AUSTRALASIAN
CLINICAL INDICATOR REPORT

20th Edition 2011-2018

An extensive review of clinical performance

HSRG
Health Services Research Group

THE AUSTRALIAN COUNCIL ON HEALTHCARE STANDARDS
ACHS
CLINICAL INDICATOR PROGRAM

AUSTRALASIAN CLINICAL INDICATOR REPORT: 2011–2018: 20TH EDITION.

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DISCLAIMER

The expert commentary provided by the colleges, societies, and associations is contributed in response to a request from ACHS. Although ACHS appreciates the insights provided, it does not necessarily agree with or endorses the views expressed.

RECOMMENDED CITATION

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The Australian Council on Healthcare Standards (ACHS) would like to thank the healthcare organisations (HCOs) participating in the ACHS Clinical Indicator Program for their data, which form the content of this report.

The ACHS Performance and Outcomes Service (POS) would also like to thank its collaborators in the development and review of the Clinical Indicators (CIs), particularly the Working Party Chairs and members. In addition, ACHS acknowledges the role played by the Health Services Research Group (HSRG) at the University of Newcastle in preparing this report.

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CLINICAL INDICATOR WORKING PARTIES

ACHS CIs are developed by Working Parties comprising practising clinicians (medical officers, nurses and allied health professionals in the relevant specialty field), representatives of the relevant Australian and New Zealand colleges, associations and societies, consumer representatives, statisticians and ACHS staff.

Selected Working Parties meet several times throughout the year, both in person and via teleconference, to review the existing CIs and explore areas for new CIs. The revised version of the CI set and its User Manual are then endorsed by the relevant colleges, associations or societies prior to implementation.

CI sets are regularly reviewed to ensure:

- they are relevant for clinicians
- they continue to reflect today's healthcare environment
- there is consensus on collection and reporting requirements
- they are regarded as useful for quality improvement.

TABLE1: List of Clinical Indicator Working Party Chairs and Participating Organisations

CI SET	WORKING PARTY CHAIR	PARTICIPATING ORGANISATIONS
Anaesthesia and Perioperative Care	Dr Joanna Sutherland (ANZCA)	Australian and New Zealand College of Anaesthetists Australian Society of Anaesthetists
Day Patient	Ms Mary Kirkwood (APHA)	Australian Private Hospitals Association Day Hospitals Australia Australian Day Surgery Nurses Association
Emergency Medicine	A/Prof Melinda Truesdale (ACEM)	Australasian College for Emergency Medicine College of Emergency Nursing Australasia
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Hospital in the Home	A/Prof Mary O'Reilly (HITHSA)	Hospital in the Home Society Australasia
Hospital-Wide	Dr David Rankin (RACMA)	The Royal Australasian College of Medical Administrators The Royal Australasian College of Surgeons Australian College of Nursing
Infection Control	Dr Philip Russo (ACIPC)	Australasian College for Infection Prevention and Control Australian College of Nursing
Intensive Care	A/Prof Mary White (ANZICS)	Australian and New Zealand Intensive Care Society College of Intensive Care Medicine of Australia and New Zealand Australian College of Critical Care Nurses
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Ophthalmology	Dr Michael Hennessy (RANZCO)	The Royal Australian and New Zealand College of Ophthalmologists Australian Ophthalmic Nurses' Association
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TABLE1: List of Clinical Indicator Working Party Chairs and Participating Organisations

CI SET	WORKING PARTY CHAIR	PARTICIPATING ORGANISATIONS
Pathology	A/Prof Peter Stewart (RCPA)	The Royal College of Pathologists of Australasia Australian College of Nursing
Radiation Oncology	Prof Jeremy Millar (RANZCR)	Faculty of Radiation Oncology of The Royal Australian and New Zealand College of Radiologists Australian College of Physical Scientists and Engineers in Medicine Australian Society of Medical Imaging and Radiation Therapy
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FOREWORD

