



Medcast

Critical Care
EDUCATION SERVICES



SURGE Critical Care

**Specialised Upskilling and RN Growth through
Education in Critical Care**

Evaluation Report

November 2020



Australian Government
Department of Health

Disclaimer

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Medcast acknowledge the Traditional Custodians of the lands and seas on which we work and live, and pay our respects to Elders, past, present and future.

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Executive Summary

The SURGE Critical Care (Specialised Upskilling and RN Growth through Education in Critical Care) education project was delivered between April and August 2020. The following are the key achievements of this project.

22,229
Registered Nurses enrolled
in the courses



Over 74%
of unique learners completed
at least 1 course

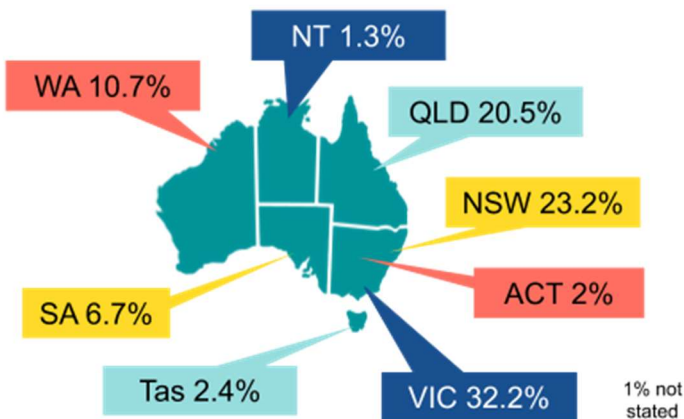



36,907
course enrolments
over 2 courses



400,000 hours of learning
completed in Critical Care or
High Dependency Nursing

Course participants by state

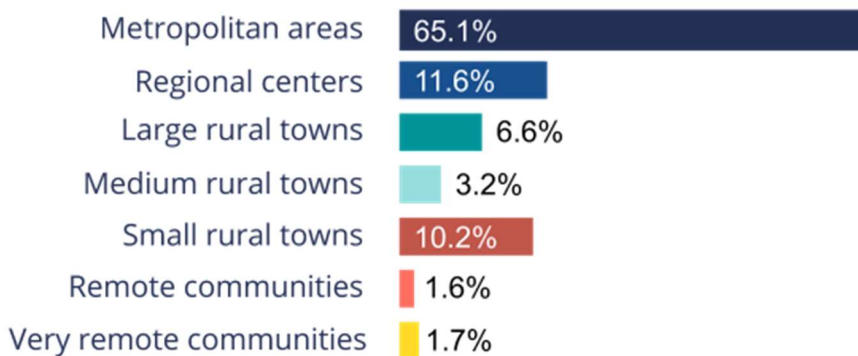


Hospital Participation



806 Australian hospitals
80% of acute public hospitals
279 / 360 acute public
hospitals outside metro /
regional areas (MMN 3-7)

Course participants by remoteness



20,000
target
enrolments
achieved within
15 days

- **Highly effective:** In March 2020, in response to the pandemic, the Commonwealth Department of Health swiftly identified, and acted on, the need to upskill nurses to meet potential workforce demand due to COVID-19.
- **Trusted partners:** Medcast and its subsidiary, Critical Care Education Services, were engaged to assist in creating workforce capacity through the rapid deployment of flexible, scalable, online learning on key critical care topics. Through the SURGE Critical Care (Specialised Upskilling and RN Growth through Education in Critical Care) project the Australian Government funded up to 20,000 new online education places to upskill Registered Nurses in critical care nursing.
- **High-quality education:** Over a 2 week period, 2 online courses were created and deployed for the SURGE Critical Care project: High Dependency Nursing (HDN) and Critical Care Nursing (CCN), totalling 32.5 hours of high-quality online education.
- **Significant uptake & completions:** A total of 22,229 unique Registered Nurses were enrolled in the courses, totalling 36,907 course enrolments. Over 74.05% of these participants completed at least one course, with the equivalent of over 400,000 hours of learning achieved.
- **Excellent educational outcomes:** The Department of Health funded program enabled world-class upskilling for registered nurses. The learners reported an increased knowledge and confidence to deploy to HDN or CCN roles on completion of the education. In addition, participants rated both the content and online delivery methods highly.
- **Improved practice & quality of care:** In a follow-up survey, 94% of participants who completed the courses reported that they sometimes, often or always use the knowledge gained from the courses in their jobs. In addition, 95% said that the courses have sometimes, often or always improved the quality of care they deliver to patients.
- **Workforce impact:** Participants were surveyed 1-2 months after completing the course and 32% of respondents reported that there has been a change in their nursing scope of practice. Of the respondents who had not been redeployed to a Critical Care / High Dependency setting, 41% indicated that they would pursue a role in this area in the future.
- **National reach:** The SURGE program was successfully delivered under significant time pressure with a national reach, enabling access in regional and remote areas, as well as significant coverage in key metropolitan areas. All states and territories were represented in the course and participants were a mix of both public and private hospital nurses.
- **Efficient delivery:** The program was delivered online via a scalable delivery platform, ensuring rapid access, cost-efficient delivery and consistent education across multiple health networks and hospitals. There have been significant benefits in delivering the program at a national level including the avoidance of (potentially significant) duplication of cost/effort within the state and local health systems and hospital networks.
- **Enhanced capability:** The SURGE project rapidly enhanced Australia's health systems' capability by upskilling the nursing workforce in the area of critical care (essential to care for patients in Intensive Care Units and High Dependency Units) as well as assisting in providing staff to replace those in quarantine.

1. Background

- In March 2020, the coronavirus (COVID-19) pandemic was occurring across the globe, and the experience internationally indicated that there would, in the absence of any other control measures, be a significant demand for ICU (Intensive Care Unit) beds to treat patients infected with the virus.
- The Australian Commonwealth Department of Health (the Department), having made a significant investment in ICU beds and ventilators, swiftly identified and acted on the need to upskill nurses to meet potential increased workforce demand due to COVID-19.
- Medcast and Critical Care Education Services (Medcast) were engaged to assist in building the workforce capacity to respond to COVID-19 through upskilling registered nurses via the rapid deployment of flexible, scalable, online learning on key critical care topics.
- The SURGE Critical Care (Specialised Upskilling and RN Growth through Education in Critical Care) courses were developed and deployed to over 22,000 Registered Nurses (RNs) across Australia.

In March 2020, in response to the pandemic the Department swiftly identified, and acted on, the need to upskill nurses to meet potential workforce demand due to COVID-19.

With the insights gained from observing events internationally, and the impact of COVID-19 on the health care system in countries with large numbers of cases, it was anticipated that there would be a need to increase the number of ICU beds to meet the demand created by the virus. Modelling reported in the Medical Journal of Australia¹, indicated that more than 40,000 Australian nurses could be needed, in order to appropriately staff the increased capacity in both ICUs and High Dependency Units (HDUs).

Medcast was engaged by the Department to deliver education to 20,000 RNs to provide them with the knowledge and skills needed to work in HDUs and ICUs.

Why Medcast?

Medcast is focussed on the delivery of independent, innovative, high-quality education for health professionals and organisations. Critical Care Education Services is part of the Medcast Group of companies and has extensive expertise and high-quality courses in the field of critical care education.

Critical Care Education Services, established in 1985 by Ken Hambrecht, has been delivering Critical Care education for more than 30 years. The team includes highly credentialed leaders in their clinical field who deliver multiple courses a year across Australia to healthcare professionals. The courses include public courses and tailored in-house programs on a range of topics including Critical Care and Anaesthesia Nursing, Basic & Advanced Life Support, Acute Life-Threatening Emergencies, Recognition and Treatment.

Since inception more than 150,000 healthcare professionals have been educated by Critical Care Education Services.

Medcast founded by Associate Professor Stephen Barnett in 2013, has extensive experience working with a range of organisations to deliver e-learning solutions and services for the health industry including primary care, critical care, aged care and hospitals.

The combination of the Critical Care educational content and the Medcast online learning expertise and platform meant that Medcast was able to deliver the SURGE Critical Care education program in a scalable, consistent, national education program to over 22,000 RNs.

¹ [Surge capacity of intensive care units in case of acute increase in demand caused by COVID-19 in Australia](#)

Aim

The aim of the SURGE Critical Care education initiative was to quickly and efficiently upskill nurses to ensure they have the necessary minimum knowledge and skills in HDU and ICU nursing.

The key principles underpinned the course development and delivery:

- **Rapid deployment:** the education was required to be developed and deployed in a short timeframe. Education was converted to an online platform from courses previously delivered face-to-face. It was re-designed to ensure delivery by the target date.
- **High quality content:** the course content was adapted from the Critical Care Nursing and High Dependency Nursing courses that had been developed, refined and delivered over many years by a team of expert critical care educators.
- **Effective elearning design:** education was designed to facilitate interactivity and maximise learning outcomes through the inclusion of interactive quizzes, knowledge checks and an online forum to deliver an engaging learning experience.
- **Accessibility:** education was available to RNs across Australia regardless of location or availability of local educators.
- **Flexibility:** learning was designed to be accessed 'on-demand' so that learners could complete at any time. The content was broken down into topics to enable learners to access in a way that suited their learning needs.
- **Scalability:** delivery was via a responsive learning platform that enabled large numbers of learners to access the content concurrently.
- **Efficiency:** cost-efficiency stemmed from a reduction in the price per-head for large intakes of RNs and high quantum of education; plus significant material benefits were likely to have occurred resulting in potential duplication of cost/effort within the state and local health and hospital systems, thereby freeing up education resources in the health system to focus on other priorities.
- **Consistency / equity:** nurses were able to access the same high-quality content delivered by critical care experts regardless of their location.

2. Education & Audience

- Two (2) courses were created - High Dependency Nursing and Critical Care Nursing, totalling 32.5 hours of learning, covering a range of clinical topics broken into interactive components.
- The target audience was Registered Nurses currently working in clinical areas, to increase their knowledge and skills to work in ICUs, Coronary Care Units, HDUs and Emergency Departments.
- The courses were built in a scalable digital platform enabling flexible delivery of online courseware including recorded lectures, quizzes, workbooks, resources, videos & forums.

Courseware

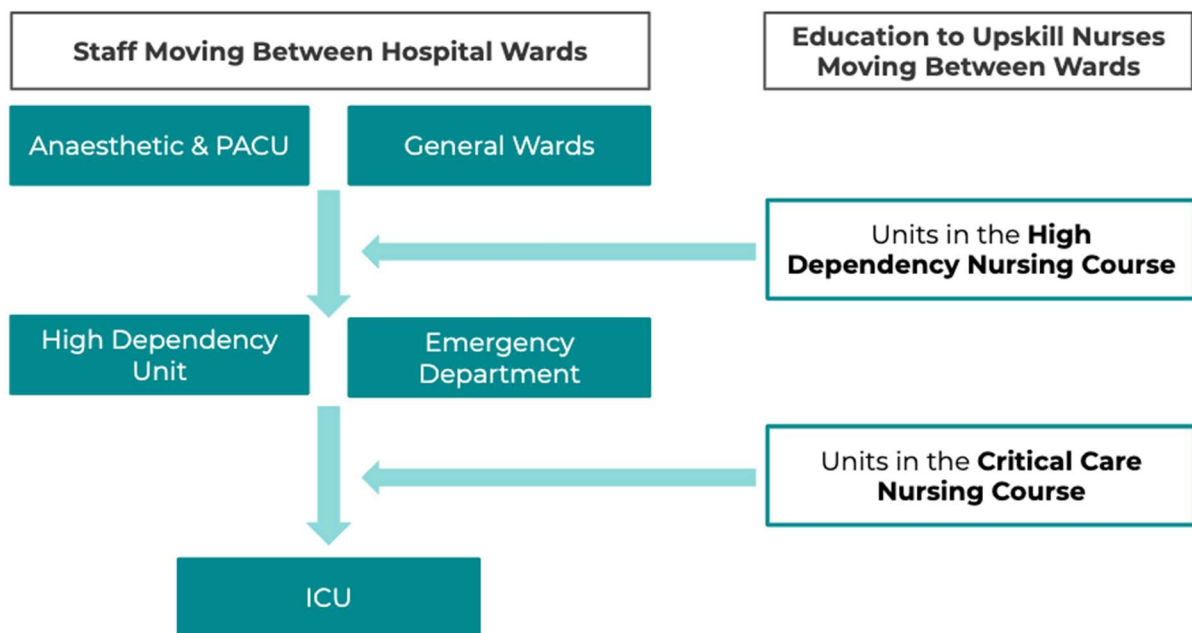
The education was delivered as 2 key courses, comprising approximately 32.5 hours of education:

- Critical Care Nursing (20 hours)
- High Dependency Nursing (12.5 hours)

Participants were given the option to enrol in one or both of the courses at sign up.

