Evaluation of the Residential Medication Management Review Program

Appendix F
Cost Effectiveness Analysis

Prepared for
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1. Cost effectiveness analysis

1.1 In summary

The cost effectiveness of the RMMR Program is maximised when RMMRS are conducted as Collaborative Reviews.

The cost to government per Review is greater for Collaborative Reviews compared with the cost of Pharmacist Only Reviews. However, the number of positive health outcomes achieved for residents is greater for Collaborative Reviews compared with Pharmacist Only Reviews.

Therefore, the cost to government per health outcome is lower for Collaborative Reviews compared with Pharmacist Only reviews.

To maximise benefits arising from the Program, government could promote and encourage Collaborative Reviews. Increasing the rate of Collaborative Reviews could be achieved by introducing a differential payment to RMMR Providers that offsets the additional time required to conduct Collaborative Reviews.

The cost to government per output (a change in regimen) is $402. The cost to government per health outcome $591.

1.2 Background

Cost effectiveness analyses can be used to compare programs that aim to achieve similar goals or outcomes. Using this approach, the relative cost of achieving the desired outcome can be compared. Funding decisions and courses of action can be informed by the most cost effective approach.

The cost effectiveness component of this evaluation provided quantitative estimates for the chain of events that link:

- Medicare payments to RMMR Provider and GP
- The number of RMMRs and number of changes made to residents’ medication regimens (outputs)
- The desired result of the RMMR Program: improvements to resident health resulting from better medication management (outcomes).

For the RMMR evaluation, no comparable Program exists. Therefore the total costs associated with achieving outputs and outcomes can only be compared with a hypothetical setting where no RMMRs are conducted. A comparative measure is, however, provided between Collaborative and Pharmacist Only Reviews to determine the net cost per outcome under these two approaches.
Campbell Research drew on a number of sources to provide estimates of cost effectiveness:

**Program inputs**

Funding from RMMR claims was calculated by the number of accepted claims for both the $130 payment to pharmacists, and in the case of Collaborative Reviews, the $96 paid to GPs. The RMMR claim data revealed that 38% of all reviews conducted nationally were Collaborative Reviews with the remaining 62% being Pharmacist Only Reviews. Total expenditure for all Reviews was calculated based on the 38% / 62% split.

**Program outputs**

The analysis focused on the processes leading to outputs (a completed RMMR):

- The first stage is the key output for the RMMR Program - the total number of Reviews conducted – and was derived from analysis of RMMR claim data.

- From the conduct of Reviews, medication issues may be identified by the Accredited Pharmacist and included in the Review report. An estimate of this output was derived from the diary-based case studies conducted for this evaluation, where the average number of recommendations made per RMMR was calculated.

- From the Review report, the GP might have acted upon recommendations and effected change to medication regimens. Two estimates were derived for this figure:
  
  - For Collaborative Reviews:
    The GP survey conducted for this evaluation provided an estimate of 20% of who followed the pharmacist’s recommendations and changed a resident’s medication regimen. (The GP survey was completed by GPs who had made one or more claim for Item 903 for a Collaborative Review in the previous 12 months.)

  - For Pharmacist Only Reviews:
    The evidence obtained through the qualitative and quantitative research indicated that it was considerably less likely for GPs to follow the Accredited Pharmacist’s recommendations when the RMMR had been conducted as a Pharmacist Only Review. Information gathered through the case studies confirmed the decreased likelihood of GPs following recommendations if the Review was not a Collaborative Review. Further confirmation was obtained from the survey of Accredited Pharmacists, where 87% of those who had undertaken at least one Collaborative Review in the previous 12 months agreed that GP involvement made changing medication regimes easier.

  Based on the range of findings from the evaluation, a conservative estimate of 10% has been used as the proportion instances where GP followed a pharmacist’s recommendation arising from a Pharmacist Only Review report.
Program outcomes:

The health outcome for the resident arising from the RMMR Program is either positive (improved overall health, greater comfort, fewer adverse effects from medication etc), negative (the change in medication may adversely affect resident health); or no change in health status may be achieved.

- The estimate of Program outcomes proved most challenging for the RMMR evaluation. Consultation with Aged Care Home staff (DoNs) and GPs revealed that health outcomes resulting from the individual RMMR recommendations were impossible to estimate as the health outcomes observed were typically seen as the result of a combination of recommendations, actions and changes, rather than as a response to one specific RMMR recommendation in isolation.

- GPs who were involved in Collaborative Reviews and DoNs (through the ACH survey) were able to provide an overall view in relation to the positive health outcomes of RMMRs.
  - In the surveys conducted for this evaluation, three in four DoNs (75%) agreed that changes made to medication as a result of reviews led to positive health outcomes for residents.
  - From the respondents to the GP survey, 60% of GPs who conducted Collaborative Reviews agreed that changes made to medication as a result of reviews led to positive health outcomes for residents.

- From the survey results it was inferred that 68% of changes as a result of RMMRs contributed to positive health outcomes for residents.

Caveats

The analysis presented in this section is based on a number of sources of primary and secondary data to provide estimates of inputs, processes and outputs.