On behalf of the Australian Council on Healthcare Standards (ACHS), I present the *Australasian Clinical Indicator Report 20th Edition 2011-2018*. The report examines data sourced from a broad range of clinical specialty areas and contains important information regarding key aspects of healthcare delivery for members of ACHS, in addition to healthcare organisations worldwide. As in previous years, the 20th Edition of the *Australasian Clinical Indicator Report* provides key points on significant trends, strata differences and outlier effects between 2011 and 2018 for a broad range of clinical indicators. The report also includes commentary by professionals from the respective healthcare specialties to provide context to the complex and ever-changing healthcare environment. The *Australasian Clinical Indicator Report* provides the reader with an insight into the standards of healthcare in Australia and New Zealand and provides individual healthcare organisations with the potential to improve quality and safety within their facility.

In developing the Clinical Indicator sets and the *Australasian Clinical Indicator Report*, ACHS has proudly collaborated with more than 40 Australasian medical colleges, societies, and associations. The opportunity has been provided to these organisations to contribute comments within their specialist area for each of the 20 Indicator sets, which now contain 332 individual clinical indicators. Data from 656 healthcare organisations have been provided, and subsequently validated by University of Newcastle statisticians.

A number of working party meetings of the relevant providers including a consumer representative were held through the year to support the continuous development of the clinical indicator sets and ensure they remain current and valid. In 2018, clinical indicator sets that were reviewed included Day Patient, Gastrointestinal Endoscopy, Hospital-Wide and Mental Health.

Dr Brian Collopy has once again written the feature report contained within the *Australasian Clinical Indicator Report*. This year's feature report was co-authored by Professor Geoffrey Dobb, ACHS Council, ACHS Board Member and AMA Representative. The feature report presents an overview of the Clinical Indicator program database.

The ACHS provides the *Australasian Clinical Indicator Report* to key health industry bodies, Federal and State Governments, our members and surveyors, and other interested parties. It is pleasing to note that the number of clinical indicators demonstrating a desirable trend outweigh the number with an undesirable one by a factor of five. The report is available to download from the ACHS website via: www.achs.org.au/publications-resources/australasian-clinical-indicator-report/. A full retrospective report is also available on the website, providing detailed results for each clinical indicator set.

To conclude, I have confidence that the *Australasian Clinical Indicator Report 20th Edition 2011-2018* will provide you with valuable knowledge of our healthcare industry for which it was intended. In providing this insight, I should like to extend my appreciation to all the collaborating colleges, associations, and societies. Their support of this Clinical Indicator Program allows us to continue our efforts to improve healthcare standards in Australia and internationally.

Prof Len Notaras AM
ACHS President
November 2019

ABOUT THE AUSTRALASIAN CLINICAL INDICATOR REPORT (ACIR)

This *Australasian Clinical Indicator Report 20th Edition 2011-2018* provides an overview of the results for each CI set for the last eight years, with additional commentary from the collaborating medical colleges, associations, specialist societies and other clinical organisations. Their expertise provides context for the trends or variations observed in the data.

A Printed Report

This report summarises the CI data submitted to the ACHS Clinical Indicator Program for the years from 2011-2018. The report highlights significant trends or variation in the data over time, which can suggest areas where there is scope to improve practice.

The Summary of Results section, commencing on page 29, describes observations drawn from the data of each CI. To capture the context and circumstances that influence the data, ACHS draws upon the expertise of the specialist healthcare colleges, societies, and associations, in addition to the other clinical organisations with which it collaborates. Their comments and expert feedback precede the summaries of the data and share subheadings within the Summary of Results and the *ACIR Retrospective Data in Full Report*, to assist cross-referencing.

The expert commentators review the retrospective data in full and respond to questions from ACHS. The views expressed in the commentaries are those of the authors, and not necessarily shared by ACHS.

ACIR Retrospective Data in Full Report

Every year, the Australasian Clinical Indicator Report (ACIR) lists collective performance against each of the ACHS CIs. This information is published on the ACHS website: https://www.achs.org.au/programs-services/clinical-indicator-program/acir-australasian-clinical-indicator-report/ and can be accessed by scanning this QR code with a smartphone or device.