The courses were designed to assist staff to move to higher acuity wards within hospital settings, as demonstrated in the figure below.

Figure 2.1 SURGE Critical Care courses alignment with staff moving between hospital wards



Each course comprised a series of units, divided into short topics ranging between 10 and 60 minutes in length, able to be accessed flexibly, depending on the needs of the individual clinician, the hospital or health service. The education topics build on previous knowledge, skills and experience to prepare nurses to move into higher acuity settings. The details of the units and topics in each course can be viewed in [Appendix A](#) of this document.

The course content includes:

- Recorded presentations incorporating interactive case based learning activities, and short videos.
- Quizzes to apply the knowledge both during the topic and at the end of each topic.
- Resources - comprising handouts, readings and references.
- Each course had a discussion forum monitored on an ongoing basis, by a senior critical care educator.
- A certificate of completion was issued which stated the number of compulsory professional development points claimable for completion of the activity.

Target Audience

The target audience for the education was RNs currently working in the acute care setting that needed to increase their knowledge and skills in HDU and Critical Care Nursing, so that they may be deployed to these areas. The inclusion criteria for nurses to complete the training:

- Australian Rns (a valid AHPRA number required at sign up);
- Requires additional skills and knowledge to assist in delivering care in a HDU; or
- Requires additional skills and knowledge to assist in delivering care in an ICU or other Critical Care areas such as Emergency or Coronary Care/Cardiology;
- Employed by an Australian Public Hospital or an Australian Private Hospital that has been contracted by a state or territory, or the Australian Government to provide COVID-19 related healthcare services;
- Support from a manager to undertake the Courses (managers details to be collected at sign up and manager will be emailed to confirm enrolment); and
- Were able to commence and complete the Courses within 28 days of enrolment.

Other groups granted access that did not meet the original eligibility criteria include:

- Nurses working in Correctional Services / Justice Health.
- Nurses working for government nursing agencies.

People ineligible to participate in the education included:

- Enrolled Nurses or Graduate Nurses.
- RNs not working in a hospital e.g. Aged Care, Community Health, Aboriginal Health, Primary Care, Specialist Centers, Retrieval Services.
- RNs employed by an Agency.
- Unemployed RNs.

Other groups that accessed the education

There were a range of other nurses who accessed the education including:

- 115 Pacific Islanders were granted access via an arrangement between The Pacific Community organisation and the Department of Foreign Affairs and Trade.
- 113 Australian Defence Force Nurses and contractor places were purchased by Joint Health Command, Department of Defence.
- 15 New Zealand Defence Force nurses.

The data from these groups has not been include in the analysis for this report. These numbers have been reported to demonstrate the courseware was distributed beyond the participants eligible for government funding.

Endorsements

The SURGE Critical Care courses were endorsed by the:

- Australian Nursing and Midwifery Foundation (ANMF).
- Australian College of Critical Care Nurses (ACCCN).

These organisations assisted in promoting the courses to their members and other nurses across Australia, which was beneficial in achieving the level of response in a short time frame.

3. Project Roll Out

- The SURGE Critical Care project was successfully delivered in a very short space of time to ensure readiness of the Australian health system to respond to coronavirus.
- The target number of 20,000 enrolments was reached within 15 days of opening course enrolments. An additional 10% of places were subsequently made available to meet the additional demand for the courses.
- Overall the project received 24,112 expressions of interest from Australian nurses.
- Of those expressions of interest, Medcast screened for eligibility and this resulted in 22,229 eligible course participants. Some participants enrolled in both of the courses which resulted in a total of 36,907 course enrolments.

Timeline

On 31st March 2020, Medcast signed a contract with The Department to deliver the SURGE Critical Care courses. On 1st April 2020, enrolments were opened and 9 days later Medcast launched the online courses. The following table sets out the timeline of key project activities between March and August 2020.

Table 3.1 Timeline of key project activities

Date	Activity
25th March 2020	Proposal submitted to the Office of Chief Nursing and Midwifery Officer and the Health Workforce Reform Branch, Australian Government Department of Health
31st March 2020	Contract Signed
1st April 2020	Enrolments Opened via Medcast website
2nd April 2020	Press release and conference - Minister Hunt & Ken Hambrecht (Medcast)
9th April 2020	Course content available to be accessed by participants
20th April 2020	Target enrolments achieved - closed enrolments via the website
	Collected EOIs from RNs who were unsuccessful in the first round
29th April 2020	Places offered to select hospitals using coupon code
	Places offered to eliminate people who had submitted EOIs via the Medcast website
31st May	First round enrolments course completion date
10th July 2020	Second round enrolments (coupons and EOIs) completion date - extension for first round
3rd August	Follow-up Survey sent to participants who completed the education
17th August 2020	Follow-up survey closed
1st September 2020	Draft report sent to the Department
6 th November 2020	Final Report

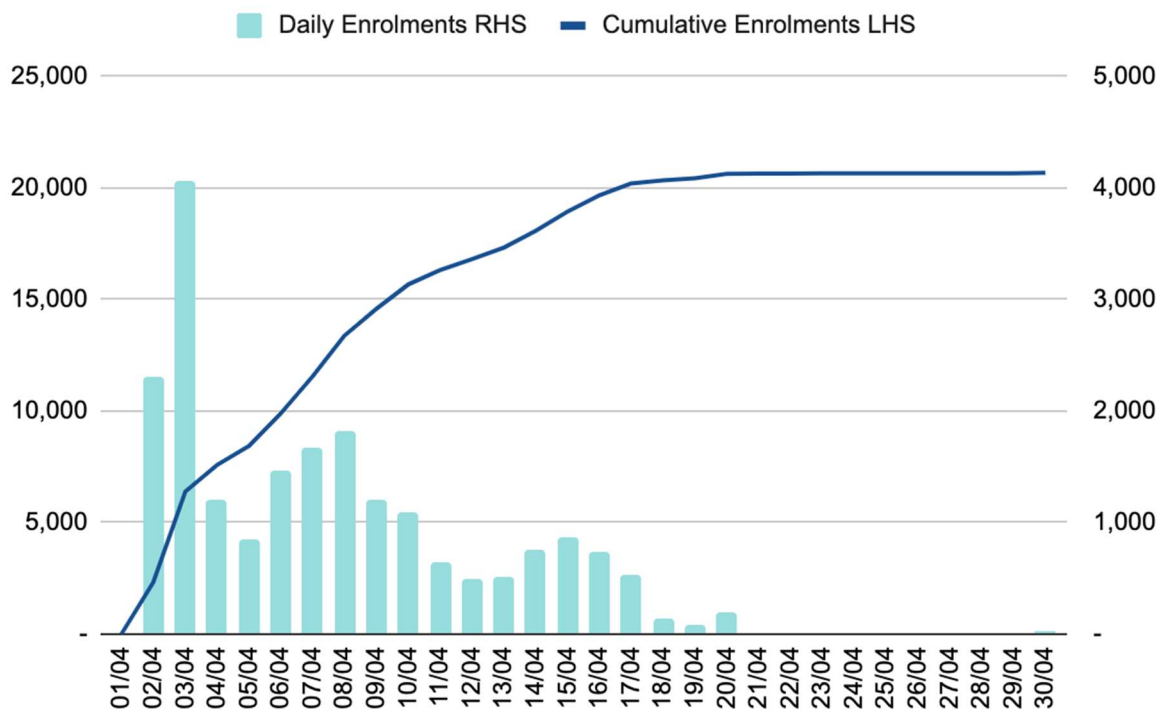
Uptake

Following a press conference on 2nd April 2020 with The Hon. Greg Hunt MP and Ken Hambrecht, Principal Consultant, Critical Care Education Services (Medcast), there was a significant uptake of the course. The majority of SURGE enrolments were taken prior to the course opening on the 9th April, and the target number of 20,000 participants was achieved within 15 days of the official launch.

Course enrolments in excess of the target 20,000 were accepted, to account for withdrawals and the removal of participants who did not meet the eligibility criteria. Given the rapid response, enrolments were paused on 20th April 2020. At that stage 22,207 course enrolments had been received. This was the total number of enrolments prior to eligibility screening.

The chart below shows the cumulative and daily enrolments in the course in April 2020. An additional, 1,718 enrolments occurred on or after 1 May 2020.

Figure 3.1: Unique Enrolments in SURGE Critical Care April 2020



After the initial intake second round places were offered to targeted hospitals to ensure that there was an equitable distribution of the places across Australia. Hospitals submitted their requests for training places to the Office of the Chief Nursing and Midwifery Officer and Medcast allocated places via online coupon codes accordingly.

The following table shows the additional places that were distributed through May to July 2020, either through hospital coupon codes or to nurses who had previously submitted an EOI via the Medcast website after the courses were closed.

Table 3.2 Number of SURGE enrolments by month (eligible participants)

Month	Enrolments	Cumulative	% Total	% Target
Apr-2020	20,511	20,511	92.3%	102.6%
May-2020	1,523	22,034	6.9%	7.6%
Jun-2020	142	22,176	0.6%	0.7%
Jul-2020	53	22,229	0.2%	0.3%
	<u>22,229</u>		<u>100.0%</u>	<u>111.1%</u>

Learner Demographics

When enrolling in SURGE Critical Care participants were asked to provide the following information:

- First and Last Name
- Mobile number
- Email
- Hospital name
- Unit Manager Name
- Unit Manager Email
- AHPRA Number: the AHPRA Practitioner Information Exchange API web service was used to confirm a participant's AHPRA number and returns additional information, including:
 - Profession
 - Gender
 - Qualifications
 - Workplace postcode
- Nursing Area of Practice (drop down list)

The following graphs and tables include an overview of the demographics of the nurses that enrolled in the education.

Figure 3.2 SURGE participants by gender

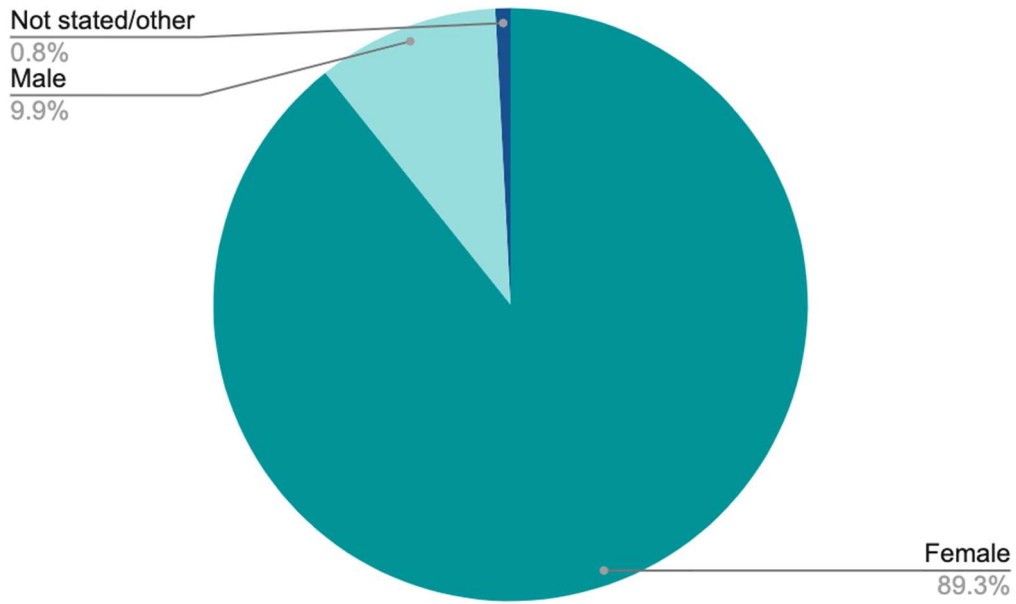


Table 3.3 SURGE Participants by nursing area of practice

	Participants	% Participants
Perioperative	4,560	20.5%
Emergency	4,290	19.3%
Medical	2,665	12.0%
Other	2,497	11.2%
Mixed medical / surgical	2,476	11.1%
Surgical	2,436	11.0%
Critical care	2,375	10.7%
Rehabilitation & disability	456	2.1%
Paediatrics	366	1.6%
Palliative care	104	0.5%
Not stated	4	0.0%
	22,229	100.0%

