HEALTH POLICY ANALYSIS

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Volume 3: Methods and data supplement

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[1] Health Policy Analysis; [2] Centre for Big Data Research in Health (CBDRH), University of NSW; [3] Centre for Health Economics Research and Evaluation (CHERE), University of Technology; [4] Flinders University; [5] Deakin University; [6] Nuffield Trust London.

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Health Policy Analysis Pty Ltd

Suite 101, 30 Atchison Street, St Leonards NSW 2065

PO Box 403, St Leonards NSW 1590

ABN: 54 105 830 920

ACN: 105 830 920

www.healthpolicy.com.au

Phone: +61 2 8065 6491

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Introduction

This document is the methods and data supplement of the final evaluation report of the Health Care Homes Trial (HCH) trial. It is one of three volumes detailing the findings of the evaluation. Table 1 describes the volumes.

Table 1: Final evaluation report volumes

Volume	Description
Volume 1 Summary report	Summarises the findings of the evaluation.
Volume 2 Main report	Presents the findings from the evaluation.
Volume 3 Methods and data supplement	Further details on evaluation methods, data sources and quality issues and additional analyses.

Overview of evaluation methods and data sources

A detailed description of the evaluation methods is in the HCH Evaluation plan.[1] Briefly, the evaluation aimed to answer the following key questions:

1. How was the HCH model implemented and what were the barriers and enablers?
2. How does the HCH model change the way practices approach chronic disease management?
3. Do patients enrolled in HCH experience better quality care?
4. What are the financial effects of the HCH model on governments, providers and individuals?

Additional key evaluation questions for the community pharmacy component were:

5. Is the community pharmacy component beneficial to the broader HCH coordinated care model and should it be included as part of any future roll out?
6. Did patients who received medication management services as part of the HCH trial experience better health outcomes than patients who did not?
7. What was the level of engagement between HCH practices and community pharmacy (care coordination)?
8. Is the inclusion of a pharmacy component in HCH financially viable?

These questions have many dimensions. Therefore, more detailed questions were developed for each key question.

[1] Health Policy Analysis. (2019b). *Evaluation of the Health Care Homes program – Interim evaluation report 2019*. https://www1.health.gov.au/internet/main/publishing.nsf/Content/Evaluation-of-the-Health-Care-Homes-Program

The evaluation used mixed methods, predominantly a convergent design (that is, quantitative and qualitative data collected separately but compared at the time of analysis to corroborate or expand findings), with some sequential elements (that is, quantitative results informing qualitative data collection or vice-versa, for example, results of practice surveys informing exploration in case study interviews).

The quantitative components used quasi-experimental and before-and-after designs. For the quasi-experimental analyses, selected outcomes for HCH patients were compared with outcomes for equivalent patients from non-HCH practices. Similarly, measures for HCH practices were also compared with non-HCH practices. For the before-and-after analyses, measures for HCH practices and patients were compared before or at the start of the trial with measures after implementation.

Quantitative data sources included extracts from practice clinical management systems and linked data that included Medical Benefits Schedule (MBS) data, Pharmaceutical Benefits (PBS) data, hospitalisations data, emergency department data, residential aged care data and national deaths data.

The qualitative components aimed to provide information about how the trial was implemented, and insights into participants' experiences with the trial. These data were collected through case studies of selected practices that included interviews with the practices, practice staff, practice patients and their carers and other stakeholders. These were undertaken in 20 locations across Australia at three different time points.[2]

Table 2 lists the data sources, labelled as "primary" (data collected specifically for the evaluation), and "secondary" (data requested from other sources). The evaluation was split into five "rounds" and primary data collection activities were organised according to these. There were also three "waves" of patient surveys. Table 3 shows the dates relating to key primary data collection activities.

[2] Not all 20 practices participated in the three case study rounds.

Table 2: Evaluation data sources

Data source	Key questions	Collection type	Evaluation report in which data were used and data collection round/period		
			Interim 2019	Interim 2020	Final report 2021
Patient surveys	3, 6	Primary	Wave 1 (baseline)	n.a.	Waves 1, 2 and 3
Practice surveys	1, 2, 4	Primary	R1 R2	R4	R1 R2 R4 R5
Practice staff surveys	1, 2, 4, 5, 7	Primary	R1	n.a.	R1 R5
PHN surveys	1, 2, 4	Primary	R1	R4	R1 R4 R5
PHN interviews	1, 2, 4, 5, 7	Primary	R1 R2	R4	R1 R2 R4 R5
Case studies[1]	2, 4, 5, 6, 7	Primary	R2	R4	R1 R2 R4 R5
HCH program data[2]	1, 4	Secondary	Oct 2017 – Aug 2019	Oct 2017 – Jun 2020	Oct 2017 – June 2021
Community pharmacy Health Outcomes Data	5, 6, 7, 8	Secondary	July 2018 – June 2019	July 2018 – June 2020	July 2018 – June 2021
Risk stratification	2	Secondary	July 2018 – June 2019	July 2018 – June 2020	July 2018 – June 2021
Practice extracts[3]	2, 3	Secondary	To June 2019	To June 2020	To June 2021
Linked data[4]	3, 4	Secondary	n.a.	n.a.	Various[5]

Notes: [1] Case studies include patient interviews/focus groups, practice interviews, related provider interviews (e.g. pharmacists, allied health), PHN interviews; [2] Data related to the administration of the program from the Department of Health and Services Australia; [3] For some practices, data were obtained two years before the start of the trial, see Chapter 2 for details; [4] Includes MBS, PBS, hospital, emergency department, aged care, and fact of death data; [5] See Chapter 2 for details.

Table 3: Timing of primary data collection activities

Evaluation round	Practice surveys and staff surveys	PHN surveys	Patient surveys	PHN interviews	Case study interviews
Round 1 (R1)	Dec 2017– Jul 2018 (incl. staff survey)	Aug 2018	Wave 1: Dec 2017– Mar 2019	Jan – Jun 2018	
Round 2 (R2)	Nov 2018– Mar 2019			Nov–Dec 2018	Sept–Oct 2018
Round 4 (R4)	Nov 2019– Mar 2020	Mar–Apr 2020	Wave 2: Dec 2019– Mar 2020	Jul–Oct 2019	Nov 2019– Mar 2020 (incl. NT ACCHS case studies)
Round 5 (R5)	Mar–May 2021 (incl. staff survey)	May–June 2021	Wave 3: Mar–Apr 2021	Mar–Apr 2021	Mar–May 2021 (incl. NT ACCHS case studies)

Table 4 shows further details of the data used for the evaluation, including a summary of response rates where applicable.

Table 4: Responses by data source

Data source and responses	Evaluation round				
	1	2	3	4	5
Patient surveys: Wave 1: 2,018 completed surveys, raw response rate of 64.6% Wave 2: 1,859 completed surveys, raw response rate of 68.0% 1,275 respondents had completed a response to wave 1 Wave 3: 1,385 completed surveys, raw response rate of 72.0% 1,001 respondents had completed a response to wave 1 1,312 respondents had completed a response to wave 2		✓		✓	✓
Practice surveys: Round 1 survey responses: Part A – 178, Part B – 170 Round 2 survey responses: 106 Round 4 survey responses: 57 Round 5 survey responses: Part A – 74, Part B – 65	✓	✓		✓	✓
Practice staff surveys: Round 1 survey responses 529 staff from 146 practices (100 GPs, 125 practice nurses/nurse practitioners, 131 receptionists, and 128 practices managers) Round 5 survey responses 182 staff from 78 practices (36 GPs, 42 practice nurses/nurse practitioners, 32 receptionists, 48 practice managers, 24 others)	✓				✓
Practice exit interviews/surveys: Methods for conducting exit interviews and surveys changed over time. By September 2018, interviews had been conducted with eight individuals covering 17 practices (some individuals spoke on behalf of multiple practices). Written reasons for withdrawal were provided by three other practices. These responses were incorporated into the *Interim evaluation report 2019*. An online exit survey was subsequently used, although responses to this were low (7 practices). Since the *Interim evaluation report 2019*, a further 13 practices withdrew from the trial. From the 13 withdrawn practices, the evaluation team received exit surveys or conducted interviews with 10.	✓	✓	✓	✓	✓
PHN surveys: Round 1: survey responses: 10 Round 4: survey responses 9 Round 5: survey responses 7	✓			✓	✓
PHN interviews: All 10 PHNs were interviewed in rounds 1, 2, 4 and 5.	✓	✓		✓	✓
Case studies: See Table 7, page 10		✓		✓	✓
Practice data extracts: Data were received via third party extraction software as follows: Pen CS (this included data from the Northern Territory ACCHS clinics), POLAR, and SONIC. Data for comparator practices was from practices participating in NPS MedicineWise's MedicineInsight program and consenting to providing their data for the evaluation. Details are provided in Chapter 2.	✓	✓	✓	✓	✓
HCH program data: Data on program establishment from the Department of Health and on administration of the program by Services Australia, including weekly enrolment numbers and withdrawals.	✓	✓	✓	✓	✓

Data source and responses	Evaluation round				
	1	2	3	4	5
Linked data: The first instalment of data covering the period from July 2015 to June 2017 was received at the end of 2019. The second instalment (July 2017 to June 2019) was received June 2021. The third instalment (July 2019 to June 2020 for hospital & aged care data and July 2019 to June 2021 for MBS, PBS & fact of death data) was received in October 2021.			✓	✓	✓
Other data sources: De-identified risk stratification data from Precedence, covering the period up until the end of June 2020 received. Data on participation and evaluation of training activities collected by AGPAL was also supplied and reported in the *Interim evaluation report 2019*. Guildlink supplied the Community Pharmacy Health Outcomes Data. Data to 30 June 2021 was received.		✓	✓	✓	✓

2

Description of evaluation data sources

The chapter provides further details of the evaluation data sources.

Patient surveys

Appendix F of the evaluation plan[3] includes the patient survey questions. The patient surveys aimed to obtain perspectives on patients' relationship with their HCH, addressing the key evaluation question: "Do patients enrolled in HCH experience better quality care", and the following sub-questions:

- Did patients enrolled in the HCH program have improved access to primary care services, including alternates to face-to-face contacts?
- How did use of services from within the HCH practice change?
- Did the HCH model result in increased continuity in the provision of primary care?
- Were the patients enrolled in the HCH program and their families/ carers more engaged in managing patients' health needs?
- What strategies resulted in the greatest impact on patient activation?
- Did patients enrolled in HCH report improved experiences of primary care, including coordination of their care and communication with their primary care providers?

The survey incorporated items from the following instruments:

- Patient Assessment of Chronic Illness Care (13-item version)[4]
- Patient Activation Measure (PAM) (13-item version)[5]
- EQ-5D-5L[6]

[3] Health Policy Analysis. (2019a). *Evaluation of the Health Care Homes program – Evaluation plan (Updated 2019)*.

[4] Gibbons, C. J., Small, N., Rick, J., Burt, J., Hann, M., & Bower, P. (2017). The Patient Assessment of Chronic Illness Care produces measurements along a single dimension: results from a Mokken analysis. *Health Qual Life Outcomes, 15*(1), 61.

[5] Hibbard, J. H., Mahoney, E. R., Stockard, J., & Tusler, M. (2005). Development and testing of a short form of the patient activation measure. *Health Serv Res, 40*(6 Pt 1), 1918-1930.

[6] Herdman, M., Gudex, C., Lloyd, A., Janssen, M., Kind, P., Parkin, D., Bonsel, G., & Badia, X. (2011). Development and preliminary testing of the new five-level version of EQ-5D (EQ-5D-5L). *Qual Life Res, 20*(10), 1727-1736.

- Consumer Assessment of Healthcare Providers and Systems (CAHPS) Clinician and Group adult survey (CG-CAHPS)[7] – selected items only
- Care Coordination Quality Measure for Primary Care (CCQM-PC)[8] – selected items only.

PAM and EQ-5D-5L are proprietary tools for which HPA obtained licenses for the evaluation. For translations into other languages, to preserve the psychometric properties of the tools, HPA obtained official translations of tools where available (for example, PACIC, EQ-5D-5L). For others, a translation service was used.

The surveys were translated into five languages: Arabic, Italian, Greek, Chinese and Tamil. The first four languages were chosen as they are the most common in Australia according to Australian Bureau of Statistics data as well as advice from a culturally and linguistically diverse public relations specialist. Tamil was nominated by one of the PHNs due to a particular cluster of Tamil speakers in its region. These five languages were the same as those into which the patient information and consent form was translated.

Only patients aged 18 years and over were invited to complete a survey. This is because children were expected to be a small proportion of HCH enrolees and given this, the costs of addressing additional ethical and legal issues of surveying children were estimated to be disproportional. Patients of the Northern Territory ACCHS clinics were not surveyed (see "Case studies" below).

HPA subcontracted The Social Research Centre (a business unit of the Australian National University) to administer the surveys via a computer assisted telephone interview (CATI).

The patient surveys were conducted in three waves. In wave 1, patients were approached to complete a survey about four to six weeks following enrolment. In wave 2, patients surveyed during wave 1 were followed up if they had not died and had not withdrawn from HCH (due to their own reasons or because their practice withdrew from the trial). In wave 2, additional patients not surveyed in wave 1 were added. The additional cohort targeted patients referred to community pharmacy as part of the HCH trial. Wave 3 followed-up patients interviewed in wave 2.

The aim was to survey 2,000 patients in wave 1 and 2,500 in waves 2 and 3. Table 5 shows the number of patients invited and the response rates per wave.

[7] Agency for Healthcare Research and Quality. (2015). *CAHPS® Clinician & Group Survey: Overview of the Questionnaires*. https://www.ahrq.gov/cahps/surveys-guidance/cg/instructions/downloadsurvey3.0.html

[8] Agency for Healthcare Research and Quality. (2016). *Care Coordination Quality Measure for Primary Care (CCQM-PC)*. AHRQ. Retrieved 1 February 2017 from https://www.ahrq.gov/professionals/prevention-chronic-care/improve/coordination/ccqmpc/index.html

Table 5: HCH evaluation patient survey response rates

Wave	Time frame	Patients surveyed	Invited	Completed surveys	Response rate
Wave 1 (Baseline)	December 2017 to March 2019	Sample drawn from HCH practices	3,125	2,018	65%
Wave 2	December 2019 to March 2020	Wave 1 patients	1,762[1]	1,275	72%
		Additional patients drawn from those referred to community pharmacists	970	584	60%
		Total wave 2	2,732	1,859	68%
Wave 3	March to April 2021	Wave 1 only patients	260	73	28%
		Wave 2 only patients	523	384	73%
		Wave 1 & Wave 2 patients	1,153	928	80%
		Total wave 3	1,936	1,385	72%

Notes: [1] Number decreased from 2,018 patients surveyed in wave 1 due to various factors, including number disconnected, patient deceased.
Source: The Social Research Centre.

Practice surveys

Appendix C of the evaluation plan[9] includes the practice surveys. The surveys were administered online using the Qualtrics application. Surveys of HCH practices were conducted in rounds 1, 2, 4 and 5. The surveys aimed to capture information on:

- Practice characteristics at baseline.
- Key features of the practice relevant to HCH approach.
- The capabilities of the practice before joining the program (for example, participation in other chronic disease management and related initiatives).
- Changes implemented as a result of participation in HCH.
- Practice experience of and feedback on HCH.
- Practice perspectives on the effectiveness of HCH.

Table 6 shows the response rates for the surveys. Response rates declined as the trial progressed. Strategies to maximise completion of surveys included:

- Letting practices know upfront about the approximate time frames during which surveys would be issued.
- Letters to practices during each survey round outlining the importance of the survey and details about completion.
- Setting a generous time window for completion of the survey (usually two months, and extensions were granted where practices asked for one).
- Reminder letter to practices not completing the survey by the due date.
- Assistance to individual practices to access the evaluation portal to complete the survey (for example, reissue lost/ forgotten passwords, issue logins to additional people in the practice).

[9] Health Policy Analysis. (2019a). *Evaluation of the Health Care Homes program – Evaluation plan (Updated 2019)*.

- Inclusion in the survey tool of a skip function for questions that were conditional on a previous answer (to minimise respondents going through questions that were not relevant to them).
- Where questions in the survey referred to responses that the practice had given in an earlier survey round, those responses were provided in the survey tool for easy reference.
- Letters to PHNs letting them know which of their practices had not completed a survey and asking them to follow up.
- Department of Health reminders to PHN practice facilitators at regular meetings and email correspondence with this group to follow up with practices with outstanding surveys.

Table 6: HCH evaluation practice survey response rates

Survey	Dates that the bulk of the practices completed the survey [A]	Number of practices responding	Number of practices active, at the end of [A]	Response rate	Number of practices that responded that were still in the HCH trial at 31 Match 2021
1 Part A	Dec 2017 – Jul 2018	164	*185 (July 2018)*	88.6%	100
1 Part B		158		85.4%	98
2	Nov 2018 – Mar 2019	105	*162 (Feb 2019)*	64.8%	78
4	Nov 2019 – Mar 2020	57	*123 (March 2020)*	46.3%	54
5 Part A	Mar – May 2021	74 (incl. one withdrawn 27 April 2021)	*109 (March 2021)*	67.9%	74
5 Part B		65		59.6%	65

Case studies

The case studies aimed to provide a comprehensive view of the implementation of HCH at the practice level. Practices included in the case studies were selected to maximise diversity across the dimensions of the sampling frame established for the HCH trial (which included practice size, location and type). PHNs reviewed a list of the practices selected by HPA, and in some cases suggested alternatives to better fit the evaluation strata. Practices that withdrew from HCH in subsequent interview rounds were replaced by an alternative practice from within the same PHN (and with similar features if possible according to the sampling frame).

The case studies involved visits to selected locations within each of the 10 participating PHNs, studying two practices in each location, with interviews or focus groups conducted with:

- Patients and their carers and family.
- Practice staff, speaking on behalf of the practice as well as individual perspectives of GPs, nurses, allied health professionals and technical and administrative staff employed by the practice.
- External allied health and other service providers that the practices referred patients to.
- Pharmacists participating in the community pharmacy trial.
- PHN representatives.
- Local Hospital Network (LHN) and state/territory health authority representatives (associated with all 10 PHNs).

Site visits and interviews were conducted in rounds 2, 4 and 5. Interviews for round 5 (March to May 2021) were largely conducted by videoconference or telephone, due to restrictions related to the COVID-19 pandemic. Table 7 provides information about the case study interviews.

Table 7: HCH evaluation case studies: interviews for rounds 2, 4 and 5

Informants interviewed or participating in focus group	Round 2	Round 4	Round 5
Dates:	*Sept–Oct 2018*	*Nov 2019–Mar 2020*	*Mar–May 2021*
Practices interviewed			
Total	*18*[1]	*20*[2]	*17*
Practice staff interviewed			
GPs	24	27	20
Nurses	13	15	11
Practice managers	14	15	13
Receptionist	6	5	6
Other	8	14	11
Total	*65*	*76*	*51*
Patients and carers			
Patients	42	49	43[3]
Carers	4	2	3
Total	*44*	*51*	*46*
Primary Health Networks	10	10	10

Notes: [1] Research ethics approval had not been obtained for two case studies based in ACCHS clinics at the time the R2 case studies were undertaken. These were included in R4 and R5. [2] Four practices that withdrew in R2 were replaced with four other HCH practices; [3] Two patients were not from the practice case study sites.

Participants in interviews were offered a voucher or payment as follows:

- Patients and their carers/ family: a $30 gift voucher or cash payment.
- Practices: $1,000 per round of interviews.
- External allied health providers and community pharmacists: $160 per interview.

Extracts from practice clinical management systems

Extracts from practice clinical management systems were supplied for the HCH evaluation, using several sources. Practice data were used to address **Key question 3: Do patients enrolled in HCH experience better quality care?** Practice extract data enabled examination of the quality of chronic illness care such as recording of HbA1c and blood pressure, use of primary care services, and clinical outcomes such as control of diabetes and high blood pressure. The measures for patients enrolled in the HCH trial were compared with those for "comparator patients" who received care from practices not participating in the HCH trial. During the evaluation, practice data were also analysed for six-monthly periods to produce benchmark reports, which were provided to individual HCH practices and PHNs as a means of providing feedback about completeness and quality of data recording (See Chapter 6: Benchmark reports).

This section describes the sources of practice data extracts, including how the data were collected and managed for the evaluation, the patient information that was extracted and provided for the evaluation, and similarities and differences of the data sources. It reports the accuracy of practice recording of HCH enrolees in clinical management systems by comparing with HCH registrations in the Health Professional Online Services (HPOS) system (that is, for receipt of the bundled payment).

Box 1: Practice data extracts – Key points

- Practice data extracts were obtained from four sources: Pen CS, Population Level Analysis and Reporting (POLAR), Sonic Clinical Services (Sonic), and MedicineInsight. For the HCH evaluation, practice extracts were received from 151 HCH practices (including 13 Northern Territory ACCHS clinics). The final MedicineInsight extract included data from 403 practices that were not participating in HCH.
- Practice extracts from the four data sources contained information about patient demographic characteristics, service encounters, diagnoses, clinical measurements, pathology results, prescriptions, immunisations and MBS billing. There was variation between data sources in terms of data extraction arrangements, information included and data processing before delivery of the data set for the evaluation. This warranted efforts to harmonise data content for the evaluation. Some evaluation outcomes of could not be harmonised, and were measured in HCH patients only (for example, number of encounters with practice nurses, allied health providers in the practice; recording of smoking status).
- There were some discrepancies between the number of HCH patients identified in practice data extracts and the number of enrolled patients registered in HPOS.

Sources of practice data extracts

For the evaluation, practices participating in the HCH trial provided data extracts from their clinical management systems through third party software (Pen CS and POLAR), or through their corporate office (Sonic Clinical Services). Data extracts from practices not participating in the HCH trial were obtained from NPS MedicineWise's MedicineInsight program. At the start of the evaluation, the Department of Health and the evaluation consortium explored options for obtaining extracts from practice clinical management systems for the evaluation. The approach to obtaining practice data was guided by three criteria:

- Leveraging existing arrangements for data sharing. This was important so as not to introduce new processes for practices, and to use existing licences for data extraction where available so as not to add cost.
- Creating infrastructure or processes that would have value beyond the evaluation.
- Selecting an approach that is compatible with most of the clinical management systems used by practices.

A survey of PHNs was conducted early 2017 by the Department and HPA to explore the extent to which the practices were already sharing their data with the PHNs. Most of the 10 PHNs were using Pen CS software for data extracts, with PHNs covering the licensing costs for practices within their region. Therefore, Pen CS data were leveraged within these PHNs for the evaluation for the majority of HCH practices.

However, Pen CS was not feasible for several subsets of HCH practices, as follows:

- The Northern Territory ACCHS agreed for their data only relating to HCH patients to be extracted for evaluation. All ACCHS were provided with instructions on how to do this extraction. ACCHS used the Pen CS platform to supply data directly to the evaluators.
- Within the South East Melbourne PHN, POLAR software, developed by Outcome Health, was being used to share data between practices and the PHN. The evaluation therefore leveraged the data extracted through the POLAR software for participating HCH practices within this PHN.
- Eleven HCH practices who were part of Sonic Clinical Service's Independent Practitioner Network agreed to provide extracts for HCH patients. For those Sonic practices, data relating to HCH patients were extracted directly from their Best Practice clinical management system and transferred to the evaluation team.

An additional source of practice data was sought for comparisons of process and clinical measures with HCH practices as well as completeness and quality of data. The comparison data were obtained from NPS MedicineWise's MedicineInsight program. MedicineInsight is a quality improvement program developed and managed by NPS MedicineWise. The initial exploration indicated that about 25 practice members of MedicineInsight were also participating in the HCH trial. Therefore, the Department negotiated with NPS MedicineWise to use MedicineInsight data as a source of data for both HCH and comparator practices. NPS MedicineWise obtained consent from member practices for their data to be used for the HCH

evaluation and provided data from the practices that consented.[10] In the initial MedicineInsight data extract delivered in September 2018, there were three HCH practices that had consented to sharing their data. In both the second extract (delivered in August 2019), and the third extract (delivered in February 2020), there were four HCH practices that had consented to share their data. In the final extract (delivered in August 2021), there were three HCH practices that had consented to share their data.

By the end of the evaluation (June 2021), the evaluation team received extracts for 151 HCH practices (Figure 1) through Pen CS (14 Northern Territory ACCHS clinics and 109 other practices), POLAR (17 practices), Sonic (11 practices) or MedicineInsight (three practices in the final delivery).

Of the 14 Northern Territory ACCHS clinics providing data through Pen CS, four clinics provided data individually and 10 arranged for the data to be combined and supplied as three entities.

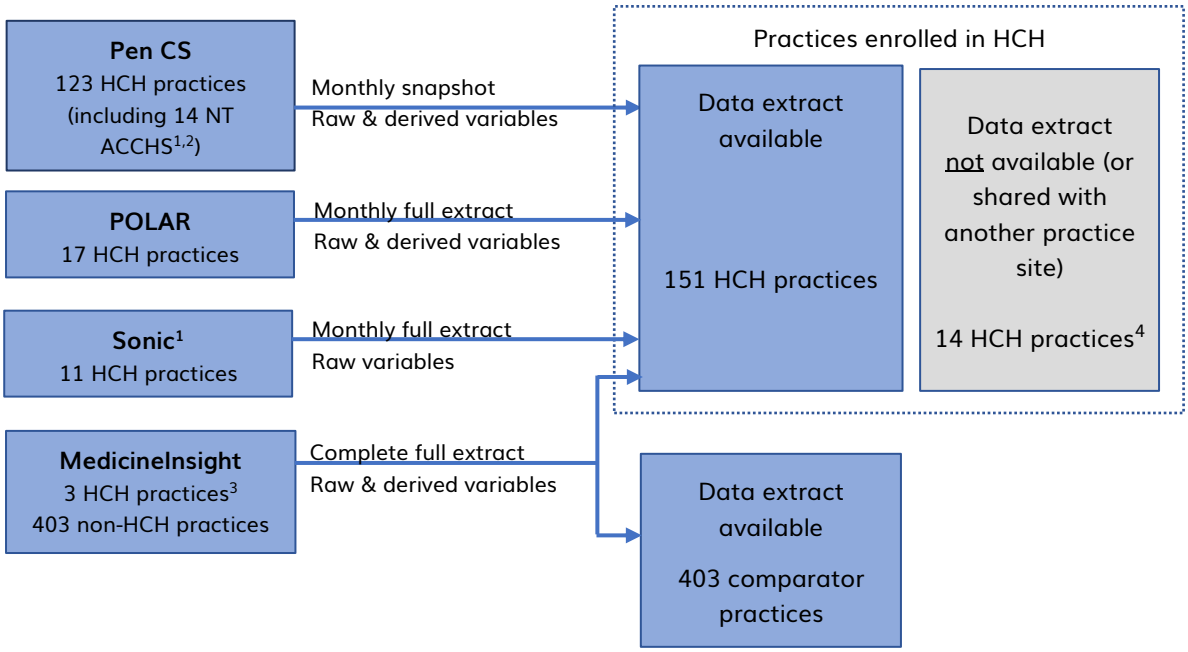
Practice data extracts were not available for 14 HCH practices for the entire evaluation. Of these, one practice shared their Pen CS database with another location.

The final MedicineInsight extract delivered in August 2021 included data for 403 non-HCH practices and three HCH practices. The three HCH practices participating in MedicineInsight program also supplied data via Pen CS. For greater data consistency, Pen CS extracts for these three practices were analysed for the evaluation.

HCH practices were required to provide data until the practice withdrew from the trial or the end of June 2021; therefore, extracts from some practices covered longer timespans than others. Extracts from non-HCH practices covered the period from December 2015 to June 2021.

[10] MedicineInsight's processes for collecting data from practices meets the definition of non-identifiable data in the NHMRC National Statement on Ethical Conduct in Human Research. Practices consent to use of non-identifiable data for research through a practice agreement. However, an important requirement for the evaluation was the capability to identify practices enrolled in the HCH program within the MedicineInsight extract. To enable this NPS MedicineWise sought and obtained explicit and informed consent from HCH enrolled practices so that consenting practices could be flagged and identified in the MedicineInsight data extract.

Figure 1: Sources and numbers of practices providing extracts for the evaluation, by end of the evaluation



Notes: [1] Extracts from Northern Territory ACCHS clinics and Sonic practices related to HCH patients only. [2] Extracts from 10 Northern Territory ACCHS clinics were combined and supplied as three entities (two entities of three sites each and one entity of four sites). [3] The three HCH practices participating in MedicineInsight also supplied data through Pen CS. [4] This included one practice that already shared Pen CS database with another site.

Pen CS extracts

Pen CS data extraction software captures a snapshot of a patient's data from the practice clinical management system at monthly intervals. At the time of the extraction, information from the most recent record for a patient is extracted. For example, if a patient had three visits to the practice within a data extraction period and had blood pressure measured and recorded in each visit, only the most recent blood pressure measurement would be included in the extract. If a patient did not have any contact with the practice within the current extract period, the data included in the extract would reflect the measurement undertaken in the previous period. For this reason, a single record of patient measurement (for example, blood pressure or HbA1c result) may be extracted multiple times. Thus the evaluation team filtered out duplicate records before data analyses. In the practice clinical management system, when the practice updates patient smoking status and alcohol use, the prior value is overwritten. Obtaining monthly extracts of smoking status and alcohol use allowed the evaluation team to examine the recording of smoking and alcohol use over time.

In addition to the extraction of raw information (for example, patient age, systolic and diastolic blood pressure), Pen CS extraction software derives a range of indicators such as flags for multiple patient conditions, whether a patient condition is active, and whether a clinical observation or a pathology test has been completed. The software calculates the number of times that a clinician in the practice has used the practice clinical management system during a defined period. It also classifies prescription information into classes of medications.

Extracts from Northern Territory ACCHS clinics provided through Pen CS platform only include records belonging to HCH patients, while other extracts from other HCH practices provided through the Pen CS platform included all patients in the practice.

For the HCH evaluation, Pen CS extracts were transferred to a secure server managed by HPA. Data were processed to remove duplicate records across extracts and combined into longitudinal tables. The longitudinal tables were updated quarterly and transferred to the SURE environment for analysis.

POLAR extracts

The POLAR software, developed by Outcome Health, also extracts data from practice clinical management systems monthly. The software retrieves patient data that were recorded in the clinical management system within the extraction period. For example, if a patient had three visits to the practice within a data extraction period and had blood pressure measured and recorded during each visit, each of the three measurements would be included in the data extract. If a patient did not have any contact with the practice within the current extract interval, then no patient measurement records would be included. In the practice clinical management system, when the practice updates patient smoking status and alcohol use, the prior value is overwritten. Monthly extracts of information relating smoking status and alcohol consumption allowed the evaluation team to examine the recording of smoking and alcohol use over time.

In addition to the retrieval of raw information (for example, patient age, systolic and diastolic blood pressure), POLAR also derives variables, such as mapping of extracted patient diagnosis information to Systematized Nomenclature of Medicine-Clinical Terms (SNOMED-CT). The SNOMED-CT coded textual descriptions are provided in the data extracts.

For the HCH evaluation, POLAR data were delivered monthly to South East Melbourne PHN, who then transferred the data directly into the SURE environment for analysis. Within the SURE environment, the monthly extracts were combined to create longitudinal tables.

Sonic extracts

Eleven HCH practices were part of Sonic Clinical Service's Independent Practitioner Network. For these practices, information belonging to HCH patients was extracted directly from Best Practice clinical management system via a Structured Query Language query. Similar to POLAR data, patient information recorded in the clinical management system within the extraction period is extracted. For example, if a patient had three visits to the practice during the period and had blood pressure measured and recorded in each visit, each of the three measurements would be included in the data extract. If a patient did not have any contact with the practice within the current extract interval, no patient measurement records would be included. In clinical management system, when the practice updates patient smoking status and alcohol use, the prior value would be overwritten. Monthly extracts of smoking status and alcohol use allowed the evaluation team to examine the recording of smoking and alcohol use over time. Patient diagnoses were provided as a free-text field. The evaluation team created flags for specific patient conditions.

Sonic data for the HCH evaluation were delivered monthly to the secure data server managed by HPA before being transferred to the SURE environment.

MedicineInsight extracts

MedicineInsight software regularly extracts data from practice clinical management systems. The software retrieves patient data recorded in the clinical management system during the period of extraction. For example, if a patient had three visits to the practice during the period and had blood pressure measured and recorded in each visit, each of the three measurements would be included in the data extract. If a patient did not have any contact with the practice within the current extract interval, then no patient measurement records would be included. In the clinical management system, when the practice updates patient smoking status and alcohol use, the prior value may be overwritten. (While some clinical management systems are now retaining multiple recordings of these values, they are usually not extracted.) Patient smoking status and alcohol use in the latest MedicineInsight extract reflects the most recently recorded status (not necessarily the last time these were assessed).

In addition to the extraction of raw information (for example, patient age, systolic and diastolic blood pressure, diagnosis and diagnosis active status), MedicineInsight also derives a range of variables, such as multiple patient condition flags using patient diagnoses, reasons for prescription and reasons for encounter.

The initial MedicineInsight extract was delivered in September 2018. Subsequently, NPS MedicineWise advised that complete longitudinal data extracts, rather than quarterly updates, would facilitate the ability to follow through individual patients over time. In June 2019 a revised agreement between the Department and NPS MedicineWise was executed. The second extract was delivered in August 2019, covering the period December 2015 to June 2019 while the third extract was delivered in February 2020 for data in the December 2015 to January 2020. The final extract, delivered in August 2021, included data from December 2015 to end of June 2021.

Description of patient information in practice extracts

For the HCH evaluation, practice extracts provided rich information about the patient and their receipt of care (Table 8). All four sources of extracts contained information about patient demographics, lifestyle factors, clinical encounters, diagnoses, clinical observations, results of pathology tests, prescriptions, and immunisations. Three data sources provided information about type of service providers (that is, user of clinical management system, with designation defined by and within the practice).

None of the sources extracted clinical information stored in scanned documents or PDF documents (for example specialist letters or hospital discharge summaries that may come in these formats).

Table 8: Patient information available for evaluation within each source of extracts

Information type	Source of practice data extracts[1]			
	Pen CS	POLAR	Sonic[2]	MedicineInsight
Demographic information	√	√	√	√
Lifestyle factors	√	√	√	√
Clinical encounters	√	√	√	√
Service providers[3]	√	√		√
Diagnoses	√	√	√	√
Clinical observations	√	√	√	√
Pathology results	√	√	√	√
Prescriptions	√	√	√	√
Immunisations	√	√	√	√
MBS billing	√	√		√

Notes: [1] A tick indicates patient information is provided for the evaluation. [2] Sonic data relate to HCH patients only. [3] Service providers are users of practice clinical management system, with designation defined by the practice.

To examine pre- and post-enrolment changes in evaluation outcomes, patient information recorded in the two years before practice enrolment (that is, a two-year lookback) was provided for the evaluation. Because the Pen CS extraction tool captures a snapshot for each patient, only the record for each patient with the date of service most recent to the first data extract was available for the evaluation. In the POLAR, Sonic and MedicineInsight extracts, all patient activities that took place in the lookback period were included.

The evaluation team examined the consistency of patient information between data sources and between practices. Where variation in data capture was observed (for example, when extracts from a practice did not include flags for HCH enrolees), clarification was sought from the data providers. It is recognised that several factors may contribute to completeness and quality of data extracts, including:

- Completeness and quality of data in the extractable fields of the source practice clinical management system.
- Version and compatibility of the practice clinical management and billing systems, and compatibility of the extraction software.
- Licence for clinical audit tools that may enable additional data to be extracted.
- Policies and methods or procedures of third party data providers in terms of data extraction, manipulation and provision.

Patient demographics included age and sex, concessional beneficiary status, and Aboriginal and Torres Strait Islander status. No personally identifiable information (for example, name, date of birth, postcode) was included in any of the data extracts. While Pen CS, POLAR and Sonic data were extracted for patients of all ages, MedicineInsight data provided for the evaluation were limited to patients aged 15 years and older (changes in evaluation outcomes in children were not in scope for the evaluation). Remoteness of practice geographical area was categorised according to the Australian Statistical Geography Standard Remoteness Area. Quintiles of the Index of Relative Socio-economic Disadvantage (IRSD) were mapped to practice geographical area.

Lifestyle factors included smoking status, alcohol consumption and physical activity. Smoking status reflected a person's current and past smoking behaviour. Alcohol consumption included amount of alcohol drinks per day and/or frequency of alcohol consumption per week. Sufficiency of physical activity (derived and provided by Pen CS extracts only) indicated whether the level of moderate or vigorous physical activity was sufficient to confer a health benefit.

Practice clinical management systems do not store historical information relating to these lifestyle factors, for example, when patient smoking status is updated, prior values will be overwritten. Data for most HCH practices were obtained monthly through Pen CS, POLAR and Sonic sources, thus enabling examination of changes in practice recording of smoking status over time. Meanwhile, smoking status in MedicineInsight data reflected the patient's most recent smoking status (that is, cross-sectional).

Clinical encounter, in the general practice setting, refers to an interaction between a patient and the service. An encounter record can be generated when patients have a consultation with clinician.

Service provider refers to a user of clinical management system, with provider designation being defined by the practice. Pen CS software extracted only date of the most recent encounter (that is, snapshot of encounters in each extraction period) and calculated the number of encounters with a specified provider type within a specified timeframe (that is, number of GP encounters in the last 12 months, number of practice nurse encounters in the last six months). Meanwhile, the extracts provided by POLAR, Sonic and MedicineInsight included unit record data for each patient encounter, with information about date of the encounter, mode of encounter (for example, visit, consultation, telehealth, administrative purpose) together with provider types.

Diagnoses can be entered into the practice clinical management system in several ways. A clinician can select a relevant term from a medical classification taxonomy embedded in the clinical management system, such as "Docle" in Medical Director or "Pyefinch" in Best Practice. A clinician can also describe a patient's diagnostic information in the free-text field in the diagnosis window, reason for visit, or reason for prescription. Diagnostic information may also be written in progress notes but these notes are not extracted as they may contain confidential information.

Pen CS software extracted patient diagnosis recorded in the clinical record window (for example, "Past History" screen in Best Practice, Medical Director). The extracted information was mapped to more than 80 condition categories according to Pen CS mapping guides.[11] These mapped condition categories were provided for the evaluation.

In POLAR extracts, both classified and free-text descriptions of diagnosis were extracted and mapped to SNOMED-CT.[12] Both free-text descriptions of diagnosis and text descriptions of SNOMED-CT concepts were provided for the evaluation.

[11] Pen CS. (2021). *Data mapping*. Retrieved 5 July from https://help.pencs.com.au/display/ADM/Data+Mapping

[12] Outcome Health. (2019). *POLAR GP*. Retrieved 5 July from https://outcomehealth.org.au/polar.aspx

In Sonic extracts, textual descriptions of patient diagnosis were provided.

MedicineInsight extracted both classified diagnoses (for example, those selected by clinicians through Docle or Pyefinch) and free-text fields (descriptions of diagnosis, reasons for encounter and reasons for prescription). This information was provided for the evaluation.

In addition to diagnosis text descriptions, all data extracts included a field indicating whether the diagnosis was flagged as active or inactive in the clinical management system alongside diagnosis onset date (that is, the date the diagnosed condition is thought to have commenced).

The evaluation team developed approaches to harmonise patient diagnosis data. The evaluation team reviewed health conditions included in the predictive risk model (PRM) that was part of the RST used by practices to identify eligible HCH patients. There are 19 PRM conditions for which Pen CS data have equivalent condition categories as presented in Appendix 2. Accordingly, the evaluation team developed methods to search for relevant textual description of these 19 diagnoses in POLAR, Sonic and MedicineInsight extracts (Appendix 3), informed by advice and documentation obtained from data providers.

Clinical observations refer to physiologic measurements at the time of the encounter such as blood pressure, heart rate, body height, body weight and waist circumference. There are also other assessments such as screening for cardiovascular and diabetes risk, hearing and vision. Pen CS derives 20 broad categories of clinical measurements, such as blood pressure, HbA1c glycated haemoglobin, albumin-creatinine ratio. Meanwhile, the POLAR, Sonic and MedicineInsight data included raw clinical measurement results as recorded in clinical management systems.

Pathology results include results of investigations such as blood sugar, HbA1c, cholesterol and estimated glomerular filtration rate. Pathology results may be transferred electronically from pathology labs or may be manually entered into the practice systems. Electronic pathology results received in atomised form (that is, predefined coded segments format) are generally compatible with data extraction software. Scanned or PDF copies of pathology reports were not extracted.[13,14]

Textual description or labelling for a test may vary according to pathology methods and techniques. For example, a test for microalbumin creatine ratio (ACR) could be labelled, as reported by the lab, as "ACR", "albumin/creatinine", "albumin/creatine ratio (ACR)", "%Albumin/Creat%" and other forms. Pen CS extraction software derives 26 broad categories of pathology test results (for example, microalbumin creatine ratio, spirometry). Meanwhile, POLAR, Sonic and MedicineInsight data included raw and extractable pathology results.

Units of measure for a test may also vary according to pathology techniques and clinical guidelines. Results of HbA1c tests could be expressed as %HbA1c according to National

[13] NPS MedicineWise. (2021). *MedicineInsight Data Book version 4.0*. https://www.nps.org.au/assets/NPS/pdf/MedicineInsight-databook-4.0-December-2021.pdf, Pen CS. (2021). *Data mapping*. Retrieved 5 July from https://help.pencs.com.au/display/ADM/Data+Mapping.
[14] NPS MedicineWise. (2021). *MedicineInsight Data Book version 4.0*. https://www.nps.org.au/assets/NPS/pdf/MedicineInsight-databook-4.0-December-2021.pdf

Glycohemoglobin Standardization Program (NGSP unit) or expressed as mmol/mol according to International Federation of Clinical Chemistry (IFCC unit). The evaluation team undertook data preparation to harmonise pathology records across sources. Values of HbA1c in IFCC units were converted to NGSP units using a recommended formula.[15]

Prescription data provide information about a patient's current or past medicines prescribed by a provider and/or scripts printed out from the practice system. Over-the-counter medicines and those prescribed by providers elsewhere are only included if manually entered into the practice system.[16]

Within Pen CS extracts, medicines present in the patient's current medication list are mapped into categories,[17] such as "ACE inhibitors", "beta blockers", and sub-categories such as "beta-blockers antihypertensives" and "beta-blockers for myocardial infarction". Since 2019, Pen CS has extracted medicine names (generic and brand names) from practices that use Medical Director, Best Practice or Zedmed.

The POLAR data provided for the evaluation contained only generic and brand names of prescribed medicines. Sonic extracts contained brand name, strength, dose, units of the medication and script date. MedicineInsight data included details of prescribed medicines, including names (generic and brand names), strength, dose, form, quantity, route of administration and number of repeats. MedicineInsight further map medicines to Anatomical Therapeutic Chemical (ATC) Classification systems and these ATC codes were also provided for the evaluation.

As the four data sources have different approaches to the extraction and presentation of prescription data, the evaluation team developed methods to identify whether a patient used diabetes medications, antithrombotic agents and medications for cardiovascular, nervous and respiratory systems. Methods to harmonize influenza vaccination data were also developed.

MBS billing data contain billing claims from the practice for services (MBS item number) provided to the patient. The process of extracting MBS billing data is supported when the practice uses integrated clinical and practice management software from the same vendor, and the billing system is compatible with the clinical management system. When a practice changed clinical and/or billing software, this could affect the completeness of billing data over time. Extracts provided by several Pen CS, POLAR and MedicineInsight practices for the evaluation did not contain MBS billing data for the entire time period.

All data collections contain unique IDs for the practice and unique IDs for the patient. Currently, it is not possible for the data extraction software to identify a patient who visited two or more practices.[18] Neither it is possible to identify patients whose records were

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[15] Goodall, I., Shephard, M., & Tate, J. (2010). *Position Statment. Recommended Changes in HbA1c Reporting Units for Australian Laboratories.* https://www.aacb.asn.au/documents/item/1214

[16] NPS MedicineWise. (2021). *MedicineInsight Data Book version 4.0*. https://www.nps.org.au/assets/NPS/pdf/MedicineInsight-databook-4.0-December-2021.pdf

[17] Pen CS. (2021). *Data mapping*. Retrieved 5 July from https://help.pencs.com.au/display/ADM/Data+Mapping

[18] NPS MedicineWise. (2021). *MedicineInsight Data Book version 4.0*. https://www.nps.org.au/assets/NPS/pdf/MedicineInsight-databook-4.0-December-2021.pdf

extracted by different software. Therefore, data for a patient were analysed within the practice and within the data source. For the HCH practices, however, based on practice name, it is possible to identify the practices whose data were extracted by two extraction tools (for example, by both Pen CS and MedicineInsight).

Identifying HCH enrolees in practice extracts

The practice needed to flag HCH enrolled patients in their clinical management system to enable clinicians in the practice to identify the patients. The practice also needed to flag HCH patients in such a manner that allowed the flags to be extracted by the relevant extraction software.

Practices supplying data through Pen CS were instructed to record patient tier and withdrawal status in Topbar, a Pen CS clinical decision support system, or where the practice did not have Topbar, in CAT 4, a Pen CS clinical audit tool. Because date of patient enrolment was not recorded, the evaluators used date of the extract in which patient tier was first identified as a proxy for patient date of enrolment. During the course of the evaluation, the evaluation team monitored the recording of patient enrolment in data extracts and discussed these findings with the PHNs and Pen CS provider to improve the ascertainment of HCH patients.

Practices in South East Melbourne PHN were requested to follow Australian Association of Practice Management guidance on using the practice clinical management system for HCH recording and reporting.[19] Preliminary analysis of the POLAR data found that patient enrolment flags were absent in extracts from several practices. The South East Melbourne PHN advised this might be due to practices flagging patients in MBS billing software (for example, Zedmed), which was incompatible with the extraction software, or practices using their own approaches so that flags were not extractable. The evaluation team and South East Melbourne PHN implemented two approaches to solve the issue. The first solution was to provide a template spreadsheet for practices to manually enter de-identified patient unique ID, the most recent patient tier and active/withdrawn enrolment status. This was only practical for practice with small number of enrolments. The second solution was that the evaluation team provided the practices with identifiers of enrolled patients to allow searches in their system. This was done via a secure portal managed by HPA. Efforts to identify HCH enrolments from POLAR extracts were disrupted due to the COVID-19 pandemic in Victoria in 2020. For the final evaluation report, patient enrolments (date of enrolment, tier but no withdrawal status) were identified in POLAR extracts from six practices.

Practices that were part of Sonic Clinical Service were also advised to follow Australian Association of Practice Management guidance on using the practice clinical management system for HCH recording and reporting.[20] The Sonic data included date of enrolment, tier and withdrawal status.

[19] Australian Association of Practice Management. (2019). *AAPM Guidance for Health Care Homes*. Retrieved 5 September from https://www.aapm.org.au/Knowledge-Hub/Healthcare-Homes

[20] Ibid.

MedicineInsight advised practices participating in the HCH trial to record patients' risk tier in the patient diagnosis screen of the practice clinical management system using a specific text string.

To assess the accuracy of practice recording of HCH enrolments, the total number of HCH patients and risk tier identified in practice extracts were compared with the HCH registrations in the HPOS system. The HPOS data with information about patient age, sex, tier, dates of enrolment and withdrawal were provided quarterly for the evaluation by the Department of Health and Services Australia.

Throughout the evaluation, 151 practices provided data extracts. As presented in Table 9, flags identifying HCH enrolees were present in data for 117 practices (100 Pen CS, 6 POLAR and 11 Sonic) and absent in data for 34 practices (23 Pen CS and 11 POLAR). From the 117 practices with flags for identifying enrolled patients, 10,174 HCH patients were identified (9,065 Pen CS, 322 POLAR and 787 Sonic patients).

When the counts of HCH patients in the practice data were compared with HPOS registrations, 26 individual practices had matching counts. Forty-nine practices had fewer number of HCH patients identified from practice data than the HPOS registration, while 35 practices had more HCH patients identified from practice data.

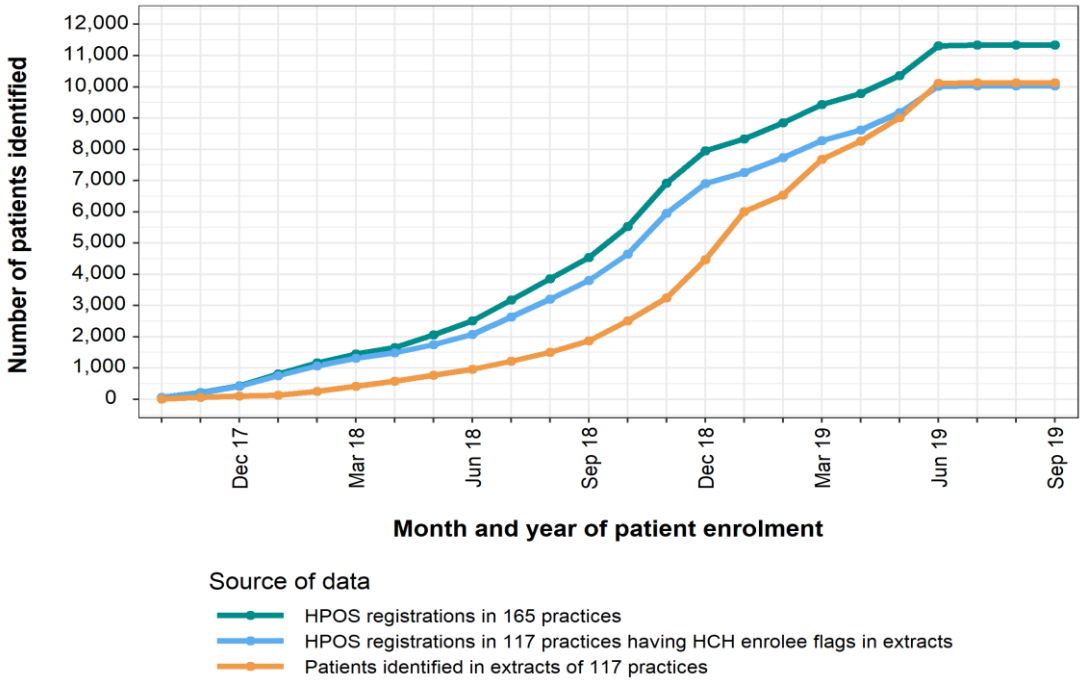
Table 9: Number of HCH enrolees identified in practice extract data compared with HPOS registration

Measure	No. practices	Total no. patients identified	
		In practice extracts	In HPOS registration
Presence of flags for HCH enrolees in practice extract data			
Practice data not available for evaluation	14	Not applicable	505
Practice data with no flags for enrolees[1]	34	Not applicable	793
Practice data with flags for HCH enrolees[2]	117	10,174	10,037
Number of HCH enrolees identified in practice extract data versus HPOS registration			
Equal number of enrolees in each source	26	1,318	1,318
Fewer HCH enrolees in practice data			
Between 1 and 9 enrolees	42	3,183	3,315
10 or more enrolees	7	911	1,095
More HCH enrolees in practice data			
Between 1 and 9 enrolees	25	3,239	3,256
10 or more enrolees	10	1,433	1,053

Notes: [1] Practice extract were provided for the evaluation but flags for identifying enrolees were absent (23 Pen CS and 11 POLAR practices). [2] These included 100 Pen CS practices (9,065 patients), 6 POLAR practices (322 patients) and 11 Sonic practices (787 patients).

Figure 2 shows cumulative numbers of HCH enrolees and Figure 3 shows number of patients in each tier recorded in data extracts of 117 practices that contained flags for HCH enrolees. The numbers were compared with patients registered in HPOS in the same 117 practices and in all 165 practices that enrolled patients in the HCH trial.

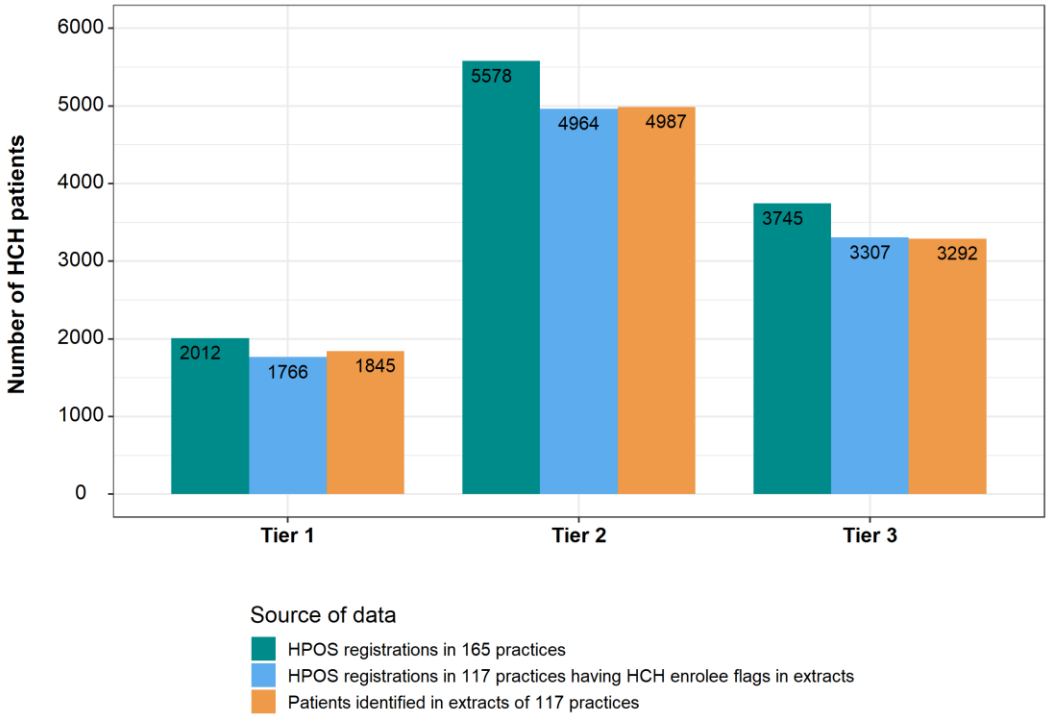
Figure 2: Cumulative number of HCH enrolees recorded in practice extracts versus HPOS registrations



Notes: Patients without derived date/tier at enrolment were excluded.

Source: Practice extracts.

Figure 3: Number of patients in each tier recorded in practice extracts versus HPOS registrations



Notes: Patients without derived date/tier at enrolment were excluded.

Source: Practice extracts.

Linked data

The Commonwealth and state and territory governments entered into *Bilateral Agreements on Coordinated Care*, which set out reforms to improve patient health outcomes and reduce avoidable demand for health services. The Commonwealth and states and territories also agreed to share data and develop a linked data set to contribute to the evidence base for improving primary care, including through the evaluation of initiatives set out in the Bilateral Agreements, such as HCH.

Data collections

The Department of Health commissioned the AIHW to create the "Bilaterals" data set. This involved linking records across several Commonwealth and jurisdictional data collections, constructing a HCH project cohort and extracting data for individuals in the cohort. Data sets linked included the following:

- Medicare Enrolment (ME) database
- National Death Index (NDI)
- HCH enrolment
- Medical Benefit Schedules (MBS)
- Pharmaceutical Benefit Scheme (PBS)
- Admitted Patient Care
- Non-admitted Emergency Department (ED) Patient Care
- National Non-Admitted Patient Care (outpatient)
- National Aged Care Data Clearing House (NACDCH).

Following ethics approval, the evaluation team worked with the Department and the AIHW to agree on the number of non-HCH patients for which data would be obtained, from which to draw comparator patients. A sample of 100,000 patients from each PHN was settled on as the minimum required to evaluate HCH, except Victoria and South Australia who agreed to include every eligible individual living in the geographical areas covered by the PHN participating in HCH.

Table 10: Number of non-HCH individuals selected for linkage, by PHN

PHN name	Non-HCH individuals
Adelaide	1,032,395
Country South Australia	366,938
South Eastern Melbourne	1,300,129
Brisbane North	1,000,00
Hunter New England and Central Coast	99,149
Nepean Blue Mountains	100,000
Western Sydney	100,000
Northern Territory[1]	89,459
Perth North	100,000
Tasmania	100,000
Total	**3,388,070**

Notes: [1] About 10,000 individuals selected for the PHN had an address in Queensland and were excluded.
Source: AIHW data linkage report in November 2010 for Project EO2017-5-321: Bilateral Agreements on Coordinated Care and Health Care Homes.

A propensity scoring approach was used to match HCH enrolees with similar patients (comparators). One of the challenges was stratifying HCH enrolees and comparators into risk groups. To do this, HPA obtained a license from Johns Hopkins University for the Adjusted Clinical Group® (ACG®) system.

An issue for the evaluation is that a limited period of follow-up data was available for the final evaluation. Table 11 shows the time coverage of each of the linked datasets provided for the evaluation. The October 2021 data drop was used for the final evaluation.

Table 11: Linked data provided for the evaluation

Date of data drop	HCH patients	MBS/PBS data	Hospital data	Aged care	National Death Index
October 2019	Enrolled to 30 June 2019	July 2015 – June 2017	July 2015 – June 2017	July 2015 – June 2017	July 2015 – June 2018
June 2021	Enrolled to 30 June 2019	July 2017 – June 2019	July 2017 – June 2019	July 2017 – June 2019	July 2017 – June 2019
October 2021	Enrolled to 30 June 2019	July 2019 – June 2021	July 2019 – June 2020	July 2019 – June 2020	July 2019 – June 2021

Data cleaning

Linked data records were checked for logical consistency between dates of services, for example date of hospital admission versus date of discharge, date of death versus date of service utilisation. There were 48,806 comparator patients who were died between December 2015 and October 2017, and thus were excluded from the evaluation. For 3,104 people (3,082 comparator patients and 22 HCH patients) there was inconsistency between the date of service use and date of death (for example, a hospital admission being after the date of death). These individuals were excluded from the evaluation as they may have had linkage errors. Among the HCH patients, 28 were enrolled after data linkage was completed and 126 other patients were under 16 years old These were not included in the analyses.

HCH program data

The Department of Health maintained a database of participating practices that included geographic location, type of practice (that is, independent, corporately owned, or ACCHS), information technology systems used, and other characteristics to assess eligibility for the program. These data were provided for the evaluation.

The Department of Health also negotiated with Services Australia to regularly receive the following de-identified data related to the administration of HCH:

- Summary of enrolments by practice and risk tier. These data are derived from the HCH registrations in HPOS.
- Claims made by enrolled patients separate to the bundled payment from HCH and non-HCH practices (by MBS Item No.).
- Demographic and socio-economic characteristics of enrolled patients (HCH start and end dates, age, sex, SEIFA, concession card status).

These data were used for the evaluation.

3

Comparative analysis using propensity score matching

A propensity score matching technique was used to create cohorts of HCH patients and "comparator" patients. Because practice extracts and linked data were obtained and analysed independently, propensity score matching was performed separately for the patient cohorts identified through practice extracts and patient cohorts identified through linked data.

Broadly, propensity score matching aimed to identify comparator patients who were not participating in the HCH and who had similar characteristics to HCH patients in terms of demographic characteristics, health risk profile, utilisation of services and receipt of chronic disease management. These characteristics were derived retrospectively, in the same manner for both HCH patients and non-HCH comparator patients, based on episodes of care that preceded enrolment to the HCH trial.

The date of enrolment was recorded for HCH patients (that is, month and year of enrolment within linked data; date of enrolment as recorded in or estimated from practice extracts). For non-HCH patients, there was no date of enrolment. Therefore, for non-HCH patients, patient characteristics were measured at various "potential enrolment points", defined pragmatically as the first day of each calendar month in the HCH recruitment period (October 2017 to July 2019). Hereafter, the period before a HCH patient's date of enrolment and before the relevant "potential enrolment point" for a matched non-HCH comparator patient is referred to as "before enrolment" or "pre-enrolment".

The propensity score was calculated using a logistic regression model, with HCH enrolment as the dependent variable and characteristics of the practice and individual patients as explanatory variables. HCH patients were matched with potential comparator patients based on their propensity score with a 1:1 ratio, using a greedy matching algorithm and a caliper of 0.25. Matching was undertaken for each month of HCH recruitment, using data from the corresponding "potential enrolment point" for potential comparators. Once a comparator patient was matched, they were removed from the pool of potential comparators for matching in future months of enrolment.

The variables used for matching within each data source differed slightly, according to the information available (further details below). Additional criteria for matching within the linked data required that HCH and potential comparator patients were living in the same PHN geographical catchment area. This ensured that the patient matching procedure was consistent with the framework for selection of non-HCH patients as per the approval from the AIHW HREC. Within the linked data, PHNs were not mapped for 800 HCH patients because

the postcodes recorded in the Medicare Enrolment database were outside of the 10 PHN catchment areas. For these patients, the evaluation team mapped the patient to a PHN using the PHN associated with the GP provider as recorded in the MBS claims in the pre-enrolment period.

The SAS PSMATCH package[21] was used for propensity score calculation and matching. Following the matching, absolute standardised differences were calculated in order to assess balance in characteristics of the matched cohort (balance is achieved if standardised difference <0.1).[22] Results of the matching (Table 13 and Table 15) indicated that the matched HCH patients and comparator patients were well-balanced in all matching variables with absolute standardised differences being less than 0.01.

Matching for patient cohorts identified through practice extracts

Records belonging to HCH patients were obtained through Pen CS, POLAR and Sonic extracts and records belonging to non-HCH patients were obtained through the latest MedicineInsight extracts. Information was harmonised across data sources before variables denoting characteristics of practices and individual patients were derived.

Definitions of practice and patient characteristics

Definitions and methods for deriving practice and patient characteristics are presented in Table 12. Practice characteristics included geographic remoteness and socio-economic disadvantage of the geographic area where the practice is located. Patient demographic factors included age at enrolment, sex, Indigenous status, and beneficiary status. Patient characteristics related to the health risk profile included specific health conditions, number of morbidities, and the prescription of classes of medication in the last 12 months. Patient characteristics related to access to health care providers included number of GP encounters within the practice. Patient characteristics related to processes of care included influenza vaccination, as well as recording of body weight, body height, blood pressure, lipid, HbA1c, and kidney function. Patient characteristics related to chronic disease control included values of blood pressure, HbA1c and estimated glomerular filtration rate (eGFR) tests.

Table 12: Description of practice and patient characteristics based on practice extracts

Characteristics	Definition and methods[1]
Practice characteristics	
Remoteness	Remoteness categories included major cities, inner regional, outer regional, remote or very remote Australia, according to Australian Statistical Geography Standard (ASGS) 2016 classification of Remoteness Areas.[23] For HCH practices, remoteness categories were mapped according to Statistical Area Level 2 (SA2) of the practice location. For non-HCH practices, remoteness categories

[21] SAS Enterprise. (2021). *PSMATCH Procedure*. Retrieved October from https://support.sas.com/rnd/app/stat/procedures/psmatch.html

[22] Nguyen, T.-L., Collins, G. S., Spence, J., Daurès, J.-P., Devereaux, P. J., Landais, P., & Le Manach, Y. (2017). Double-adjustment in propensity score matching analysis: choosing a threshold for considering residual imbalance. *BMC Med Res Methodol, 17*(1), 78.

[23] Australian Bureau of Statistics. (2018a). 1270.0.55.005 - Australian Statistical Geography Standard (ASGS): Volume 5 - Remoteness Structure, July 2016

Characteristics	Definition and methods[1]
	were obtained directly from MedicineInsight extracts where remoteness categories were mapped according to postcode of the practice location.
Index of Relative Socioeconomic Disadvantage (IRSD) quintiles	IRSD quintiles were derived based on IRSD deciles, with quintile 1 indicating the most disadvantage and quintile 5 indicating the least disadvantage status. For HCH practices, 2016 IRSD deciles ranking within Australia[24] were mapped according to SA2 of the practice location. For non-HCH practices, 2016 IRSD deciles were obtained directly from MedicineInsight extracts where the 2016 deciles were mapped according to postcode of the practice location.
Patient demographics	
Age	Age at time of enrolment (an integer number).
Sex	Male or female.
Aboriginal and/or Torres Strait Islander status	A patient was categorised as of Aboriginal and/or Torres Strait Islander origin if this was ever recorded in the extracts. For HCH patients, this was based on all extract records provided for the evaluation. For comparator patients, this was based on the latest extract provided in August 2021.
Beneficiary status	Beneficiary status was categorised as Department of Veterans' Affairs (DVA), pension or health care card, or none of the above. For HCH patients, this was based on health care card status and DVA status recorded in the extract associated with time of enrolment. For comparator patients, this was based on the latest extract provided in August 2021, thus reflecting the most recent beneficiary status.
Health risk profile	
Chronic health conditions	Nineteen individual health conditions were derived, including asthma, COPD, atrial fibrillation, coronary heart disease, stroke, congestive heart failure, osteoarthritis, osteoporosis, anxiety, depression, bipolar disorder, schizophrenia, dementia, cancer (any), high blood pressure, high cholesterol, diabetes type 1, diabetes type 2, and chronic kidney disease. These conditions must have been flagged as "active" in clinical management system and had date of onset was any time before enrolment. See Appendix 3 for further descriptions of the search for these diagnoses in POLAR, Sonic and MedicineInsight extracts. These individual health conditions were grouped into respiratory (asthma or COPD), diabetes (type 1 or type 2), CVD (atrial fibrillation, coronary heart disease, stroke, congestive heart failure, high blood pressure and high cholesterol), joint/bone disorder (osteoarthritis or osteoporosis), mental health (anxiety, depression,

[24] Australian Bureau of Statistics. (2018b). *2033.0.55.001 - Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2016*. Retrieved September from https://www.abs.gov.au/AUSSTATS/abs@.nsf/allprimarymainfeatures/6CD4E5CE952FEDBFCA257B3B001AC3E5?opendocument

Characteristics	Definition and methods[1]
	bipolar disorder, schizophrenia), dementia, cancer and chronic kidney disease.
Number of morbidities	The number of the above-listed individual conditions identified for a patient, ranging from 0 to 19. Categorised as nil, one, 2 to 4, and 5 or more.
Use of medication for specific conditions	Medicines used were grouped into medications for diabetes, antithrombotic therapies, cardiovascular medications, medications for nervous system, and medications for respiratory system (see Appendix 4). For both HCH and comparator patients, this was based on prescriptions for these medications with prescription date in the 12 months before enrolment.
Use of health services	
Number of GP encounters in the six and 12 months before enrolment[2]	For Pen CS extracts, this was based on Pen CS derived variables indicating the numbers of GP encounters in the last six and 12 months, respectively. For POLAR and MedicineInsight extracts, this was calculated as the number of patient encounters of any modality (for example, visit, surgery, telephone, non-visit) with GP/doctor providers where the date of the encounter was within six and 12 months before enrolment. For Sonic data, this was not estimated because type of provider was not available in Sonic extracts. In instances where there were multiple encounters in one day with the same provider and same encounter modality, only one encounter was counted.
Process of care	
Receipt of influenza vaccination in the 12 months before enrolment	This was based on presence of an immunisation record for influenza where date of service was in the 12 months before enrolment.
Recording of body weight in the 12 months before enrolment	This was based on presence of a body weight measurement with date of service in the 12 months before enrolment.
Ever recording of body height before enrolment	This was based on presence of body height measurement with date of service any time before enrolment, acknowledging that body height may not require regular updates.
Recording of lipid test in the six and 12 months before enrolment	This was based on presence of a lipid test (total cholesterol, HDL, LDL or triglycerides) with date of service in the six and 12 months before enrolment.
Recording of blood pressure in the six and 12 months before enrolment	This was based on presence of blood pressure with date of service in the six and 12 months before enrolment.
Recording of HbA1c test in the six and 12 months before enrolment[2]	This was based on presence of HbA1c pathology test in patients with type 2 diabetes with date of service in the six and 12 months before enrolment.

Characteristics	Definition and methods[1]
Recording of kidney function[3] test in the six and 12 months before enrolment	This was based on presence of either estimated glomerular filtration rate test (eGFR), serum creatinine, urinary creatinine or albumin-creatinine ratio test in patients with type 2 diabetes or cardiovascular disease, with date of service in the six and 12 months before enrolment.
Chronic disease control	
Results of the most recent blood pressure measured in the six and 12 months before enrolment	This was based on presence of blood pressure measurements with date of service in the six and 12 months before enrolment; where there were multiple measurements in the respective periods, the most recent measurement was selected. Blood pressure reading was classified as ≤130/80 mmHg (that is, systolic pressure ≤130mmHg and diastolic pressure ≤80mmHg), greater than 130/30 (that is, systolic pressure >130mmHg or diastolic pressure >80mmHg).
Results of the most recent HbA1c[2] measured in the six and 12 months before enrolment.	This was based on presence of HbA1c pathology tests in patients with type 2 diabetes, with date of service in the six and 12 months before enrolment; where there were multiple measurements in the respective periods, the most recent measurement was selected. HbA1c results were categorised as less than or equal to 7%, greater than 7% but less than or equal to 8%, greater than 8% but less than 10%, and greater than or equal to 10.
Result of the most recent eGFR[3] in the six and 12 months prior	This was based on presence of eGFR tests in patients with type 2 diabetes or cardiovascular disease, with date of service in the six and 12 months before enrolment; where there were multiple eGFR measurements in the respective periods, the most recent measurement was selected Results of eGFR were categorised as greater than or equal to 90, greater than or equal to 60 but less than 90, greater than or equal to 45 but less than 60, greater than or equal to 30 but less than 45, greater than or equal to 15 but less than 30, less than 15.

Notes: [1] The six months and 12 months before enrolment were defined as a period from 1 day to 180 days and from 1 day to 365 days, respectively, before date of enrolment for HCH patients; before the first day of each calendar month between October 2017 and July 2019 for comparison patients. [2] Calculated in patients with type 2 diabetes. [3] Calculated among patients with type 2 diabetes and/or CVDs.

Exclusion and inclusion criteria

A total of 10,174 HCH patients were identified through practice extracts that contained flags for HCH enrolees. Among those, 49 patients had records indicating "withdrawal" only, and information about date of enrolment was absent. Sex was not recorded for 38 patients and there were 118 HCH patients who were under 15 years of age. These patients were excluded from propensity score matching.

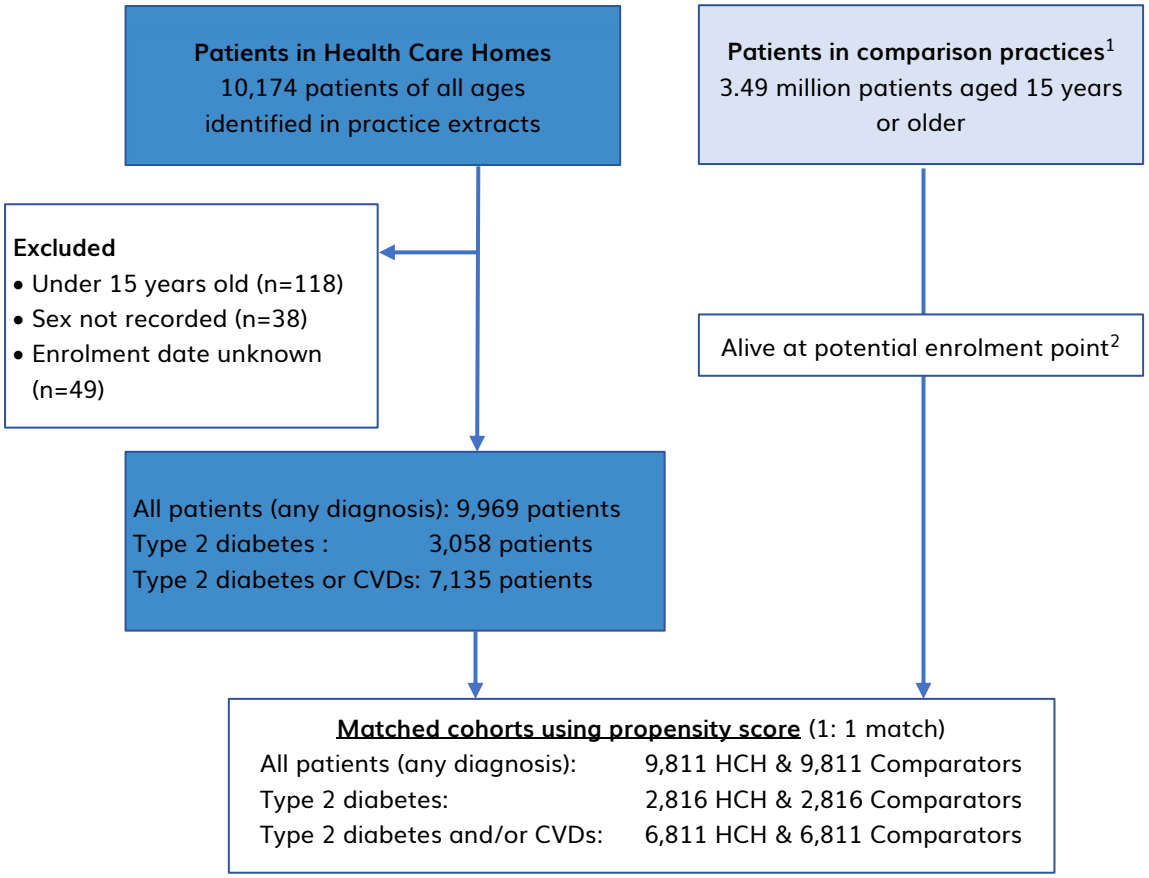
Extracts from non-HCH practices contain year of death, this information would be recorded only if a patient's death was known to practice. For the purposes of propensity score matching, it was required that comparator patients were alive at the "potential enrolment points", thus patients who died before or in the year of "potential enrolment" were excluded from propensity score matching procedures.