An *ACIR Retrospective Data in Full Report* is created for every Clinical Indicator set and provides detailed information about each CI collected in 2018. Listed within the report are the CI, its intent, the numerator, and denominator. Tables summarise the data submitted in every year since 2011 that the CI has been available for reporting.

Trends in the rates over time are reported with statistical significance, and the data are displayed in a graph if four or more years of data are available from five or more HCOs. There are three measures of variation in rates between HCOs included in this report. These are quantified by the differences between the 20th and 80th centiles.

Where significant differences between strata have occurred in 2018, these data are reported in additional tables, and the information is illustrated graphically using box plots. The absence of a specific comparator table means that the differences between strata were not statistically significant at three standard deviations or that the minimum number of contributors to enable comparison was not met. Outlier information is displayed through funnel plots.

The full report also statistically estimates the potential improvement (gains) for all eligible CIs, if changes in the distribution of rates were achieved.

Statistical Methods

The statistical methods used to analyse and report these data are also available online at https://www.achs.org.au/programs-services/clinical-indicator-program/acir-australasian-clinical-indicator-report/, along with a description of how to read, understand and use the retrospective data.

KEY RESULTS OF 2018

IMPROVEMENTS

In 2018, there were 104 CIs which showed statistically significant trends in the desired direction. Of these, 63 CIs remained significant after allowing for changes in the composition of HCOs contributing over the period. There were eight CI sets that had an improvement in at least two-thirds of all trended CIs. They were Anaesthesia and Perioperative Care, Day Patient, Emergency Medicine, Gynaecology, Infection Control, Intensive Care, Paediatrics and Rehabilitation Medicine. For the CIs denoted below (L) means low desirable rate while (H) means high desirable rate.

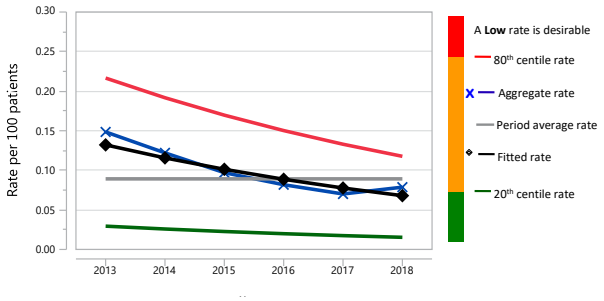
There were noteworthy improvements in the following sets:

Day Patient

4.1 Patients who experience an adverse event during care delivery (L)

This increasingly well reported indicator shows a greater than 50 percent decline in adverse events during care delivery for day procedure patients. The fitted rate has dropped from 0.13 to 0.067 since 2013, as well as a reduction in variance between the 80th and 20th centiles.

Trend plot of rates and centiles by year

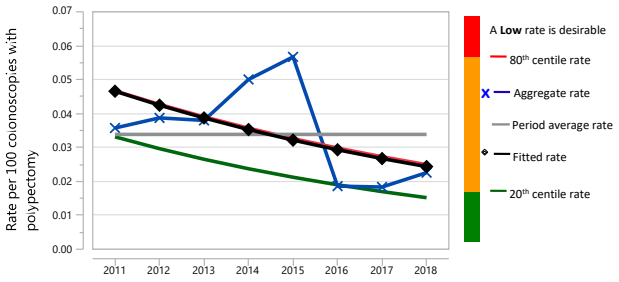


Gastrointestinal Endoscopy

2.1 Treatment for possible perforation post-polypectomy (L)

The rate of treatment for possible perforation post-polypectomy has been decreasing significantly over time. The two years of 2014 and 2015 had several outliers which pushed both the fitted rate and aggregated rate up. Due to this the fitted rate sits close to the 80th centile rate, although both the 80th centile and 20th centile are decreasing over time.