Figure 3.4 SURGE participants by state, based on AHPRA details

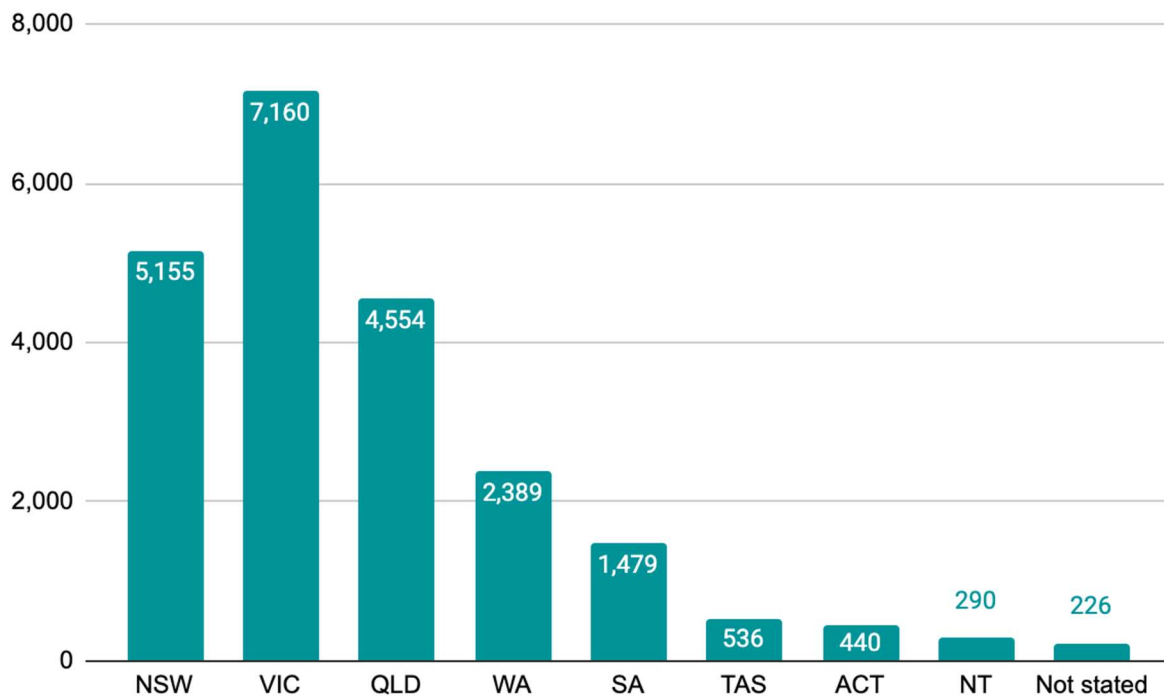


Table 3.5 SURGE Participants by remoteness classification

Level	Classification	Participants	% Participants
1	Metropolitan areas	14,468	65.09%
2	Regional centres	2,572	11.57%
3	Large rural towns	1,466	6.59%
4	Medium rural towns	725	3.26%
5	Small rural towns	2,262	10.18%
6	Remote communities	354	1.59%
7	Very remote Communities	382	1.72%
		22,229	100.0%

4. Geographical & Hospital Coverage

- All States and Territories were well represented in the SURGE Critical Care course participants.
- Victoria had the greatest number of nurse enrolments with 7,160, making up 32% of participants. New South Wales and Queensland had 23% and 20% respectively.
- Hospital type analysis revealed that 71.6% of participants were from public and 28.4% from private facilities.
- Nurses from over 800 hospitals enrolled - across public and private hospitals. Excellent hospital coverage was achieved with 80% (394 of 499) of Australian acute public hospitals having participants in the courses.
- Strong hospital coverage was achieved in regional and remote communities with 299 / 387 acute public hospitals outside of metropolitan areas (MMN 2-7) having participants in the courses.

The SURGE Critical Care project achieved an excellent result in distributing the education across Australia. The following data shows the distribution of the participants by state, remoteness classification and hospital type.

Hospital Coverage

The collection of information about hospitals enabled analysis of hospital type. The following table shows the distribution between public and private facilities and acute and non-acute facilities. Hospitals were classified using a combination of the latest Australian Institute of Health and Welfare hospital peer group classification² and The Department Listing of Commonwealth declared hospitals³.

Nurses from over 800 hospitals - across public and private, enrolled in the SURGE courses.

² Australian Institute of Health and Welfare 2015. Australian hospital peer groups. Health services series no. 66. Cat. no. HSE 170. Canberra: AIHW.

³ [Department of Health: Hospitals webpage](#)

Table 4.1 - SURGE Participants - Hospital Coverage by Type

Public/Private		Hospitals	Participants	% Learners
	Public	505	15,914	71.6%
	Private	301	6,315	28.4%
	Total	806	22,229	100.0%
Acute / Non-Acute		Hospitals	Participants	% Learners
Acute	Public	394	15,204	68.4%
	Private	177	5,711	25.7%
	Sub-total Acute	571	20,915	94.1%
Other (Non-acute)		Hospitals	Participants	% Learners
Other (Non-acute)	Public	111	710	3.2%
	Private	124	604	2.7%
	Sub-total Non-acute	235	1,314	5.9%
	Total All Hospitals	806	22,229	100.0%

The hospital distribution above excludes nurses from the Pacific Islands, Australian Defence Force and New Zealand.

Table 4.2 - SURGE Participants - Hospital Coverage by State

	All Hospitals	Acute Public	Acute Private	Other Public	Other Private
NSW	242	119	52	27	44
VIC	193	84	44	27	38
QLD	162	93	37	12	20
WA	95	40	16	25	14
SA	75	41	16	15	3
TAS	21	9	7	3	2
ACT	11	2	4	2	3
NT	7	6	1	0	0
	806	394	177	111	124

Table 4.3 - Hospitals by Remoteness Classification (based on hospitals with participants)

		All Hospitals	Acute Public	Acute Private	Other Public	Other Private
1	Metropolitan areas	373	95	129	41	108
2	Regional centres	53	20	20	3	10
3	Large rural towns	46	28	15	1	2
4	Medium rural towns	29	28	0	1	0
5	Small rural towns	211	157	12	38	4
6	Remote communities	51	32	1	18	0
7	Very remote Communities	43	34	0	9	0
		806	394	177	111	124

- The Modified Monash Model (MMM) was used to classify hospital remoteness.
- Table 4.3 shows the distribution of hospitals with nurses enrolled in the SURGE courses, across the MMM classifications, and further broken out into broad hospital types.

Table 4.4 - Hospital Coverage: Acute Public Hospitals by State & Remoteness Classification

	All Areas	Metropolitan areas	Regional centres	Large rural towns	Medium rural towns	Small rural towns	Remote communities	Very remote Communities
NSW	119 / 158	36 / 40	0 / 1	12 / 13	5 / 5	56 / 81	7 / 11	3 / 4
VIC	84 / 106	26 / 33	6 / 8	5 / 6	12 / 12	34 / 46	1 / 1	0 / 0
QLD	93 / 105	14 / 14	8 / 8	4 / 4	8 / 8	32 / 36	13 / 18	14 / 17
WA	40 / 51	10 / 11	2 / 3	2 / 2	2 / 2	12 / 14	2 / 4	10 / 15
SA	41 / 58	7 / 8	0 / 2	4 / 4	1 / 1	20 / 29	5 / 9	4 / 4
TAS	9 / 13	0 / 0	2 / 3	1 / 1	0 / 0	3 / 5	2 / 3	1 / 1
ACT	6 / 6	0 / 0	2 / 2	0 / 0	0 / 0	0 / 0	2 / 2	2 / 2
NT	2 / 2	2 / 2	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
	394 / 499	95 / 108	20 / 27	28 / 30	28 / 28	157 / 211	32 / 48	34 / 43
	80%	88%	74%	93%	100%	74%	67%	79%

- The above table sets out the number of acute public hospitals with nurses enrolled in SURGE expressed as a fraction of the total number of acute public hospitals within that state/MMM classification.
- Overall, the program achieved enrolments of RNs from 80% (394 of 499) of acute public hospitals across the country, with:
 - particularly strong coverage in large and medium rural towns (93% and 100% respectively) and
 - Excellent participation rates in small rural towns, remote and very remote communities.

5. Course Completions

- By the conclusion of SURGE, 16,461 / 22,229 participants completed at least one of the SURGE courses - this equates to a 74.05% completion rate of at least one course
- 7,757 participants completed both courses
- 8,704 participants completed one course
- Completion rates by hospital type, state or MMM remote classification were broadly consistent with the overall completion rate of 74.1% (+/- 5%)

Table 5.1 - Completions by course

	Participants who Completed the Course	Participants who enrolled in the course	Completion Rate
Critical Care Nursing	11,371	18,214	62.4%
High Dependency Nursing	12,847	18,693	68.7%

* Some participants enrolled in both courses and therefore the total course enrolments is greater than the number of unique participants in the project.

Figure 5.1 - Enrolment and completions overtime

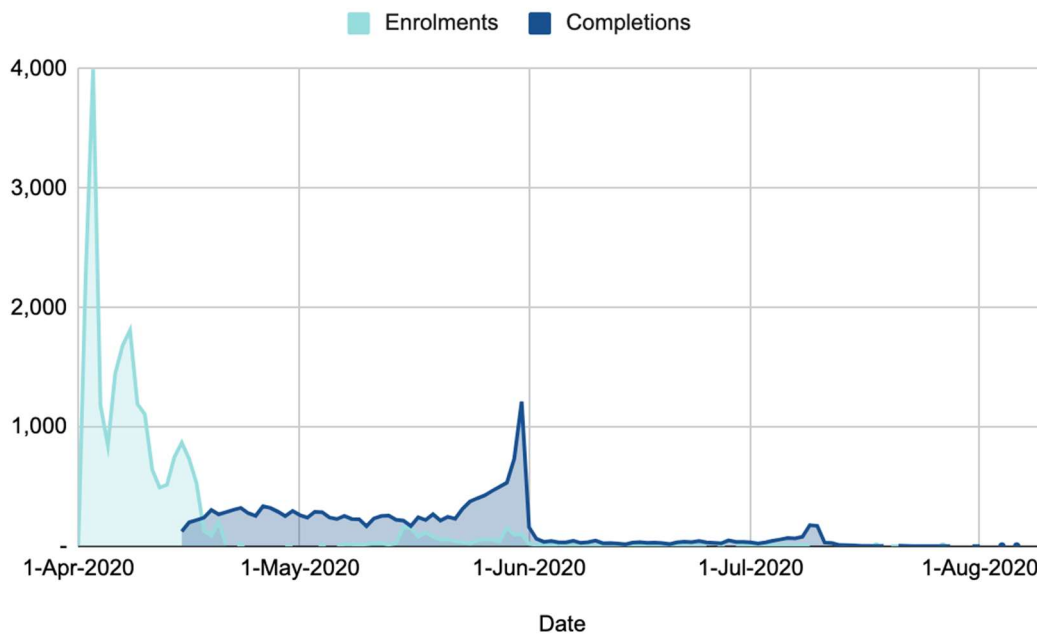
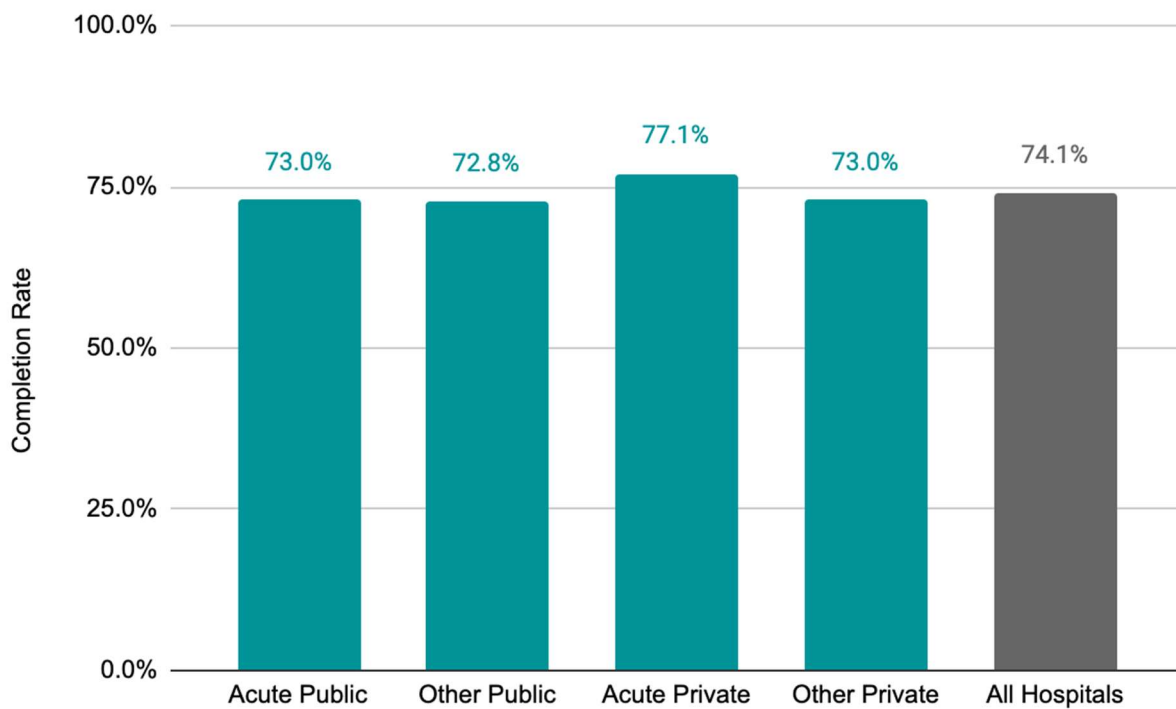


Table 5.2: Completions by month

Month	Participants Enrolled	Completions
Apr-2020	20,511	4,294
May-2020	1,523	10,158
Jun-2020	142	1,139
Jul-2020	53	865
Aug-2020	-	5
	<hr/> 22,229	<hr/> 16,461

- The majority of participants (14,452) completed the courses on or before the 31st May 2020.
- Another 2,009 participants completed the course between June and August 2020.