Three different cohorts were created using the practice extracts, corresponding to population groups required for evaluating different study outcomes. The first cohort included all HCH patients. The second cohort included patients with a diagnosis of type 2 diabetes. The third cohort included patients with a diagnosis of type 2 diabetes and/or cardiovascular disease.

The propensity score model for all HCH patients (that is, with any diagnosis) included all variables shown in Table 12, relating to demographic characterises, health risk profile, number of encounters with GPs, process of care and results of the most recent blood pressure. Models for patients with type 2 diabetes further included variables indicating recording of HbA1c tests and results of the most recent HbA1c test. Models for patients with type 2 diabetes and/or CVDs included the same sets of variables as the model for all patients, plus variables indicating recording of kidney function tests and results of the most recent eGFR test.

After propensity score matching, 9,811 (98.4%) HCH patients who had any diagnosis, 2,816 (92.1%) patients with type 2 diabetes, and 6,811 (95.5%) patients with type 2 diabetes and/or CVDs were matched to comparator patients (Figure 4). Most of the unmatched HCH patients came from a small number of practices and were enrolled in the second quarter of 2019.

Figure 4: Flowchart of propensity score matching for patient cohorts, using practice extracts



Notes: [1] Practices not participating in the HCH program. [2] The first day of each calendar month in the HCH trial period (October 2017 to July 2019) was assigned as a "potential enrolment point". Pre-enrolment characteristics of comparator patients and propensity scores were calculated repeatedly at each "potential enrolment point". MedicineInsight extracts contained year of death (if recorded in clinical management system); comparator patients who died before or in the year of "potential enrolment" were excluded from propensity score matching.

Descriptions of matched patient cohorts

Pre-enrolment characteristics of HCH and comparator patients before and after propensity score matching are presented in Table 13. Following propensity score matching, all pre-enrolment characteristics of HCH patients and comparators were well-balanced, with absolute standardised differences for all matching variables being less than 0.01. Patients with any diagnosis were balanced on demographic characteristics, health risk profile, number of GP encounters, process of care and blood pressure results. As presented in Table 13, among patients with type 2 diabetes, the recording of HbA1c and levels of HbA1c control in the pre-enrolment period was similar between HCH and matched comparators. In patients with type 2 diabetes and/or CVDs, HCH patients and comparators had similar pre-enrolment recording of kidney function and results of eGFR tests.

Table 13: Pre-enrolment characteristics of HCH & comparator patients derived from practice extracts, before & after propensity score matching

Pre-enrolment characteristics [1]	Before matching – number (%) & standardised difference			After matching – number (%) & standardised difference		
	HCH patients[2] (n=9,969)	Potential comparator patients[3] (n=3,465,102)	Std Diff [4]	HCH patients[2] (n=9,811)	Comparator patients[3] (n=9,811)	Std Diff[4]
Demographic characteristics						
Sex						
Female	5,437 (54.5%)	1,906,936 (55.0%)	0.01	5,332 (54.3%)	5,262 (53.6%)	0.01
Male	4,532 (45.5%)	1,558,166 (45.0%)	0.01	4,479 (45.7%)	4,549 (46.4%)	0.01
Age (years)						
Mean (SD)	62.6 (16.9)	43.9 (19.1)	1.04	62.8 (16.9)	63.6 (16.9)	0.05
15 to 44	1,503 (15.1%)	1,846,254 (53.3%)	0.88	1,469 (15.0%)	1,301 (13.3%)	0.05
45 to 64	3,320 (33.3%)	978,524 (28.2%)	0.11	3,227 (32.9%)	3,196 (32.6%)	0.01
65 to 74	2,471 (24.8%)	353,875 (10.2%)	0.39	2,454 (25.0%)	2,461 (25.1%)	0.00
75 to 84	1,977 (19.8%)	176,274 (5.1%)	0.46	1,967 (20.0%)	2,089 (21.3%)	0.03
85 and older	698 (7.0%)	67,925 (2.0%)	0.25	694 (7.1%)	764 (7.8%)	0.03
Aboriginal and Torres Strait Islander						
Aboriginal	1,535 (15.4%)	71,676 (2.1%)	0.49	1,379 (14.1%)	1,316 (13.4%)	0.02
Non-Aboriginal	7,627 (76.5%)	2,573,981 (74.3%)	0.05	7,625 (77.7%)	7,741 (78.9%)	0.03
Not stated, unknown	807 (8.1%)	819,445 (23.6%)	0.44	807 (8.2%)	754 (7.7%)	0.02
Beneficiary status						
Department of Veterans' Affairs	52 (0.5%)	8,361 (0.2%)	0.05	52 (0.5%)	47 (0.5%)	0.01
Pension or health care card	6,291 (63.1%)	917,020 (26.5%)	0.79	6,290 (64.1%)	6,591 (67.2%)	0.06
None of the above	3,626 (36.4%)	2,539,721 (73.3%)	0.80	3,469 (35.4%)	3,173 (32.3%)	0.06
Practice remoteness						
Major cities	6,575 (66.0%)	2,340,113 (67.5%)	0.03	6,573 (67.0%)	6,701 (68.3%)	0.03
Inner regional	1,316 (13.2%)	774,134 (22.3%)	0.24	1,316 (13.4%)	1,340 (13.7%)	0.01
Outer region, remote, very remote	2,078 (20.8%)	350,855 (10.1%)	0.30	1,922 (19.6%)	1,770 (18.0%)	0.04
Practice Index of Relative Socioeconomic Disadvantage quintile						
Quintile 1 (most disadvantaged)	3,219 (32.3%)	547,389 (15.8%)	0.39	3,063 (31.2%)	3,053 (31.1%)	0.00
Quintile 2	2,153 (21.6%)	650,769 (18.8%)	0.07	2,151 (21.9%)	2,161 (22.0%)	0.00

Pre-enrolment characteristics [1]	Before matching – number (%) & standardised difference			After matching – number (%) & standardised difference		
	HCH patients[2] (n=9,969)	Potential comparator patients[3] (n=3,465,102)	Std Diff [4]	HCH patients[2] (n=9,811)	Comparator patients[3] (n=9,811)	Std Diff[4]
Quintile 3	2,198 (22.0%)	751,399 (21.7%)	0.01	2,198 (22.4%)	2,116 (21.6%)	0.02
Quintile 4	1,545 (15.5%)	725,989 (21.0%)	0.14	1,545 (15.7%)	1,626 (16.6%)	0.02
Quintile 5 (least disadvantaged)	854 (8.6%)	789,556 (22.8%)	0.4	854 (8.7%)	855 (8.7%)	0.00
Health risk profile						
Health conditions						
Respiratory	2,566 (25.7%)	281,859 (8.1%)	0.48	2,521 (25.7%)	2,408 (24.5%)	0.03
Diabetes	3,187 (32.0%)	129,415 (3.7%)	0.79	3,065 (31.2%)	3,068 (31.3%)	0.00
Cardiovascular	6,604 (66.2%)	585,465 (16.9%)	1.16	6,479 (66.0%)	6,589 (67.2%)	0.02
Join or bone disorder	3,224 (32.3%)	237,023 (6.8%)	0.68	3,207 (32.7%)	3,268 (33.3%)	0.01
Mental health	2,757 (27.7%)	414,331 (12.0%)	0.40	2,746 (28.0%)	2,796 (28.5%)	0.01
Dementia	178 (1.8%)	9,775 (0.3%)	0.15	175 (1.8%)	194 (2.0%)	0.01
Cancer	1,232 (12.4%)	132,563 (3.8%)	0.32	1,232 (12.6%)	1,234 (12.6%)	0.00
Chronic renal disease	1,314 (13.2%)	25,485 (0.7%)	0.50	1,165 (11.9%)	1,056 (10.8%)	0.04
Number of morbidities[5]						
Nil	1,097 (11.0%)	2,336,444 (67.4%)	1.42	1,096 (11.2%)	1,001 (10.2%)	0.03
One	1,536 (15.4%)	533,781 (15.4%)	0.00	1,531 (15.6%)	1,560 (15.9%)	0.01
2 to 4	5,527 (55.4%)	528,203 (15.2%)	0.93	5,426 (55.3%)	5,547 (56.5%)	0.02
5 or more	1,809 (18.1%)	66,674 (1.9%)	0.56	1,758 (17.9%)	1,703 (17.4%)	0.01
Use of medicine in 12 months prior						
Medicine for diabetes	1,631 (16.4%)	43,113 (1.2%)	0.55	1,573 (16.0%)	1,502 (15.3%)	0.02
Antithrombotic therapies	1,335 (13.4%)	52,230 (1.5%)	0.46	1,283 (13.1%)	1,259 (12.8%)	0.01
Medicine for cardiovascular disease	3,496 (35.1%)	156,227 (4.5%)	0.83	3,444 (35.1%)	3,408 (34.7%)	0.01
Medicine for nervous system	3,215 (32.2%)	287,530 (8.3%)	0.62	3,210 (32.7%)	3,272 (33.4%)	0.01
Medicine for respiratory system	1,866 (18.7%)	109,723 (3.2%)	0.51	1,843 (18.8%)	1,816 (18.5%)	0.01

Pre-enrolment characteristics [1]	Before matching – number (%) & standardised difference			After matching – number (%) & standardised difference		
	HCH patients[2] (n=9,969)	Potential comparator patients[3] (n=3,465,102)	Std Diff [4]	HCH patients[2] (n=9,811)	Comparator patients[3] (n=9,811)	Std Diff[4]
Use of health services						
GP encounters in the six months pre-enrolment[6]						
Mean (Std)	7.2 (5.2)	1.4 (2.9)	1.38	7.2 (5.2)	7.0 (6.3)	0.03
None	257 (3.1%)	2,201,549 (63.5%)	1.67	257 (3.1%)	235 (2.8%)	0.02
1 to 4	2,781 (33.4%)	920,440 (26.6%)	0.15	2,779 (33.4%)	2,728 (32.8%)	0.01
5 to 9	3,225 (38.7%)	256,931 (7.4%)	0.80	3,225 (38.7%)	3,368 (40.5%)	0.04
10 to 14	1,380 (16.6%)	60,163 (1.7%)	0.53	1,380 (16.6%)	1,301 (15.6%)	0.03
15 to 19	450 (5.4%)	16,793 (0.5%)	0.29	450 (5.4%)	454 (5.5%)	0.00
20 or more	234 (2.8%)	9,226 (0.3%)	0.21	234 (2.8%)	239 (2.9%)	0.00
GP encounters in the 12 months pre-enrolment[6]						
Mean (Std)	13.4 (9.9)	2.6 (5.2)	1.37	13.4 (9.9)	13.3 (9.7)	0.00
None	70 (0.8%)	1,975,684 (57.0%)	1.58	70 (0.8%)	45 (0.5%)	0.04
1 to 4	1,209 (14.5%)	824,852 (23.8%)	0.24	1,208 (14.5%)	1,184 (14.2%)	0.01
5 to 9	2,023 (24.3%)	387,381 (11.2%)	0.35	2,020 (24.3%)	2,025 (24.3%)	0.00
10 to 14	1,973 (23.7%)	149,165 (4.3%)	0.58	1,973 (23.7%)	2,044 (24.6%)	0.02
15 to 19	1,374 (16.5%)	65,091 (1.9%)	0.52	1,374 (16.5%)	1,407 (16.9%)	0.01
20 to 24	758 (9.1%)	30,037 (0.9%)	0.39	758 (9.1%)	706 (8.5%)	0.02
25 or more	920 (11.0%)	32,892 (0.9%)	0.44	919 (11.1%)	911 (11.0%)	0.00
Process of care						
In the six months pre-enrolment						
Lipid recorded[7]	5,626 (56.4%)	343,760 (9.9%)	1.14	5,558 (56.7%)	5,658 (57.7%)	0.02
Blood pressure recorded	7,491 (75.1%)	678,621 (19.6%)	1.34	7,486 (76.3%)	7,580 (77.3%)	0.02
HbA1c recorded[8]	2,189 (71.6%)	56,096 (47.8%)	0.50	2,063 (73.3%)	2,094 (74.4%)	0.03
Kidney function recorded[9]	5,120 (71.8%)	231,900 (37.8%)	0.73	4,925 (72.3%)	4,941 (72.5%)	0.01
In the 12 months pre-enrolment						
Influenza vaccination	5,675 (56.9%)	362,189 (10.5%)	1.13	5,628 (57.4%)	5,769 (58.8%)	0.03
Body height recorded[10]	8,421 (84.5%)	1,030,966 (29.8%)	1.33	8,329 (84.9%)	8,353 (85.1%)	0.01

Pre-enrolment characteristics [1]	Before matching – number (%) & standardised difference			After matching – number (%) & standardised difference		
	HCH patients[2] (n=9,969)	Potential comparator patients[3] (n=3,465,102)	Std Diff [4]	HCH patients[2] (n=9,811)	Comparator patients[3] (n=9,811)	Std Diff[4]
Body weight recorded	7,324 (73.5%)	504,693 (14.6%)	1.47	7,282 (74.2%)	7,296 (74.4%)	0.00
Lipid recorded	7,498 (75.2%)	573,080 (16.5%)	1.46	7,408 (75.5%)	7,473 (76.2%)	0.02
Blood pressure recorded[8]	8,260 (82.9%)	941,139 (27.2%)	1.35	8,254 (84.1%)	8,353 (85.1%)	0.03
HbA1c recorded[8]	2,557 (83.6%)	72,834 (62.0%)	0.50	2,414 (85.7%)	2,436 (86.5%)	0.02
Kidney function recorded [9]	6,285 (88.1%)	343,196 (56.0%)	0.77	6,044 (88.7%)	6,048 (88.8%)	0.00
Chronic disease control						
Most recent blood pressure, measured in the six months pre-enrolment [8]						
≤130/80 mmHg	989 (32.3%)	23,565 (20.1%)	0.28	953 (33.8%)	932 (33.1%)	0.02
>130/80 mmHg	1,475 (48.2%)	45,488 (38.7%)	0.19	1,425 (50.6%)	1,478 (52.5%)	0.04
Not measured	594 (19.4%)	48,386 (41.2%)	0.49	438 (15.6%)	406 (14.4%)	0.03
Most recent blood pressure, measured in the 12 months pre-enrolment [8]						
≤130/80 mmHg	1,054 (34.5%)	28,143 (24.0%)	0.23	1,017 (36.1%)	1,005 (35.7%)	0.01
>130/80 mmHg	1,561 (51.0%)	53,076 (45.2%)	0.12	1,510 (53.6%)	1,554 (55.2%)	0.03
Not measured	443 (14.5%)	36,220 (30.8%)	0.40	289 (10.3%)	257 (9.1%)	0.04
Most recent HbA1c, measured in the six months pre-enrolment [8]						
HbA1c ≤7%	1,155 (37.8%)	31,961 (27.2%)	0.23	1,126 (40.0%)	1,151 (40.9%)	0.02
7% <HbA1c ≤8%	513 (16.8%)	13,125 (11.2%)	0.16	492 (17.5%)	474 (16.8%)	0.02
8% <HbA1c <10%	354 (11.6%)	8,391 (7.1%)	0.15	323 (11.5%)	334 (11.9%)	0.01
HbA1c ≥10%	167 (5.5%)	2,619 (2.2%)	0.17	122 (4.3%)	135 (4.8%)	0.02
Not measured	869 (28.4%)	61,343 (52.2%)	0.50	753 (26.7%)	722 (25.6%)	0.03
Most recent HbA1c, measured in the 12 months pre-enrolment [8]						
HbA1c ≤7%	1,391 (45.5%)	43,037 (36.6%)	0.18	1,355 (48.1%)	1,371 (48.7%)	0.01
7% <HbA1c ≤8%	572 (18.7%)	16,180 (13.8%)	0.13	550 (19.5%)	534 (19.0%)	0.01
8% <HbA1c <10%	398 (13.0%)	10,256 (8.7%)	0.14	366 (13.0%)	376 (13.4%)	0.01
HbA1c ≥10%	196 (6.4%)	3,361 (2.9%)	0.17	143 (5.1%)	155 (5.5%)	0.02
Not measured	501 (16.4%)	44,605 (38.0%)	0.50	402 (14.3%)	380 (13.5%)	0.02

Pre-enrolment characteristics [1]	Before matching – number (%) & standardised difference			After matching – number (%) & standardised difference		
	HCH patients[2] (n=9,969)	Potential comparator patients[3] (n=3,465,102)	Std Diff [4]	HCH patients[2] (n=9,811)	Comparator patients[3] (n=9,811)	Std Diff[4]
Most recent eGFR, measured in the six months pre-enrolment [9]						
eGFR ≥ 90	680 (9.5%)	69,672 (11.4%)	0.06	652 (9.6%)	622 (9.1%)	0.02
60 ≤ eGFR <90	2,409 (33.8%)	112,594 (18.4%)	0.36	2,377 (34.9%)	2,428 (35.6%)	0.02
45 ≤ eGFR <60	659 (9.2%)	24,202 (3.9%)	0.21	658 (9.7%)	625 (9.2%)	0.02
30 ≤ eGFR <45	338 (4.7%)	11,223 (1.8%)	0.16	336 (4.9%)	308 (4.5%)	0.02
15 ≤ eGFR <30	112 (1.6%)	3,135 (0.5%)	0.10	112 (1.6%)	111 (1.6%)	0.00
eGFR <15	684 (9.6%)	671 (0.1%)	0.45	597 (8.8%)	682 (10.0%)	0.04
Not measured	2,253 (31.6%)	391,554 (63.9%)	0.68	2,079 (30.5%)	2,035 (29.9%)	0.01
Most recent eGFR, measured in the 12 months pre-enrolment [9]						
eGFR ≥ 90	904 (12.7%)	107,008 (17.5%)	0.13	857 (12.6%)	817 (12.0%)	0.02
60 ≤ eGFR <90	2,995 (42.0%)	171,116 (27.9%)	0.30	2,960 (43.5%)	3,002 (44.1%)	0.01
45 ≤ eGFR <60	799 (11.2%)	34,075 (5.6%)	0.20	796 (11.7%)	747 (11.0%)	0.02
30 ≤ eGFR <45	394 (5.5%)	14,382 (2.3%)	0.16	391 (5.7%)	344 (5.1%)	0.03
15 ≤ eGFR <30	122 (1.7%)	3,746 (0.6%)	0.10	122 (1.8%)	119 (1.7%)	0.00
eGFR <15	865 (12.1%)	802 (0.1%)	0.52	756 (11.1%)	867 (12.7%)	0.05
Not measured	1,056 (14.8%)	281,922 (46.0%)	0.72	929 (13.6%)	915 (13.4%)	0.01

Notes: [1] See Table 12 for definition and methods relating pre-enrolment characteristics. [2] Among HCH patients in both before-matching and after-matching samples, health risk profile, GP encounters, process of care and chronic disease control were calculated for the period before date of enrolment into the HCH program. [3] Among comparison patients in the before-matching sample, health risk profile, GP encounters, process of care and chronic disease control were calculated for the period before October 2017; in the after-matching sample, these characteristics reflected the period before month/year when their matched HCH patients were enrolled in the HCH. [4] Absolute standardised difference; two patient groups had similar characteristic (balanced) if absolute standardised difference is less than 0.1. [5] The number of individual conditions identified for a patient, ranging from 0 to 19 and includes asthma, COPD, type 1 diabetes, type 2 diabetes, atrial fibrillation, coronary heart disease, stroke, heart failure, hypertension, hyperlipidaemia, osteoarthritis, osteoporosis, anxiety, depression, bipolar, schizophrenia, dementia, cancer and chronic kidney disease. [6] GP encounters were not calculated for HCH patients identified through Sonic extracts (provider type not available). [7] Lipid test included total cholesterol, HDL, LDL or triglycerides. [8] HbA1c recording, HbA1c results and blood pressure results were calculated among patients with type 2 diabetes. [9] Kidney function recording (including eGFR, serum creatinine, urinary creatinine or albumin-creatinine ratio) and eGFR results were calculated among patients with type 2 diabetes and/or CVDs. [10] Body height recorded any time before enrolment.

Matching for patient cohorts identified through linked data

Linked data were delivered in stages, with the final delivery in October 2021. Records delivered across stages were combined to create a complete dataset.

Definitions of patient characteristics

Similar to practice extracts, linked data were used to derive patient demographic factors, health risk profile and access to primary care and other MBS-funded services in the period before enrolment. Pre-enrolment utilisation of hospital and aged care services was also ascertained. Demographic factors included age, sex, PBS beneficiary status, remoteness and IRSD quintiles of patient's residential area. Health risk profile variables included morbidity diagnoses recorded in hospital admission data, use of medicines for specific conditions, and number of unique medicines dispensed. Utilisation of primary care and other health providers were measured in terms of numbers of claims for consultations with GPs, specialists, allied health providers and number of claims for any pathology test and any imaging service. Utilisation of hospital services included the numbers of hospital admissions (any cause, emergency reason, and potentially preventable conditions), total number of bed-days and total National Weighted Activity Units – a proxy for weighted intensity of hospital stay. Use of aged care services was classified as use of community-based services and residential care services. Definitions and detailed methods for deriving patient characteristics in the pre-enrolment period are presented in Table 14.

Table 14: Description of patient characteristics based on linked data

Characteristics	Definition and methods[a]
Demographic factors	
Age	Age at time of enrolment (an integer number).
Sex	Male or female.
Remoteness of residential location	Remoteness categories included major cities, inner regional, outer regional, remove or very remote Australia, according to Australian Statistical Geography Standard (ASGS) 2016 classification of Remoteness Areas.[25] Remoteness categories were mapped to SA2 of patient's residential areas.
Index of Relative Socioeconomic Disadvantage quintiles of residential area	IRSD quintiles were derived based on IRSD deciles, with quintile 1 indicating the most disadvantage and quintile 5 indicating the least disadvantage status. The 2016 IRSD deciles ranking within Australia[26] were mapped to SA2 of patient's residential areas.
PBS beneficiary status	Beneficiary status in the 12 months before enrolment was categorised as always concessional, ever general, and no dispensing. Among those with one or more PBS items dispensed in the pre-enrolment period, beneficiary status was categorised as

[25] Australian Bureau of Statistics. (2018a). 1270.0.55.005 - Australian Statistical Geography Standard (ASGS): Volume 5 - Remoteness Structure, July 2016

[26] Australian Bureau of Statistics. (2018b). *2033.0.55.001 - Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2016*. Retrieved September from https://www.abs.gov.au/AUSSTATS/abs@.nsf/allprimarymainfeatures/6CD4E5CE952FEDBFCA257B3B001AC3E5?opendocument

Characteristics	Definition and methods[a]
	"always concessional" if the patient's entitlement status was recorded as "C0- Concessional Safety Net prescription" or "C1-Concessional non-Safety Net prescription" for all PBS items dispensed in this period, otherwise, "ever general", which was equivalent to presence of one or more dispensed items where entitlement status was recorded as "G1-General Safety Net prescription" or "G2-General non-Safety Net prescription". Patient entitlement status at the time the PBS item was supplied was recorded as per the AIHW METeOR identifier 604103.[27]
Health risk profile	
Morbidity diagnoses recorded in hospital admissions[b]	Patient morbidities included hypertension, cardiovascular diseases, digestive disorders, mental health, diabetes, chronic airway, joint or bone disorders, neurological disorder, cancer and chronic renal disease. These conditions were listed in the Risk Stratification Tool that practices used to identify patients suitable for enrolment in HCH and to assign patient tiers. These morbidities were identified from the principal diagnosis and four additional diagnosis fields (coded according to the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification [ICD-10-AM]) in hospital admissions that occurred in the 12 months before enrolment. The Johns Hopkins ACG System software-version 12.0[28] the Charlson Comorbidity Index[29,30] and previously reported methods[31,32] were used to derive these morbidity conditions. The condition was assigned if it was flagged by any one of these methods.
Use of medications for specific health conditions in the 12 months before enrolment	Types of medication include medications for hyperlipidaemia, hypertension, cardiovascular diseases, pain relief, digestive disorders, mental health, diabetes, chronic airway, coagulation disorders, joint or bone disorders, inflammation, hypothyroidism, neurological disorder, cancer and chronic renal disease. These

[27] Australian Institute of Health and Welfare. (2015). *Pharmaceutical Benefits Scheme (PBS) prescription-patient entitlement status (derived) [METeOR 604103]*. AIHW. https://meteor.aihw.gov.au/content/index.phtml/itemId/604103

[28] Johns Hopkins ACG® System. (2021). *The Johns Hopkins ACG System*. Retrieved October from https://www.hopkinsacg.org/resource-center/#documentation

[29] Quan, H., Li, B., Couris, C. M., Fushimi, K., Graham, P., Hider, P., Januel, J. M., & Sundararajan, V. (2011). Updating and validating the Charlson comorbidity index and score for risk adjustment in hospital discharge abstracts using data from 6 countries. *Am J Epidemiol, 173*(6), 676-682.

[30] Sundararajan, V., Henderson, T., Perry, C., Muggivan, A., Quan, H., & Ghali, W. A. (2004). New ICD-10 version of the Charlson comorbidity index predicted in-hospital mortality. *J Clin Epidemiol, 57*(12), 1288-1294.

[31] Australian Institute of Health and Welfare. (2014). *Cardiovascular disease, diabetes and chronic kidney disease. Australian facts: Morbidity–Hospital care. Cardiovascular, diabetes and chronic kidney disease*.

[32] Tran, D. T., Preen, D. B., Einarsdottir, K., Kemp-Casey, A., Randall, D., Jorm, L. R., Choi, S. K. Y., & Havard, A. (2020). Use of smoking cessation pharmacotherapies during pregnancy is not associated with increased risk of adverse pregnancy outcomes: a population-based cohort study. *BMC Medicine, 18*(1), 15.

Characteristics	Definition and methods[a]
	medicines (coded according to the Anatomical Therapeutic Chemical [ATC] classification system) were identified from PBS dispensing records where date of dispensing was in the 12 months before enrolment. The Johns Hopkins ACG System software-version 12.0[33] and the Rx-Risk grouping methods[34] were used to derive the use of these medications. The use of medications for specific health condition was assigned if it was flagged by any one of these methods.
Number of unique medicines dispensed	Number of unique medicines was measured as the total numbers of unique medicines dispensed in the three timeframes that is, 12 months, six months and three months before enrolment in order to account for seasonal fluctuations in medicine dispensing. Unique medicines were identified according to the fifth level of their ATC code, which represents the chemical substance of the medicine for example, A10AB04 is for insulin lispro, A10AB06 is for insulin glulisine. Each active component of a combination therapy was counted separately.[35]
Utilisation of primary care and other MBS-funded services	
Number of MBS claims for GP and practice nurse attendance in the 12 months before enrolment.	The total number of MBS claims for GP and practice nurse attendances in the 12 months before enrolment were quantified. MBS items used to identify GP attendance were all items in Groups A1, A2, A5, A6, A7, A11, A14, A15 Subgroup 1, A12 Subgroup 2 (items 735-758), A17, A18, A19, A20, A22, A23, A23, A30.[36] MBS items used to identify practice nurse attendance were all items in Groups M2, M12, and M14.[37]
Number of MBS claims for specialist consultation in the 12 months before enrolment	The total number of MBS claims for consultations with specialist providers in the 12 months before enrolment was calculated. MBS items used to identify specialist consultations were all items in Groups A3, A4, A8, A9, A12, A13, A15 Subgroup 2 (only item 820-880) A16, A21, A24, A26, A28, A29, A32, and T6 Subgroup1.[38]

[33] Johns Hopkins ACG® System. (2021). *The Johns Hopkins ACG System*. Retrieved October from https://www.hopkinsacg.org/resource-center/#documentation

[34] Pratt, N. L., Kerr, M., Barratt, J. D., Kemp-Casey, A., Kalisch Ellett, L. M., Ramsay, E., & Roughead, E. E. (2018). The validity of the Rx-Risk Comorbidity Index using medicines mapped to the Anatomical Therapeutic Chemical (ATC) Classification System. *BMJ Open*, *8*(4), e021122.

[35] Page, A. T., Falster, M. O., Litchfield, M., Pearson, S. A., & Etherton‐Beer, C. (2019). Polypharmacy among older Australians, 2006‐2017: a population‐based study. *Med J Aust 211*(2), 71-75..

[36] Australian Institute of Health and Welfare. (2016). *General Practitioner attendance indicator [METeOR 603651]*. AIHW. https://meteor.aihw.gov.au/content/index.phtml/itemId/603651

[37] Australian Institute of Health and Welfare. (2019a). *Medicare-subsidised GP, allied health and specialist health care across local areas, 2013–14 to 2017–18 Technical Note*. AIHW. https://www.aihw.gov.au/getmedia/0185a2b5-5093-4194-85b3-e9776867f512/aihw-phe-254-tech-note.pdf.aspx.

[38] Australian Institute of Health and Welfare. (2013). *Expenditure on specialist attendances, 2012–13 [METeOR 547958]*. AIHW. https://meteor.aihw.gov.au/content/index.phtml/itemId/547958

Characteristics	Definition and methods[a]
Number of MBS claims for any allied health services in the 12 months before enrolment	The total number of MBS claims for any allied health services in the 12 months before enrolment was quantified. MBS items used to identify allied health services were all items in Groups M3, M6, M7, M8, M9, M10, M11, M15.[39]
Number of MBS claims for any pathology services in the 12 months before enrolment	The total number of MBS claims for any pathology services in the 12 months before enrolment was quantified. MBS items used to identify pathology services were all items in Groups P01 to P09.[40]
Had a MBS claim for HbA1c test in the six months and 12 months before enrolment[b]	This was based on the presence of a MBS claim for HbA1c test (MBS items 66551 and 73840) in the six months and 12 months before enrolment.
Number of MBS claims for any imaging services in the 12 months before enrolment	The total number of MBS claims for any imaging services in the 12 months before enrolment was quantified. MBS items used to identify imaging services were all items in Groups I01 to I05.[41]
Usual provider of care continuity of care score in the 12 months before enrolment	The usual provider of care index (UPC)[42] was used to measure concentration or continuity of care with a usual GP provider in the 12 months before enrolment. For patients who had four or more unreferred GP claims (MBS items Groups A1 and A2), the UPC score was calculated as the number of claims for visits to the GP with the highest number of visits ("usual provider") divided by the total number of claims for GP visits.
Utilisation of hospital services[c]	
All-cause admissions in the 12 months before enrolment	This was calculated as the total number of hospital admission episodes for any cause in the 12 months before enrolment, excluding renal dialysis (Z49 recorded as principal diagnosis) and transfers during hospital stay.
All-cause day-only admissions in the 12 months before enrolment	This was calculated as the total number of hospital admission episodes for any cause in the 12 months before enrolment when the patient was discharged on the same date as admission, excluding renal dialysis and transfers during hospital stay.
All-cause overnight-stay admissions in the 12 months before enrolment	This was calculated as the total number of hospital admission episodes for any cause in the 12 months before enrolment when date of discharge was subsequent to date of admission (that is, discharge not on the same date as admission). Renal dialysis and transfers during hospital stay were excluded.
All-cause emergency admission in the 12 months before enrolment	This was calculated as the total number of hospital admission episodes for any cause in the 12 months before enrolment where the urgency status of the admission was recorded as "emergency".

[39] Australian Institute of Health and Welfare. (2019a). *Medicare-subsidised GP, allied health and specialist health care across local areas, 2013–14 to 2017–18 Technical Note*. AIHW. https://www.aihw.gov.au/getmedia/0185a2b5-5093-4194-85b3-e9776867f512/aihw-phe-254-tech-note.pdf.aspx

[40] Ibid.

[41] Ibid.

[42] Pollack, C. E., Hussey, P. S., Rudin, R. S., Fox, D. S., Lai, J., & Schneider, E. C. (2016). Measuring Care Continuity: A Comparison of Claims-based Methods. *Medical Care*, *54*(5), e30-e34.

Characteristics	Definition and methods[a]
Potentially preventable hospitalisations in the 12 months before enrolment	This was calculated as the total number of hospital admission episodes for potentially preventable conditions in in the 12 months before enrolment. Potentially preventable conditions were based on the definition used in the 2019 National Healthcare Agreement.[43]
Number of bed-days in the 12 months before enrolment	This was calculated as the total number of hospital bed-days associated with hospital admissions for any cause in the 12 months before enrolment, excluding renal dialysis and transfers during hospital stay.
National Weighted Activity Units (NWAU) in the 12 months before enrolment	NWAUs associated with hospital admissions in the 12 months before enrolment were calculated, using a calculator developed by the Independent Hospital Pricing Authority for financial year 2018–19.[44]
Number of emergency department (ED) presentations in the 12 months before enrolment	This was calculated as the total number of presentations to any hospital EDs for any reason based on presence of records in the non-admitted ED patient care data in the 12 months before enrolment.
Use of aged care services	
Use of aged care services in the 24 months before enrolment	Use of aged care services in the 24 months before enrolment was categorised as use of community-based services and residential care services. Use of community-based services was identified based on presence of a record in three data files: Home Care Package Period of Care, Home Care Package Period of Leave and Transitional Care Program. Meanwhile, use of residential care services was identified based on presence of a record in three data files: Residential Aged Care (RAC) Assessment, RAC Episode of Care and RAC Period of Leave.

Notes: [a] The six months, 12 months and 24 months before enrolment were defined as a period from 1 day to 180 days, from 1 day to 365 days, and from 1 day to 730 days respectively, before date of enrolment for HCH patients; before the first day of each calendar month between October 2017 and July 2019 for comparison patients. [b] Calculated among patients with diabetes. [c] Calculated for patients from five states (NSW, Vic, Qld, SA and Tas).

Exclusion and inclusion criteria

There were 11,334 HCH enrolees in the HCH trial. Of those, 175 patients were not included in the propensity score matching process. These included 125 patients aged under 16 years, 28 patients who were enrolled after completion of the data linkage, and 22 patients with inconsistent dates in linked records (for example, dates of health service use recorded after date of death).

[43] Australian Institute of Health and Welfare. (2019b). *National Healthcare Agreement: PI 18–Selected potentially preventable hospitalisations, 2019 [METeOR 698954]*. AIHW. https://meteor.aihw.gov.au/content/index.phtml/itemId/698954

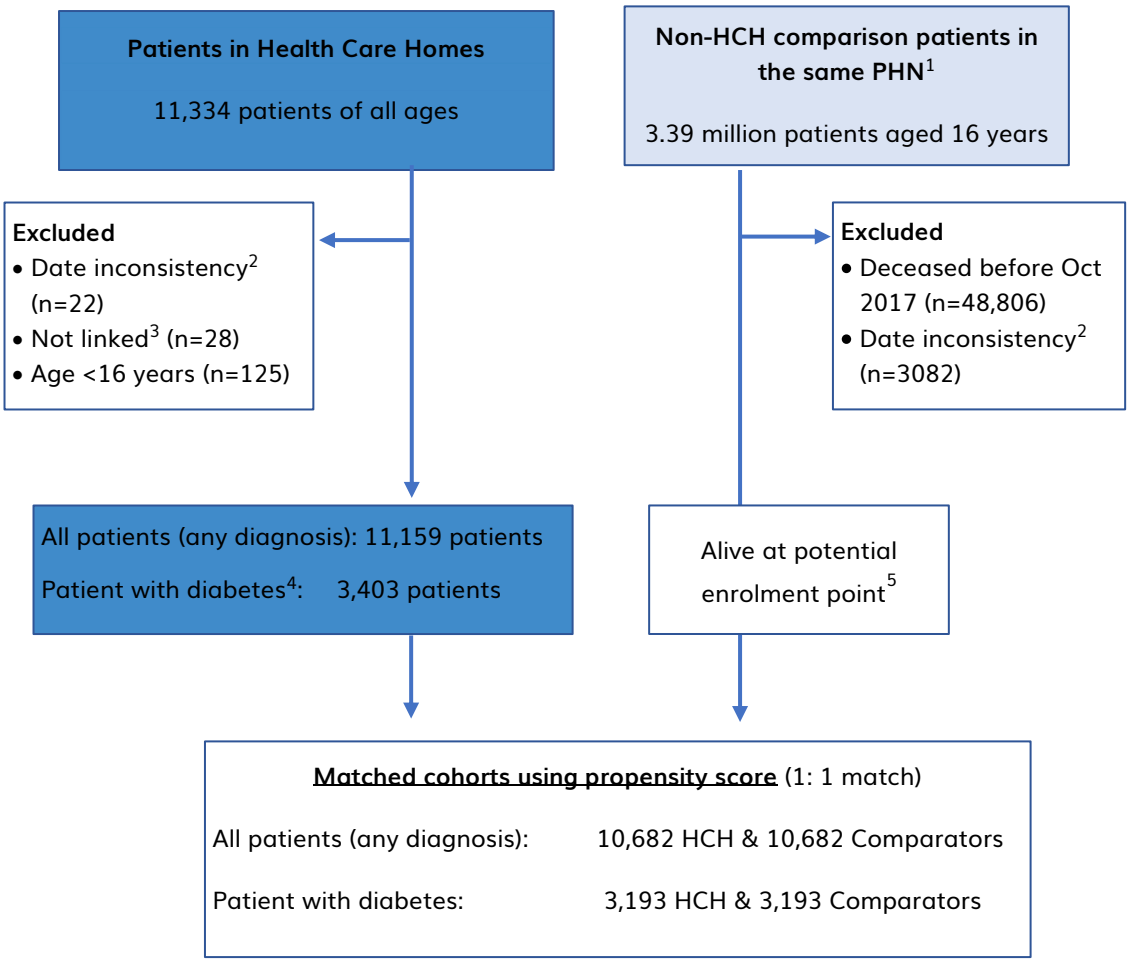
[44] Independent Hospital Pricing Authority. (2019). *National Weighted Activity Unit (NWAU) calculators*. Retrieved June from https://www.ihpa.gov.au/what-we-do/national-weighted-activity-unit-nwau-calculators

Two different cohorts were created using the linked data, corresponding to population groups required for evaluating different study outcomes. The first cohort included all HCH patients. The second cohort included patients with a diagnosis of diabetes only.

All variables denoting pre-enrolment characteristics of patients as shown in Table 14 were included in the propensity score models, although the variable on claims for HbA1c tests was only included in the matching for patients with diabetes.

Following propensity score matching, 10,682 HCH patients (with any diagnosis), and 3,198 HCH patients with a diagnosis of diabetes or who used medications for diabetes were matched with comparator patients (Figure 5). Most of the unmatched patients were enrolled in 2019, resided in Western Australia and Northern Territory, and had a residential area that was not mapped to an IRSD score.

Figure 5: Flowchart of linked data cleaning and propensity score matching for patient cohorts



Notes: [1] PHNs participate in the HCH. [2] Date of health service use was subsequent to date of death. [3] HCH patients enrolled after the data linkage was completed. [4] Having a diagnosis of diabetes or used medication for diabetes. [5] The first day of each calendar month in the HCH trial enrolment period (October 2017 to July 2019) was assigned as a "potential enrolment point". Pre-enrolment characteristics of comparison patients and propensity scores were calculated repeatedly at each "potential enrolment point". Comparison patients who died before "potential enrolment point" were not included in propensity score matching.

Descriptions of matched patient cohorts

Pre-enrolment characteristics of HCH and comparator patients before and after propensity score matching are presented in Table 15. Following propensity score matching, all pre-enrolment characteristics of HCH patients and comparators were well-balanced, with absolute standardised differences for all matching variables being less than 0.01. Patients with any diagnosis were balanced on demographic characteristics, health risk profile, use of MBS-funded services, number of hospital admission, and use of aged care services. Patients with diabetes were also balanced on these variables, as well as claims for HbA1c tests.

Table 15: Pre-enrolment characteristics of HCH and comparison patients derived from linked data, before and after propensity score matching

Pre-enrolment characteristics[1]	Before matching – number (%) & standardised difference			After matching – number (%) & standardised difference		
	HCH Patients[2] (n=11,159)	Potential comparator patients[3] (n=3,332,270)	Std Diff[4]	HCH patients[2] (n=10,682)	Comparator patients[3] (n=10,682)	Std Diff[4]
Demographic characteristics						
Sex						
Female	6,036 (54.1%)	1,711,845 (51.4%)	0.05	5,752 (53.8%)	5,842 (54.7%)	0.02
Male	5,123 (45.9%)	1,620,425 (48.6%)	0.05	4,930 (46.2%)	4,840 (45.3%)	0.02
Age (years)						
Mean (SD)	62.8 (16.4)	47.0 (18.9)	0.89	63.3 (16.3)	63.0 (16.4)	0.02
16 to 44	1,585 (14.2%)	1,595,008 (47.9%)	0.78	1,441 (13.5%)	1,424 (13.3%)	0.00
45 to 64	3,802 (34.1%)	1,061,026 (31.8%)	0.05	3,554 (33.3%)	3,610 (33.8%)	0.01
65 to 74	2,870 (25.7%)	381,664 (11.5%)	0.37	2,815 (26.4%)	2,809 (26.3%)	0.00
75 to 84	2,172 (19.5%)	205,199 (6.2%)	0.41	2,149 (20.1%)	2,131 (19.9%)	0.00
85 and older	730 (6.5%)	89,373 (2.7%)	0.18	723 (6.8%)	708 (6.6%)	0.01
PBS beneficiary status						
Ever general	3,321 (29.8%)	1,672,142 (50.2%)	0.43	3,256 (30.5%)	3,338 (31.2%)	0.02
Always concession	6,852 (61.4%)	818,753 (24.6%)	0.80	6,732 (63.0%)	6,657 (62.3%)	0.01
No dispensing in 12 months	986 (8.8%)	841,375 (25.2%)	0.45	694 (6.5%)	687 (6.4%)	0.00
Remoteness of residential area						
Major cities	7,206 (64.6%)	2,628,990 (78.9%)	0.32	7,171 (67.1%)	7,074 (66.2%)	0.02
Inner regional	1,582 (14.2%)	346,417 (10.4%)	0.12	1,572 (14.7%)	1,838 (17.2%)	0.07
Outer region, remote, very remote	1,999 (17.9%)	338,400 (10.2%)	0.22	1,939 (18.2%)	1,770 (16.6%)	0.04
Index of Relative Socioeconomic Disadvantage quintile of residential area						
Quintile 1 (most disadvantaged)	3,111 (27.9%)	615,657 (18.5%)	0.22	2,784 (26.1%)	3,064 (28.7%)	0.06
Quintile 2	2,705 (24.2%)	615,132 (18.5%)	0.14	2,678 (25.1%)	2,669 (25.0%)	0.00
Quintile 3	2,664 (23.9%)	632,325 (19.0%)	0.12	2,602 (24.4%)	2,523 (23.6%)	0.02
Quintile 4	1,579 (14.2%)	740,385 (22.2%)	0.21	1,575 (14.7%)	1,400 (13.1%)	0.05
Quintile 5 (least disadvantaged)	1,049 (9.4%)	728,485 (21.9%)	0.35	1,043 (9.8%)	1,026 (9.6%)	0.01

Pre-enrolment characteristics[1]	Before matching – number (%) & standardised difference			After matching – number (%) & standardised difference		
	HCH Patients[2] (n=11,159)	Potential comparator patients[3] (n=3,332,270)	Std Diff[4]	HCH patients[2] (n=10,682)	Comparator patients[3] (n=10,682)	Std Diff[4]
Health risk profile						
Diagnoses in hospital admissions [5]						
Hypertension	244 (2.6%)	17,471 (0.5%)	0.17	241 (2.6%)	258 (2.8%)	0.01
Cardiovascular diseases	661 (7.2%)	46,884 (1.4%)	0.29	652 (7.1%)	610 (6.7%)	0.02
Digestive disorders	477 (5.2%)	70,664 (2.1%)	0.16	464 (5.1%)	458 (5.0%)	0.00
Mental health	648 (7.0%)	85,664 (2.6%)	0.21	615 (6.7%)	609 (6.7%)	0.00
Diabetes	1,074 (11.6%)	54,272 (1.6%)	0.41	1,061 (11.6%)	971 (10.6%)	0.03
Chronic airway	303 (3.3%)	15,553 (0.5%)	0.21	290 (3.2%)	248 (2.7%)	0.03
Joint or bone disorders	788 (8.5%)	83,384 (2.5%)	0.27	783 (8.6%)	793 (8.7%)	0.00
Neurological disorder	83 (0.9%)	7,405 (0.2%)	0.09	82 (0.9%)	81 (0.9%)	0.00
Cancer	197 (2.1%)	20,118 (0.6%)	0.13	197 (2.2%)	182 (2.0%)	0.01
Chronic renal disease	224 (2.4%)	10,948 (0.3%)	0.18	220 (2.4%)	185 (2.0%)	0.03
Use of medications for specific health conditions						
Hyperlipidaemia	5,700 (51.1%)	527,973 (15.8%)	0.80	5,622 (52.6%)	5,526 (51.7%)	0.02
Hypertension	6,770 (60.7%)	742,336 (22.3%)	0.85	6,672 (62.5%)	6,588 (61.7%)	0.02
Cardiovascular diseases	5,251 (47.1%)	526,761 (15.8%)	0.71	5,170 (48.4%)	5,010 (46.9%)	0.03
Pain relief	5,219 (46.8%)	809,974 (24.3%)	0.48	5,154 (48.2%)	5,109 (47.8%)	0.01
Digestive disorders	4,770 (42.7%)	573,118 (17.2%)	0.58	4,695 (44.0%)	4,701 (44.0%)	0.00
Mental health	4,546 (40.7%)	625,553 (18.8%)	0.49	4,462 (41.8%)	4,370 (40.9%)	0.02
Diabetes	3,248 (29.1%)	206,703 (6.2%)	0.63	3,195 (29.9%)	3,112 (29.1%)	0.02
Chronic airway	2,994 (26.8%)	386,797 (11.6%)	0.39	2,946 (27.6%)	2,856 (26.7%)	0.02
Coagulation disorders	2,518 (22.6%)	207,024 (6.2%)	0.48	2,463 (23.1%)	2,323 (21.7%)	0.03
Joint or bone disorders	1,803 (16.2%)	149,891 (4.5%)	0.39	1,786 (16.7%)	1,902 (17.8%)	0.03
Inflammation	2,373 (21.3%)	279,241 (8.4%)	0.37	2,342 (21.9%)	2,188 (20.5%)	0.04
Hypothyroidism	1,224 (11.0%)	141,020 (4.2%)	0.26	1,210 (11.3%)	1,259 (11.8%)	0.01
Neurological disorder	1,027 (9.2%)	89,474 (2.7%)	0.28	985 (9.2%)	938 (8.8%)	0.02
Cancer	673 (6.0%)	65,328 (2.0%)	0.21	665 (6.2%)	658 (6.2%)	0.00
Chronic renal disease	301 (2.7%)	15,776 (0.5%)	0.18	288 (2.7%)	253 (2.4%)	0.02

Pre-enrolment characteristics[1]	Before matching – number (%) & standardised difference			After matching – number (%) & standardised difference		
	HCH Patients[2] (n=11,159)	Potential comparator patients[3] (n=3,332,270)	Std Diff[4]	HCH patients[2] (n=10,682)	Comparator patients[3] (n=10,682)	Std Diff[4]
Number of unique medicines in 12 months						
Mean (Std)	9.0 (6.4)	4.0 (4.8)	0.88	9.2 (6.3)	9.2 (6.5)	0.00
None	986 (8.8%)	840,732 (25.2%)	0.45	692 (6.5%)	687 (6.4%)	0.00
1 to 4	1,947 (17.4%)	1,424,937 (42.8%)	0.57	1,892 (17.7%)	1,916 (17.9%)	0.01
5 to 9	3,683 (33.0%)	685,010 (20.6%)	0.28	3,613 (33.8%)	3,737 (35.0%)	0.02
10 to 14	2,552 (22.9%)	240,691 (7.2%)	0.45	2,520 (23.6%)	2,466 (23.1%)	0.01
15 or more	1,991 (17.8%)	140,900 (4.2%)	0.45	1,965 (18.4%)	1,876 (17.6%)	0.02
Number of unique medicines in six months						
Mean (Std)	7.1 (5.3)	2.9 (3.8)	0.90	7.3 (5.2)	7.1 (5.3)	0.02
None	1,193 (10.7%)	1,165,140 (35.0%)	0.60	880 (8.2%)	852 (8.0%)	0.01
1 to 4	2,793 (25.0%)	1,400,699 (42.0%)	0.37	2,731 (25.6%)	2,868 (26.8%)	0.03
5 to 9	4,050 (36.3%)	539,291 (16.2%)	0.47	3,990 (37.4%)	4,058 (38.0%)	0.01
10 to 14	2,096 (18.8%)	160,872 (4.8%)	0.44	2,070 (19.4%)	1,997 (18.7%)	0.02
15 or more	1,027 (9.2%)	66,268 (2.0%)	0.32	1,011 (9.5%)	907 (8.5%)	0.03
Number of unique medicines in three months						
Mean (Std)	5.7 (4.5)	2.2 (3.2)	0.90	5.8 (4.4)	5.7 (4.4)	0.03
None	1,468 (13.2%)	1,470,159 (44.1%)	0.73	1,141 (10.7%)	1,123 (10.5%)	0.01
1 to 4	3,599 (32.3%)	1,302,082 (39.1%)	0.14	3,530 (33.0%)	3,672 (34.4%)	0.03
5 to 9	4,096 (36.7%)	422,964 (12.7%)	0.58	4,046 (37.9%)	4,071 (38.1%)	0.00
10 to 14	1,521 (13.6%)	105,309 (3.2%)	0.38	1,496 (14.0%)	1,383 (12.9%)	0.03
15 or more	475 (4.3%)	31,756 (1.0%)	0.21	469 (4.4%)	433 (4.1%)	0.02
Utilisation of MBS-funded services						
Number of MBS claims for GP and practice nurse attendance						
Mean (Std)	15.0 (10.0)	6.6 (7.1)	0.97	15.0 (9.9)	14.8 (9.9)	0.01
None	56 (0.5%)	350,501 (10.5%)	0.45	47 (0.4%)	39 (0.4%)	0.01
1 to 3	483 (4.3%)	990,382 (29.7%)	0.72	444 (4.2%)	379 (3.5%)	0.03
4 to 6	1,256 (11.3%)	760,038 (22.8%)	0.31	1,187 (11.1%)	1,177 (11.0%)	0.00
7 to 9	1,700 (15.2%)	470,181 (14.1%)	0.03	1,616 (15.1%)	1,706 (16.0%)	0.02

Pre-enrolment characteristics[1]	Before matching – number (%) & standardised difference			After matching – number (%) & standardised difference		
	HCH Patients[2] (n=11,159)	Potential comparator patients[3] (n=3,332,270)	Std Diff[4]	HCH patients[2] (n=10,682)	Comparator patients[3] (n=10,682)	Std Diff[4]
10 to 14	2,852 (25.6%)	407,905 (12.2%)	0.35	2,767 (25.9%)	2,849 (26.7%)	0.02
15 or more	4,812 (43.1%)	353,263 (10.6%)	0.79	4,621 (43.3%)	4,532 (42.4%)	0.02
Number of MBS claims for specialist consultations						
Mean (Std)	3.3 (6.7)	1.5 (4.7)	0.30	3.4 (6.8)	3.3 (6.6)	0.01
None	4,492 (40.3%)	2,118,987 (63.6%)	0.48	4,141 (38.8%)	4,142 (38.8%)	0.00
1 to 3	3,529 (31.6%)	793,483 (23.8%)	0.18	3,430 (32.1%)	3,446 (32.3%)	0.00
4 to 6	1,522 (13.6%)	229,462 (6.9%)	0.22	1,509 (14.1%)	1,505 (14.1%)	0.00
7 to 9	673 (6.0%)	85,320 (2.6%)	0.17	666 (6.2%)	663 (6.2%)	0.00
10 to 14	510 (4.6%)	54,776 (1.6%)	0.17	509 (4.8%)	520 (4.9%)	0.00
15 or more	433 (3.9%)	50,242 (1.5%)	0.15	427 (4.0%)	406 (3.8%)	0.01
Number of MBS claims for any allied health services						
Mean (Std)	2.0 (2.7)	0.6 (1.8)	0.60	2.1 (2.7)	1.9 (2.7)	0.04
None	5,689 (51.0%)	2,833,684 (85.0%)	0.78	5,326 (49.9%)	5,524 (51.7%)	0.04
1 to 3	2,308 (20.7%)	224,342 (6.7%)	0.41	2,238 (21.0%)	2,280 (21.3%)	0.01
4 to 6	2,625 (23.5%)	209,790 (6.3%)	0.50	2,594 (24.3%)	2,357 (22.1%)	0.05
7 to 9	295 (2.6%)	37,627 (1.1%)	0.11	290 (2.7%)	287 (2.7%)	0.00
10 to 14	212 (1.9%)	22,945 (0.7%)	0.11	205 (1.9%)	211 (2.0%)	0.00
15 or more	30 (0.3%)	3,882 (0.1%)	0.03	29 (0.3%)	23 (0.2%)	0.01
Number of MBS claims for any pathology services						
Mean (Std)	11.1 (13.5)	4.6 (8.5)	0.58	11.0 (13.1)	10.9 (12.8)	0.01
None	745 (6.7%)	1,180,488 (35.4%)	0.75	714 (6.7%)	703 (6.6%)	0.00
1 to 3	1,616 (14.5%)	846,451 (25.4%)	0.28	1,573 (14.7%)	1,533 (14.4%)	0.01
4 to 6	2,324 (20.8%)	581,319 (17.4%)	0.09	2,258 (21.1%)	2,285 (21.4%)	0.01
7 to 9	2,030 (18.2%)	294,220 (8.8%)	0.28	1,948 (18.2%)	1,996 (18.7%)	0.01
10 to 14	1,997 (17.9%)	218,216 (6.5%)	0.35	1,892 (17.7%)	1,930 (18.1%)	0.01
15 or more	2,447 (21.9%)	211,576 (6.3%)	0.46	2,297 (21.5%)	2,235 (20.9%)	0.01

Pre-enrolment characteristics[1]	Before matching – number (%) & standardised difference			After matching – number (%) & standardised difference		
	HCH Patients[2] (n=11,159)	Potential comparator patients[3] (n=3,332,270)	Std Diff[4]	HCH patients[2] (n=10,682)	Comparator patients[3] (n=10,682)	Std Diff[4]
Had a claim for HbA1c test [6]						
In the six months pre-enrolment	1,291 (37.9%)	64,426 (29.6%)	0.18	1,201 (37.6%)	1,213 (38.0%)	0.01
In the 12 months pre-enrolment	1,854 (54.5%)	103,982 (47.8%)	0.13	1,732 (54.2%)	1,716 (53.7%)	0.01
Number of MBS claims for any imaging services						
Mean (Std)	2.6 (3.5)	1.2 (2.2)	0.47	2.6 (3.5)	2.6 (3.5)	0.01
None	3,788 (33.9%)	1,915,051 (57.5%)	0.49	3,521 (33.0%)	3,451 (32.3%)	0.01
1 to 3	4,437 (39.8%)	1,066,218 (32.0%)	0.16	4,280 (40.1%)	4,352 (40.7%)	0.01
4 to 6	1,777 (15.9%)	246,026 (7.4%)	0.27	1,739 (16.3%)	1,716 (16.1%)	0.01
7 to 9	694 (6.2%)	66,886 (2.0%)	0.21	684 (6.4%)	689 (6.5%)	0.00
10 to 14	330 (3.0%)	28,532 (0.9%)	0.15	330 (3.1%)	334 (3.1%)	0.00
15 or more	133 (1.2%)	9,557 (0.3%)	0.11	128 (1.2%)	140 (1.3%)	0.01
Usual provider score (UPC) continuity of care						
No GP visit	150 (1.3%)	435,376 (13.1%)	0.47	116 (1.1%)	108 (1.0%)	0.01
1 to 3 visits	1,463 (13.1%)	1,137,073 (34.1%)	0.51	1,327 (12.4%)	1,257 (11.8%)	0.02
Low continuity (0<UPC<0.75)	5,216 (46.7%)	1,048,198 (31.5%)	0.32	4,964 (46.5%)	4,880 (45.7%)	0.02
High continuity (0.75≤UPC<1)	2,841 (25.5%)	424,328 (12.7%)	0.33	2,803 (26.2%)	2,869 (26.9%)	0.01
Perfect continuity (UPC=1)	1,489 (13.3%)	287,295 (8.6%)	0.15	1,472 (13.8%)	1,568 (14.7%)	0.03
Utilisation of hospital services [5]						
All-cause admissions [5]						
Mean (Std)	0.5 (1.5)	0.2 (1.0)	0.23	0.5 (1.4)	0.5 (1.6)	0.01
None	6,706 (72.7%)	2,674,230 (80.3%)	0.18	6,639 (72.8%)	6,620 (72.6%)	0.00
1 or 2	2,048 (22.2%)	408,355 (12.3%)	0.27	2,029 (22.2%)	2,032 (22.3%)	0.00
3 or 4	319 (3.5%)	42,547 (1.3%)	0.14	315 (3.5%)	329 (3.6%)	0.01
5 or more	152 (1.6%)	19,895 (0.6%)	0.10	137 (1.5%)	139 (1.5%)	0.00
All-cause day-only admissions [5]						
Mean (Std)	0.2 (1.0)	0.1 (0.8)	0.10	0.2 (0.9)	0.2 (1.3)	0.01
None	7,990 (86.6%)	2,874,744 (86.3%)	0.01	7,904 (86.7%)	7,916 (86.8%)	0.00
1 or 2	1,106 (12.0%)	248,672 (7.5%)	0.15	1,093 (12.0%)	1,067 (11.7%)	0.01

Pre-enrolment characteristics[1]	Before matching – number (%) & standardised difference			After matching – number (%) & standardised difference		
	HCH Patients[2] (n=11,159)	Potential comparator patients[3] (n=3,332,270)	Std Diff[4]	HCH patients[2] (n=10,682)	Comparator patients[3] (n=10,682)	Std Diff[4]
3 or 4	87 (0.9%)	12,409 (0.4%)	0.07	83 (0.9%)	94 (1.0%)	0.01
5 or more	42 (0.5%)	9,202 (0.3%)	0.03	40 (0.4%)	43 (0.5%)	0.00
All-cause overnight stay admissions [5]						
Mean (Std)	0.3 (0.9)	0.1 (0.5)	0.27	0.3 (0.8)	0.3 (0.8)	0.00
None	7,445 (80.7%)	2,870,415 (86.1%)	0.15	7,373 (80.8%)	7,339 (80.5%)	0.01
1 or 2	1,538 (16.7%)	251,080 (7.5%)	0.28	1,519 (16.7%)	1,568 (17.2%)	0.01
3 or 4	180 (2.0%)	18,593 (0.6%)	0.13	177 (1.9%)	171 (1.9%)	0.00
5 or more	62 (0.7%)	4,939 (0.1%)	0.08	51 (0.6%)	42 (0.5%)	0.01
Emergency admission [5]						
Mean (Std)	0.3 (1.0)	0.1 (0.5)	0.26	0.3 (0.9)	0.3 (0.8)	0.02
None	7,528 (81.6%)	2,900,823 (87.1%)	0.15	7,455 (81.7%)	7,456 (81.8%)	0.00
1 or 2	1,426 (15.5%)	217,798 (6.5%)	0.29	1,412 (15.5%)	1,455 (16.0%)	0.01
3 or 4	194 (2.1%)	19,901 (0.6%)	0.13	190 (2.1%)	161 (1.8%)	0.02
5 or more	77 (0.8%)	6,505 (0.2%)	0.09	63 (0.7%)	48 (0.5%)	0.02
Potentially preventable hospitalisations [5]						
Mean (Std)	0.1 (0.5)	0.0 (0.2)	0.16	0.1 (0.4)	0.1 (0.3)	0.03
None	8,706 (94.4%)	3,090,810 (92.8%)	0.07	8,620 (94.5%)	8,695 (95.3%)	0.04
1 or 2	456 (4.9%)	50,678 (1.5%)	0.19	453 (5.0%)	383 (4.2%)	0.04
3 or more	49 (0.5%)	2,763 (0.1%)	0.08	47 (0.5%)	42 (0.5%)	0.01
Total number of bed-days [5]						
Mean (Std)	2.3 (9.5)	0.8 (6.2)	0.18	1.9 (2.0)	1.9 (2.6)	0.02
No admission	6,706 (72.7%)	2,674,230 (80.3%)	0.18	6,639 (72.8%)	6,620 (72.6%)	0.00
1 to 9 days	1,979 (21.5%)	410,046 (12.3%)	0.25	1,956 (21.4%)	1,994 (21.9%)	0.01
10 to 19 days	275 (3.0%)	29,470 (0.9%)	0.15	272 (3.0%)	273 (3.0%)	0.00
20 to 29 days	97 (1.1%)	12,219 (0.4%)	0.08	97 (1.1%)	94 (1.0%)	0.00
30 days or more	168 (1.8%)	19,062 (0.6%)	0.12	156 (1.7%)	139 (1.5%)	0.01

Pre-enrolment characteristics[1]	Before matching – number (%) & standardised difference			After matching – number (%) & standardised difference		
	HCH Patients[2] (n=11,159)	Potential comparator patients[3] (n=3,332,270)	Std Diff[4]	HCH patients[2] (n=10,682)	Comparator patients[3] (n=10,682)	Std Diff[4]
Total National Weighted Activity Units (NWAU) [5]						
Mean (Std)	0.8 (2.7)	0.3 (1.6)	0.22	0.8 (2.5)	0.7 (2.4)	0.02
Quintile 1 (0 <NWAU≤0.34)	375 (4.1%)	86,998 (2.6%)	0.08	370 (4.1%)	355 (3.9%)	0.01
Quintile 2 (0.34<NWAU≤0.78)	503 (5.5%)	107,522 (3.2%)	0.11	500 (5.5%)	490 (5.4%)	0.00
Quintile 3 (0.78<NWAU≤1.36)	438 (4.7%)	100,730 (3.0%)	0.09	435 (4.8%)	472 (5.2%)	0.02
Quintile 4 (1.36<NWAU≤2.83)	472 (5.1%)	93,906 (2.8%)	0.12	468 (5.1%)	487 (5.3%)	0.01
Quintile 5 (2.83<NWAU)	726 (7.9%)	81,447 (2.4%)	0.25	708 (7.8%)	696 (7.6%)	0.00
No admission	6,711 (72.7%)	2,674,230 (80.3%)	0.18	6,639 (72.8%)	6,620 (72.6%)	0.00
Presentations to ED [5]						
Mean (Std)	0.6 (1.7)	0.2 (0.9)	0.25	0.6 (1.5)	0.5 (1.4)	0.01
No ED visit	6,636 (71.9%)	2,659,451 (79.8%)	0.18	6,577 (72.1%)	6,515 (71.4%)	0.02
1 or 2	2,042 (22.1%)	420,737 (12.6%)	0.25	2,016 (22.1%)	2,120 (23.2%)	0.03
3 or 4	362 (3.9%)	46,784 (1.4%)	0.16	358 (3.9%)	336 (3.7%)	0.01
5 or more	185 (2.0%)	18,055 (0.5%)	0.13	169 (1.9%)	149 (1.6%)	0.02
Use of aged care services in 24 months						
Community based services	250 (2.2%)	15,193 (0.5%)	0.16	234 (2.2%)	240 (2.2%)	0.00
Residential care services	107 (1.0%)	29,964 (0.9%)	0.01	103 (1.0%)	85 (0.8%)	0.02

Notes: [1] See Table 14 for definition and methods relating pre-enrolment characteristics. [2] Among HCH patients in both before-matching and after-matching samples, pre-enrolment characteristics were calculated for the respective period before enrolment into the HCH program. [3] Among comparison patients in the before-matching sample, pre-enrolment characteristics were calculated for the respective period before October 2017; in the after-matching sample, these characteristics reflected the period before month/year when their matched HCH patients were enrolled in HCH. [4] Absolute standardised difference; two patient groups had similar characteristic (balanced) if absolute standardised difference is less than 0.1. [5] Calculated for patients from five states (NSW, Vic, Qld, SA and Tas). [6] Calculated among patients with diabetes.

4

Patient surveys

Patients were surveyed using computer assisted telephone interviews (CATI). HPA collaborated with The Social Research Centre to administer the surveys. The surveys were organised into three waves (Table 5, p. 8).

The wave 1 survey aimed to profile patients and their experience of primary health care at the time of enrolment into the HCH program (or shortly after). Subsequent interviews were used to track changes following enrolment. Complete survey instruments (including changes in questions through the three waves) are in the Evaluation plan.[45]

A weighted random sample of patients was selected by HPA from patients who had recently enrolled in the HCH trial and who had agreed to be contacted to participate in the evaluation. Practices provided contact details for these patients through a purposefully designed secure portal established by HPA. HPA regularly drew samples from the patients registered in this system – initially approximately every month then, as enrolments increased, every fortnight. Only patients enrolled in the most recent period were included in each sample. The sampling approach aimed to capture enough patients from each practice to be able to develop practice level estimates for relevant measures. A maximum number of patients from any practice was initially established (100), but this was relaxed in later waves. The sampling approach aimed to ensure patients surveyed were spread across the enrolment period. As enrolment occurred at different rates between practices, the sampling approach needed to be recalibrated over time.

For waves 2 and 3, patients who had responded to the previous survey were approached, provided the practice continued to participate in the HCH trial. Additional patients were also sampled for wave 2 to attempt to achieve the targets for the patient survey samples.

[45] Health Policy Analysis. (2019a). *Evaluation of the Health Care Homes program – Evaluation plan (Updated 2019)*. . Note that this reference is to the version of the plan that was updated to accommodate the extension of the trial. The updated plan maintained the evaluation approach and measures published in the original plan but added data collection points due to the extension.

Once contact details for patients were received, The Social Research Centre followed a protocol developed with HPA, which reflects best practice in conducting surveys:[46]

1. Within seven days of receiving contact details, The Social Research Centre sent enrolees a primary approach letter with a non-contingent incentive of $10 (in the form of a card). Patients could access the voucher regardless of whether they agreed to participate in the survey. If only an email address was available, an approach letter was emailed with an electronic voucher.

2. Telephone contact was then made at least seven days after the initial approach to allow for delivery of the letter.

3. An SMS was sent to enrolees with a valid mobile number before the initial call to reduce non-contacts.

4. If an enrolee didn't answer, The Social Research Centre continued to call up to eight times. If the enrolee or a family member answered and hung up or the enrolee declined to participate, then they were not contacted further.

5. When contacted the interviewee could also choose: (a) not to participate in the survey at the time they received a telephone call from The Social Research Centre interviewer; (b) to stop the interview at any time; and/ or (c) not answer certain questions.

6. The Social Research Centre interviewers followed a script to ensure the same questions were asked of all the participants, subject to the conditional statements within the survey. The interviewee asked the patient which language they would prefer the interview to be conducted in. The interviewer also gave the patient the opportunity to reschedule the interview at another time. The interviews took 15 to 20 minutes.

7. For waves 1 and 2, respondents were sent a thank you email (or letter if no email address), reminding them that they will be contacted again in the next wave, and allowing an opportunity to opt-out if they didn't wish to be re-surveyed.

Table 16 presents data on response rates for each survey wave. Crude response rates were 64.6% for wave 1, 68% for wave 2 and 71.5% for wave 3. For some patients the contact information was classified as unusable. If these are excluded from the denominator, the response rates were 66.7% for wave 1, 72.1% for wave 2 and 77.1% for wave 3. Contact could not be made with some patients (17.6%, 14.4% and 10.3% for waves 1 to 3 respectively).

[46] Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, Phone, Mail, and Mixed-Mode Surveys: The Tailored Design Method* (4th ed.). Wiley.

Table 16: Patient participation in HCH surveys

Sample size/ status		Number of patients n (%)		
		Wave 1	Wave 2	Wave 3
Patient sample		3,125 (100.0%)	2,733 (100.0%)	1,936 (100.0%)
Interviews completed		2,018 (64.6%)	1,859 (68.0%)	1,385 (71.5%)
Unusable sample	Deceased	5	19	23
	Named person not known	32	23	17
	Not a residential number	6	1	1
	Incoming call restriction	1	2	1
	Number disconnected	55	109	98
	Total	99 (3.2%)	154 (5.6%)	140 (7.2%)
Non contacts	Answering machine	347	246	145
	Answering machine message left	12	9	3
	Engaged	19	22	10
	No answer	173	117	41
	Total	551 (17.6%)	394 (14.4%)	199 (10.3%)
Other contacts	Re-appointment not completed	67	26	4
	Away for duration	30	13	17
	Claims to have done survey	4	3	6
	Language difficulty	25	7	3
	No longer part of HCH	22	44	38
	Too frail / ill-health	76	51	29
	Intoxicated respondent	1	1	2
	Total other contacts	225 (7.2%)	145 (5.3%)	99 (5.2%)
Refusal	Incoming call solution hard refusal	42	46	19
	Household refusal	47	17	7
	Respondent refusal	112	95	66
	Midway termination	31	22	21
	Total refusals	232 (7.4%)	180 (6.6%)	113 (5.8%)

Source: The Social Research Centre.

Summary tables from the surveys are presented in Appendix 7. These provide cross tabulations of responses by wave and patient tier. In Table 17, key socio-demographic characteristics of patients for all patients surveyed are presented by the tier to which the patient was assigned. Key points to note include:

- The age and sex distribution of patients who completed the surveys were similar to the population of HCH patients (although only patients aged 18 years and over were approached for the survey). Almost one-third of the patients who agreed to participate in the survey were aged 65 to 74 years and there was a fairly even split of

participants by gender (males 44.9%, females 55.1%). Patients in tier 3 tended to be older ($p < 0.001$).

- 3.3% of patients interviewed identified as Aboriginal or Torres Strait Islander, even though the sample did not include patients enrolled by ACCHS in the Northern Territory.
- 68.0% of respondents were born in Australia, 15.4% in the United Kingdom and 16.6% in other countries.
- Respondents were offered the opportunity to conduct the interview in one of several languages. The vast majority (99%) were conducted in English. Eighteen were conducted in other languages: Maltese, Tagalog, Hindi, Filipino, French, Punjabi, Croatian, Romanian and Polish (data not shown in the Table).
- 5.6% of patients had the survey completed by a proxy and 3.7% needed help to answer some of the questions.
- Respondents' most common living arrangement was living in a household consisting of a couple only (45.8%). A further 25.9% of respondents were living alone. There was a statistically significant difference in household composition between tiers ($p < 0.001$). Specifically, a higher proportion of patients in tier 1 and tier 2 were living in couple only households, and a higher proportion of tier 3 patients were living alone.

Table 17: Socio-demographic characteristics of HCH patients responding to the survey

Respondent characteristics	Total Individuals	Tier		
		1	2	3
A1 Sex				
Female	1,418 (55.1%)	686 (56.2%)	1,526 (55.4%)	625 (55.7%)
Male	1,157 (44.9%)	535 (43.8%)	1,230 (44.6%)	497 (44.3%)
A2 Age group				
25–44	156 (6.0%)	65 (5.3%)	164 (6.0%)	79 (7.0%)
45–64	599 (23.1%)	273 (22.4%)	654 (23.8%)	326 (28.8%)
65–74	784 (30.2%)	446 (36.6%)	894 (32.5%)	261 (23.1%)
75–84	754 (29.0%)	356 (29.2%)	794 (28.9%)	309 (27.3%)
85+	286 (11.0%)	77 (6.3%)	232 (8.4%)	139 (12.3%)
A3 Indigenous status (Q34)				
Aboriginal or Torres Strait Islander	87 (3.3%)	19 (1.6%)	87 (3.2%)	50 (4.5%)
Not Aboriginal or Torres Strait Islander	2,494 (95.8%)	1,201 (98.4%)	2,651 (96.8%)	1,073 (95.5%)
Don't know/ Refused	21 (0.8%)			
A4 Country of birth (Q35)				
Australia	1,769 (68.0%)	847 (69.2%)	1,850 (67.0%)	791 (69.9%)
United Kingdom	402 (15.4%)	193 (15.8%)	440 (15.9%)	157 (13.9%)
Other	431 (16.6%)	184 (15.0%)	472 (17.1%)	183 (16.2%)

Respondent characteristics	Total Individuals	Tier		
		1	2	3
A5 Highest level of education (Q36)				
Year 9 or below	541 (20.8%)	202 (16.6%)	593 (21.7%)	258 (23.2%)
Year 10 or equivalent	406 (15.6%)	210 (17.3%)	425 (15.6%)	169 (15.2%)
Year 11 or equivalent	145 (5.6%)	67 (5.5%)	168 (6.2%)	54 (4.9%)
Year 12 or equivalent	332 (12.8%)	167 (13.8%)	295 (10.8%)	148 (13.3%)
Certificate I to IV (inc. trade certificate)	554 (21.3%)	239 (19.7%)	609 (22.3%)	242 (21.7%)
Advanced diploma/Diploma	216 (8.3%)	134 (11.0%)	226 (8.3%)	86 (7.7%)
Bachelor Degree	227 (8.7%)	143 (11.8%)	240 (8.8%)	96 (8.6%)
Post-Graduate Degree	82 (3.2%)	34 (2.8%)	98 (3.6%)	24 (2.2%)
Other	69 (2.7%)	18 (1.5%)	74 (2.7%)	36 (3.2%)
Refused	30 (1.2%)			
A6 Household composition (Q33)				
Person living alone	675 (25.9%)	217 (17.7%)	732 (26.5%)	328 (29.0%)
Couple only	1,193 (45.8%)	723 (59.1%)	1,318 (47.7%)	417 (36.9%)
Couple with non-dependent child/ren	179 (6.9%)	82 (6.7%)	200 (7.2%)	82 (7.3%)
Couple with dependent child/ren	171 (6.6%)	102 (8.3%)	179 (6.5%)	64 (5.7%)
Single parent with non-dependent child/ren	93 (3.6%)	29 (2.4%)	74 (2.7%)	66 (5.8%)
Single parent with dependent child or children	53 (2.0%)	11 (0.9%)	45 (1.6%)	27 (2.4%)
Other household type	238 (9.1%)	60 (4.9%)	214 (7.7%)	147 (13.0%)

Source: Patient survey Wave 1, Dec 2017–Mar 2019; Wave 2, Dec 2019–Mar 2020; and Wave 3 Mar–Apr 2021.