Trend plot of rates and centiles by year

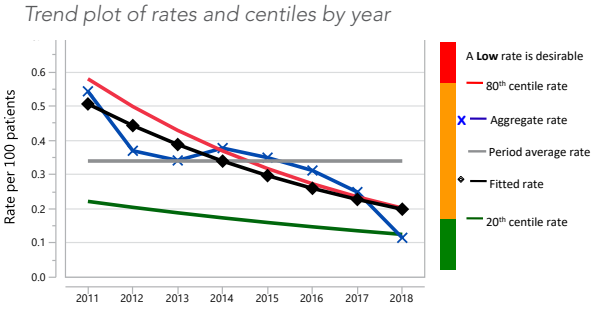


Hospital-Wide

9.2 Laparoscopic cholecystectomy – bile duct injury requiring operative intervention (L)

This rate is markedly decreasing since 2011, with the fitted rate improving from 0.51 to 0.20. The variance between healthcare institutions has been decreasing with a large reduction of outliers in 2018.

Trend plot of rates and centiles by year

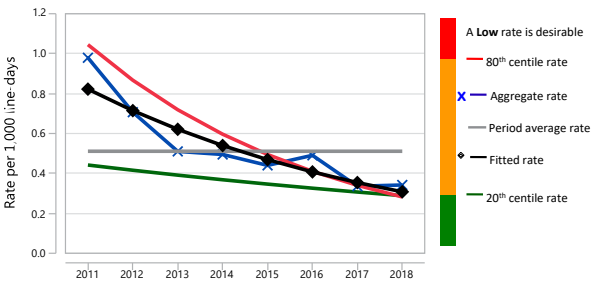


Intensive Care

4.1 Adult ICU-associated CI-CLABSI (L)

The rate of adult ICU-associated centrally inserted central line-associated blood stream infection has decreased from 0.83 to 0.31 in the fitted rate, a change of 0.52 per 1,000 line-days. There has been a large reduction in variance between healthcare organisations.

Trend plot of rates and centiles by year



DETERIORATIONS

In 2018, there were 40 CIs which showed statistically significant trends in the undesirable direction. Of these, 18 remained significant after allowing for changes in the composition of HCOs contributing over the period. It is recommended that HCOs give consideration to determining and to addressing the reasons for the deterioration.

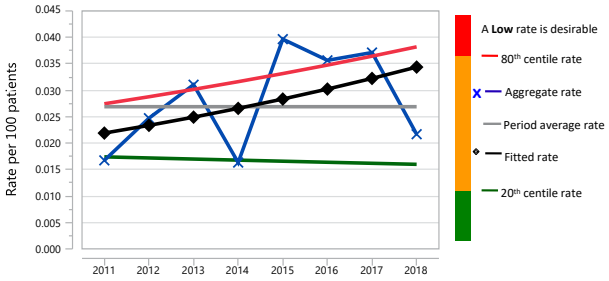
There were noteworthy deteriorations in the following sets:

Gastrointestinal Endoscopy

5.1 Aspiration following endoscopy (L)

The rate of aspiration following endoscopy continues to increase. While the overall rate is increasing the 20th centile has remained flat, which shows that there is an increasing variance between health care organisations which previously didn't exist.

Trend plot of rates and centiles by year

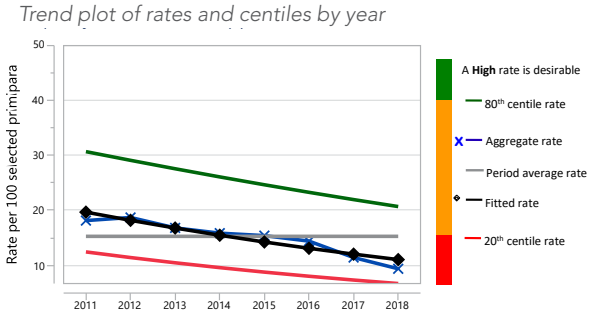


Maternity

3.1 Selected primipara – intact perineum (H)

There has been a decrease in the rate of intact perineum during birth with a decrease from 18.1 per 100 primipara to 9.37 per 100 primipara. This is almost half the previous rate and is continuing to decline steeply. The variance between organisations is decreasing though, as is the number of outliers.