- This analysis provides an indicative cost effectiveness analysis rather than a precise cost effectiveness analysis due to the range of limitations associated with measurement of actions, changes and outcomes arising from RMMRs.

- This analysis does not include costs associated with Departmental staffing and other costs associated with the administration of the RMMR Program. This caveat implies that the analysis above does not represent the total cost to Government for the RMMR Program.

- This analysis relates only to the provision of RMMRs and not to the broader QUM component included in the $130 payment to RMMR Providers. Quantification of QUM activities and attaching a dollar value to outcomes from QUM proved to be problematic for this evaluation as it is subject to a great degree of variation and assessment of cost per item is not able to be definitively presented. Based on findings across the various components of the evaluation, the RMMR Program is almost certain to deliver health outcomes for residents arising from the broader QUM activities and these additional health outcomes are not included in the dollar figures quoted below.
To undertake an evaluation which included a far more comprehensive evaluation of confirmed and fully attributable health outcomes for residents and the corresponding cost effectiveness of the RMMR Program would require identification of reduced (or increased) use of medicines, hospital admissions and other medical services that arise from adverse drug events. Such an analysis was beyond the scope of this evaluation. The focus of this evaluation was on the processes of implementation.

Future evaluations may seek to quantify outcomes arising from QUM with particular regard to health outcomes for residents resulting from education and information provided to Aged Care Home staff, and consider costs associated with GP payment to provide an overall cost effectiveness estimate for RMMR.

### 1.3 Detailed findings

**Estimated overall cost effectiveness of the RMMR Program**

The findings for the overall cost effectiveness estimation are summarised below (Figure 1). Both Collaborative and Pharmacist Only Reviews are aggregated in this comparison.

#### Figure 1: Overall Effectiveness Analyses

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RMMR Funding</td>
<td>$20,533,477</td>
<td>RMMR Claim Data</td>
</tr>
<tr>
<td></td>
<td>$130/review + $96/Collaborative Review</td>
<td></td>
</tr>
<tr>
<td>Total number of RMMRs Conducted</td>
<td>123,339</td>
<td>RMMR Claim Data</td>
</tr>
<tr>
<td>Average 3 recommendations/review</td>
<td>370,017</td>
<td>Case Studies</td>
</tr>
<tr>
<td>GP action following reviews</td>
<td>51,062</td>
<td></td>
</tr>
<tr>
<td>10% Pharmacist Only 20% Collaborative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outcome for resident</td>
<td>34,722</td>
<td>ACH/GP Survey</td>
</tr>
<tr>
<td>68% of changes contribute to outcomes for resident</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Metric**: The input and output metrics of the RMMR Program.
- **Value**: The quantified values associated with each metric.
- **Source**: The sources from which the data was collected.
Based on consideration of RMMR claim data, surveys of stakeholders, diary-based case studies and qualitative research conducted for the purposes of this evaluation, it was estimated that:

- RMMR funding for one year (2008) amounted to $20,533,477. This figure represents:
  - $130 payment only for Pharmacist Only Reviews
  - $130 paid to the RMMR Provider and $96 to the GP for Collaborative Reviews (Rejected claims are not included).

- 123,339 Reviews were conducted (both Collaborative and Pharmacist Only). This figure was derived from the total number of RMMR claims accepted for services provided in 2008.

- The Reviews resulted in 370,017 recommendations being made by pharmacists.
  - Estimated from the case studies where an average of three recommendations were made per Review.

- The recommendations resulted in 51,062 changes to medication regimens by GPs, estimated from:
  - The GP survey, where, on average, GPs acted on 20% of recommendations made by pharmacists when the GP participated in Medication Reviews
  - The qualitative research, where an average response to recommendations by GPs was estimated to be 10%.

- In turn, based on the response of GPs to the survey, where 60% of GPs agreed that the changes made to medication as a result of the reviews had led to positive health outcomes; and the survey of ACH DoNs, where 75% of respondents agreed that the changes made arising from reviews had led to positive health outcomes, it has been estimated that 68% of changes as a result of RMMRs contributed to positive health outcomes, arriving at a final figure of 34,722 positive outcomes for the year.

Overall, it was estimated that 11,574 residents benefitted from one or more positive health outcomes as a result of reviews conducted under RMMR (assuming an average of three positive health outcomes per review).

This equates to:

- $402 per change in regimen, presumably contributing to a positive health outcome for a resident and one which may not have occurred in the absence of the RMMR Program
- $591 per health outcome, that may not have occurred in the absence of the RMMR Program.
Pharmacist Only vs. Collaborative Reviews

Pharmacist Only Reviews may or may not involve the active participation of a GP in the Review process. There is no claim by the GP for the $96 MBS Item 903 in addition to the $130 claimed by the RMMR Provider. This leads to a lower cost to the Australian Government for an individual claim for Pharmacist Only Reviews.

There is strong evidence from all components of this evaluation that GPs are considerably less likely to respond to recommendations made from Pharmacist Only Reviews. This diminished likelihood of response leads to a lower number of changes in the resident’s medication regimen which might have contributed to a positive health outcome for residents.