Additional tables derived from the patient surveys are in Appendix 7.

An aim of HCH was to encourage patients to become more informed about their health and, with the help of their practice, to take a more active role in managing it. "Patient activation" is the term used to describe this concept. The Patient Activation Measure (PAM)[47] is a validated tool measuring patient activation. Survey respondents completed the 13-item version of PAM. A valid response to each item is the patient's level of agreement with a statement (they can strongly disagree, disagree, agree, or strongly agree). Using the Rasch approach that underpinned the development of the PAM, patients' responses were transformed to a score ranging from 0 to 100. The score measures the psychometric properties of a patient's skills, knowledge and confidence for managing their health. The score out of 100 can then be used to categorise each patient as:

- disengaged and overwhelmed (lowest level of activation)
- becoming aware but still struggling

[47] Hibbard, J. H., Mahoney, E. R., Stockard, J., & Tusler, M. (2005). Development and testing of a short form of the patient activation measure. *Health Serv Res*, *40*(6 Pt 1), 1918-1930.

- taking action and gaining control
- maintaining behaviours and pushing further (highest level of activation).

Table 87 in Appendix 7 presents the PAM results.

The PACIC is a validated tool designed to assess the implementation of the chronic care model from the patient perspective.[48] It focuses on the patient's perspective of the receipt of patient-centred chronic disease management. The 12-item version of the tool was used in the evaluation, and the possible responses to each item are on a five-point scale from 1 (none of the time) to 5 (always). There are five domains within the PACIC:

- patient activation score
- decision support score
- goal setting score
- problem solving score
- follow-up/ co-ordination score.

Responses for each question were assigned a score of 1–5, and then averaged for each dimension. A total average score was also calculated. Table 84 in Appendix 7 presents the PACIC results.

The EQ-5D-5L is a health-related quality of life measure which can be used to estimate a respondent's health related quality of life.[49] It is also used to estimate quality adjusted life years when comparing health interventions. The EQ-5D-5L has five basic questions about five key dimensions of a patient's health related quality of life at the time of interview. The dimensions include: mobility, self-care, usual activities, pain and discomfort, and anxiety and depression. Responses reflect the level of difficulty patients experience with these dimensions. Responses to the five questions are mapped to a utility score ranging from just below zero to one, where scores at zero or below represent the worst health related quality of life and a score of one represents the best health related quality of life. Table 90 in Appendix 7 presents the EQ-5D-5L results.

Longitudinal analysis

This section presents the results from the longitudinal analysis of patients' responses to questions in the CATI. In particular, to their scores on instruments that measure patient activation, experience of chronic illness care, and quality of life. Total scores from the PAM, PACIC and EQ-5D-5L are numeric and change in the mean scores between surveys is

[48] Gibbons, C. J., Small, N., Rick, J., Burt, J., Hann, M., & Bower, P. (2017). The Patient Assessment of Chronic Illness Care produces measurements along a single dimension: results from a Mokken analysis. *Health Qual Life Outcomes, 15*(1), 61, Glasgow, R. E., Wagner, E. H., Schaefer, J., Mahoney, L. D., Reid, R. J., & Greene, S. M. (2005). Development and Validation of the Patient Assessment of Chronic Illness Care (PACIC) [Journal]. *Medical care, 43*, 436-444, Schmittdiel, J., Mosen, D. M., Glasgow, R. E., Hibbard, J., Remmers, C., & Bellows, J. (2008). Patient Assessment of Chronic Illness Care (PACIC) and improved patient-centered outcomes for chronic conditions. *J Gen Intern Med, 23*, 77-80.

[49] Devlin, N. J., & Krabbe, P. F. (2013). The development of new research methods for the valuation of EQ-5D-5L. *Eur J Health Econ, 14 Suppl 1*, S1-3, Herdman, M., Gudex, C., Lloyd, A., Janssen, M., Kind, P., Parkin, D., Bonsel, G., & Badia, X. (2011). Development and preliminary testing of the new five-level version of EQ-5D (EQ-5D-5L). *Qual Life Res, 20*(10), 1727-1736.

estimated using generalised linear mixed models (GLMM). For each patient outcome we estimated a GLMM with fixed effects for HCH tier, wave, categorized age, practice size, practice ownership, location and with random intercepts for practice and patient. These models estimate the effect of each of the fixed effects on the outcome, with an adjustment for practice and respondent mean. The main variable of interest in these models is wave, which provides an estimate of the change in the mean score on the instrument from wave 1 to wave 2 and from wave 1 to wave 3.

GLMM are similar to linear regression but adjust for the lack of independence of residuals, which occur due to surveying the same patients multiple times, and also for the clustering that occurs due to patients being selected from practices (rather than randomly from the population). Like linear regression, the models assume linearity and normally distributed residuals with constant variance, but they also assume that variation between patients is normally distributed and that variation between practices is normally distributed. Additional models were fit to the data to explore whether practices that recruited more than 50 patients did better or worse that practices that recruited fewer than 50 patients. Before fitting these additional models, logistic regression was used to obtain propensity scores for each practice and the propensity scores were included in the models as inverse probability weights to balance the potential confounders of the analysis between the two groups of practices.

Total scores on each of the instruments were dichotomised and change between waves in the dichotomised outcome were estimated using a logistic regression model fitted within a generalised estimating equation (GEE) framework. Like GLMM, these models also adjust for the lack of independence within the data but only for one level, which we have set to be patient for the longitudinal analysis. The outcomes from a logistic regression model are usually expressed as odds ratio, for example the odds of having the outcome of interest in wave 2 relative to wave 1. We chose to use GEEs primarily because they give population-based estimates of the odds ratio rather than individual estimates, the former of which are more relevant for this study. GEEs also tend to converge more readily than GLMM for dichotomous outcomes with a logit link function. Generalised estimating equations do have a slightly less robust assumptions regarding missing data; they are valid when the data are missing completely at random. This means they are valid when the missing data is independent of both the observed and unobserved data, or equivalently the observed data is a random sample of the complete data. GLMMs are valid when the data are missing at random, which means they are valid when the missing data is independent of its unobserved value. To overcome this potential weakness, we have conducted sensitivity analysis to determine if p-values are similar between the two models. In addition, when we have dichotomised outcomes, we have undertaken sensitivity analysis to check that the results are robust to the choice of the cut-point.

Summaries of the responses for individual items, total scores, and categories derived from the total scores are given in Table 87 for the PAM, Table 84 for the PACIC, and Table 90 for the EQ-5D-5L.

Patient activation measure (PAM)

The longitudinal analysis found there was no significant difference in the mean PAM score at the second [0.67 (95% CI -0.07 to 1.38)] or third wave [0.30 (95% CI -0.44 to 0.99)] compared

with the mean score at the first wave (Table 18). Patients enrolled in HCH tended to score relatively high on the PAM, with 40.5% being categorised as "taking action and gaining control" across waves and another 34.7% being classified as "maintaining behaviours and pushing further" (Figure 6). The proportions of patients categorised as "taking action and gaining control" or "maintaining behaviours and pushing further" were similar across waves and the proportion of patients in each category remained relatively constant across the three waves (Table 19).

Table 18: Estimated change (95% confidence intervals) in mean scores from wave 1 to wave 2 and wave three patient surveys

Outcome	Wave 1	Change from wave 1†	
	Mean (median)	Wave 2	Wave 3
Total score (PAM)	66.2 (65.5)	0.67 (-0.07, 1.38)	0.30 (-0.44, 0.99)
PACIC: Patient activation score	3.4 (3.5)	-0.02 (-0.08, 0.05)	-0.10 (-0.18, -0.03)
PACIC: Decision support score	3.7 (3.7)	-0.06 (-0.11, -0.02)	-0.21 (-0.26, -0.16)
PACIC: Goal setting score	3.4 (3.7)	-0.02 (-0.07, 0.04)	-0.10 (-0.17, -0.04)
PACIC: Problem solving score	4.2 (5.0)	-0.09 (-0.16, -0.02)	-0.13 (-0.21, -0.05)
PACIC: Follow-up/ co-ordination score	2.6 (2.7)	0.04 (-0.02, 0.09)	-0.10 (-0.17, -0.04)
Total score (PACIC)	3.4 (3.5)	-0.02 (-0.06, 0.02)	-0.13 (-0.18, -0.09)
Total score (EQ-5D-5L)	0.7 (0.7)	0.00 (-0.01, 0.01)	-0.01 (-0.02, 0.00)

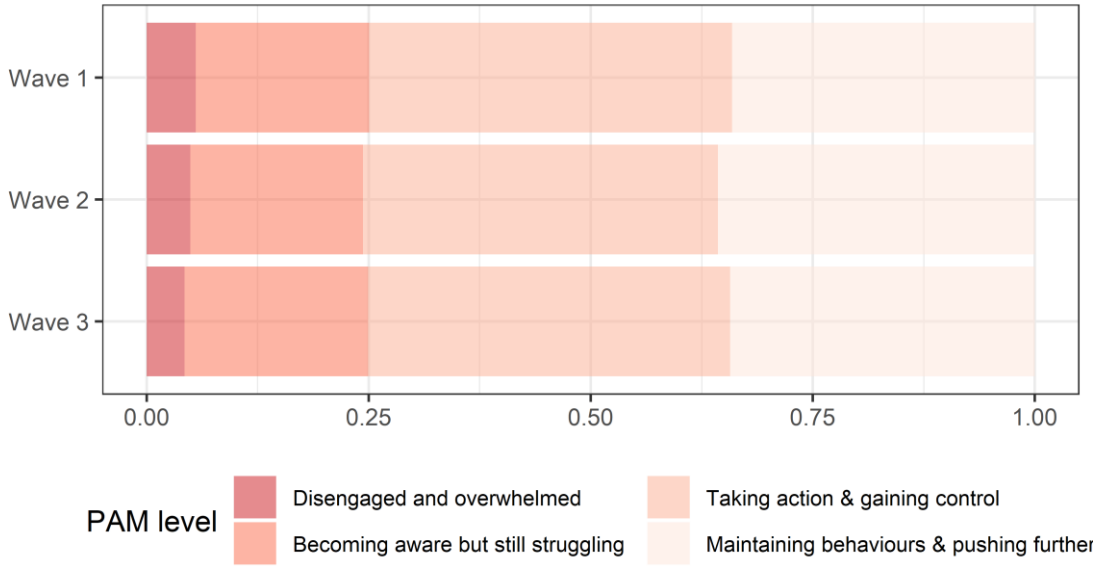
Notes: † Change is estimated from an analysis involving all patients who completed at least one survey using generalised linear mixed model with random intercept terms for patient and practice. Very similar results were obtained from the same analysis using only those patients who completed all three surveys.
Source: Patient survey Wave 1, Dec 2017–Mar 2019; Wave 2, Dec 2019–Mar 2020; and Wave 3 Mar–Apr 2021.

Table 19: Odds of being categories as 4 or 5 in the PACIC in waves 2 and 3 relative to wave 1

Outcome	Odds ratio‡ (95% CI) relative to wave 1	
	Wave 2	Wave 3
PAM†	1.09 (0.97, 1.21)	1.00 (0.88, 1.12)
PACIC: Patient activation score (≥4)	0.96 (0.85, 1.08)	0.84 (0.74, 0.95)
PACIC: Decision support score (≥4)	0.82 (0.73, 0.92)	0.62 (0.55, 0.70)
PACIC: Goal setting score (≥4)	0.95 (0.85, 1.06)	0.80 (0.71, 0.90)
PACIC: Problem solving score (≥4)	0.82 (0.70, 0.94)	0.79 (0.67, 0.93)
PACIC: Follow-up/ co-ordination score (≥4)	1.04 (0.89, 1.22)	0.79 (0.66, 0.95)
Total score (PACIC) (≥4)	0.93 (0.82, 1.04)	0.73 (0.64, 0.83)
Patient rating of overall health (Excellent or very good)	1.13 (1.00, 1.28)	1.06 (0.93, 1.21)
Patient rating of overall mental or emotional health (Excellent or very good)	0.97 (0.87, 1.08)	0.93 (0.82, 1.04)

Notes: ‡ Odds ratios were estimated from an analysis involving all patients using a generalised estimating equation with patient as the repeated measure. † Categorised as "taking action and gaining control" or "maintaining behaviours and pushing further".
Source: Patient survey Wave 1, Dec 2017–Mar 2019; Wave 2, Dec 2019–Mar 2020; and Wave 3 Mar–Apr 2021.

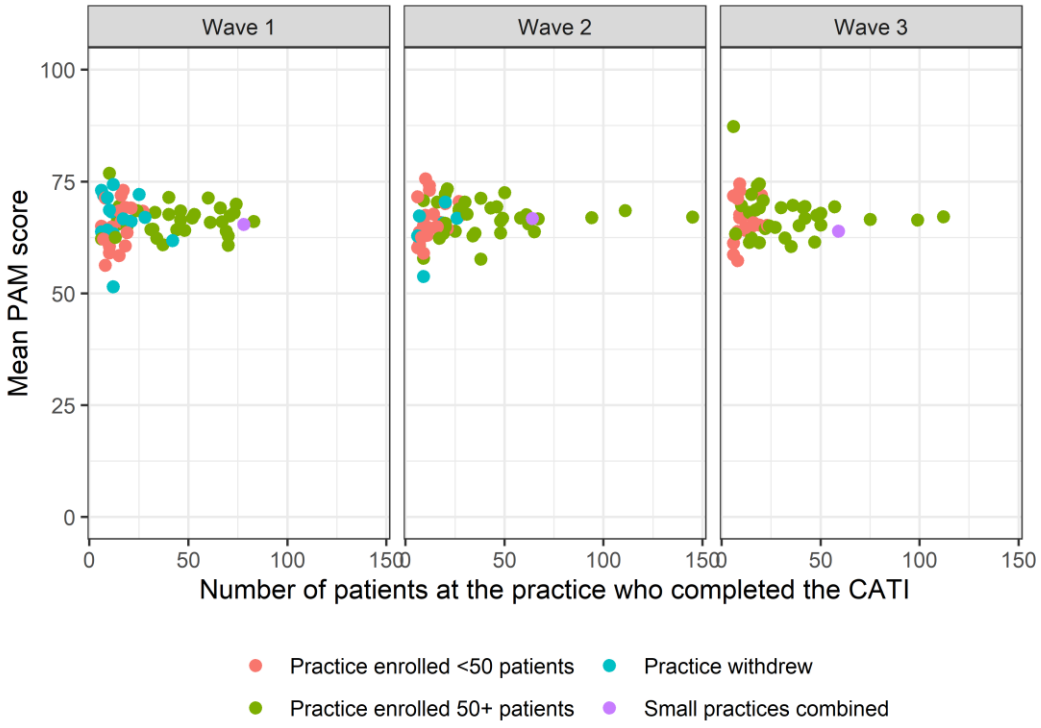
Figure 6: Proportion of patients at each wave by the category of their PAM scores



Source: Patient survey Wave 1, Dec 2017–Mar 2019; Wave 2, Dec 2019–Mar 2020; and Wave 3 Mar–Apr 2021.

There was no difference in the change in PAM scores between patients at practices that recruited more than 50 patients and those that recruited less than 50 (p = 0.93) (Figure 7).

Figure 7: Mean PAM score during each wave by practice and number of patients who completed the survey within each practice



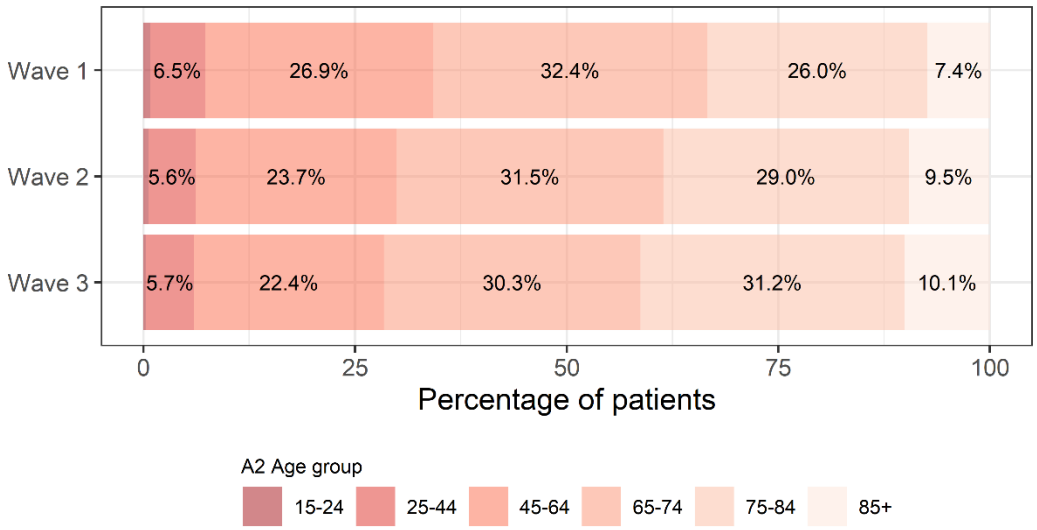
Source: Patient survey Wave 1, Dec 2017–Mar 2019; Wave 2, Dec 2019–Mar 2020; and Wave 3 Mar–Apr 2021.

Patient Assessment of Chronic Illness Care (PACIC)

On average patients scored -0.13 (95% CI -0.18 to -0.09) lower for the total PACIC score at wave 3 than wave 1 (Table 18), although the mean of response at wave 2 was similar to wave 1 [difference = -0.02 (95% CI -0.06 to 0.02)]. This suggests patients assessed the quality of care for their chronic condition to have deteriorated as the trial progressed. This pattern was consistent throughout the five components of the PACIC (Table 18). The PACIC was dichotomised as "greater than or equal to 4" or "less than 4", where a score of 4 or more is consistent with responses of "Most of the time" or "Always". The results suggest that the odds of having a total score of 4 or more on the PACIC in wave 3 was 0.73 (95% CI 0.64, 0.83) of the odds in wave 1 (Table 19). Similar results were found for the five components of the PACIC. The results were similar with the cut point for the dichotomy was change to 3 or 5.

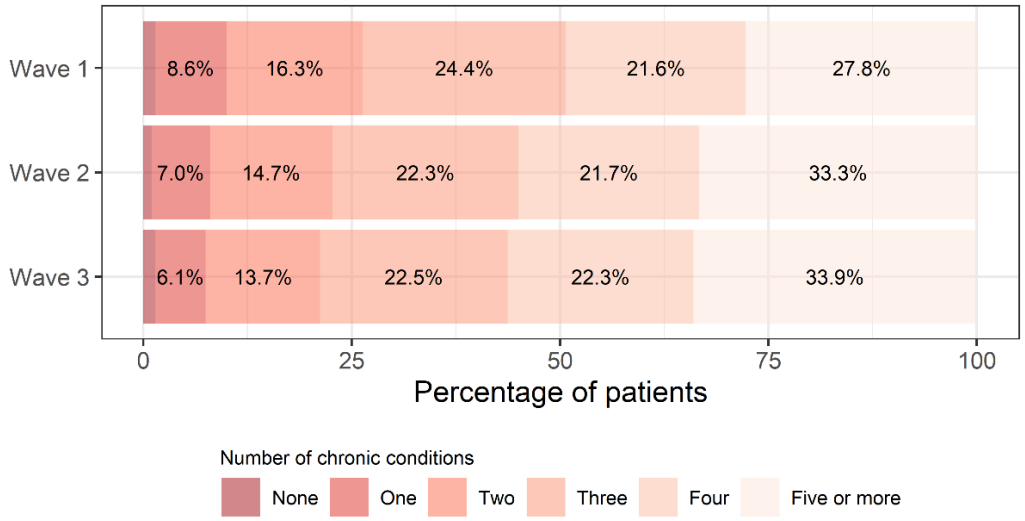
We did some additional analysis to try and understand the reason for the reduction in PACIC scores that occurred across waves. People got older and they tended to report having more chronic conditions as time passed (Figure 8 and Figure 9). Peoples' age and the number of chronic conditions they had may have influenced the way they scored the PACIC. Although older people do tend to score lower on the PACIC, the opposite is true for number of chronic conditions (Figure 10 and Figure 11). People with more chronic conditions tended to score higher on the PACIC. Interestingly, the mean PACIC score increased among the youngest age group (< 25 years) but the number of patients in that group is relatively small (16 in wave 1). Adjusting for these variables had little impact on the size of the change. Similarly, removing the oldest age group and/or restricted the model to people who completed the 3 surveys had little impact on the size of the change in mean PACIC scores between wave 1 and wave 3.

Figure 8: Percentage of patients in each age group by wave



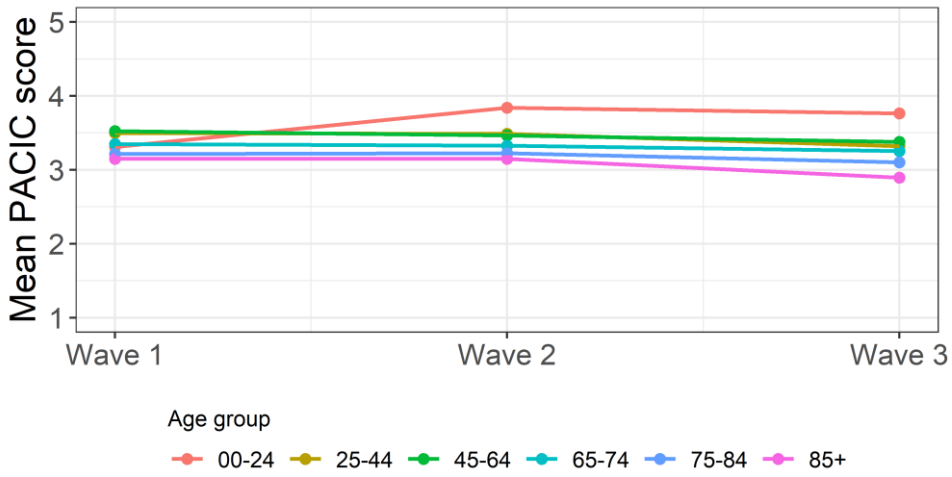
Source: Patient survey Wave 1, Dec 2017–Mar 2019; Wave 2, Dec 2019–Mar 2020; and Wave 3 Mar–Apr 2021.

Figure 9: Percentage of patients by number of chronic conditions, by wave



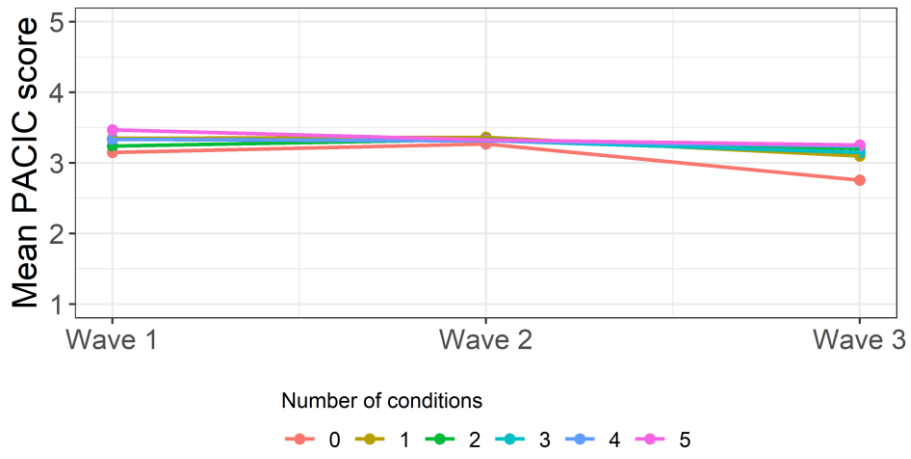
Source: Patient survey Wave 1, Dec 2017–Mar 2019; Wave 2, Dec 2019–Mar 2020; and Wave 3 Mar–Apr 2021.

Figure 10: Mean PACIC scores by age group, by wave



Source: Patient survey Wave 1, Dec 2017–Mar 2019; Wave 2, Dec 2019–Mar 2020; and Wave 3 Mar–Apr 2021.

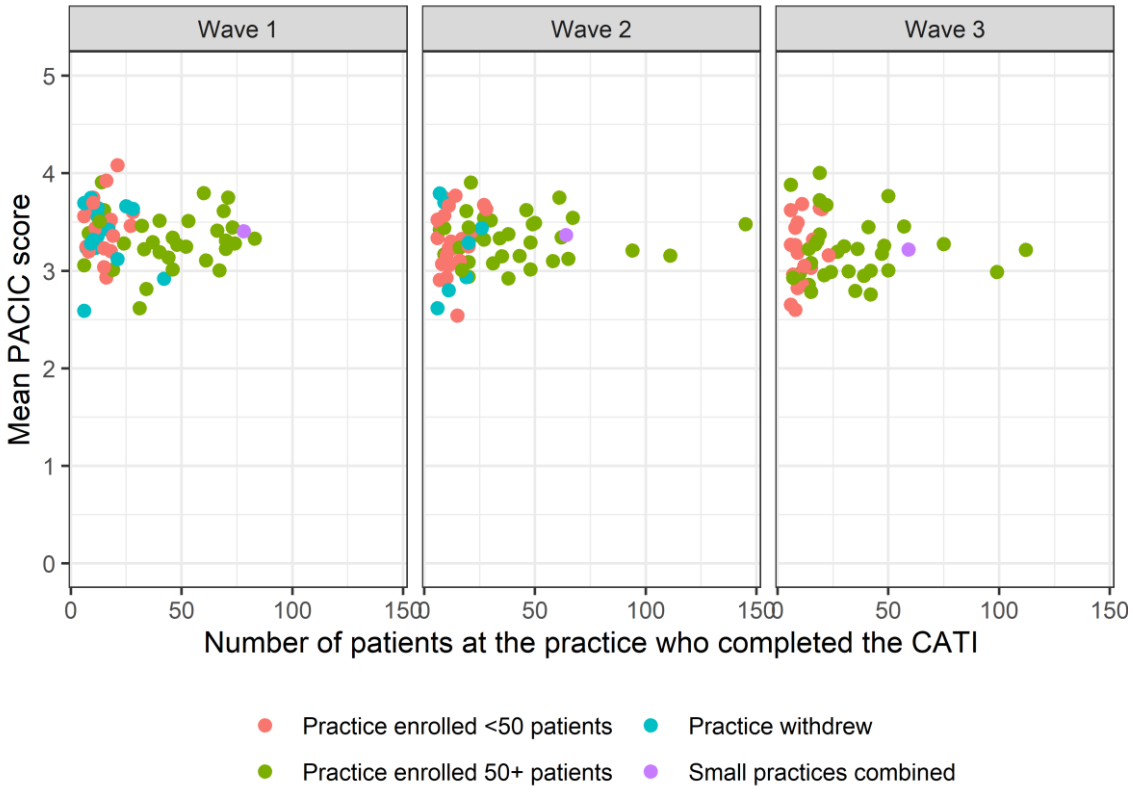
Figure 11: Mean PACIC scores by number of chronic conditions, by wave



Source: Patient survey Wave 1, Dec 2017–Mar 2019; Wave 2, Dec 2019–Mar 2020; and Wave 3 Mar–Apr 2021.

Figure 12 shows the mean PACIC score at each practice by the number of patients who completed the survey, with the colour of the circles indicating characteristics of the practice. There was no difference in the change in PACIC scores between patients at practices that recruited more than 50 patients and those that recruited less than 50 patients (p = 0.06), although there was an indication that the decline was slower at wave 2 as the number of patients recruited increased.

Figure 12: Mean PACIC score at each survey by practice and number of patients who completed the CATI

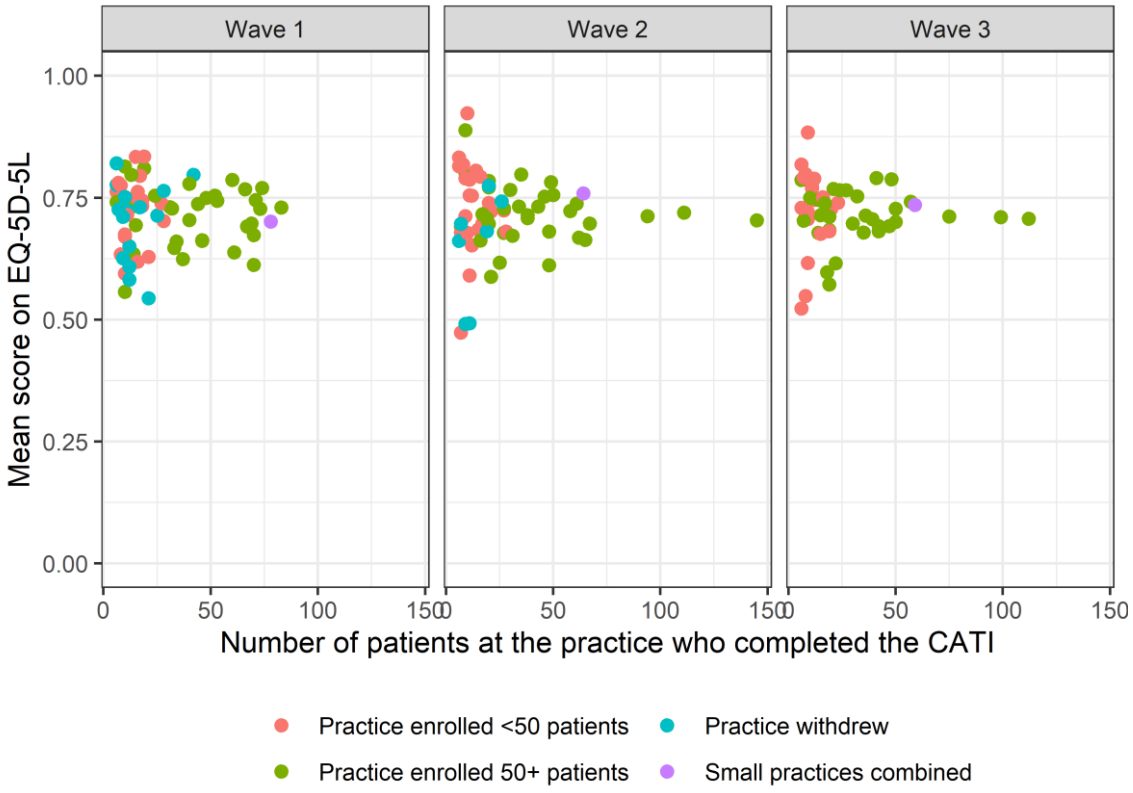


Source: Patient survey Wave 1, Dec 2017–Mar 2019; Wave 2, Dec 2019–Mar 2020; and Wave 3 Mar–Apr 2021.

EQ-5D-5L

There was no difference in the mean EQ-5D-5L scores at the second wave [0.00 (95% CI -0.01 to 0.01)] or third wave [-0.01 (95% CI -0.02 to 0.00)] compared with the first wave (Table 18). There was no difference in the change in EQ-5D-5L scores between patients at practises that recruited more than 50 patients and those that recruited less than 50 patients (p = 0.68) and there were no obvious differences in average scores when examined by the number of patients who completed the CATI. Nor was there a difference in the trend across the three waves (Figure 13).

Figure 13: Mean EQ-5D-5L score at each survey by practice and number of patients who completed the CATI



Source: Patient survey Wave 1, Dec 2017–Mar 2019; Wave 2, Dec 2019–Mar 2020; and Wave 3 Mar–Apr 2021.

Quality of life

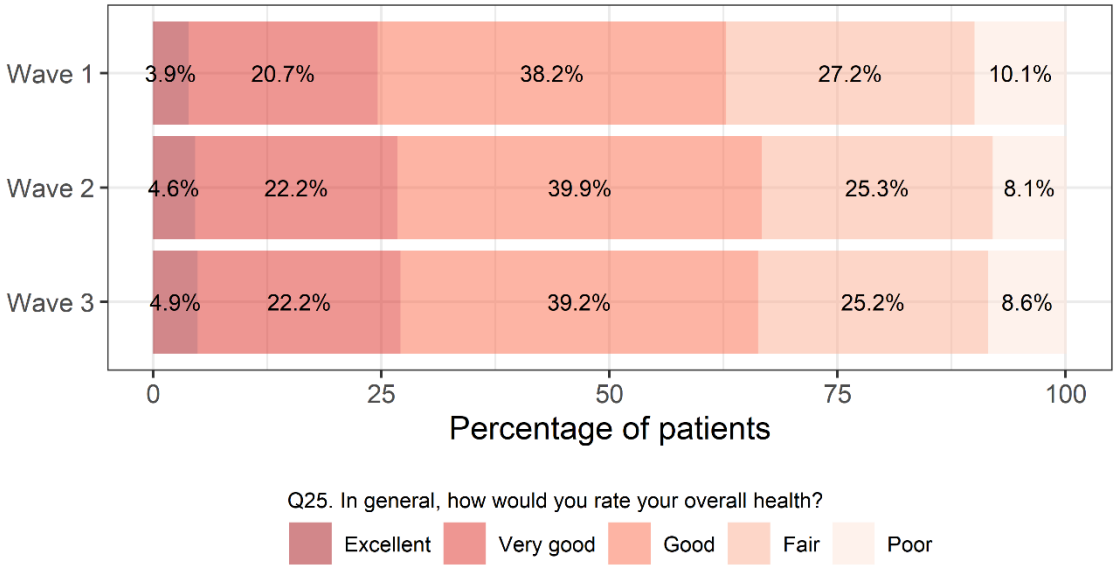
Question 25 of the patient survey was a general question on how the patient rated their overall health (In general, how would you rate your overall health, is it…?). Question 26 was similar but specific to mental and emotional health (In general, how would you rate your overall mental or emotional health, is it…?). The responses to these two questions are shown in Figure 14 and Figure 15. Most patients rated their overall health and their mental health as good, very good, or excellent.

In a model adjusted for age group, patient tier, and the practice characteristics of size, location and ownership, the odds of a patient rating their overall health as poor or fair at wave 2 was 0.84 (95% CI 0.76 to 0.94) compared with wave 1. Although still lower at wave 3 the odds were not statistically different to wave 1 [0.95 (95% CI 0.84 to 1.07)].

The model results suggest there was an increase in patients reporting poor or fair mental health in wave 3 relative to wave 1 [1.16 (95% CI 1.02 to 1.33)].

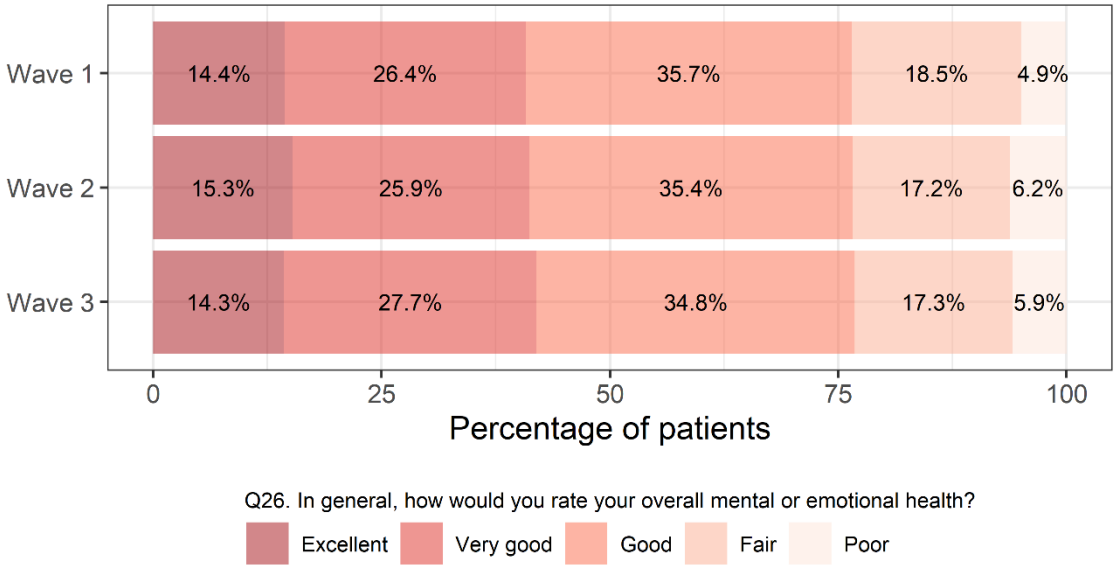
In similar models, the odds of a patient rating their overall health as very good or excellent at wave 2 was 1.13 (95% CI 1.00 to 1.28) compared with wave 1 and at wave 3 was 1.06 (95% CI 0.93 to 1.21). The results for mental health were 0.97 (0.87 to 1.08) at wave 2 relative to wave 1 and 0.93 (0.82 to 1.04).

Figure **14**: Summary of responses to the question of overall health by wave



Source: Patient survey Wave 1, Dec 2017–Mar 2019; Wave 2, Dec 2019–Mar 2020; and Wave 3 Mar–Apr 2021.

Figure 15: Summary of responses to the question of overall health by wave



Source: Patient survey Wave 1, Dec 2017–Mar 2019; Wave 2, Dec 2019–Mar 2020; and Wave 3 Mar–Apr 2021.

5

Practice and practice staff surveys

Surveys of HCH practices were conducted in rounds 1, 2, 4 and 5. The topics included in each round are described in Table 20. The surveys were administered online using the Qualtrics application. To accompany the surveys in rounds 1 and 5, HPA developed a Microsoft Excel tool that practices could use to compile assessments from individual staff members to derive their overall HCH-A result. The intention was for practices to use the tool to discuss individual staff members' scoring (anonymously), and achieve a consensus response for the practice.

Table 20: Topic areas for each practice survey

Survey	When undertaken	Contents of survey
1	Dec 2017 – Jul 2018	**Part A** • Characteristic of the practice at baseline • Staffing • Opening hours • Accessibility of other services in the local community • Information technology infrastructure and capabilities • Participation in PIP and quality improvement activities • Co-payment policies • Practice costs **Part B** • Self-assessment against dimension of the Patient Centred Medical Home using the HCH-A tool
2	Nov 2018 – Mar 2019	• Perspectives on patient enrolment and risk stratification • Perspectives on training and support • Focus for initiatives implemented/ enhanced as part of HCH
4	Nov 2019 – Mar 2020	• Progress on initiatives implemented/ enhanced as part of HCH
5	Mar 2020 – May 2021	**Part A** • Assessment of initiatives implemented/ enhanced as part of HCH • Shared care planning • Patient engagement and activation • Chronic disease management • Assessment of training and support • Changes in staffing • Financial impacts of HCH • Impact of COVID-19 **Part B** • Self-assessment against dimension of the Patient Centred Medical Home using the HCH-A tool

Table 21 shows the response rates to the surveys and the characteristics of practices responding. Response rates were very high across all study strata in round 1 (88.6%) but reduced over the course of the evaluation.

Table 21: Response rates and characteristics of practices responding to survey requests

Study strata	Practice surveys n (response rate, calculated based on active practices)					
	Round 1 Part A	Round 1 Part B	Round 2	Round 4	Round 5 Part A	Round 5 Part B
1. Total practices at time of survey						
Responding to survey	164 (88.6%)	161 (87.0%)	105 (64.8%)	57 (46.3%)	74 (67.9%)	65 (59.6%)
Total practices	**185**		**162**	**123**	**109**	
2. Size (active practices only)[1]						
Large practice	35 (92.1%)	34 (89.5%)	18 (52.9%)	10 (50.0%)	14 (73.7%)	11 (57.9%)
Medium practice	31 (96.9%)	30 (93.8%)	25 (83.3%)	12 (44.4%)	15 (65.2%)	14 (60.9%)
Small practice	78 (83.0%)	77 (81.9%)	47 (61.0%)	30 (48.4%)	37 (66.1%)	32 (57.1%)
Sole practitioner	20 (95.2%)	20 (95.2%)	15 (71.4%)	5 (35.7%)	8 (72.7%)	8 (72.7%)
3. Ownership (active practices only)[2]						
AMS	21 (84.0%)	21 (84.0%)	10 (45.5%)	6 (35.3%)	4 (25.0%)	5 (31.2%)
Corporate	35 (89.7%)	35 (89.7%)	17 (54.8%)	5 (31.2%)	9 (64.3%)	7 (50.0%)
Independent	108 (89.3%)	105 (86.8%)	78 (71.6%)	46 (51.1%)	61 (77.2%)	53 (67.1%)
4. MMM (active practices only)[3]						
MMM 1	109 (92.4%)	109 (92.4%)	84 (79.2%)	43 (50.6%)	62 (79.5%)	52 (66.7%)
MMM 2	22 (75.9%)	20 (69.0%)	5 (20.0%)	2 (15.4%)	2 (25.0%)	2 (25.0%)
MMM 3	8 (88.9%)	7 (77.8%)	5 (83.3%)	3 (60.0%)	4 (100.0%)	4 (100.0%)
MMM 4 & 5	10 (90.9%)	9 (81.8%)	5 (71.4%)	3 (50.0%)	4 (66.7%)	4 (66.7%)
MMM 6 & 7	15 (83.3%)	16 (88.9%)	6 (33.3%)	6 (42.9%)	2 (15.4%)	3 (23.1%)

Notes: [1] Large practice defined as 8+ FTE GPs; Medium practice defined as 5 to 8 FTE GPs; Small practice defined as <5 FTE GPs. [2] Aboriginal Medical Service is used to refer to both Indigenous Health Services and ACCHS clinics. In this Table, all but one AMS is an ACCHS clinic; [3] MMM refers to the Modified Monash Model. It classifies metropolitan, regional, rural and remote areas according to both geographical remoteness and town size. It is intended to enhance the Australian Statistical Geographic Standard, Remoteness Areas (ASGS-RA) used by the Australian Bureau of Statistics (ABS). The classification has been adopted by several Government programs, including the General Practice Rural Incentives Programme (GPRIP). MMM 1 aligns fully with the ASGS-RA category of "Major cities". MMM 7 relates to the most remote areas.
Source: Department of Health database of practices and Practice surveys.

Of the 109 practices still participating in the trial on 31 April 2021, 100 had responded to the round 1 Part A survey (response rate of 91.7%), 78 to the round 2 survey (response rate of 71.6%), 54 to the round 4 survey (response rate of 49.5%), and 67 to the round 5 survey (response rate of 61.5%).

Tables derived from the responses to the practice surveys are provided in Appendix 8.

Practice self-assessment using HCH-A

Practices initially used the Health Care Homes Assessment (HCH-A) tool to assess the extent to which they operate as a HCH. The recommended approach for applying the tool is for individual practice staff to undertake the assessment separately, and then discuss results as a group to reach a consensus. This was not always the approach taken by practices, and this should be considered when interpreting the results presented here.

HCH-A results were received for 169 practices in round 1 of the evaluation and for 65 practices in round 5. Practices reported that 282 staff were involved in completing the assessment in round 5 (Table 135). Across the practices, 83 GPs participated in the assessment, 78 nurses, 52 reception/administration staff, 51 practice managers, 2 Aboriginal health practitioners and 12 allied health staff.

Figure 16 and Figure 17 show the distributions of the HCH-A scores on each of the questions in the HCH-A tool in round 1. For each question, scores are represented on a scale of 1 to 12. These are grouped into eight dimensions. Scores of 1 to 3 on any item reflect absent or minimal implementation of an element of the patient centred medical home. Scores of 10 to 12 reflect that most or all the critical aspects of the element are well established in the practice. Summaries of the scores for rounds 1 and 5 can be found in Appendix 9.

Overall, the median and mean self-assessment scores in round 1 were in the range of 6 to 9. These suggest that most practices believed they had many of the elements of a patient centred medical home in place when HCH started, but there were still opportunities for improvement.

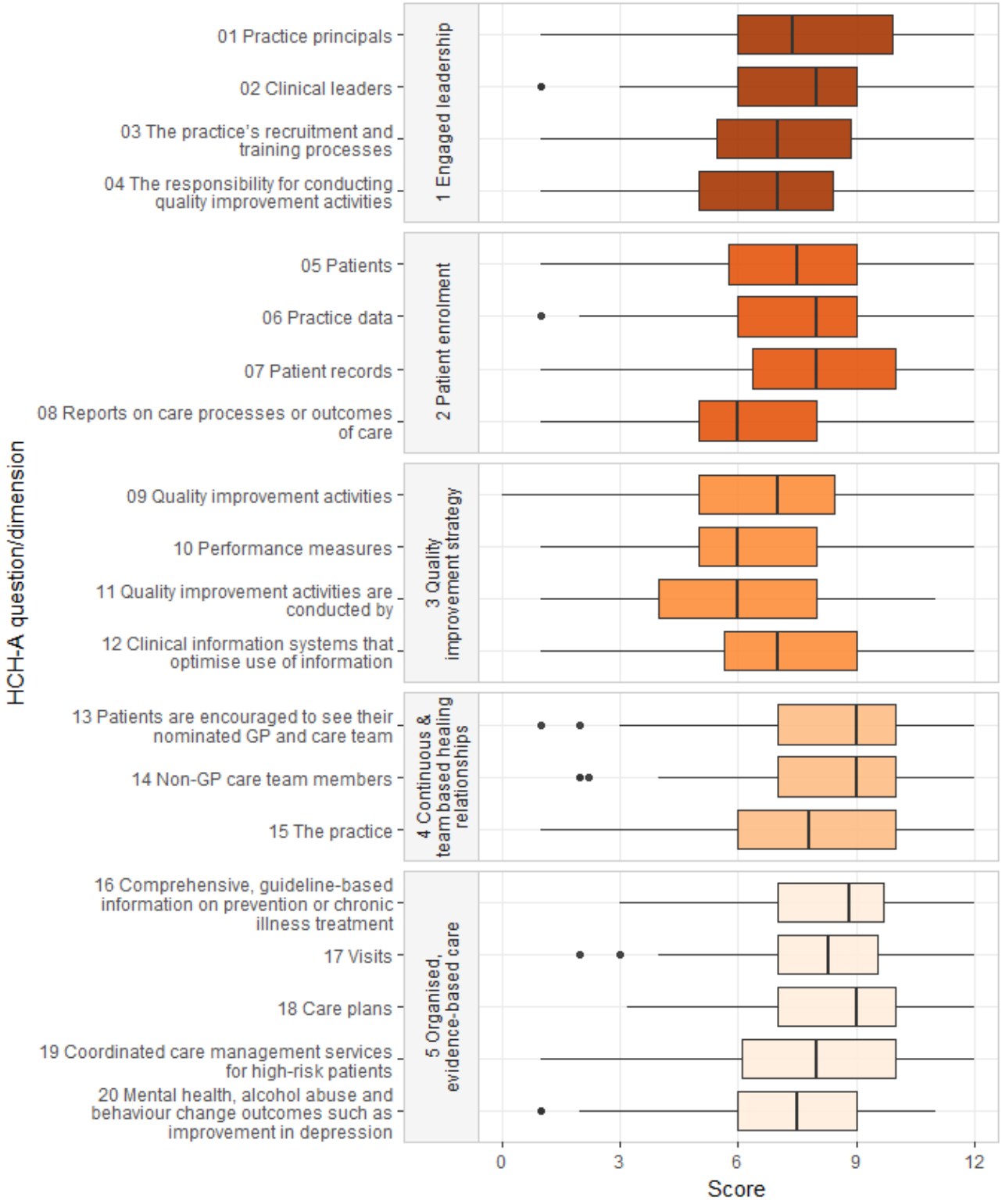
Change in scores between round 1 and round 5 were estimated using generalised linear mixed models with a random intercept term for practice. These models use all available data and provide unbiased estimates under the assumption that missing data is missing at random. Additional estimates of change were calculated using data from those practices that completed the HCH-A tool at both timepoints. The estimated change from round 1 to round 5 in this case is the mean of the observed change from each of the practices. This approach gives an unbiased estimate of change for those practices but inference to all practices assumes the unobserved values (that is, the non-responders) are missing completely at random. There was some improvement in scores from round 1 to round 5. The estimated change in scores when data from all practices who completed the HCH-A tool in round 1 and/or round 5 were included in the analysis (Table 137) was slightly greater than when data from those practices who completed the survey in both rounds were analysed (Table 138). The data are presented graphically in Figure 18 to Figure 25 with a separate figure for each subscale of the HCH-A. The 8 figures show the direction of change for each aspect within the subscale depicted by the figure. Practices are grouped by whether the change within the practice was a "Decrease", "No change", or an "Increase", and within the change component

of the figure there are arrows showing the starting location and change for each practice. There is substantial variation in scores between the two rounds, but the figures tend to show more practices scored themselves higher (compared with lower) in round 5 than in round 1.

An element of patient-centred care that practices generally assessed that they had only minimally implemented was "measurement of patient-centred interactions" (Dimension 6, item 26). For this element, 50% of practices scored themselves between 3 and 7 in round 1 (median = 5). Values between 4 and 6 represents that measurement of patient-centred interactions is "*accomplished through patient representation on boards and regularly soliciting patient input through surveys*". A high score on this item (10 to 12) "*is accomplished by getting regular and actionable input from patients and families on all care delivery issues, and incorporating their feedback in quality improvement activities*". Practices scored themselves 1.12 (95% CI 0.37 to 1.85) units higher on this element in round 5, but it was still scored lower on average than the other elements in the HCH-A tool (Table 137). This improvement was of a similar magnitude when the analysis was restricted to those practices that completed the tool in both the round 1 and the round 5 survey (0.98 (95% CI 0.03 to 1.94) (Table 138, Figure 23).

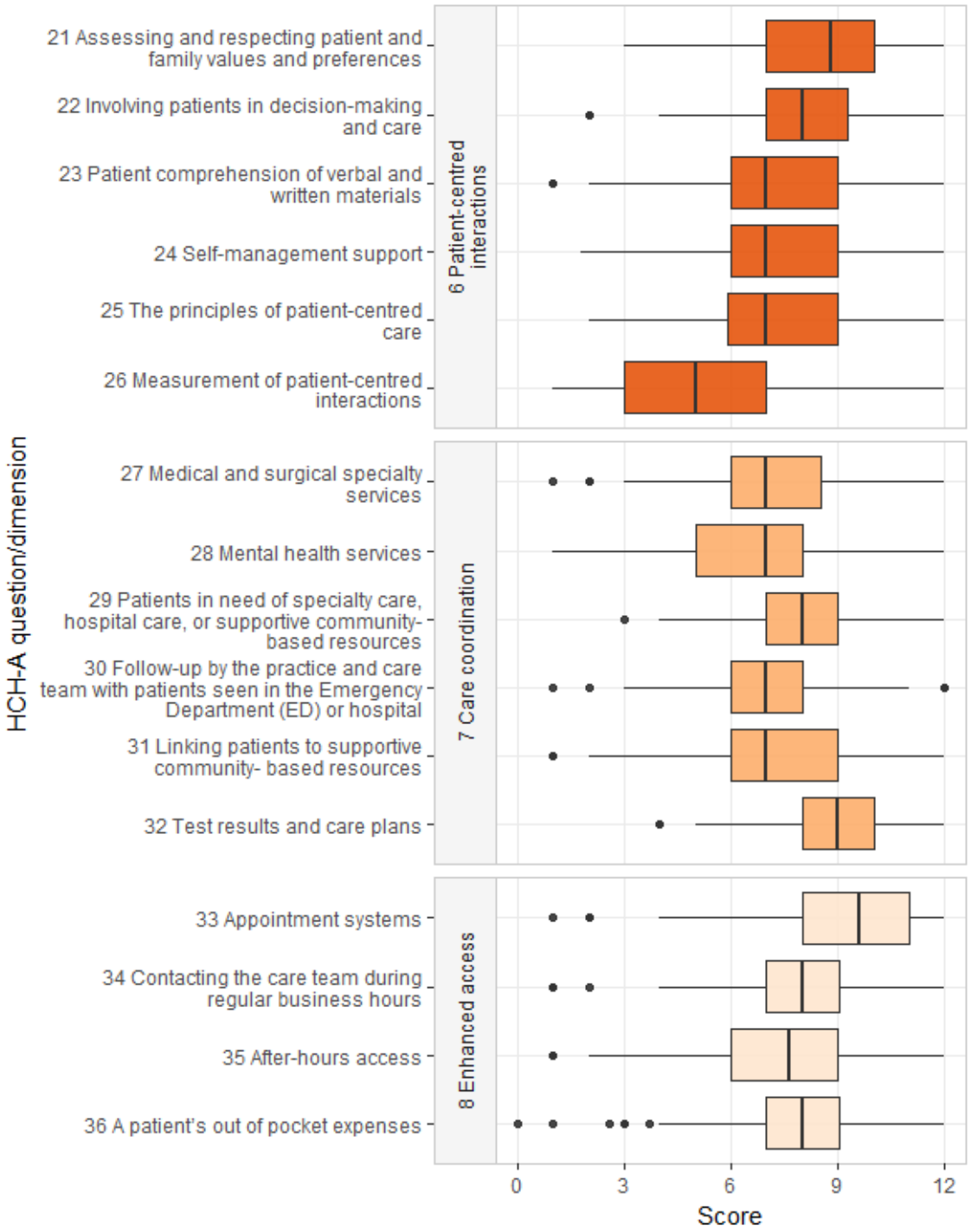
An element that practices generally assessed they had most of the critical aspects in place in round 1 was "Care plans" (Dimension 5: Organised, evidenced-based care, item 18). Many practices scored themselves between 7 and 9, which indicates that care plans "*are developed collaboratively with patients (and their families and carers where applicable), and include self-management and clinical goals, but they are not routinely recorded or used to guide subsequent care*". The goal for this item (scores 10 to 12) is that care plans "*are developed collaboratively, by the patient (and their families and carers where applicable) and care team to include self-management and clinical management goals are routinely recorded, and guide patient care in the practice and across the health care neighbourhood*". There was a non-significant improvement of 0.44 (95% CI -0.17 to 1.03) units on this element between round 1 and round 5 (0.36 (95% CI -0.39 to 1.12) for practices completing both rounds), with the median improving from 9 to 10.

Figure 16: Distribution of reported HCH-A scores: Dimensions 1 to 5



Notes: The box represents the range from the first quartile and the third quartile. This is where 50% of scores occurred. The vertical line crossing the middle of the box is the median score. The horizontal lines extending from the box (the "whiskers") show the values up to quartile 1 minus 1.5 times the interquartile range (to the left of the box) and the values up to quartile 3 plus 1.5 times the interquartile range (to the right of the box). Points outside these are often considered outliers. For more values for these distributions see Appendix 9.
Source: Practice survey R1 Dec 2017–Jul 2018.

Figure 17: Distribution of reported HCH-A scores: Dimensions 6 to 8



Notes: See notes in Figure 16 for interpretation of the box plots. For more values for these distributions see Appendix 9.

Source: Practice survey R1 Dec 2017–Jul 2018.

Staff surveys

Practice staff were surveyed in rounds 1 and 5. Table 22 provides details of staff responding to these surveys. Staff were asked to provide their views on various aspects of HCH in their practice but could choose not to answer questions that they felt they could not adequately assess.

Table 22: Response rates and characteristics of staff responding to survey requests

Study strata	Staff surveys (n)[1]		Practices from which staff surveys were received (n)[2]	
	Round 1	Round 5	Round 1	Round 5
1. Total				
Active practices	559	182	146	78
Withdrawn practices[3]	18	0	8	0
All practices	577	182	154	78
2. Size (active practices only)				
Large practice	123 (22.0%)	39 (21.4%)	31 (21.2%)	14 (17.9%)
Medium practice	129 (23.1%)	34 (18.7%)	27 (18.5%)	16 (20.5%)
Small practice	261 (46.7%)	92 (50.5%)	69 (47.3%)	39 (50.0%)
Sole practitioner	46 (8.2%)	17 (9.3%)	19 (13.0%)	9 (11.5%)
3. Ownership (active practices only)				
AMS	67 (12.0%)	21 (11.5%)	15 (10.3%)	5 (6.4%)
Corporate	101 (18.1%)	25 (13.7%)	30 (20.5%)	9 (11.5%)
Independent	391 (69.9%)	136 (74.7%)	101 (69.2%)	64 (82.1%)
4. MMM (active practices only)				
MMM 1	417 (74.6%)	132 (72.5%)	100 (68.5%)	63 (80.8%)
MMM 2	30 (5.4%)	5 (2.7%)	18 (12.3%)	4 (5.1%)
MMM 3	25 (4.5%)	12 (6.6%)	8 (5.5%)	4 (5.1%)
MMM 4 & 5	31 (5.5%)	15 (8.2%)	9 (6.2%)	4 (5.1%)
MMM 6 & 7	56 (10.0%)	18 (9.9%)	11 (7.5%)	3 (3.8%)

Notes: [1] Percentages are calculated using the denominator of the total number of surveys completed by staff at active practices; [2] Percentages are calculated using the denominator of the total number of active practices where at least one member of staff completed the survey; [3] Withdrawn as at 1 August 2018 for R1 and 1 April 2021 for R5. Source: Staff survey R1 Dec 2017–Jul 2018 and R5 Mar–May 2021.

Appendix 10 of this volume provides extensive details of the responses to the staff surveys. The results are presented in tables with summaries of staff responses to the round 5 survey, followed by a table with a longitudinal view of the data. The longitudinal analysis is generally a summary of the number and percentage of positive responses to a dichotomised version of the original response, followed by a p-value testing the null hypothesis of no change in the percentage of positive responses from round 1 to round 5. For example, Table 23 shows the results for the roles of the primary care team. The questions shown in the Table are preceded with, "The primary care team is …", and staff could respond with options on a five-point Likert scale from "Disagree (1)" to "Agree (5)" or they could respond "Don't know". These responses have been dichotomised with a positive response being "Agree or Somewhat agree". A statistical model fitted using generalised estimating equations, to control for the repeated measurements within practice at each timepoint and over time, is fit to the data to calculate the p-value. Models have been fit using all available data (that is, all responses to the round 1 and round 5 surveys) and separately using only the data for those practices that had

completed surveys in both rounds. Table 23 shows that the percentage of positive results increased for all three questions, regardless of which data were used, but there was only a statistically significant improvement (using both approaches) for the response to the question, "is characterised by collaboration and trust".

Table 23: Primary care team role

Percentage responding Agree or Somewhat agree	All responses			Responses by staff in practices responding to R1 & R5		
	R1	R5	Statistical significance of change from R1 to R5 (p-value)	R1	R5	Statistical significance of change from R1 to R5 (p-value)
… is made up of members with clearly defined roles, such as responsibility for patient self-management education, proactive follow up, and resource coordination	378 (89%)	172 (95%)	0.038	262 (91%)	148 (94%)	0.285
… is characterised by collaboration and trust	389 (92%)	176 (97%)	0.020	266 (93%)	153 (97%)	0.034
… works with patients to help them understand their roles and responsibilities in care	390 (92%)	173 (95%)	0.149	266 (93%)	151 (96%)	0.086

Source: Staff survey R1 Dec 2017–Jul 2018 and R5 Mar–May 2021, question 5.

In almost all tables there was an increase in positive responses from round 1 to round 5 (see Table 148, Table 151, Table 154, Table 160, Table 163, Table 166, Table 169, Table 172, Table 175, Table 178, Table 181, Table 194, Table 197, Table 200, Table 206, Table 216) but most were not statistically significant changes. The exceptions were responses to questions that assessed the extent to which the practice engaged the patient in their care (see Table 166 Table 169, Table 172 & Table 175).

6

Benchmark reports

Throughout the evaluation, benchmark reports were provided to practices and PHNs based on extracts from practice clinical management systems and program data from Services Australia. This chapter describes the reports.

Aims of the benchmark reports

The benchmark reports were initially proposed by the Evaluation Working Group (EWG) to help practices identify areas for improvement in their data, such as the completeness and quality of data collected. They were also provided to feedback data supplied for the evaluation.

The practice and PHN benchmark reports provided the following information:

- An assessment of completeness of practice data, including the recording of HCH enrolled patients.
- An indication of quality of care processes, that is, whether the practice had recorded key health measures (for example, smoking status, body height, body weight) and timeliness of patient examinations and tests (for example, blood pressure, pulse, lipids, kidney function, HbA1c).
- An understanding of the profile of HCH patients such as distribution of patient age, sex, risk tier, diagnoses, and recording of key health measures in the practice (or in the PHN) in comparison to HCH patients in other practices (or other PHNs).

Contents

PHNs were consulted on the draft design of the practice and PHN benchmark reports. In the round 4 surveys, both practices and PHNs were asked for feedback on the benchmark reports. Feedback provided is summarised in Volume 2.

Contents of the practice and PHN benchmark reports were derived from the HCH program data (obtained through Services Australia) and practice extracts, and were organised in three sections:

- Summary of background information and key findings
- Section 1: A profile of HCH enrolments derived from HPOS registration data
- Section 2: A profile of HCH patients based on the practice extracts.

In each report provided to practices, data were presented for the HCH patients in the practice, HCH patients in similar practices (that is, similar practice size and geographical remoteness), and HCH patients in all other HCH practices. The practice size was the number of full-time equivalent GPs working in the practice while the practice remoteness was defined

using the Monash Modified remoteness categories of the practice geographic location. A sample of practice benchmark reports is provided Appendix 11.

In the reports provided to PHNs, data were presented collectively for HCH practices within the PHN and in all other PHNs combined.

In Section 1, patient demographic characteristics (age and sex) and enrolment characteristics (date of enrolment and risk tier) were derived from HPOS registration data. The number of HCH enrolments, timing of enrolment and risk tier from HPOS registrations were then compared with findings from practice extracts (presented in Section 2). This aimed to inform the practice whether HCH patients had been accurately flagged in their local systems.

In Section 2, findings derived from practice extracts included recording of patient clinical measures (for example, smoking status, height, weight, blood pressure, cholesterol, HbA1c), and patient health conditions. Graphs showing trends in the practice's recording of blood pressure, pulse, cholesterol, kidney function and HbA1c were included in the reports in the round 4 (December 2018 to June 2020) and round 5 (July 2020 to December 2020).

Data analysis for each round of benchmark reports included patients who remained enrolled in the HCH trial (withdrawn patients were excluded), irrespective of whether patients visited the practice.

Delivery

Practice and PHN benchmark reports were distributed to practices and PHNs five times throughout the trial (Table 24).

Table 24: Dissemination of practice and PHN benchmark reports

Round of report and delivery time	Coverage	Included practices	Included PHNs
Round 1, March 2019[1]	February 2018 to December 2018	94	9
Round 2, September 2019[2]	February 2018 to June 2019	132	10
Round 3, April 2020[3]	June 2019 to December 2019	125	10
Round 4, October 2020[4,5]	January 2020 to June 2020	113[5]	10
Round 5, June 2021[5,6]	July 2020 to December 2020	106	10

Notes: [1] Practices participating in HCH as at 31 December 2018. Reports were not generated for practices or PHN where practice extracts were not available or there were too few enrolments for the report to be meaningful. [2] Practices participating in HCH as at 31 July 2019. [3] Practices participating in HCH as at 31 December 2019. [4] Practices participating in HCH as at 30 June 2020. [5] Three groups of 10 practices combined their practice extracts, for each group, a single report was generated presenting combined data. [6] Practices participating in HCH as at 31 December 2020.

7

Economic analysis technical notes

Data

The main economic analysis draws on linked administrative data for both HCH-enrolled patients and non-enrolled propensity score-matched comparator patients. This includes Medicare (MBS) and Pharmaceutical Benefits Scheme (PBS) claims data, hospital admissions and emergency department data. The administrative data was extracted in June 2021, spanning the period from July 2017 to June 2021.

Individual-level MBS claims data includes the type of service (for example, GP consultation), the provider fee charged, and the Medicare rebate paid, on every service delivered to patients. This data is used to examine changes in public Medicare expenditures, as well as fees charged and patient out-of-pocket costs (provider charge minus rebate paid). PBS claims data includes the cost to the PBS as well as to the patient for each script supplied. This data was used to assess changes in government PBS expenditures, as well as patient contributions to the cost of medicines.

Hospital admissions data was used to similarly examine the number and cost of admissions. The administrative data on state-level hospital admissions was linked to cost data as follows:

- Public patient admissions recorded using AR-DRG version 8.0 were mapped to total cost estimates from the NHCDC round 21 (2016–17).
- Public hospital admissions recorded using AR-DRG version 7.0 were mapped to cost estimates from the NHCDC round 18 (2013–14).
- Private patient admissions (in both private and public hospitals) were mapped to cost data from the HCP Annual Report (2018–19) using AR-DRG versions 7 and 8.
- Public patient cost estimates were indexed to 2019 dollars using the inflation rate for medical and hospital services (ABS cat.no6401).

Methods

For analysis of the administrative data, a graphical event study was undertaken first, comparing average outcomes between enrolled HCH patients ("treatment group"), and propensity score-matched comparator patients ("control group"). Control group patients were matched based on 12 months of data on health, socioeconomic, and healthcare use, and were assigned a placebo enrolment month and year. Consequently, we compare outcomes in the treatment and comparator groups in the 12 months before, and 24 months following the month of enrolment. We aggregate outcomes (for example, out-of-pocket costs)

in 6-monthly periods (for example, months 1–6, 7–12, etc where enrolment month = 1), and plot their change graphically relative to the 6-month period before enrolment. Outcomes associated with health care use in the month of enrolment is included in the first 6-month period post-enrolment. This approach is necessary because we do not observe exact dates of service use, but only the month and year of service.

Following the graphical event study, we implemented a difference-in-difference event-study regression model, again comparing outcomes between enrolled HCH patients ("treatment group") and propensity-score matched comparator patients ("control group"). The model provides a causal interpretation on the impact of the HCH trial on economic outcomes. Formally, the estimating equation is given by:

$$y_{it} = \alpha + \beta treat_i + \sum_{r\neq -1; r=-2}^{4} \gamma_r I_r + \sum_{r\neq -1; r=-2}^{4} \delta_r I_r treat_i + \varepsilon_{it} \quad (1)$$

Here, y_{it} denotes an outcome of interest, such as out-of-pocket costs and public expenditures associated with MBS, PBS and hospital use. The variable $treat_i$ denotes whether an individual was enrolled in the HCH trial; I_r denotes the time (in 6-month periods) relative to enrolment month, ranging from -1 that is, the period 12 to 6 months before enrolment) to 4 (that is, the period ranging from 18 to 24 months post-enrolment). The treatment effects, captured by parameters γ_r, represent the impact of the HCH trial on the outcomes for enrolled patients in each post-enrolment period (relative to the 6-month period pre-enrolment), compared with control group patients. The actual enrolment month was used for HCH treatment group patients, and a placebo enrolment month was assigned to control group patients during the matching process. The model does not include additional covariates due to the matching process which ensured balanced covariates between the treatment and control groups; indeed, the inclusion of further covariates had no impact on the magnitude or significance of our estimates. We estimate equation (1) using ordinary least squares and report standard errors clustered at the PHN level.

In addition to the linked administrative data, we also report on the staffing impacts of the HCH trial on GP practices, using separate data from practice surveys. A descriptive analysis is presented for the 67 practices who completed questions on staffing in both the round 1 and round 5 practice surveys, which were undertaken about October 2017 and March 2021 respectively.

Cohort analysis

The enrolment period was from October 2017 to July 2019. Potential enrolment cohort differences between early and later enrolees could bias our analysis, particularly if there were substantial differences in cohort characteristics such as patient complexity. We therefore undertook a preliminary cohort analysis, examining the following outcomes in the year before enrolment, by year of enrolment: number of GP visits, number of specialist visits, patient out-of-pocket costs, number of hospital admissions, and cost of hospital care. We evaluated differences between those enrolled in 2018 and 2019 (since only 3.8% of patients were enrolled in 2017), using a "normalised difference" measure.[50] Differences between any two groups are found to be significant if the normalised difference exceeds an absolute value of 0.25. As reported in Table 25, we found that these outcomes were statistically similar

[50] Imbens, G. W., & Wooldridge, J. M. (2009). Recent Developments in the Econometrics of Program Evaluation. *Journal of Economic Literature, 47*(1), 5-86.

between cohorts in the year before enrolment. In the analysis which follows, we have therefore combined data of all HCH-enrolled patients, without distinguishing enrolment cohort.

Table 25: Enrolment-year cohort differences

	2017	2018	2019	Normalised difference (2019 vs 2018)
n	438	7,499	3,395	
No. GP visits				
6–12 months pre-enrolment	5.9	6.0	5.4	0.08
6 months pre-enrolment	6.2	6.1	5.4	0.11
No. specialist visits				
6–12 months pre-enrolment	0.7	0.6	0.5	0.1
6 months pre-enrolment	0.6	0.6	0.4	0.1
Total OOP ($)^				
6–12 months pre-enrolment	212	236	201	0.03
6 months pre-enrolment	286	236	183	0.05
No. overnight hospital admissions*				
6–12 months pre-enrolment	0.7	0.8	0.7	0.06
6 months pre-enrolment	1.0	0.8	0.8	0.00
No. same-day admissions*				
6–12 months pre-enrolment	1.8	1.9	1.8	0.01
6 months pre-enrolment	2.5	1.9	1.8	0.01
Total cost of hospital care				
6–12 months pre-enrolment	16,549	13,978	13,200	0.03
6 months pre-enrolment	16,863	13,459	13,689	-0.01

*Notes: *Including patients with no admissions; ^includes bulk-billed patients.*

In addition to enrolment cohort differences, we also examined potential differences between patients who remained in the HCH trial, and those who withdrew or died. Table 26 shows that there was no significant difference between the two cohorts across a number of key health use and cost metrics in the year before enrolment. For those patients who withdrew or died, we analysed their service use data for completed 6-month periods only.

Table 26: Comparison of enrolled vs withdrawn patients

	Stayed enrolled	Withdrew or died	Normalised difference
n	7,241	3,439	-
%	67.8	32.2	
No. GP visits			
6–12 months pre-enrolment	5.6	6.5	0.14
6 months pre-enrolment	5.6	6.6	0.14
No. specialist visits			
6–12 months pre-enrolment	0.5	0.6	0.03
6 months pre-enrolment	0.6	0.6	0.01
Total OOP ($)^			
6–12 months pre-enrolment	228	244	0.01
6 months pre-enrolment	230	239	0.01
No. overnight hospital admissions*			
6–12 months pre-enrolment	0.7	0.7	0.04
6 months pre-enrolment	0.7	0.9	0.09
Cost of admissions			
6–12 months pre-enrolment	13,032	14,345	0.05
6 months pre-enrolment	12,178	15,268	0.13

*Notes: *Including patients with no admissions; ^includes bulk-billed patients.*

Appendix 1: HCH evaluation team and HCH Evaluation Working Group membership

Health Policy Analysis (HPA)

- Jim Pearse (HCH Evaluation director)
- Deniza Mazevska (HCH Project manager and Quality manager)
- Prof. Patrick McElduff
- Christine Stone
- Joel Tuccia
- Owen Cho
- Susan Mitchell
- Ben McElduff

Centre for Big Data Research in Health (CBDRH), University of NSW

- Prof. Louisa Jorm
- Prof. Sallie-Anne Pearson
- Dr Michael Falster
- Dr Duong (Danielle) Tran

Centre for Health Economics Research and Evaluation (CHERE), University of Technology

- Prof. Jane Hall
- Prof. Kees van Gool
- Dr Serena Yu
- Dr Maryam Naghsh Nejad
- Dr Michael Wright

Collaborating researchers, Australia

- Prof. James Dunbar, Deakin University
- Prof. Robyn McDermott, James Cook University
- Dr Tim Smyth, Consultant
- Dr Joanna Henryks, Consultant (Central Australia case study)
- Maddie Bower, Flinders University (Top End case study)

Expert advisors

- Dr Rebecca Rosen, Nuffield Trust London
- Dr Steve Sutch, Sutch Consulting International Ltd
- Dr Kathryn Mack McDonald, Stanford University

Social Research Centre, Australian National University

- Anna Lethborg
- Charles Dove

HCH Evaluation Working Group membership

Chair (Assistant Secretary, Primary Health and Palliative Care Branch, Australian Government Department of Health)	Currently Dr Bronwyn Morrish
Member (Practice Manager)	Ms Tracey Johnson
Member (Practice Research and Evaluation)	Dr Cameron Martin
Member (Academic)	Prof John Wakerman
Member (Consumer Rep)	Ms Jo Root
Member (Consumer Rep)	Ms Jan Donovan
Member (Researcher)	Dr Karen Gardner
Member (Indigenous)	Dr John Boffa
Member (Researcher)	Prof Mark Harris
Member (Pharmacy Guild)	Ms Marsha Gomez

Appendix 2: Health conditions in the predictive risk model vs derived in Pen CS extracts

Predictive risk model – Condition group	Predictive risk model – Individual condition	Derived in Pen CS extract[1]
Respiratory	Asthma	√
	Chronic obstructive pulmonary disease (COPD)	√
Atrial fibrillation	Atrial fibrillation	√
Cardiovascular	Coronary heart disease	√
	Stroke	√
	Transient ischaemic attack	
	Congestive heart failure	√
	Rheumatic heart disease	
Osteoarthritis	Osteoarthritis	√
Osteoporosis	Osteoporosis	√
Rheumatoid arthritis	Rheumatoid arthritis	
Mental health	Depression	√
	Anxiety	√
	Bipolar disorder	√
	Schizophrenia	√
	Dementia	√
	Learning difficulties	
Cancer	Cancer	Any cancer
Digestive	Crohn's disease	
	Ulcerative colitis	
	Coeliac disease	
	Steatorrhea	
	Malabsorption syndrome	
	Chronic liver disease	
	Pancreatitis	
Hypertension	Hypertension	√
Blood fats	Hyperlipidaemia	√
	Hypercholesterolaemia	
	Hypertriglyceridemia	
Chronic kidney	Chronic kidney disease	√
Diabetes type I	Diabetes type I	√
Diabetes type 2	Diabetes type 2	√
Venous thromboembolism	Venous thromboembolism	
Other	Falls	
	Epilepsy	

Notes: [1] A tick indicates that a health condition listed in the Predictive Risk Model was also derived by Pen CS extract and available for evaluation.