Figure 5.2: Completion Rate by Hospital Type



- Acute private hospital nurses achieved the best course completion rate of 77.1%, this was 3% above the average for all participants.

Figure 5.3: Completion Rate by State

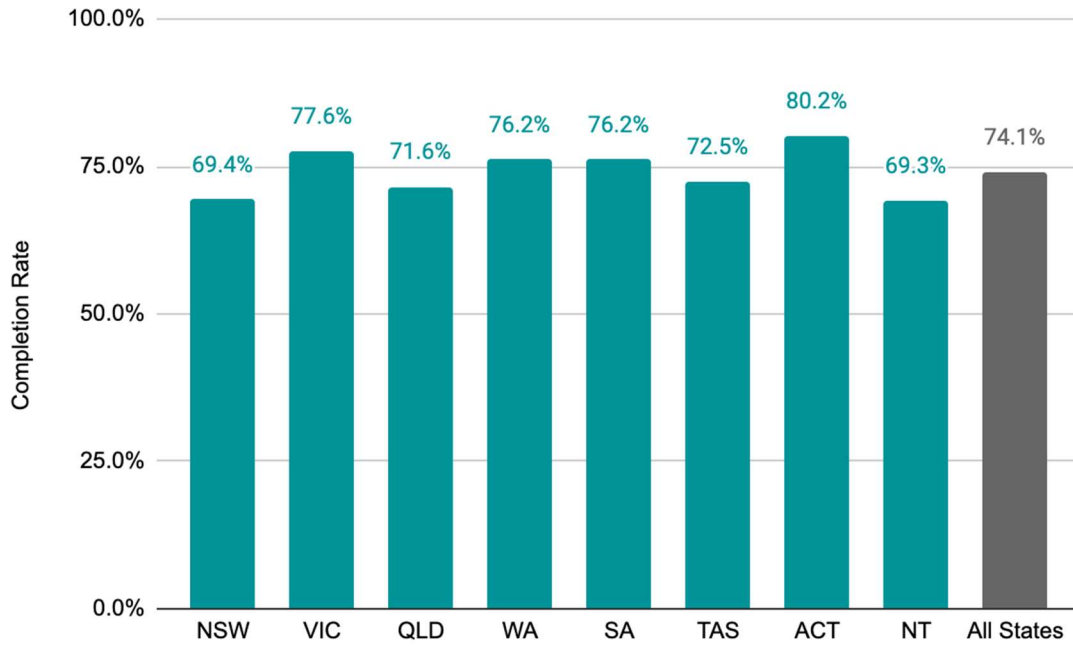
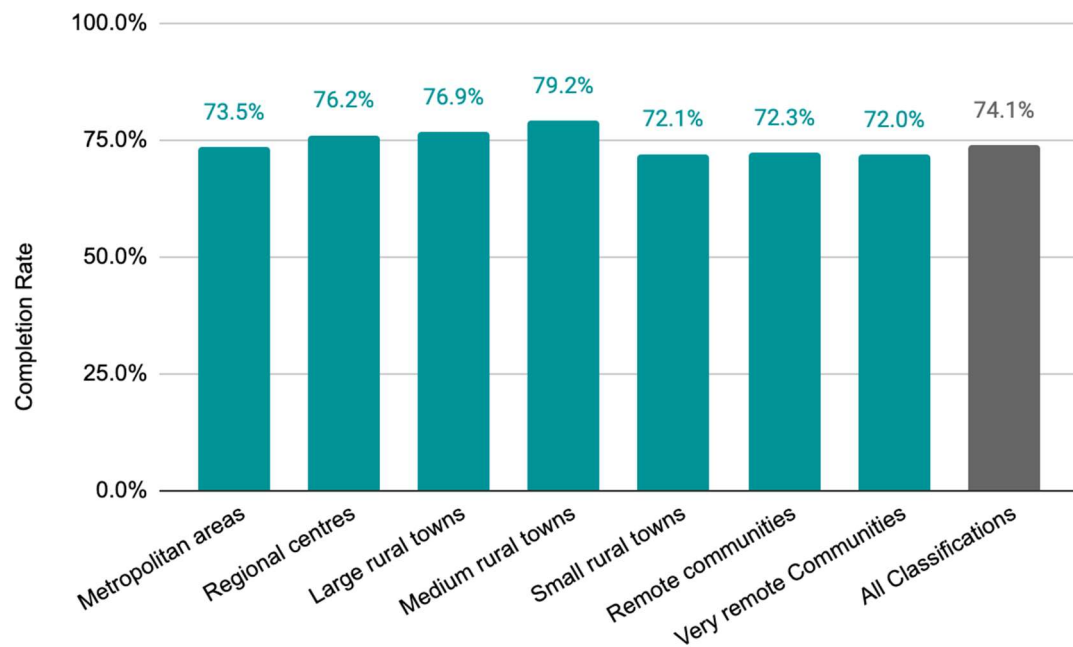


Figure 5.4: Completion Rate by Remoteness Classification

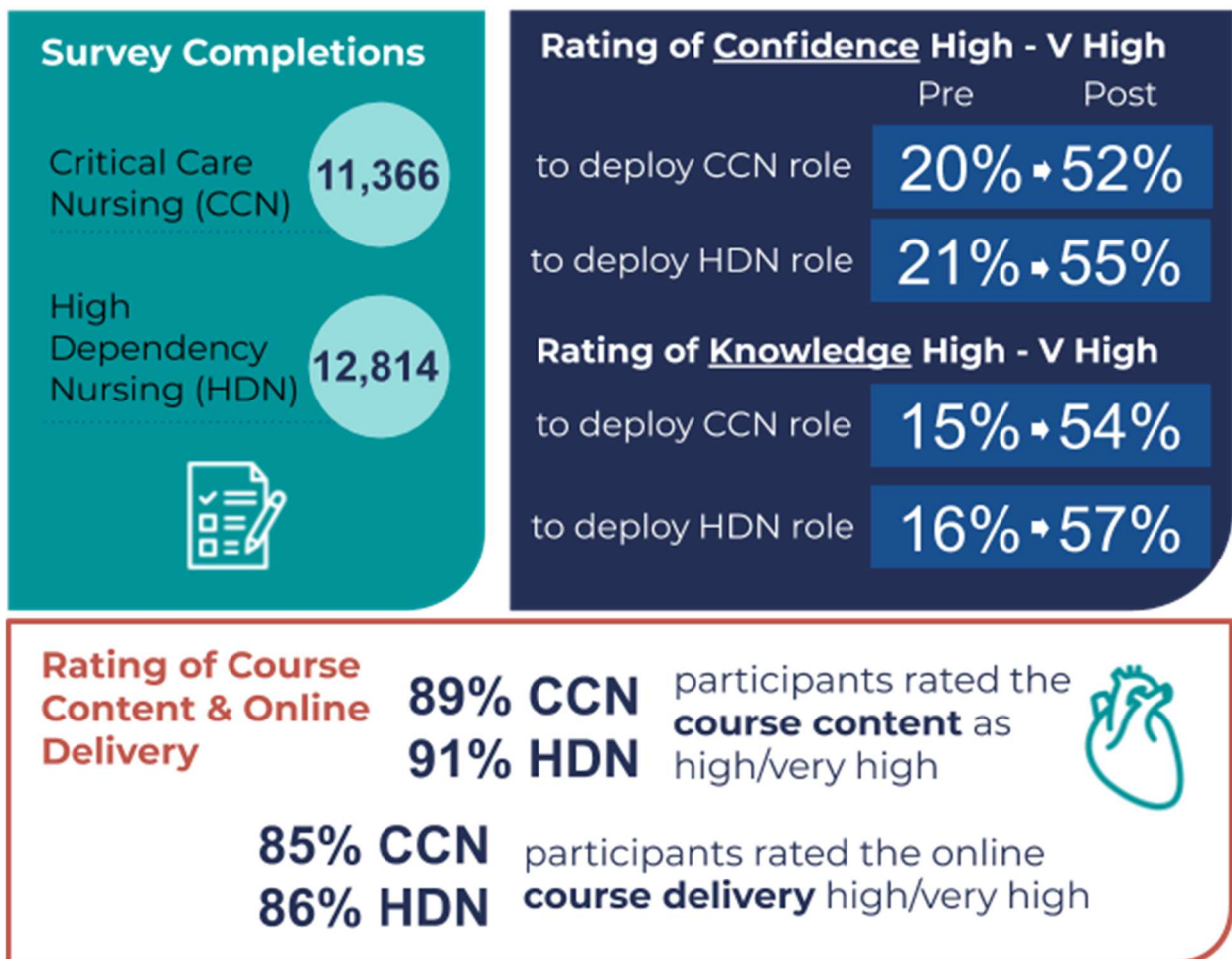


6. Educational Outcomes

- Educational outcomes were measured comparing responses to pre and post course and topic surveys.
- Successful outcomes include a +30% increase in participants' reporting high or very high knowledge and confidence to be deployed to High Dependency or Critical Care nursing roles.
- The **course content** was rated high or very high by 89% (CCN) and 91% (HDN) of participants.
- The **online delivery** format was rated high or very high by 85% (CCN) and 86% (HDN) of participants.

The following table is a summary of the key findings from the surveys.

Figure 6.1: Pre and Post Course Survey Summary Statistics



*NB – the number of surveys completed was slightly less than the total number of participants that completed the training. 11,366 / 11,371 for the CCN course and 12,814 / 12,847 for the HDN course.

Survey Approach

Mandatory pre and post surveys were included as part of the Critical Care Nursing (CCN) and High Dependency Nursing (HDN) education to measure the change in knowledge and confidence of the course participants and to gather qualitative feedback about the most useful aspects of the course and areas of improvement. A 5 point Likert scale was used for all questions, except for free text fields in the post course survey.

At the course level, Medcast analysed the impact of the course on participants' self-reported knowledge and confidence pre and post-training, as well as participants' ratings of course content and delivery post-training by comparing percentage of responses at each point on the Likert scales.

At a topic level, Medcast undertook statistical analysis to assess the impact on participant's self-reported knowledge and confidence by comparing the pre and post-training means for each topic in each course.

Note - the analysis included only participants who completed the courses in their entirety. Therefore the pre-survey responses for participants who did not complete the post-survey were excluded from the analysis.

Pre / post course questions available for quantitative analysis included:

1. How would you rate your confidence to redeploy to a CCN or HDN nursing role (pre and post)?
2. How do you rate your knowledge to redeploy to a CCN or HDN nursing role (pre and post)?
3. How likely are you to be redeployed to a CC or HD nursing role (pre-training only)?
4. Overall how would you rate the course content (post-training only)?
5. Overall how would you rate the online course delivery (post-training only)?

The unit level questions included the following (for each of the 10 and 9 units within the CCN and HDN courses, respectively):

1. How do you rate your knowledge in this topic (pre and post)?
2. How do you rate your confidence in this topic (pre and post)?

Summary of Key Findings

Findings - Critical Care Nursing (CCN) Course

The following momentum charts illustrate the overall success of the CCN course (survey responses = 11,366):

- The proportion of participants that rated their confidence to redeploy as high/very high: increased from 20% in the pre survey to 52% in the post-training survey
- The proportion of participants that rated their knowledge to redeploy as high/very high: increase from 15% in the pre-training survey to 54% in the post-training survey
- Course content rating of high/very high: 89%
- Online course delivery rating of high/very high: 85%
- Approximately 81% of participants reported a moderate to very high likelihood that they will redeploy to a CC nursing role.