Trend plot of rates and centiles by year

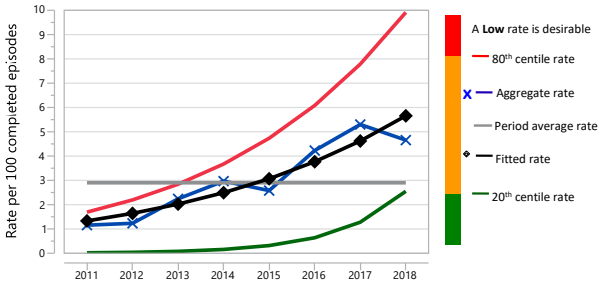


Mental Health

5.5 Physical restraint - 1 or more episodes (L)

The rate of physical restraint is steadily increasing from a fitted rate of 1.3 to 5.6, which is a change of 4.2 per 100 completed episodes. There has been significant increase in the variance between institutions, but all reported healthcare organisations are on a significant upward trend currently.

Trend plot of rates and centiles by year

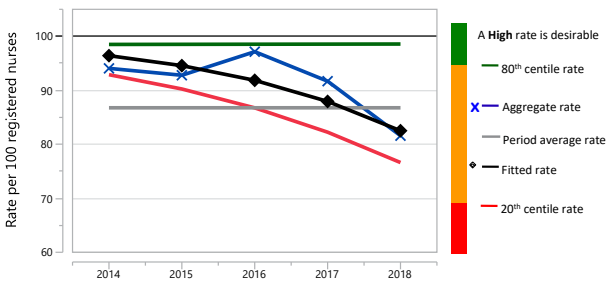


Paediatrics

1.1 Registered nurses with paediatric basic life support qualifications (H)

The rate of registered nurses with paediatric basic life support qualifications is decreasing. This downward trend also has coincided with an increase in healthcare organisations reporting the data. The 20th centile has remained flat, so the performance of the best performers has remained stable.

Trend plot of rates and centiles by year



ABOUT THE ACHS CLINICAL INDICATOR PROGRAM

The Australian Council on Healthcare Standards (ACHS) provides the world's largest dedicated Clinical Indicator (CI) data collection and reporting service. The Clinical Indicator Program (CIP) examines data sourced from a broad range of clinical speciality areas. It includes CIs that are relevant to inpatient, outpatient, and community health facilities, which were developed by specialist clinicians. It is a highly valued program by participating healthcare organisations (HCOs) and is developed by Australian and New Zealand clinicians.

History

The ACHS CIP was established in 1989 through the initiative of Dr Brian Collopy, a surgeon and then Chairman of the ACHS Board, who still remains involved in the program today.

The rationale for introducing the program was to provide measures to support the clinical component of the ACHS accreditation standards and to increase the involvement of medical practitioners in quality improvement initiatives within HCOs. At the time of its introduction, doctors were familiar with the use of measures to assess a patient's health status; however, there were almost no tools to assess the performance of an HCO when delivering clinical care.

The first set of CIs, the Hospital-Wide Medical CIs, was introduced in 1993 and the program has continued to evolve since its inception nearly three decades ago. The program has expanded by working in collaboration with specialist colleges, societies, and associations, to include a wide range of speciality areas, now totalling 20 CI sets.

Clinical Indicators and Healthcare Organisations

CIs are designed to indicate potential problems that may need addressing, rather than to provide definitive answers for HCOs. This is achieved by identifying variations within the data results. CIs are used to assess, compare and determine the potential to improve care within an organisation. They are, therefore, a tool to assist in assessing whether or not a standard of patient care is being met and can provide evidence for accreditation. HCOs select those CIs that are relevant to their organisation.

Clinical Indicators and Accreditation

Accreditation with ACHS has always had a focus on quality improvement. The CIP continues to be free for all HCOs that are accredited by ACHS. The program is one of a number of tools that facilitate the review and improvement of HCO performance. While the data are not a focus for accreditation, assessors are able to monitor the HCO's response to an outlier measure or a deteriorating trend. HCOs and assessors are able to question what was investigated, what was learnt, what action had been, or would be, taken, and finally what was the outcome of those actions.

Supporting Clinical Indicator Program Customers

The Performance and Outcomes Service (POS) at ACHS provides email, telephone, webinar and workshop support to its members, including user access, CI collection assistance clarification on the User Manuals and generation of customised reports.