Appendix 3: Keywords to identify health conditions from practice extracts

Patient conditions	Textual descriptions
Asthma	Acute asthma, acute exacerbation of asthma, allergic asthma, asthma, asthma attack, asthmatic bronchitis, childhood asthma, chronic obstructive airway disease with asthma, cough variant asthma, eosinophilic asthma, exacerbation of asthma, exercise-induced asthma, hay fever with asthma, late onset asthma, occupational asthma, seasonal asthma, severe asthma, thunderstorm asthma, viral exacerbation of asthma.
COPD	Acute exacerbation of chronic obstructive airways disease, COPD, chronic lung disease, chronic obstructive airway disease with asthma, interstitial lung disease, pulmonary fibrosis, restrictive lung disease.
Atrial fibrillation	Atrial fibrillation, atrial fibrillation and flutter, chronic atrial fibrillation, controlled atrial fibrillation, non-rheumatic atrial fibrillation, paroxysmal atrial fibrillation, rapid atrial fibrillation.
Coronary heart disease	Acute ST segment elevation myocardial infarction, acute coronary syndrome, acute myocardial infarction, acute non-ST segment elevation myocardial infarction, angina, cardiac arrest, coronary angioplasty, coronary artery bypass graft, coronary artery bypass graft, myocardial infarction, percutaneous transluminal coronary angioplasty, prinzmetal angina, silent myocardial infarction, stable angina.
Stroke	Brain stem infarction, brainstem stroke syndrome, cerebral embolism, cerebral haemorrhage, cerebral infarction, cerebrovascular accident, embolic stroke, haemorrhagic cerebral infarction, intracranial haemorrhage, left sided cerebral hemisphere cerebrovascular accident, subarachnoid haemorrhage, subdural haemorrhage, thalamic infarction, thrombotic stroke.
Congestive heart failure	Biventricular congestive heart failure, chronic heart failure, congestive heart failure, diastolic heart failure, heart failure, heart failure with reduced ejection fraction, hypertensive heart failure, left ventricular diastolic dysfunction, right heart failure.
Osteoarthritis	Patellofemoral osteoarthritis, osteoarthritis.
Osteoporosis	Osteoporosis, osteoporosis due to corticosteroids, osteoporotic fracture, posttraumatic osteoporosis, postmenopausal osteoporosis.
Anxiety	Adjustment disorder with anxious mood, anxiety, anxiety attack, anxiety disorder, anxiety neurosis, anxious personality disorder, chronic anxiety, generalised anxiety disorder, mixed anxiety and depressive disorder, separation anxiety disorder of childhood, social phobia.
Depression	adjustment disorder with depressed mood, agitated depression, chronic depression, depressed mood, depression, endogenous depression, major depressive disorder, mixed anxiety and depressive disorder, recurrent

Patient conditions	Textual descriptions
	depression, severe depression, severe major depression with psychotic features, symptoms of depression.
Bipolar disorder	Bipolar, bipolar i disorder, bipolar ii disorder, bipolar disorder, schizoaffective disorder, bipolar type.
Schizophrenia	Catatonic schizophrenia, chronic paranoid schizophrenia, chronic schizophrenia, paranoid schizophrenia, psychotic disorder, schizoaffective disorder, schizophrenia.
Dementia	Dementia, dementia associated with alcoholism, dementia of frontal lobe type, frontotemporal dementia, senile dementia of the Lewy body type, senile dementia with psychosis multi-infarct dementia, vascular dementia.
High blood pressure	Antihypertensive therapy, diastolic hypertension, essential hypertension, hypertensive, malignant hypertension, ocular hypertension, portal hypertension, pulmonary hypertension, renal hypertension, renovascular hypertension, systolic hypertension.
High cholesterol	Cholesterol, dyslipidaemia, familial combined hyperlipidaemia, familial hypercholesterolaemia, hypercholesterolaemia, hyperlipidaemia, mixed hyperlipidaemia.
Diabetes type 1	Diabetes mellitus type 1
Diabetes type 2	Diabetes mellitus type 2
Chronic kidney disease	Anaemia of chronic renal failure, chronic kidney disease, chronic renal impairment, end stage renal disease, hypertensive renal disease, IGA nephropathy, medullary sponge kidney, renal dialysis, transplant of kidney
Cancer	Cancer, malignant, metastatic, carcino, leukaemia, neoplasm, neoplastic, lymphoma, melanoma, blastoma, mesothelioma, sarcoma, seminoma

Notes: [1] These keywords were searched in a field containing SNOMED-CT concept textual descriptions in POLAR extracts, a field containing textual description of patient diagnosis in Sonic extracts, and a free-text field containing description of diagnosis in MedicineInsight extracts. The search considered common spelling variations for example, diabetes type 2, diabetes type ii, NIDDM. The search did not include an unconfirmed diagnosis i.e. text descriptions contain terms such as "likely", "possible", "suspected", "investigation", a question mark, or other similar terminology.

Appendix 4: Keywords to identify medicine use and flu vaccine from practice extracts

Use of medication and flu vaccination	Keywords for medicine[1]
Medication for diabetes	Acarbose, alogliptin, canagliflozin, dapagliflozin, dulaglutide, empagliflozin, ertugliflozin, exanatide, glibenclamide, gliclazide, glimepiride, glipizide, glyburide, insulin, linagliptin, liraglutide, metformin, pioglitazone, repaglinide, rosiglitazone, saxagliptin, sitagliptin, vildagliptin
Antithrombotic agents	Abciximab, apixaban, aspirin, bivalirudin, clopidogrel, dabigatran, dalteparin, danaparoid, dipyridamole, enoxaparin, eptifibatide, fondaparinux, heparin, nadroparin, prasugrel, rivaroxaban, ticagrelo, ticlopidine, tirofiban, warfarin
Medications for cardiovascular disease	
Diuretics	Bumetanide, ethacrynic acid, frusemide, hydrochlorothiazide, hydrochlorothiazide amiloride, indapamide hemihydrate
Beta blockers	Atenolol, bisoprolol fumarate, carvedilol, esmolol hydrochloride, labetalol hydrochloride, metoprolol succinate, metoprolol tartrate, oxprenolol hydrochloride, pindolol, propranolol hydrochloride, sotalol
Calcium channel blockers	Amlodipine, atorvastatin, diltiazem hydrochloride, felodipine, lercanidipine hydrochloride, nifedipine, verapamil hydrochloride
Agents acting on the renin-angiotensin system	Candesartan cilexetil, captopril, enalapril, eprosartan mesylate, fosinopril sodium, irbesartan, lisinopril, losartan potassium, imesartan medoxomil, perindopril, perindopril arginine, quinapril, ramipril, telmisartan, trandolapril, valsartan
Lipid modifying agents	Atorvastatin, alirocumab, cerivastatin, cholestyramine, clofibrate, colestipol, evolocumab, ezetimibe, fenofibrate, fluvastatin, gemfibrozil, policosanol, pravastatin sodium, probucol, rosuvastatin, simvastatin
Medications for nervous system	
Analgesics- opioids	Buprenorphine, codein, hydromorphone, morphine, oxycodone, pentanyl, tapentadol, tramadol
Antidepressants	Carbamazepine, amitriptyline hydrochloride, citalopram, hydrobromide, clomipramine hydrochloride, desvenlafaxine, dothiepin hydrochloride, doxepin hydrochloride, duloxetine, escitalopram oxalate, fluoxetine hydrochloride, fluvoxamine maleate, imipramine hydrochloride, lithium carbonate, mianserin hydrochloride, mirtazapine, moclobemide, nortriptyline hydrochloride, paroxetine hydrochloride, phenelzine sulfate, reboxetine mesylate, tranylcypromine sulfate, trimipramine maleate

Use of medication and flu vaccination	Keywords for medicine[1]
Anti-anxiety	Clonazepam, alprazolam, bromazepam, clobazam, diazepam, flunitrazepam, lorazepam, midazolam, nitrazepam, oxazepam, temazepam, triazolam
Antipsychotics	Amisulpride, aripiprazole, asenapine, brexpiprazole, chlorpromazine hydrochloride, clozapine, clozapine, flupenthixol decanoate, haloperidol, haloperidol decanoate, levomepromazine, olanzapine, paliperidone, periciazine, quetiapine, risperidone, thioridazine, ziprasidone, zuclopenthixol decanoate
Stimulants	Atomoxetine hydrochloride, dexamphetamine sulfate, methylphenidate
Medications for respiratory system	Aclidinium, budesonide, eformoterol fumarate dihydrate, fluticasone, fluticasone propionate, glycopyrronium, indacaterol, salbutamol sulfate, salmeterol xinafoate, terbutaline sulfate, tiotropium, umeclinium
Influenza vaccine	Flu vaccine, influenza vaccine, agrippal, afluria quad, fluad, fluad quad, fluquadri, fluarix, luarix tetra, fluvax, fluvirin, fluzone high dose, influvac tetra, vaxigrip, vaxigrip tetra

Notes: [1] These keywords were searched in a field containing generic names of prescribed medicines in POLAR extracts, a field containing textual description of brand name of prescribed medicines in Sonic extract, a field containing brand names of prescribed medicines in MedicineInsight extracts.

Appendix 5: Changes to chronic disease management detailed tables

Changes in the quality of chronic illness care

Table 27: Recording of HbA1c among HCH and comparator patients with type 2 diabetes, derived from practice extracts

Pre-and post-enrolment period	HCH patients			Comparator patients			p-value[3]
	Total number[1]	Number[2]	Percentage (95%CI)	Total number [1]	Number[2]	Percentage (95%CI)	
Recording of HbA1c in the last 12 months							
Pre-enrolment	2,816	2,414	85.7% (84.4-87.0)	2,816	2,436	86.5% (85.2-87.8)	0.396
First year	2,722	2,282	83.8% (82.4-85.2)	2,722	2,155	79.2% (77.8-80.5)	<0.001
Second year	2,607	2,058	78.9% (77.3-80.5)	2,607	1,854	71.1% (69.6-72.6)	<0.001
Third year	381	274	71.9% (67.2-76.2)	381	260	68.2% (63.7-72.4)	0.268
Recording of HbA1c in the last six months							
Pre-enrolment	2,816	2,063	73.3% (71.6-74.9)	2,816	2,094	74.4% (72.7-76.0)	0.347
6 months	2,756	1,840	66.8% (65.0-68.5)	2,756	1,786	64.8% (63.1-66.5)	0.125
12 months	2,722	1,825	67.0% (65.3-68.8)	2,722	1,690	62.1% (60.4-63.8)	<0.001
18 months	2,679	1715	64.0% (62.2-65.8)	2,679	1529	57.1% (55.3-58.8)	<0.001
24 months	2,607	1,671	64.1% (62.2-65.9)	2,607	1,461	56.0% (54.3-57.8)	<0.001
30 months	1,679	1,001	59.6% (57.3-61.9)	1,679	912	54.3% (52.1-56.5)	0.002
36 months	381	218	57.2% (52.2-62.1)	381	200	52.5% (47.7-57.2)	0.190

Notes: [1] The total number of patients included in the analysis within each measurement period (i.e. denominator); those with the follow-up period shorter than the respective measurement period were not included. [2] Number of patients who had a test recorded (i.e. numerator). [3] Chi-square test for proportions, 1df.

Table 28: Having MBS claims for HbA1c tests among HCH and comparator patients with diabetes, derived from linked data

Pre-and post-enrolment period	HCH patients			Comparator patients			p-value[3]
	Total number[1]	Number[2]	Percentage (95%CI)	Total number[1]	Number[2]	Percentage (95%CI)	
Having MBS claims for HbA1c test in the last 12 months							
Pre-enrolment	3,193	1,732	54.2% (52.5-56.0)	3,193	1,716	53.7% (52.0-55.5)	0.687
First year	3,131	1,646	52.6% (50.8-54.3)	3,118	1,503	48.2% (46.5-49.9)	<0.001
Second year	3,058	1,534	50.2% (48.4-51.9)	3,019	1,365	45.2% (43.5-46.9)	<0.001
Third year	952	463	48.6% (45.5-51.8)	951	399	42.0% (39.0-44.9)	0.003
Having MBS claims for HbA1c test in the last six months							
Pre-enrolment	3,193	1,201	37.6% (35.9-39.3)	3,193	1,213	38.0% (36.3-39.7)	0.756
6 months	3,164	1,087	34.4% (32.7-36.0)	3,157	1,050	33.3% (31.7-34.9)	0.357
12 months	3,131	1,131	36.1% (34.5-37.8)	3,118	1,018	32.6% (31.1-34.3)	0.003
18 months	3,092	1,046	33.8% (32.2-35.5)	3,071	948	30.9% (29.3-32.5)	0.013
24 months	3,058	1,030	33.7% (32.0-35.4)	3,019	900	29.8% (28.3-31.4)	0.001
30 months	2,379	771	32.4% (30.6-34.3)	2,342	682	29.1% (27.4-31.0)	0.014
36 months	952	301	31.6% (28.7-34.6)	951	262	27.5% (24.9-30.4)	0.051

Notes: [1] The total number of patients included in the analysis within each measurement period (i.e. denominator); those with the follow-up period shorter than the respective measurement period were not included. [2] Number of patients who had one or more MBS claims (i.e. numerator). [3] Chi-square test for proportions, 1df.

Table 29: Recording of blood pressure among all HCH and comparator patients, derived from practice extracts

Pre-and post-enrolment period	HCH patients			Comparator patients			p-value[3]
	Total number[1]	Number[2]	Percentage (95%CI)	Total number[1]	Number[2]	Percentage (95%CI)	
Recording of blood pressure in the last 12 months							
Pre-enrolment	9,811	8,254	84.1% (83.4-84.8)	9,811	8,353	85.1% (84.4-85.9)	0.05
First year	9,433	7,940	84.2% (83.4-84.9)	9,433	7,259	77.0% (76.2-77.6)	<0.001
Second year	9,080	6,795	74.8% (73.9-75.7)	9,080	6,106	67.2% (66.4-68.1)	<0.001
Third year	1190	830	69.7% (67.1-72.3)	1190	782	65.7% (63.1-68.2)	0.035
Recording of blood pressure in the last six months							
Pre-enrolment	9,811	7,486	76.3% (75.5-77.1)	9,811	7,580	77.3% (76.4-78.1)	0.112
6 months	9,544	7,038	73.7% (72.9-74.6)	9,544	6,291	65.9% (65.1-66.7)	<0.001
12 months	9,433	6,505	69.0% (68.0-69.9)	9,433	5,932	62.9% (62.0-63.8)	<0.001
18 months	9,247	5,833	63.1% (62.1-64.1)	9,247	5,161	55.8% (54.9-56.7)	<0.001
24 months	9,080	5,432	59.8% (58.8-60.8)	9,080	4,793	52.8% (51.8-53.7)	<0.001
30 months	5,786	3,241	56.0% (54.7-57.3)	5,786	2,919	50.4% (49.2-51.7)	<0.001
36 months	1190	630	52.9% (50.1-55.8)	1190	640	53.8% (50.9-56.6)	0.681

Notes: [1] The total number of patients included in the analysis within each measurement period (i.e. denominator); those with the follow-up period shorter than the respective measurement period were not included. [2] Number of patients who had blood pressure recorded (i.e. numerator). [3] Chi-square test for proportions, 1df.

Table 30: Recording of blood pressure among HCH and comparator patients with type 2 diabetes, derived from practice extracts

Pre-and post-enrolment period	HCH patients			Comparator patients			p-value[3]
	Total number[1]	Number[2]	Percentage (95%CI)	Total number[1]	Number[2]	Percentage (95%CI)	
Recording of blood pressure in the last 12 months							
Pre-enrolment	2,816	2,527	89.7% (88.6-90.8)	2,816	2,559	90.9% (89.7-91.9)	0.149
First year	2,722	2,520	92.6% (91.5-93.5)	2,722	2,308	84.8% (83.8-85.7)	<0.001
Second year	2,607	2,217	85.0% (83.6-86.4)	2,607	1,951	74.8% (73.5-76.1)	<0.001
Third year	381	300	78.7% (74.4-82.6)	381	266	69.8% (65.8-73.5)	0.005
Recording of blood pressure in the last six months							
Pre-enrolment	2,816	2,378	84.4% (83.1-85.7)	2,816	2,410	85.6% (84.2-86.9)	0.232
6 months	2,756	2,305	83.6% (82.2-85.0)	2,756	2,082	75.5% (74.2-76.8)	<0.001
12 months	2,722	2,180	80.1% (78.5-81.5)	2,722	1,977	72.6% (71.2-74.0)	<0.001
18 months	2,679	1,989	74.2% (72.6-75.9)	2,679	1,699	63.4% (61.9-64.9)	<0.001
24 months	2,607	1,817	69.7% (67.9-71.4)	2,607	1,584	60.8% (59.1-62.4)	<0.001
30 months	1,679	1,139	67.8% (65.6-70.0)	1,679	1,029	61.3% (59.1-63.4)	<0.001
36 months	381	232	60.9% (55.9-65.7)	381	223	58.5% (53.7-63.2)	0.506

Notes: [1] The total number of patients included in the analysis within each measurement period (i.e. denominator); those with the follow-up period shorter than the respective measurement period were not included. [2] Number of patients who had blood pressure recorded (i.e. numerator). [3] Chi-square test for proportions, 1df.

Table 31: Recording of lipid tests among HCH and comparators patients, derived from practice extracts

Pre-and post-enrolment period	HCH patients			Comparator patients			p-value[3]
	Total number[1]	Number[2]	Percentage (95%CI)	Total number[1]	Number[2]	Percentage (95%CI)	
Recording of lipid tests in the last 12 months							
Pre-enrolment	9,811	7,408	75.5% (74.6-76.3)	9,811	7,473	76.2% (75.3-77.0)	0.278
First year	9,433	6,573	69.7% (68.7-70.6)	9,433	5,551	58.8% (58.0-59.7)	<0.001
Second year	9,080	5,688	62.6% (61.6-63.6)	9,080	5,073	55.9% (54.9-56.8)	<0.001
Third year	1,190	722	60.7% (57.9-63.4)	1,190	685	57.6% (54.8-60.2)	0.123
Recording of lipid tests in the last six months							
Pre-enrolment	9,811	5,558	56.7% (55.7-57.6)	9,811	5,658	57.7% (56.7-58.7)	0.149
6 months	9,544	4,590	48.1% (47.1-49.1)	9,544	3,721	39.0% (38.1-39.9)	<0.001
12 months	9,433	4,414	46.8% (45.8-47.8)	9,433	3,762	39.9% (39.0-40.8)	<0.001
18 months	9,247	4,009	43.4% (42.3-44.4)	9,247	3,424	37.0% (36.1-38.0)	<0.001
24 months	9,080	3,883	42.8% (41.7-43.8)	9,080	3,405	37.5% (36.6-38.5)	<0.001
30 months	5,786	2,257	39.0% (37.8-40.3)	5,786	2,019	34.9% (33.7-36.1)	<0.001
36 months	1,190	464	39.0% (36.3-41.8)	1,190	484	40.7% (37.9-43.5)	0.402

Notes: [1] The total number of patients included in the analysis within each measurement period (i.e. denominator); those with the follow-up period shorter than the respective measurement period were not included. [2] Number of patients who had a test recorded (i.e. numerator). [3] Chi-square test for proportions, 1df.

Table 32: Having MBS claims for lipid tests among HCH and comparator patients, derived from linked data

Pre-and post-enrolment period	HCH patients			Comparator patients			p-value[3]
	Total number[1]	Number[2]	Percentage (95%CI)	Total number[1]	Number[2]	Percentage (95%CI)	
Having MBS claims for lipid test in the last 12 months							
Pre-enrolment	10,682	2,658	24.9% (24.1-25.7)	10,682	2,598	24.3% (23.5-25.1)	0.341
First year	10,454	2,411	23.1% (22.3-23.9)	10,459	2,217	21.2% (20.4-22.0)	0.001
Second year	10,196	2,074	20.3% (19.6-21.1)	10,224	1,899	18.6% (17.8-19.3)	0.001
Third year	2,873	568	19.8% (18.4-21.3)	2,930	545	18.6% (17.2-20.0)	0.258
Having MBS claims for lipid test in the last six months							
Pre-enrolment	10,682	1,625	15.2% (14.5-15.9)	10,682	1,541	14.4% (13.8-15.1)	0.106
6 months	10,579	1,452	13.7% (13.1-14.4)	10,585	1,381	13.0% (12.4-13.7)	0.147
12 months	10,454	1,358	13.0% (12.4-13.6)	10,459	1,205	11.5% (10.9-12.1)	0.001
18 months	10,333	1,207	11.7% (11.1-12.3)	10,344	1,136	11.0% (10.4-11.6)	0.113
24 months	10,196	1,213	11.9% (11.3-12.5)	10,224	1,060	10.4% (9.8-11.0)	<0.001
30 months	7,588	878	11.6% (10.9-12.3)	7,616	823	10.8% (10.1-11.5)	0.135
36 months	2,873	334	11.6% (10.5-12.8)	2,930	309	10.5% (9.5-11.7)	0.190

Notes: [1] The total number of patients included in the analysis within each measurement period (i.e. denominator); those with the follow-up period shorter than the respective measurement period were not included. [2] Number of patients who had one or more MBS claims (i.e. numerator). [3] Chi-square test for proportions, 1df.

Table 33: Recording of kidney function tests among HCH and comparator patients with type 2 diabetes or cardiovascular disease, derived from practice extracts

Pre-and post-enrolment period	HCH patients			Comparator patients			p-value[3]
	Total number[1]	Number[2]	Percentage (95%CI)	Total number[1]	Number[2]	Percentage (95%CI)	
Recording of kidney function tests[4] in the last 12 months							
Pre-enrolment	6,811	6,044	88.7% (88.0-89.5)	6,811	6,048	88.8% (88.0-89.5)	0.913
First year	6,539	5,600	85.6% (84.8-86.5)	6,539	4,972	76.0% (75.2-76.8)	<0.001
Second year	6,313	4,989	79.0% (78.0-80.0)	6,313	4,389	69.5% (68.6-70.5)	<0.001
Third year	866	627	72.4% (69.3-75.3)	866	556	64.2% (61.3-66.9)	<0.001
Recording of kidney function tests[4] in the last six months							
Pre-enrolment	6,811	4,925	72.3% (71.2-73.4)	6,811	4,941	72.5% (71.5-73.6)	0.759
6 months	6,625	4,367	65.9% (64.8-67.0)	6,625	3,893	58.8% (57.7-59.8)	<0.001
12 months	6,539	4,265	65.2% (64.1-66.4)	6,539	3,722	56.9% (55.8-58.0)	<0.001
18 months	6,430	3,911	60.8% (59.6-62.0)	6,430	3,394	52.8% (51.7-53.9)	<0.001
24 months	6,313	3,838	60.8% (59.6-62.0)	6,313	3,385	53.6% (52.5-54.7)	<0.001
30 months	4,049	2,294	56.7% (55.1-58.2)	4,049	2,050	50.6% (49.2-52.1)	<0.001
36 months	866	461	53.2% (49.9-56.5)	866	425	49.1% (45.9-52.3)	0.084

Notes: [1] The total number of patients included in the analysis within each measurement period (i.e. denominator); those with the follow-up period shorter than the respective measurement period were not included. [2] Number of patients who had a test recorded (i.e. numerator). [3] Chi-square test for proportions, 1df. [4] Kidney function tests included estimated glomerular filtration rate (eGFR), creatinine and albumin-creatine ratio.

Table 34: Recording of eGFR tests among HCH and comparator patients with type 2 diabetes or cardiovascular disease, derived from practice extracts

Pre-and post-enrolment period	HCH patients			Comparator patients			p-value[3]
	Total number[1]	Number[2]	Percentage (95%CI)	Total number[1]	Number[2]	Percentage (95%CI)	
Recording of eGFR tests in the last 12 months							
Pre-enrolment	6,811	5,882	86.4% (85.5-87.2)	6,811	5,896	86.6% (85.7-87.4)	0.726
First year	6,539	5,506	84.2% (83.3-85.1)	6,539	4,833	73.9% (73.1-74.7)	<0.001
Second year	6,313	4,896	77.6% (76.5-78.6)	6,313	4,302	68.1% (67.2-69.1)	<0.001
Third year	866	618	71.4% (68.3-74.3)	866	545	62.9% (60.1-65.7)	<0.001
Recording of eGFR tests in the last six months							
Pre-enrolment	6,811	4,732	69.5% (68.4-70.6)	6,811	4,776	70.1% (69.0-71.2)	0.412
6 months	6,625	4,218	63.7% (62.5-64.8)	6,625	3,754	56.7% (55.6-57.8)	<0.001
12 months	6,539	4,147	63.4% (62.2-64.6)	6,539	3,598	55.0% (53.9-56.1)	<0.001
18 months	6,430	3,809	59.2% (58.0-60.4)	6,430	3,287	51.1% (50.0-52.2)	<0.001
24 months	6,313	3,673	58.2% (57.0-59.4)	6,313	3,301	52.3% (51.1-53.4)	<0.001
30 months	4,049	2,108	52.1% (50.5-53.6)	4,049	2,009	49.6% (48.1-51.1)	0.026
36 months	866	450	52.0% (48.6-55.3)	866	411	47.5% (44.3-50.6)	0.061

Notes: [1] The total number of patients included in the analysis within each measurement period (i.e. denominator); those with the follow-up period shorter than the respective measurement period were not included. [2] Number of patients who had a test recorded (i.e. numerator). [3] Chi-square test for proportions, 1df.

Table 35: Smoking status ever recorded in HCH patients, derived from practice extracts

Pre-and post-enrolment period	Total number[1]	Number[2]	Percentage (95%CI)
Pre-enrolment	9,811	7,631	77.8% (76.9-78.6)
6 months	9544	8286	86.8% (86.1-87.5)
12 months	9433	8751	92.8% (92.2-93.3)
18 months	9,247	8,794	95.1% (94.6-95.5)
24 months	9,080	8,730	96.1% (95.7-96.5)
30 months	5,786	5,603	96.8% (96.4-97.3)
36 months	1,190	1,171	98.4% (97.5-99.0)

Notes: [1] The total number of patients included in the analysis within each measurement period (i.e. denominator); those with the follow-up period shorter than the respective measurement period were not included. [2] Number of patients who had smoking status ever recorded (i.e. numerator).

Table 36: Body height ever recorded among HCH and comparator patients, derived from practice extracts

Pre-and post-enrolment period	HCH patients			Comparator patients			p-value[3]
	Total number[1]	Number[2]	Percentage (95%CI)	Total number[1]	Number[2]	Percentage (95%CI)	
Pre-enrolment	9,811	8329	84.9% (84.2-85.6)	9,811	8353	85.1% (84.4-85.8)	0.631
6 months	9,544	8,548	89.6% (88.9-90.2)	9,544	8,232	86.3% (85.6-86.8)	<0.001
12 months	9,433	8,560	90.7% (90.1-91.3)	9,433	8,229	87.2% (86.6-87.8)	<0.001
18 months	9,247	8,471	91.6% (91.0-92.2)	9,247	8,143	88.1% (87.5-88.6)	<0.001
24 months	9,080	8,367	92.1% (91.6-92.7)	9,080	8,055	88.7% (88.2-89.2)	<0.001
30 months	5,786	5,288	91.4% (90.6-92.1)	5,786	5,130	88.7% (87.9-89.3)	<0.001
36 months	1,190	1,111	93.4% (91.8-94.6)	1,190	1,079	90.7% (89.1-91.9)	0.016

Notes: [1] The total number of patients included in the analysis within each measurement period (i.e. denominator); those with the follow-up period shorter than the respective measurement period were not included. [2] Number of patients who had body height ever recorded (i.e. numerator). [3] Chi-square test for proportions, 1df.

Table 37: Recording of body weight among HCH and comparator patients, derived from practice extracts

Pre-and post-enrolment period	HCH patients			Comparator patients			p-value[3]
	Total number[1]	Number[2]	Percentage (95%CI)	Total number[1]	Number[2]	Percentage (95%CI)	
Recording of body weight in the last 12 months							
Pre-enrolment	9,811	7,282	74.2% (73.3-75.1)	9,811	7,296	74.4% (73.5-75.2)	0.819
First year	9,433	6,710	71.1% (70.2-72.0)	9,433	5,459	57.9% (57.0-58.7)	<0.001
Second year	9,080	5,652	62.2% (61.2-63.2)	9,080	4,436	48.9% (48.0-49.7)	<0.001
Third year	1,190	684	57.5% (54.7-60.3)	1,190	561	47.1% (44.6-49.7)	<0.001
Recording of body weight in the last six months							
Pre-enrolment	9,811	6,007	61.2% (60.3-62.2)	9,811	5,450	55.5% (54.6-56.5)	<0.001
6 months	9,544	5,050	52.9% (51.9-53.9)	9,544	4,009	42.0% (41.1-42.9)	<0.001
12 months	9,433	4,886	51.8% (50.8-52.8)	9,433	3,885	41.2% (40.3-42.1)	<0.001
18 months	9,247	4,251	46.0% (45.0-47.0)	9,247	3,209	34.7% (33.8-35.6)	<0.001
24 months	9,080	4,113	45.3% (44.3-46.3)	9,080	3,110	34.3% (33.4-35.1)	<0.001
30 months	5,786	2,469	42.7% (41.4-44.0)	5,786	1,846	31.9% (30.8-33.0)	<0.001
36 months	1,190	470	39.5% (36.8-42.3)	1,190	415	34.9% (32.3-37.5)	0.020

Notes: [1] The total number of patients included in the analysis within each measurement period (i.e. denominator); those with the follow-up period shorter than the respective measurement period were not included. [2] Number of patients who had body weight recorded (i.e. numerator). [3] Chi-square test for proportions, 1df.

Table 38: Recording of three CVD risk factors (age, cholesterol and blood pressure) among HCH and comparator patients, derived from practice extracts

Pre-and post-enrolment period	HCH patients			Comparator patients			p-value[3]
	Total number[1]	Number[2]	Percentage (95%CI)	Total number[1]	Number[2]	Percentage (95%CI)	
Recording of the three risk factors in the last 12 months							
Pre-enrolment	9,811	6,857	69.9% (69.0-70.8)	9,811	6,957	70.9% (70.0-71.8)	0.118
First year	9,433	6,141	65.1% (64.1-66.1)	9,433	5,182	54.9% (54.0-55.8)	<0.001
Second year	9,080	5,212	57.4% (56.4-58.4)	9,080	4,597	50.6% (49.7-51.6)	<0.001
Third year	1,190	636	53.4% (50.6-56.3)	1,190	613	51.5% (48.7-54.3)	0.345
Recording of the three risk factors in the last six months							
Pre-enrolment	9,811	4,897	49.9% (48.9-50.9)	9,811	5,053	51.5% (50.5-52.5)	0.026
6 months	9,544	3,984	41.7% (40.8-42.7)	9,544	3,230	33.8% (33.0-34.7)	<0.001
12 months	9,433	3,804	40.3% (39.3-41.3)	9,433	3,250	34.5% (33.5-35.4)	<0.001
18 months	9,247	3,298	35.7% (34.7-36.6)	9,247	2,824	30.5% (29.6-31.5)	<0.001
24 months	9,080	3,202	35.3% (34.3-36.3)	9,080	2,773	30.5% (29.6-31.5)	<0.001
30 months	5,786	1,861	32.2% (31.0-33.4)	5,786	1,639	28.3% (27.2-29.5)	<0.001
36 months	1,190	342	28.7% (26.2-31.4)	1,190	397	33.4% (30.6-36.2)	0.015

Notes: [1] The total number of patients included in the analysis within each measurement period (i.e. denominator); those with the follow-up period shorter than the respective measurement period were not included. [2] Number of patients who had all the three risk factors recorded (i.e. numerator). [3] Chi-square test for proportions, 1df.

Table 39: Immunisation against influenza among HCH and comparator patients, derived from practice extracts

Pre-and post-enrolment period	HCH patients			Comparator patients			p-value[3]
	Total number[1]	Number[2]	Percentage (95%CI)	Total number[1]	Number[2]	Percentage (95%CI)	
Influenza immunisation in the last 12 months							
Pre-enrolment	9,811	5,628	57.4% (56.4-58.3)	9,811	5,769	58.8% (57.8-59.8)	0.051
First year	9,433	6,241	66.2% (65.2-67.1)	9,433	5,221	55.3% (54.5-56.2)	<0.001
Second year	9,080	5,541	61.0% (60.0-62.0)	9,080	4,644	51.1% (50.2-52.1)	<0.001
Third year	1,190	662	55.6% (52.8-58.4)	1,190	615	51.7% (49.0-54.4)	0.053

Notes: [1] The total number of patients included in the analysis within each measurement period (i.e. denominator); those with the follow-up period shorter than the respective measurement period were not included. [2] Number of patients who had an influenza immunisation (i.e. numerator). [3] Chi-square test for proportions, 1df.

Table 40: Having MBS claims for development of a GP Management Plan among HCH and comparator patients, derived from linked data

Pre-and post-enrolment period	HCH patients			Comparator patients			p-value[3]
	Total number[1]	Number[2]	Percentage (95%CI)	Total number[1]	Number[2]	Percentage (95%CI)	
Having MBS claims for development of a GP Management Plan in the last 24 months							
Pre-enrolment	10,682	8,117	76.0% (75.2-76.8)	10,682	6,374	59.7% (58.9-60.4)	<0.001
First biennium	10,196	1,970	19.3% (18.6-20.1)	10,224	5,586	54.6% (53.3-55.9)	<0.001
Having MBS claims for development of a GP Management Plan in the last 12 months							
Pre-enrolment	10,682	5,961	55.8% (54.9-56.7)	10,682	4,396	41.2% (40.3-42.0)	<0.001
First year	10,454	898	8.6% (8.1-9.1)	10,459	3,863	36.9% (35.8-38.1)	<0.001
Second year	10,196	1,299	12.7% (12.1-13.4)	10,224	3,373	33.0% (32.0-34.0)	<0.001
Third year	2,873	497	17.3% (16.0-18.7)	2,930	893	30.5% (28.7-32.3)	<0.001

Notes: [1] The total number of patients included in the analysis within each measurement period (i.e. denominator); those with the follow-up period shorter than the respective measurement period were not included. [2] Number of patients who had a claim for MBS item 721 (i.e. numerator). [3] Chi-square test for proportions, 1df.

Table 41: Having MBS claims for Team Care Arrangement development among HCH and comparator patients, derived from linked data

Pre-and post-enrolment period	HCH patients			Comparator patients			p-value[3]
	Total number[1]	Number[2]	Percentage (95%CI)	Total number[1]	Number[2]	Percentage (95%CI)	
Having MBS claims for development of a Team Care Arrangement in the last 24 months							
Pre-enrolment	10,682	7,333	68.6% (67.8-69.5)	10,682	5,894	55.2% (54.4-56.0)	<0.001
First biennium	10,196	1,807	17.7% (17.0-18.5)	10,224	5,102	49.9% (48.7-51.1)	<0.001
Having MBS claims for development of a Team Care Arrangement in the last 12 months							
Pre-enrolment	10682	5,261	49.3% (48.3-50.2)	10,682	4,041	37.8% (37.0-38.7)	<0.001
First year	10,454	841	8.0% (7.5-8.6)	10,459	3,505	33.5% (32.5-34.6)	<0.001
Second year	10,196	1,171	11.5% (10.9-12.1)	10,224	3,057	29.9% (28.9-30.9)	<0.001
Third year	2,873	470	16.4% (15.1-17.8)	2,930	801	27.3% (25.6-29.1)	<0.001

Notes: [1] The total number of patients included in the analysis within each measurement period (i.e. denominator); those with the follow-up period shorter than the respective measurement period were not included. [2] Number of patients who had a claim for MBS item 723 (i.e. numerator). [3] Chi-square test for proportions, 1df.

Table 42: Having MBS claims for review of chronic disease management plans among HCH and comparator patients, derived from linked data

Pre-and post-enrolment period	HCH patients			Comparator patients			p-value[3]
	Total number[1]	Number[2]	Percentage (95%CI)	Total number[1]	Number[2]	Percentage (95%CI)	
Having MBS claims for review of chronic disease management plans in the last 24 months							
Pre-enrolment	10,682	6,186	57.9% (57.0-58.8)	10,682	4,298	40.2% (39.5-41.0)	<0.001
First biennium	10196	1,444	14.2% (13.5-14.9)	10,224	4,157	40.7% (39.5-41.8)	<0.001
Having MBS claims for review of chronic disease management plans in the last 12 months							
Pre-enrolment	10,682	4,793	44.9% (43.9-45.8)	10,682	3,342	31.3% (30.5-32.1)	<0.001
First year	10,454	807	7.7% (7.2-8.2)	10,459	3,229	30.9% (29.9-31.9)	<0.001
Second year	10,196	919	9.0% (8.5-9.6)	10,224	2,798	27.4% (26.4-28.3)	<0.001
Third year	2,873	403	14.0% (12.8-15.3)	2,930	765	26.1% (24.4-27.9)	<0.001

Notes: [1] The total number of patients included in the analysis within each measurement period (i.e. denominator); those with the follow-up period shorter than the respective measurement period were not included. [2] Number of patients who had a claim for MBS items 731, 732 and 729 (i.e. numerator). [3] Chi-square test for proportions, 1df.

Table 43: Having MBS claims for Health Assessment for Aboriginal and Torres Strait Islander People among HCH and comparator patients, derived from linked data

Pre-and post-enrolment period	HCH patients			Comparator patients			p-value[3]
	Total number[1]	Number[2]	Percentage (95%CI)	Total number[1]	Number[2]	Percentage (95%CI)	
Having MBS claims for Health Assessment in the last 24 months							
Pre-enrolment	10,682	996	9.3% (8.8-9.9)	10,682	577	5.4% (5.0-5.8)	<0.001
First biennium	10,196	859	8.4% (7.9-9.0)	10,224	509	5.0% (4.6-5.4)	<0.001
Having MBS claims for Health Assessment in the last 12 months							
Pre-enrolment	10,682	775	7.3% (6.8-7.8)	10,682	439	4.1% (3.8-4.5)	<0.001
First year	10,454	592	5.7% (5.2-6.1)	10,459	380	3.6% (3.3-4.0)	<0.001
Second year	10,196	604	5.9% (5.5-6.4)	10,224	322	3.1% (2.8-3.5)	<0.001
Third year	2873	40	1.4% (1.0-1.9)	2,930	46	1.6% (1.2-2.1)	0.575

Notes: [1] The total number of patients included in the analysis within each measurement period (i.e. denominator); those with the follow-up period shorter than the respective measurement period were not included. Note, Aboriginal and Torres Strait Islander people were unable to be identified within the data. [2] Number of patients who had a claim for MBS item 715 (i.e. numerator). [3] Chi-square test for proportions, 1df.

Table 44: Number of PBS dispensings in 12 months among HCH and comparator patients, derived from linked data

Pre-and post-enrolment period	HCH patients		Comparator patients		p-value[1]
	Number	Percentage (95%CI)	Number	Percentage (95%CI)	
Pre-enrolment					
Mean (std)	52.9	(43.7)	51.2	(44.2)	
Median (IQR)	45	(20-76)	43	(17-73)	
None	680	6.4% (6.0-6.9)	687	6.4% (6.0-6.9)	<0.001
1 to 9	947	8.9% (8.4-9.4)	1,101	10.3% (9.7-10.9)	
10 to 29	2,044	19.1% (18.4-19.9)	2,205	20.6% (19.9-21.4)	
30 to 59	3,081	28.8% (28-29.7)	2,933	27.5% (26.6-28.3)	
60 to 89	2,027	19.0% (18.3-19.8)	2,008	18.8% (18.1-19.5)	
90 or more	1,903	17.8% (17.1-18.5)	1,748	16.4% (15.7-17.1)	
Total[2]	10,682	100%	10,682	100%	
First year					
Mean (std)	53.9	(43.8)	51.6	(45.0)	
Median (IQR)	46	(21-77)	43	(17-73)	
None	670	6.4% (6.0-6.9)	702	6.7% (6.2-7.2)	<0.001
1 to 9	873	8.4% (7.9-8.9)	1,102	10.5% (10.0-11.1)	
10 to 29	1,925	18.4% (17.7-19.2)	2,079	19.9% (19.1-20.7)	
30 to 59	3,049	29.2% (28.4-30.1)	2,899	27.7% (26.9-28.6)	
60 to 89	2,039	19.5% (18.8-20.3)	1,924	18.4% (17.7-19.1)	
90 or more	1,898	18.2% (17.5-19.0)	1,753	16.8% (16.1-17.5)	
Total[2]	10,454	100%	10,459	100%	
Second year					
Mean (std)	53.4	(43.4)	50.9	(44.6)	
Median (IQR)	46	(20-77)	42	(16-74)	
None	690	6.8% (6.4-7.3)	740	7.2% (6.8-7.8)	<0.001
1 to 9	878	8.6% (8.1-9.2)	1,137	11.1% (10.5-11.8)	
10 to 29	1,821	17.9% (17.2-18.7)	2,001	19.6% (18.8-20.4)	
30 to 59	2,957	29% (28.2-29.9)	2,762	27.0% (26.2-27.9)	
60 to 89	2,051	20.1% (19.4-20.9)	1,871	18.3% (17.6-19.1)	
90 or more	1,799	17.6% (16.9-18.4)	1,713	16.8% (16.0-17.5)	
Total[2]	10,196	100%	10,224	100%	
Third year					
Mean (std)	57.1	(43.6)	55.9	(47.8)	
Median (IQR)	49	(26-79)	47	(21-79)	
None	85	3.0% (2.5-3.6)	116	4.0% (3.4-4.7)	<0.001
1 to 9	240	8.4% (7.5-9.4)	288	9.8% (8.8-11.0)	
10 to 29	497	17.3% (16.0-18.7)	562	19.2% (17.8-20.7)	
30 to 59	897	31.2% (29.6-32.9)	813	27.7% (26.2-29.3)	
60 to 89	607	21.1% (19.7-22.6)	591	20.2% (18.8-21.6)	
90 or more	547	19.0% (17.6-20.4)	560	19.1% (17.7-20.5)	
Total[2]	2,873	100%	2,930	100%	

Notes: [1] Chi-square test for proportions, 5df. [2] Patients with the follow-up period shorter than the respective measurement period were excluded.

Table 45: Number of unique medicines dispensed in three months among HCH and comparator patients, derived from linked data

Pre-and post-enrolment period	HCH patients		Comparator patients		p-value[1]
	Number	Percentage (95%CI)	Number	Percentage (95%CI)	
Pre-enrolment					
Mean (std)	5.9	(4.4)	5.7	(4.4)	
Median (IQR)	5	(3-8)	5	(2-8)	
None	1,141	10.7% (10.1-11.3)	1,123	10.5% (9.9-11.1)	0.064
1 to 4	3,530	33.0% (32.2-33.9)	3,672	34.4% (33.5-35.3)	
5 to 9	4,046	37.9% (37.0-38.8)	4,071	38.1% (37.2-39.0)	
10 to 14	1,496	14.0% (13.4-14.7)	1,383	12.9% (12.3-13.6)	
15 or more	469	4.4% (4.0-4.8)	433	4.1% (3.7-4.4)	
Total	10,682	100%	10,682	100%	
First year[2]					
Mean (std)	5.9	(4.5)	5.6	(4.6)	
Median (IQR)	5	(3-8)	5	(2-8)	
None	1,175	11.2% (10.6-11.9)	1,303	12.5% (11.8-13.1)	<0.001
1 to 4	3,332	31.9% (31.0-32.8)	3,589	34.3% (33.4-35.2)	
5 to 9	3,966	37.9% (37.0-38.9)	3,709	35.5% (34.6-36.4)	
10 to 14	1,490	14.3% (13.6-14.9)	1,363	13.0% (12.4-13.7)	
15 or more	491	4.7% (4.3-5.1)	495	4.7% (4.3-5.2)	
Total[3]	10,454	100%	10,459	100%	
Second year[2]					
Mean (std)	5.8	(4.4)	5.4	(4.4)	
Median (IQR)	5	(3-8)	5	(2-8)	
None	1,144	11.2% (10.6-11.8)	1,322	12.9% (12.3-13.6)	<0.001
1 to 4	3,381	33.2% (32.3-34.1)	3,558	34.8% (33.9-35.7)	
5 to 9	3,816	37.4% (36.5-38.4)	3,669	35.9% (35.0-36.8)	
10 to 14	1,444	14.2% (13.5-14.9)	1,278	12.5% (11.9-13.1)	
15 or more	411	4.0% (3.7-4.4)	397	3.9% (3.5-4.3)	
Total[3]	10,196	100%	10,224	100%	
Third year[2]					
Mean (std)	6.0	(4.3)	5.9	(4.4)	
Median (IQR)	5	(3-8)	5	(3-8)	
None	206	7.2% (6.3-8.2)	264	9.0% (8.0-10.1)	0.118
1 to 4	996	34.7% (32.9-36.4)	1,026	35.0% (33.3-36.8)	
5 to 9	1,127	39.2% (37.5-41.0)	1,103	37.6% (35.9-39.4)	
10 to 14	421	14.7% (13.4-16.0)	414	14.1% (12.9-15.4)	
15 or more	123	4.3% (3.6-5.1)	123	4.2% (3.5-5.0)	
Total[3]	2,873	100%	2,930	100%	

Notes: [1] Chi-square test for proportions, 4df. [2] The number of unique medicines dispensed in the last three months of the first year, second year or third year following enrolment. [3] Patients with the follow-up period shorter than the respective measurement period were excluded.

Table 46: Having MBS claims for medication management review among HCH and comparator patients, derived from linked data

Pre-and post-enrolment period	HCH patients			Comparator patients			p-value[3]
	Total number[1]	Number[2]	Percentage (95%CI)	Total number[1]	Number[2]	Percentage (95%CI)	
Having MBS claims for medication management review in the last 24 months							
Pre-enrolment	10,682	893	8.4% (7.8-8.9)	10,682	424	4.0% (3.6-4.3)	<0.001
First biennium	10,196	388	3.8% (3.5-4.2)	10,224	478	4.7% (4.3-5.1)	0.002
Having MBS claims for medication management review in the last 12 months							
Pre-enrolment	10,682	526	4.9% (4.5-5.4)	10,682	260	2.4% (2.2-2.7)	<0.001
First year	10,454	210	2.0% (1.8-2.3)	10,459	280	2.7% (2.4-3.0)	0.001
Second year	10,196	212	2.1% (1.8-2.4)	10,224	259	2.5% (2.2-2.9)	0.031
Third year	2,873	63	2.2% (1.7-2.8)	2,930	92	3.1% (2.6-3.8)	0.025

Notes: [1] The total number of patients included in the analysis within each measurement period (i.e. denominator); those with the follow-up period shorter than the respective measurement period were not included. [2] Number of patients who had a claim for MBS items 900 and 903 (i.e. numerator). [3] Chi-square test for proportions, 1df.

Changes in the use of primary care providers

Table 47: Number of GP encounters within the practice, among HCH and comparator patients, derived from practice extracts

Pre-and post-enrolment period	HCH patients		Comparator patients		p-value[1]
	Number	Percentage (95%CI)	Number	Percentage (95%CI)	
Pre-enrolment					
Mean (std)	13.4	(9.9)	13.3	(9.7)	
Median (IQR)	11	(7-18)	11	(7-17)	
None	70	0.8% (0.7-1.1)	45	0.5% (0.4-0.7)	0.162
1 to 4	1,208	14.5% (13.8-15.3)	1,184	14.2% (13.5-15.0)	
5 to 9	2,020	24.3% (23.4-25.2)	2,025	24.3% (23.4-25.3)	
10 to 14	1,973	23.7% (22.8-24.6)	2,044	24.6% (23.6-25.5)	
15 to 19	1,374	16.5% (15.7-17.3)	1,407	16.9% (16.1-17.7)	
20 to 24	758	9.1% (8.5-9.7)	706	8.5% (7.9-9.1)	
25 or more	919	11.0% (10.4-11.7)	911	10.9% (10.3-11.6)	
Total[2]	8,322	100%	8,322	100%	
First year					
Mean (std)	13.7	10.3	12	10.2	
Median (IQR)	12	(7-18)	10	(5-17)	
None	117	1.5% (1.2-1.8)	601	7.6% (7.0-8.2)	<0.001
1 to 4	1,089	13.7% (13.0-14.5)	1,209	15.2% (14.4-16.0)	
5 to 9	1,944	24.5% (23.5-25.4)	2,029	25.5% (24.6-26.5)	
10 to 14	1,792	22.5% (21.6-23.5)	1,598	20.1% (19.2-21.0)	
15 to 19	1,281	16.1% (15.3-16.9)	1,056	13.3% (12.6-14.0)	
20 to 24	743	9.3% (8.7-10.0)	625	7.9% (7.3-8.5)	
25 or more	984	12.4% (11.7-13.1)	832	10.5% (9.8-11.2)	
Total[2]	7,950	100%	7,950	100%	
Second year					
Mean (std)	13.7	12.5	11.5	10.7	
Median (IQR)	11	(5-19)	9	(3-17)	
None	604	7.8% (7.3-8.5)	1,170	15.2% (14.4-16.0)	<0.001
1 to 4	1,062	13.8% (13.0-14.6)	1,074	13.9% (13.2-14.7)	
5 to 9	1,652	21.4% (20.5-22.4)	1,684	21.9% (20.9-22.8)	
10 to 14	1,535	19.9% (19.0-20.8)	1,363	17.7% (16.9-18.5)	
15 to 19	1,047	13.6% (12.8-14.4)	977	12.7% (12.0-13.4)	
20 to 24	690	9.0% (8.3-9.6)	605	7.9% (7.3-8.5)	
25 or more	1,115	14.5% (13.7-15.3)	832	10.8% (10.1-11.5)	
Total[2]	7,705	100%	7,705	100%	
Third year					
Mean (std)	12	10	11.6	11.3	
Median (IQR)	10	(5-17)	9	(3-16)	
None	114	12.5% (10.5-14.8)	178	19.5% (17.0-22.3)	0.002
1 to 4	103	11.3% (9.4-13.5)	98	10.7% (8.9-12.9)	
5 to 9	203	22.3% (19.7-25.1)	184	20.2% (17.7-22.9)	

Pre-and post-enrolment period	HCH patients		Comparator patients		p-value[1]
	Number	Percentage (95%CI)	Number	Percentage (95%CI)	
10 to 14	181	19.8% (17.4-22.6)	167	18.3% (16.0-20.9)	
15 to 19	139	15.2% (13.1-17.7)	110	12.1% (10.1-14.3)	
20 to 24	79	8.7% (7.0-10.7)	68	7.5% (5.9-9.3)	
25 or more	93	10.2% (8.4-12.3)	107	11.7% (9.8-14.0)	
Total[2]	912	100%	912	100%	

Notes: [1] Chi-square test for proportions, 6df. [2] Patients with the follow-up period shorter than the respective measurement period were excluded.

Source: Data extracted from 106 HCH practices (Pen CS, POLAR) and 403 comparator practices (MedicineInsight).

Table 48: MBS claims for unreferred GP consultations, among HCH and comparator patients, derived from linked data

Pre-and post-enrolment period	HCH patients		Comparator patients		p-value[1]
	Number	Percentage (95%CI)	Number	Percentage (95%CI)	
Pre-enrolment					
Mean (std)	11.0	(8.2)	11.4	(8.4)	
Median (IQR)	9	(6-14)	10	(6-15)	
None	104	1.0% (0.8-1.2)	108	1.0% (0.8-1.2)	<0.001
1 to 3	1,190	11.1% (10.6-11.8)	1,257	11.8% (11.2-12.4)	
4 to 6	2,058	19.3% (18.5-20.0)	1,699	15.9% (15.2-16.6)	
7 to 9	2,149	20.1% (19.4-20.9)	2,134	20.0% (19.2-20.7)	
10 to 14	2,581	24.2% (23.4-25.0)	2,693	25.2% (24.4-26.0)	
15 or more	2,600	24.3% (23.5-25.2)	2,791	26.1% (25.3-27.0)	
Total	10,682	100%	10,682	100%	
First year					
Mean (std)	7.0	(7.0)	10.6	(8.5)	
Median (IQR)	5	(2-9)	9	(5-14)	
None	662	6.3% (5.9-6.8)	316	3.0% (2.7-3.4)	<0.001
1 to 3	3,013	28.8% (28.0-29.7)	1,399	13.4% (12.8-14.0)	
4 to 6	2,496	23.9% (23.1-24.7)	2,070	19.8% (19.1-20.5)	
7 to 9	1,706	16.3% (15.6-17.0)	1,895	18.1% (17.4-18.9)	
10 to 14	1,475	14.1% (13.5-14.8)	2,293	21.9% (21.1-22.8)	
15 or more	1,102	10.5% (10.0-11.1)	2,486	23.8% (22.9-24.7)	
Total[2]	10,454	100%	10,459	100%	
Second year					
Mean (std)	6.6	(6.7)	9.4	(8.0)	
Median (IQR)	5	(2-9)	8	(4-13)	
None	889	8.7% (8.2-9.3)	449	4.4% (4.0-4.8)	<0.001
1 to 3	3,029	29.7% (28.8-30.6)	1,697	16.6% (15.9-17.3)	
4 to 6	2,459	24.1% (23.3-25.0)	2,198	21.5% (20.7-22.3)	
7 to 9	1,508	14.8% (14.1-15.5)	1,928	18.9% (18.1-19.6)	
10 to 14	1,312	12.9% (12.2-13.5)	2,061	20.2% (19.4-21.0)	
15 or more	999	9.8% (9.2-10.4)	1,891	18.5% (17.7-19.3)	
Total[2]	10,196	100%	10,224	100%	
Third year					
Mean (std)	6.6	(6.3)	8.8	(8.1)	
Median (IQR)	5	(2-9)	7	(4-12)	
None	258	9.0% (8.0-10.1)	171	5.8% (5.1-6.7)	<0.001
1 to 3	809	28.2% (26.5-29.8)	528	18.0% (16.8-19.4)	
4 to 6	696	24.2% (22.7-25.8)	670	22.9% (21.4-24.4)	
7 to 9	433	15.1% (13.8-16.4)	524	17.9% (16.5-19.3)	
10 to 14	396	13.8% (12.6-15.1)	570	19.5% (18.0-21.0)	
15 or more	281	9.8% (8.7-10.9)	467	15.9% (14.6-17.4)	
Total[2]	2,873	100%	2,930	100%	

Notes: [1] Chi-square test for proportions, 5df. [2] Patients with the follow-up period shorter than the respective measurement period were excluded.

Source: MBS claims of items in Groups A1 & A2.

Table 49: Usual provider of care (UPC) index score[1] of continuity of care in MBS claims, among HCH and comparator patients, derived from linked data

Pre-and post-enrolment period	HCH patients		Comparator patients		p-value[2]
	Number	Percentage (95%CI)	Number	Percentage (95%CI)	
Pre-enrolment					
Low continuity	5,064	53.9% (52.9-54.9)	4,880	52.4% (51.4-53.4)	0.100
High continuity	2,799	29.8% (28.9-30.7)	2,869	30.8% (29.9-31.7)	
Perfect continuity	1,527	16.3% (15.5-17.0)	1,568	16.8% (16.1-17.6)	
Total	9,388	100%	9,317	100%	
First year					
Low continuity	4,078	60.2% (59.0-61.3)	4,442	50.8% (49.5-51.7)	<0.001
High continuity	1,806	26.6% (25.6-27.7)	2,678	30.6% (29.6-31.6)	
Perfect continuity	895	13.2% (12.4-14.0)	1,624	18.6% (17.7-19.4)	
Total[3]	6,779	100%	8,744	100%	
Second year					
Low continuity	3,643	58.0% (56.8-59.2)	3,979	49.3% (48.3-50.2)	<0.001
High continuity	1,727	27.5% (26.4-28.6)	2,493	30.9% (29.8-31.9)	
Perfect continuity	908	14.5% (13.6-15.4)	1,606	19.9% (19.0-20.8)	
Total[3]	6,278	100%	8,078	100%	
Third year					
Low continuity	1,027	56.9% (54.6-59.1)	1,062	47.6% (45.7-49.5)	<0.001
High continuity	486	26.9% (24.9-29.0)	692	31.0% (29.1-33.0)	
Perfect continuity	293	16.2% (14.6-18.0)	477	21.4% (19.7-23.2)	
Total[3]	1,806	100%	2.231	100%	

Notes: [1] UPC score was calculated for patients having four or more claims in the 12 months; Low continuity was defined as 0<UPC<0.75, high continuity was defined as 0.75≤UPC<1; perfect continuity was defined as UPC=1. [2] Chi-square test for proportions, 2df. [3] Patients with the follow-up period shorter than the respective measurement period were excluded.

Source: MBS claims of items in Groups A1 & A2.

Changes in the use of other health providers

Table 50: MBS claims for specialist consultations among HCH and comparator patients, derived from linked data

Pre-and post-enrolment period	HCH patients		Comparator patients		p-value[1]
	Number	Percentage (95%CI)	Number	Percentage (95%CI)	
Pre-enrolment					
Mean (std)	3.4	(6.8)	3.3	(6.6)	
Median (IQR)	1	(0-4)	1	(0-4)	
None	4,141	38.8% (37.9-39.7)	4,142	38.8% (37.9-39.7)	0.998
1 to 3	3,430	32.1% (31.2-33.0)	3,446	32.3% (31.4-33.2)	
4 to 6	1,509	14.1% (13.5-14.8)	1,505	14.1% (13.5-14.8)	
7 to 9	666	6.2% (5.8-6.7)	663	6.2% (5.8-6.7)	
10 or more	936	8.8% (8.3-9.3)	926	8.7% (8.2-9.2)	
Total[2]	10,682	100%	10,682	100%	
First year					
Mean (std)	3.4	(6.9)	3.2	(7.0)	
Median (IQR)	1	(0-4)	1	(0-4)	
None	3,983	38.1% (37.2-39.1)	4,208	40.2% (39.3-41.2)	0.002
1 to 3	3,422	32.7% (31.8-33.6)	3,394	32.5% (31.6-33.4)	
4 to 6	1,547	14.8% (14.2-15.5)	1,386	13.3% (12.6-13.9)	
7 to 9	630	6.0% (5.6-6.5)	656	6.3% (5.9-6.8)	
10 or more	872	8.3% (7.8-8.8)	815	7.8% (7.3-8.3)	
Total[2]	10,454	100%	10,459	100%	
Second year					
Mean (std)	2.9	(6.6)	2.8	(5.9)	
Median (IQR)	1	(0-3)	1	(0-3)	
None	4,237	41.6% (40.7-42.6)	4,369	42.7% (41.8-43.7)	0.394
1 to 3	3,484	34.2% (33.3-35.1)	3,398	33.2% (32.3-34.1)	
4 to 6	1,234	12.1% (11.5-12.7)	1,258	12.3% (11.7-12.9)	
7 to 9	573	5.6% (5.2-6.1)	547	5.4% (4.9-5.8)	
10 or more	668	6.6% (6.2-7.1)	652	6.4% (5.9-6.9)	
Total[2]	10,196	100%	10,224	100%	
Third year					
Mean (std)	2.8	(6.3)	2.8	(5.4)	
Median (IQR)	1	(0-3)	1	(0-3)	
None	1,147	39.9% (38.1-41.7)	1,254	42.8% (41.0-44.6)	0.003
1 to 3	1,065	37.1% (35.4-38.9)	949	32.4% (30.8-34)	
4 to 6	337	11.7% (10.6-13.0)	393	13.4% (12.2-14.6)	
7 to 9	154	5.4% (4.7-6.2)	148	5.1% (4.3-5.9)	
10 or more	170	5.9% (5.1-6.7)	186	6.3% (5.5-7.3)	
Total[2]	2,873	100%	2,930	100%	

Notes: [1] Chi-square test for proportions, 2df. [2] Number of patients included in analysis within each measurement period (i.e. denominator); those with the follow-up period shorter than the respective measurement period were excluded.

Source: MBS claims for items in Groups A3, A4, A8, A9, A12, A13, A16, A21, A24, A26, A28, A29, A31, A32, subgroup A15-02 (items 820 to 880) and subgroup T06-01.

Table 51: Number of encounters with practice nurses within the practice, among HCH patients only, derived from practice extracts

Pre-and post-enrolment period	HCH patients	
	Number	Percentage (95%CI)
Pre-enrolment		
None	6,787	81.6% (80.7-82.4)
1 to 4	1,170	14.1% (13.3-14.8)
5 or more	365	4.4% (4.0-4.8)
Total[2]	8,322	100%
6 months		
None	6,233	77.4% (76.5-78.3)
1 to 4	1,364	16.9% (16.1-17.8)
5 or more	458	5.7% (5.2-6.2)
Total[2]	8,055	100%
12 months		
None	6,172	77.6% (76.7-78.5)
1 to 4	1,329	16.7% (15.9-17.6)
5 or more	449	5.6% (5.2-6.2)
Total[2]	7,950	100%
18 months		
None	5,971	76.2% (75.3-77.2)
1 to 4	1,395	17.8% (17.0-18.7)
5 or more	465	5.9% (5.4-6.5)
Total[2]	7,831	100%
24 months		
None	5,983	77.7% (76.7-78.6)
1 to 4	1,258	16.3% (15.5-17.2)
5 or more	464	6.0% (5.5-6.6)
Total[2]	7,705	100%
30 months		
None	3,884	78.7% (77.5-79.8)
1 to 4	821	16.6% (15.6-17.7)
5 or more	233	4.7% (4.2-5.3)
Total[2]	4,938	100%

Notes: [1] Number of patients included in analysis within each measurement period (i.e. denominator); those with the follow-up period shorter than the respective measurement period were excluded.

Source: Data extracted from 106 HCH practices (Pen CS, POLAR).

Table 52: Encounters with podiatrists, dieticians and psychologists within the practice, among HCH patients only, derived from practice extracts

Pre-and post-enrolment period	Total number [1]	Number	Percentage (95%CI)
Podiatrist encounters in the last six months			
Pre-enrolment	8325	671	8.1% (7.5-8.7)
6 months	8058	777	9.6% (9.0-10.3)
12 months	7953	701	8.8% (8.2-9.5)
18 months	7834	636	8.1% (7.5-8.7)
24 months	7708	606	7.9% (7.3-8.5)
30 months	4941	366	7.4% (6.7-8.2)
Dietician encounters in the last six months			
Pre-enrolment	8,325	294	3.5% (3.2-3.9)
6 months	8,058	294	3.6% (3.3-4.1)
12 months	7,953	256	3.2% (2.9-3.6)
18 months	7,834	226	2.9% (2.5-3.3)
24 months	7,708	178	2.3% (2.0-2.7)
30 months	4,941	61	1.2% (1.0-1.6)
Psychologist encounters in the last six months			
Pre-enrolment	8,325	129	1.5% (1.3-1.8)
6 months	8,058	120	1.5% (1.2-1.8)
12 months	7,953	107	1.3% (1.1-1.6)
18 months	7,834	83	1.1% (0.9-1.3)
24 months	7,708	73	0.9% (0.8-1.2)
30 months	4,941	26	0.5% (0.4-0.8)

Notes: [1] Number of patients included in analysis within each measurement period (i.e. denominator); those with the follow-up period shorter than the respective measurement period were excluded.

Source: Data extracted from 106 HCH practices (Pen CS, POLAR).

Table 53: MBS claims for any allied health services, among HCH and comparator patients, derived from linked data

Pre-and post-enrolment anniversary	HCH patients		Comparator patients		p-value[1]
	Number	Percentage (95%CI)	Number	Percentage (95%CI)	
Pre-enrolment					
Mean (std)	2.1	(2.7)	2.0	(2.7)	
Median (IQR)	1	(0-4)	0	(0-3)	
None	5,326	49.9% (48.9-50.8)	5,524	51.7% (50.7-52.7)	0.007
1 or 2	1,487	13.9% (13.3-14.6)	1,528	14.3% (13.7-15.0)	
3 or 4	1,685	15.8% (15.1-16.5)	1,557	14.6% (13.9-15.3)	
5 or more	2,184	20.4% (19.7-21.2)	2,073	19.4% (18.7-20.2)	
Total[2]	10,682	100%	10,682	100%	
First year					
Mean (std)	2.3	(2.8)	1.8	(2.7)	
Median (IQR)	1	(0-4)	0	(0-4)	
None	4,537	43.4% (42.5-44.4)	5,912	56.5% (55.4-57.6)	<0.001
1 or 2	1,730	16.5% (15.8-17.3)	1,238	11.8% (11.2-12.5)	
3 or 4	1,770	16.9% (16.2-17.7)	1,381	13.2% (12.6-13.9)	
5 or more	2,417	23.1% (22.3-23.9)	1,928	18.4% (17.7-19.2)	
Total[2]	10,454	100%	10,459	100%	
Second year					
Mean (std)	1.9	(2.5)	1.6	(2.5)	
Median (IQR)	0	(0-4)	0	(0-3)	
None	5,146	50.5% (49.5-51.4)	6,040	59.1% (58.0-60.1)	<0.001
1 or 2	1,450	14.2% (13.6-14.9)	1,115	10.9% (10.3-11.5)	
3 or 4	1,634	16.0% (15.3-16.8)	1,308	12.8% (12.2-13.4)	
5 or more	1,966	19.3% (18.5-20.1)	1,761	17.2% (16.5-18.0)	
Total[2]	10,196	100%	10,224	100%	
Third year					
Mean (std)	2.0	(2.6)	1.7	(2.5)	
Median (IQR)	1	(0-4)	0	(0-4)	
None	1,410	49.1% (47.3-50.9)	1,718	58.6% (56.6-60.6)	<0.001
1 or 2	402	14.0% (12.8-15.3)	317	10.8% (9.8-12.0)	
3 or 4	474	16.5% (15.2-17.9)	408	13.9% (12.7-15.2)	
5 or more	587	20.4% (19.0-21.9)	487	16.6% (15.3-18.0)	
Total[2]	2,873	100%	2,930	100%	

Notes: [1] Chi-square test for proportions, 3df. [2] Number of patients included in analysis within each measurement period (i.e. denominator); those with the follow-up period shorter than the respective measurement period were excluded.

Source: MBS claims of items in Groups M3, M6, M7, M8, M9, M10, M11, M15.

Table 54: MBS claims for allied health services for chronic disease management, among HCH and comparator patients, derived from linked data

Pre-and post-enrolment anniversary	HCH patients		Comparator patients		p-value[1]
	Number	Percentage (95%CI)	Number	Percentage (95%CI)	
Pre-enrolment					
Mean (std)	1.7	(2.3)	1.5	(2.2)	
Median (IQR)	0	(0-4)	0	(0-3)	
None	5,689	53.3% (52.4-54.3)	6,202	58.1% (57.1-59.1)	<0.001
1 or 2	1,486	13.9% (13.3-14.6)	1,382	12.9% (12.3-13.5)	
3 or 4	1,653	15.5% (14.9-16.2)	1,468	13.7% (13.1-14.4)	
5 or more	1,854	17.4% (16.7-18.1)	1,630	15.3% (14.7-15.9)	
Total[2]	10,682	100%	10,682	100%	
First year					
Mean (std)	2.0	(2.4)	1.5	(2.2)	
Median (IQR)	1	(0-4)	0	(0-3)	
None	4,961	47.5% (46.6-48.5)	6,410	61.3% (60.2-62.4)	<0.001
1 or 2	1,686	16.1% (15.4-16.8)	1,120	10.7% (10.2-11.3)	
3 or 4	1,742	16.7% (16.0-17.4)	1,327	12.7% (12.1-13.3)	
5 or more	2,065	19.8% (19.1-20.6)	1,602	15.3% (14.7-16.0)	
Total[2]	10,454	100%	10,459	100%	
Second year					
Mean (std)	1.7	(2.2)	1.4	(2.1)	
Median (IQR)	0	(0-4)	0	(0-3)	
None	5,476	53.7% (52.8-54.7)	6,442	63.0% (62.0-64.1)	<0.001
1 or 2	1,402	13.8% (13.2-14.5)	1,031	10.1% (9.6-10.7)	
3 or 4	1,592	15.6% (14.9-16.3)	1,248	12.2% (11.6-12.8)	
5 or more	1,727	16.9% (16.2-17.6)	1,503	14.7% (14.1-15.4)	
Total[2]	10,196	100%	10,224	100%	
Third year					
Mean (std)	1.8	(2.3)	1.4	(2.1)	
Median (IQR)	0	(0-4)	0	(0-3)	
None	1,486	51.7% (49.9-53.6)	1,805	61.6% (60.6-62.6)	<0.001
1 or 2	391	13.6% (12.4-14.8)	300	10.2% (9.2-11.3)	
3 or 4	472	16.4% (15.1-17.7)	391	13.3% (12.2-14.5)	
5 or more	524	18.2% (16.9-19.6)	434	14.8% (13.6-16.1)	
Total[2]	2,873	100%	2,930	100%	

Notes: [1] Chi-square test for proportions, 3df. [2] Number of patients included in analysis within each measurement period (i.e. denominator); those with the follow-up period shorter than the respective measurement period were excluded.

Source: MBS claims of items 10950-10970; 81100- 81125.

Table 55: MBS claims for any pathology tests, among HCH and comparator patients, derived from linked data

Pre-and post-enrolment period	HCH patients		Comparator patients		p-value[1]
	Number	Percentage (95%CI)	Number	Percentage (95%CI)	
Pre-enrolment					
Mean (std)	11.0	(13.1)	10.9	(12.8)	
Median (IQR)	8	(4-13)	8	(4-13)	
None	714	6.7% (6.2-7.2)	703	6.6% (6.1-7.1)	0.766
1 to 3	1,573	14.7% (14.1-15.4)	1,533	14.4% (13.7-15.0)	
4 to 6	2,258	21.1% (20.4-21.9)	2,285	21.4% (20.6-22.2)	
7 to 9	1,948	18.2% (17.5-19.0)	1,996	18.7% (18.0-19.4)	
10 to 14	1,892	17.7% (17.0-18.4)	1,930	18.1% (17.3-18.8)	
15 or more	2,297	21.5% (20.7-22.3)	2,235	20.9% (20.2-21.7)	
Total[2]	10,682	100%	10,682	100%	
First year					
Mean (std)	10.6	(13.0)	10.2	(14.5)	
Median (IQR)	7	(4-13)	7	(3-12)	
None	808	7.7% (7.2-8.3)	1,078	10.3% (9.7-10.9)	<0.001
1 to 3	1,671	16.0% (15.3-16.7)	1,868	17.9% (17.1-18.6)	
4 to 6	2,313	22.1% (21.3-22.9)	2,210	21.1% (20.4-21.9)	
7 to 9	1,828	17.5% (16.8-18.2)	1,700	16.3% (15.6-17.0)	
10 to 14	1,705	16.3% (15.6-17.0)	1,545	14.8% (14.1-15.5)	
15 or more	2,129	20.4% (19.6-21.1)	2,058	19.7% (18.9-20.4)	
Total[2]	10,454	100%	10,459	100%	
Second year					
Mean (std)	10.6	(13.8)	9.9	(13.6)	
Median (IQR)	7	(4-13)	6	(3-12)	
None	820	8.0% (7.5-8.6)	1,075	10.5% (9.9-11.1)	<0.001
1 to 3	1,653	16.2% (15.5-16.9)	1,799	17.6% (16.9-18.4)	
4 to 6	2,148	21.1% (20.3-21.9)	2,254	22.0% (21.2-22.9)	
7 to 9	1,756	17.2% (16.5-18.0)	1,636	16.0% (15.3-16.7)	
10 to 14	1,773	17.4% (16.7-18.1)	1,587	15.5% (14.8-16.2)	
15 or more	2,046	20.1% (19.3-20.9)	1,873	18.3% (17.6-19.1)	
Total[2]	10,196	100%	10,224	100%	
Third year					
Mean (std)	10.6	(13.3)	10.1	(13.4)	
Median (IQR)	7	(4-13)	7	(3-12)	
None	207	7.2% (6.3-8.2)	319	10.9% (9.8-12.1)	<0.001
1 to 3	477	16.6% (15.3-18.0)	489	16.7% (15.4-18.1)	
4 to 6	631	22.0% (20.5-23.5)	634	21.6% (20.2-23.2)	
7 to 9	510	17.8% (16.4-19.2)	484	16.5% (15.2-17.9)	
10 to 14	475	16.5% (15.2-17.9)	437	14.9% (13.7-16.2)	
15 or more	573	19.9% (18.5-21.4)	567	19.4% (18.0-20.8)	
Total[2]	2,873	100%	2,930	100%	

Notes: [1] Chi-square test for proportions, 3df. [2] Number of patients included in analysis within each measurement period (i.e. denominator); those with the follow-up period shorter than the respective measurement period were excluded.

Source: MBS claims of items Groups P01 to P09.