Figure 6.2: Change in confidence Critical Care Nursing - comparing pre and post survey responses

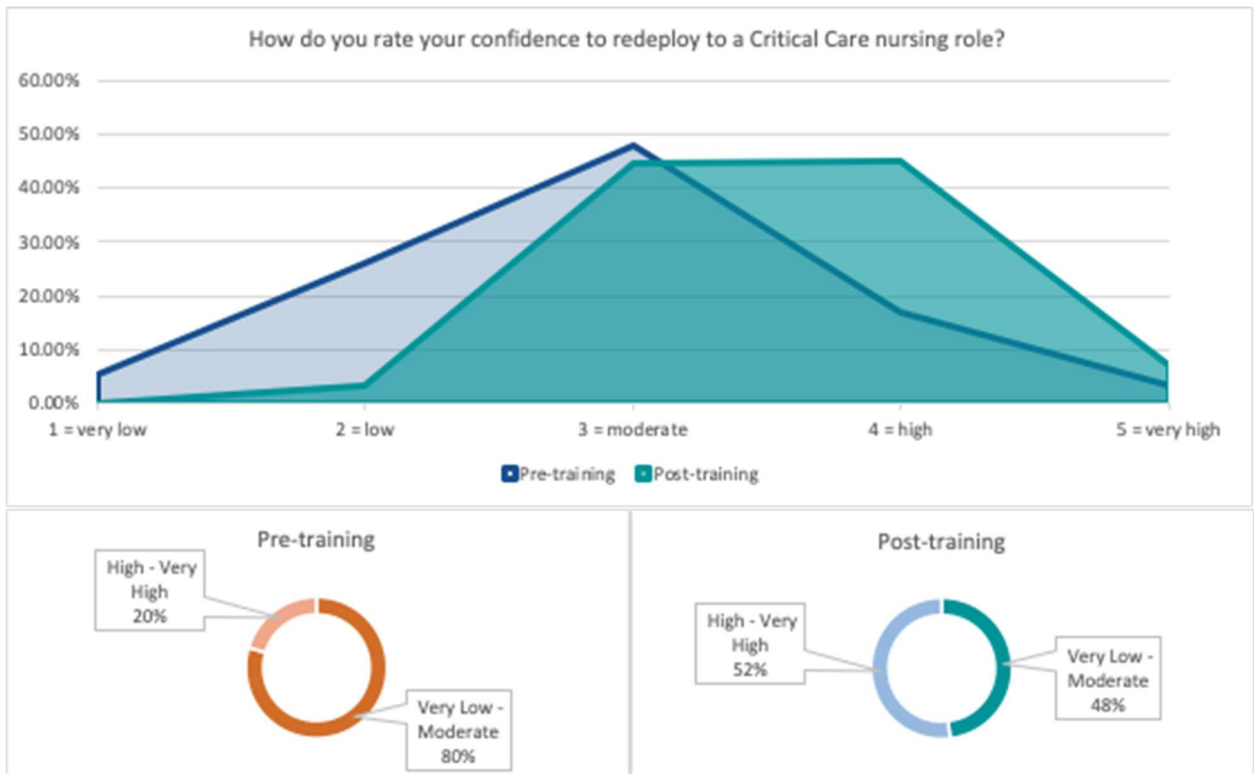


Figure 6.3: Change in knowledge Critical Care Nursing comparing pre and post survey responses

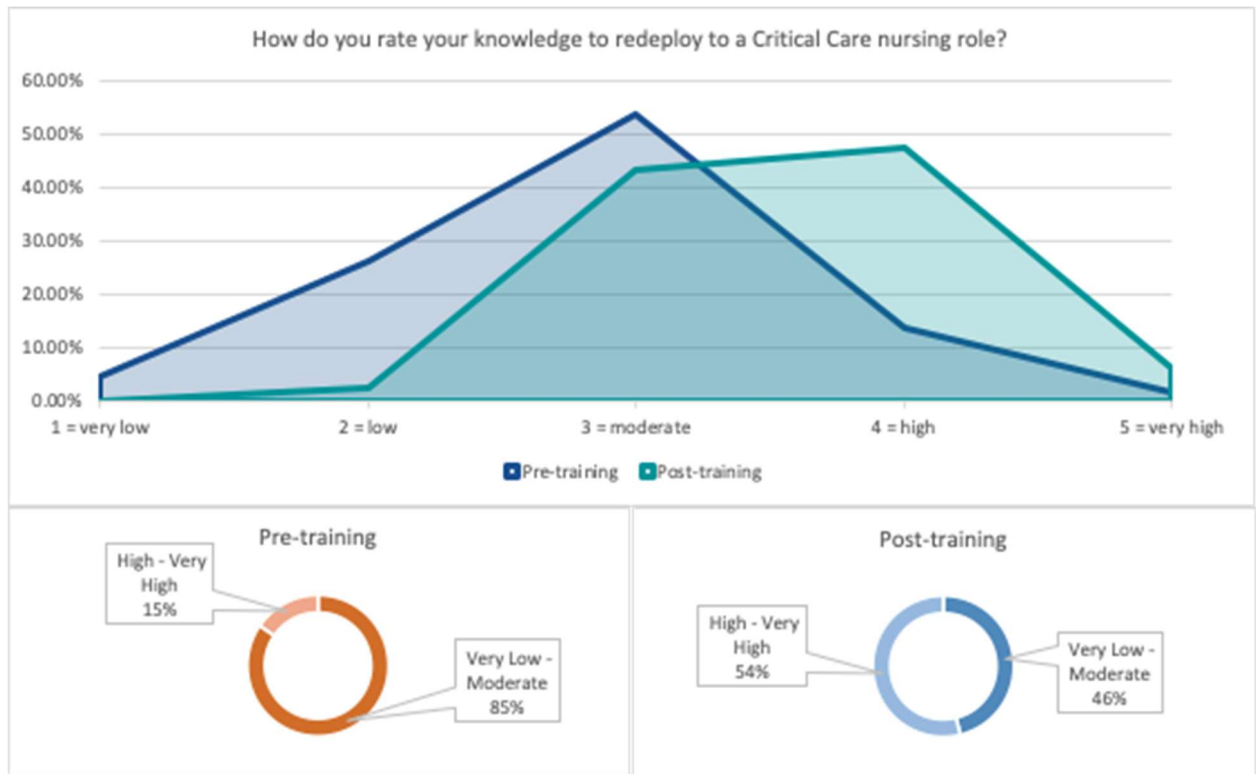
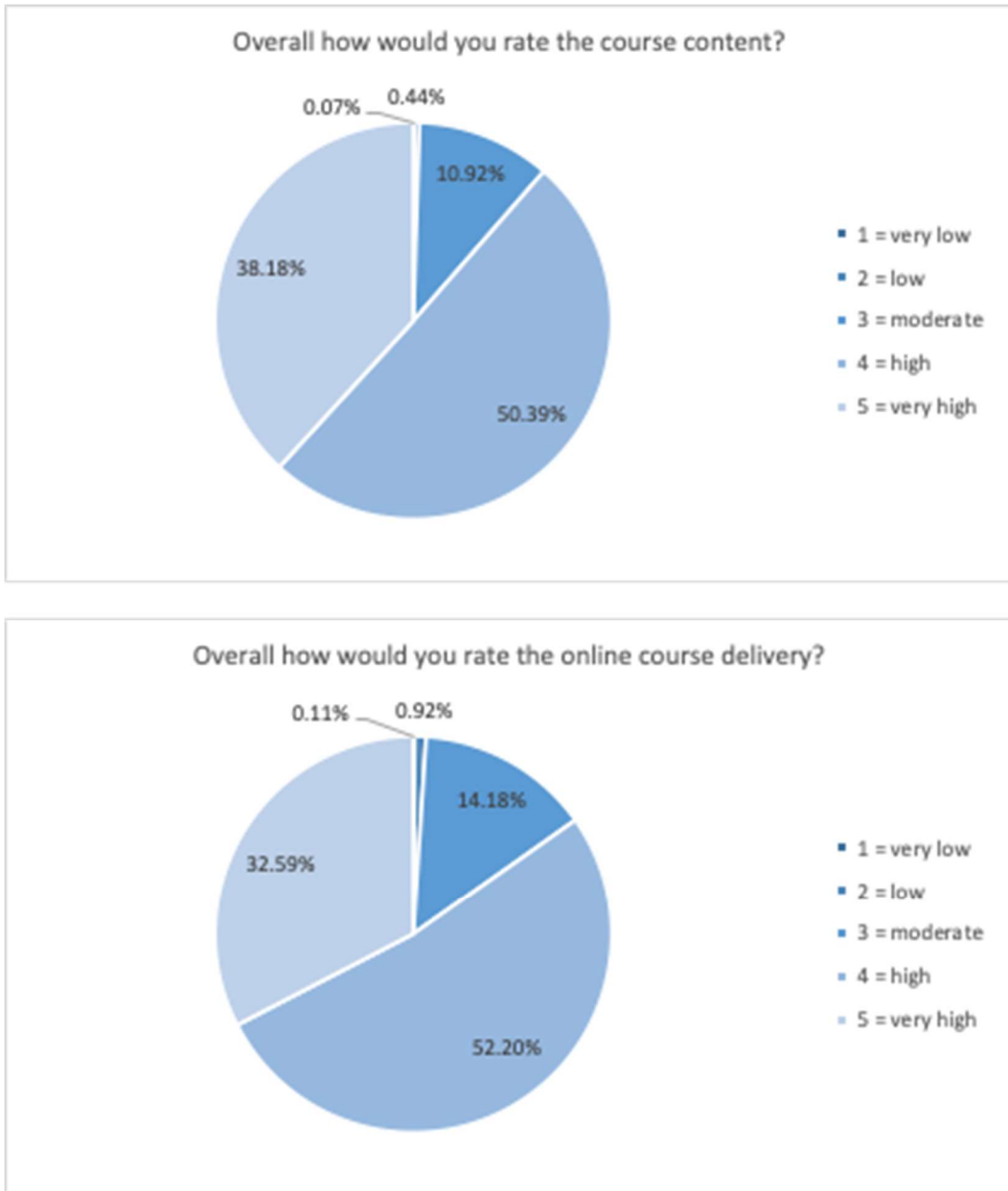


Figure 6.4: Critical Care Nursing course rating of course content and online course delivery



Findings - High Dependency Nursing (HDN) Course

The following momentum charts illustrate the overall success of the HDN course in terms of the following (Total survey responses = 12,814)

- The proportion of participants that rated their confidence to redeploy as high/very high: increased from 21% in the pre-training survey to 55% in the post-training survey
- The proportion of participants that rated their knowledge to redeploy as high/very high: increased from 16% in the pre-training survey to 57% in the post-training survey
- Course content rating of high/very high: 91%
- Online course delivery rating of high/very high: 86%
- Approximately 82% of participants reported a moderate to very high likelihood that they will redeploy to a HD nursing role.