Strengths of the **CLINICAL INDICATOR PROGRAM**

- Internationally renowned
- Well established with ongoing review of CI sets
- The selection of CIs collected is determined by the HCO
- Collaboration with more than 40 Australasian healthcare colleges, societies, and associations
- CI Working Parties involve wide representation from relevant healthcare colleges, societies, and associations, assisted by consumers and statisticians to ensure relevancy
- External analysis and validation of data by University of Newcastle statisticians
- ICD coding provided (where applicable) to aid data collection
- Current literature review conducted on all new speciality areas available, providing background to the rationale for inclusion
- Developed by clinicians for clinicians to ensure relevancy and currency

ABOUT THE ACHS CLINICAL INDICATOR PROGRAM

Developed by Clinicians for Clinicians

Decisions are made on each CI set by a Working Party selected to provide broad representation. The ACHS POS facilitate the process by providing secretariat support. When developing CIs, ACHS relies on practising clinicians from specialist areas in public and private HCOs. Members of CI Working Parties encompass relevant professions and include personnel from non-metropolitan centres and from a number of different states and territories. The Working Party Chair is selected by the lead college, society or association, which will also oversee and endorse the revised CI User Manual.

Assisting with data analysis and offering support and advice to the Working Parties is the HSRG at the University of Newcastle. Prof Robert Gibberd, who has consulted on the ACHS program for more than 16 years, is supported by Mr Stephen Hancock and a team that has made healthcare data its focus.

Comparisons of Performance

The focus when collecting CI data should always be to identify opportunities for improvement. All participating HCOs receive benchmarking reports that compare their performance to that of all other HCOs submitting data for the CI, and to HCOs from their peer group. Peer groupings are determined by the Working Party and the HCO is then able to select the most appropriate stratification for their organisation. Reports are prepared every six months following data submission. In addition, trend reports are developed annually for HCOs submitting regularly, which enable the HCOs to compare their own trended performance against that of the group overall.

By definition, 20% of all contributors of CI data must be in the poorer performing centile. If an HCO has rates in the poorest 20% of rates, it is not necessarily an indicator of poor performance, especially when variation between HCO rates is relatively small. In the latter case, centile gains will be relatively small. However, being in the poorer performing centile may indicate a greater opportunity for improvement.

As participation in the ACHS program is voluntary, the number of HCOs submitting data for any single CI may be small; therefore the sample may not represent the overall population. Furthermore, participating HCOs are not identified during statistical analysis, which limits comparisons between HCOs. The program's statisticians believe that, in most specialities, with greater numbers comes greater confidence that the data are representative. For this reason, ACHS reports also include outlier data which notify an HCO that their rate is more than three standard deviations from the mean. In conjunction with the centile data, outlier status provides HCOs with a realistic 'snapshot' of their performance against all other reports submitted for a specific CI.

Research in the area of organisational response to CI outcomes has identified the phenomenon of 'data denial', where HCOs are sometimes reluctant to accept the implications of CI data and reject the findings rather than investigate their implications, or seek explanations that are not associated with their own performance. Acceptance of the data as both correct and relevant is the first step towards positive action and change.[1]

It is necessary that clinicians and healthcare executives recognise that a CI result is a marker of change over time, rather than the equivalent of an 'exam result' with its designated pass/fail outcome. Although the ACHS CI reports provide data from multiple HCOs, CI data outcomes should not be considered as 'league tables'.

CIs are so named because they do not provide answers; they 'indicate'. This means an HCO's rate can raise questions for further evaluation. A considered analysis of potential reasons for trends over time and/or variation between HCOs can then be used to highlight quality issues or monitor the progress of quality improvement initiatives.

Clinical Indicator User Manuals

The ACHS CI User Manuals contain greater information about the CIs. Members can access the User Manuals from the ACHS website. The User Manuals include information such as:

- the rationale for CI development
- suggested sources for data collection (including ICD-10-AM codes where applicable)
- desired rates (i.e. whether the organisation should be aiming for a high or low rate)
- stratification variables
- data cleaning rules
- definition of terms
- numerator and denominator details including inclusion and exclusion criteria
- evidence-based information about the CI area

Accompanying resources to the User Manuals are blank templates to assist HCOs to collect their data and retain details of their collection.