Table 56: MBS claims for imaging services, among HCH and comparator patients, derived from linked data

Pre-and post-enrolment period	HCH patients		Comparator patients		p-value[1]
	Number	Percentage (95%CI)	Number	Percentage (95%CI)	
Pre-enrolment					
Mean (std)	2.6	(3.5)	2.6	(3.5)	
Median (IQR)	1	(0-4)	2	(0-4)	
None	3,521	33.0% (32.1-33.9)	3,451	32.3% (31.4-33.2)	0.649
1 to 3	4,280	40.1% (39.1-41.0)	4,352	40.7% (39.8-41.7)	
4 to 6	1,739	16.3% (15.6-17.0)	1,716	16.1% (15.4-16.8)	
7 or more	1,142	10.7% (10.2-11.3)	1,163	10.9% (10.3-11.5)	
Total[2]	10,682	100%	10,682	100%	
First year					
Mean (std)	2.6	(3.6)	2.5	(3.6)	
Median (IQR)	1	(0-4)	1	(0-4)	
None	3,527	33.7% (32.8-34.7)	3,682	35.2% (34.3-36.1)	0.013
1 to 3	4,068	38.9% (38.0-39.9)	4,105	39.2% (38.3-40.2)	
4 to 6	1,644	15.7% (15.0-16.4)	1,571	15.0% (14.4-15.7)	
7 or more	1,215	11.6% (11-12.2)	1,101	10.5% (10-11.1)	
Total[2]	10,454	100%	10,459	100%	
Second year					
Mean (std)	2.5	(3.6)	2.5	(3.4)	
Median (IQR)	1	(0-4)	1	(0-4)	
None	3,652	35.8% (34.9-36.8)	3,681	36.0% (35.1-36.9)	0.357
1 to 3	3,925	38.5% (37.6-39.4)	3,982	38.9% (38.0-39.9)	
4 to 6	1,522	14.9% (14.2-15.6)	1,539	15.1% (14.4-15.8)	
7 or more	1,097	10.8% (10.2-11.4)	1,022	10% (9.5-10.6)	
Total[2]	10,196	100%	10,224	100%	
Third year					
Mean (std)	2.5	(3.3)	2.6	(3.8)	
Median (IQR)	1	(0-4)	1	(0-4)	
None	967	33.7% (32.0-35.4)	1,010	34.5% (32.8-36.2)	0.461
1 to 3	1,148	40.0% (38.2-41.8)	1,157	39.5% (37.7-41.3)	
4 to 6	470	16.4% (15.1-17.8)	445	15.2% (13.9-16.5)	
7 or more	288	10% (9-11.1)	318	10.9% (9.8-12)	
Total[2]	2,873	100%	2,930	100%	

Notes: [1] Chi-square test for proportions, 3df. [2] Number of patients included in analysis within each measurement period (i.e. denominator); those with the follow-up period shorter than the respective anniversary were excluded.
Source: MBS claims of items in Groups I01 to I05.

Appendix 6: Changes in patient outcomes detailed tables

Changes in blood pressure, glycaemic control and renal function

Table 57: Blood pressure in HCH patients and comparators with type 2 diabetes who had blood pressure recorded, derived from practice data

Pre-and post-enrolment anniversary	HCH patients		Comparator patients		p-value[1]
	Number	Percentage (95%CI)	Number	Percentage (95%CI)	
Most recent blood pressure, measured in the last 12 months					
Pre-enrolment					
≤130/80 mmHg	1,017	40.2% (38.3-42.2)	1,005	39.3% (37.4-41.2)	0.479
>130/80 mmHg	1,510	59.8% (57.8-61.7)	1,554	60.7% (58.8-62.6)	
Total[2]	2,527	100%	2,559	100%	
First year					
≤130/80 mmHg	1,049	41.6% (39.7-43.6)	890	38.6% (36.6-40.5)	0.030
>130/80 mmHg	1,471	58.4% (56.4-60.3)	1,418	61.4% (59.4-63.5)	
Total[2]	2,520	100%	2,308	100%	
Second year					
≤130/80 mmHg	832	37.5% (35.5-39.6)	718	36.8% (34.7-39.0)	0.628
>130/80 mmHg	1,385	62.5% (60.4-64.5)	1,233	63.2% (61.0-65.3)	
Total[2]	2,217	100%	1,951	100%	
Third year					
≤130/80 mmHg	98	32.7% (27.6-38.2)	102	38.3% (32.5-44.6)	0.158
>130/80 mmHg	202	67.3% (61.8-72.4)	164	61.7% (56.1-66.9)	
Total[2]	300	100%	266	100%	
Most recent blood pressure, measured in the last six months					
Pre-enrolment					
≤130/80 mmHg	953	40.1% (38.1-42.1)	932	38.7% (36.8-40.6)	0.320
>130/80 mmHg	1,425	59.9% (57.9-61.9)	1,478	61.3% (59.3-63.3)	
Total[2]	2378	100%	2,410	100%	
6 months					
≤130/80 mmHg	913	39.6% (37.6-41.6)	811	39.0% (36.9-41.1)	0.657
>130/80 mmHg	1,392	60.4% (58.4-62.4)	1,271	61.0% (58.9-63.1)	
Total[2]	2,305	100%	2,082	100%	
12 months					
≤130/80 mmHg	897	41.1% (39.1-43.2)	758	38.3% (36.3-40.5)	0.065
>130/80 mmHg	1,283	58.9% (56.8-60.9)	1,219	61.7% (59.4-63.9)	
Total[2]	2,180	100%	1,977	100%	
18 months					
≤130/80 mmHg	711	35.7% (33.7-37.9)	656	38.6% (36.3-41.0)	0.073
>130/80 mmHg	1,278	64.3% (62.1-66.3)	1,043	61.4% (59.1-63.6)	

Pre-and post-enrolment anniversary	HCH patients		Comparator patients		p-value[1]
	Number	Percentage (95%CI)	Number	Percentage (95%CI)	
Total[2]	1,989	100%	1,699	100%	
24 months					
≤130/80 mmHg	683	37.6% (35.4-39.8)	574	36.2% (33.9-38.6)	0.415
>130/80 mmHg	1,134	62.4% (60.2-64.6)	1,010	63.8% (61.3-66.1)	
Total[2]	1,817	100%	1,584	100%	
30 months					
≤130/80 mmHg	396	34.8% (32.1-37.6)	370	36.0% (33.1-39.0)	0.563
>130/80 mmHg	743	65.2% (62.4-67.9)	659	64.0% (61.1-66.9)	
Total[2]	1,139	100%	1,029	100%	
36 months					
≤130/80 mmHg	82	35.3% (29.5-41.7)	85	38.1% (31.9-44.8)	0.540
>130/80 mmHg	150	64.7% (58.3-70.5)	138	61.9% (55.6-67.8)	
Total[2]	232	100%	223	100%	

Notes: [1] Chi-square test for proportions, 1df. [2] Diabetes patients with the follow-up period shorter than the respective measurement period and those without blood pressure measurement were excluded.

Table 58: HbA1c results in HCH patients and comparators with type 2 diabetes who had a HbA1c test recorded, derived from practice data

Pre-and post-enrolment anniversary	HCH patients		Comparator patients		p-value[1]
	Number	Percentage (95%CI)	Number	Percentage (95%CI)	
Most recent HbA1c, measured in the last 12 months					
Pre-enrolment					
HbA1c ≤7%	1,355	56.1% (54.1-58.1)	1,371	56.3% (54.3-58.2)	0.838
7% <HbA1c ≤8%	550	22.8% (21.2-24.5)	534	21.9% (20.3-23.6)	
8% <HbA1c <10%	366	15.2% (13.8-16.6)	376	15.4% (14.1-16.9)	
HbA1c ≥10%	143	5.9% (5.1-6.9)	155	6.4% (5.5-7.4)	
Total[2]	2414	100%	2436	100%	
First year					
HbA1c ≤7%	1,315	57.6% (55.6-59.6)	1,219	56.6% (54.5-58.6)	0.020
7% <HbA1c ≤8%	464	20.3% (18.7-22.0)	501	23.2% (21.5-25.1)	
8% <HbA1c <10%	353	15.5% (14.0-17.0)	329	15.3% (13.8-16.8)	
HbA1c ≥10%	150	6.6% (5.6-7.7)	106	4.9% (4.1-5.9)	
Total[2]	2282	100%	2155	100%	
Second year					
HbA1c ≤7%	1,051	51.1% (48.9-53.2)	984	53.1% (50.8-55.4)	<0.0001
7% <HbA1c ≤8%	497	24.1% (22.3-26.0)	449	24.2% (22.3-26.2)	
8% <HbA1c <10%	331	16.1% (14.6-17.7)	328	17.7% (16.0-19.5)	
HbA1c ≥10%	179	8.7% (7.6-10.0)	93	5.0% (4.1-6.1)	
Total[2]	2058	100%	1854	100%	
Most recent HbA1c, measured in the last six months					
Pre-enrolment					
HbA1c ≤7%	1,126	54.6% (52.4-56.7)	1,151	55.0% (52.8-57.1)	0.748
7% <HbA1c ≤8%	492	23.8% (22.1-25.7)	474	22.6% (20.9-24.5)	
8% <HbA1c <10%	323	15.7% (14.2-17.3)	334	16.0% (14.4-17.6)	

Pre-and post-enrolment anniversary	HCH patients		Comparator patients		p-value[1]
	Number	Percentage (95%CI)	Number	Percentage (95%CI)	
HbA1c ≥10%	122	5.9% (5.0-7.0)	135	6.4% (5.5-7.6)	
Total[2]	2063		2094	100%	
6 months					
HbA1c ≤7%	1,030	56.0% (53.7-58.2)	1,003	56.2% (53.8-58.4)	0.020
7% <HbA1c ≤8%	431	23.4% (21.5-25.4)	437	24.5% (22.5-26.5)	
8% <HbA1c <10%	255	13.9% (12.4-15.5)	267	14.9% (13.4-16.7)	
HbA1c ≥10%	124	6.7% (5.7-8.0)	79	4.4% (3.6-5.5)	
Total[2]	1840	100%	1786	100%	
12 months					
HbA1c ≤7%	1,024	56.1% (53.8-58.4)	928	54.9% (52.6-57.2)	0.013
7% <HbA1c ≤8%	383	21.0% (19.2-22.9)	418	24.7% (22.7-26.9)	
8% <HbA1c <10%	301	16.5% (14.9-18.3)	265	15.7% (14.0-17.5)	
HbA1c ≥10%	117	6.4% (5.4-7.6)	79	4.7% (3.8-5.8)	
Total[2]	1825	100%	1690	100%	
18 months					
HbA1c ≤7%	887	51.7% (49.4-54.1)	836	54.7% (52.1-57.2)	0.020
7% <HbA1c ≤8%	429	25.0% (23.0-27.1)	358	23.4% (21.4-25.6)	
8% <HbA1c <10%	273	15.9% (14.3-17.7)	267	17.5% (15.6-19.5)	
HbA1c ≥10%	126	7.3% (6.2-8.7)	68	4.4% (3.5-5.6)	
Total[2]	1715	100%	1529	100%	
24 months					
HbA1c ≤7%	826	49.4% (47.0-51.8)	750	51.3% (48.7-53.9)	<0.001
7% <HbA1c ≤8%	411	24.6% (22.6-26.7)	378	25.9% (23.7-28.2)	
8% <HbA1c <10%	285	17.1% (15.3-18.9)	260	17.8% (15.9-19.8)	
HbA1c ≥10%	149	8.9% (7.6-10.4)	73	5.0% (4.0-6.2)	
Total[2]	1671	100%	1461	100%	

Notes: [1] Chi-square test for proportions, 3df. [2] Diabetes patients with the follow-up period shorter than the respective measurement period and those without HbA1c measurement were excluded.

Table 59: eGFR results in HCH patients and comparators with type 2 diabetes or cardiovascular disease, derived from practice data

Pre-and post-enrolment anniversary	HCH patients		Comparator patients		p-value[1]
	Number	Percentage (95%CI)	Number	Percentage (95%CI)	
Most recent eGFR, measured in the last 12 months					
Pre-enrolment					
eGFR ≥ 90	857	14.6% (13.7-15.5)	817	13.9% (13.0-14.8)	0.020
60 ≤ eGFR <90	2,960	50.3% (49.0-51.6)	3,002	50.9% (49.6-52.2)	
45 ≤ eGFR <60	796	13.5% (12.7-14.4)	747	12.7% (11.8-13.5)	
30 ≤ eGFR <45	391	6.6% (6.0-7.3)	344	5.8% (5.3-6.5)	
15 ≤ eGFR <30	122	2.1% (1.7-2.5)	119	2.0% (1.7-2.4)	
eGFR <15	756	12.9% (12.0-13.7)	867	14.7% (13.8-15.6)	
Total[2]	5882	100%	5896	100%	
First year					
eGFR ≥ 90	785	14.3% (13.4-15.2)	754	15.6% (14.6-16.7)	<0.001
60 ≤ eGFR <90	2,751	50.0% (48.6-51.3)	2,359	48.8% (47.4-50.2)	
45 ≤ eGFR <60	805	14.6% (13.7-15.6)	674	13.9% (13.0-14.9)	
30 ≤ eGFR <45	387	7.0% (6.4-7.7)	374	7.7% (7.0-8.5)	
15 ≤ eGFR <30	148	2.7% (2.3-3.1)	203	4.2% (3.7-4.8)	
eGFR <15	630	11.4% (10.6-12.3)	469	9.7% (8.9-10.6)	
Total[2]	5506	100%	4833	100%	
Second year					
eGFR ≥ 90	643	13.1% (12.2-14.1)	675	15.7% (14.6-16.8)	<0.001
60 ≤ eGFR <90	2,425	49.5% (48.1-50.9)	2,101	48.8% (47.4-50.3)	
45 ≤ eGFR <60	745	15.2% (14.2-16.2)	663	15.4% (14.4-16.5)	
30 ≤ eGFR <45	372	7.6% (6.9-8.4)	326	7.6% (6.8-8.4)	
15 ≤ eGFR <30	150	3.1% (2.6-3.6)	179	4.2% (3.6-4.8)	
eGFR <15	561	11.5% (10.6-12.4)	358	8.3% (7.5-9.2)	
Total[2]	4896	100%	4302	100%	
Third year					
eGFR ≥ 90	68	11.0% (8.8-13.7)	82	15.0% (12.2-18.4)	0.177
60 ≤ eGFR <90	331	53.6% (49.6-57.5)	256	47.0% (43.1-50.9)	
45 ≤ eGFR <60	90	14.6% (12.0-17.6)	78	14.3% (11.6-17.5)	
30 ≤ eGFR <45	46	7.4% (5.6-9.8)	44	8.1% (6.1-10.7)	
15 ≤ eGFR <30	19	3.1% (2.0-4.8)	23	4.2% (2.8-6.3)	
eGFR <15	64	10.4% (8.2-13.0)	62	11.4% (9.0-14.3)	
Total[2]	618	100%	545	100%	
Most recent eGFR, measured in the last six months					
Pre-enrolment					
eGFR ≥ 90	652	13.8% (12.8-14.8)	622	13.0% (12.1-14.0)	0.119
60 ≤ eGFR <90	2,377	50.2% (48.8-51.7)	2,428	50.8% (49.4-52.3)	
45 ≤ eGFR <60	658	13.9% (12.9-14.9)	625	13.1% (12.2-14.1)	
30 ≤ eGFR <45	336	7.1% (6.4-7.9)	308	6.4% (5.8-7.2)	
15 ≤ eGFR <30	112	2.4% (2.0-2.8)	111	2.3% (1.9-2.8)	
eGFR <15	597	12.6% (11.7-13.6)	682	14.3% (13.3-15.3)	
Total[2]	4732	100%	4776	100%	
6 months					
eGFR ≥ 90	563	13.3% (12.4-14.4)	527	14.0% (13.0-15.2)	<0.001
60 ≤ eGFR <90	2,082	49.4% (47.9-50.9)	1,757	46.8% (45.3-48.4)	

Pre-and post-enrolment anniversary	HCH patients		Comparator patients		p-value[1]
	Number	Percentage (95%CI)	Number	Percentage (95%CI)	
45 ≤ eGFR <60	625	14.8% (13.8-15.9)	523	13.9% (12.9-15.1)	
30 ≤ eGFR <45	335	7.9% (7.2-8.8)	321	8.6% (7.7-9.5)	
15 ≤ eGFR <30	115	2.7% (2.3-3.3)	199	5.3% (4.6-6.1)	
eGFR <15	498	11.8% (10.9-12.8)	427	11.4% (10.4-12.4)	
Total[2]	4218	100%	3754	100%	
12 months					
eGFR ≥ 90	544	13.1% (12.1-14.2)	511	14.2% (13.1-15.4)	<0.001
60 ≤ eGFR <90	2,074	50.0% (48.5-51.5)	1,714	47.6% (46.0-49.2)	
45 ≤ eGFR <60	628	15.1% (14.1-16.3)	525	14.6% (13.5-15.8)	
30 ≤ eGFR <45	318	7.7% (6.9-8.5)	304	8.4% (7.6-9.4)	
15 ≤ eGFR <30	129	3.1% (2.6-3.7)	177	4.9% (4.3-5.7)	
eGFR <15	454	10.9% (10.0-11.9)	367	10.2% (9.3-11.2)	
Total[2]	4147	100%	3598	100%	
18 months					
eGFR ≥ 90	492	12.9% (11.9-14.0)	464	14.1% (13.0-15.4)	<0.001
60 ≤ eGFR <90	1,850	48.6% (47.0-50.2)	1,532	46.6% (44.9-48.3)	
45 ≤ eGFR <60	624	16.4% (15.2-17.6)	513	15.6% (14.4-16.9)	
30 ≤ eGFR <45	302	7.9% (7.1-8.8)	298	9.1% (8.1-10.1)	
15 ≤ eGFR <30	119	3.1% (2.6-3.7)	159	4.8% (4.1-5.6)	
eGFR <15	422	11.1% (10.1-12.1)	321	9.8% (8.8-10.8)	
Total[2]	3809	100%	3287	100%	
24 months					
eGFR ≥ 90	415	11.3% (10.3-12.4)	480	14.5% (13.4-15.8)	<0.001
60 ≤ eGFR <90	1,837	50.0% (48.4-51.6)	1,599	48.4% (46.8-50.1)	
45 ≤ eGFR <60	571	15.5% (14.4-16.8)	539	16.3% (15.1-17.6)	
30 ≤ eGFR <45	308	8.4% (7.5-9.3)	269	8.1% (7.3-9.1)	
15 ≤ eGFR <30	126	3.4% (2.9-4.1)	142	4.3% (3.7-5.1)	
eGFR <15	416	11.3% (10.3-12.4)	272	8.2% (7.4-9.2)	
Total[2]	3673	100%	3301	100%	
30 months					
eGFR ≥ 90	257	12.2% (10.9-13.7)	299	14.9% (13.4-16.5)	<0.001
60 ≤ eGFR <90	1,045	49.6% (47.4-51.7)	982	48.9% (46.7-51.1)	
45 ≤ eGFR <60	352	16.7% (15.2-18.4)	331	16.5% (14.9-18.2)	
30 ≤ eGFR <45	171	8.1% (7.0-9.4)	175	8.7% (7.6-10.0)	
15 ≤ eGFR <30	56	2.7% (2.1-3.4)	78	3.9% (3.1-4.8)	
eGFR <15	227	10.8% (9.5-12.2)	144	7.2% (6.1-8.4)	
Total[2]	2108	100%	2009	100%	
36 months					
eGFR ≥ 90	51	11.3% (8.7-14.6)	59	14.4% (11.2-18.1)	0.453
60 ≤ eGFR <90	233	51.8% (47.2-56.4)	186	45.3% (40.8-49.8)	
45 ≤ eGFR <60	67	14.9% (11.9-18.5)	65	15.8% (12.6-19.7)	
30 ≤ eGFR <45	38	8.4% (6.2-11.4)	38	9.2% (6.8-12.4)	
15 ≤ eGFR <30	13	2.9% (1.7-4.9)	17	4.1% (2.6-6.5)	
eGFR <15	48	10.7% (8.1-13.9)	46	11.2% (8.5-14.6)	
Total[2]	450	100%	411	100%	

Notes: [1] Chi-square test for proportions, 5df. [2] Patients with follow-up period shorter than the respective measurement period and those without eGFR measurement were excluded.

Changes in the use of hospital services

Changes in the use of hospital services were examined among patients living in five states: New South Wales, Victoria, Queensland, South Australia and Tasmania.

Table 60: Presentations at emergency departments among all HCH patients and comparators, derived from linked data

Pre-and post-enrolment anniversary	HCH patients		Comparator patients		p-value[1]
	Number	Percentage (95%CI)	Number	Percentage (95%CI)	
Pre-enrolment					
Mean (std)	0.6	(1.5)	0.5	(1.4)	
Median (IQR)	0	(0-1)	0	(0-1)	
None	6,577	72.1% (71.2-73.0)	6,515	71.4% (70.5-72.3)	0.157
One	1,457	16.0% (15.2-16.7)	1,554	17.0% (16.3-17.8)	
Two	559	6.1% (5.7-6.6)	566	6.2% (5.7-6.7)	
3 or more	527	5.8% (5.3-6.3)	485	5.3% (4.9-5.8)	
Total	9,120	100%	9,120	100%	
First year					
Mean (std)	0.6	(1.6)	0.5	(1.3)	
Median (IQR)	0	(0-1)	0	(0-1)	
None	6,446	72.2% (71.3-73.1)	6,540	73.3% (72.4-74.2)	0.099
One	1,411	15.8% (15.1-16.6)	1,356	15.2% (14.5-16.0)	
Two	507	5.7% (5.2-6.2)	530	5.9% (5.5-6.5)	
3 or more	561	6.3% (5.8-6.8)	496	5.6% (5.1-6.1)	
Total[2]	8,925	100%	8,922	100%	
Second year					
Mean (std)	0.5	(1.5)	0.6	(1.3)	
Median (IQR)	0	(0-1)	0	(0-1)	
None	1,994	74.0% (72.4-75.7)	1,954	72.1% (70.4-73.7)	0.200
One	414	15.4% (14.1-16.8)	428	15.8% (14.5-17.2)	
Two	143	5.3% (4.5-6.2)	151	5.6% (4.8-6.5)	
3 or more	142	5.3% (4.5-6.2)	177	6.5% (5.7-7.5)	
Total[2]	2,693	100%	2,710	100%	

Notes: Calculated for patients living in five states (NSW, Vic, Qld, SA and Tas). [1] *Chi-square test for proportions, 3df.*
[2] *Patients with the follow-up period shorter than the respective measurement period were excluded.*

Table 61: Presentations to emergency department among HCH and comparator attendants, derived from linked data

Pre-and post-enrolment anniversary	HCH patients	Comparator patients
Pre-enrolment		
Number of attended patients	2,543	2,605
Mean (std)	2.0 (2.2)	1.9 (2.0)
Median (IQR)	1 (1-2)	1 (1-2)
First year		
Number of attended patients	2,479	2,382
Mean (std)	2.1 (2.4)	2.0 (1.9)
Median (IQR)	1 (1-2)	1 (1-2)
Second year		
Number of attended patients	699	756
Mean (std)	2.0 (2.3)	2.0 (1.9)
Median (IQR)	1 (1-2)	1 (1-2)

Notes: Calculated for patients living in five states (NSW, Vic, Qld, SA and Tas).

Table 62: All-cause hospital admissions among all HCH patients and comparators, derived from linked data

Pre-and post-enrolment period	HCH patients		Comparator patients		p-value[1]
	Number	Percentage (95%CI)	Number	Percentage (95%CI)	
Pre-enrolment					
Mean (std)	0.5	(1.4)	0.5	(1.6)	
Median (IQR)	0	(0-1)	0	(0-1)	
None	6,639	72.8% (71.9-73.7)	6,620	72.6% (71.7-73.5)	0.835
One	1,493	16.4% (15.6-17.1)	1,516	16.6% (15.9-17.4)	
Two	536	5.9% (5.4-6.4)	516	5.7% (5.2-6.2)	
3 or more	452	5.0% (4.5-5.4)	468	5.1% (4.7-5.6)	
Total[2]	9,120	100%	9,120	100%	
First year					
Mean (std)	0.5	(1.4)	0.5	(1.6)	
Median (IQR)	0	(0-1)	0	(0-1)	
None	6,463	72.4% (71.5-73.3)	6,651	74.5% (73.6-75.5)	0.004
One	1,399	15.7% (14.9-16.4)	1,345	15.1% (14.4-15.8)	
Two	551	6.2% (5.7-6.7)	483	5.4% (5.0-5.9)	
3 or more	512	5.7% (5.3-6.2)	443	5.0% (4.5-5.4)	
Total[2]	8,925	100%	8,922	100%	
Second year					
Mean (std)	0.6	(1.8)	0.6	(2.0)	
Median (IQR)	0	(0-1)	0	(0-1)	
None	1,959	72.7% (71.0-74.4)	1,959	72.3% (70.6-73.9)	0.720
One	423	15.7% (14.4-17.1)	449	16.6% (15.2-18.0)	
Two	156	5.8% (5.0-6.7)	143	5.3% (4.5-6.2)	
3 or more	155	5.8% (4.9-6.7)	159	5.9% (5.0-6.8)	
Total[2]	2,693	100%	2,710	100%	

Notes: Calculated for patients living in five states (NSW, Vic, Qld, SA and Tas). [1] *Chi-square test for proportions, 3df.*
[2] *Patients with the follow-up period shorter than the respective measurement period were excluded.*

Table 63: Total number of bed-days for all-cause admissions, among all HCH patients and comparators, derived from linked data

Pre-and post-enrolment period	HCH patients		Comparator patients		p-value[1]
	Number	Percentage (95%CI)	Number	Percentage (95%CI)	
Pre-enrolment					
Mean (std)	2.2	(9.1)	2.1	(8.2)	
Median (IQR)	0	(0-1)	0	(0-1)	
No admission	6,639	72.8% (71.9-73.7)	6,620	72.6% (71.7-73.5)	0.749
1-9 days	1,956	21.4% (20.6-22.3)	1,994	21.9% (21.0-22.7)	
10-19 days	272	3.0% (2.7-3.4)	273	3.0% (2.7-3.4)	
20 days or more	253	2.8% (2.5-3.1)	233	2.6% (2.3-2.9)	
Total[2]	9,120	100%	9,120	100%	
First year					
Mean (std)	2.3	(9.5)	2.3	(10.8)	
Median (IQR)	0	(0-1)	0	(0-1)	
No admission	6,463	72.4% (71.5-73.3)	6,651	74.6% (73.6-75.5)	0.007
1-9 days	1,954	21.9% (21.0-22.8)	1,785	20.0% (19.2-20.8)	
10-19 days	236	2.6% (2.3-3.0)	242	2.7% (2.4-3.1)	
20 days or more	272	3.0% (2.7-3.4)	243	2.7% (2.4-3.1)	
Total[2]	8,925	100%	8,921	100%	
Second year					
Mean (std)	2.5	(10.9)	2.5	(10.4)	
Median (IQR)	0	(0-1)	0	(0-1)	
No admission	1,959	72.7% (71.0-74.4)	1,959	72.3% (70.6-73.9)	0.957
1-9 days	571	21.2% (19.7-22.8)	590	21.8% (20.3-23.4)	
10-19 days	75	2.8% (2.2-3.5)	76	2.8% (2.2-3.5)	
20 days or more	88	3.3% (2.7-4.0)	85	3.1% (2.5-3.9)	
Total[2]	2,693	100%	2,710	100%	

Notes: Calculated for patients living in five states (NSW, Vic, Qld, SA and Tas). [1] *Chi-square test for proportions, 3df.*
[2] *Patients with the follow-up period shorter than the respective measurement period were excluded.*

Table 64: Number of all-cause hospital admissions and total bed-days among admitted HCH patients and comparators, derived from linked data

Pre-and post-enrolment period	HCH patients			Comparator patients		
	Number of patients[1]	Mean (std)	Median (IQR)	Number of patients[1]	Mean (std)	Median (IQR)
Pre-enrolment						
All-cause admissions	2481	1.9 (2.0)	1 (1-2)	2500	1.9 (2.6)	1 (1-2)
Total bed-days		8.2 (16.1)	3 (1-8)		7.6 (14.3)	3 (1-8)
First year						
All-cause admissions	2462	2.0 (2.0)	1 (1-2)	2271	2.0 (2.6)	1 (1-2)
Total bed-days		8.3 (16.6)	3 (1-7)		8.9 (20.1)	2 (1-8)
Second year						
All-cause admissions	734	2.1 (2.9)	1 (1-2)	751	2.1 (3.3)	1 (1-2)
Total bed-days		9.1 (19.5)	2.5 (1-8)		9.0 (18.2)	2 (1-8)

Notes: Calculated for patients living in five states (NSW, Vic, Qld, SA and Tas). [1] Patients with the follow-up period shorter than the respective measurement period were excluded.

Table 65: Emergency hospital admissions among HCH patients and comparators, derived from linked data

Pre-and post-enrolment period	HCH patients		Comparator patients		p-value[1]
	Number	Percentage (95%CI)	Number	Percentage (95%CI)	
Pre-enrolment					
Mean (std)	0.3	(0.9)	0.3	(0.8)	
Median (IQR)	0	(0-0)	0	(0-0)	
None	7,455	81.7% (80.9-82.5)	7,456	81.8% (80.9-82.5)	0.171
One	1,078	11.8% (11.2-12.5)	1,101	12.1% (11.4-12.8)	
Two	334	3.7% (3.3-4.1)	354	3.9% (3.5-4.3)	
3 or more	253	2.8% (2.5-3.1)	209	2.3% (2.0-2.6)	
Total[2]	9,120	100%	9,120	100%	
First year					
Mean (std)	0.3	(0.9)	0.3	(0.8)	
Median (IQR)	0	(0-0)	0	(0-0)	
None	7,310	81.9% (81.1-82.7)	7,437	83.4% (82.5-84.1)	0.010
One	998	11.2% (10.5-11.9)	972	10.9% (10.3-11.6)	
Two	352	3.9% (3.6-4.4)	285	3.2% (2.9-3.6)	
3 or more	265	3.0% (2.6-3.3)	228	2.6% (2.2-2.9)	
Total[2]	8,925	100%	8,922	100%	
Second year					
Mean (std)	0.3	(0.9)	0.3	(0.8)	
Median (IQR)	0	(0-0)	0	(0-0)	
None	2,234	83.0% (81.5-84.3)	2,204	81.3% (79.9-82.7)	0.330
One	279	10.4% (9.3-11.6)	318	11.7% (10.6-13.0)	
Two	97	3.6% (3.0-4.4)	94	3.5% (2.8-4.2)	
3 or more	83	3.1% (2.5-3.8)	94	3.5% (2.8-4.2)	
Total[2]	2,693	100%	2,710	100%	

Notes: Calculated for patients living in five states (NSW, Vic, Qld, SA and Tas). [1] *Chi-square test for proportions, 3df.*
[2] *Patients with the follow-up period shorter than the respective measurement period were excluded.*

Table 66: Total number of bed-days for emergency admissions, among all HCH patients and comparators, derived from linked data

Pre-and post-enrolment period	HCH patients		Comparator patients		p-value[1]
	Number	Percentage (95%CI)	Number	Percentage (95%CI)	
Pre-enrolment					
Mean (std)	1.7	(7.9)	1.5	(6.8)	
Median (IQR)	0	(0-0)	0	(0-0)	
No admission	7,455	81.7% (80.9-82.5)	7,456	81.8% (80.9-82.5)	0.989
1 or 2 days	721	7.9% (7.4-8.5)	721	7.9% (7.4-8.5)	
3 days or more	941	10.3% (9.7-11.0)	935	10.3% (9.6-10.9)	
Total[2]	9,117	100%	9,120	100%	
First year					
Mean (std)	1.7	(8.2)	1.6	(9.2)	
Median (IQR)	0	(0-0)	0	(0-0)	
No admission	7,310	81.9% (81.1-82.7)	7,437	83.4% (82.5-84.1)	0.019
1 or 2 days	683	7.7% (7.1-8.2)	659	7.4% (6.9-7.9)	
3 days or more	928	10.4% (9.8-11.0)	822	9.2% (8.6-9.8)	
Total[2]	8,921	100%	8,918	100%	
Second year					
Mean (std)	1.8	(9.8)	1.7	(8.0)	
Median (IQR)	0	(0-0)	0	(0-0)	
No admission	2,234	83.0% (81.5-84.3)	2,204	81.3% (79.9-82.7)	0.029
1 or 2 days	180	67.% (5.8-7.7)	233	8.6% (7.6-9.7)	
3 days or more	278	10.3% (9.2-11.5)	270	10.0% (8.9-11.1)	
Total[2]	2,692	100%	2,710	100%	

Notes: Calculated for patients living in five states (NSW, Vic, Qld, SA and Tas). [1] *Chi-square test for proportions, 2df.*
[2] *Patients with the follow-up period shorter than the respective measurement period were excluded.*

Table 67: Number of admissions and bed-days for emergency admissions among admitted HCH patients and comparators, derived from linked data

Pre-and post-enrolment period	HCH patients			Comparator patients		
	Number of patients[1]	Mean (std)	Median (IQR)	Number of patients[1]	Mean (std)	Median (IQR)
Pre-enrolment						
Emergency admissions	1665	1.7 (1.5)	1 (1-2)	1664	1.6 (1.2)	1 (1-2)
Total bed-days		9.0 (16.7)	3 (1-9)		8.0 (14.3)	3 (1-8)
First year						
Emergency admissions	1615	1.7 (1.4)	1 (1-2)	1485	1.7 (1.3)	1 (1-2)
Total bed-days		9.3 (17.3)	3 (1-9)		9.8 (20.6)	3 (1-9)
Second year						
Emergency admissions	459	1.7 (1.4)	1 (1-2)	506	1.7 (1.3)	1 (1-2)
Total bed-days		10.5 (21.6)	4 (1-10)		9.3 (16.5)	3 (1-9)

Notes: Calculated for patients living in five states (NSW, Vic, Qld, SA and Tas). [1] Patients with the follow-up period shorter than the respective measurement period were excluded.

Table 68: Potentially preventable hospitalisations among HCH patients and comparators, derived from linked data

Pre-and post-enrolment period	HCH patients		Comparator patients		p-value[1]
	Number	Percentage (95%CI)	Number	Percentage (95%CI)	
Pre-enrolment					
Mean (std)	0.1	(0.4)	0.1	(0.3)	
Median (IQR)	0	(0-0)	0	(0-0)	
None	8,620	94.5% (94.0-95.0)	8,695	95.3% (94.9-95.8)	0.081
One	373	4.1% (3.7-4.5)	310	3.4% (3.0-3.8)	
Two	80	0.9% (0.7-1.1)	73	0.8% (0.6-1.0)	
3 or more	47	0.5% (0.4-0.7)	42	0.5% (0.3-0.6)	
Total[2]	9120	100%	9120	100%	
First year					
Mean (std)	0.1	(0.4)	0.1	(0.3)	
Median (IQR)	0	(0-0)	0	(0-0)	
None	8,438	94.5% (94.1-95.0)	8,479	95.0% (94.5-95.5)	0.518
One	369	4.1% (3.7-4.6)	338	3.8% (3.4-4.2)	
Two	76	0.9% (0.7-1.1)	66	0.7% (0.6-0.9)	
3 or more	42	0.5% (0.3-0.6)	39	0.4% (0.3-0.6)	
Total[2]	8925	100%	8922	100%	
Second year					
Mean (std)	0.1	(0.6)	0.1	(0.4)	
Median (IQR)	0	(0-0)	0	(0-0)	
None	2,560	95.1% (94.2-95.8)	2,559	94.4% (93.6-95.2)	0.636
One	95	3.5% (2.9-4.3)	114	4.2% (3.5-5.0)	
Two	22	0.8% (0.5-1.2)	22	0.8% (0.5-1.2)	
3 or more	16	0.6% (0.4-1.0)	15	0.6% (0.3-0.9)	
Total[2]	2693	100%	2710	100%	

Notes: Calculated for patients living in five states (NSW, Vic, Qld, SA and Tas). [1] *Chi-square test for proportions, 3df.*
[2] *Patients with the follow-up period shorter than the respective measurement period were excluded.*

Table 69: Total number of bed-days for potentially preventable hospitalisations, among all HCH patients and comparators, derived from linked data

Pre-and post-enrolment period	HCH patients		Comparator patients		p-value[1]
	Number	Percentage (95%CI)	Number	Percentage (95%CI)	
Pre-enrolment					
Mean (std)	0.4	(2.9)	0.3	(2.2)	
Median (IQR)	0	(0-0)	0	(0-0)	
No admission	8,620	94.5% (94.0-95.0)	8,695	95.3% (94.9-95.8)	0.033
1 or 2 days	218	2.4% (2.1-2.7)	189	2.1% (1.8-2.4)	
3 days or more	276	3.0 (2.7-3.4)	229	2.5% (2.2-2.9)	
Total[2]	9,114	100%	9,113	100%	
First year					
Mean (std)	0.3	(2.4)	0.4	(4.7)	
Median (IQR)	0	(0-0)	0	(0-0)	
No admission	8,438	94.5% (94.1-95.0)	8,479	95.0% (94.5-95.5)	0.059
1 or 2 days	232	2.6% (2.3-3.0)	184	2.1% (1.8-2.4)	
3 days or more	246	2.8% (24-3.1)	245	2.7% (2.4-3.1)	
Total[2]	8,916	100%	8,908	100%	
Second year					
Mean (std)	0.4	(6.2)	0.4	(3.4)	
Median (IQR)	0	(0-0)	0	(0-0)	
No admission	2,560	95.1% (94.2-95.8)	2,559	94.4% (93.6-95.2)	0.368
1 or 2 days	50	1.9% (1.4-2.4)	65	2.4% (1.9-3.0)	
3 days or more	80	3.0% (2.4-3.7)	84	3.1% (2.5-3.8)	
Total[2]	2,690	100%	2,708	100%	

Notes: Calculated for patients living in five states (NSW, Vic, Qld, SA and Tas). [1] *Chi-square test for proportions, 2df.*
[2] *Patients with the follow-up period shorter than the respective measurement period were excluded.*

Table 70: Number of admission and total bed-days for potentially preventable hospitalisations among admitted HCH patients and comparators, derived from linked data

Pre-and post-enrolment period	HCH patients			Comparator patients		
	Number of patients[1]	Mean (std)	Median (IQR)	Number of patients[1]	Mean (std)	Median (IQR)
Pre-enrolment						
Potentially preventable hospitalisations	500	1.4 (0.8)	1 (1-2)	425	1.4 (0.8)	1 (1-2)
Total bed-days		6.4 (10.5)	3 (1-7)		5.9 (8.4)	3 (1-6)
First year						
Potentially preventable hospitalisations	487	1.4 (1.0)	1 (1-1)	443	1.4 (1.0)	1 (1-1)
Total bed-days		5.8 (8.4)	3 (1-7)		8.5 (19.5)	3 (1-8)
Second year						
Potentially preventable hospitalisations	133	1.6 (2.2)	1 (1-2)	151	1.4 (0.9)	1 (1-1)
Total bed-days		8.5 (26.8)	3 (1-8)		7.6 (12.2)	3 (1-8)

Notes: Calculated for patients living in five states (NSW, Vic, Qld, SA and Tas). [1] Patients with the follow-up period shorter than the respective measurement period were excluded.

Table 71: Total National Weighted Activity Unit among HCH patients and comparators, derived from linked data

Pre-and post-enrolment period	HCH patients			Comparator patients		
	Number of patients[1]	Mean (std)	Median (IQR)	Number of patients[1]	Mean (std)	Median (IQR)
In all patients						
Pre-enrolment	9120	0.77 (2.53)	0 (0-0.23)	9120	0.73 (2.44)	0 (0-0.24)
First year	8925	0.74 (2.54)	0 (0-0.23)	8922	0.71 (2.81)	0 (0-0.12)
Second year	2693	0.77 (2.95)	0 (0-0.20)	2710	0.77 (2.70)	0 (0-0.21)
Amongst admitted patients						
Pre-enrolment	2481	2.82 (4.22)	1.26 (0.53-3.34)	2500	2.66 (4.08)	1.28 (0.53-3.08)
First year	2462	2.66 (4.26)	1.17 (0.48-2.84)	2271	2.80 (5.00)	1.19 (0.44-3.19)
Second year	734	2.84 (5.10)	1.15 (0.48-3.38)	751	2.77 (4.55)	1.19 (0.43-3.09)

Notes: Calculated for patients living in five states (NSW, Vic, Qld, SA and Tas). [1] Patients with the follow-up period shorter than the respective measurement period were excluded.

Entry into aged care facility

Table 72: Admission to aged care facility by 30 June 2020 among HCH patients and comparators

Admission to aged care facility	HCH patients	Comparator patients
In all patients		
Admission to aged care facility, number (%)	339 (3.2%)	292 (2.7%)
Time-to-entry (months)		
Mean (std)	9.8 (6.6)	11.2 (6.9)
Median (IQR)	9 (5-14)	11 (5-16)
In patients who did not use residential aged care services in the 24 months before enrolment		
Admission to aged care facility, number (%)	281 (2.7%)	270 (2.5%)
Time-to-entry (months)		
Mean (std)	10.7 (6.4)	11.7 (6.8)
Median (IQR)	10 (6-15)	11 (6-17)

Source: National Death Index data collection and National Aged Care Data Clearing House – Residential Aged Care Episode of care.

Table 73: Hazard ratio for having an entry to aged care facility by 30 June 2020

Entry to aged care facility	Hazard Ratio (95%CI)	p-value[1]
Comparator patients	1.00 (reference)	
HCH patients	1.16 (0.97-1.39)	0.110

Notes: [1] Cox proportional hazard model, adjusted for pre-enrolment use of community-based aged care services and residential aged care facility services

Serious cardiovascular event and death

Table 74: Serious cardiovascular event by 30 June 2020 among HCH patients and comparator patients, derived from linked data

Serious cardiovascular event	HCH patients	Comparator patients
Cardiovascular hospitalisation or death, number (%)	621 (6.8%)	604 (6.6%)
Time-to-cardiovascular event (months)		
Mean (std)	9.3 (6.7)	10.3 (7.0)
Median (IQR)	9 (4-14)	9 (4-15)

Notes: Calculated for patients living in five states (NSW, Vic, Qld, SA and Tas).

Table 75: Hazard ratio for serious cardiovascular event, HCH versus comparator patients, derived from linked data

Serious cardiovascular event	Hazard Ratio (95%CI)	p-value[2]
Comparator patients	1.00 (reference)	
HCH patients	1.04 (0.92-1.16)	0.568

Notes: Calculated for patients living in five states (NSW, Vic, Qld, SA and Tas). [2] *Univariate Cox proportional hazard model.*

Table 76: Mortality by 30 June 2021 among HCH patients and c comparator patients, derived from linked data

Mortality	HCH patients	Comparator patients
Death, number (%)	689 (6.5%)	646 (6.1%)
Time-to-death (months)		
Mean (std)	17.2 (9.9)	17.1 (9.9)
Median (IQR)	17 (9-25)	17 (9-25)

Source: National Death Index data collection.

Table 77: Hazard ratio for mortality HCH versus comparator patients, derived from linked data

Mortality	Hazard Ratio (95%CI)	p-value[1]
Comparator patients	1.00 (reference)	
HCH patients	1.07 (0.96-1.20)	0.217

Notes: [1] *Univariate Cox proportional hazard model.*

Appendix 7: Patient surveys detailed tables

Respondent characteristics

Table 78: Respondent characteristics

Respondent characteristics	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
A0 Totals								
Total responses	2018	1859	1385	5262	2602	1224	2762	1131
Total Patients	2018	1859	1385	2602	2602	564	1340	623
Total Practices	99	87	73	108	108	77	99	93
A1 Sex								
Female	1,083 (54.4%)	1,035 (56.3%)	767 (56.1%)	2,885 (55.5%)	1,418 (55.1%)	686 (56.2%)	1,526 (55.4%)	625 (55.7%)
Male	908 (45.6%)	804 (43.7%)	601 (43.9%)	2,313 (44.5%)	1,157 (44.9%)	535 (43.8%)	1,230 (44.6%)	497 (44.3%)
A2 Age group								
00–24	16 (0.8%)	12 (0.6%)	4 (0.3%)	32 (0.6%)	17 (0.7%)	1 (0.1%)	14 (0.5%)	17 (1.5%)
25–44	130 (6.5%)	104 (5.6%)	79 (5.7%)	313 (6.0%)	156 (6.0%)	65 (5.3%)	164 (6.0%)	79 (7.0%)
45–64	542 (26.9%)	439 (23.7%)	309 (22.4%)	1,290 (24.6%)	599 (23.1%)	273 (22.4%)	654 (23.8%)	326 (28.8%)
65–74	652 (32.4%)	584 (31.5%)	418 (30.3%)	1,654 (31.5%)	784 (30.2%)	446 (36.6%)	894 (32.5%)	261 (23.1%)
75–84	523 (26.0%)	538 (29.0%)	431 (31.2%)	1,492 (28.4%)	754 (29.0%)	356 (29.2%)	794 (28.9%)	309 (27.3%)
85+	149 (7.4%)	177 (9.5%)	139 (10.1%)	465 (8.9%)	286 (11.0%)	77 (6.3%)	232 (8.4%)	139 (12.3%)
A3 Indigenous status (Q34)								
Aboriginal or Torres Strait Islander	66 (3.3%)	57 (3.1%)	33 (2.4%)	156 (3.0%)	87 (3.3%)	19 (1.6%)	87 (3.2%)	50 (4.5%)
Not Aboriginal or Torres Strait Islander	1,936 (96.7%)	1,789 (96.9%)	1,345 (97.6%)	5,070 (96.4%)	2,494 (95.8%)	1,201 (98.4%)	2,651 (96.8%)	1,073 (95.5%)
Don't know/ Refused				36 (0.7%)	21 (0.8%)			

Respondent characteristics	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
A4 Country of birth (Q35)								
Australia	1,379 (68.3%)	1,269 (68.3%)	950 (68.6%)	3,598 (68.4%)	1,769 (68.0%)	847 (69.2%)	1,850 (67.0%)	791 (69.9%)
United Kingdom	291 (14.4%)	298 (16.0%)	223 (16.1%)	812 (15.4%)	402 (15.4%)	193 (15.8%)	440 (15.9%)	157 (13.9%)
Other	348 (17.2%)	292 (15.7%)	212 (15.3%)	852 (16.2%)	431 (16.6%)	184 (15.0%)	472 (17.1%)	183 (16.2%)
A5 Highest level of education (Q36)								
Year 9 or below	427 (21.4%)	391 (21.3%)	255 (18.6%)	1,073 (20.4%)	541 (20.8%)	202 (16.6%)	593 (21.7%)	258 (23.2%)
Year 10 or equivalent	326 (16.3%)	286 (15.6%)	223 (16.3%)	835 (15.9%)	406 (15.6%)	210 (17.3%)	425 (15.6%)	169 (15.2%)
Year 11 or equivalent	112 (5.6%)	100 (5.5%)	80 (5.8%)	292 (5.5%)	145 (5.6%)	67 (5.5%)	168 (6.2%)	54 (4.9%)
Year 12 or equivalent	244 (12.2%)	223 (12.2%)	161 (11.7%)	628 (11.9%)	332 (12.8%)	167 (13.8%)	295 (10.8%)	148 (13.3%)
Certificate I to IV (including trade certificate)	416 (20.9%)	401 (21.9%)	304 (22.2%)	1,121 (21.3%)	554 (21.3%)	239 (19.7%)	609 (22.3%)	242 (21.7%)
Advanced diploma/Diploma	167 (8.4%)	167 (9.1%)	138 (10.1%)	472 (9.0%)	216 (8.3%)	134 (11.0%)	226 (8.3%)	86 (7.7%)
Bachelor's degree	187 (9.4%)	166 (9.1%)	135 (9.8%)	488 (9.3%)	227 (8.7%)	143 (11.8%)	240 (8.8%)	96 (8.6%)
Post-graduate degree	66 (3.3%)	56 (3.1%)	41 (3.0%)	163 (3.1%)	82 (3.2%)	34 (2.8%)	98 (3.6%)	24 (2.2%)
Other	50 (2.5%)	44 (2.4%)	34 (2.5%)	128 (2.4%)	69 (2.7%)	18 (1.5%)	74 (2.7%)	36 (3.2%)
Refused				62 (1.2%)	30 (1.2%)			
A6 Household composition (Q33)								
Person living alone	486 (24.1%)	486 (26.1%)	355 (25.6%)	1,327 (25.2%)	675 (25.9%)	217 (17.7%)	732 (26.5%)	328 (29.0%)
Couple only	934 (46.3%)	885 (47.6%)	697 (50.3%)	2,516 (47.8%)	1,193 (45.8%)	723 (59.1%)	1,318 (47.7%)	417 (36.9%)
Couple with non-dependent child/ren	168 (8.3%)	125 (6.7%)	78 (5.6%)	371 (7.1%)	179 (6.9%)	82 (6.7%)	200 (7.2%)	82 (7.3%)
Couple with dependent child or children	148 (7.3%)	125 (6.7%)	90 (6.5%)	363 (6.9%)	171 (6.6%)	102 (8.3%)	179 (6.5%)	64 (5.7%)

Respondent characteristics	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
Single parent with non-dependent child/ren	85 (4.2%)	56 (3.0%)	33 (2.4%)	174 (3.3%)	93 (3.6%)	29 (2.4%)	74 (2.7%)	66 (5.8%)
Single parent with dependent child/ren	36 (1.8%)	32 (1.7%)	16 (1.2%)	84 (1.6%)	53 (2.0%)	11 (0.9%)	45 (1.6%)	27 (2.4%)
Other household type	161 (8.0%)	150 (8.1%)	116 (8.4%)	427 (8.1%)	238 (9.1%)	60 (4.9%)	214 (7.7%)	147 (13.0%)
A9 Help provided to patient and answering the survey								
Yes: answered for them (proxy)	113 (5.6%)	90 (4.8%)	58 (4.2%)	261 (5.0%)	158 (6.1%)	22 (1.8%)	92 (3.3%)	138 (12.2%)
Yes: helped them answer some questions	75 (3.7%)	81 (4.4%)	39 (2.8%)	195 (3.7%)	91 (3.5%)	30 (2.5%)	108 (3.9%)	49 (4.3%)
No: did not need any help	1,830 (90.7%)	1,688 (90.8%)	1,288 (93.0%)	4,806 (91.3%)	2,353 (90.4%)	1,172 (95.8%)	2,562 (92.8%)	944 (83.5%)

Source: Patient surveys Wave 1 Dec 2017–Mar 2019; Wave 2 Dec 2019–Mar 2020; Wave 3 Mar–Apr 2021.

Use of services and access

Table 79: Use of HCH practice

Patient use of HCH practice	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
B01 HCH practice is the GP practice that patient usually attends (Q2)								
Yes	1,983 (98.4%)	1,845 (99.4%)	1,376 (99.4%)	5,204 (98.9%)	2,562 (98.5%)	1,213 (99.1%)	2,735 (99.2%)	1,111 (98.4%)
No	32 (1.6%)	12 (0.6%)	8 (0.6%)	52 (1.0%)	35 (1.3%)	11 (0.9%)	23 (0.8%)	18 (1.6%)
Refused				6 (0.1%)	5 (0.2%)			
B02 Length of time the patient has been attending the HCH practice (Q3)								
Less than 6 months	34 (1.7%)	8 (1.4%)		42 (1.6%)	42 (1.6%)	3 (0.5%)	13 (1.0%)	24 (3.9%)
At least 6 months but less than 1 year	52 (2.6%)	9 (1.5%)		61 (2.3%)	61 (2.3%)	7 (1.2%)	26 (1.9%)	27 (4.4%)
At least 1 year but less than 3 years	297 (14.8%)	58 (10.0%)		355 (13.6%)	355 (13.6%)	68 (12.1%)	182 (13.6%)	98 (15.8%)
At least 3 years but less than 5 years	315 (15.6%)	73 (12.6%)		388 (14.9%)	388 (14.9%)	81 (14.4%)	211 (15.8%)	90 (14.5%)
5 years or more	1,315 (65.3%)	433 (74.5%)		1,748 (67.2%)	1,748 (67.2%)	405 (71.8%)	903 (67.6%)	381 (61.5%)
Don't know				8 (0.3%)	8 (0.3%)			
B03 Number of times the patient attending the HCH practice in the last six months (Q4)								
Never	16 (0.8%)	29 (1.6%)	48 (3.5%)	93 (1.8%)	70 (2.7%)	23 (1.9%)	41 (1.5%)	24 (2.1%)
Once	82 (4.1%)	102 (5.5%)	102 (7.4%)	286 (5.4%)	164 (6.3%)	94 (7.8%)	140 (5.1%)	44 (3.9%)
Twice	244 (12.2%)	260 (14.1%)	233 (17.0%)	737 (14.0%)	374 (14.4%)	237 (19.6%)	372 (13.6%)	112 (10.0%)
3 times	324 (16.3%)	290 (15.7%)	229 (16.7%)	843 (16.0%)	417 (16.0%)	231 (19.1%)	437 (16.0%)	156 (14.0%)
4 times	296 (14.9%)	261 (14.2%)	234 (17.1%)	791 (15.0%)	400 (15.4%)	192 (15.8%)	446 (16.3%)	128 (11.4%)
5 to 9 times	596 (29.9%)	596 (32.3%)	372 (27.1%)	1,564 (29.7%)	731 (28.1%)	294 (24.3%)	838 (30.6%)	389 (34.8%)
10 or more times	434 (21.8%)	306 (16.6%)	154 (11.2%)	894 (17.0%)	415 (15.9%)	141 (11.6%)	461 (16.9%)	265 (23.7%)
Don't know				54 (1.0%)	31 (1.2%)			

Patient use of HCH practice	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
B04 Number of times the patient contacted their GP or other professional at the HCH practice by email or telephone about their health in the last six months (apart from s cheduling appointments) (Q5)								
Never	1,340 (67.3%)	966 (52.5%)		2,306 (59.5%)	1,447 (55.6%)	559 (64.5%)	1,237 (61.8%)	449 (52.5%)
Once	121 (6.1%)	182 (9.9%)		303 (7.8%)	217 (8.3%)	85 (9.8%)	153 (7.6%)	58 (6.8%)
Twice	155 (7.8%)	212 (11.5%)		367 (9.5%)	270 (10.4%)	61 (7.0%)	206 (10.3%)	89 (10.4%)
3 times	99 (5.0%)	128 (7.0%)		227 (5.9%)	162 (6.2%)	56 (6.5%)	109 (5.4%)	59 (6.9%)
4 times	70 (3.5%)	92 (5.0%)		162 (4.2%)	120 (4.6%)	27 (3.1%)	90 (4.5%)	37 (4.3%)
5 to 9 times	128 (6.4%)	184 (10.0%)		312 (8.0%)	248 (9.5%)	54 (6.2%)	147 (7.3%)	100 (11.7%)
10 or more times	78 (3.9%)	75 (4.1%)		153 (3.9%)	111 (4.3%)	24 (2.8%)	60 (3.0%)	63 (7.4%)
Don't know				47 (1.2%)	27 (1.0%)			

Source: Patient surveys Wave 1 Dec 2017–Mar 2019; Wave 2 Dec 2019–Mar 2020; Wave 3 Mar–Apr 2021.

Table 80: Use of telemedicine, wave 3

Use of telemedicine	Total responses	Patient tier		
		1	2	3
B06 Number of times the patient had a contact with their GP or other professional at the HCH practice by telephone or video in the last 6 months				
Never	768 (55.5%)	216 (61.7%)	410 (56.9%)	121 (47.1%)
Once	181 (13.1%)	44 (12.6%)	100 (13.9%)	34 (13.2%)
Twice	156 (11.3%)	34 (9.7%)	89 (12.4%)	32 (12.5%)
3 times	110 (8.0%)	28 (8.0%)	53 (7.4%)	27 (10.5%)
4 times	54 (3.9%)	11 (3.1%)	27 (3.8%)	15 (5.8%)
5–9 times	67 (4.8%)	15 (4.3%)	31 (4.3%)	18 (7.0%)
10 or more times	23 (1.7%)	2 (0.6%)	10 (1.4%)	10 (3.9%)
Don't know	24 (1.7%)			
B07 Modality of consults with the GP or other professional				
All by telephone	550 (92.4%)	124 (92.5%)	291 (93.9%)	124 (90.5%)
All by video	6 (1.0%)		2 (0.6%)	4 (2.9%)
A mix of telephone and video	37 (6.2%)	10 (7.5%)	17 (5.5%)	9 (6.6%)
Don't know	2 (0.3%)			
B08 Did the patient have their first telephone or video consult with a GP in the last 6 months? (Q6e)				
Yes	414 (69.6%)	94 (74.0%)	213 (74.7%)	100 (76.9%)
No	138 (23.2%)	33 (26.0%)	72 (25.3%)	30 (23.1%)
Don't know	42 (7.1%)			
Refused	1 (0.2%)			
B10 Number of times the patient had a contact with a nurse at the HCH practice by telephone or video in the last 6 months (Q6g)				
Never	1,026 (74.1%)	267 (76.5%)	544 (75.2%)	191 (74.3%)
Once	160 (11.6%)	39 (11.2%)	91 (12.6%)	26 (10.1%)
Twice	85 (6.1%)	28 (8.0%)	39 (5.4%)	14 (5.4%)
3 times	47 (3.4%)	8 (2.3%)	25 (3.5%)	14 (5.4%)
4 times	19 (1.4%)	3 (0.9%)	12 (1.7%)	4 (1.6%)

Use of telemedicine	Total responses	Patient tier		
		1	2	3
5–9 times	22 (1.6%)	4 (1.1%)	10 (1.4%)	7 (2.7%)
10 or more times	3 (0.2%)		2 (0.3%)	1 (0.4%)
Don't know	22 (1.6%)			
B11 Modality of consults with a nurse (Q6i)				
All by telephone	327 (96.5%)	80 (97.6%)	174 (97.2%)	64 (97.0%)
All by video	2 (0.6%)		1 (0.6%)	1 (1.5%)
A mix of telephone and video	7 (2.1%)	2 (2.4%)	4 (2.2%)	1 (1.5%)
Don't know	3 (0.9%)			
B12 Did the patient have their first telephone or video consult with a nurse in the last 6 months (Q6j)				
Yes	231 (68.1%)	57 (75.0%)	121 (74.7%)	46 (76.7%)
No	76 (22.4%)	19 (25.0%)	41 (25.3%)	14 (23.3%)
Don't know	29 (8.6%)			
Refused	3 (0.9%)			
B13 Do the patient think telephone or video consults were a good option in the future in addition to visiting the practice in person (Q6l)				
Definitely no	74 (10.0%)	11 (6.3%)	51 (13.3%)	12 (7.6%)
Probably no	119 (16.0%)	31 (17.7%)	65 (17.0%)	20 (12.7%)
Probably yes	211 (28.4%)	51 (29.1%)	103 (26.9%)	51 (32.3%)
Definitely yes	328 (44.1%)	82 (46.9%)	164 (42.8%)	75 (47.5%)
Don't know	11 (1.5%)			
B13 Is the practice continuing with telephone or video consults (Q6k)				
Yes	487 (65.5%)	118 (87.4%)	253 (83.8%)	107 (82.9%)
No	92 (12.4%)	17 (12.6%)	49 (16.2%)	22 (17.1%)
Don't know	164 (22.1%)			

Source: Patient survey Wave 3 Mar–Apr 2021.

Table 81: Access

Access measures	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
C1 Over the last 6 months, that patient contacted the HCH to get an appointment for an illness, injury, or condition that needed care right away (Q14)								
Yes	973 (48.8%)	840 (45.7%)	587 (42.8%)	2,400 (45.6%)	1,155 (44.4%)	499 (41.2%)	1,249 (45.6%)	584 (52.3%)
No	1,022 (51.2%)	998 (54.3%)	786 (57.2%)	2,806 (53.3%)	1,421 (54.6%)	712 (58.8%)	1,488 (54.4%)	532 (47.7%)
Don't know				56 (1.1%)	26 (1.0%)			
C2 When requesting an appointment for care needed right away, how often the patient get an appointment as soon as required (Q15)								
None of the time	19 (2.0%)	31 (3.7%)	26 (4.5%)	76 (3.2%)	42 (3.6%)	13 (2.6%)	37 (3.0%)	25 (4.3%)
A little of the time	37 (3.9%)	33 (4.0%)	25 (4.3%)	95 (4.0%)	46 (4.0%)	16 (3.2%)	49 (4.0%)	27 (4.7%)
Some of the time	85 (8.9%)	73 (8.8%)	77 (13.3%)	235 (9.8%)	127 (11.0%)	60 (12.2%)	116 (9.4%)	57 (9.9%)
Most of the time	300 (31.3%)	266 (32.0%)	164 (28.2%)	730 (30.4%)	335 (29.0%)	146 (29.6%)	413 (33.5%)	159 (27.7%)
Always	516 (53.9%)	428 (51.5%)	289 (49.7%)	1,233 (51.4%)	591 (51.2%)	258 (52.3%)	618 (50.1%)	307 (53.4%)
Don't know				31 (1.3%)	14 (1.2%)			
C3 Over the last 6 months, did the patient contact the HCH to get an appointment for a check-up or routine care (Q16)								
Yes	1,521 (76.8%)	1,373 (74.6%)	1,018 (74.6%)	3,912 (74.3%)	1,882 (72.3%)	928 (76.6%)	2,046 (75.0%)	826 (74.8%)
No	460 (23.2%)	468 (25.4%)	346 (25.4%)	1,274 (24.2%)	675 (25.9%)	283 (23.4%)	683 (25.0%)	278 (25.2%)
Don't know				76 (1.4%)	45 (1.7%)			
C4 When requesting an appointment for a check-up or routine care, how often did the patient get an appointment as soon as required (Q17)								
None of the time	20 (1.3%)	37 (2.7%)	29 (2.9%)	86 (2.2%)	46 (2.4%)	26 (2.8%)	38 (1.9%)	21 (2.6%)
A little of the time	42 (2.8%)	39 (2.9%)	45 (4.5%)	126 (3.2%)	68 (3.6%)	28 (3.1%)	65 (3.2%)	32 (3.9%)
Some of the time	143 (9.6%)	146 (10.8%)	126 (12.5%)	415 (10.6%)	205 (10.9%)	111 (12.1%)	196 (9.7%)	102 (12.5%)
Most of the time	550 (36.7%)	491 (36.3%)	364 (36.1%)	1,405 (35.9%)	683 (36.3%)	325 (35.5%)	759 (37.6%)	279 (34.3%)
Always	742 (49.6%)	640 (47.3%)	443 (44.0%)	1,825 (46.7%)	855 (45.4%)	425 (46.4%)	958 (47.5%)	380 (46.7%)
Don't know				55 (1.4%)	25 (1.3%)			
C5 When requesting an appointment or attending for any reason, how often did the patient see their own personal GP (Q18)								
None of the time	21 (1.1%)	21 (1.1%)	24 (1.7%)	66 (1.3%)	38 (1.5%)	19 (1.6%)	36 (1.3%)	11 (1.0%)

Access measures	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
A little of the time	52 (2.6%)	41 (2.2%)	43 (3.1%)	136 (2.6%)	69 (2.7%)	42 (3.5%)	71 (2.6%)	22 (2.0%)
Some of the time	106 (5.3%)	116 (6.3%)	101 (7.4%)	323 (6.1%)	162 (6.2%)	82 (6.8%)	163 (6.0%)	71 (6.3%)
Most of the time	633 (31.7%)	580 (31.5%)	396 (28.8%)	1,609 (30.6%)	743 (28.6%)	405 (33.5%)	846 (30.9%)	319 (28.5%)
Always	1,182 (59.3%)	1,085 (58.9%)	809 (58.9%)	3,076 (58.5%)	1,563 (60.1%)	661 (54.7%)	1,621 (59.2%)	697 (62.2%)
Don't know				52 (1.0%)	27 (1.0%)			

Source: Patient surveys Wave 1 Dec 2017–Mar 2019; Wave 2 Dec 2019–Mar 2020; Wave 3 Mar–Apr 2021.

Care planning

Table 82: Care planning

Care planning	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
D1 Patient has registered for My Health Record (Q6)								
Yes	1,449 (81.1%)	1,227 (78.8%)		2,676 (69.0%)	1,717 (66.0%)	642 (84.6%)	1,426 (80.7%)	531 (73.3%)
No	338 (18.9%)	330 (21.2%)		668 (17.2%)	478 (18.4%)	117 (15.4%)	340 (19.3%)	193 (26.7%)
Don't know				533 (13.7%)	407 (15.6%)			
D2 Before enrolling in HCH, patient had a treatment/shared care plan which their GP or practice staff developed with them (Q7)								
Yes	1,159 (60.8%)	1,520 (86.3%)	1,109 (83.6%)	3,788 (72.0%)	1,887 (72.5%)	880 (75.2%)	2,001 (76.1%)	804 (76.2%)
No	747 (39.2%)	242 (13.7%)	217 (16.4%)	1,206 (22.9%)	575 (22.1%)	290 (24.8%)	627 (23.9%)	251 (23.8%)
Don't know/Refused				268 (5.1%)	140(5.3%)			
D3 Before enrolling in HCH, frequency the patient discussed their treatment/shared care plan with their GP or practice staff (Q8)								
At most or all consultations	485 (45.6%)	591 (40.7%)	416 (38.6%)	1,492 (39.4%)	724 (38.4%)	356 (42.7%)	740 (38.8%)	354 (46.6%)
It was sometimes discussed	500 (47.0%)	720 (49.6%)	560 (52.0%)	1,780 (47.0%)	919 (48.7%)	409 (49.0%)	971 (51.0%)	352 (46.3%)
It was never discussed	79 (7.4%)	142 (9.8%)	101 (9.4%)	322 (8.5%)	164 (8.7%)	69 (8.3%)	194 (10.2%)	54 (7.1%)
Don't know/Refused				194 (5.1%)	80(4.3%)			
D4 Patient was given a copy of their treatment plan/shared care plan in the last 6 months (Q9)								
Yes	850 (76.6%)	882 (61.8%)	593 (55.9%)	2,325 (61.4%)	1,094 (58.0%)	546 (64.7%)	1,248 (65.3%)	475 (63.7%)
No	260 (23.4%)	545 (38.2%)	468 (44.1%)	1,273 (33.6%)	692 (36.7%)	298 (35.3%)	663 (34.7%)	271 (36.3%)
Don't know/Refused				190 (5.0%)	101 (5.4%)			
D5 Was a copy of the patient's treatment plan/shared care plan included in My Health Record (Q10)								
Yes	420 (87.7%)	535 (90.5%)	597 (86.1%)	1,552 (50.6%)	853 (51.9%)	379 (87.3%)	826 (88.8%)	301 (86.2%)
No	59 (12.3%)	56 (9.5%)	96 (13.9%)	211 (6.9%)	128 (7.8%)	55 (12.7%)	104 (11.2%)	48 (13.8%)
Don't know				1,304 (42.5%)	664 (40.4%)			

Source: Patient surveys Wave 1 Dec 2017–Mar 2019; Wave 2 Dec 2019–Mar 2020; Wave 3 Mar–Apr 2021.

Medications review

Table 83: Medications review

E Medications review	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
E1 Over the last six months, how often did the GP, or someone from the HCH, talk to the patient about all the prescription medicines they were taking, when they attended (Q13)								
Never	231 (11.9%)	222 (12.3%)	193 (14.3%)	646 (12.3%)	350 (13.5%)	162 (13.9%)	348 (13.0%)	122 (11.1%)
Some of the times	577 (29.8%)	523 (29.1%)	431 (31.9%)	1,531 (29.1%)	751 (28.9%)	345 (29.5%)	834 (31.0%)	316 (28.8%)
Most of times	1,128 (58.3%)	1,055 (58.6%)	728 (53.8%)	2,911 (55.3%)	1,418 (54.5%)	661 (56.6%)	1,505 (56.0%)	659 (60.1%)
Not taking prescription medication				81 (1.5%)	42 (1.6%)			
Don't know				93 (1.8%)	41 (1.6%)			
E2 In the last 12 months, did the patient have a consultation with a pharmacist who reviewed all the medicines they were taking and explained each medication?								
Yes		869 (47.2%)	585 (43.0%)	1,454 (44.8%)	836 (43.3%)	279 (36.0%)	795 (46.5%)	346 (53.6%)
No		974 (52.8%)	777 (57.0%)	1,751 (54.0%)	1,065 (55.1%)	497 (64.0%)	914 (53.5%)	299 (46.4%)
Don't know				39 (1.2%)	31 (1.6%)			
E3 If the opportunity was made available would the patient like to have a consultation with a pharmacist to review their medicines and the pharmacist questions about them?								
Yes		384 (41.0%)	285 (37.4%)	669 (38.2%)	390 (36.6%)	176 (36.3%)	351 (39.5%)	124 (43.1%)
No		553 (59.0%)	478 (62.6%)	1,031 (58.9%)	647 (60.8%)	309 (63.7%)	538 (60.5%)	164 (56.9%)
Don't know				51 (2.9%)	28 (2.6%)			
E4 Where did the patient see the pharmacist for this consultation?								
In your GP practice		102 (11.8%)	73 (12.5%)	175 (12.0%)	102 (12.2%)	29 (10.4%)	94 (11.9%)	41 (11.9%)
At a community pharmacy		627 (72.3%)	399 (68.6%)	1,026 (70.6%)	566 (67.7%)	214 (77.0%)	568 (71.7%)	228 (66.1%)
At home		102 (11.8%)	71 (12.2%)	173 (11.9%)	109 (13.0%)	22 (7.9%)	88 (11.1%)	56 (16.2%)
Somewhere else		36 (4.2%)	39 (6.7%)	75 (5.2%)	56 (6.7%)	13 (4.7%)	42 (5.3%)	20 (5.8%)
Don't know				5 (0.3%)	3 (0.4%)			

E Medications review	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
E5 At the consultation, did the pharmacist give the patient a list of all the medicines they are taking?								
Yes		572 (67.5%)	385 (68.1%)	957 (65.8%)	548 (65.6%)	170 (62.3%)	523 (67.7%)	241 (72.2%)
No		276 (32.5%)	180 (31.9%)	456 (31.4%)	260 (31.1%)	103 (37.7%)	249 (32.3%)	93 (27.8%)
Don't know				41 (2.8%)	28 (3.3%)			

Source: Patient surveys Wave 1 Dec 2017–Mar 2019; Wave 2 Dec 2019–Mar 2020; Wave 3 Mar–Apr 2021.