Figure 6.5: Change in confidence High Dependency Nursing - comparing pre and post survey responses

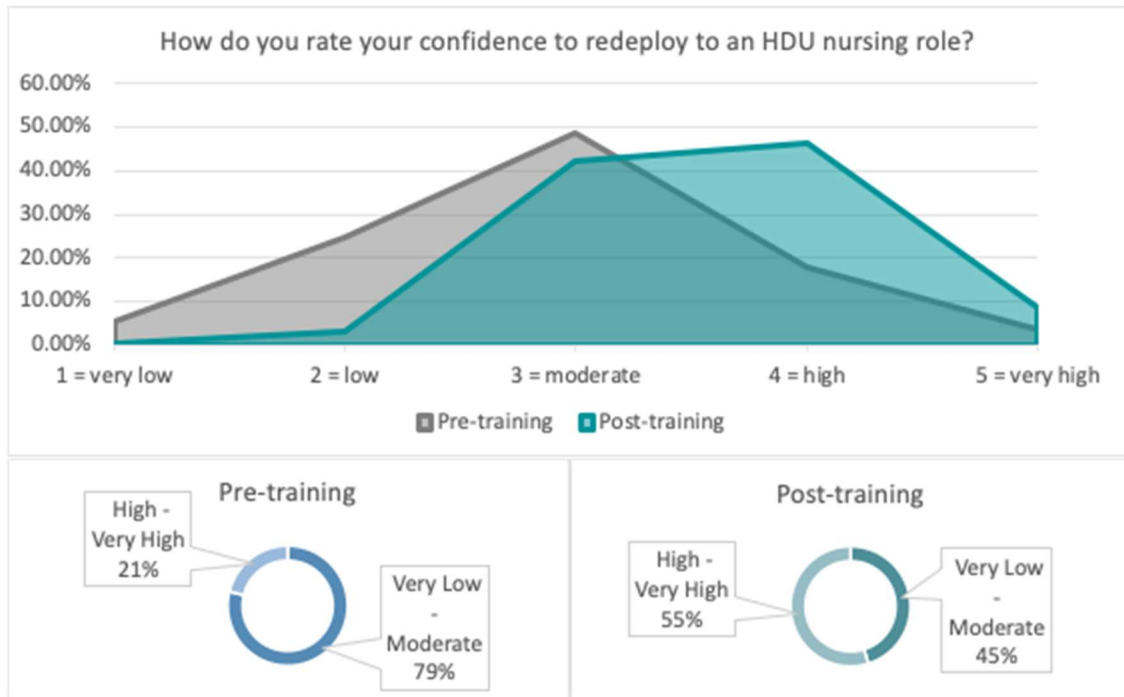


Figure 6.6: Change in knowledge High Dependency Nursing - comparing pre and post survey responses

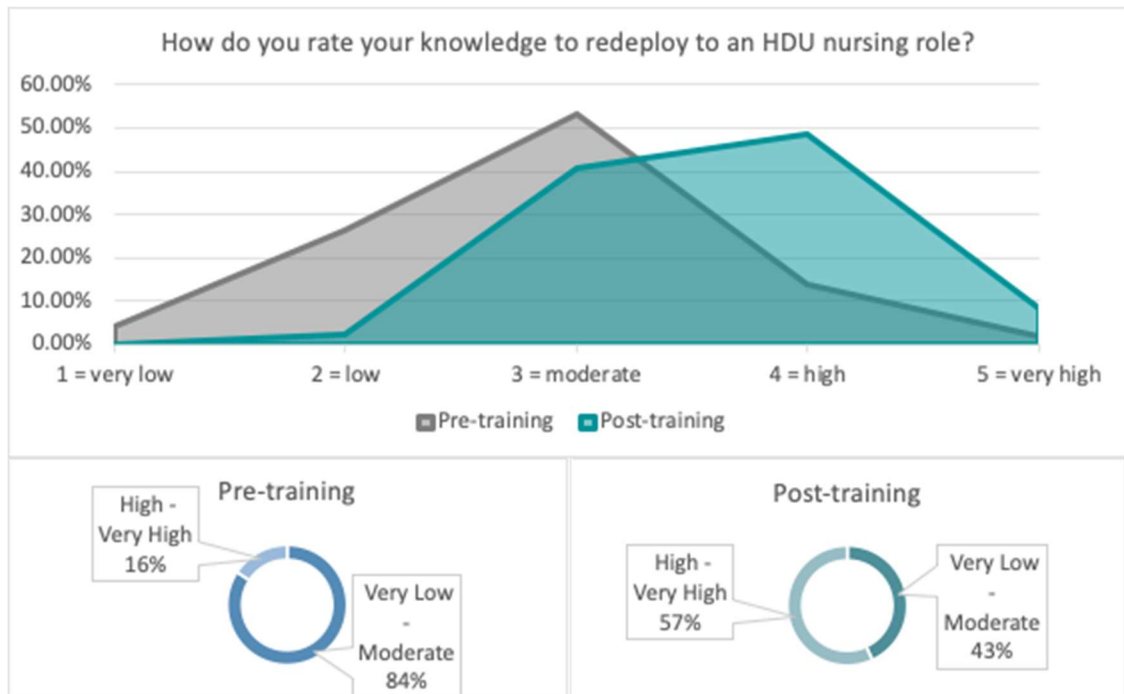
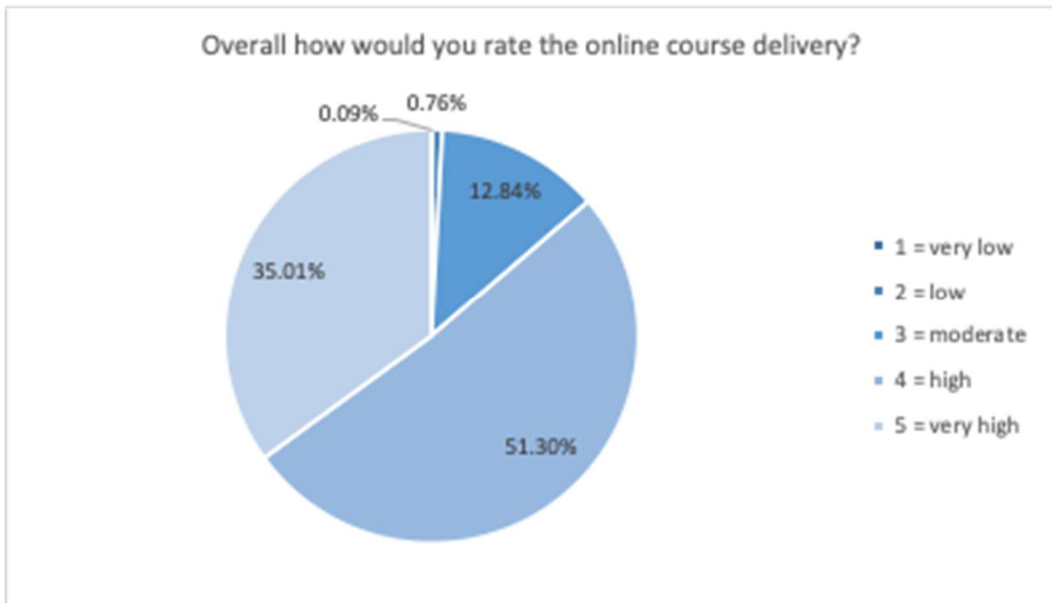
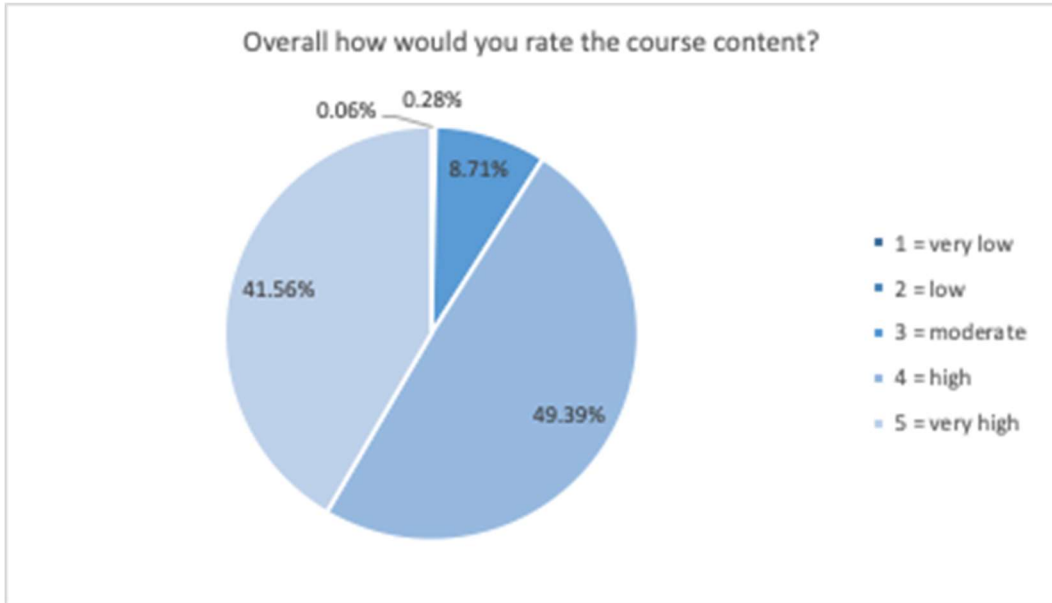


Figure 6.7: High Dependency Nursing course rating of course content and online course delivery



Unit Level Findings - Critical Care Nursing

As shown in the table below, the difference between the pre and post training mean results for participants' self-reported knowledge and confidence across all CCN units shows a **statistically significant increase**.

The top 3 units with the most statistically significant increases in both knowledge and confidence include the following.

- Endocrine & metabolic
- Respiratory - assessment & mechanical ventilation
- Neurological disorders

Unit	Knowledge			Confidence		
	Pre-training mean	Post- training mean	P value	Pre-training mean	Post- training mean	P value
1. Fundamental cardiac physiology	2.96	3.53	p<.001	2.90	3.51	p<.001
2. Cardiovascular pathophysiology - assessment & management of the patient with chest pain	2.96	3.70	p<.001	2.91	3.69	p<.001
3. Cardiovascular pathophysiology - shock states - assessment & management	2.86	3.69	p<.001	2.83	3.67	p<.001
4. Respiratory physiology	2.88	3.59	p<.001	2.84	3.56	p<.001
5. Monitoring techniques for the critically ill patient	2.89	3.62	p<.001	2.86	3.59	p<.001
6. Respiratory - assessment and mechanical ventilation	2.64	3.56	p<.001	2.60	3.51	p<.001
7. Respiratory - airway management	2.96	3.65	p<.001	2.93	3.59	p<.001
8. Renal	2.67	3.20	p<.001	2.64	3.13	p<.001
9. Neurological disorders	2.63	3.51	p<.001	2.60	3.47	p<.001
10. Endocrine & metabolic	2.66	3.58	p<.001	2.64	3.56	p<.001

Notes on the analysis:

- Anything with a p value <.001 means that the result is statistically significant, i.e. for all topics within the course, the reported increases in knowledge and confidence pre and post-training are statistically significant.
- T Tests were conducted using the excel data analysis tool (two sample t tests assuming unequal variances) with alpha=.05 (i.e. 95% confidence interval).
- The very large sample size can affect the p value downward (more likely to see a statistically significant difference pre and post-training the larger the sample).

Unit Level Findings - High Dependency Nursing

Similar to the CCN course, the difference between the pre and post-training mean results for participants' self-reported knowledge and confidence across all HDN units shows a **statistically significant increase**.

The top 3 units with the most statistically significant increases in both knowledge and confidence include the following:

- Cardiac - shock states
- Cardiac - acute coronary syndromes
- Fluid & electrolyte imbalances

Unit	Knowledge			Confidence		
	Pre-training mean	Post-training mean	P value	Pre-training mean	Post-training mean	P value
1. Cardiac - electrocardiography	2.64	3.52	p<.001	2.57	3.49	p<.001
2. Cardiac - physiology	2.77	3.50	p<.001	2.69	3.45	p<.001
3. Cardiac - shock states	2.62	3.65	p<.001	2.56	3.61	p<.001
4. Cardiac - arrhythmias	2.59	3.48	p<.001	2.52	3.41	p<.001
5. Cardiac - acute coronary syndromes	2.60	3.63	p<.001	2.56	3.61	p<.001
6. Fluid & electrolyte imbalances	2.81	3.71	p<.001	2.78	3.69	p<.001
7. The infected patient	3.04	3.89	p<.001	3.02	3.87	p<.001
8. Monitoring	3.21	3.67	p<.001	3.20	3.64	p<.001
9. Respiratory - assessment & management	2.86	3.60	p<.001	2.82	3.57	p<.001

Notes on the analysis:

- Anything with a p value <.001 means that the result is statistically significant, i.e. for all topics within the course, the reported increases in knowledge and confidence pre and post-training are statistically significant.
- T Tests were conducted using the excel data analysis tool (two sample t tests assuming unequal variances) with alpha=.05 (i.e. 95% confidence interval).
- The very large sample size can affect the p value downward (more likely to see a statistically significant difference pre and post-training the larger the sample).

7. Feedback

- Feedback about the courses, collected through free text responses, was thematically analysed to draw out the common themes.
- Themes were grouped according to content, delivery, design and presentation.
- The common themes with regards to the most beneficial aspects of the course were the flexible online delivery and high quality content. The presenters and their expertise were rated highly as were the interactive elements.
- Participants were appreciative of the opportunity to participate in the course to enhance their knowledge and prepare for a potential COVID-19 outbreak.

Thematic analysis

A thematic analysis was conducted of the free text post-training qualitative survey questions for both the Critical Care Nursing (CCN) and High Dependency Nursing (HDN) courses. The objective was to identify, analyse and summarise common themes in the responses.

The qualitative (i.e. free text) questions in the CCN and HDN post-training course surveys included:

1. What did you find most beneficial about the course?
2. What improvements would you suggest?
3. Do you have any other comments or feedback?

The themes were identified based on groupings of key areas and approximate response counts for each question. (There were 11,366 total responses to the CCN post-training survey and 12,814 total responses to the HDN post-training survey).