Despite the lower cost of a Pharmacist Only Review, the cost to government per positive health outcome is higher for Pharmacist Only Reviews compared with Collaborative Reviews.

In summary, it is estimated that:

- The cost per medication change for residents for Collaborative Reviews is $377, compared with $433 for Pharmacist Only Reviews
- The cost per health outcome for residents for Collaborative Reviews is $554, compared with $637 for Pharmacist Only Reviews.
Pharmacist Only Reviews

The inputs, outputs and outcomes associated with Pharmacist Only Reviews are summarised below (Figure 2).

Figure 2: Pharmacist Only Review Effectiveness Analyses

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMMR Funding</td>
<td>$9,941,123</td>
<td>RMMR Claim Data</td>
</tr>
<tr>
<td></td>
<td>$130/review</td>
<td></td>
</tr>
<tr>
<td>RMMR Conducted</td>
<td>76,470</td>
<td>RMMR Claim Data</td>
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<tr>
<td></td>
<td>Total number of Pharmacist Only RMMRs</td>
<td></td>
</tr>
<tr>
<td>Recommendation made in report</td>
<td>229,411</td>
<td>Case Studies</td>
</tr>
<tr>
<td></td>
<td>Avg 3 recommendations/review</td>
<td></td>
</tr>
<tr>
<td>Change in regimen</td>
<td>22,941</td>
<td>GP, ACH, AP Surveys, Qual Research, Case studies, Submissions</td>
</tr>
<tr>
<td></td>
<td>GP action following reviews 10% Pharmacist Only</td>
<td></td>
</tr>
<tr>
<td>Outcome for resident</td>
<td>15,600</td>
<td>ACH/GP Survey</td>
</tr>
<tr>
<td></td>
<td>68% of changes contribute to outcomes for residents</td>
<td></td>
</tr>
</tbody>
</table>

Unlike the overall analysis presented above, the government funding required for Pharmacist Only Reviews is reduced due to the absence of the $96 payment to the GP for MBS Item 903. However, the net cost per positive health outcome is increased due to the decreased likelihood of GPs acting on recommendations made by pharmacists. In summary, it is estimated that:

- 62% of Reviews were done as Pharmacist Only Reviews. Therefore 76,470 Pharmacist Only Reviews were conducted, costing government $9,941,123 based on the $130 payment per Review
- 229,411 recommendations arose from the Reviews based on an estimate of three recommendations per Review (from the case studies)
- GPs responded to 22,941 of these recommendations and made changes to residents’ medication regimens - based on an estimate derived from the qualitative research, where GPs made changes to regimens in 10% of cases (as opposed to the higher estimate of 20% for collaborative reviews)
• 15,600 positive health outcomes were contributed to by changes affected as a result of RMMRs, based on an estimate of 68% derived from the Aged Care Home and GP surveys.

This equates to an estimated cost under Pharmacist Only Reviews of:
• $433 per medication change
• $637 per positive health outcome.

It has been assumed that these outcomes would not have occurred without a RMMR being conducted.
Collaborative Reviews

Estimated inputs, outputs and outcomes associated with Collaborative Reviews are summarised below (Figure 3).

**Figure 3: Collaborative Review Effectiveness Analyses**

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMMR Funding</td>
<td>$10,592,353</td>
<td>RMMR Claim Data</td>
</tr>
<tr>
<td>RMMR Conducted</td>
<td>46,869</td>
<td>RMMR Claim Data</td>
</tr>
<tr>
<td>Recommendation made in report</td>
<td>140,606</td>
<td>Case Studies</td>
</tr>
<tr>
<td>Change in regimen</td>
<td>28,121</td>
<td>GP, ACH, AP Surveys, Qual Research, Case studies, Submissions</td>
</tr>
<tr>
<td>Outcome for resident</td>
<td>19,122</td>
<td>ACH/GP Survey</td>
</tr>
</tbody>
</table>

The Government funding required for Collaborative Reviews is greater than funding for Pharmacist Only Reviews due to the need for the $96 payment to the GP. However, the net cost per outcome is decreased due to the increased likelihood of GPs acting on recommendations made by pharmacists, thus increasing the likelihood of a positive health outcome for residents.

In summary it is estimated that:

- 38% of Reviews were done as Collaborative Reviews, equating to the conduct of 46,869 Reviews, costing government $10,592,353 based on the $130 payment per Review for pharmacists, plus the $96 payment to GPs
- 140,606 recommendations resulted from these Reviews based on an estimate of three recommendations per Review derived from the case studies
- GPs respond to 28,121 of these recommendations and make changes to residents’ medication regimens based on the estimate of 20% derived from the GP survey
• 19,122 positive health outcomes are contributed to from these changes based on an estimate of 68% derived from a mid point of estimates from the Aged Care Home and GP surveys.

This equates to an estimated cost under Collaborative Reviews of:

• $377 per medication change
• $554 per positive health outcome.

It has been assumed that these outcomes would not have occurred without a RMMR being conducted.