Patient and carer experience and rating of quality of care

Table 84: Patient assessment of chronic illness care (PACIC)

Patient assessment of chronic illness care (PACIC)	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
J01 I was asked for my ideas when we made decisions about my treatment (Q11)								
None of the time	287 (15.3%)	310 (17.3%)	233 (17.4%)	830 (16.6%)	430 (17.4%)	219 (18.5%)	444 (16.9%)	155 (14.5%)
A little of the time	178 (9.5%)	152 (8.5%)	145 (10.8%)	475 (9.5%)	227 (9.2%)	107 (9.0%)	257 (9.8%)	98 (9.2%)
Some of the time	484 (25.8%)	484 (27.1%)	346 (25.8%)	1,314 (26.2%)	650 (26.3%)	305 (25.8%)	694 (26.5%)	276 (25.9%)
Most of the time	487 (25.9%)	418 (23.4%)	333 (24.8%)	1,238 (24.7%)	598 (24.2%)	275 (23.2%)	650 (24.8%)	275 (25.8%)
Always	441 (23.5%)	423 (23.7%)	285 (21.2%)	1,149 (23.0%)	568 (23.0%)	277 (23.4%)	577 (22.0%)	263 (24.6%)
J02 I was given choices about treatment to think about (Q11)								
None of the time	292 (15.3%)	292 (16.4%)	228 (17.1%)	812 (16.1%)	418 (16.7%)	214 (18.2%)	420 (15.9%)	151 (14.1%)
A little of the time	149 (7.8%)	97 (5.4%)	102 (7.6%)	348 (6.9%)	175 (7.0%)	87 (7.4%)	174 (6.6%)	75 (7.0%)
Some of the time	373 (19.5%)	392 (22.0%)	315 (23.6%)	1,080 (21.5%)	554 (22.2%)	227 (19.3%)	589 (22.3%)	232 (21.6%)
Most of the time	445 (23.3%)	424 (23.8%)	317 (23.7%)	1,186 (23.6%)	564 (22.6%)	278 (23.7%)	622 (23.5%)	253 (23.6%)
Always	651 (34.1%)	577 (32.4%)	374 (28.0%)	1,602 (31.9%)	786 (31.5%)	368 (31.3%)	837 (31.7%)	361 (33.7%)
J03 I was sure that my doctor or nurse thought about my values, beliefs, and traditions when they recommended treatments to me (Q11)								
None of the time	130 (6.9%)	143 (8.1%)	121 (9.2%)	394 (7.9%)	211 (8.6%)	94 (8.1%)	215 (8.3%)	74 (6.9%)
A little of the time	64 (3.4%)	51 (2.9%)	61 (4.6%)	176 (3.5%)	96 (3.9%)	41 (3.5%)	86 (3.3%)	45 (4.2%)
Some of the time	169 (8.9%)	193 (11.0%)	116 (8.8%)	478 (9.6%)	235 (9.6%)	102 (8.8%)	252 (9.7%)	116 (10.8%)
Most of the time	437 (23.1%)	408 (23.2%)	294 (22.3%)	1,139 (22.9%)	549 (22.3%)	256 (22.1%)	626 (24.1%)	224 (20.8%)
Always	1,094 (57.8%)	960 (54.7%)	726 (55.1%)	2,780 (56.0%)	1,366 (55.6%)	664 (57.4%)	1,417 (54.6%)	618 (57.4%)
J04 I was shown how what I did to care for myself influenced my condition (Q11)								
None of the time	145 (7.7%)	143 (8.0%)	129 (9.8%)	417 (8.4%)	220 (9.0%)	103 (8.8%)	226 (8.6%)	80 (7.7%)
A little of the time	102 (5.4%)	76 (4.3%)	68 (5.1%)	246 (4.9%)	118 (4.8%)	51 (4.3%)	122 (4.6%)	64 (6.1%)
Some of the time	269 (14.3%)	302 (17.0%)	194 (14.7%)	765 (15.4%)	378 (15.4%)	160 (13.6%)	432 (16.5%)	156 (15.0%)

Patient assessment of chronic illness care (PACIC)	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
Most of the time	561 (29.9%)	540 (30.4%)	420 (31.8%)	1,521 (30.6%)	765 (31.1%)	349 (29.7%)	792 (30.2%)	325 (31.2%)
Always	801 (42.7%)	718 (40.4%)	510 (38.6%)	2,029 (40.8%)	976 (39.7%)	513 (43.6%)	1,052 (40.1%)	416 (40.0%)
J05 I was asked to talk about my goals in caring for my condition (Q11)								
None of the time	296 (15.3%)	276 (15.2%)	221 (16.5%)	793 (15.6%)	418 (16.7%)	196 (16.5%)	423 (15.9%)	152 (13.9%)
A little of the time	146 (7.5%)	134 (7.4%)	94 (7.0%)	374 (7.4%)	162 (6.5%)	97 (8.2%)	186 (7.0%)	82 (7.5%)
Some of the time	362 (18.7%)	361 (19.9%)	273 (20.4%)	996 (19.6%)	504 (20.1%)	193 (16.2%)	553 (20.7%)	221 (20.3%)
Most of the time	499 (25.8%)	476 (26.3%)	363 (27.1%)	1,338 (26.3%)	660 (26.3%)	312 (26.3%)	700 (26.2%)	286 (26.2%)
Always	631 (32.6%)	563 (31.1%)	390 (29.1%)	1,584 (31.2%)	763 (30.4%)	390 (32.8%)	805 (30.2%)	349 (32.0%)
J06 I was helped to set specific goals to improve my eating or exercise (Q11)								
None of the time	306 (15.8%)	285 (15.7%)	242 (17.9%)	833 (16.3%)	424 (16.9%)	197 (16.6%)	440 (16.4%)	171 (15.6%)
A little of the time	177 (9.2%)	127 (7.0%)	115 (8.5%)	419 (8.2%)	209 (8.3%)	91 (7.7%)	214 (8.0%)	98 (9.0%)
Some of the time	407 (21.1%)	424 (23.4%)	306 (22.6%)	1,137 (22.3%)	568 (22.6%)	235 (19.8%)	629 (23.5%)	247 (22.6%)
Most of the time	513 (26.6%)	479 (26.4%)	365 (27.0%)	1,357 (26.6%)	656 (26.1%)	315 (26.5%)	696 (26.0%)	301 (27.5%)
Always	528 (27.3%)	497 (27.4%)	325 (24.0%)	1,350 (26.5%)	659 (26.2%)	349 (29.4%)	697 (26.0%)	276 (25.3%)
J07 I was given a written list of things I should do to improve my health (Q12)								
None of the time	655 (33.8%)	722 (40.1%)	645 (47.9%)	2,022 (39.7%)	1,069 (42.6%)	490 (41.2%)	1,078 (40.4%)	388 (35.7%)
A little of the time	185 (9.5%)	140 (7.8%)	130 (9.7%)	455 (8.9%)	228 (9.1%)	97 (8.2%)	228 (8.5%)	116 (10.7%)
Some of the time	414 (21.3%)	396 (22.0%)	246 (18.3%)	1,056 (20.8%)	482 (19.2%)	245 (20.6%)	556 (20.8%)	232 (21.3%)
Most of the time	373 (19.2%)	280 (15.5%)	198 (14.7%)	851 (16.7%)	408 (16.3%)	180 (15.1%)	464 (17.4%)	185 (17.0%)
Always	313 (16.1%)	263 (14.6%)	127 (9.4%)	703 (13.8%)	322 (12.8%)	177 (14.9%)	345 (12.9%)	167 (15.3%)
J08 I was asked questions, either directly or on a survey, about my health habits (Q12)								
None of the time	378 (19.4%)	391 (21.5%)	317 (23.4%)	1,086 (21.2%)	561 (22.3%)	250 (20.9%)	591 (21.9%)	211 (19.4%)
A little of the time	202 (10.4%)	145 (8.0%)	152 (11.2%)	499 (9.7%)	256 (10.2%)	118 (9.9%)	247 (9.2%)	121 (11.1%)
Some of the time	448 (23.0%)	489 (26.9%)	353 (26.1%)	1,290 (25.2%)	641 (25.4%)	298 (24.9%)	686 (25.5%)	270 (24.8%)
Most of the time	503 (25.8%)	412 (22.6%)	302 (22.3%)	1,217 (23.8%)	576 (22.9%)	288 (24.1%)	621 (23.1%)	272 (25.0%)

Patient assessment of chronic illness care (PACIC)	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
Always	415 (21.3%)	384 (21.1%)	228 (16.9%)	1,027 (20.1%)	486 (19.3%)	242 (20.2%)	548 (20.3%)	216 (19.8%)
J09 I was satisfied that my care was well organised (Q12)								
None of the time	38 (1.9%)	35 (1.9%)	32 (2.3%)	105 (2.0%)	57 (2.2%)	34 (2.8%)	44 (1.6%)	26 (2.3%)
A little of the time	52 (2.6%)	42 (2.3%)	46 (3.4%)	140 (2.7%)	77 (3.0%)	26 (2.1%)	74 (2.7%)	37 (3.3%)
Some of the time	114 (5.7%)	132 (7.2%)	112 (8.2%)	358 (6.9%)	200 (7.8%)	78 (6.4%)	203 (7.4%)	74 (6.6%)
Most of the time	469 (23.5%)	409 (22.2%)	342 (24.9%)	1,220 (23.4%)	629 (24.4%)	274 (22.6%)	665 (24.3%)	252 (22.5%)
Always	1,325 (66.3%)	1,228 (66.5%)	839 (61.2%)	3,392 (65.0%)	1,611 (62.6%)	803 (66.1%)	1,755 (64.0%)	731 (65.3%)
J10 I was contacted after a visit to see how things were going (Q12)								
None of the time	767 (39.5%)	658 (36.1%)	516 (37.9%)	1,941 (37.9%)	950 (37.5%)	483 (40.5%)	1,059 (39.2%)	352 (32.2%)
A little of the time	186 (9.6%)	157 (8.6%)	136 (10.0%)	479 (9.3%)	235 (9.3%)	122 (10.2%)	242 (9.0%)	100 (9.1%)
Some of the time	438 (22.5%)	469 (25.8%)	363 (26.6%)	1,270 (24.8%)	629 (24.8%)	256 (21.5%)	682 (25.3%)	304 (27.8%)
Most of the time	282 (14.5%)	292 (16.0%)	197 (14.5%)	771 (15.0%)	391 (15.4%)	178 (14.9%)	387 (14.3%)	176 (16.1%)
Always	270 (13.9%)	245 (13.5%)	151 (11.1%)	666 (13.0%)	327 (12.9%)	153 (12.8%)	330 (12.2%)	162 (14.8%)
J11 I was encouraged to attend programs in the community that could help me (Q12)								
None of the time	777 (40.4%)	762 (42.3%)	651 (48.4%)	2,190 (43.2%)	1,126 (45.1%)	557 (46.9%)	1,153 (43.3%)	408 (37.6%)
A little of the time	195 (10.1%)	138 (7.7%)	117 (8.7%)	450 (8.9%)	206 (8.2%)	100 (8.4%)	233 (8.8%)	109 (10.1%)
Some of the time	462 (24.0%)	450 (25.0%)	283 (21.0%)	1,195 (23.6%)	572 (22.9%)	249 (21.0%)	661 (24.8%)	265 (24.4%)
Most of the time	252 (13.1%)	224 (12.4%)	143 (10.6%)	619 (12.2%)	284 (11.4%)	131 (11.0%)	321 (12.1%)	146 (13.5%)
Always	238 (12.4%)	228 (12.7%)	152 (11.3%)	618 (12.2%)	311 (12.4%)	150 (12.6%)	294 (11.0%)	156 (14.4%)
J12 I was asked how my visits with other doctors were going (Q12)								
None of the time	670 (36.5%)	637 (36.4%)	508 (39.1%)	1,815 (37.2%)	943 (39.1%)	465 (41.3%)	976 (37.7%)	326 (31.4%)
A little of the time	105 (5.7%)	92 (5.3%)	90 (6.9%)	287 (5.9%)	149 (6.2%)	79 (7.0%)	145 (5.6%)	56 (5.4%)
Some of the time	290 (15.8%)	259 (14.8%)	209 (16.1%)	758 (15.5%)	372 (15.4%)	161 (14.3%)	393 (15.2%)	183 (17.6%)
Most of the time	280 (15.2%)	272 (15.6%)	189 (14.6%)	741 (15.2%)	353 (14.6%)	156 (13.9%)	396 (15.3%)	170 (16.4%)
Always	492 (26.8%)	489 (28.0%)	302 (23.3%)	1,283 (26.3%)	596 (24.7%)	264 (23.5%)	678 (26.2%)	304 (29.3%)

Patient assessment of chronic illness care (PACIC)	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
J13 Total score (PACIC)								
Mean (median)	3.4 (3.5)	3.3 (3.4)	3.2 (3.3)	3.3 (3.4)	3.3 (3.4)	3.3 (3.4)	3.3 (3.4)	3.4 (3.5)
Missing				7	5			
J14 PACIC: Patient activation score								
Mean (median)	3.4 (3.5)	3.4 (3.5)	3.3 (3.5)	3.4 (3.5)	3.3 (3.5)	3.3 (3.5)	3.4 (3.5)	3.5 (3.5)
Missing				59	29			
J15 PACIC: Decision support score								
Mean (median)	3.7 (3.7)	3.7 (3.7)	3.5 (3.7)	3.6 (3.7)	3.6 (3.7)	3.7 (3.7)	3.6 (3.7)	3.7 (3.7)
Missing				13	10			
J16 PACIC: Goal setting score								
Mean (median)	3.4 (3.7)	3.3 (3.7)	3.2 (3.3)	3.3 (3.5)	3.3 (3.3)	3.4 (3.7)	3.3 (3.3)	3.3 (3.7)
Missing				20	17			
J17 PACIC: Problem solving score								
Mean (median)	4.2 (5.0)	4.1 (5.0)	4.1 (5.0)	4.2 (5.0)	4.1 (5.0)	4.2 (5.0)	4.1 (5.0)	4.2 (5.0)
Missing				295	145			
J18 PACIC: Follow-up/ co-ordination score								
Mean (median)	2.6 (2.7)	2.7 (2.7)	2.5 (2.3)	2.6 (2.7)	2.6 (2.3)	2.5 (2.3)	2.6 (2.5)	2.8 (2.7)
Missing				22	14			

Source: Patient surveys Wave 1 Dec 2017–Mar 2019; Wave 2 Dec 2019–Mar 2020; Wave 3 Mar–Apr 2021.

Table 85: Patient rating of HCH practice

Patient rating of HCH practice	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
K1 Patient rating of the HCH practice (0–10)								
Mean (median)	9.0 (9.0)	9.0 (9.0)	8.9 (9.0)	9.0 (9.0)	8.9 (9.0)	9.0 (9.0)	9.0 (9.0)	8.9 (9.0)
Missing				35	21			

Source: Patient surveys Wave 1 Dec 2017–Mar 2019; Wave 2 Dec 2019–Mar 2020; Wave 3 Mar–Apr 2021.

Table 86: Carer involvement in patient's treatment

Carer involved in patient's treatment	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
L1 In the last six months, how often did the carer attend consultations at the practice with the patient								
Never		5 (5.6%)	2 (3.4%)	7 (4.7%)	6 (6.1%)	1 (6.7%)	5 (8.8%)	1 (1.4%)
Rarely		3 (3.4%)	4 (6.9%)	7 (4.7%)	5 (5.1%)	1 (6.7%)	5 (8.8%)	1 (1.4%)
Sometimes		11 (12.4%)	7 (12.1%)	18 (12.2%)	12 (12.1%)	2 (13.3%)	10 (17.5%)	5 (6.8%)
Usually		9 (10.1%)	5 (8.6%)	14 (9.5%)	10 (10.1%)	2 (13.3%)	2 (3.5%)	10 (13.7%)
Always		61 (68.5%)	40 (69.0%)	101 (68.2%)	66 (66.7%)	9 (60.0%)	35 (61.4%)	56 (76.7%)
Not applicable				1 (0.7%)				
L2 When the carer attended consultations with the patient, how often were the carer's personal values, beliefs and circumstances were taken into consideration								
Never		3 (3.7%)	4 (7.4%)	7 (5.0%)	6 (6.5%)	1 (7.1%)	4 (8.2%)	2 (2.8%)
Rarely		2 (2.4%)	2 (3.7%)	4 (2.9%)	3 (3.2%)	2 (14.3%)		2 (2.8%)
Sometimes		9 (11.0%)	6 (11.1%)	15 (10.7%)	12 (12.9%)	2 (14.3%)	4 (8.2%)	9 (12.7%)
Usually		16 (19.5%)	6 (11.1%)	22 (15.7%)	11 (11.8%)	4 (28.6%)	11 (22.4%)	7 (9.9%)
Always		52 (63.4%)	36 (66.7%)	88 (62.9%)	59 (63.4%)	5 (35.7%)	30 (61.2%)	51 (71.8%)
Don't know				4 (2.9%)	2 (2.2%)			
L3 When the carer attended consultations with the patient, how often was the carer involved in decisions affecting the person under their care								
Never		2 (2.4%)	3 (5.4%)	5 (3.6%)	4 (4.3%)	2 (15.4%)	3 (5.8%)	

Carer involved in patient's treatment	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
Rarely		4 (4.8%)	2 (3.6%)	6 (4.3%)	2 (2.2%)	2 (15.4%)	2 (3.8%)	2 (2.8%)
Sometimes		11 (13.3%)	7 (12.5%)	18 (12.9%)	12 (12.9%)	2 (15.4%)	10 (19.2%)	6 (8.3%)
Usually		13 (15.7%)	4 (7.1%)	17 (12.1%)	10 (10.8%)	2 (15.4%)	5 (9.6%)	10 (13.9%)
Always		53 (63.9%)	40 (71.4%)	93 (66.4%)	64 (68.8%)	5 (38.5%)	32 (61.5%)	54 (75.0%)
Don't know				1 (0.7%)	1 (1.1%)			
L4 When the carer attended consultations with the patient, how often was the carer asked for their input when the GP or nurse was developing the treatment or care plan for the person under their care								
Never		8 (9.6%)	5 (9.1%)	13 (9.3%)	9 (9.7%)	3 (21.4%)	7 (13.7%)	3 (4.2%)
Rarely		3 (3.6%)	1 (1.8%)	4 (2.9%)	2 (2.2%)	1 (7.1%)	1 (2.0%)	2 (2.8%)
Sometimes		16 (19.3%)	6 (10.9%)	22 (15.7%)	14 (15.1%)	3 (21.4%)	8 (15.7%)	11 (15.5%)
Usually		8 (9.6%)	15 (27.3%)	23 (16.4%)	17 (18.3%)	1 (7.1%)	10 (19.6%)	12 (16.9%)
Always		48 (57.8%)	28 (50.9%)	76 (54.3%)	50 (53.8%)	6 (42.9%)	25 (49.0%)	43 (60.6%)
Don't know				2 (1.4%)	1 (1.1%)			

Source: Patient surveys Wave 1 Dec 2017–Mar 2019; Wave 2 Dec 2019–Mar 2020; Wave 3 Mar–Apr 2021.

Patient activation

Table 87: Patient activation measure (PAM)

H Patient activation measure (PAM)	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
H01 When all is said and done, I am the person who is responsible for managing my health condition(s) (Q20)								
Strongly disagree	19 (1.0%)	9 (0.5%)	4 (0.3%)	32 (0.6%)	17 (0.7%)	5 (0.4%)	13 (0.5%)	13 (1.2%)
Disagree	70 (3.6%)	55 (3.0%)	44 (3.2%)	169 (3.2%)	89 (3.4%)	22 (1.8%)	87 (3.2%)	58 (5.3%)
Agree	1,002 (50.9%)	895 (48.9%)	671 (49.2%)	2,568 (48.8%)	1,295 (49.8%)	571 (47.2%)	1,366 (50.4%)	562 (51.1%)
Strongly agree	877 (44.6%)	870 (47.6%)	645 (47.3%)	2,392 (45.5%)	1,150 (44.2%)	611 (50.5%)	1,245 (45.9%)	466 (42.4%)
Don't know				101 (1.9%)	51 (2.0%)			
H02 Taking an active role in my own health care is the most important factor in determining my health and ability to function (Q20)								
Strongly disagree	13 (0.7%)	4 (0.2%)	3 (0.2%)	20 (0.4%)	10 (0.4%)	4 (0.3%)	9 (0.3%)	7 (0.6%)
Disagree	31 (1.6%)	25 (1.4%)	17 (1.2%)	73 (1.4%)	47 (1.8%)	6 (0.5%)	29 (1.1%)	38 (3.4%)
Agree	922 (46.7%)	872 (47.5%)	646 (47.0%)	2,440 (46.4%)	1,226 (47.1%)	532 (43.8%)	1,300 (47.7%)	546 (49.5%)
Strongly agree	1,009 (51.1%)	936 (51.0%)	709 (51.6%)	2,654 (50.4%)	1,283 (49.3%)	672 (55.4%)	1,388 (50.9%)	513 (46.5%)
Don't know				75 (1.4%)	36 (1.4%)			
H03 I know what each of my prescribed medications do (Q20)								
Strongly disagree	12 (0.6%)	16 (0.9%)	13 (1.0%)	41 (0.8%)	27 (1.0%)	5 (0.4%)	17 (0.6%)	19 (1.7%)
Disagree	72 (3.6%)	72 (3.9%)	49 (3.6%)	193 (3.7%)	101 (3.9%)	25 (2.1%)	87 (3.2%)	78 (7.1%)
Agree	859 (43.5%)	848 (46.2%)	626 (46.2%)	2,333 (44.3%)	1,186 (45.6%)	554 (46.4%)	1,223 (44.8%)	493 (44.9%)
Strongly agree	1,030 (52.2%)	900 (49.0%)	667 (49.2%)	2,597 (49.4%)	1,236 (47.5%)	611 (51.1%)	1,402 (51.4%)	507 (46.2%)
Don't know				98 (1.9%)	52 (2.0%)			
H04 I understand the nature and causes of my health condition(s) (Q20)								
Strongly disagree	10 (0.5%)	14 (0.8%)	11 (0.8%)	35 (0.7%)	22 (0.8%)	2 (0.2%)	13 (0.5%)	19 (1.7%)
Disagree	53 (2.7%)	42 (2.3%)	34 (2.5%)	129 (2.5%)	69 (2.7%)	21 (1.7%)	62 (2.3%)	46 (4.2%)
Agree	962 (48.6%)	847 (46.2%)	656 (48.1%)	2,465 (46.8%)	1,236 (47.5%)	567 (46.7%)	1,321 (48.7%)	511 (46.3%)

H Patient activation measure (PAM)	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
Strongly agree	954 (48.2%)	930 (50.7%)	663 (48.6%)	2,547 (48.4%)	1,225 (47.1%)	625 (51.4%)	1,319 (48.6%)	527 (47.8%)
Don't know				86 (1.6%)	50 (1.9%)			
H05 I know the different medical treatment options available for my health condition(s) (Q20)								
Strongly disagree	18 (0.9%)	11 (0.6%)	8 (0.6%)	37 (0.7%)	22 (0.8%)	2 (0.2%)	16 (0.6%)	19 (1.8%)
Disagree	129 (6.7%)	127 (7.1%)	105 (7.8%)	361 (6.9%)	192 (7.4%)	66 (5.6%)	192 (7.2%)	100 (9.3%)
Agree	1,081 (56.1%)	994 (55.2%)	779 (57.7%)	2,854 (54.2%)	1,418 (54.5%)	693 (58.4%)	1,495 (55.9%)	589 (54.5%)
Strongly agree	699 (36.3%)	669 (37.1%)	459 (34.0%)	1,827 (34.7%)	880 (33.8%)	426 (35.9%)	971 (36.3%)	372 (34.4%)
Don't know				183 (3.5%)	90 (3.5%)			
H06 I have been able to maintain the lifestyle changes for my health that I have made (Q20)								
Strongly disagree	28 (1.4%)	19 (1.0%)	6 (0.4%)	53 (1.0%)	28 (1.1%)	3 (0.3%)	20 (0.7%)	29 (2.7%)
Disagree	135 (7.0%)	114 (6.3%)	95 (7.0%)	344 (6.5%)	180 (6.9%)	55 (4.6%)	171 (6.4%)	110 (10.2%)
Agree	1,147 (59.4%)	1,072 (59.2%)	846 (62.6%)	3,065 (58.2%)	1,536 (59.0%)	709 (59.3%)	1,640 (61.1%)	646 (59.9%)
Strongly agree	622 (32.2%)	607 (33.5%)	404 (29.9%)	1,633 (31.0%)	765 (29.4%)	428 (35.8%)	851 (31.7%)	293 (27.2%)
Don't know				167 (3.2%)	93 (3.6%)			
H07 I know how to prevent further problems with my health condition (Q20)								
Strongly disagree	22 (1.1%)	19 (1.1%)	10 (0.7%)	51 (1.0%)	27 (1.0%)	4 (0.3%)	25 (0.9%)	21 (1.9%)
Disagree	161 (8.4%)	122 (6.8%)	84 (6.3%)	367 (7.0%)	186 (7.1%)	60 (5.0%)	170 (6.4%)	129 (12.0%)
Agree	1,094 (56.8%)	1,056 (58.5%)	830 (62.0%)	2,980 (56.6%)	1,491 (57.3%)	717 (60.0%)	1,571 (59.2%)	613 (56.8%)
Strongly agree	648 (33.7%)	607 (33.6%)	415 (31.0%)	1,670 (31.7%)	792 (30.4%)	414 (34.6%)	887 (33.4%)	316 (29.3%)
Don't know				194 (3.7%)	106 (4.1%)			
H08 I am confident that I can take actions that will help prevent or minimise some symptoms or problems associated with my health condition (Q21)								
Strongly disagree	17 (0.9%)	20 (1.1%)	6 (0.4%)	43 (0.8%)	21 (0.8%)	6 (0.5%)	14 (0.5%)	23 (2.1%)
Disagree	118 (6.0%)	105 (5.8%)	74 (5.4%)	297 (5.6%)	161 (6.2%)	38 (3.1%)	138 (5.1%)	115 (10.5%)
Agree	1,167 (59.3%)	1,096 (60.1%)	810 (59.3%)	3,073 (58.4%)	1,521 (58.5%)	731 (60.6%)	1,633 (60.3%)	625 (56.8%)
Strongly agree	665 (33.8%)	602 (33.0%)	477 (34.9%)	1,744 (33.1%)	851 (32.7%)	432 (35.8%)	921 (34.0%)	337 (30.6%)

H Patient activation measure (PAM)	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
Don't know				105 (2.0%)	48 (1.8%)			
H09 I am confident that I can tell when I need to go get medical care and when I can handle a health problem myself (Q21)								
Strongly disagree	12 (0.6%)	20 (1.1%)	5 (0.4%)	37 (0.7%)	18 (0.7%)	1 (0.1%)	15 (0.6%)	21 (1.9%)
Disagree	108 (5.5%)	84 (4.6%)	56 (4.1%)	248 (4.7%)	133 (5.1%)	52 (4.3%)	99 (3.6%)	92 (8.3%)
Agree	1,036 (52.5%)	931 (50.6%)	729 (53.1%)	2,696 (51.2%)	1,365 (52.5%)	623 (51.4%)	1,447 (53.2%)	556 (50.0%)
Strongly agree	818 (41.4%)	805 (43.8%)	583 (42.5%)	2,206 (41.9%)	1,049 (40.3%)	537 (44.3%)	1,159 (42.6%)	443 (39.8%)
Don't know				75 (1.4%)	37 (1.4%)			
H10 I am confident I can tell my health care provider concerns I have even when he or she does not ask (Q21)								
Strongly disagree	14 (0.7%)	10 (0.5%)	7 (0.5%)	31 (0.6%)	18 (0.7%)	2 (0.2%)	13 (0.5%)	15 (1.4%)
Disagree	45 (2.3%)	45 (2.5%)	33 (2.4%)	123 (2.3%)	70 (2.7%)	22 (1.8%)	56 (2.1%)	45 (4.1%)
Agree	937 (47.2%)	884 (48.1%)	635 (46.2%)	2,456 (46.7%)	1,221 (46.9%)	575 (47.6%)	1,309 (47.9%)	511 (46.0%)
Strongly agree	988 (49.8%)	897 (48.9%)	699 (50.9%)	2,584 (49.1%)	1,252 (48.1%)	610 (50.5%)	1,352 (49.5%)	540 (48.6%)
Don't know				68 (1.3%)	41 (1.6%)			
H11 I am confident that I can follow through on medical treatments I need to do at home (Q21)								
Strongly disagree	13 (0.7%)	12 (0.7%)	4 (0.3%)	29 (0.6%)	16 (0.6%)	4 (0.3%)	10 (0.4%)	15 (1.3%)
Disagree	62 (3.1%)	64 (3.5%)	43 (3.1%)	169 (3.2%)	93 (3.6%)	27 (2.2%)	65 (2.4%)	75 (6.7%)
Agree	1,002 (50.8%)	944 (51.2%)	713 (51.9%)	2,659 (50.5%)	1,331 (51.2%)	609 (50.5%)	1,424 (52.2%)	563 (50.6%)
Strongly agree	895 (45.4%)	824 (44.7%)	613 (44.6%)	2,332 (44.3%)	1,124 (43.2%)	566 (46.9%)	1,230 (45.1%)	459 (41.3%)
Don't know				73 (1.4%)	38 (1.5%)			
H12 I am confident I can figure out solutions when new situations or problems arise with my health condition (Q21)								
Strongly disagree	25 (1.3%)	23 (1.3%)	10 (0.7%)	58 (1.1%)	31 (1.2%)	8 (0.7%)	20 (0.7%)	30 (2.7%)
Disagree	247 (12.8%)	204 (11.2%)	153 (11.3%)	604 (11.5%)	310 (11.9%)	128 (10.7%)	287 (10.8%)	175 (16.0%)
Agree	1,189 (61.7%)	1,124 (62.0%)	864 (63.9%)	3,177 (60.4%)	1,553 (59.7%)	753 (63.2%)	1,717 (64.3%)	619 (56.7%)
Strongly agree	466 (24.2%)	463 (25.5%)	325 (24.0%)	1,254 (23.8%)	618 (23.8%)	303 (25.4%)	645 (24.2%)	268 (24.5%)
Don't know				169 (3.2%)	90 (3.5%)			

H Patient activation measure (PAM)	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
H13 I am confident that I can maintain lifestyle changes like diet and exercise even during times of stress (Q21)								
Strongly disagree	58 (3.0%)	44 (2.4%)	20 (1.5%)	122 (2.3%)	63 (2.4%)	13 (1.1%)	44 (1.6%)	60 (5.4%)
Disagree	276 (14.1%)	248 (13.5%)	176 (12.9%)	700 (13.3%)	338 (13.0%)	127 (10.5%)	347 (12.8%)	215 (19.5%)
Agree	1,162 (59.2%)	1,118 (60.7%)	837 (61.5%)	3,117 (59.2%)	1,534 (59.0%)	755 (62.4%)	1,671 (61.6%)	606 (55.0%)
Strongly agree	466 (23.8%)	432 (23.5%)	328 (24.1%)	1,226 (23.3%)	611 (23.5%)	314 (26.0%)	649 (23.9%)	220 (20.0%)
Don't know				97 (1.8%)	56 (2.2%)			
H14 PAM level								
Disengaged and overwhelmed	111 (5.5%)	91 (4.9%)	59 (4.3%)	261 (5.0%)	136 (5.2%)	32 (2.6%)	110 (4.0%)	117 (10.3%)
Becoming aware but still struggling	392 (19.5%)	360 (19.4%)	285 (20.7%)	1,037 (19.8%)	546 (21.0%)	224 (18.4%)	568 (20.7%)	219 (19.4%)
Taking action	822 (40.9%)	740 (40.0%)	562 (40.8%)	2,124 (40.5%)	1,050 (40.5%)	515 (42.3%)	1,097 (39.9%)	450 (39.8%)
Maintaining behaviours/pushing further	685 (34.1%)	661 (35.7%)	473 (34.3%)	1,819 (34.7%)	862 (33.2%)	447 (36.7%)	972 (35.4%)	345 (30.5%)
H14 Total score (PAM)								
Mean (median)	66 (66)	67 (66)	67 (66)	67 (66)	66 (63)	68 (66)	67 (66)	64 (63)
Missing				21	8			

Source: Patient surveys Wave 1 Dec 2017–Mar 2019; Wave 2 Dec 2019–Mar 2020; Wave 3 Mar–Apr 2021.

Patient-reported health status

Table 88: Overall health and mental and emotional health

Overall health	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
F01 Patient rating of overall health (Q25)								
Excellent	77 (3.9%)	85 (4.6%)	67 (4.9%)	229 (4.4%)	115 (4.4%)	68 (5.6%)	118 (4.3%)	32 (2.8%)
Very good	413 (20.7%)	411 (22.2%)	306 (22.2%)	1,130 (21.5%)	536 (20.6%)	367 (30.2%)	589 (21.4%)	130 (11.6%)
Good	763 (38.2%)	740 (39.9%)	541 (39.2%)	2,044 (38.8%)	1,003 (38.5%)	527 (43.3%)	1,088 (39.6%)	377 (33.6%)
Fair	543 (27.2%)	469 (25.3%)	347 (25.2%)	1,359 (25.8%)	677 (26.0%)	210 (17.3%)	746 (27.1%)	381 (33.9%)
Poor	202 (10.1%)	150 (8.1%)	118 (8.6%)	470 (8.9%)	254 (9.8%)	44 (3.6%)	207 (7.5%)	203 (18.1%)
Don't know				30 (0.6%)	17 (0.7%)			
F02 Patient rating of overall mental or emotional health (Q26)								
Excellent	288 (14.4%)	283 (15.3%)	198 (14.3%)	769 (14.6%)	351 (13.5%)	254 (20.8%)	387 (14.1%)	102 (9.1%)
Very good	530 (26.4%)	480 (25.9%)	384 (27.7%)	1,394 (26.5%)	682 (26.2%)	413 (33.8%)	724 (26.4%)	215 (19.1%)
Good	717 (35.7%)	654 (35.4%)	482 (34.8%)	1,853 (35.2%)	919 (35.3%)	398 (32.6%)	1,023 (37.2%)	381 (33.8%)
Fair	372 (18.5%)	319 (17.2%)	239 (17.3%)	930 (17.7%)	475 (18.3%)	128 (10.5%)	499 (18.2%)	290 (25.8%)
Poor	99 (4.9%)	114 (6.2%)	81 (5.9%)	294 (5.6%)	166 (6.4%)	29 (2.4%)	114 (4.1%)	138 (12.3%)
Don't know				22 (0.4%)	9 (0.3%)			

Table 89: Number of chronic conditions and presence of specific health conditions

F2 Health conditions	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
F03 Number of chronic conditions								
None	28 (1.4%)	18 (1.0%)	20 (1.4%)	66 (1.3%)	35 (1.3%)	29 (2.4%)	22 (0.8%)	12 (1.1%)
One	173 (8.6%)	130 (7.0%)	85 (6.1%)	388 (7.4%)	182 (7.0%)	144 (11.8%)	163 (5.9%)	70 (6.2%)
Two	329 (16.3%)	274 (14.7%)	190 (13.7%)	793 (15.1%)	397 (15.3%)	239 (19.5%)	396 (14.3%)	140 (12.4%)
Three	492 (24.4%)	415 (22.3%)	312 (22.5%)	1,219 (23.2%)	593 (22.8%)	298 (24.3%)	661 (23.9%)	223 (19.7%)
Four	436 (21.6%)	403 (21.7%)	309 (22.3%)	1,148 (21.8%)	556 (21.4%)	262 (21.4%)	650 (23.5%)	202 (17.9%)
Five or more	560 (27.8%)	619 (33.3%)	469 (33.9%)	1,648 (31.3%)	839 (32.2%)	252 (20.6%)	870 (31.5%)	484 (42.8%)
F04 Heart disease (Q22)								
Yes	653 (33.1%)	641 (34.9%)	487 (35.8%)	1,781 (33.8%)	905 (34.8%)	388 (32.2%)	919 (33.9%)	426 (38.4%)
No	1,322 (66.9%)	1,195 (65.1%)	874 (64.2%)	3,391 (64.4%)	1,651 (63.5%)	817 (67.8%)	1,794 (66.1%)	684 (61.6%)
Don't know				90 (1.7%)	46 (1.8%)			
F05 Stroke (includes mini strokes, TIA, aneurisms) (Q22)								
Yes	216 (10.8%)	210 (11.4%)	171 (12.4%)	597 (11.3%)	319 (12.3%)	100 (8.2%)	304 (11.1%)	177 (15.8%)
No	1,787 (89.2%)	1,639 (88.6%)	1,207 (87.6%)	4,633 (88.0%)	2,263 (87.0%)	1,120 (91.8%)	2,443 (88.9%)	942 (84.2%)
Don't know				32 (0.6%)	20 (0.8%)			
F06 Cancer (includes skin cancer) (Q22)								
Yes	490 (24.5%)	565 (30.6%)	402 (29.2%)	1,457 (27.7%)	725 (27.9%)	330 (27.0%)	795 (29.0%)	280 (25.0%)
No	1,514 (75.5%)	1,282 (69.4%)	973 (70.8%)	3,769 (71.6%)	1,860 (71.5%)	890 (73.0%)	1,945 (71.0%)	842 (75.0%)
Don't know				36 (0.7%)	17 (0.7%)			
F07 Osteoporosis (Q22)								
Yes	495 (25.1%)	524 (28.8%)	384 (28.3%)	1,403 (26.7%)	692 (26.6%)	272 (22.6%)	767 (28.4%)	332 (30.1%)
No	1,474 (74.9%)	1,298 (71.2%)	974 (71.7%)	3,746 (71.2%)	1,855 (71.3%)	930 (77.4%)	1,935 (71.6%)	770 (69.9%)
Don't know				113 (2.1%)	55 (2.1%)			
F08 Depression or anxiety (Q22)								

F2 Health conditions	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
Yes	828 (41.3%)	787 (42.6%)	571 (41.4%)	2,186 (41.5%)	1,076 (41.4%)	364 (29.9%)	1,147 (41.8%)	611 (54.5%)
No	1,176 (58.7%)	1,059 (57.4%)	807 (58.6%)	3,042 (57.8%)	1,512 (58.1%)	854 (70.1%)	1,598 (58.2%)	510 (45.5%)
Don't know				34 (0.6%)	14 (0.5%)			
F09 Arthritis (Q22)								
Yes	1,170 (58.6%)	1,109 (60.5%)	859 (62.5%)	3,138 (59.6%)	1,567 (60.2%)	661 (54.7%)	1,689 (61.7%)	700 (62.8%)
No	828 (41.4%)	725 (39.5%)	515 (37.5%)	2,068 (39.3%)	1,009 (38.8%)	548 (45.3%)	1,049 (38.3%)	415 (37.2%)
Don't know				56 (1.1%)	26 (1.0%)			
F10 Diabetes (Q22)								
Yes	703 (35.0%)	706 (38.2%)	541 (39.3%)	1,950 (37.1%)	975 (37.5%)	413 (33.9%)	1,016 (37.0%)	468 (41.6%)
No	1,305 (65.0%)	1,144 (61.8%)	837 (60.7%)	3,286 (62.4%)	1,612 (62.0%)	805 (66.1%)	1,733 (63.0%)	656 (58.4%)
Don't know				26 (0.5%)	15 (0.6%)			
F11 High blood pressure (Q22)								
Yes	1,230 (61.9%)	1,202 (65.2%)	906 (65.8%)	3,338 (63.4%)	1,650 (63.4%)	723 (59.4%)	1,799 (65.9%)	730 (65.5%)
No	756 (38.1%)	642 (34.8%)	471 (34.2%)	1,869 (35.5%)	932 (35.8%)	495 (40.6%)	932 (34.1%)	385 (34.5%)
Don't know				55 (1.0%)	20 (0.8%)			
F12 Asthma (Q22)								
Yes	546 (27.3%)	541 (29.3%)	374 (27.2%)	1,461 (27.8%)	711 (27.3%)	278 (22.8%)	785 (28.6%)	365 (32.6%)
No	1,454 (72.7%)	1,305 (70.7%)	1,003 (72.8%)	3,762 (71.5%)	1,871 (71.9%)	939 (77.2%)	1,955 (71.4%)	756 (67.4%)
Don't know				39 (0.7%)	20 (0.8%)			
F13 Another chronic health condition (Q22)								
Yes	912 (46.4%)	827 (45.1%)	645 (47.3%)	2,384 (45.3%)	1,199 (46.1%)	447 (37.0%)	1,245 (46.1%)	638 (57.3%)
No	1,054 (53.6%)	1,006 (54.9%)	720 (52.7%)	2,780 (52.8%)	1,363 (52.4%)	760 (63.0%)	1,457 (53.9%)	475 (42.7%)
Don't know				98 (1.9%)	40 (1.5%)			

Table 90: Health related quality of life (EQ-5D-5L)

F2 Specific health conditions	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
F15 Mobility today (Q27)								
No problems in walking about	840 (42.1%)	794 (43.0%)	562 (40.8%)	2,196 (42.0%)	1,042 (40.4%)	711 (58.4%)	1,154 (42.0%)	277 (24.8%)
Slight problems	474 (23.7%)	443 (24.0%)	359 (26.1%)	1,276 (24.4%)	641 (24.8%)	302 (24.8%)	687 (25.0%)	256 (22.9%)
Moderate problems	467 (23.4%)	424 (22.9%)	332 (24.1%)	1,223 (23.4%)	613 (23.8%)	171 (14.1%)	688 (25.1%)	324 (29.0%)
Severe problems	177 (8.9%)	158 (8.5%)	107 (7.8%)	442 (8.5%)	234 (9.1%)	32 (2.6%)	203 (7.4%)	198 (17.7%)
Unable to walk about	39 (2.0%)	29 (1.6%)	18 (1.3%)	86 (1.6%)	51 (2.0%)	1 (0.1%)	13 (0.5%)	64 (5.7%)
F16 Self-care today (Q27)								
No problems washing or dressing	1,637 (81.4%)	1,491 (80.6%)	1,119 (80.9%)	4,247 (81.0%)	2,054 (79.2%)	1,130 (92.6%)	2,280 (82.8%)	721 (64.2%)
Slight problems	182 (9.1%)	184 (10.0%)	130 (9.4%)	496 (9.5%)	235 (9.1%)	62 (5.1%)	268 (9.7%)	156 (13.9%)
Moderate problems	138 (6.9%)	119 (6.4%)	99 (7.2%)	356 (6.8%)	205 (7.9%)	27 (2.2%)	175 (6.4%)	145 (12.9%)
Severe problems	28 (1.4%)	36 (1.9%)	20 (1.4%)	84 (1.6%)	58 (2.2%)		28 (1.0%)	53 (4.7%)
Unable to wash or dress	25 (1.2%)	19 (1.0%)	15 (1.1%)	59 (1.1%)	42 (1.6%)	1 (0.1%)	4 (0.1%)	48 (4.3%)
F17 Usual activities today (Q27)								
No problems doing usual activities	1,042 (52.2%)	947 (51.2%)	709 (51.4%)	2,698 (51.6%)	1,301 (50.3%)	821 (67.4%)	1,437 (52.2%)	359 (32.3%)
Slight problems	466 (23.4%)	443 (23.9%)	342 (24.8%)	1,251 (23.9%)	606 (23.4%)	260 (21.3%)	702 (25.5%)	267 (24.0%)
Moderate problems	341 (17.1%)	334 (18.0%)	235 (17.0%)	910 (17.4%)	475 (18.4%)	112 (9.2%)	479 (17.4%)	290 (26.1%)
Severe problems	80 (4.0%)	71 (3.8%)	51 (3.7%)	202 (3.9%)	107 (4.1%)	16 (1.3%)	78 (2.8%)	103 (9.3%)
Unable to do usual activities	66 (3.3%)	56 (3.0%)	42 (3.0%)	164 (3.1%)	96 (3.7%)	10 (0.8%)	55 (2.0%)	93 (8.4%)
F18 Pain or discomfort today (Q27)								
No pain or discomfort	565 (28.3%)	559 (30.1%)	388 (28.1%)	1,512 (28.9%)	736 (28.5%)	493 (40.5%)	769 (28.0%)	207 (18.5%)
Slight pain or discomfort	686 (34.4%)	607 (32.7%)	488 (35.4%)	1,781 (34.0%)	863 (33.4%)	454 (37.3%)	979 (35.6%)	294 (26.3%)
Moderate pain or discomfort	565 (28.3%)	537 (28.9%)	405 (29.4%)	1,507 (28.8%)	768 (29.7%)	234 (19.2%)	818 (29.7%)	423 (37.9%)
Severe pain or discomfort	153 (7.7%)	130 (7.0%)	79 (5.7%)	362 (6.9%)	176 (6.8%)	35 (2.9%)	165 (6.0%)	148 (13.2%)
Extreme pain or discomfort	28 (1.4%)	22 (1.2%)	19 (1.4%)	69 (1.3%)	42 (1.6%)	2 (0.2%)	20 (0.7%)	45 (4.0%)

F2 Specific health conditions	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
F19 Anxiety or depression today (Q27)								
Not anxious or depressed	1,305 (65.3%)	1,161 (62.8%)	878 (63.7%)	3,344 (64.0%)	1,628 (63.0%)	938 (77.0%)	1,753 (63.9%)	558 (49.8%)
Slightly anxious or depressed	366 (18.3%)	371 (20.1%)	256 (18.6%)	993 (19.0%)	483 (18.7%)	188 (15.4%)	559 (20.4%)	224 (20.0%)
Moderately anxious or depressed	265 (13.3%)	262 (14.2%)	210 (15.2%)	737 (14.1%)	393 (15.2%)	82 (6.7%)	380 (13.9%)	253 (22.6%)
Severely anxious or depressed	43 (2.2%)	36 (1.9%)	25 (1.8%)	104 (2.0%)	51 (2.0%)	3 (0.2%)	40 (1.5%)	57 (5.1%)
Extremely anxious or depressed	18 (0.9%)	19 (1.0%)	10 (0.7%)	47 (0.9%)	30 (1.2%)	7 (0.6%)	10 (0.4%)	29 (2.6%)
F20 Total score (EQ-5D-5L)								
Mean (median)	0.71 (0.74)	0.71 (0.74)	0.72 (0.74)	0.71 (0.74)	0.70 (0.74)	0.81 (0.80)	0.73 (0.75)	0.57 (0.65)
Missing				127	65			

Source: Patient surveys Wave 1 Dec 2017–Mar 2019; Wave 2 Dec 2019–Mar 2020; Wave 3 Mar–Apr 2021.

Patient-reported use of hospital services

Table 91: Hospital utilisation

I Hospital utilisation	Survey wave			Total		Patient tier		
	1	2	3	Total responses	Total individuals	1	2	3
I1 Patient attended an emergency department for their own medical care in last 12 months (Q23)								
Yes	728 (36.1%)	611 (32.9%)	435 (31.5%)	1,774 (33.7%)	900 (34.6%)	308 (25.2%)	902 (32.7%)	516 (45.6%)
No	1,289 (63.9%)	1,247 (67.1%)	947 (68.5%)	3,483 (66.2%)	1,698 (65.3%)	916 (74.8%)	1,855 (67.3%)	615 (54.4%)
I2 Patient stayed one or more nights in hospital in last 12 months (Q24)								
Yes	628 (31.2%)	572 (30.8%)	388 (28.1%)	1,588 (30.2%)	799 (30.7%)	273 (22.3%)	802 (29.1%)	469 (41.6%)
No	1,388 (68.8%)	1,285 (69.2%)	993 (71.9%)	3,666 (69.7%)	1,797 (69.1%)	949 (77.7%)	1,957 (70.9%)	659 (58.4%)

Source: Patient surveys Wave 1 Dec 2017–Mar 2019; Wave 2 Dec 2019–Mar 2020; Wave 3 Mar–Apr 2021.

Appendix 8: Practice surveys detailed tables

Practice characteristics

Table 92: Practice survey response rates by practice characteristic and evaluation round

Dimension	Strata	Participating practices				Practice responses				Response rate			
		R1	R2	R4	R5	R1	R2	R4	R5	R1	R2	R4	R5
Total		**185**	**162**	**123**	**109**	**164**	**105**	**57**	**74**	**89%**	**65%**	**46%**	**68%**
Ownership	AMS	25	22	17	16	21	10	6	4	84%	45%	35%	25%
	Corporate	39	31	16	14	35	17	5	9	90%	55%	31%	64%
	Independent	121	109	90	79	108	78	46	61	89%	72%	51%	77%
Practice size (FTE GPs)	Large practice	38	34	20	19	35	18	10	14	92%	53%	50%	74%
	Medium practice	32	30	27	23	31	25	12	15	97%	83%	44%	65%
	Small practice	94	77	62	56	78	47	30	37	83%	61%	48%	66%
	Sole practitioner	21	21	14	11	20	15	5	8	95%	71%	36%	73%
MMM category	MMM1	118	106	85	78	109	84	43	62	92%	79%	51%	79%
	MMM2	29	25	13	8	22	5	2	2	76%	20%	15%	25%
	MMM3	9	6	5	4	8	5	3	4	89%	83%	60%	100%
	MMM4_5	11	7	6	6	10	5	3	4	91%	71%	50%	67%
	MMM6_7	18	18	14	13	15	6	6	2	83%	33%	43%	15%
SEIFA (IRDS) category	Deciles 1–3 most disadvantaged	71	60	47	44	65	41	21	27	92%	68%	45%	61%
	Deciles 4–7	77	69	53	45	65	51	28	35	84%	74%	53%	78%
	Deciles 8–10 least disadvantaged	37	33	23	20	34	13	8	12	92%	39%	35%	60%

Dimension	Strata	Participating practices				Practice responses				Response rate			
		R1	R2	R4	R5	R1	R2	R4	R5	R1	R2	R4	R5
PHN	PHN103 WentWest (Western Sydney)	22	22	17	16	22	19	10	11	100%	86%	59%	69%
	PHN104 Nepean Blue Mountains	13	11	10	9	11	9	6	6	85%	82%	60%	67%
	PHN108 Hunter New England and Central Coast	16	10	5	3	12	5	1	2	75%	50%	20%	67%
	PHN203 South Eastern Melbourne	24	19	16	12	24	20	9	9	100%	105%	56%	75%
	PHN301 Brisbane North	17	16	14	14	16	9	3	13	94%	56%	21%	93%
	PHN401 Adelaide	20	17	13	13	17	17	10	12	85%	100%	77%	92%
	PHN402 Country SA	14	13	10	9	11	10	8	6	79%	77%	80%	67%
	PHN501 Perth North	15	15	12	11	14	6	4	9	93%	40%	33%	82%
	PHN601 Tasmania	17	12	7	6	12	4	0	4	71%	33%	0%	67%
	PHN701 Northern Territory	27	27	19	16	25	6	6	2	93%	22%	32%	12%

Source: Practice surveys R1 Dec 2017–Jul 2018; R2 Nov 2018–Mar 2019; R4 Nov 2019–Mar 2020 and R5 Mar–May 2021.

Practice staff levels

Table 93: Number of staff employed

Staff type	Practices reporting	Head Count (mean)	Full time equivalent (mean)	Vacancies (% of head count)
General practitioner	73	8.1	5.7	7.8%
Other medical	10	0.3	0.1	14.3%
Nurses	71	4.1	2.6	5.0%
Allied health and other	44	2.5	1.2	4.9%
Practice manager/receptionist/administrative/other	73	6.5	4.3	2.8%
Total	**73**	**21.5**	**13.4**	**5.5%**

Source: Practice survey R5 Mar–May 2021, question 27.

Table 94: Number of GPs in the practice, mean head count and FTE

Staff type	Practices reporting	Head count (mean)	Full time equivalent (mean)
Owner/ partner	55	1.7	1.5
Salaried	34	1.1	0.8
Contract	56	4.2	2.7
Other	6	0.4	0.2
Total	**71**	**7.5**	**4.9**

Source: Practice survey R5 Mar–May 2021, question 28.

Table 95: Number of GPs in the practice, mean head count per practice, by sampling strata

Response	Total	Size		Type			Location		
		Large/ medium	Small/sole	Corporate	AMS	Independ-ent	MMM 1	MMM 2 & 3	MMM 4+
Owner/ Partner	1.95	3.70	1.03	0.60	0.00	2.20	1.47	4.40	4.75
Salaried	1.16	1.30	1.08	0.20	2.33	1.18	0.82	3.00	3.00
Contract	3.47	5.15	2.58	5.80	1.33	3.36	3.55	1.40	5.00
Other	0.03	0.00	0.05	0.00	0.00	0.04	0.04	0.00	0.00

Source: Practice survey R5 Mar–May 2021, question 28.

Table 96: Additional staff employed due to HCH, by sampling strata

Practice subgroup	Response	Total	Size		Type			Location		
			Large/ medium	Small/sole	AMS	Corporate	Independent	MMM 1	MMM 2 & 3	MMM 4+
Did the practice employ additional staff as a result of implementing HCH										
Practices responding to R5:72 (No response:2)	Yes	19 (26%)	9 (33%)	10 (22%)	2 (50%)	4 (50%)	13 (22%)	15 (25%)	2 (33%)	2 (33%)
	No	53 (74%)	18 (67%)	35 (78%)	2 (50%)	4 (50%)	47 (78%)	45 (75%)	4 (67%)	4 (67%)
	chi-square		0.577 (p=0.448)		4.133 (p=0.127)			0.357 (p=0.836)		

Source: Practice survey R5 Mar–May 2021, question 29.

Relationships with other local health services – baseline (round 1)

Table 97: GP/ local hospital arrangements, by sampling strata

Practice subgroup	Response	Total	Size		Type			Location		
			Large/ medium	Small/sole	AMS	Corporate	Independent	MMM 1	MMM 2 & 3	MMM 4+
Do GPs in the practice have formal arrangements for working with/in local hospitals										
Practices responding to R1 survey:119 (No response:1)	Yes	21 (18%)	13 (28%)	8 (11%)	3 (20%)	4 (24%)	14 (16%)	9 (11%)	8 (42%)	4 (22%)
	No	98 (82%)	34 (72%)	64 (89%)	12 (80%)	13 (76%)	73 (84%)	73 (89%)	11 (58%)	14 (78%)
	chi-square		4.28 (p=0.039)		0.607 (p=0.738)			10.591 (p=0.005)		
Response to R1 survey, practices active 1 April 2021 & responding to R5:66 (No response:1)	Yes	11 (17%)	8 (31%)	3 (8%)	1 (50%)	1 (14%)	9 (16%)	6 (11%)	2 (33%)	3 (60%)
	No	55 (83%)	18 (69%)	37 (92%)	1 (50%)	6 (86%)	48 (84%)	49 (89%)	4 (67%)	2 (40%)
	chi-square		4.582 (p=0.032)		1.66 (p=0.436)			9.273 (p=0.01)		

Source: Practice survey R1 Dec 2017–Jul 2018, question 12.

Access measures

Table 98: How long (in days) does the patient have to wait before seeing a GP, by sampling strata

Response	Total	Size		Type			Location		
		Large/ medium	Small/sole	Corporate	AMS	Independent	MMM 1	MMM 2 & 3	MMM 4+
In an emergency									
Same day	107 (89.2%)	47 (97.9%)	60 (83.3%)	18 (100.0%)	15 (100.0%)	74 (85.1%)	73 (88.0%)	16 (84.2%)	18 (100.0%)
Around 1 day	13 (10.8%)	1 (2.1%)	12 (16.7%)			13 (14.9%)	10 (12.0%)	3 (15.8%)	
Other appointment									
Same day	52 (43.3%)	17 (35.4%)	35 (48.6%)	9 (50.0%)	12 (80.0%)	31 (35.6%)	36 (43.4%)	4 (21.1%)	12 (66.7%)
Around 1 day	51 (42.5%)	26 (54.2%)	25 (34.7%)	9 (50.0%)	2 (13.3%)	40 (46.0%)	35 (42.2%)	11 (57.9%)	5 (27.8%)
Around 2 days	6 (5.0%)	1 (2.1%)	5 (6.9%)			6 (6.9%)	6 (7.2%)		
Other	11 (9.2%)	4 (8.3%)	7 (9.7%)		1 (6.7%)	10 (11.5%)	6 (7.2%)	4 (21.1%)	1 (5.6%)

Source: Practice survey R1 Dec 2017–Jul 2018, question 24.

Table 99: Arrangements for patient attending the practice to access after hours general practice services, by sampling strata

Response	Total	Size		Type			Location		
		Large/ medium	Small/sole	Corporate	AMS	Independent	MMM 1	MMM 2 & 3	MMM 4+
Doctor in practice	22 (18.3%)	10 (22.2%)	12 (17.4%)	4 (25.0%)	4 (26.7%)	14 (16.9%)	12 (15.2%)	5 (29.4%)	5 (27.8%)
Nurse Triage + Doctor in practice	4 (3.3%)		4 (5.8%)		4 (26.7%)				4 (22.2%)
Doctor in Practice + After hours service/deputising service	6 (5.0%)	3 (6.7%)	3 (4.3%)			6 (7.2%)	4 (5.1%)	1 (5.9%)	1 (5.6%)
After hours service/deputising service	63 (52.5%)	25 (55.6%)	38 (55.1%)	12 (75.0%)	1 (6.7%)	50 (60.2%)	59 (74.7%)	4 (23.5%)	
Local ED/Hospital	16 (13.3%)	6 (13.3%)	10 (14.5%)		5 (33.3%)	11 (13.3%)	3 (3.8%)	7 (41.2%)	6 (33.3%)
Other	3 (2.5%)	1 (2.2%)	2 (2.9%)		1 (6.7%)	2 (2.4%)	1 (1.3%)		2 (11.1%)
Don't know/ no response	6 (5.0%)	3	3	2		4	4	2	

Source: Practice survey R1 Dec 2017–Jul 2018, question 23.

Table 100: Options available for patients to interact with practice or GP

Response	n (%)
Contact a doctor or nurse by telephone during the practice/ service's hours of operation?	102 (85.0%)
Request appointments online?	85 (70.8%)
Describe the problems they wish to discuss with the GP prior to the appointment?	75 (62.5%)
Send a medical question or concern via email or electronic message?	48 (40.0%)
Leave a voice message and get a return call from a doctor or nurse	39 (32.5%)

Response	n (%)
Review letters from specialists/ hospital discharge summarised on a patient portal?	11 (9.2%)
View test results on a patient portal?	7 (5.8%)
Request refills for prescriptions online?	6 (5.0%)
Don't know/ no response	3 (2.5%)

Source: Practice survey R1 Dec 2017–Jul 2018, question 25.

Table 101: At least one GP in the practice who makes home visits, by sampling strata

Response	Total	Size		Type			Location		
		Large/ medium	Small/sole	Corporate	AMS	Independent	MMM 1	MMM 2 & 3	MMM 4+
Yes	105 (87.5%)	45 (93.8%)	60 (83.3%)	16 (88.9%)	12 (80.0%)	77 (88.5%)	74 (89.2%)	17 (89.5%)	14 (77.8%)
No	15 (12.5%)	3 (6.2%)	12 (16.7%)	2 (11.1%)	3 (20.0%)	10 (11.5%)	9 (10.8%)	2 (10.5%)	4 (22.2%)

Source: Practice survey R1 Dec 2017–Jul 2018, question 26.

Table 102: Access to health services within the local community, by sampling strata

Practice subgroup	Health service	Total			MMM 2, 3, 4+		
		Usually available	Sometimes available	Not usually available	Usually available	Sometimes available	Not usually available
Availability of selected health services within the local community:							
Practices responding to R1 survey	Pharmacy	111 (94%)	7 (6%)		30 (81%)	7 (19%)	
	Physiotherapist	100 (85%)	15 (13%)	3 (3%)	24 (65%)	11 (30%)	2 (5%)
	Dietitian	94 (80%)	19 (16%)	5 (4%)	21 (57%)	14 (38%)	2 (5%)
	Psychologist	96 (81%)	14 (12%)	8 (7%)	23 (62%)	8 (22%)	6 (16%)
	Social Worker	64 (55%)	33 (28%)	19 (16%)	17 (47%)	12 (33%)	7 (19%)
	Dentist	98 (83%)	16 (14%)	4 (3%)	24 (65%)	11 (30%)	2 (5%)
	Optometrist	94 (80%)	17 (14%)	7 (6%)	23 (62%)	10 (27%)	4 (11%)
Response to R1 survey, practices active 1 April 2021 & responding to R5	Pharmacy	64 (98%)	1 (2%)		10 (91%)	1 (9%)	
	Physiotherapist	58 (89%)	5 (8%)	2 (3%)	9 (82%)	1 (9%)	1 (9%)
	Dietitian	56 (86%)	6 (9%)	3 (5%)	8 (73%)	3 (27%)	
	Psychologist	57 (88%)	5 (8%)	3 (5%)	8 (73%)	2 (18%)	1 (9%)
	Social Worker	37 (58%)	15 (23%)	12 (19%)	7 (64%)	3 (27%)	1 (9%)
	Dentist	61 (94%)	2 (3%)	2 (3%)	10 (91%)	1 (9%)	
	Optometrist	58 (89%)	3 (5%)	4 (6%)	9 (82%)	1 (9%)	1 (9%)

Source: Practice survey R1 Dec 2017–Jul 2018, question 13.

Systems to support chronic disease management – baseline (round 1)

Table 103: Level of difficulty generating information from current systems

Practice subgroup	Description of system functionality	Easy	Somewhat difficult	Difficult	Not possible
Do GPs routinely receive and review data on:					
Practices responding to R1 survey	Clinical summaries to give patients after each visit.	104 (87%)	14 (12%)	1 (1%)	1 (1%)
	List of all laboratory results for an individual patient (including those ordered by other doctors).	81 (68%)	28 (23%)	8 (7%)	3 (2%)
	List of all medications taken by an individual patient (including those that may have been prescribed by other doctors)	87 (72%)	24 (20%)	8 (7%)	1 (1%)
	List of all patients taking a particular medication	96 (81%)	20 (17%)	2 (2%)	1 (1%)
	List of patients by diagnosis or health problems (e.g. diabetes, cancer)	109 (91%)	11 (9%)		
	List of patients by laboratory result (e.g. HbA1c > 9.0)	90 (75%)	23 (19%)	4 (3%)	3 (2%)
	List of patients who are due or overdue for tests or preventive care (e.g. flu vaccine)	101 (84%)	17 (14%)	1 (1%)	1 (1%)
Response to R1 survey, practices active 1 April 2021 & responding to R5	Clinical summaries to give patients after each visit.	55 (82%)	11 (16%)	1 (1%)	
	List of all laboratory results for an individual patient (including those ordered by other doctors).	45 (67%)	16 (24%)	4 (6%)	2 (3%)
	List of all medications taken by an individual patient (including those that may have been prescribed by other doctors)	49 (73%)	13 (19%)	4 (6%)	1 (1%)
	List of all patients taking a particular medication	57 (85%)	8 (12%)	1 (1%)	1 (1%)
	List of patients by diagnosis or health problems (e.g. diabetes, cancer)	64 (96%)	3 (4%)		
	List of patients by laboratory result (e.g. HbA1c > 9.0)	49 (73%)	16 (24%)		2 (3%)
	List of patients who are due or overdue for tests or preventive care (e.g. flu vaccine)	55 (82%)	11 (16%)	1 (1%)	

Source: Practice survey R1 Dec 2017–Jul 2018, questions 27 & 30.

Table 104: GPs routinely receive and review data on selected aspects of patient care

Practice subgroup	Type of clinical data	Yes	No
Do GPs routinely receive and review data on:			
Practices responding to R1 survey	Clinical outcomes (e.g. percentage of patients with diabetes or asthma with good control)	74 (62%)	45 (38%)
	Frequency of ordering diagnostic tests	69 (57%)	51 (42%)
	Patients' hospital admissions or emergency department use	92 (77%)	28 (23%)
	Prescribing practices	82 (68%)	38 (32%)
	Surveys of patient satisfaction and experiences with care	74 (62%)	45 (38%)
Response to R1 survey, practices active 1 April 2021 & responding to R5 survey	Clinical outcomes (e.g. percentage of patients with diabetes or asthma with good control)	39 (59%)	27 (41%)
	Frequency of ordering diagnostic tests	34 (51%)	33 (49%)
	Patients' hospital admissions or emergency department use	50 (75%)	17 (25%)
	Prescribing practices	46 (69%)	21 (31%)
	Surveys of patient satisfaction and experiences with care	40 (61%)	26 (39%)

Source: Practice survey R1 Dec 2017–Jul 2018, questions 28 & 31.

Table 105: Practice processes/systems

Practice subgroup	Process/system	Yes	No
Are the following processes/systems in place:			
Practices responding to R1 survey	A checklist for preventive clinical practices (counselling, screening, immunisation) to carry out with patients, according to guidelines?	104 (87%)	16 (13%)
	A reminder system to invite patients to recommend screening tests (e.g. Pap test, mammogram)?	119 (99%)	1 (1%)
	A system to track laboratory tests ordered until results reach clinicians?	88 (73%)	32 (27%)
	A tool to assist lifestyle counselling or to help modify behaviors (e.g. smoking cessation program, health education program)?	86 (72%)	33 (28%)
Response to R1 survey, practices active 1 April 2021 & responding to R5 survey	A checklist for preventive clinical practices (counselling, screening, immunisation) to carry out with patients, according to guidelines?	58 (87%)	9 (13%)
	A reminder system to invite patients to recommend screening tests (e.g. Pap test, mammogram)?	67 (100%)	
	A system to track laboratory tests ordered until results reach clinicians?	50 (75%)	17 (25%)
	A tool to assist lifestyle counselling or to help modify behaviors (e.g. smoking cessation program, health education program)?	49 (73%)	18 (27%)

Source: Practice survey R1 Dec 2017–Jul 2018, question 29 & 32.

Other practice characteristics

Table 106: Practice Incentive Program (PIP) participation, by sampling strata

Response	Total	Size		Type			Location		
		Large/ medium	Small/sole	Corporate	AMS	Independent	MMM 1	MMM 2 & 3	MMM 4+
Diabetes Incentive	114 (95.0%)	44 (93.6%)	70 (97.2%)	17 (100.0%)	15 (100.0%)	82 (94.3%)	77 (93.9%)	19 (100.0%)	18 (100.0%)
eHealth Incentive	110 (91.7%)	44 (93.6%)	66 (91.7%)	14 (82.4%)	14 (93.3%)	82 (94.3%)	76 (92.7%)	18 (94.7%)	16 (88.9%)
Asthma incentive	108 (90.0%)	43 (91.5%)	65 (90.3%)	15 (88.2%)	14 (93.3%)	79 (90.8%)	74 (90.2%)	16 (84.2%)	18 (100.0%)
Cervical Screening Incentive	105 (87.5%)	43 (91.5%)	62 (86.1%)	16 (94.1%)	15 (100.0%)	74 (85.1%)	70 (85.4%)	17 (89.5%)	18 (100.0%)
Practice Incentive Program After Hours Initiative	86 (71.7%)	41 (87.2%)	45 (62.5%)	12 (70.6%)	7 (46.7%)	67 (77.0%)	59 (72.0%)	17 (89.5%)	10 (55.6%)
Indigenous Health Incentive	83 (69.2%)	35 (74.5%)	48 (66.7%)	13 (76.5%)	11 (73.3%)	59 (67.8%)	50 (61.0%)	19 (100.0%)	14 (77.8%)
Teaching Payment	58 (48.3%)	28 (59.6%)	30 (41.7%)	5 (29.4%)	7 (46.7%)	46 (52.9%)	38 (46.3%)	10 (52.6%)	10 (55.6%)
Quality Prescribing Incentive (QPI)	52 (43.3%)	18 (38.3%)	34 (47.2%)	6 (35.3%)	2 (13.3%)	44 (50.6%)	34 (41.5%)	12 (63.2%)	6 (33.3%)
General Practitioner Aged Care Access Incentive	49 (40.8%)	22 (46.8%)	27 (37.5%)	8 (47.1%)	4 (26.7%)	37 (42.5%)	28 (34.1%)	13 (68.4%)	8 (44.4%)
Rural Loading Incentive	23 (19.2%)	7 (14.9%)	16 (22.2%)	1 (5.9%)	8 (53.3%)	14 (16.1%)	2 (2.4%)	9 (47.4%)	12 (66.7%)
Procedural General Practitioner Payment	16 (13.3%)	8 (17.0%)	8 (11.1%)	3 (17.6%)	3 (20.0%)	10 (11.5%)	5 (6.1%)	6 (31.6%)	5 (27.8%)
Don't know/ no response	1 (0.8%)	1		1			1		

Source: Practice survey R1 Dec 2017–Jul 2018, question 16.

Enrolment and risk stratification

Table 107: Practice focused on enrolling patients in HCH with specific chronic illnesses, by sampling strata

Response	Total	Size		Type			Location		
		Large/ medium	Small/sole	Corporate	AMS	Independent	MMM 1	MMM 2 & 3	MMM 4+
Yes: focused chronic illnesses	**23 (25.0%)**	**12 (30.8%)**	**11 (21.2%)**	**1 (7.7%)**		**22 (31.0%)**	**19 (26.0%)**	**3 (37.5%)**	**1 (10.0%)**
Diabetes	15 (16.3%)	9 (23.1%)	6 (11.5%)	1 (7.7%)		14 (19.7%)	13 (17.8%)	2 (25.0%)	
COPD	9 (9.8%)	6 (15.4%)	3 (5.8%)			9 (12.7%)	6 (8.2%)	2 (25.0%)	1 (10.0%)
CHD	7 (7.6%)	3 (7.7%)	4 (7.7%)	1 (7.7%)		6 (8.5%)	6 (8.2%)	1 (12.5%)	
Asthma	3 (3.3%)	3 (7.7%)				3 (4.2%)	3 (4.1%)		
Arthritis	2 (2.2%)	2 (5.1%)		1 (7.7%)		1 (1.4%)	2 (2.7%)		
Hyperlipidaemia	2 (2.2%)	1 (2.6%)	1 (1.9%)			2 (2.8%)	2 (2.7%)		
Hypertension	2 (2.2%)	1 (2.6%)	1 (1.9%)			2 (2.8%)	2 (2.7%)		
CHF	1 (1.1%)		1 (1.9%)			1 (1.4%)	1 (1.4%)		
Dementia	1 (1.1%)		1 (1.9%)			1 (1.4%)	1 (1.4%)		
Lung cancer	1 (1.1%)		1 (1.9%)			1 (1.4%)	1 (1.4%)		
Mental illness	1 (1.1%)		1 (1.9%)			1 (1.4%)	1 (1.4%)		
Obesity	1 (1.1%)	1 (2.6%)				1 (1.4%)	1 (1.4%)		
Stroke	1 (1.1%)		1 (1.9%)			1 (1.4%)	1 (1.4%)		
No	**68 (73.9%)**	**27 (69.2%)**	**41 (78.8%)**	**12 (92.3%)**	**7 (100.0%)**	**49 (69.0%)**	**54 (74.0%)**	**5 (62.5%)**	**9 (90.0%)**
Don't know/ no response	**1 (1.1%)**		**1**		**1**				**1**

Source: Practice survey R2 Nov 2018–Mar 2019, question 1.

Table 108: Ease of use of the risk stratification software/ patient enrolment

Response by practice status	The process was very smooth	We had some challenges, but we overcame them	We experienced ongoing difficulties	Don't know/ no response
Ease of use of the risk stratification software and associated processes				
Active	17 (18.7%)	61 (67.0%)	13 (14.3%)	1
Withdrawn	5 (38.5%)	4 (30.8%)	4 (30.8%)	
Rating of the administrative processes for enrolling patients in HCH				
Active	21 (23.1%)	57 (62.6%)	13 (14.3%)	1
Withdrawn	2 (16.7%)	7 (58.3%)	3 (25.0%)	1

Source: Practice survey R2 Nov 2018–Mar 2019, questions 2 & 13.

Table 109: Did the practice use the GP override function, by sampling strata

Response	Total	Size		Type			Location		
		Large/ medium	Small/sole	Corporate	AMS	Independent	MMM 1	MMM 2 & 3	MMM 4+
Yes: reason for using this function	**53 (57.6%)**	**24 (63.2%)**	**29 (58.0%)**	**10 (76.9%)**	**5 (71.4%)**	**38 (55.9%)**	**44 (62.9%)**	**3 (37.5%)**	**6 (60.0%)**
Missed by PRM	15 (16.3%)	9 (23.7%)	6 (12.0%)	6 (46.2%)	2 (28.6%)	7 (10.3%)	12 (17.1%)		3 (30.0%)
Psychosocial	11 (12.0%)	5 (13.2%)	6 (12.0%)			11 (16.2%)	8 (11.4%)	2 (25.0%)	1 (10.0%)
Multiple diseases	4 (4.3%)	1 (2.6%)	3 (6.0%)			4 (5.9%)	3 (4.3%)	1 (12.5%)	
Cancer	3 (3.3%)	1 (2.6%)	2 (4.0%)			3 (4.4%)	2 (2.9%)	1 (12.5%)	
Carer stress/availability	3 (3.3%)	1 (2.6%)	2 (4.0%)			3 (4.4%)	2 (2.9%)	1 (12.5%)	
Auto immune diseases	2 (2.2%)	1 (2.6%)	1 (2.0%)			2 (2.9%)	1 (1.4%)		1 (10.0%)
Disability	2 (2.2%)		2 (4.0%)			2 (2.9%)	2 (2.9%)		
Financial	2 (2.2%)		2 (4.0%)			2 (2.9%)	1 (1.4%)	1 (12.5%)	
Osteoporosis	2 (2.2%)	2 (5.3%)		1 (7.7%)		1 (1.5%)	1 (1.4%)	1 (12.5%)	
Other heart	2 (2.2%)	2 (5.3%)		1 (7.7%)	1 (14.3%)		1 (1.4%)		1 (10.0%)
Age	1 (1.1%)	1 (2.6%)		1 (7.7%)			1 (1.4%)		
Acromegaly	1 (1.1%)	1 (2.6%)		1 (7.7%)			1 (1.4%)		
Dementia	1 (1.1%)	1 (2.6%)		1 (7.7%)			1 (1.4%)		

Response	Total	Size		Type			Location		
		Large/ medium	Small/sole	Corporate	AMS	Independent	MMM 1	MMM 2 & 3	MMM 4+
Haematological	1 (1.1%)	1 (2.6%)				1 (1.5%)	1 (1.4%)		
Health literacy	1 (1.1%)	1 (2.6%)				1 (1.5%)	1 (1.4%)		
Homelessness	1 (1.1%)		1 (2.0%)			1 (1.5%)	1 (1.4%)		
MS	1 (1.1%)	1 (2.6%)				1 (1.5%)	1 (1.4%)		
Obesity	1 (1.1%)		1 (2.0%)			1 (1.5%)		1 (12.5%)	
Rheumatological	1 (1.1%)	1 (2.6%)				1 (1.5%)	1 (1.4%)		
Sleep apnoea	1 (1.1%)	1 (2.6%)		1 (7.7%)			1 (1.4%)		
No	**35 (38.0%)**	**14 (36.8%)**	**21 (42.0%)**	**3 (23.1%)**	**2 (28.6%)**	**30 (44.1%)**	**26 (37.1%)**	**5 (62.5%)**	**4 (40.0%)**
Don't know/ no response	**4 (4.3%)**	**1**	**3**		**1**	**3**	**3**		**1**

Source: Practice survey R2 Nov 2018–Mar 2019, question 4.

Table 110: Usefulness of the HARP tool

Response	Very useful	Moderately useful	Limited usefulness	Not useful	Don't know/ no response
Usefulness of the HARP tool for assessing the care needs of patients	13 (14.6%)	36 (40.4%)	30 (33.7%)	10 (11.2%)	3

Source: Practice survey R2, questions 8.

Table 111: Proportion of patients approached to enroll in HCH who actually enrolled (including responses from withdrawn practices)

Practice status	Practice estimate of proportion of patients who agreed to enrol					
	0%–20%	20%–40%	40%–60%	60%–80%	80%–100%	Don't know/ no response
All practices responding to R2 survey	19 (18.6%)	8 (7.8%)	12 (11.8%)	19 (18.6%)	44 (43.1%)	3
Practices responding to R2 survey and still active in April 2021	10 (17.2%)	3 (5.2%)	8 (13.8%)	10 (17.2%)	27 (46.6%)	1

Source: Practice surveys R2 Nov 2018–Mar 2019, question 11.