The high-level themes that emerged were related to course:

- Content
- Delivery
- Design
- Presentation

Key Findings

Critical Care Nursing

In terms of what participants found **most beneficial** about the CCN course, an overwhelming majority said that the *content* and *design* aspects were beneficial. This included themes such as

- The course was a good refresher and review / update.
- Participants enjoyed the lectures and presentations.
- The cardiac and respiratory topics were the most popular (which also aligns with the quantitative analysis in terms of self-reported increases in knowledge and confidence to redeploy to a CC nursing role, as well as statistically significant increases in those individual topic areas within the CCN course.)
- Participants found the notes and handouts beneficial because they could refer back to them throughout the course.

- Participants found the overall interactivity of the course to be very beneficial, in particular the diagrams, drawings and use of the interactive whiteboard.

Regarding the course aspects that **could be improved**, most participants’ responses centered on *delivery*, which could be expected in the context of how rapidly the course was developed and deployed in light of the unfolding COVID-19 pandemic. This included themes such as

- Participants noted that they would have appreciated more time to complete the course and access the materials.
- Some participants suggested improvements in the speakers/presenters, with the most common theme focused on presentation skills.
- Some participants reported inconsistent video quality and made suggestions to improve the editing post-production.

The following table shows the qualitative questions grouped into content, delivery (e.g. audio, video, online learning), design (e.g. interactive cases and quizzes, diagrams, whiteboard, etc.) and presentation.

Table 7.1 - CCN Course Thematic Analysis

	Content	Delivery	Design	Presentation	All course aspects
1. What did you find most beneficial about the course?	1,476	451	1,358	216	241
2. What improvements would you suggest?	273	1,925	465	448	N/A

High Dependency Nursing

In terms of what participants found **most beneficial** about the HDN course, an overwhelming majority said that the *content* and *delivery* aspects were beneficial. This included themes such as

- Participants found the information on and interpretation of the arterial blood gases, acid base disorders, and interpretation of electrocardiogram topics most beneficial.
- A significant portion of the participants said that the course was a great refresher overall, and noted specific topics around reading of ECGs, CPAP and BiPAP, and the use of notes coupled with the presentations to be very beneficial.
- HDN participants praised the delivery of the course in terms of its interactivity, informative nature, length of lectures, and quizzes as a tool to consolidate the learning.

Similar to the CCN course, regarding the course aspects that **could be improved**, most participants’ responses centered on *delivery*, which could be expected in the context of how rapidly the course was developed and deployed in light of the unfolding COVID-19 pandemic. This included themes such as

- Opportunity to improve audio quality in some videos.
- Suggestions for a more streamlined approach to navigate the course: some participants found it disjointed or confusing to be taken back to the home page and then need to “search” for the quizzes.

- Some participants suggested improvements to the presenters' delivery.
- Participants suggested the need for more clinical practical examples and case studies to reinforce the learning and apply the biochemical/science and theoretical components in a practical HDN setting.

The following table shows the qualitative questions grouped into content, delivery (e.g. audio, video, online learning), design (e.g. interactive cases and quizzes, diagrams, whiteboard, etc.) and presentation.

Table 7.2 - HDN Course Thematic Analysis

	Content	Delivery	Design	Presentation	All course aspects
1. What did you find most beneficial about the course?	3,020	2,534	1,854	734	1,945
2. What improvements would you suggest?	-	2,045	555	556	N/A

The following quotes are from a selection of participants that participated in either the Critical Care or High Dependency nursing course.



"As an ED nurse the range of topics was excellent. Would recommend this course to be attended every couple of years as the information given was a good refresher of knowledge needed in my area. I found the entire course to be beneficial as it covered a wide range of topics that all need to work as one in the critical care environment." (CCN)

"Excellent base of information, really helped me feel more confident in managing different presentations in my role. Best online course I have completed"

"This was an excellent overall refresher course. I found the content relevant and well presented. The notes are also comprehensive and will be very beneficial for me as I will read over them again to refresh my knowledge." (HDN)

"Thank you for this excellent avenue for learning. Even if I never have to redeploy (and I hope it doesn't come to that) I have found both courses helpful for the acute setting in which I currently work. It has helped me to refresh my knowledge and given more context again to what I am seeing in practice." (HDN)

"The content, range of speakers, its interactivenss"

"Very detailed meeting all key components of ICU nursing"

"Easy to complete while at home. Well organised and set out, easy to follow. Best online course I have ever completed."

"Good refresher for studies completed over 20 years ago, and update into what has changed. Identifying some of the areas of critical care which should I have the opportunity to learn in those environments will not seem as terrifying." (CCN)

"Quizzes, topics were easy to orientate and essential information made readily available. Regular quiz questions throughout each unit helped consolidate content. I found the conversational style of some presenters the best aid to learning. Anecdotes by some presenters relevant to topic was very helpful."

"Felt honoured to have had this opportunity with a high standard and quality of top professional teachers, high in their field credit to you all for sharing your dedication and commitment and teaching your knowledge for best patient care." (CCN)

"All areas studied are very relevant to my nursing area of expertise being Anaesthetics and Recovery room nursing. Will help me be more confident and competent to look after medically compromised patients"

"Course was a GREAT refresher and I am glad I was able to do it , it was a great opportunity to feel more confident in my clinical practice."

"Thank you for providing an enjoyable learning environment with relevant content"

8. Workplace Impact

- A follow up survey to assess impact on work was distributed on 3rd August 2020 to all participants who completed the courses. 22.1% (3,634) people responded.
- The majority (58.8%) of survey respondents identified that their primary motivation for participating in the training was to prepare for COVID-19.
- 92.6% of survey respondents have indicated that the knowledge gained in the SURGE courses has been used in the workplace sometimes, often or always. Very few (7.4%) reported rarely or never using the knowledge.
- 95.3% of survey respondents indicated that the knowledge gained in the SURGE courses has **improved the quality of care they delivered to patients**, sometimes, often or always. Very few (4.7%) reported rarely or never using the knowledge.
- 31% of all respondents noted a moderate change in working scope of practice, which was found to be similar across both public and private hospitals.
- 41% who had not redeployed to a High Dependency / Critical Care setting indicated that they plan to pursue a role in this area in the future.

A follow-up survey was sent on 3rd August 2020, to participants who completed at least one of the SURGE courses. This survey was designed to investigate how the knowledge gained in the SURGE Critical Care program was applied in the workplace, as well as the impact on scope of practice and setting.

Survey distribution and response:

- **16,461** nurses who completed one or both of the SURGE Critical Care Courses were sent the survey
- **3,634** participants responded to the survey
- this equates to a **22.1%** survey completion rate.

Survey Respondents

Table 8.1 - Age Overall of Survey Respondents (and by Hospital Type)

	Number	%	Public	Private
Under 25	184	5.0%	5.9%	3.2%
25-34	972	27.0%	26.7%	26.8%
35-44	961	26.0%	26.9%	25.4%
45-54	949	26.0%	25.2%	28.4%
55-64	539	15.0%	14.6%	15.5%
65-74	29	1.0%	0.8%	0.8%
75 and over	-	0.0%	0.0%	0.0%
	3,634	100.0%	100.0%	100.0%

Table 8.2 - What was your primary motivation to do the course?

	Number	%
Prepare for COVID	2,138	58.8%
Career Development	1,085	29.9%
Free CPD	191	5.3%
Other	114	3.1%
Employer Request	106	2.9%
	3,634	100.0%

The majority (58.8%) of survey respondents identified that their **primary motivation for participating in the training was to prepare for COVID-19**. This response was consistent across states and between private and public hospitals. Further analysis of this response can be found in [Appendix B](#).

Table 8.3 - Do you use the knowledge gained in the High Dependency / Critical Care Nursing Course in your job?

	Number	%
Never	29	0.8%
Rarely	205	5.6%
Sometimes	1,368	37.6%
Often	1,384	38.1%
Always	648	17.8%
	3,634	100.0%

55.9% of survey respondents have indicated that the **knowledge gained in the SURGE courses has been used in the workplace** often or always. Very few (7.4%) reported rarely or never using the knowledge.

Table 8.4 - Has the course improved the quality of care you deliver to patients?

	Number	%
Never	27	0.7%
Rarely	144	4.0%
Sometimes	1,168	32.1%
Often	1,456	40.1%
Always	839	23.1%
	3,634	100.0%

63.2% of survey respondents indicated that the knowledge gained in the SURGE courses has **improved the quality of care delivered to patients**, either often or always. Very few (4.7%) reported rarely or never using the knowledge.

Table 8.5 - Have you had practical skills training in your workplace to enhance the knowledge gained in the SURGE critical Care courses?

	Number	%		Public	Private
None	1,482	41.0%	None	40.7%	41.0%
A Little	531	15.0%	A Little	14.7%	14.5%
Some	826	23.0%	Some	22.5%	23.2%
Moderate amount	551	15.0%	Moderate amount	15.2%	15.0%
A Lot	244	7.0%	A Lot	6.9%	6.3%
	<u>3,634</u>	<u>100.0%</u>		<u>100.0%</u>	<u>100.0%</u>

Based on survey responses, there appears to have been **some practical skills training** offered to SURGE course participants in their workplaces (22% a moderate amount or more), with 56% receiving none or little. Survey responses were consistent across both public and private hospitals.

Table 8.6 - As a result of doing this training has there been a change in your working scope of practice?

	Overall:		By Hospital:		
	Number	%	Public	Private	
Yes	1,143	31.0%	Yes	31.8%	30.6%
No	2,491	69.0%	No	68.2%	69.4%
	<u>3,634</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	

Based on survey responses, there appears to be some **moderate change in working scope of practice** (31% of all respondents), which is similar across both public and private hospitals. Of note, the most change was identified in ACT and NT (40.5% and 42.9%) and the lowest in Victoria (29.2%), Queensland (28.9%) and Tasmania (26.9%).

Table 8.7 - As a result of doing this training has there been a change in your hours of employment?

	Overall:		By Hospital:		
	Number	%	Public	Private	
Increase	199	5.0%	Increase	5.4%	5.7%
Decrease	18	0.0%	Decrease	0.5%	0.5%
No change	3,417	94.0%	No change	94.1%	93.8%
	<u>3,634</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	

Respondents identified no meaningful change in **hours of employment** (~94% no change).

Table 8.8 - Which of the following statements best apply to you regarding the impact of the SURGE Critical Care training on where you work?

	Number	%
Already HDU/CC & No Change	902	25.0%
Acute Ward & No Change	938	26.0%
Acute Ward & Possible Future Deployment	740	20.0%
Already HDU/CC & Increase Responsibility	129	4.0%
Already HDU/CC & Mentoring Responsibility	75	2.0%
Acute Ward & Redeployed to HDU/CCN	148	4.0%
Other	702	19.0%
	<hr/> 3,634	<hr/> 100.0%

“No change to work allocation was already doing occasional HDU CCU shifts. Course has improved my critical thinking and problem solving with the expanded and more in depth knowledge gained”

There appears to have been a moderate impact of SURGE on work setting. 51% of respondents indicated that there has been no change in the workplace. However, 25% of these people were already working in an HDU / ICU setting. A fifth (20%) of respondents indicated that there is a possibility of future deployment to a higher acuity area.

Respondents who selected ‘other’ provided a range of responses to this question, including:

- Working in Anaesthetics / PACU / Theatres / Periop / Recovery - no change
- Nurses Educators
- Working in subacute setting, day surgery, rehabilitation or geriatrics

Many respondents indicated that there were plans for them to move to higher acuity settings when the need arose and this scenario is yet to eventuate in most states.

Table 8.9 If you have not redeployed to a High Dependency / Critical Care setting, do you plan to pursue a role in this area in the future?

	Number	%
Yes	1,472	41.0%
No	798	22.0%
na	1,364	38.0%
	<hr/> 3,634	<hr/> 100.0%

41% who had not redeployed to a High Dependency / Critical Care setting indicated that they plan to pursue a role in this area in the future.

Table 8.10 - Free text questions from follow-up survey

The following tables summarise the free text responses in the survey. The responses were grouped into themes and example quotes are provided according to each theme.