Shared care planning and use of My Health Record

Table 112: Did processes for shared care planning and review change from before HCH?, by sampling strata

Response	Total	Size		Type			Location		
		Large/ medium	Small/sole	Corporate	AMS	Independent	MMM 1	MMM 2 & 3	MMM 4+
Yes	34 (37.0%)	9 (23.1%)	25 (49.0%)	3 (23.1%)	3 (50.0%)	28 (39.4%)	26 (35.6%)	2 (25.0%)	6 (66.7%)
No	56 (60.9%)	30 (76.9%)	26 (51.0%)	10 (76.9%)	3 (50.0%)	43 (60.6%)	47 (64.4%)	6 (75.0%)	3 (33.3%)
Don't know/ no response	2 (2.2%)		2		2				2

Source: Practice survey R2 Nov 2018–Mar 2019, question 15.

Table 113: Main ways in which shared care planning and review processes changed following HCH implementation

Response	n (%)
Share care plans are more detailed	8 (8.7%)
Implemented electronic shared care / went online	6 (6.5%)
Shared care planning can be more easily forwarded to specialist and AH workers	3 (3.3%)
Patient had more input	2 (2.2%)

Response	n (%)
Patient reviews can be done by phone	2 (2.2%)
More regular reviews	1 (1.1%)
Use of a patient centred measure to add more patient goals	1 (1.1%)

Source: Practice survey R2 Nov 2018–Mar 2019, question 15.

Table 114: Main ways that the practice shares care plans with HCH patients and their carers or family (multiple may apply), by sampling strata

Response	Total	Size		Type			Location		
		Large/ medium	Small/sole	Corporate	AMS	Independent	MMM 1	MMM 2 & 3	MMM 4+
We give a printed version of the care plan to the patient and/or their carer/ family	58 (63.0%)	25 (64.1%)	33 (67.3%)	9 (69.2%)	4 (66.7%)	45 (65.2%)	47 (66.2%)	6 (75.0%)	5 (55.6%)
We email an electronic version of the care plan to the patient and/or their carer/ family	7 (7.6%)	2 (5.1%)	5 (10.2%)	1 (7.7%)		6 (8.7%)	7 (9.9%)		
We give the patient and/ or their carer/ family access to the care plan via a patient portal or through shared care planning software	23 (25.0%)	9 (23.1%)	14 (28.6%)	4 (30.8%)		19 (27.5%)	19 (26.8%)	2 (25.0%)	2 (22.2%)
We load the patient's care plan into their My Health Record	23 (25.0%)	9 (23.1%)	14 (28.6%)	3 (23.1%)	3 (50.0%)	17 (24.6%)	18 (25.4%)	3 (37.5%)	2 (22.2%)
Other: Link it to the EHR/ allow patient to access	4 (4.3%)	1 (2.6%)	3 (6.1%)			4 (5.8%)	4 (5.6%)		
Other: Patient can have hard copy if they request it	2 (2.2%)	2 (5.1%)			1 (16.7%)	1 (1.4%)	1 (1.4%)		1 (11.1%)
Other: Verbally	2 (2.2%)	1 (2.6%)	1 (2.0%)			2 (2.9%)	1 (1.4%)	1 (12.5%)	
Other	7 (7.6%)	5 (12.8%)	2 (4.1%)	2 (15.4%)		5 (7.2%)	6 (8.5%)		1 (11.1%)
Don't know/ no response	4 (4.3%)		4		2	2	2		2

Source: Practice survey R2 Nov 2018–Mar 2019, question 16.

Table 115: Reflections on ways in which shared care planning has worked in practice

Sentiment	Response	Practices (n)
Reflections on ways in which shared care planning has worked:		
Positive impact	Improved team care communication internal and external	15
	Improved patient engagement	5
	Improved patient access	5
	Improved patient to practice communication	3
	Enhanced chronic disease management	3
Neutral or negative impact	Not worked/ software issues	11
	Complicated/ time consuming/ duplication of work	11
	Need more effective ways to monitor patients	11
	No change	9
	Other health providers/allied health don't have access/ don't use	8
	Don't use it	6
	Most patients are not accessing their care plans	4
	Issues with training/limited education	2
	Too expensive	1
	Patients over-reliant and overuse tools as form of communication	1

Source: Practice survey R5 Mar–May 2021, question 2.

Table 116: Practice insights into how shared care planning could be improved

Type of suggestion	Suggestion	Practices (n)
Suggestions for improving shared care planning:		
No change	No change required	8
Suggested changes	Better training/engagement of health care providers to increase access of shared care plans	23
	Needs to integrate with practice software	17
	Move to a single system	10
	Enhance software by fixing issues around functionality	9
	Better training/support for practice staff	3
	Reliability	1
	Additional patient education/make plans more patient-focussed	1

Source: Practice survey R5 Mar–May 2021, question 3.

Table 117: Usefulness of My Health Record in sharing HCH patient information

Survey round/ Practice subgroup	Very useful	Moderately useful	Limited usefulness	Not useful
Usefulness of My Health Record for sharing care plans with patients, carers or family				
R2 responses: All practices	9 (15%)	9 (15%)	20 (33%)	23 (38%)
R2 responses: Practices also responding to R5	5 (13%)	4 (10%)	18 (46%)	12 (31%)
Usefulness of My Health Record for sharing information about HCH patients with other service providers				
R5 responses	20 (29%)	18 (26%)	26 (38%)	5 (7%)

Source: Practice R2 Nov 2018–Mar 2019, question 22; R5 Mar–May 2021, question 4.

Table 118: Usefulness of My Health Record in sharing information about HCH patients with other service providers, by sampling strata

Response	Total	Size		Type			Location		
		Large/ medium	Small/sole	Corporate	AMS	Independ-ent	MMM 1	MMM 2 & 3	MMM 4+
Very useful	20 (29.0%)	6 (23.1%)	14 (32.6%)	3 (42.9%)	2 (50.0%)	15 (25.9%)	17 (29.3%)	1 (20.0%)	2 (33.3%)
Moderately useful	18 (26.1%)	3 (11.5%)	15 (34.9%)	2 (28.6%)	1 (25.0%)	15 (25.9%)	15 (25.9%)	3 (60.0%)	
Limited	26 (37.7%)	14 (53.8%)	12 (27.9%)	1 (14.3%)	1 (25.0%)	24 (41.4%)	22 (37.9%)		4 (66.7%)
Not useful	5 (7.2%)	3 (11.5%)	2 (4.7%)	1 (14.3%)		4 (6.9%)	4 (6.9%)	1 (20.0%)	

Source: Practice survey R5 Mar–May 2021, question 4.

Table 119: Change in the level of use of My Health Record by GPs and other clinicians in the practice since the start of HCH, by sampling strata

Response	Total	Size		Type			Location		
		Large/ medium	Small/sole	Corporate	AMS	Independ-ent	MMM 1	MMM 2 & 3	MMM 4+
Significant increase	11 (16.2%)	1 (4.3%)	10 (22.2%)		2 (50.0%)	9 (15.8%)	7 (12.3%)	3 (60.0%)	1 (16.7%)
Moderate increase	25 (36.8%)	7 (30.4%)	18 (40.0%)	3 (42.9%)	1 (25.0%)	21 (36.8%)	20 (35.1%)	1 (20.0%)	4 (66.7%)
Much the same	32 (47.1%)	15 (65.2%)	17 (37.8%)	4 (57.1%)	1 (25.0%)	27 (47.4%)	30 (52.6%)	1 (20.0%)	1 (16.7%)
Don't know/ no response	6	6		2		4	5	1	

Source: Practice survey R5 Mar–May 2021, question 5.

Changes implemented within practice

Table 120: Initiatives that practices/ services have implemented as part of HCH

Initiatives practices implemented as part of HCH	Was this a feature of practice before HCH	Was a focus of change during HCH	Progress on implementation (% where this was a focus)			Impact of COVID-19 (% where this was a focus)			Extent the initiative helped during the COVID-19 pandemic (% where this was a focus)		
			Completed	Plan to complete	Did not commence	Accelerated progress	No impact	Slowed progress	A lot	A little	Not at all
A. Improving the completeness and quality of the data in the practice clinical management system	61 (82%)	42 (57%)	25 (60%)	17 (40%)		12 (29%)	9 (21%)	21 (50%)	8 (19%)	27 (64%)	7 (17%)
B. Regular meetings of HCH practice team (e.g. GPs, nurse, admin staff) to review HCH patients and their care needs	33 (45%)	45 (61%)	25 (56%)	19 (42%)	1 (2%)	10 (22%)	3 (7%)	32 (71%)	13 (31%)	20 (48%)	9 (21%)
C. Reassigning components of care usually undertaken by a GP to a nurse (e.g. patients routinely see a nurse prior to seeing the GP when they attend the practice)	53 (72%)	38 (51%)	30 (79%)	8 (21%)		9 (24%)	7 (18%)	22 (58%)	14 (38%)	19 (51%)	4 (11%)
D. Reassigning components of care usually undertaken by a GP or nurse to a medical assistant (e.g. clinical measurements and assessments)	23 (31%)	21 (28%)	12 (57%)	2 (10%)	7 (33%)	3 (15%)	8 (40%)	9 (45%)	5 (25%)	8 (40%)	7 (35%)

Initiatives practices implemented as part of HCH	Was this a feature of practice before HCH	Was a focus of change during HCH	Progress on implementation (% where this was a focus)			Impact of COVID-19 (% where this was a focus)			Extent the initiative helped during the COVID-19 pandemic (% where this was a focus)		
			Completed	Plan to complete	Did not commence	Accelerated progress	No impact	Slowed progress	A lot	A little	Not at all
E. Introducing new roles within the practice (e.g. medical practice assistance, care coordinator, community care worker)	17 (23%)	24 (32%)	13 (54%)	2 (8%)	9 (38%)	6 (27%)	7 (32%)	9 (41%)	4 (22%)	10 (56%)	4 (22%)
F. Improved systems for follow-up and re-call of HCH patients (e.g. for review or preventive services)	53 (72%)	47 (64%)	34 (72%)	12 (26%)	1 (2%)	8 (18%)	15 (33%)	22 (49%)	16 (37%)	19 (44%)	8 (19%)
G. Proactive contact with patients to check how they are going (e.g. by telephone)	40 (54%)	45 (61%)	35 (78%)	10 (22%)		18 (41%)	11 (25%)	15 (34%)	22 (52%)	15 (36%)	5 (12%)
H. Dedicated clinics for HCH patients with specific chronic illnesses (e.g. diabetes, osteoarthritis)	13 (18%)	20 (27%)	13 (65%)	3 (15%)	4 (20%)	1 (5%)	3 (16%)	15 (79%)	3 (18%)	6 (35%)	8 (47%)
I. Group consultations involving two or more patients	7 (9%)	15 (20%)	3 (20%)	2 (13%)	10 (67%)	1 (8%)	2 (15%)	10 (77%)	3 (30%)	2 (20%)	5 (50%)
J. Joint consultations for a patient involving a GP, nurse and allied health (e.g. pharmacist)	25 (34%)	25 (34%)	13 (52%)	10 (40%)	2 (8%)	5 (22%)	3 (13%)	15 (65%)	7 (33%)	10 (48%)	4 (19%)
K. HCH patients able to telephone the practice and talk to a nurse or GP about their health concerns	50 (68%)	53 (72%)	49 (92%)	4 (8%)		32 (62%)	14 (27%)	6 (12%)	30 (58%)	15 (29%)	7 (13%)

Initiatives practices implemented as part of HCH	Was this a feature of practice before HCH	Was a focus of change during HCH	Progress on implementation (% where this was a focus)			Impact of COVID-19 (% where this was a focus)			Extent the initiative helped during the COVID-19 pandemic (% where this was a focus)		
			Completed	Plan to complete	Did not commence	Accelerated progress	No impact	Slowed progress	A lot	A little	Not at all
L. HCH patients able to communicate by email or secure messaging with the GP or nurse about their health concerns	28 (38%)	30 (41%)	23 (77%)	5 (17%)	2 (7%)	17 (59%)	11 (38%)	1 (3%)	11 (38%)	10 (34%)	8 (28%)
M. Introducing a patient portal through which clinical information is shared with HCH patients	9 (12%)	22 (30%)	10 (45%)	9 (41%)	3 (14%)	3 (16%)	11 (58%)	5 (26%)	2 (10%)	8 (40%)	10 (50%)
N. HCH patients able to refill scripts without a GP consultation	44 (59%)	47 (64%)	42 (89%)	4 (9%)	1 (2%)	28 (62%)	12 (27%)	5 (11%)	25 (57%)	10 (23%)	9 (20%)

Source: Practice survey R5 Mar–May 2021, question 9.

Table 121: Additional changes that have occurred in the last 12 months, in the practice's processes for managing patients' chronic illnesses

Response	Total
Increased use of technology	7 (19.4%)
Patient Outreach (Nurse) follow up with HCH patients	6 (16.7%)
Introduced/ enhanced telehealth (including e-scripts)	6 (16.7%)
Improved in practice collaboration	6 (16.7%)
Increased scope of practice for non GP staff	5 (13.9%)
Improved external collaboration	4 (11.1%)
Increased service offering	4 (11.1%)
Introduced/ enhanced recall system	4 (11.1%)
Improved flexibility for staff: e.g. remote working	4 (11.1%)
New staff/ increased hours	3 (8.3%)
Installed/ changed/greater use of shared care platform	3 (8.3%)
Improved practice culture and team	3 (8.3%)
Increased non-GP staff involvement	2 (5.6%)
Data cleansing/ improved use of practice data in patient care	2 (5.6%)
Improved care plan processes	2 (5.6%)
More patient engagement in care planning	1 (2.8%)
Improved internal systems to support HCH	1 (2.8%)
Don't know/ no response	38

Source: Practice survey R5 Mar–May 2021, question 11.

Table 122: Changes the practice has made during the HCH trial that will be continued after the trial ends

Category	Changes	Practices (n)
Changes made as a HCH that will be continued or discontinued when the trial ends:		
Continued	Internal collaborative/ team care approach	6
	No appointment prescriptions	6
	Quality Improvement including Data cleansing	6
	Nurse led care	5
	Team meetings/ huddles	5
	Expanded scope of practice for staff	5
	Care Plans and care plan review	5
	External collaborative care approach	3
	SMS and Email contact	3
	Maintain HCH software incl. Shared Care	3
	Training medical assistants	2
	Telehealth	19
	Dedicated Care coordination/ Chronic Disease staff	14
	Recalls	10
	Patient lifestyle groups / education	1
	Increased recording of health data (Inc. Alcohol/tobacco use screening etc)	1
Discontinued	Discontinue use of Shared Care Platform	4
	Reduce Nursing time	4
	Discontinue no appointment prescriptions	1

Source: Practice survey R5 Mar–May 2021, question 14.

Impact of COVID-19

Table 123: Changes in the mode of contact with HCH patients since the start of the COVID-19 pandemic

Mode of contact	Practice subgroup	2020 compared with 2019			
		Did more	Did less	No change	Mode not offered /used
Changes in the mode of contact with HCH patients during 2020 as a whole compared with 2019:					
Face-to-face	All R5 practices	2 (3%)	59 (84%)	9 (13%)	
	Practice enrolled <50 patients	1 (3%)	28 (78%)	7 (19%)	
	Practice enrolled 50+ patients	1 (3%)	31 (91%)	2 (6%)	
Telephone	All R5 practices	65 (92%)		6 (8%)	
	Practice enrolled <50 patients	32 (86%)		5 (14%)	
	Practice enrolled 50+ patients	33 (97%)		1 (3%)	
Video	All R5 practices	20 (31%)		7 (11%)	37 (58%)
	Practice enrolled <50 patients	7 (21%)		4 (12%)	22 (67%)
	Practice enrolled 50+ patients	13 (42%)		3 (10%)	15 (48%)
Email	All R5 practices	26 (39%)	4 (6%)	20 (30%)	16 (24%)
	Practice enrolled <50 patients	14 (42%)		13 (39%)	6 (18%)
	Practice enrolled 50+ patients	12 (36%)	4 (12%)	7 (21%)	10 (30%)
Shared care tool	All R5 practices	1 (100%)			
	Practice enrolled 50+ patients	1 (100%)			
Text/SMS	All R5 practices	1 (50%)		1 (50%)	
	Practice enrolled <50 patients	1 (100%)			
	Practice enrolled 50+ patients			1 (100%)	
Home visits	All R5 practices	1 (100%)			
	Practice enrolled 50+ patients	1 (100%)			

Mode of contact	Practice subgroup	2020 compared with 2019			
		Did more	Did less	No change	Mode not offered /used
Nurse consults	All R5 practices	1 (100%)			
	Practice enrolled 50+ patients	1 (100%)			

Source: Practice survey R5 Mar–May 2021, question 22.

Table 124: Factors that impacted implementation of HCH initiatives, including COVID

Category	Other factors	Practices (n)
COVID-19: General	Impacted group sessions/classes	8
	Fewer face-to-face appointments/patients hesitant to come in	5
	Impacted staffing/staffing changes	4
	Stifled progress, COVID was priority	18
	Fewer appointments allied health/specialists	1
	Reduced nurse role	1
	Negatively impacted patient management	1
COVID-19: Telehealth	telehealth and the rollout of other initiatives due to COVID negated some benefits of HCH	5
	Difficult to contact patients or resistance to telehealth	5
	Increased telehealth/introduced IT initiatives	20
	HCH processes established prior to COVID made certain changes and less face-to-face engagement easier (i.e. patients used to telehealth/enhanced chronic disease management already in place)	18
Other factors	lack of qualified staff/limited staff availability	2
	Introduced eScripts	1
	Lack of prescriptive direction form DoH	1

Source: Practice survey R5 Mar–May 2021, question 10.

Table 125: Impact of COVID-19 on regularity clinical or preventative measures/ screening were undertaken for HCH patients

Impact of COVID-19 on regularly of clinical or preventive measures/screening for HCH patients	Practices n (%)
COVID-19 had no effect: we continued our measurement/ screening with the same regularity as usual.	22 (33%)
We reduced the regularity of these measures/ screening for a while, but we subsequently caught up and are now achieving our usual regularity.	18 (27%)
We reduced the regularity of these measures/ screening for a while, and we are still catching up to achieve our usual regularity.	27 (40%)

Source: Practice survey R5 Mar–May 2021, question 23.

Table 126: Additional comments on the impact of COVID-19 on services delivered to HCH patients

Additional comments on the impact of COVID-19 on services delivered to HCH patients	Practices n (%)
Increased telehealth/introduced IT initiatives	19 (40%)
limited/no change	13 (28%)
Fewer face-to-face appointments/patients hesitant to come in	10 (21%)
telehealth and the rollout of other initiatives (i.e. eScripts & eReferrals) due to COVID negated some benefits of HCH	4 (9%)
Impacted staffing/staffing changes	3 (6%)
Reduced preventative screening, procedures, clinical measures, etc.	3 (6%)
HCH processes established prior to COVID made certain changes and less face-to-face engagement easier (i.e. patients used to telehealth/enhanced chronic disease management already in place)	2 (4%)
Difficult to contact patients or resistance to telehealth	2 (4%)
Impacted group sessions/classes	1 (2%)
Stifled progress, COVID was priority	1 (2%)

Additional comments on the impact of COVID-19 on services delivered to HCH patients	Practices n (%)
Fewer appointments allied health/specialists	1 (2%)
Caused confusion amongst patients	1 (2%)

Source: Practice survey R5 Mar–May 2021, question 24.

Patient engagement and activation

Table 127: Practice assessment of change engagement/ activation for HCH patients since start of HCH

Response	Total	Size		Type			Location		
		Large/ medium	Small/sole	Corporate	AMS	Independ-ent	MMM 1	MMM 2 & 3	MMM 4+
Significant improvement	9 (12.9%)	1 (4.0%)	8 (17.8%)	1 (14.3%)	2 (50.0%)	6 (10.2%)	6 (10.2%)	2 (33.3%)	1 (20.0%)
Moderate improvement	33 (47.1%)	12 (48.0%)	21 (46.7%)	2 (28.6%)	1 (25.0%)	30 (50.8%)	28 (47.5%)	2 (33.3%)	3 (60.0%)
Small improvement	20 (28.6%)	9 (36.0%)	11 (24.4%)	3 (42.9%)	1 (25.0%)	16 (27.1%)	17 (28.8%)	2 (33.3%)	1 (20.0%)
No improvement/reduction	8 (11.4%)	3 (12.0%)	5 (11.1%)	1 (14.3%)		7 (11.9%)	8 (13.6%)		
Don't know/ no response	4	4		2		2	3		1

Source: Practice survey R5 Mar–May 2021, question 6.

Table 128: Factors contributing to or limiting improvements in patient engagement/ activation

Factors contributing to improvements		Factors preventing/limiting improvements	
Description	**Practices (n)**	**Description**	**Practices (n)**
Convenience (e.g. phone consults, not having to see GP for regular scripts)	28	Lack of resources locally to deliver HCH	18
More care from non GP staff	23	Patient attitude	17
Team Care	18	Covid	17
Continuity of care	14	Lack of HCH understanding by patients	15
Regular reminders	11	Lack of GP engagement	10
Improved Patient Health literacy	11	Staff turnover	10
Regular feedback/contact	9	Share care planning software limitations	9
Improved practice culture	8	Lack of engagement by Allied Health	8
Focus on patient's goals	7	Patient Value proposition	5
Improved service offering	6	Bundled Payments/ funding/ resourcing	5
Patient communication	6	Low Patient numbers	5
Access to their medical record	3	Lack of HCH understanding practice staff	2
Improved shared care plans	1	External service availability	2
Broadened programs and referrals	1	Language barriers	2
		lack of Department of Health support	2
		IT issues	2
		Lack of staff (non GP) engagement	2
		Lack of PHN support	1

Source: Practice survey R5 Mar–May 2021, questions 7 & 8.

Practice assessment of impact on outcomes

Table 129: Practice assessment of the overall impact of HCH on coordination of care, compared with usual care for similar patients

Outcome dimension / Practice subgroup	Practice assessment of improvement compared with usual care					chi-square
	Significant	Moderate	Small	None	Worse	
Impact on coordination of care						
All R5 practices	16 (23%)	21 (30%)	21 (30%)	12 (17%)	1 (1%)	statistic=6.375 (p=0.095)
Practice enrolled <50 patients	6 (17%)	8 (22%)	12 (33%)	10 (28%)		
Practice enrolled 50+ patients	10 (29%)	13 (37%)	9 (26%)	2 (6%)	1 (3%)	
Impact on patient outcomes						
All R5 practices	9 (14%)	19 (30%)	23 (37%)	12 (19%)		statistic=4.081 (p=0.253)
Practice enrolled <50 patients	3 (9%)	9 (28%)	11 (34%)	9 (28%)		
Practice enrolled 50+ patients	6 (19%)	10 (32%)	12 (39%)	3 (10%)		
Impact on quality of care						
All R5 practices	15 (23%)	17 (26%)	18 (27%)	16 (24%)		statistic=4.668 (p=0.198)
Practice enrolled <50 patients	5 (15%)	7 (21%)	10 (30%)	11 (33%)		
Practice enrolled 50+ patients	10 (30%)	10 (30%)	8 (24%)	5 (15%)		
Staff experience & satisfaction						
All R5 practices	9 (14%)	18 (27%)	19 (29%)	18 (27%)	2 (3%)	statistic=17.297 (p=0.001)
Practice enrolled <50 patients	1 (3%)	6 (18%)	9 (27%)	16 (48%)	1 (3%)	
Practice enrolled 50+ patients	8 (24%)	12 (36%)	10 (30%)	2 (6%)	1 (3%)	

Source: Practice survey R5 Mar–May 2021, question 16.

Economic issues

Table 130: Practice assessment of the impact of HCH on the financial viability of the practice

Response	All practices, R5	Practice enrolled 50+ patients	Practice enrolled <50 patients
Description of impact of HCH on the financial viability of the practice			
Positive	18 (28%)	15 (44%)	3 (10%)
Neutral or little to no financial advantage with HCH funding model	14 (22%)	5 (15%)	9 (29%)
Negative	13 (20%)	5 (15%)	8 (26%)
Viability dependent on patient tier	7 (11%)	5 (15%)	2 (6%)
Viability concerns around staff time/work required to operate program	7 (11%)	3 (9%)	4 (13%)
Small scale of HCH patients impacted viability or unable to sufficiently evaluate viability	6 (9%)	1 (3%)	5 (16%)

Source: Practice survey R5 Mar–May 2021, question 32.

Table 131: Changes in the approach practice undertook to co-payments for patients enrolled in the HCH trial, by sampling strata

Response	Total	Size		Type			Location		
		Large/ medium	Small/sole	Corporate	AMS	Independent	MMM 1	MMM 2 & 3	MMM 4+
No payment/bulk billed	21 (48.8%)	8 (61.5%)	13 (43.3%)	2 (50.0%)	1 (50.0%)	18 (48.6%)	15 (42.9%)	3 (75.0%)	3 (75.0%)
No change (bulk billed)	10 (23.3%)	1 (7.7%)	9 (30.0%)	1 (25.0%)	1 (50.0%)	8 (21.6%)	8 (22.9%)	1 (25.0%)	1 (25.0%)
No change (no other details)	4 (9.3%)	3 (23.1%)	1 (3.3%)	1 (25.0%)		3 (8.1%)	4 (11.4%)		
Annual payment	2 (4.7%)		2 (6.7%)			2 (5.4%)	2 (5.7%)		
Per consult payment	2 (4.7%)		2 (6.7%)			2 (5.4%)	2 (5.7%)		
No change (co-pay like other patients)	2 (4.7%)		2 (6.7%)			2 (5.4%)	2 (5.7%)		
Co-payment not defined	2 (4.7%)	1 (7.7%)	1 (3.3%)			2 (5.4%)	2 (5.7%)		
No charge for other HCH Services	1 (2.3%)		1 (3.3%)			1 (2.7%)	1 (2.9%)		
Co-pay for non HCH services	1 (2.3%)		1 (3.3%)			1 (2.7%)		1 (25.0%)	
Did not attend fee	1 (2.3%)		1 (3.3%)			1 (2.7%)	1 (2.9%)		
Don't know/ no response	31	16	15	5	2	24	27	2	2

Source: Practice survey R5 Mar–May 2021, question 31.

Wish to continue in HCH or a similar program

Table 132: Whether practice wishes to continue to participate in a program like HCH

Practice subgroup	Yes	Maybe	No
Does the practice wish to continue to participate in a program like HCH:			
All R5 practices	30 (42%)	28 (39%)	14 (19%)
Practice enrolled <50 patients	9 (25%)	16 (44%)	11 (31%)
Practice enrolled 50+ patients	21 (58%)	12 (33%)	3 (8%)

Source: Practice survey R5 Mar–May 2021, question 33.

Table 133: Whether practice wishes to continue to participate in a program like HCH, by sampling strata

Response	Total	Size		Type			Location		
		Large/ medium	Small/sole	Corporate	AMS	Independent	MMM 1	MMM 2 & 3	MMM 4+
Yes	30 (41.7%)	9 (33.3%)	21 (46.7%)	3 (37.5%)	4 (100.0%)	23 (38.3%)	24 (40.0%)	1 (16.7%)	5 (83.3%)
Maybe	28 (38.9%)	13 (48.1%)	15 (33.3%)	4 (50.0%)		24 (40.0%)	25 (41.7%)	3 (50.0%)	
No	14 (19.4%)	5 (18.5%)	9 (20.0%)	1 (12.5%)		13 (21.7%)	11 (18.3%)	2 (33.3%)	1 (16.7%)
Don't know/ no response	2	2		1		1	2		

Source: Practice survey R5 Mar–May 2021, question 33.

Table 134: Final comments, feedback or observations about the HCH trial

Response	Practices n (%)
Concerns around financial viability of the model/increase bundled payments	11 (14%)
The program should have a broader rollout/continue	8 (11%)
Created additional work and increased administrative burden for staff; reduce administrative burden	6 (8%)
GP engagement/buy-in was challenging	5 (7%)
Positive patient feedback/outcomes	5 (7%)
Poor governance support and engagement across the health system	5 (7%)
Provide more training/education on various aspects of the program and increase engagement	5 (7%)
Positive practice experience with the trial and it should be continued	5 (7%)
Difficulties registering/engaging patient cohort or demographic not appropriate for program	4 (5%)
Difficulties engaging external health providers in shared care planning	3 (4%)
Funding model has worked well	2 (3%)
Need greater scale/higher volume of HCH patients	2 (3%)
Program suffered from lack of patient awareness / Need more patient education	2 (3%)
Program was successful	2 (3%)
Survey was time consuming/confusing	1 (1%)
Training was time consuming/costly as took away staff time	1 (1%)
Enhanced chronic disease/ability to manage patients	1 (1%)
Implementation of program processes helped transition workflows/implement new processes during the pandemic	1 (1%)
Need software integration/fix issues with shared care planning tools	1 (1%)
No changes in care delivery with implementation of program	1 (1%)
Re-evaluate tiers	1 (1%)
Register patients to a practice not a single GP	1 (1%)
Appreciated flexibility in service delivery	1 (1%)
Program required more clarity re acute v chronic billing	1 (1%)
Trial needed greater scale, i.e. more GPs and more practices participating	1 (1%)

Source: Practice survey R5 Mar–May 2021, question 34.

Appendix 9: HCH-A Practice self-assessment

Table 135: Number of participants in the HCH-A assessment

Response	Total staff participating in HCH-A	Mean staff per practice (practices responding)
GPs	83	1.28
Nurses	78	1.20
Practice managers	51	0.78
Aboriginal health practitioners	2	0.03
Allied health	12	0.18
Reception/admin	52	0.80
Other	4	0.06
Total	282	4.34

Source: Practice survey R5 Mar–May 2021, Part B, question 2.

Table 136: Assistance from a PHN practice facilitator in reaching consensus

Response	Total	Size		Type			Location		
		Large/ medium	Small/sole	Corporate	AMS	Independent	MMM 1	MMM 2 & 3	MMM 4+
No	50 (77%)	19 (76%)	31 (78%)	6 (86%)	5 (100%)	39 (74%)	39 (75%)	5 (83%)	6 (86%)
Yes	15 (23%)	6 (24%)	9 (22%)	1 (14%)		14 (26%)	13 (25%)	1 (17%)	1 (14%)

Source: Practice survey R5 Mar–May 2021, Part B, question 3.

Table 137: Change in HCH-A assessment from rounds 1 to 5

HCH-A dimension and item	Round	Practices	Min	25th percentile	Median	Mean	75th percentile	Max	Estimate of change in the mean (95% CI)
1 Engaged leadership									
01 Practice principals	1B	169	1	6	7.2	7.4	9.8	12	0.73 (0.08 to 1.43)
	5B	65	1	6	8.3	8.2	10	12	
02 Clinical leaders	1B	169	1	6	7.5	7.4	9	12	0.68 (0.09 to 1.32)
	5B	65	1	7	8	8.1	10	12	
03 The practice's recruitment and training processes	1B	169	1	5	7	6.9	8.7	12	1.02 (0.31 to 1.63)
	5B	65	1	6	8	8	10	12	
04 The responsibility for conducting quality improvement activities	1B	169	1	5	7	6.7	8.5	12	0.98 (0.34 to 1.69)
	5B	65	1	6	8.3	7.8	10	12	
Average score	1B	169	1	5.8	7	7.1	8.7	11.5	0.85 (0.27 to 1.42)
	5B	65	1	6.5	8.2	8	9.8	12	
2 Patient enrolment									
05 Patients	1B	169	1	5.8	7.4	7.1	9	12	1.31 (0.69 to 1.88)
	5B	65	1	8	9	8.5	10	12	
06 Practice data	1B	169	1	6	7.9	7.5	9	12	1.01 (0.42 to 1.64)
	5B	65	1	7.3	9	8.6	10	12	
07 Patient records	1B	169	1	6	8	7.8	10	12	1.10 (0.45 to 1.68)
	5B	65	1	8	9.2	8.9	10	12	
08 Reports on care processes or outcomes of care	1B	169	1	5	6	6.5	8	12	1.13 (0.48 to 1.78)
	5B	65	1	6	8	7.8	9.5	12	
Average score	1B	169	1	5.8	7.2	7.2	8.8	11.8	1.15 (0.63 to 1.75)
	5B	65	1	7.8	8.5	8.5	9.9	12	
3 Quality improvement strategy									
09 Quality improvement activities	1B	169	0	5	7	6.8	8.4	12	1.09 (0.38 to 1.74)
	5B	65	1	6	8	7.9	10	12	
10 Performance measures	1B	169	1	5	6	6.5	8	12	0.99 (0.39 to 1.62)
	5B	65	1	6	7	7.5	9	12	

HCH-A dimension and item	Round	Practices	Min	25th percentile	Median	Mean	75th percentile	Max	Estimate of change in the mean (95% CI)
11 Care team and patient involvement in QI activities	1B	169	1	4	6	5.9	8	11	1.24 (0.58 to 1.94)
	5B	65	1	5	7	7.2	9	12	
12 Clinical information systems that optimise use of information	1B	169	1	5	7	7	9	12	0.99 (0.33 to 1.58)
	5B	65	2	7	8.5	8	10	12	
Average score	1B	169	1	5	6.4	6.6	8	11.2	1.07 (0.51 to 1.66)
	5B	65	1.2	6.2	7.5	7.7	9.8	12	
4 Continuous & team based healing relationships									
13 Patients are encouraged to see their nominated GP and care team	1B	169	1	7	9	8.3	10	12	0.99 (0.35 to 1.63)
	5B	65	2	8.5	10	9.3	11	12	
14 Non-GP care team members	1B	169	2	7	9	8.5	10	12	0.24 (-0.45 to 0.84)
	5B	65	1	8	9	8.7	10	12	
15 The practice	1B	169	1	6	7.8	7.4	9.8	12	0.49 (-0.26 to 1.24)
	5B	65	1	6	9	8	10	12	
Average score	1B	169	3.3	6.7	8.3	8.1	9.3	12	0.57 (0.04 to 1.12)
	5B	65	1.3	8	9	8.7	10.3	12	
5 Organised, evidence-based care									
16 Comprehensive, guideline-based information on prevention or chronic illness treatment	1B	169	3	7	8	8.3	9.5	12	0.43 (-0.06 to 1.00)
	5B	65	1	8	9	8.7	10	12	
17 Visits	1B	169	2	7	8	8.2	9.5	12	0.76 (0.16 to 1.33)
	5B	65	1	8	9	8.9	10	12	
18 Care plans	1B	169	3.2	7	9	8.7	10	12	0.44 (-0.17 to 1.03)
	5B	65	1	9	10	9.1	10.8	12	
19 Coordinated care management services for high-risk patients	1B	169	1	6	8	7.8	10	12	0.37 (-0.39 to 1.07)
	5B	65	1	6	9	8.1	10	12	
20 Mental health, alcohol abuse and behaviour change outcomes such as improvement in depression	1B	169	1	6	7.4	7.3	9	12	0.69 (0.08 to 1.25)
	5B	65	2	7.5	8.2	8	9	12	

HCH-A dimension and item	Round	Practices	Min	25th percentile	Median	Mean	75th percentile	Max	Estimate of change in the mean (95% CI)
Average score	1B	169	3.4	6.8	8.2	8.1	9.4	11.2	0.53 (0.03 to 1.09)
	5B	65	1.4	7.8	9	8.6	9.8	12	
6 Patient-centred interactions									
21 Assessing and respecting patient and family values and preferences	1B	169	3	7	8.7	8.4	10	12	0.95 (0.29 to 1.54)
	5B	65	1	8.8	10	9.3	11	12	
22 Involving patients in decision-making and care	1B	169	2	6.8	8	8	9.2	12	1.06 (0.43 to 1.70)
	5B	65	1	8	9.5	9	10.7	12	
23 Patient comprehension of verbal and written materials	1B	169	1	6	7	7.3	9	12	0.84 (0.20 to 1.51)
	5B	65	1	6	8.8	8.1	10	12	
24 Self-management support	1B	169	1.8	6	7	7.3	9	12	1.06 (0.45 to 1.68)
	5B	65	1	7.9	9	8.3	10	12	
25 The principles of patient-centred care	1B	169	1	5.6	7	7.1	9	12	1.31 (0.63 to 2.10)
	5B	65	2	7.1	9	8.4	10	12	
26 Measurement of patient-centred interactions	1B	169	1	3	5	5.5	7	12	1.12 (0.37 to 1.85)
	5B	65	1	5	7	6.7	9	12	
Average score	1B	169	2.5	5.9	7.2	7.2	8.5	12	1.06 (0.52 to 1.64)
	5B	65	1.2	7.5	8.7	8.3	9.5	12	
7 Care coordination									
27 Medical and surgical specialty services	1B	169	1	5.5	7	7.2	9	12	0.76 (0.16 to 1.38)
	5B	65	1	7	8	7.9	9	12	
28 Mental health services	1B	169	1	5	7	6.9	8	12	0.47 (-0.21 to 1.19)
	5B	65	1	6	7	7.4	9	12	
29 Patients in need of specialty care, hospital care, or supportive community- based resources	1B	169	3	7	8	7.9	9	12	0.60 (0.06 to 1.19)
	5B	65	1	7.6	9	8.5	10	12	
	1B	169	1	6	7	7	8	12	0.93 (0.31 to 1.53)

HCH-A dimension and item	Round	Practices	Min	25th percentile	Median	Mean	75th percentile	Max	Estimate of change in the mean (95% CI)
30 Follow-up by the practice and care team with patients seen in the Emergency Department (ED) or hospital	5B	65	2	6	8.1	7.9	10	12	
31 Linking patients to supportive community- based resources	1B	169	1	6	7	7.1	9	12	0.88 (0.25 to 1.49)
	5B	65	2	6	8	8	9	12	
32 Test results and care plans	1B	169	4	7.7	9	8.7	10	12	0.75 (0.20 to 1.29)
	5B	65	2	8.3	10	9.5	11	12	
Average score	1B	169	3.5	6.3	7.3	7.5	8.4	11.3	0.73 (0.18 to 1.25)
	5B	65	1.5	7.2	8.3	8.2	9.7	12	
8 Enhanced access									
33 Appointment systems	1B	169	1	8	9.1	9.1	11	12	0.50 (-0.10 to 1.12)
	5B	65	1	8	10	9.6	12	12	
34 Contacting the care team during regular business hours	1B	169	1	7	8	8.1	9	12	1.10 (0.50 to 1.69)
	5B	65	2	8.5	9.5	9.2	11	12	
35 After-hours access	1B	169	1	6	7	7.4	9	12	0.52 (-0.14 to 1.20)
	5B	65	1	6.3	9	7.9	9.2	12	
36 A patient's out-of-pocket expenses	1B	169	0	7	8	8	9	12	0.71 (0.05 to 1.40)
	5B	65	1	7.5	9	8.7	10	12	
Average score	1B	169	2	7.2	8.2	8.1	9.2	11.2	0.71 (0.19 to 1.24)
	5B	65	1.2	8	9.2	8.9	10	12	

Practice survey R1 Dec 2017–Jul 2018, Part B and R5 Mar–May 2021, Part B.

Table 138: Change in HCH-A assessment from round 1 to round 5

HCH-A dimension and item	Number of practices where score: [1]			Mean score		Estimate of change in the mean (95% CI)
	Decreased	Did not change	Increased	R1	R5	
1 Engaged leadership						
01 Focus of practice principals	19 (32%)	10 (17%)	31 (52%)	7.58	8.14	0.56 (-0.22 to 1.34)
02 Focus of clinical leaders	22 (37%)	9 (15%)	29 (48%)	7.68	8.1	0.42 (-0.29 to 1.13)
03 The practice's recruitment and training processes	17 (28%)	8 (13%)	35 (58%)	7.34	7.94	0.59 (-0.18 to 1.37)
04 Responsibility for quality improvement activities	18 (30%)	8 (13%)	34 (57%)	7.07	7.69	0.62 (-0.2 to 1.44)
Average score	19 (32%)	6 (10%)	35 (58%)	7.42	7.97	0.55 (-0.16 to 1.26)
2 Patient enrolment						
05 Patient linkage to nominated GP and care team	15 (25%)	14 (23%)	31 (52%)	7.76	8.57	0.81 (0.06 to 1.56)
06 Practice data availability	19 (32%)	9 (15%)	32 (53%)	7.76	8.58	0.83 (0.09 to 1.57)
07 Patient records availability for pre-visit planning & outreach	16 (27%)	10 (17%)	34 (57%)	8.17	8.79	0.62 (-0.1 to 1.35)
08 Availability of reports on care processes & outcomes of care	20 (33%)	11 (18%)	29 (48%)	7.14	7.63	0.49 (-0.3 to 1.27)
Average score	21 (35%)	4 (7%)	35 (58%)	7.71	8.39	0.69 (0 to 1.37)
3 Quality improvement strategy						
09 Conduct of quality improvement activities	21 (35%)	7 (12%)	32 (53%)	7.1	7.88	0.78 (0.01 to 1.55)
10 Availability of performance measures	19 (32%)	8 (13%)	33 (55%)	6.69	7.47	0.78 (0 to 1.56)
11 Care team and patient involvement in QI activities	16 (27%)	10 (17%)	34 (57%)	6.1	7.2	1.09 (0.25 to 1.93)
12 Clinical information systems that optimise use of information	16 (27%)	9 (15%)	35 (58%)	7.28	8.03	0.75 (-0.03 to 1.54)
Average score	19 (32%)	3 (5%)	38 (63%)	6.79	7.64	0.85 (0.11 to 1.59)
4 Continuous & team based healing relationships						
13 Patients are encouraged to see their nominated GP and care team	23 (38%)	8 (13%)	29 (48%)	8.94	9.32	0.38 (-0.39 to 1.16)
14 Extent of role of non-GP care team members	19 (32%)	8 (13%)	33 (55%)	8.25	8.63	0.38 (-0.49 to 1.24)
15 The practice approach to training needs of staff	27 (45%)	6 (10%)	27 (45%)	7.68	7.88	0.2 (-0.66 to 1.06)
Average score	22 (37%)	3 (5%)	35 (58%)	8.29	8.61	0.32 (-0.41 to 1.05)

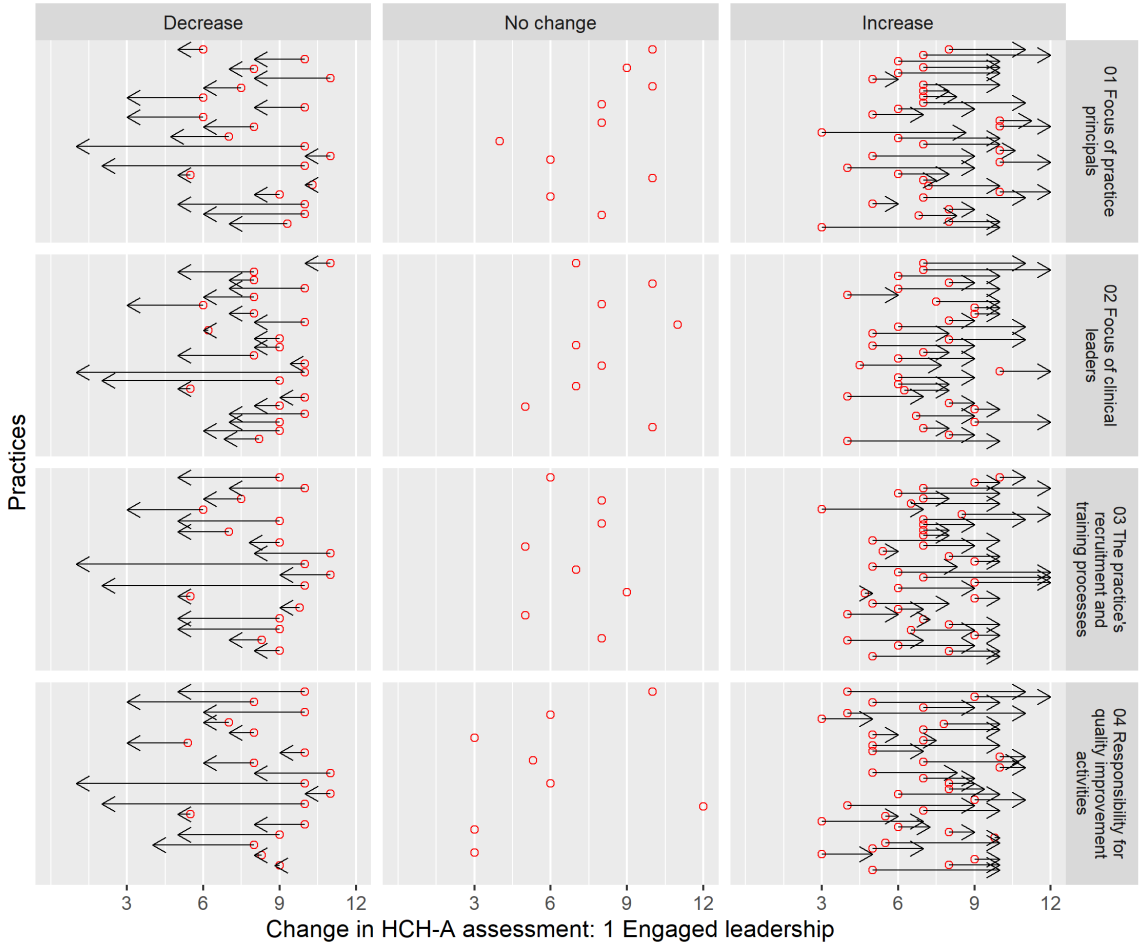
HCH-A dimension and item	Number of practices where score: [1]			Mean score		Estimate of change in the mean (95% CI)
	Decreased	Did not change	Increased	R1	R5	
5 Organised, evidence-based care						
16 Availability of comprehensive, guideline-based information on prevention & chronic illness treatment	18 (30%)	8 (13%)	34 (57%)	8.29	8.57	0.28 (-0.43 to 0.98)
17 Focus during patient visits	19 (32%)	9 (15%)	32 (53%)	8.45	8.9	0.45 (-0.32 to 1.23)
18 Development of care plans	18 (30%)	7 (12%)	35 (58%)	8.76	9.13	0.36 (-0.39 to 1.12)
19 Availability of coordinated care management services for high-risk patients	19 (32%)	10 (17%)	31 (52%)	7.65	8.12	0.47 (-0.4 to 1.34)
20 Measurement of mental health, alcohol abuse and behaviour change outcomes	16 (27%)	8 (13%)	36 (60%)	7.28	8.05	0.78 (0.06 to 1.49)
Average score	21 (35%)	3 (5%)	36 (60%)	8.09	8.55	0.47 (-0.21 to 1.15)
6 Patient-centred interactions						
21 Assessing and respecting patient and family values and preferences	13 (22%)	5 (8%)	42 (70%)	8.35	9.25	0.9 (0.09 to 1.72)
22 Involving patients in decision-making and care	13 (22%)	4 (7%)	43 (72%)	8.1	8.91	0.81 (0 to 1.63)
23 Assessment of patient comprehension of verbal & written materials	17 (28%)	7 (12%)	36 (60%)	7.32	8.03	0.71 (-0.11 to 1.53)
24 Self-management support	13 (22%)	7 (12%)	40 (67%)	7.28	8.27	0.99 (0.27 to 1.72)
25 Incorporation of the principles of patient-centred care	16 (27%)	5 (8%)	39 (65%)	7.24	8.32	1.08 (0.23 to 1.93)
26 Measurement of patient-centred interactions	20 (33%)	8 (13%)	32 (53%)	5.72	6.7	0.98 (0.03 to 1.94)
Average score	14 (23%)	1 (2%)	45 (75%)	7.33	8.25	0.91 (0.19 to 1.64)
7 Care coordination						
27 Availability and coordination with medical & surgical specialty services	21 (35%)	7 (12%)	32 (53%)	7.5	7.93	0.43 (-0.34 to 1.19)
28 Availability and coordination with mental health services	21 (35%)	9 (15%)	30 (50%)	7.11	7.47	0.36 (-0.44 to 1.16)
29 Patients ability to obtain referrals to needed specialty or hospital care & community-based resources	16 (27%)	10 (17%)	34 (57%)	7.71	8.48	0.77 (-0.01 to 1.54)

HCH-A dimension and item	Number of practices where score: [1]			Mean score		Estimate of change in the mean (95% CI)
	Decreased	Did not change	Increased	R1	R5	
30 Follow-up by the practice and care team with patients seen in the Emergency Department (ED) or hospital	18 (30%)	7 (12%)	35 (58%)	7.2	8	0.8 (0.02 to 1.58)
31 Practice approach to linking patients to supportive community-based resources	13 (22%)	11 (18%)	36 (60%)	6.89	7.95	1.07 (0.38 to 1.75)
32 Communication of test results and care plans to patients	17 (28%)	12 (20%)	31 (52%)	9.02	9.36	0.33 (-0.39 to 1.05)
Average score	18 (30%)	1 (2%)	41 (68%)	7.57	8.2	0.62 (-0.03 to 1.28)
8 Enhanced access						
33 Flexibility in appointment systems	18 (30%)	14 (23%)	28 (47%)	9.54	9.65	0.11 (-0.66 to 0.87)
34 Contacting the care team during regular business hours	12 (20%)	11 (18%)	37 (62%)	8.48	9.26	0.78 (0.08 to 1.48)
35 After-hours access	18 (30%)	13 (22%)	29 (48%)	7.22	7.81	0.59 (-0.25 to 1.43)
36 Approach to patient's out of pocket expenses	22 (37%)	8 (13%)	30 (50%)	8.16	8.66	0.5 (-0.3 to 1.3)
Average score	16 (27%)	4 (7%)	40 (67%)	8.35	8.85	0.49 (-0.15 to 1.14)

Notes: [1] Numbers are based on the 60 practices that completed the HCH-A tool in both R1 and R5.

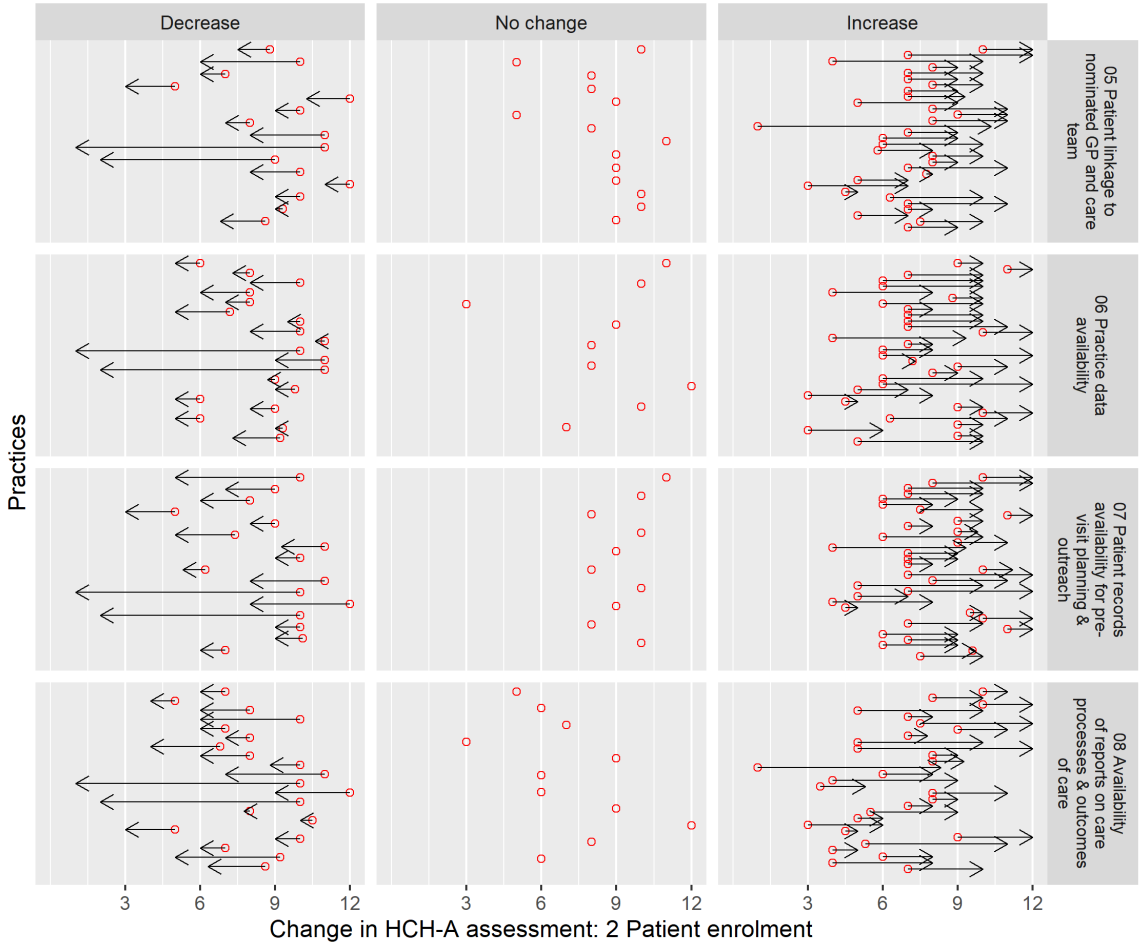
Source: Practice survey R1 Dec 2017–Jul 2018, Part B and R5 Mar–May 2021, Part B.

Figure 18: Change in HCH-A assessment from round 1 to round 5, 1 Engaged leadership



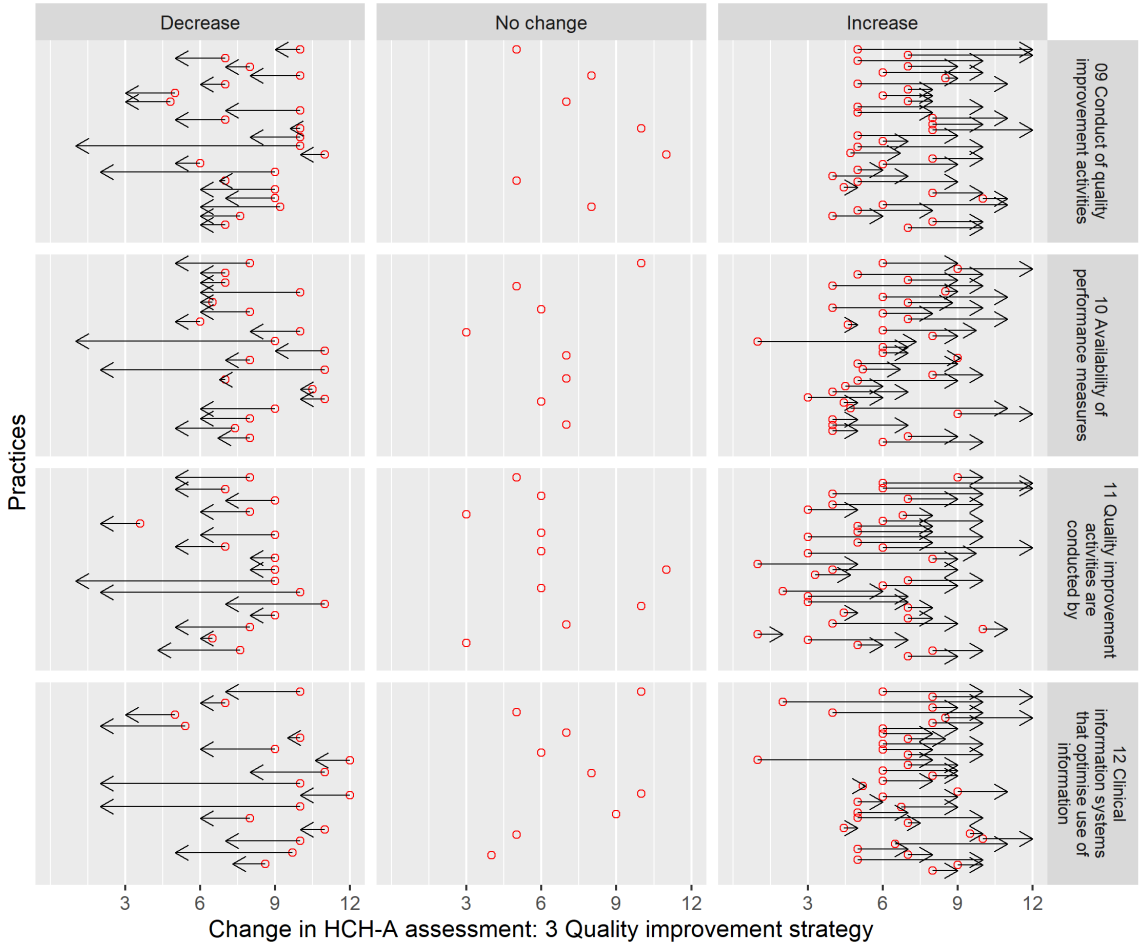
Notes: [1] *Numbers are based on the 60 practices that completed the HCH-A tool in both R1 and R5.*
Source: Practice survey R1 Dec 2017–Jul 2018, Part B and R5 Mar–May 2021, Part B.

Figure 19: Change in HCH-A assessment from round 1 to round 5, 2 Patient enrolment



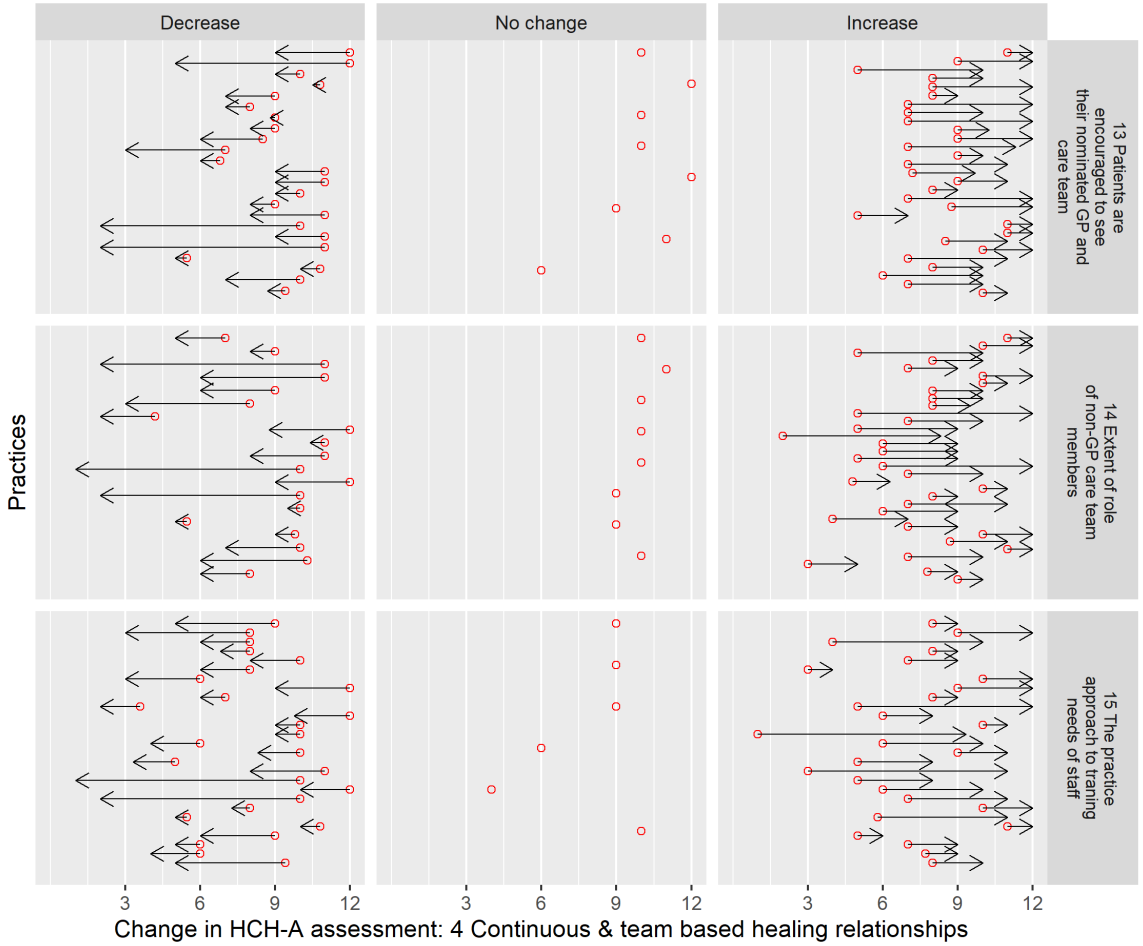
Notes: [1] Numbers are based on the 60 practices that completed the HCH-A tool in both R1 and R5.
Source: Practice survey R1 Dec 2017–Jul 2018, Part B and R5 Mar–May 2021, Part B.

Figure 20: Change in HCH-A assessment from round 1 to round 5, 3 Quality improvement strategy



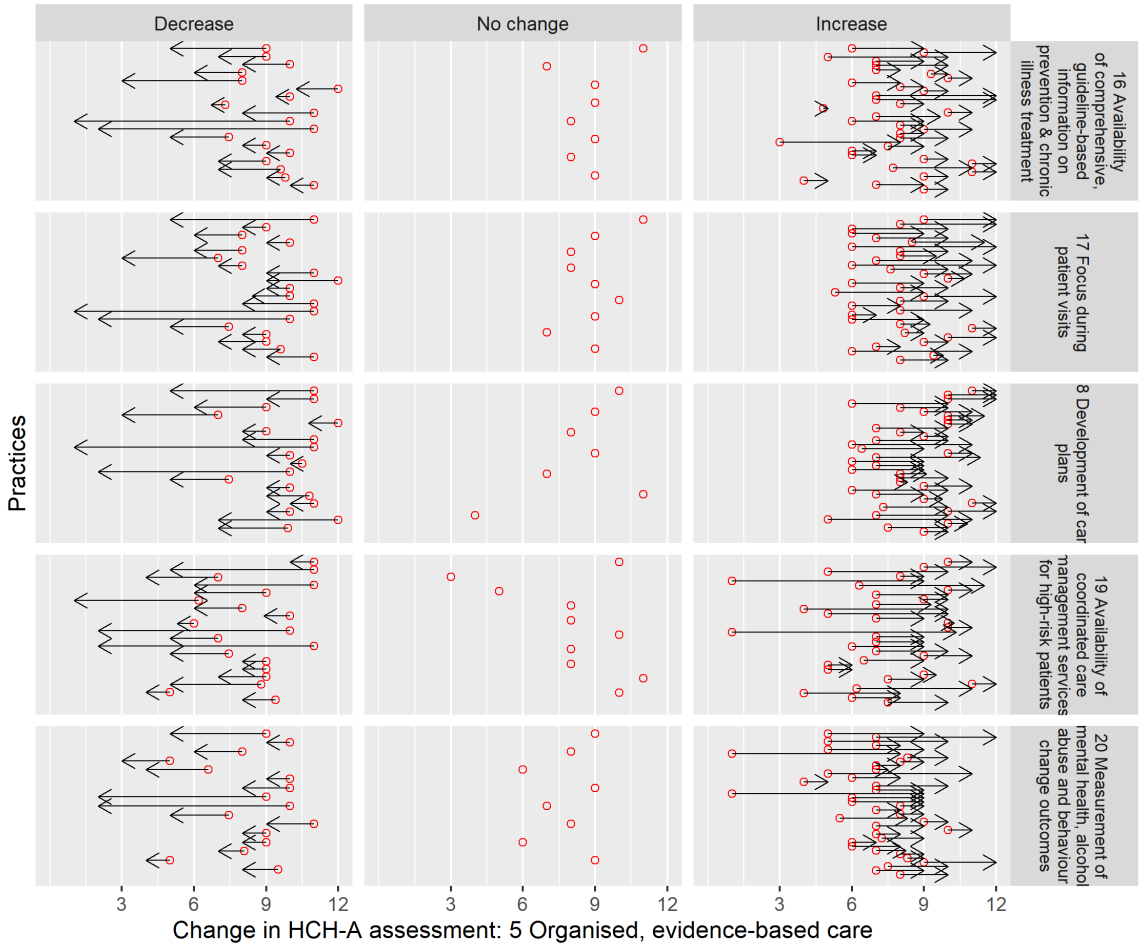
Notes: [1] Numbers are based on the 60 practices that completed the HCH-A tool in both R1 and R5.
Source: Practice survey R1 Dec 2017–Jul 2018, Part B and R5 Mar–May 2021, Part B.

Figure 21: Change in HCH-A assessment from round 1 to round 5, 4 Continuous & team-based healing relationships



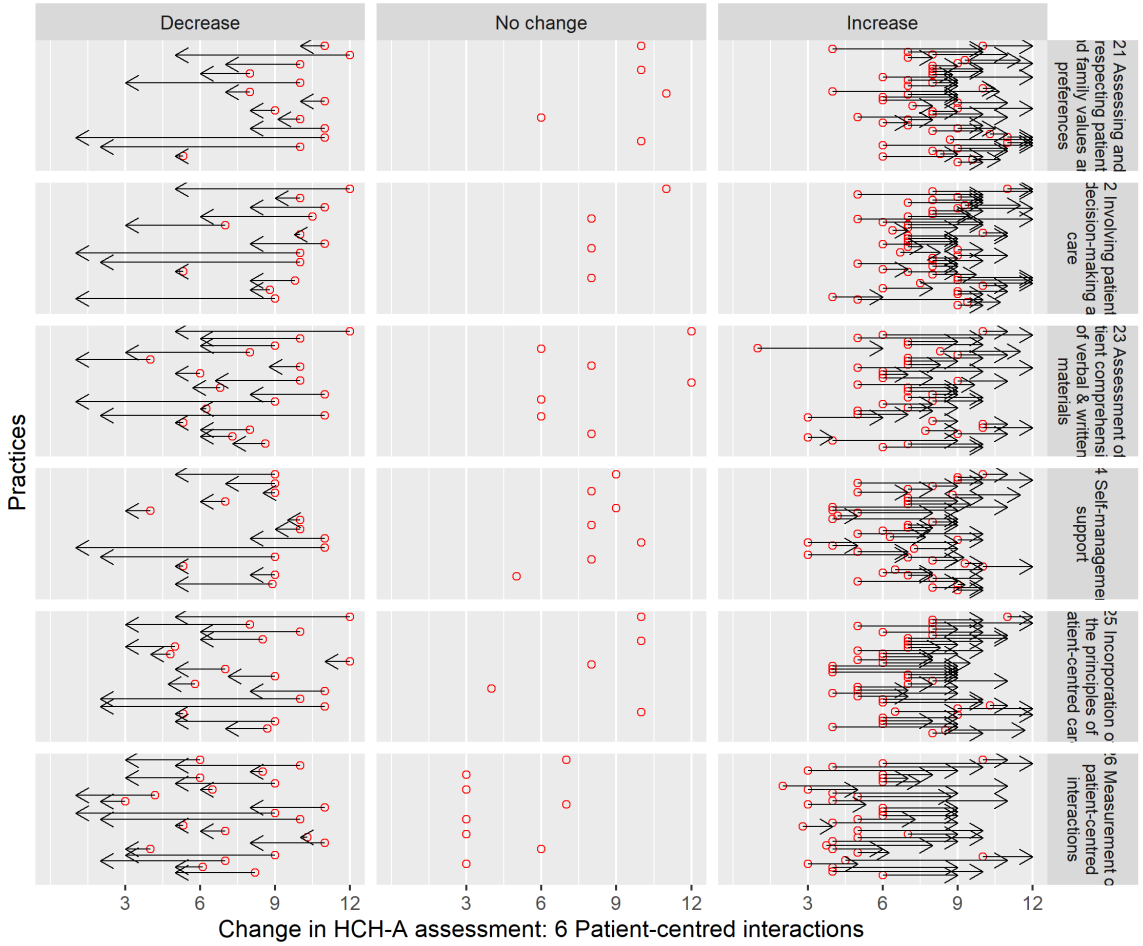
Notes: [1] Numbers are based on the 60 practices that completed the HCH-A tool in both R1 and R5.
Source: Practice survey R1 Dec 2017–Jul 2018, Part B and R5 Mar–May 2021, Part B.

Figure 22: Change in HCH-A assessment from round 1 to round 5, 5 Organised, evidence-based care



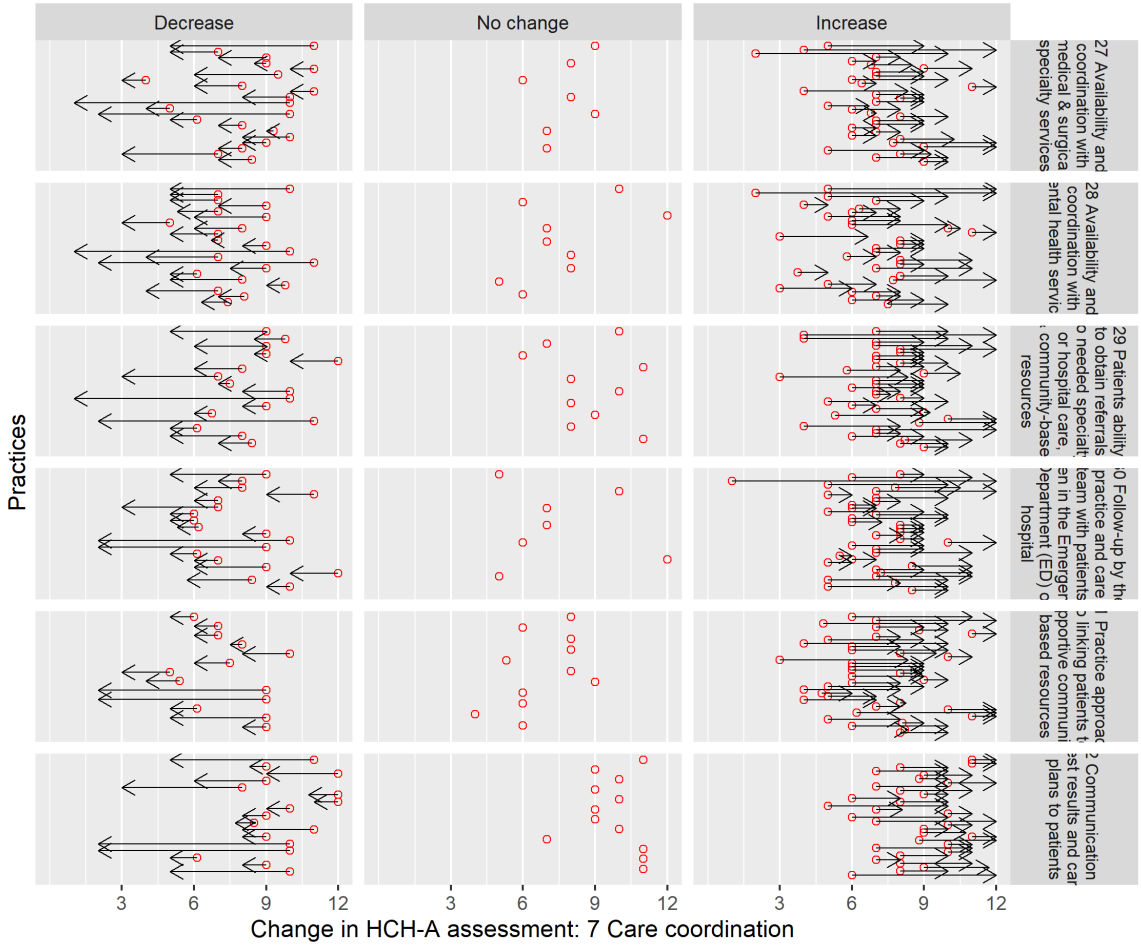
Notes: [1] Numbers are based on the 60 practices that completed the HCH-A tool in both R1 and R5.
Source: Practice survey R1 Dec 2017–Jul 2018, Part B and R5 Mar–May 2021, Part B.

Figure 23: Change in HCH-A assessment from round 1 to round 5, 6 Patient-centred interactions



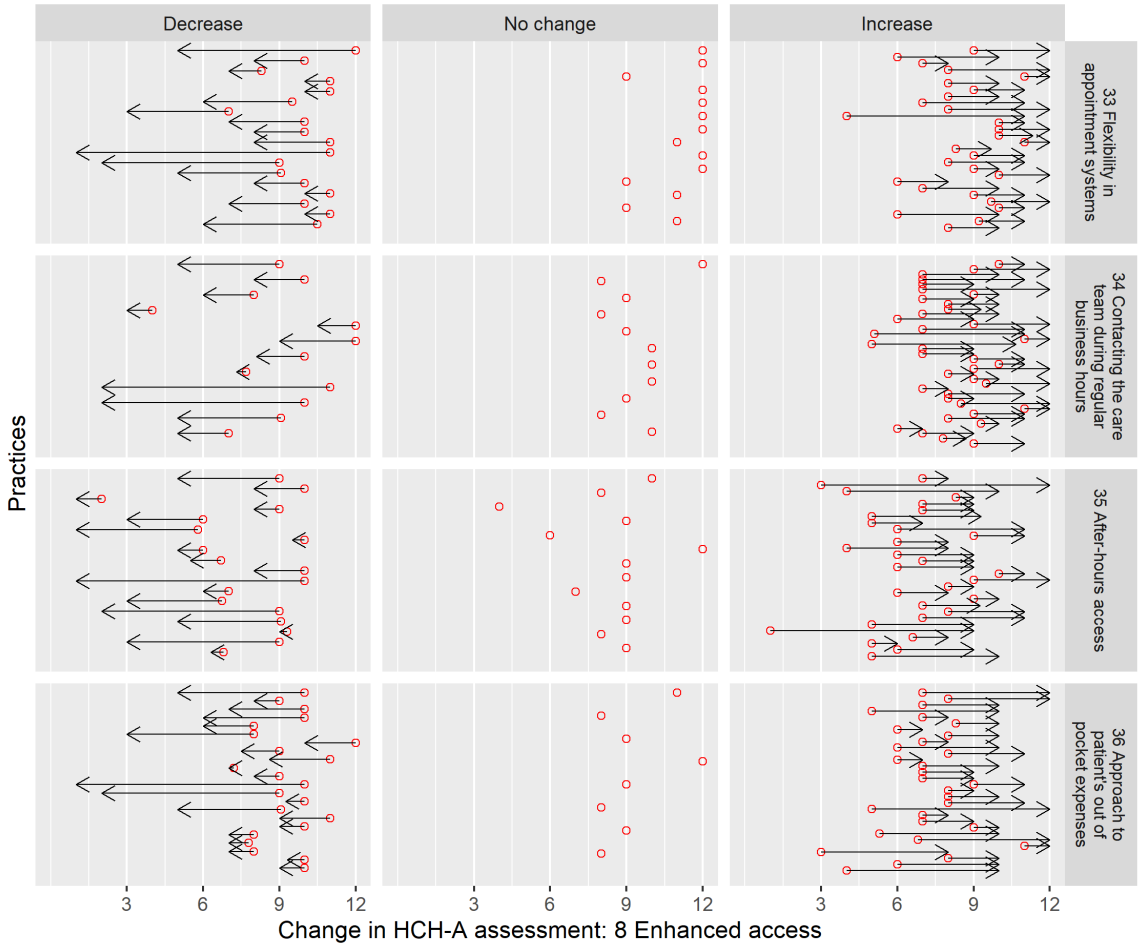
Notes: [1] *Numbers are based on the 60 practices that completed the HCH-A tool in both R1 and R5.*
Source: Practice survey R1 Dec 2017–Jul 2018, Part B and R5 Mar–May 2021, Part B.

Figure 24: Change in HCH-A assessment from round 1 to round 5, 7 Care coordination



Notes: [1] *Numbers are based on the 60 practices that completed the HCH-A tool in both R1 and R5.*
Source: Practice survey R1 Dec 2017–Jul 2018, Part B and R5 Mar–May 2021, Part B.

Figure 25: Change in HCH-A assessment from round 1 to round 5, 8 Enhanced access



Notes: 1 Numbers are based on the 60 practices that completed the HCH-A tool in both R1 and R5.
Source: Practice survey R1 Dec 2017–Jul 2018, Part B and R5 Mar–May 2021, Part B.

Appendix 10: Practice staff surveys detailed tables

Table 139: Role of the respondent in the practice/service, by sampling strata

Response	Total	Size		Type			Location		
		Large/ medium	Small/sole	Corporate	AMS	Independent	MMM 1	MMM 2 & 3	MMM 4+
Number of practices	78	30	48	9	5	64	63	8	7
Number of staff responding	182	73	109	25	21	136	132	17	33
Staff role:									
General practitioner, including GP registrar	36 (20%)	12 (16%)	24 (22%)	2 (8%)	7 (33%)	27 (20%)	21 (16%)	5 (29%)	10 (30%)
Nurse including: practice nurse, nurse practitioner, other nursing roles	45 (25%)	21 (29%)	24 (22%)	7 (28%)	2 (10%)	36 (26%)	34 (26%)	4 (24%)	7 (21%)
Practice manager/ Owner/ Executive role	50 (27%)	20 (27%)	30 (28%)	5 (20%)	4 (19%)	41 (30%)	40 (30%)	4 (24%)	6 (18%)
Receptionist	32 (18%)	13 (18%)	19 (17%)	7 (28%)	1 (5%)	24 (18%)	28 (21%)	2 (12%)	2 (6%)
Medical practice assistant	5 (3%)	1 (1%)	4 (4%)			5 (4%)	3 (2%)	1 (6%)	1 (3%)
Other administration	12 (7%)	6 (8%)	6 (6%)	4 (16%)	5 (24%)	3 (2%)	6 (5%)	1 (6%)	5 (15%)
Coordinator	2 (1%)		2 (2%)		2 (10%)				2 (6%)

Source: Staff survey R5 Mar–May 2021, question 1.

Table 140: Employment arrangements

Response	Total	Employment arrangements			
		Full-time (includes full-time partner)	Part-time (includes part-time partner)	Casual/ Locum/ Other	Don't know/ no response
Number of practices		50	39	14	1
Number of staff responding	182	84	74	23	1
Staff role:					
General practitioner, including GP registrar	36	21	13	2	
Nurse including: practice nurse, nurse practitioner, other nursing roles	45	16	21	7	1
Practice manager/ Owner/ Executive role	50	29	18	3	
Receptionist	32	6	17	9	
Medical practice assistant	5		4	1	
Other administration	12	10	1	1	
Coordinator	2	2			

Source: Staff survey R5 Mar–May 2021, question 3.

Table 141: Role of GPs, by sampling strata

Response	Total	Size		Type			Location		
		Large/ medium	Small/sole	Corporate	AMS	Independ-ent	MMM 1	MMM 2 & 3	MMM 4+
Number of GPs responding	36	12	24	2	7	27	21	5	10
GP role:									
General medical practitioner, owner/partner	19 (53%)	6 (50%)	13 (54%)	1 (50%)	1 (14%)	17 (63%)	11 (52%)	5 (100%)	3 (30%)
General medical practitioner, contract	8 (22%)	5 (42%)	3 (12%)	1 (50%)		7 (26%)	7 (33%)		1 (10%)
General medical practitioner, salaried	7 (19%)		7 (29%)		6 (86%)	1 (4%)	1 (5%)		6 (60%)
General practice registrar/advanced trainee	1 (3%)		1 (4%)			1 (4%)	1 (5%)		
General medical practitioner, other: associate	1 (3%)	1 (8%)				1 (4%)	1 (5%)		

Source: Staff survey R5 Mar–May 2021, question 2.

Table 142: Role of nurse/nurse assistants, by sampling strata

Response	Total	Size		Type			Location		
		Large/ medium	Small/sole	Corporate	AMS	Independ-ent	MMM 1	MMM 2 & 3	MMM 4+
Number of nurses responding	40	18	22	7	1	32	32	3	5
Nurse role:									
Practice Nurse, Registered Nurse	37 (95%)	16 (89%)	21 (100%)	7 (100%)		30 (94%)	31 (97%)	3 (100%)	3 (75%)
Nurse Practitioner	1 (3%)	1 (6%)				1 (3%)			1 (25%)
Practice Nurse, Enrolled Nurse	1 (3%)	1 (6%)				1 (3%)	1 (3%)		
Don't know/ no response	1		1		1				1

Source: Staff survey R5 Mar–May 2021, question 2.1.

Table 143: Length of service at practice/service

	0–3 months	4–12 months	1–2 years	3–5 years	6 years or more	Don't know/ no response
How long have you worked at this practice/ service?	1 (1%)	15 (8%)	23 (13%)	50 (28%)	90 (50%)	3

Source: Staff survey R5 Mar–May 2021, question 4

Table 144: Involvement in developing general practice management plans for patients

question	Yes	No	Don't know/ no response
Are you directly involved in developing general practice management plans for patients at this practice?	38 (95%)	2 (5%)	0

Source: Staff survey R5 Mar–May 2021, question 2.2.

Table 145: Care Coordinator or Case Manager role

question	Yes	No	Don't know/ no response
Do you also play a role as a Care Coordinator or Case Manager for patients at this practice?	20 (50%)	20 (50%)	0

Source: Staff survey R5 Mar–May 2021, question 2.3.

Table 146: Primary care team roles and collaboration

	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Don't know/ no response
The primary care team...						
... is made up of members with clearly defined roles, such as responsibility for patient self-management education, proactive follow up, and resource coordination	151 (83%)	21 (12%)	4 (2%)	6 (3%)		0
... works with patients to help them understand their roles and responsibilities in care	155 (86%)	18 (10%)	5 (3%)	1 (1%)	1 (1%)	2
...is characterised by collaboration and trust.	158 (87%)	18 (10%)	3 (2%)	2 (1%)		1

Source: Staff survey R5 Mar–May 2021, question 5.

Table 147: Primary care team roles and collaboration by staff type

	Percentage responding Agree or Somewhat agree				
	Total	GP	Nurse	Manager	Other
The primary care team…					
… is made up of members with clearly defined roles, such as responsibility for patient self-management education, proactive follow up, and resource coordination	172 (95%)	35 (97%)	38 (84%)	50 (100%)	49 (96%)
… is characterised by collaboration and trust	176 (97%)	36 (100%)	42 (93%)	50 (100%)	48 (96%)
… works with patients to help them understand their roles and responsibilities in care	173 (96%)	35 (97%)	40 (91%)	50 (100%)	48 (96%)

Source: Staff survey R5 Mar–May 2021, question 5.

Table 148: Primary care team roles and collaboration, longitudinal analysis

Percentage responding Agree or Somewhat agree	All responses			Responses by staff in practices responding to R1 & R5		
	R1	R5	Statistical significance of change from R1 to R5 (p-value)	R1	R5	Statistical significance of change from R1 to R5 (p-value)
… is made up of members with clearly defined roles, such as responsibility for patient self-management education, proactive follow up, and resource coordination	378 (89%)	172 (95%)	0.038	262 (91%)	148 (94%)	0.285
… is characterised by collaboration and trust	389 (92%)	176 (97%)	0.020	266 (93%)	153 (97%)	0.034
… works with patients to help them understand their roles and responsibilities in care	390 (92%)	173 (95%)	0.149	266 (93%)	151 (96%)	0.086

Source: Staff survey R1 Dec 2017–Jul 2018 and R5 Mar–May 2021, question 5.

Table 149: Primary care team and patient responsibility sharing

	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Don't know/ no response
The primary care team and patients share responsibilities for managing patients' health...	149 (83%)	25 (14%)	3 (2%)	3 (2%)		2

Source: Staff survey R5 Mar–May 2021, question 6.

Table 150: Primary care team and patient responsibility sharing by staff type

	Percentage responding Agree or Somewhat agree				
	Total	GP	Nurse	Manager	Other
The primary care team and patients share responsibilities for managing patients' health...	174 (97%)	34 (94%)	43 (96%)	49 (98%)	48 (98%)

Source: Staff survey R5 Mar–May 2021, question 6.

Table 151: Primary care team and patient responsibility sharing, longitudinal analysis

Percentage responding Agree or Somewhat agree	All responses			Responses by staff in practices responding to R1 & R5		
	R1	R5	Statistical significance of change from R1 to R5 (p-value)	R1	R5	Statistical significance of change from R1 to R5 (p-value)
The primary care team and patients share responsibilities for managing patients' health...	389 (92%)	174 (96%)	0.082	272 (95%)	152 (97%)	0.427

Source: Staff survey R1 Dec 2017–Jul 2018 and R5 Mar–May 2021, question 6.

Table 152: Practice management and ancillary systems

	Very easy	Somewhat easy	Somewhat difficult	Very difficult	Not applicable	Don't know/ no response
How easy/difficult is it for you to use the practice management system (clinical management system) or ancillary systems (care planning application/clinical data audit tool) to do the following for your patients?						
Review basic pathology results	111 (61%)	31 (17%)	1 (1%)		39 (21%)	0
Update medication list and drug allergies for patients	86 (48%)	30 (17%)	3 (2%)		62 (34%)	1
Review information from hospital discharge summaries	78 (43%)	48 (26%)	12 (7%)	1 (1%)	43 (24%)	0
Review notes about patients	120 (66%)	23 (13%)	3 (2%)		36 (20%)	0
Order new patient pathology tests	75 (42%)	12 (7%)	1 (1%)	1 (1%)	91 (51%)	2
Prescribe medications	69 (39%)	11 (6%)	1 (1%)		98 (55%)	3
Communicate electronically with other providers	47 (26%)	55 (31%)	26 (15%)	8 (4%)	43 (24%)	3
Send or print after-visit summaries, instructions, educational information for patients	70 (39%)	58 (32%)	14 (8%)	1 (1%)	38 (21%)	1
Send or receive messages from patients	55 (31%)	59 (33%)	18 (10%)	9 (5%)	39 (22%)	2
Develop a care plan/shared care plan for patients	57 (31%)	46 (25%)	17 (9%)	1 (1%)	61 (34%)	0

Source: Staff survey R5 Mar–May 2021, question 7.

Table 153: Practice management and ancillary systems, by staff type

	Percentage responding Very easy or Somewhat easy				
	Total	GP	Nurse	Manager	Other
How easy/difficult is it for you to use the practice management system (clinical management system) or ancillary systems (care planning application/clinical data audit tool) to do the following for your patients?					
Review basic pathology results	142 (78%)	36 (100%)	43 (96%)	40 (80%)	23 (45%)
Update medication list and drug allergies for patients	116 (64%)	36 (100%)	31 (69%)	37 (74%)	12 (24%)
Review information from hospital discharge summaries	126 (69%)	32 (89%)	36 (80%)	37 (74%)	21 (41%)
Review notes about patients	143 (79%)	34 (94%)	44 (98%)	40 (80%)	25 (49%)
Order new patient pathology tests	87 (48%)	36 (100%)	16 (37%)	24 (48%)	11 (22%)
Prescribe medications	80 (45%)	36 (100%)	11 (26%)	24 (48%)	9 (18%)
Communicate electronically with other providers	102 (57%)	24 (67%)	27 (61%)	34 (68%)	17 (35%)
Send or print after-visit summaries, instructions, educational information for patients	128 (71%)	28 (78%)	37 (84%)	40 (80%)	23 (45%)
Send or receive messages from patients	114 (63%)	21 (58%)	27 (63%)	37 (74%)	29 (57%)
Develop a care plan/shared care plan for patients	103 (57%)	29 (81%)	38 (84%)	25 (50%)	11 (22%)

Source: Staff survey R5 Mar–May 2021, question 7.

Table 154: Practice management and ancillary systems, longitudinal analysis

Percentage responding Very easy or Somewhat easy	All responses			Responses by staff in practices responding to R1 & R5		
	R1	R5	Statistical significance of change from R1 to R5 (p-value)	R1	R5	Statistical significance of change from R1 to R5 (p-value)
Review basic pathology results	312 (73%)	142 (78%)	0.245	223 (78%)	122 (78%)	0.914
Update medication list and drug allergies for patients	234 (55%)	116 (64%)	0.070	160 (56%)	97 (62%)	0.228
Review information from hospital discharge summaries	271 (64%)	126 (69%)	0.207	186 (65%)	110 (70%)	0.253
Review notes about patients	328 (77%)	143 (79%)	0.673	228 (79%)	120 (76%)	0.574
Order new patient pathology tests	187 (44%)	87 (48%)	0.518	121 (42%)	68 (43%)	0.885
Prescribe medications	166 (39%)	80 (44%)	0.320	106 (37%)	62 (39%)	0.610
Communicate electronically with other providers	222 (52%)	102 (56%)	0.385	150 (52%)	86 (55%)	0.575
Send or print after-visit summaries, instructions, educational information for patients	288 (68%)	128 (70%)	0.490	197 (69%)	109 (69%)	0.817
Send or receive messages from patients	227 (53%)	114 (63%)	0.026	165 (57%)	102 (65%)	0.114
Develop a care plan/shared care plan for patients	218 (51%)	103 (57%)	0.227	153 (53%)	86 (55%)	0.769

Source: Staff survey R1 Dec 2017–Jul 2018 and R5 Mar–May 2021, question 7.

Table 155: Electronic data

	Always	Usually	Sometimes	Rarely	Never	Don't know/ no response
The primary care team uses electronic data to...						
... identify patients with complex health needs.	81 (49%)	61 (37%)	23 (14%)	1 (1%)	1 (1%)	15
... monitor and track patient health indicators and outcomes.	76 (46%)	66 (40%)	22 (13%)	2 (1%)	1 (1%)	15

Source: Staff survey R5 Mar–May 2021, question 8.

Table 156: Electronic data by staff type

	Percentage responding Always or Usually				
	Total	GP	Nurse	Manager	Other
The primary care team uses electronic data to...					
... identify patients with complex health needs	142 (85%)	31 (86%)	31 (69%)	45 (90%)	35 (97%)
... monitor and track patient health indicators and outcomes	142 (85%)	31 (89%)	30 (67%)	43 (88%)	38 (100%)

Source: Staff survey R5 Mar–May 2021, question 8.

Table 157: Electronic data, longitudinal analysis

Percentage responding Always or Usually	All responses			Responses by staff in practices responding to R1 & R5		
	R1	R5	Statistical significance of change from R1 to R5 (p-value)	R1	R5	Statistical significance of change from R1 to R5 (p-value)
... identify patients with complex health needs	304 (72%)	142 (78%)	0.075	210 (73%)	118 (75%)	0.581
... monitor and track patient health indicators and outcomes	279 (66%)	142 (78%)	0.003	193 (67%)	119 (76%)	0.070

Source: Staff survey R1 Dec 2017–Jul 2018 and R5 Mar–May 2021, question 8.

Table 158: Electronic health record and other electronic systems

	Always	Usually	Sometimes	Rarely	Never	Don't know/ no response
The primary care team uses an electronic health record system or other electronic systems to...						
... support the documentation of patient needs.	125 (73%)	36 (21%)	8 (5%)	1 (1%)	2 (1%)	10
... develop care plans.	127 (74%)	35 (20%)	6 (3%)	1 (1%)	3 (2%)	10
... determine clinical outcomes.	104 (64%)	47 (29%)	9 (6%)		3 (2%)	19

Source: Staff survey R5 Mar–May 2021, question 9.

Table 159: Electronic health record and other electronic systems, by staff type

	Percentage responding Always or Usually				
	Total	GP	Nurse	Manager	Other
The primary care team uses an electronic health record system or other electronic systems to...					
... support the documentation of patient needs	161 (94%)	33 (92%)	40 (91%)	47 (96%)	41 (95%)
... develop care plans	162 (94%)	34 (94%)	39 (87%)	48 (98%)	41 (98%)
... determine clinical outcomes	151 (93%)	32 (91%)	36 (86%)	48 (98%)	35 (95%)

Source: Staff survey R5 Mar–May 2021, question 9.

Table 160: Electronic health record and other electronic systems, longitudinal analysis

Percentage responding Always or Usually	All responses			Responses by staff in practices responding to R1 & R5		
	R1	R5	Statistical significance of change from R1 to R5 (p-value)	R1	R5	Statistical significance of change from R1 to R5 (p-value)
... support the documentation of patient needs	343 (81%)	161 (88%)	0.020	236 (82%)	137 (87%)	0.160
... develop care plans	356 (84%)	162 (89%)	0.077	240 (84%)	137 (87%)	0.274
... determine clinical outcomes	308 (72%)	151 (83%)	0.003	207 (72%)	128 (82%)	0.014

Source: Staff survey R1 Dec 2017–Jul 2018 and R5 Mar–May 2021, question 9.

Table 161: Patient care plans

	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Don't know/ no response
The primary care team...						
... informs patients about any diagnosis in a way that they can understand.	155 (92%)	13 (8%)				13
... helps patients understand all of the choices for their care.	157 (92%)	11 (6%)	1 (1%)	1 (1%)		11
... considers and respects patients' values, beliefs and traditions when recommending treatments.	163 (94%)	9 (5%)		1 (1%)		9

Source: Staff survey R5 Mar–May 2021 question 10.

Table 162: Patient care plans by staff type

	Percentage responding Agree or Somewhat agree				
	Total	GP	Nurse	Manager	Other
The primary care team...					
... informs patients about any diagnosis in a way that they can understand	168 (99%)	36 (100%)	44 (98%)	47 (100%)	41 (100%)
... helps patients understand all of the choices for their care	168 (98%)	36 (100%)	43 (96%)	48 (100%)	41 (98%)
... considers and respects patients' values, beliefs and traditions when recommending treatments	172 (99%)	36 (100%)	45 (100%)	48 (100%)	43 (98%)

Source: Staff survey R5 Mar–May 2021, question 10.

Table 163: Patient care plans, longitudinal analysis

Percentage responding Agree or Somewhat agree	All responses			Responses by staff in practices responding to R1 & R5		
	R1	R5	Statistical significance of change from R1 to R5 (p-value)	R1	R5	Statistical significance of change from R1 to R5 (p-value)
... informs patients about any diagnosis in a way that they can understand	379 (89%)	168 (92%)	0.291	258 (90%)	143 (91%)	0.824
... helps patients understand all of the choices for their care	380 (89%)	168 (92%)	0.302	259 (90%)	144 (92%)	0.684
... considers and respects patients' values, beliefs and traditions when recommending treatments	386 (91%)	172 (95%)	0.136	258 (90%)	148 (94%)	0.109

Source: Staff survey R1 Dec 2017–Jul 2018 and R5 Mar–May 2021, question 10.

Table 164: Patient care plan input

	Always	Usually	Sometimes	Rarely	Never	Don't know/ no response
The primary care team…						
… asks for patients' input when making a plan for their care.	115 (70%)	45 (27%)	1 (1%)	2 (1%)	1 (1%)	18
… helps make care plans that patients can follow in their daily life.	117 (70%)	46 (28%)	3 (2%)		1 (1%)	15
… develops care plans that incorporate recommendations from other health care providers that patients see.	115 (69%)	44 (26%)	5 (3%)	1 (1%)	2 (1%)	15

Source: Staff survey R5 Mar–May 2021, question 11.

Table 165: Patient care plan input, by staff type

	Percentage responding Always or Usually				
	Total	GP	Nurse	Manager	Other
The primary care team…					
… asks for patients' input when making a plan for their care	160 (98%)	34 (97%)	42 (95%)	47 (100%)	37 (97%)
… helps make care plans that patients can follow in their daily life	163 (98%)	34 (97%)	42 (95%)	46 (100%)	41 (98%)
… develops care plans that incorporate recommendations from other health care providers that patients see	159 (95%)	34 (97%)	38 (86%)	46 (98%)	41 (100%)

Source: Staff survey R5 Mar–May 2021, question 11.

Table 166: Patient care plan input, longitudinal analysis

Percentage responding Always or Usually	All responses			Responses by staff in practices responding to R1 & R5		
	R1	R5	Statistical significance of change from R1 to R5 (p-value)	R1	R5	Statistical significance of change from R1 to R5 (p-value)
... asks for patients' input when making a plan for their care	339 (80%)	160 (88%)	0.018	232 (81%)	137 (87%)	0.086
... helps make care plans that patients can follow in their daily life	345 (81%)	163 (90%)	0.018	233 (81%)	140 (89%)	0.042
... develops care plans that incorporate recommendations from other health care providers that patients see	340 (80%)	159 (87%)	0.039	230 (80%)	135 (86%)	0.160

Source: Staff survey R1 Dec 2017–Jul 2018 and R5 Mar–May 2021, question 11.

Table 167: Patient goals

	Always	Usually	Sometimes	Don't know/ no response
Someone on the primary care team...				
... helps patients set goals for managing their health.	115 (66%)	52 (30%)	6 (3%)	9
... checks to see if patients are reaching their goals.	102 (61%)	58 (35%)	8 (5%)	14

Source: Staff survey R5 Mar–May 2021, question 12.

Table 168: Patient goals by staff type

	Percentage responding Always or Usually				
	Total	GP	Nurse	Manager	Other
Someone on the primary care team...					
... helps patients set goals for managing their health	167 (97%)	35 (97%)	42 (93%)	47 (98%)	43 (98%)
... checks to see if patients are reaching their goals	160 (95%)	35 (97%)	41 (93%)	43 (93%)	41 (98%)

Source: Staff survey R5 Mar–May 2021, question 12.

Table 169: Patient goals, longitudinal analysis

Percentage responding Always or Usually	All responses			Responses by staff in practices responding to R1 & R5		
	R1	R5	Statistical significance of change from R1 to R5 (p-value)	R1	R5	Statistical significance of change from R1 to R5 (p-value)
... helps patients set goals for managing their health	350 (82%)	167 (92%)	0.004	236 (82%)	144 (92%)	0.009
... checks to see if patients are reaching their goals	311 (73%)	160 (88%)	<0.001	212 (74%)	137 (87%)	0.001

Source: Staff survey R1 Dec 2017–Jul 2018 and R5 Mar–May 2021, question 12.

Table 170: Patient care plans

	Always	Usually	Sometimes	Rarely	Never	Don't know/ no response
The primary care team...						
... gives patients a copy of their care plan.	98 (56%)	53 (30%)	14 (8%)	9 (5%)	1 (1%)	7
... follows through with the care plan.	104 (61%)	60 (35%)	6 (4%)		1 (1%)	11
... uses patients' care plan to follow progress.	102 (60%)	56 (33%)	9 (5%)	3 (2%)	1 (1%)	11
... reviews and updates patients' care plan with them.	115 (65%)	50 (28%)	8 (5%)	2 (1%)	1 (1%)	6

Source: Staff survey R5 Mar–May 2021, question 13.

Table 171: Patient care plans by staff type

	Percentage responding Always or Usually				
	Total	GP	Nurse	Manager	Other
The primary care team...					
... gives patients a copy of their care plan	151 (86%)	30 (83%)	36 (82%)	44 (90%)	41 (89%)
... follows through with the care plan	164 (96%)	35 (97%)	40 (93%)	48 (100%)	41 (93%)
... uses patients' care plan to follow progress	158 (92%)	33 (92%)	37 (86%)	45 (96%)	43 (96%)
... reviews and updates patients' care plan with them	165 (94%)	30 (86%)	40 (91%)	49 (100%)	46 (96%)

Source: Staff survey R5 Mar–May 2021, question 13.

Table 172: Patient care plans, longitudinal analysis

Percentage responding Always or Usually	All responses			Responses by staff in practices responding to R1 & R5		
	R1	R5	Statistical significance of change from R1 to R5 (p-value)	R1	R5	Statistical significance of change from R1 to R5 (p-value)
... gives patients a copy of their care plan	337 (79%)	151 (83%)	0.235	237 (83%)	136 (87%)	0.232
... follows through with the care plan	338 (80%)	164 (90%)	0.001	237 (83%)	142 (90%)	0.026
... uses patients' care plan to follow progress	313 (74%)	158 (87%)	<0.001	217 (76%)	137 (87%)	0.003
... reviews and updates patients' care plan with them	352 (83%)	165 (91%)	0.016	247 (86%)	146 (93%)	0.037

Source: Staff survey R1 Dec 2017–Jul 2018 and R5 Mar–May 2021, question 13.

Table 173: Behaviour change interventions and peer support

	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Don't know/ no response
The primary care practice/service...						
... has behaviour change interventions readily available for patients as part of routine care.	93 (62%)	45 (30%)	9 (6%)	3 (2%)	1 (1%)	31
... has peer support readily available for patients as part of routine care.	74 (49%)	47 (31%)	19 (12%)	5 (3%)	7 (5%)	30

Source: Staff survey R5 Mar–May 2021, question 14.

Table 174: Behaviour change interventions and peer support by staff type

	Percentage responding Agree or Somewhat agree				
	Total	GP	Nurse	Manager	Other
The primary care practice/service…					
… has behaviour change interventions readily available for patients as part of routine care	138 (91%)	33 (92%)	36 (86%)	41 (98%)	28 (90%)
… has peer support readily available for patients as part of routine care	121 (80%)	23 (66%)	33 (79%)	38 (88%)	27 (84%)

Source: Staff survey R5 Mar–May 2021, question 14.

Table 175: Behaviour change interventions and peer support, longitudinal analysis

Percentage responding Agree or Somewhat agree	All responses			Responses by staff in practices responding to R1 & R5		
	R1	R5	Statistical significance of change from R1 to R5 (p-value)	R1	R5	Statistical significance of change from R1 to R5 (p-value)
… has behaviour change interventions readily available for patients as part of routine care	261 (61%)	138 (76%)	<0.001	168 (59%)	115 (73%)	0.002
… has peer support readily available for patients as part of routine care	244 (57%)	121 (66%)	0.040	157 (55%)	102 (65%)	0.041

Source: Staff survey R5 Mar–May 2021, question 14.

Table 176: Additional support services

	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Don't know/ no response
Someone on the primary care team…						
… asks patients about additional supportive services they may need including those that may be available in the practice/service or the community, such as counselling programs, support groups, rehabilitation programs, home care, financial support, equipment and transportation services.	135 (79%)	31 (18%)	3 (2%)	1 (1%)		12
… gives patients information about additional supportive services offered at the practice/ service or in the community, such as counselling programs, support groups, rehabilitation programs, home care, financial support, equipment and transportation services.	131 (77%)	35 (20%)	4 (2%)	1 (1%)		11
… connects patients to needed services in the practice/service or the community, such as counselling programs, support groups, rehabilitation programs, home care, financial support, equipment and transportation services.	136 (79%)	30 (17%)	5 (3%)	1 (1%)		10

Source: Staff survey R5 Mar–May 2021, question 15.

Table 177: Additional support services by staff type

	Percentage responding Agree or Somewhat agree				
	Total	GP	Nurse	Manager	Other
Someone on the primary care team…					
… asks patients about additional supportive services they may need including those that may be available in the practice/service or the community, such as counselling programs, support groups, rehabilitation programs, home care, financial support, equipment and transportation services	166 (98%)	34 (94%)	43 (96%)	47 (100%)	42 (100%)
… gives patients information about additional supportive services offered at the practice/ service or in the community, such as counselling programs, support groups, rehabilitation programs, home care, financial support, equipment and transportation services	166 (97%)	33 (92%)	42 (95%)	47 (100%)	44 (100%)
… connects patients to needed services in the practice/service or the community, such as counselling programs, support groups, rehabilitation programs, home care, financial support, equipment and transportation services	166 (97%)	33 (92%)	42 (95%)	46 (98%)	45 (100%)

Source: Staff survey R5 Mar–May 2021, question 15.

Table 178: Additional support services, longitudinal analysis

Percentage responding Agree or Somewhat agree	All responses			Responses by staff in practices responding to R1 & R5		
	R1	R5	Statistical significance of change from R1 to R5 (p-value)	R1	R5	Statistical significance of change from R1 to R5 (p-value)
... asks patients about additional supportive services they may need including those that may be available in the practice/service or the community, such as counselling programs, support groups, rehabilitation programs, home care, financial support, equipment and transportation services	359 (84%)	166 (91%)	0.033	249 (87%)	142 (90%)	0.290
... gives patients information about additional supportive services offered at the practice/ service or in the community, such as counselling programs, support groups, rehabilitation programs, home care, financial support, equipment and transportation services	366 (86%)	166 (91%)	0.087	250 (87%)	143 (91%)	0.212
... connects patients to needed services in the practice/service or the community, such as counselling programs, support groups, rehabilitation programs, home care, financial support, equipment and transportation services	358 (84%)	166 (91%)	0.031	240 (84%)	143 (91%)	0.037

Source: Staff survey R5 Mar–May 2021, question 15.

Table 179: Specialist care

	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Don't know/ no response
When a patient sees a specialist, the primary care team...						
... is informed about the care patients received from the specialist.	108 (62%)	57 (33%)	7 (4%)	3 (2%)		7
... receives information from the specialist about new prescriptions or if there was a change in medication.	96 (57%)	56 (33%)	10 (6%)	7 (4%)		13
... receives information from the specialist about follow-up care.	98 (57%)	58 (34%)	11 (6%)	5 (3%)		10

Source: Staff survey R5 Mar–May 2021, question 16.

Table 180: Specialist care by staff type

	Percentage responding Agree or Somewhat agree				
	Total	GP	Nurse	Manager	Other
When a patient sees a specialist, the primary care team...					
... is informed about the care patients received from the specialist	165 (94%)	35 (97%)	39 (89%)	47 (96%)	44 (96%)
... receives information from the specialist about new prescriptions or if there was a change in medication	152 (90%)	33 (92%)	37 (86%)	42 (89%)	40 (93%)
... receives information from the specialist about follow-up care	156 (91%)	34 (94%)	36 (84%)	45 (94%)	41 (91%)

Source: Staff survey R5 Mar–May 2021, question 16.

Table 181: Specialist care, longitudinal analysis

Percentage responding Agree or Somewhat agree	All responses			Responses by staff in practices responding to R1 & R5		
	R1	R5	Statistical significance of change from R1 to R5 (p-value)	R1	R5	Statistical significance of change from R1 to R5 (p-value)
... is informed about the care patients received from the specialist	362 (85%)	165 (91%)	0.037	247 (86%)	140 (89%)	0.275
... receives information from the specialist about new prescriptions or if there was a change in medication	346 (81%)	152 (84%)	0.376	240 (84%)	130 (83%)	0.935
... receives information from the specialist about follow-up care	349 (82%)	156 (86%)	0.184	242 (84%)	134 (85%)	0.672

Source: Staff survey R5 Mar–May 2021, question 16.

Table 182: HCH patients referred to a community pharmacist as part of the HCH trial

question	All/majority of HCH patients (80–100%)	Most HCH patients (50–79%)	Some HCH patients (20–49%)	No/very few HCH patients (less than 20%)	Don't know/ no response
Approximately how many HCH patients that you are responsible for have you referred to a community pharmacist as part of the HCH trial (i.e. for a medication reconciliation and a medication management plan or other support)?	6 (17%)	4 (11%)	14 (39%)	12 (33%)	0

Source: Staff survey R5 Mar–May 2021, question 16A.

Table 183: Key reasons GPs have not referred more HCH patients to a community pharmacy

Response	n (%)
Pharmacy intervention was not required	5 (50%)
Lack of pharmacists available or not participating in HCH	3 (30%)
Limited patient interest	2 (20%)
Patients dispersed geographically	1 (10%)
Small scale of HCH patients	1 (10%)
Don't know/ no response	2

Source: Staff survey R5 Mar–May 2021, question 16B.

Table 184: Proportion of HCH patients referred to a community pharmacist for whom the GP received a medication management plan from the community pharmacist

	All/majority of HCH patients (80–100%)	Most HCH patients (50–79%)	Some HCH patients (20–49%)	No/very few HCH patients (less than 20%)	Don't know/ no response
For approximately what proportion of HCH patients that you referred to a community pharmacist have you received a medication management plan from the community pharmacist?	9 (38%)	3 (12%)	6 (25%)	6 (25%)	0

Source: Staff survey R5 Mar–May 2021, question 16C.

Table 185: Frequency of interaction with community pharmacist

	5–6 times	3–4 times	1–2 times	Nil	Don't know/ no response
Thinking about the community pharmacist with whom you have most dealings, how often have you interacted over the last month? Interaction could be via telephone, video, email or face-to-face.	5 (21%)	8 (33%)	5 (21%)	6 (25%)	0

Source: Staff survey R5 Mar–May 2021, question 16D.

Table 186: Did community pharmacists outline supporting services that could be delivered to support achievement of patient medication management goals?

	Yes	Maybe	No	Don't know/ no response
In any of the interactions with this pharmacist throughout the trial period, did the pharmacist outline supporting services that he/she planned or could deliver to support the patient's achievement of their medication management goals?	15 (83%)	2 (11%)	1 (6%)	0

Source: Staff survey R5 Mar–May 2021, question 16E.

Table 187: Proportion of community pharmacists' recommendations that GP acted on

Response	n (%)
0–20%	6 (26%)
21–40%	2 (9%)
41–60%	6 (26%)
61–80%	5 (22%)
81–100%	4 (17%)
Don't know/ no response	1

Source: Staff survey R5 Mar–May 2021, question 16F.

Table 188: Key reasons for GP not acting on the community pharmacists' recommendations most of the time

Response	n (%)
Did not agree with /or find pharmacist input valuable	8 (62%)
Do not receive any communication from pharmacists	2 (15%)
Service provided by GP	1 (8%)
No HCH pharmacists locally	1 (8%)
GP did not see the use	1 (8%)
Don't know/ no response	1

Source: Staff survey R5 Mar–May 2021, question 16G.

Table 189: GP's perceptions of benefits of services provided by community pharmacists

Response	n (%)
Patient education	3 (21%)
Aid medication compliance	2 (14%)
Reinforce GP decisions and/or provide medications suggestions and improvements	2 (14%)
Help identify errors or interactions through checks and medication reconciliation	2 (14%)
Promotes continuity and integration of care	2 (14%)
Minimal to no benefits	2 (14%)
Other	1 (7%)
Don't know/ no response	10

Source: Staff survey R5 Mar–May 2021, question 16H.

Table 190: Did communications between GP and community pharmacists in your local area improve?

question	Yes	No	Don't know/ no response
Since the start of the community pharmacy component of the HCH trial, have communications between you and community pharmacists in your local area improved?	8 (44%)	10 (56%)	6

Source: Staff survey R5 Mar–May 2021, question 16I.

Table 191: GP views on top three ways in which community pharmacists' expertise could be better used towards improving the care provided for HCH patients and other patients with chronic illnesses

Response	n (%)
Provide more education and support	13 (76%)
Offer additional services (i.e. delivery, e-scripts, home visits)	7 (41%)
Better communication and feedback	6 (35%)
More frequent medication reviews and patient follow up	6 (35%)
More regular reporting and documentation	6 (35%)
Additional involvement with general practice team based care arrangements (i.e. visits to practice)	4 (24%)
Better use of and communication through shared care planning tools	3 (18%)
Reminders	1 (6%)
Don't know/ no response	7

Source: Staff survey R5 Mar–May 2021, question 16J.

Table 192: Information received from the hospital after patient discharge

	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Don't know/ no response
When patients are discharged from the hospital, the primary care team...						
... is informed about the care patients received from the hospital.	85 (49%)	62 (36%)	10 (6%)	14 (8%)	1 (1%)	10
... receives information from the hospital about new prescriptions or if there was a change in medication.	77 (46%)	65 (39%)	10 (6%)	14 (8%)	1 (1%)	15
... receives information from the hospital about post-discharge follow-up care.	73 (43%)	67 (40%)	8 (5%)	19 (11%)	1 (1%)	14

Source: Staff survey R5 Mar–May 2021, question 17.

Table 193: Information received from the hospital after patient discharge by staff type

	Percentage responding Agree or Somewhat agree				
	Total	GP	Nurse	Manager	Other
When patients are discharged from the hospital, the primary care team...					
... is informed about the care patients received from the hospital	147 (85%)	28 (78%)	32 (71%)	46 (96%)	41 (95%)
... receives information from the hospital about new prescriptions or if there was a change in medication	142 (85%)	30 (83%)	30 (68%)	46 (96%)	36 (92%)
... receives information from the hospital about post-discharge follow-up care	140 (83%)	28 (78%)	31 (69%)	43 (93%)	38 (93%)

Source: Staff survey R5 Mar–May 2021, question 17.

Table 194: Information received from the hospital after patient discharge, longitudinal analysis

Percentage responding Agree or Somewhat agree	All responses			Responses by staff in practices responding to R1 & R5		
	R1	R5	Statistical significance of change from R1 to R5 (p-value)	R1	R5	Statistical significance of change from R1 to R5 (p-value)
... is informed about the care patients received from the hospital	331 (78%)	147 (81%)	0.448	226 (79%)	126 (80%)	0.817
... receives information from the hospital about new prescriptions or if there was a change in medication	318 (75%)	142 (78%)	0.432	214 (75%)	121 (77%)	0.617
... receives information from the hospital about post-discharge follow-up care	313 (74%)	140 (77%)	0.442	212 (74%)	119 (76%)	0.761

Source: Staff survey R1 Dec 2017–Jul 2018 and R5 Mar–May 2021, question 17.

Table 195: When patients are discharged from the hospital results are incorporated into their primary care medical record

	Always	Usually	Sometimes	Rarely	Never	Don't know/ no response
When patients are discharged from the hospital and they have test results pending, the results are incorporated into their primary care medical record within two weeks:	28 (18%)	67 (42%)	35 (22%)	27 (17%)	3 (2%)	22

Source: Staff survey R5 Mar–May 2021, question 18.

Table 196: When patients are discharged from the hospital results are incorporated into their primary care medical record by staff type

	Percentage responding Always or Usually				
	Total	GP	Nurse	Manager	Other
When patients are discharged from the hospital and they have test results pending, the results are incorporated into their primary care medical record within two weeks:	95 (59%)	14 (41%)	20 (48%)	32 (68%)	29 (78%)

Source: Staff survey R5 Mar–May 2021, question 18.

Table 197: When patients are discharged from the hospital results are incorporated into their primary care medical record, longitudinal analysis

Percentage responding Always or Usually	All responses			Responses by staff in practices responding to R1 & R5		
	R1	R5	Statistical significance of change from R1 to R5 (p-value)	R1	R5	Statistical significance of change from R1 to R5 (p-value)
When patients are discharged from the hospital and they have test results pending, the results are incorporated into their primary care medical record within two weeks:	194 (46%)	95 (52%)	0.113	120 (42%)	80 (51%)	0.076

Source: Staff survey R1 Dec 2017–Jul 2018 and R5 Mar–May 2021, question 18.

Table 198: Rating of coordination of care provided by the primary care practice/ service

	Excellent	Very good	Good	Fair	Poor	Don't know/ no response
In general, how would rate the coordination of care provided by your primary care practice/ service?	44 (24%)		42 (23%)	9 (5%)		1

Source: Staff survey R5 Mar–May 2021, question 19.

Table 199: Rating of coordination of care provided by the primary care practice/ service by staff type

	Percentage responding Excellent or Very Good				
	Total	GP	Nurse	Manager	Other
In general, how would rate the coordination of care provided by your primary care practice/ service?	130 (72%)	29 (81%)	27 (60%)	34 (69%)	40 (78%)

Source: Staff survey R5 Mar–May 2021, question 19.

Table 200: Rating of coordination of care provided by the primary care practice/ service, longitudinal analysis

Percentage responding Excellent or Very Good	All responses			Responses by staff in practices responding to R1 & R5		
	R1	R5	Statistical significance of change from R1 to R5 (p-value)	R1	R5	Statistical significance of change from R1 to R5 (p-value)
In general, how would rate the coordination of care provided by your primary care practice/ service?	246 (58%)	130 (71%)	0.003	167 (58%)	109 (69%)	0.034

Source: Staff survey R1 Dec 2017–Jul 2018 and R5 Mar–May 2021, question 19.

Table 201: Staff assessment of whether coordination of care provided for patients improved since HCH started

	Got better	Stayed the same	Got worse	Don't know/ no response
Since the HCH program commenced, coordination of care provided for patients of your practice/service:	98 (60%)	64 (39%)	1 (1%)	19

Source: Staff survey R5 Mar–May 2021, question 20A.

Table 202: Top three changes that have occurred that improved the coordination of care provided for patients

Response	n (%)
Improved flexibility for staff and patients (better access & remote working)	47 (35%)
More patient engagement in care planning and otherwise	34 (26%)
Improved external collaboration	28 (21%)
Improved in practice collaboration	24 (18%)
Patient Outreach (Nurse) follow up with HCH patients	21 (16%)
Improved Care plan processes	20 (15%)
Increased scope of practice for non GP staff / nurse led care	18 (14%)
Increased non GP staff involvement	14 (11%)
Introduced/ enhanced telehealth (including e scripts)	14 (11%)
Improved practice culture and team	13 (10%)
Increased service offering	13 (10%)
Improved internal systems to support HCH	12 (9%)
Introduced/ enhanced recall system	12 (9%)
Installed/ changed/greater use of shared care platform	11 (8%)
New staff/ increased hours	9 (7%)
Data cleansing/ improved use of practice data in patient care	8 (6%)
Continuity of care	6 (5%)
No change	5 (4%)
Increased use of technology	3 (2%)
Improved patient outcomes	2 (2%)
Don't know/ no response	49

Source: Staff survey R5 Mar–May 2021, question 20B.

Table 203: Top three changes staff believe would further improve the coordination of care provided for patients

Response	n (%)
More external provider support / communication /engagement	47 (39%)
Improve IT infrastructure (includes supporting further interoperability)	39 (32%)
Dedicated / increased staffing	27 (22%)
More internal practice support / involvement / collaboration	20 (16%)
More patient engagement / education / resources	18 (15%)
Additional training and resources (for practice staff and/or other health providers)	18 (15%)
Additional funding	17 (14%)
More time to support HCH	12 (10%)
Support continued use and/or expansion of telehealth	11 (9%)
Specific involvement/ funding of allied health/ specialist care in HCH: Funding bulk billing etc	10 (8%)
Extend program / expand enrolment	9 (7%)
Better program monitoring and planning	5 (4%)
Expanded practice offering	5 (4%)
Lower administrative burden	4 (3%)
Additional guidance and program structure	4 (3%)
Enrolment to practice rather than GP	3 (2%)
More opportunity for provider feedback	2 (2%)
Don't know/ no response	60

Source: Staff survey R5 Mar–May 2021, question 20C.

Table 204: Staff rating of the quality of care provided to patients

	Excellent	Very good	Good	Fair	Poor	Don't know/ no response
In general, how would rate the quality of care provided to patients by your primary care practice/ service?	61 (34%)	90 (50%)	29 (16%)	1 (1%)		1

Source: Staff survey R5 Mar–May 2021, question 21.

Table 205: Staff rating of the quality of care provided to patients, by staff type

	Percentage responding Excellent or Very Good				
	Total	GP	Nurse	Manager	Other
In general, how would rate the quality of care provided to patients by your primary care practice/ service?	151 (83%)	31 (86%)	36 (82%)	41 (82%)	43 (84%)

Source: Staff survey R5 Mar–May 2021, question 21.

Table 206: Staff rating of the quality of care provided to patients, longitudinal analysis

Percentage responding Excellent or Very Good	All responses			Responses by staff in practices responding to R1 & R5		
	R1	R5	Statistical significance of change from R1 to R5 (p-value)	R1	R5	Statistical significance of change from R1 to R5 (p-value)
In general, how would rate the quality of care provided to patients by your primary care practice/ service?	315 (74%)	151 (83%)	0.035	218 (76%)	127 (81%)	0.357

Source: Staff survey R5 Mar–May 2021, question 21.

Table 207: Top three changes that have occurred since the start of HCH that improved the quality of care provided to patients

Response	n (%)
Improved access for patients	40 (34%)
More patient engagement / improved patient relationship	39 (33%)
Improved in practice collaboration	24 (20%)
Improved Care plan processes	24 (20%)
Patient recalls / Practice outreach	20 (17%)
Introduced/ enhanced telehealth (including e scripts)	17 (14%)
Improved external collaboration	15 (13%)
Nurse led /nurse involved care	12 (10%)
Data cleansing/ improved use of practice data in patient care	10 (8%)

Response	n (%)
Continuity of care	10 (8%)
Increased scope/ training to increase scope of non GP staff	9 (8%)
Increased service offering	8 (7%)
New staff or increased hours for HCH dedicated staff	8 (7%)
Improved practice culture and team	7 (6%)
Improved internal systems to support HCH	6 (5%)
Improved patient outcomes	6 (5%)
No change	4 (3%)
Proactive care/ preventative health care	4 (3%)
Increased non GP staff involvement	3 (3%)
Increased use of technology	3 (3%)
Installed/ changed/greater use of shared care platform	3 (3%)
Increased options with flexible funding	3 (3%)
PHN Support	2 (2%)
Higher staff satisfaction	1 (1%)
Improved Flexibility for staff (remote working)	1 (1%)
Don't know/ no response	63

Source: Staff survey R5 Mar–May 2021, question 22B.

Table 208: Top three changes staff believe would further improve the quality of care provided to patients

Response	n (%)
Additional/ dedicated staff and or staff hours	37 (37%)
More patient engagement / education / resources	18 (18%)
Improve IT infrastructure (includes supporting further interoperability)	18 (18%)
Specific involvement/ funding of allied health/ specialist care in HCH: Funding bulk billing etc	16 (16%)
More external support / communication /engagement	15 (15%)
Extend program / expand enrolment	13 (13%)
Patient monitoring/ recalls / outreach	13 (13%)
More internal practice support / involvement / collaboration	12 (12%)
Additional training and resources (for practice staff and/or other health providers)	10 (10%)
More funding/ improved targeting of funding	10 (10%)
Lower administrative burden	7 (7%)
Support continued use and/or expansion of telehealth	7 (7%)
More GPs involved/ engaged	5 (5%)
More time to support HCH	4 (4%)
Physical HCH space within practice	3 (3%)
No change	2 (2%)
Nurse led /nurse involved care	2 (2%)
Proactive care/ preventative health care	2 (2%)
Data cleansing/ improved use of practice data in patient care	2 (2%)
Don't know/ no response	81

Source: Staff survey R5 Mar–May 2021, question 22C.

Table 209: Staff experience

	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Don't know/ no response
Please indicate your level of agreement with the following statements about your job						
My work gives me a feeling of personal accomplishment	82 (45%)	90 (50%)	7 (4%)	2 (1%)		1
I have the tools and resources to do my job well.	83 (46%)	79 (44%)	11 (6%)	7 (4%)	1 (1%)	1
My job makes good use of my skills and abilities.	88 (49%)	71 (39%)	16 (9%)	5 (3%)		2
I have clearly defined quality goals.	85 (47%)	76 (42%)	14 (8%)	4 (2%)	1 (1%)	2
The practice/service leaders visibly demonstrate a commitment to quality.	88 (49%)	79 (44%)	11 (6%)	1 (1%)		3
The practice/service leaders keep employees informed about matters affecting us.	81 (45%)	80 (44%)	13 (7%)	3 (2%)	3 (2%)	2
The practice/service leaders strongly support practice change efforts.	80 (45%)	80 (45%)	15 (8%)	2 (1%)	2 (1%)	3

Source: Staff survey R5 Mar–May 2021, question 23.

Table 210: Has your role in the practice/ service changed since the implementation of the HCH in your practice?

Response	n (%)
I started work with the practice/ service after the HCH program commenced.	35 (19%)
There have been no changes to my role since the HCH program commenced.	63 (35%)
My role in the practice/ service has changed, but this has not been a result of the HCH program.	34 (19%)
My role in the practice/ service has changed since the HCH program commenced, and this is a result of/ related to the HCH program.	50 (27%)

Source: Staff survey R5 Mar–May 2021, question 23A.

Table 211: Extent to which daily work relates to patients enrolled in HCH

question	All my daily work	Some of my daily work	None or very little	Don't know/ no response
How much of your daily work relates to patients enrolled in the HCH program?	3 (6%)	43 (90%)	2 (4%)	2

Source: Staff survey R5 Mar–May 2021, question 23B.

Table 212: Change in staff members' role in the practice since start of HCH

question	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree	Don't know/ no response
In what ways has your role in the practice/ service changed the implementation of the HCH in your practice?						
The depth of my job has increased (e.g. through extending my skills)	19 (38%)	19 (38%)	9 (18%)	1 (2%)	2 (4%)	0
The breadth of my job has been expanded (e.g. wider range of tasks, and/or working with more organisations)	19 (39%)	21 (43%)	5 (10%)	2 (4%)	2 (4%)	1
I now delegate more responsibility to others	9 (19%)	19 (40%)	4 (8%)	7 (15%)	9 (19%)	2
I now have more responsibility delegated to me.	22 (46%)	13 (27%)	7 (15%)	4 (8%)	2 (4%)	2

Source: Staff survey R5 Mar–May 2021, question 23C.

Table 213: Change of aspects of job since start of HCH at the practice

question	Better than before	No change	Worse than before	Don't know/ no response
In what ways has your role in the practice/ service changed the implementation of the HCH in your practice?				
Having clear planned goals and objectives for my job	24 (48%)	25 (50%)	1 (2%)	0
Having an interesting job	26 (54%)	21 (44%)	1 (2%)	2
Developing my role	36 (75%)	12 (25%)		2
I now have more responsibility delegated to me	32 (67%)	15 (31%)	1 (2%)	2

Source: Staff survey R5 Mar–May 2021, question 23E.

Table 214: Staff assessment of atmosphere within the practice

	1. Calm	2.	3. Busy, but reasonable	4.	5. Hectic, chaotic
Which number below best describes the atmosphere in your practice?	9 (5%)	7 (4%)	95 (52%)	54 (30%)	17 (9%)

Source: Staff survey R5 Mar–May 2021, question 24.

Table 215: Staff assessment of atmosphere within the practice, by staff type

	Percentage responding Calm to Busy but reasonable				
	Total	GP	Nurse	Manager	Other
Which number below best describes the atmosphere in your practice?	111 (61%)	28 (78%)	24 (53%)	28 (56%)	31 (61%)

Source: Staff survey R5 Mar–May 2021, question 24.

Table 216: Staff assessment of atmosphere within the practice, longitudinal analysis

	All responses			Responses by staff in practices responding to R1 & R5		
	R1	R5	Statistical significance of change from R1 to R5 (p-value)	R1	R5	Statistical significance of change from R1 to R5 (p-value)
Percentage responding Calm to Busy but reasonable	281 (66%)	111 (61%)	0.162	190 (66%)	94 (60%)	0.202

Source: Staff survey R1 Dec 2017–Jul 2018 and R5 Mar–May 2021, question 24.

Table 217: Staff rating of their job satisfaction

	Very satisfied	Satisfied	Neutral	Unsatisfied	Very unsatisfied
In general, how do rate your satisfaction with your job?	59 (32%)	100 (55%)	18 (10%)		5 (3%)

Source: Staff survey R5 Mar–May 2021, question 25.

Table 218: Staff rating of their job satisfaction, by staff type

	Percentage responding Very satisfied or satisfied				
	Total	GP	Nurse	Manager	Other
In general, how do rate your satisfaction with your job?	159 (87%)	32 (89%)	38 (84%)	46 (92%)	43 (84%)

Source: Staff survey R5 Mar–May 2021, question 25.

Table 219: Staff rating of their job satisfaction, longitudinal analysis

Percentage responding Very satisfied or satisfied	All responses			Responses by staff in practices responding to R1 & R5		
	R1	R5	Statistical significance of change from R1 to R5 (p-value)	R1	R5	Statistical significance of change from R1 to R5 (p-value)
In general, how do rate your satisfaction with your job?	364 (86%)	159 (87%)	0.603	247 (86%)	137 (87%)	0.771

Source: Staff survey R1 Dec 2017–Jul 2018 and R5 Mar–May 2021, question 25.

Table 220: Top changes staff believe would improve job satisfaction

Response	n (%)
More hours/ additional staff: practice level	40 (33%)
Improved internal communication / support / involvement / collaboration / culture	39 (32%)
Training/ education / education support / career progression	25 (21%)
Increased funding / MBS reimbursement	18 (15%)
Increased wage: employee	17 (14%)
Improved internal processes and systems	17 (14%)
Quarantined hours for practice development tasks (admin QI)	12 (10%)
Lower administrative burden	10 (8%)
Improved Patient relationships / engagement / outcomes	9 (7%)
improved external collaboration / access to AH or specialist care	8 (7%)
Improved internal leadership	7 (6%)
Improved work life balance	7 (6%)
Improve/ embrace technology	6 (5%)
Improved government communication /transparency	6 (5%)
High job satisfaction currently	5 (4%)
Employee / Professional recognition	5 (4%)
Expand and or extend HCH	5 (4%)
Increased role scope for Nurses/ Medical assistants	4 (3%)
Reduced Staff turnover	4 (3%)
Maintain / improve Telehealth	3 (2%)
Improved information sharing – eMR	3 (2%)
Improved physical space (larger space, renovated)	2 (2%)
Don't know/ no response	61

Source: Staff survey R5 Mar–May 2021, question 26.

Appendix 11: Sample practice benchmark report

CENTRE FOR BIG DATA RESEARCH IN HEALTH

HEALTH CARE HOMES
Patient-centred Coordinated Flexible

HPA
HEALTH POLICY ANALYSIS

Health Care Homes Practice Benchmark Report

For: Sample Medical Centre

Reporting period: July - December 2020

This report provides information about patients enrolled in the Health Care Homes (HCH) program in your practice and other practices participating in the HCH. It also describes the completeness and timeliness of clinical assessments and measurements as recorded in the practice management systems for HCH patients. The information presented could be useful to inform areas for quality improvement. Results presented in this report are drawn from two data sources, including HCH registrations with the Department of Human Services' Health Professional Online Services (referred to as "HPOS registration") and patient records extracted from the practice clinical management systems by an extraction tool (referred to as "practice data"). The HPOS registration and practice data are provided for the HCH evaluation in a confidential and de-identified form. It is not possible to ascertain patient clinical information that is not included in the practice data extracts.

Information about your practice

Practice size*	Between 1.6 and 5 full-time equivalent GPs
Practice location	Metropolitan areas (Modified Monash category 1)
Practice ownership	Corporate

* Practice size is based on the number of full-time equivalent GPs in the practice which may change over time.

Key findings from this report

* At the time of this report, your practice has 300 patients enrolled in the HCH program according to the HPOS registration.
* Number of enrolled patients recorded in your practice data extract over the same period is 295.
* In the last year, the completion of patient observations and measurements for 295 patients ranges from 0% (physical activity), 53% (waist), 96% (body weight), 99% (smoking status) to 100% (pulse) and 100% (cholesterol). In patients with diabetes, 99% had a HbA1c test recorded.
* The top-five diagnoses in 295 patients are high blood pressure (73%), high cholesterol (63%), osteoarthritis (48%), diabetes type 2 (48%) and coronary heart disease (39%). It is likely that patient diagnoses may be under-ascertained.

Section 1: HCH enrolments and patient characteristics based on the HPOS registration

This section presents the number of HCH patients enrolled in the HPOS registration in your practice and other similar practices by the end of December 2020 as well as patient characteristics such as age, sex and risk tier.

Table 1: Number of HCH enrolments and risk tier in your practice, as at December 2020

	HPOS registration
Time of enrolment commencement	**May-18**
Number of total enrolments*	**300**
HCH risk tier	
Tier 1	50
Tier 2	200
Tier 3	50

* Enrolled patients who subsequently withdrew are not included.

Table 2: Demographic characteristics and risk tier of patients in the HPOS registration: your practice versus other practices, as at December 2020

		Statistics from other HCH practices		
	Your practice	Similar location	Similar size	All others
Number of enrolments (persons)				
Total enrolments	**300**	**6000**	**4000**	**9700**
Mean (median)		70 (40)	50 (35)	65 (35)
Enrolments by age, sex and risk tier (% of all enrolments)				
Age group				
Under 25	0	3	4	3
25 to 44	3	11	10	10
45 to 64	18	28	27	26
65 to 74	34	21	21	20
Sex				
75 to 84	36	16	17	16
85 and older	9	6	6	6
HCH risk tier				
Female	56	46	43	43
Male	44	40	42	37
Tier 1	30	15	12	13
Tier 2	47	44	40	41
Tier 3	23	27	33	26

Notes: Results are drawn from HPOS registration data.
- Percentage is not shown when there are fewer than ten patients.

Section 2: HCH patient health profile based on practice data extracts

In Section 2, HCH patients are identified in practice data extracts and the number of patients identified is compared to the HPOS registration. This section also reports the completeness and timeliness of patient clinical assessments, measurements and patient health conditions. It is not possible to examine patient health profile when practice data extracts are not available or contain no flags for HCH patients.

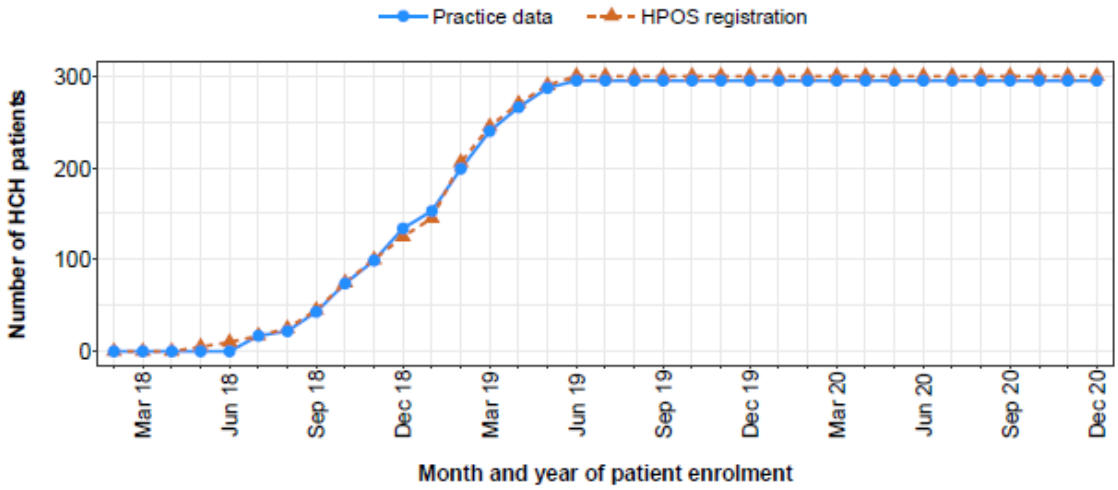
Recording of HCH patient enrolments in practice data

Table 3: Number of HCH patients and risk tier identified in your practice data, as at December 2020

	Practice data
When the first patient was recorded*	**Jul-18**
Number of patients identified from extract data†	**295**
HCH risk tier	
Tier 1	43
Tier 2	198
Tier 3	49

* Based on date of patient enrolment recorded in practice data or derived from date of data extract.
† Enrolled patients who subsequently withdrew are not included.

Figure 1: Monthly cumulative patient enrolments in your practice: practice data versus HPOS registration



Note: Month and year of patient enrolment in 'Practice data' are derived from date of patient enrolment if available, otherwise date of practice extract.

Completion and timeliness of recorded clinical assessments and measurements

Table 4: Recording of clinical assessments and whether an assessment was recorded in the previous year: your practice versus other practices

		Statistics for other HCH practices		
	Your practice	Similar location	Similar size	All others
Number of enrolments recorded in practice data (persons)				
All patients	**295**	**5300**	**3600**	**9005**
Patients who have an assessment recorded (% of all patients*)				
Smoking status†				
Smoking status ever recorded	100	93	95	95
Reviewed in previous year	99	66	57	68
Alcohol consumption amount				
Consumption amount ever recorded	100	81	75	78
Reviewed in previous year	100	60	47	60
Physical activity‡				
Ever recorded	0	5	17	17
Recorded in previous year	0	2	5	7
Body weight				
Ever recorded	100	92	95	94
Recorded in previous year	96	77	80	80
Body height				
Ever recorded	100	88	92	91
Waist				
Ever recorded	82	51	59	57
Recorded in previous year	53	29	30	31

Notes:
- Percentage is not shown when there are fewer than ten patients or data for an assessment are absent.
* Denominator includes only patients in practices that have data for an assessment.
† Smoking status is recorded as smoker, ex-smoker or never smoked.
‡ Physical activity is recorded as sufficient, insufficient and sedentary.

Table 5: Recording of clinical measurements and whether a measurement was recorded in the previous year and previous six months: your practice versus other practices

		Statistics for other HCH practices		
	Your practice	Similar location	Similar size	All others
Number of enrolments recorded in practice data (persons)				
All patients	**295**	**5300**	**3600**	**9005**
Patients with diabetes	**130**	**2700**	**1500**	**4300**
Patients with asthma or COPD*	**110**	**2200**	**1300**	**4100**
Patients who have a measurement recorded (% of all patients†)				
Blood pressure‡				
Ever recorded	100	95	96	97
Recorded in previous year	100	87	89	90
Recorded in previous six months	93	75	78	79
Pulse				
Ever recorded	100	94	95	95
Recorded in previous year	100	82	84	84
Recorded in previous six months	93	67	70	70
Cholesterol§				
Ever recorded	100	91	94	93
Recorded in previous year	98	76	78	76
Recorded in previous six months	73	55	55	54
Kidney function¶				
Ever recorded	100	93	96	95
Recorded in previous year	99	81	85	83
Recorded in previous six months	79	62	65	64
Patients who have a HbA1c test recorded (% of patients with diabetes)				
HbA1c				
Ever recorded	100	99	98	99
Recorded in previous year	99	91	91	92
Recorded in previous six months	79	76	75	77
Patients who have a spirometry test recorded (% of patients with asthma or COPD*)				
Spirometry**				
Ever recorded	88	20	21	19
Recorded in previous year	13	8	7	5
Recorded in previous six months	7	5	5	3

Notes:

- Percentage is not shown when there are fewer than ten patients or data for a measurement are absent.

* Patients with asthma or COPD in practices that had extracts of spirometry measurements.

† Denominator includes only patients in practices that have data for a measurement.

‡ Systolic or diastolic blood pressure.

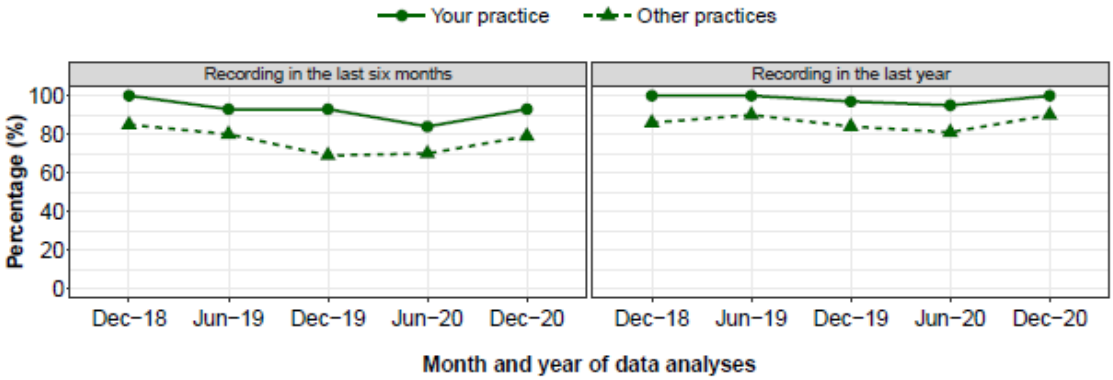
§ Total cholesterol, HDL, LDL or triglycerides.

¶ eGFR, serum creatinine, urinary creatinine or albumin-creatinine ratio.

** FEV or FVC.

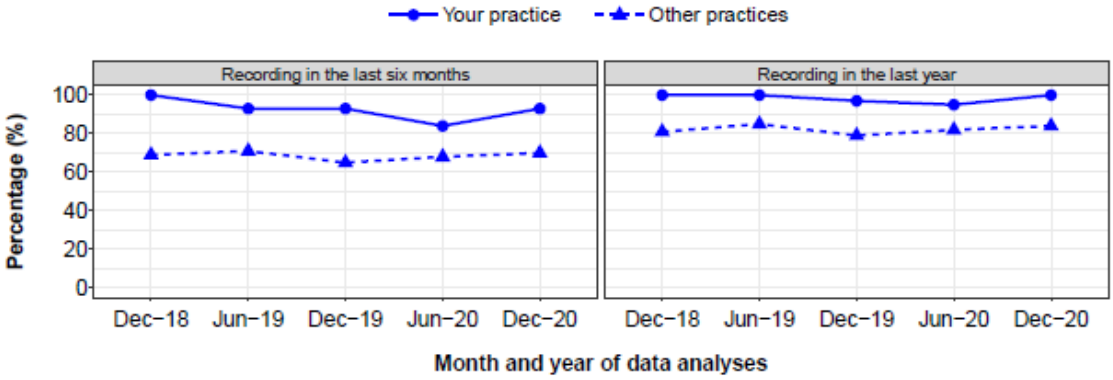
The following figures present your practice's recording of patient assessments compared to other practices participating in the HCH by the end of December 2020. The analyses were conducted at the end of December 2018, June 2019, December 2019, June 2020 and December 2020 based on extracts that contained flags for HCH patients. The numbers of patients (i.e. the numerators and/or denominators) may differ from one to another analysis because there could have been additional enrolments and/or withdrawals over time. Results for your practice are not shown if practice extracts were not available for the analysis period or the number of patients being fewer than ten.

Figure 2: Recording of blood pressure* in all patients: your practice vs other practices



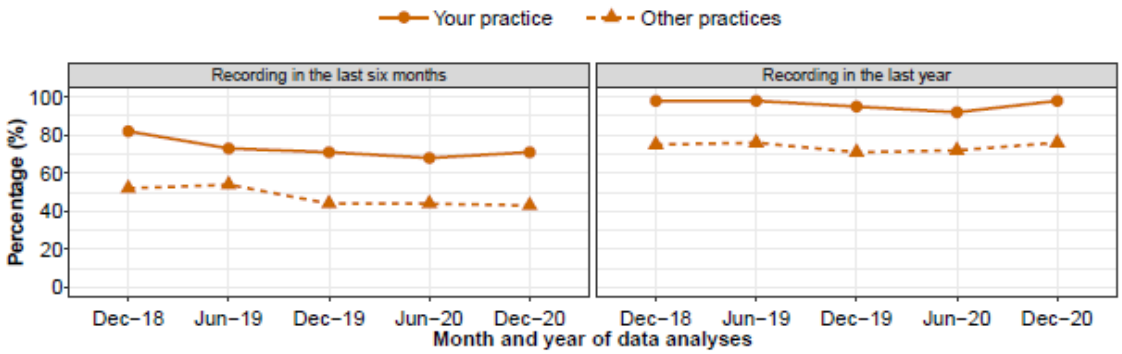
* Recording of systolic or diastolic blood pressure in active HCH patients, irrespective of health conditions and whether patients visited the practice.

Figure 3: Recording of pulse* in all patients: your practice vs other practices



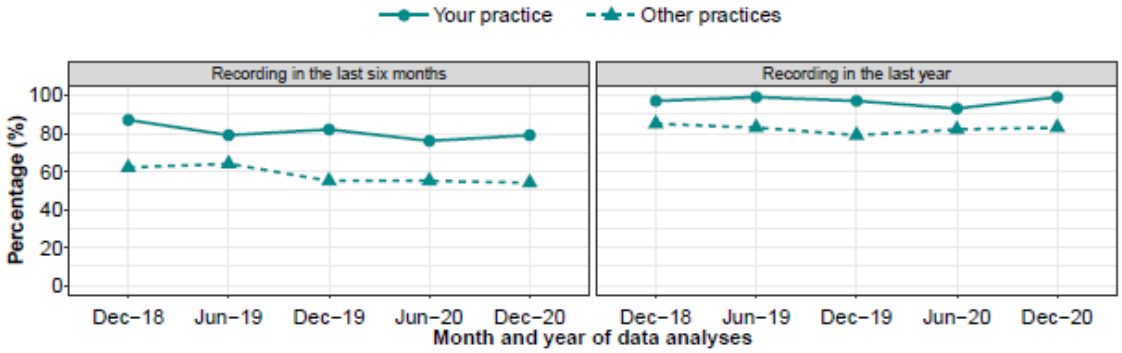
* Recording of pulse in active HCH patients, irrespective of health conditions and whether patients visited the practice.

Figure 4: Recording of cholesterol* in all patients: your practice vs other practices



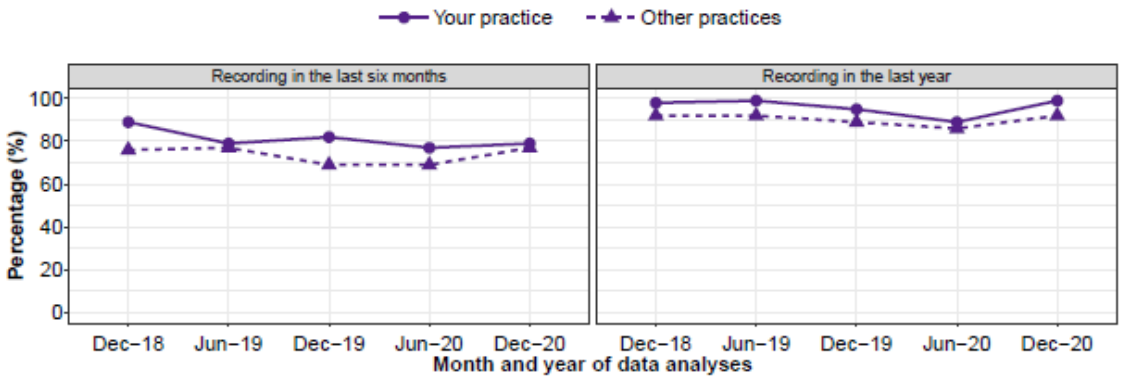
* Recording of total cholesterol, HDL, LDL or triglycerides in active HCH patients, irrespective of health conditions and whether patients visited the practice.

Figure 5: Recording of kidney function* in all patients: your practice vs other practices



* Recording of eGFR, serum creatinine, urinary creatinine or albumincreatinine ratio in active HCH patients, irrespective of health conditions and whether patients visited the practice.

Figure 6: Recording of HbA1c* in patients with diabetes: your practice vs other practices



* In active HCH patients with diabetes, irrespective of whether patients visited the practice.

Health profile of HCH patients

This table presents health conditions that have ever been flagged or recorded in practice extract data. It is not possible to ascertain the conditions that have not been recorded in the practice systems or have not been included in the practice data extracts.

Table 6: Patients who have a health condition flagged in practice data extracts: your practice versus other practices

		Statistics for other HCH practices		
	Your practice	Similar location	Similar size	All others
Number of enrolments recorded in practice data (persons)				
All patients	**295**	**5300**	**3600**	**9005**
Patients who have a health condition flagged (% of all patients*)				
Patient health conditions				
Asthma	35	17	18	18
COPD	19	10	13	12
Atrial fibrillation	14	7	8	8
Coronary heart disease	39	14	15	15
Stroke	9	5	5	5
Congestive heart failure	6	3	4	5
Osteoarthritis	48	24	22	24
Osteoporosis	39	15	16	14
Anxiety	16	14	15	13
Depression	29	23	24	22
Bipolar	1	2	3	2
Schizophrenia	3	2	2	2
Dementia	3	2	3	2
Cancer (any)	15	8	9	9
High blood pressure	73	45	48	48
High cholesterol	63	35	39	38
Diabetes type 1	2	2	2	2
Diabetes type 2	48	24	30	30
Chronic kidney disease	9	7	12	14
Number of above morbidities†				
Nil	1	12	9	9
One condition	3	18	17	16
2-4 conditions	44	56	55	58
5+ conditions	52	14	18	17

Notes:
- Percentage is not shown when there are fewer than ten patients or flags for a health condition are absent.
* Denominator includes only patients in practices that have flags for a health condition.
† The number of above-listed health conditions, ranging from nil to 19.

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