On reflection, what has been the most useful thing about the High Dependency / Critical Care Nursing Course?
Increased Confidence
“Everything! I was so ready to take the next step in learning about the patient/care in ICU systematically. The ventilation subjects have been especially useful and allowed me to take the next step in my current role.”
“The course increased my confidence in the knowledge I had and was a great update. I gained new knowledge as well which is very helpful particularly in regards to latest best practice.”
Increased Knowledge
“The teachers were explaining difficult concepts in a way that made them easier and less overwhelming to understand and apply to our everyday practice.”
“Everything. The high dependency course provided a refresher for the knowledge i already learnt during bachelor study, things that i might have forgotten, and the intensive care course taught me new and more in depth knowledge of things that i've never learnt before. The course all assisted me with re-evaluating my current practice and help me improve my patient care.”
“Accessibility to a great range of diverse trainers fully experienced and current knowledge based. i have printed out all the resources and read through them as a cne to assist with teaching and use them to support staff in my unit.”
“The most useful thing out of this course would be the respiratory & ventilation package! my confidence has increased whilst operating ventilators & my knowledge has expanded immensely! so thank you !!”
Delivery Mode and Presenters
“Both courses were delivered in an easy to understand format and the presenters were fantastic in the way they delivered the key concepts and training modules.”
“Very easy to navigate course found the content really interesting and helpful for my jobs.”
“The course was structured well and most of the speakers were engaging, explained things well so the content really stuck. The diagrams drawn during presentations were excellent, it was a very effective way of learning. a+ for that! I would highly recommend this course to any nurse, it's a revision of things we learnt back at university and probably don't get to use much depending of area of work. i sadly missed out on the high dependency unit due to time constraints but will consider it in the future. thank you kindly for this opportunity!”
Refresher
“it has been a great refresher of information learnt back in university days plus gaining new knowledge. it has also made me think more critically when their are abnormalities in my patients bloods or observations.”
“I thoroughly enjoyed the courses and found it really beneficial to my learning experience. and getting me back into icu. The majority of the pdf documents have been fantastic to be able to write additional notes whilst listening to the lectures.”
“Great revision. I feel that I could be redeployed comfortably to our new ICU (not open yet). info sheets have been printed and knowledge shared with anesthetic colleagues.”
“The refreshing of knowledge that i had once learnt and had not used in recent years. the ability to complete a lengthy course at home, in my own time (i would definitely do a similar refresher online in the future). The bonus of my Commonwealth paying for a course that i might not have been able to afford.”

On reflection, what areas in the course could have been improved to better prepare you for the workplace?
Case Scenarios
“Case scenarios would have been great.. loved the questions thru out the course.”
“A few more practical case scenarios that reinforced the science explanation. I loved the male lecturer who made us draw flow charts and interacted with us. maybe a case study after his lecture to help make it a little more practical and consolidate the theory.”
Practical Component
“More practical training in the workplace in complement of the medcast course.”
“A component linked to practical setting. maybe an agreement with my workplace to provide practical education based on the course content. in my case perhaps the opportunity to attend ALS, resus or triage training after completion in order to solidify my learning.”
“I would have liked an opportunity for some hands on training at around the time of undertaking the online modules as i feel this would have provided some consolidation of the theoretical knowledge gained through the surge course.”
“It would be fantastic to have practical workshops related to the course.”
Extra Time
“More time for the course to be completed.”
“I would appreciate ongoing access to the content to enable me to re visit content in my own time”
“I think you covered most things as far as I am aware. high flow was new to me so that was very beneficial and i did the free webinar on that as well. so really, as i said on completion of the course, thank you so much for putting the course out there. i just wish i could have kept on in icu to keep skills going. We made need it later.
Ongoing Training / Access
“I felt there was a good flow of information and it was well thought out. i would be interested in further education in this format.”
“i think the course was great. maybe some extra reading or worksheets to go through?”
“I would love lifetime access or at least access to download and keep the recordings to replay and review the whole course content again not under pressure. I found the course fantastic. if i was to ask for something it would be about some of the pdf docs where uploaded in a different format to the rest. Overall I thoroughly enjoyed this course, very well presented and very professional. well done medcast it was an absolute pleasure to do both courses.”
“The course covered a vast amount of information across all the topics, i think i would have liked to study diabetes in more depth. it would be awesome to have some linking or follow through to my actual practice, especially if we have be redeployed in the event of a covid wave, but i realise how difficult that would be for each individual. mostly i really wish i could still access the online lectures even though i completed the course, because i’ve been going back over it all to consolidate and refine my notes and it would have been so helpful to listen again to the experts.”
“It was great training, not sure how it could have been improved other than have more of it!”

Table 8.11 - How would you like to maintain and improve your knowledge and confidence in High Dependency / Critical Care Nursing? (You may select more than one answer.)

	Number	%
Ongoing access to course content	2,378	65.0%
Regular education updates	2,274	63.0%
Ongoing clinical skills training in workplace	1,895	52.0%
Annual refresher	1,770	49.0%
More in-depth training (particular topics)	1,013	28.0%
Undertake formal qualification	884	24.0%
Other	30	1.0%

Survey respondents indicated a high level of interest in ongoing access to the course content (65%), regular education updates (63%) and an annual refresher (49%) to maintain and improve knowledge and skills.

Clinical skills training in the workplace was reported by 52% of respondents as important ongoing education.

9. Summary

The SURGE Critical Care project has been an extraordinary success in terms of implementation and educational outcomes. It has achieved its aim to build capacity in the nursing workforce to respond to increased demand for ICU beds. The program was rapidly deployed to over 22,000 registered nurses across Australia and has thus resulted in the development of a significant national asset including:

- a database of 22,229 nurses with training in High Dependency and Critical Care Nursing, 16,461 who have completed a SURGE course
- high-quality online critical care education that is able to be delivered flexibly, equitably and at scale
- a contact list of Nurse Unit Managers, and of nurses who are upskilled in High Dependency and Critical Care Nursing
- demographic information on the nurses hospital, qualifications, gender, current 'area of practice' and dates of registration
- information about the national, coverage of public and private hospitals undertaking the SURGE upskilling course for their RNs..

Appendix A: Critical Care and High Dependency Nursing Course Content

The education will be delivered as 2 key courses, across topics, comprising 32.5 hours of education:

- Critical Care Nursing
- High Dependency Nursing

The course content includes:

- Recorded presentations incorporating interactive case based learning activities, and short videos.
- Quiz to apply the knowledge both during the topic and at the end of each topic.
- Resources - comprising handouts, readings and references.
- Each course will have a discussion forum monitored on an ongoing basis, by a senior critical care educator.
- A certificate of completion will be issued that states the number of CPD points claimable for completion of the activity.

Critical Care Nursing

This course is designed to provide nurses with current knowledge and skills to be applied to any Critical Care setting. Includes the following units and topics:

Critical Care Nursing	
Unit	Topic
Fundamental Cardiac Physiology	Cardiac Muscle Physiology
	Innervation of the Myocardium
	Adrenergic Receptors
	Regulation of Cardiac Output & Blood Pressure
Cardiovascular Pathophysiology	Introduction, pathophysiology, classification of acute coronary syndromes
Assessment & Management of the Patient with Chest Pain, Acute Coronary Syndromes	Diagnosis of myocardial ischaemia/infarction - history, physical examination, ECG interpretation, laboratory testing
	Management of ischaemic chest pain - fibrinolytics, PCI, CABG's
Cardiovascular Pathophysiology	Overview, classification of shock, pathophysiology
Shock States - Assessment & Management	Clinical features, treatment - hypovolaemic, cardiogenic, septic shock, inotropic support
Respiratory Physiology	The Control of Ventilation, Dynamics of Spontaneous Breathing, Lung volumes and capacities
	Gas transport - O ₂ delivery & metabolism, physiology of O ₂ saturation. CO ₂ production & elimination

Critical Care Nursing	
	Arterial Blood Gas Interpretation - primary acid-base disturbances
Monitoring Techniques for the critically ill patient	Introduction to Haemodynamic Monitoring
	Arterial Lines
	Central Lines
	Pulmonary Artery Catheters
	Pulse Oximetry - SpO ₂
	Capnography - EtCO ₂
Respiratory - assessment and mechanical ventilation	Respiratory assessment including Lung Sounds
	Chest X-ray Interpretation
	Indications & Goals for Mechanical Ventilation
	Ventilator Modes
	Care of the Mechanically Ventilated Patient
Respiratory - Oxygen Therapy	High Flow Humidified Nasal Oxygen Therapy
Respiratory - Difficult Airway management	Assessment & Management of the Difficult Airway - The Vortex approach
Renal	Physiology
	Acute Kidney Injury - Assessment, Complications
	Acute Kidney Injury - Management including renal replacement therapies
Neurological Disorders	Review of anatomy and physiology
	Neurological Assessment
	Care of the Patient with a neurological disorder - common presentations
Endocrine & Metabolic	Hepatic Failure
	Diabetic Emergencies

High Dependency Nursing

This course is designed to increase the knowledge and skills of RNs to work in a high dependency unit. The course covers the following units and topics:

High Dependency Nursing	
Unit	Topic
Cardiac - electrocardiography	Fundamental electrocardiography
	Getting the most from Your Cardiac Monitoring System

High Dependency Nursing	
Cardiac - physiology	Cardiovascular Physiology: Innervation of the Myocardium & Introduction to Adrenergic receptors
	Cardiovascular Physiology: Regulation of Cardiac Output and Blood Pressure
Cardiac - Shock States	Introduction
	Hypovolaemic
	Cardiogenic
	Septic Shock
Cardiac - Arrhythmias	An Introduction to Cardiac Arrhythmias
A Systematic Approach to Interpretation & Management. Abnormalities in Rate, Regularity or Conduction.	Arrhythmias Originating in the Atria
	Arrhythmias Originating in the AV Junction including AV Conduction Blocks
	Arrhythmias Originating in the Ventricles
Cardiac - Acute coronary syndromes	Pathophysiology of Myocardial Ischaemia/Infarction
Assessment and Management of the Patient with Chest Pain, Angina, AMI	Chest Pain Assessment - History, Physical examination, ECG
	Differential Diagnosis of Chest Pain - Angina Pectoris, Acute Myocardial Infarction
	Management of Ischaemic Chest Pain
Fluid & Electrolyte Imbalances	Distribution of fluids and electrolytes in the body
Assessment and management of the patient with fluid and electrolyte imbalances	Fluid and Electrolyte Imbalances
	Intravenous Solutions & Their Usage
Infection and Allergy	The Infected Patient – Recognising the Signs & Symptoms of Sepsis Anaphylaxis - Recognition and Management
Monitoring	Pulse oximetry - Oxygen Saturation Monitoring
	Care of the Patient with a Central Line
	Care of the Patient with an Arterial Line
	Interpreting common blood tests: what do they measure & if abnormal, why?
Respiratory	Regulation of respiration
Assessment & Management of the Patient with Respiratory Problems	Lung volumes and capacities



High Dependency Nursing	
	Respiratory assessment including Lung Sounds
	Oxygen Therapy, and Humidification – Getting it Right
	Essential Respiratory Physiology: O ₂ delivery & metabolism, physiology of O ₂ saturation. CO ₂ production & elimination
	Assessment & Management of the Patient with Respiratory Problems including Hypoxaemia & Hypercarbia
	Acute Pulmonary Oedema, Pathogenesis & Management including the use of CPAP & BiPAP.
	High Flow Humidified Nasal Oxygenation
	Blood Gas Interpretation Made Easy

Appendix B: Follow Up Survey Additional Data

Figure B.1 - Primary motivation by hospital

	Public	Private
Prepare for COVID	58.4%	59.8%
Career Development	31.3%	26.5%
Free CPD	5.0%	6.0%
Other	3.4%	2.4%
Employer Request	1.9%	5.3%
	100.0%	100.0%

Figure B.2 - Primary motivation by state

	NSW	VIC	QLD	WA	SA	TAS	ACT	NT
Prepare for COVID	54.3%	65.6%	53.9%	56.8%	53.0%	65.6%	59.5%	34.3%
Career Development	33.5%	25.9%	31.5%	30.9%	33.1%	23.7%	29.7%	57.1%
Free CPD	4.7%	3.9%	8.4%	5.8%	4.5%	6.5%	4.1%	8.6%
Other	3.5%	2.3%	4.7%	3.6%	2.6%	2.2%	2.7%	0.0%
Employer Request	3.9%	2.4%	1.5%	2.9%	6.8%	2.2%	4.1%	0.0%
	100%	100%	100%	100%	100%	100%	100%	100%

Figure B.3 - Primary motivation by remoteness classification

	1	2	3	4	5	6	7
Prepare for COVID	58.9%	57.8%	58.2%	60.0%	59.9%	46.0%	67.2%
Career Development	29.3%	31.8%	30.8%	25.4%	30.6%	44.0%	23.0%
Free CPD	5.6%	4.1%	5.0%		4.5%	4.0%	6.6%
Other	2.6%	3.8%	4.0%	5.4%	4.2%	2.0%	3.3%
Employer Request	3.5%	2.6%	2.0%	3.1%	0.8%	4.0%	0.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure B1 - Use of knowledge gained by hospital type