REFERENCE
1. Berwick DM, James B, Coye MJ. Connections between Quality Measurement and Improvement. Medical care. 2003 Jan 1; 41 (Suppl 1): 30-38.

FEATURE REPORT

THE ACHS CLINICAL INDICATOR DATABASE

B Collopy FRACS, FRACMA. Clinical Advisor, Performance & Outcomes Service, ACHS
G Dobb AMA Representative, ACHS Council, ACHS Board Member

Introduction

When the Australian Council on Healthcare Standards (ACHS) started collecting clinical indicator (CI) data 26 years ago (January 1993) it was a first for accreditation programs and there were few existing databases in healthcare addressing clinical rather than administrative health data. Now, as Cook and Collins report[1], such databases are ubiquitous and may be used for an overview of population healthcare addressing the processes and outcomes of treatment, the identification of risk factors, comparison of care across regions or facilities and variation in healthcare use and delivery. Amongst the countries with large clinical databases evident from the literature are the United States (US), the United Kingdom (UK), Japan and Denmark. The US has the impressive National Surgical Quality Improvement Program (NSQIP) developed by the American College of Surgeons and Japan also has a large national surgical database, which is relied upon for Specialty Board appointments. Denmark has a government-funded national program comprising a multiplicity of smaller databases, to which reporting is mandatory. Sorensen et al however have noted[2], it is to an extent an 'untapped' resource. The same can be said for the ACHS database, to which reporting is voluntary.

Size of the database

The annual 'long reports' of the data for the 20 CI sets contain data on more than 300 CIs. The data analysis, which is performed by the Health Services Research Group (HSRG) of the University of Newcastle is usually 600 pages or more in length. The percentage of clinical care provided annually in Australia, which is reported in the data, varies with each CI set. Approximately 15% of annual services are reflected in the anaesthetic set and there is information on approximately 35% of hospital admissions in some of the CIs in the hospital-wide set. The numbers can be large, for example in the decade 2008-2017 the denominator for the unplanned re-admissions CI was more than 32 million patient separations and the average rate for that CI through that decade was 1.24%.

Effects on the CI data

The most effective result of the introduction of this voluntary CI program has been the in-house review and subsequent actions taken by healthcare organisations (HCOs) following review of the peer comparative data they receive six-monthly. In the first few years of the program, the ACHS received qualitative data advising of the actions taken and these fell into six main groups, namely:

- a further quality audit/activity;
- an educational program;
- policy/procedure changes;
- staff changes;
- equipment changes; and
- other.

As each CI set is reviewed and revised (usually three-yearly) a survey of HCOs is performed and one of the questions asked seeks information on actions taken. These same six types of action continue to be reported, as seen in *Table 2*, which reflects the actions taken in 2017 by HCOs following receipt of their data for one set - the hospital-wide CIs. Surveys concerning the two other sets reviewed and revised in 2017 revealed a further 110 actions taken. Thus 230 actions were reported after review of data for just three of the 20 CI sets in that one year. It is not surprising therefore that data analysis over time has enabled recognition of desirable trending for a variety of CIs, for example:

- an increase in the percentage of pre-anaesthetic consultations *(Figure 1);*
- an increase in the percentage of mothers receiving prophylactic antibiotics prior to caesarean section;
- a decrease in the rate of negative histology in children having an appendicectomy;
- a decrease in the number of mental health patients discharged on three or more psychotropic drugs *(Figure 2).*

Table 2. Responses to 2017 CI data[7]
(48 HCOs reported 120 actions on data from 1 CI set)

Action	Number
Quality activity	29
Education	33
Policy/Procedure change	37
Staff change	3
Equipment change	10
Other	8

The likelihood that the CI program can influence real, sustainable change in clinical practice is apparent from the early improvement seen to occur with many of the CIs within the first two to three years of their introduction, as shown in *Figures 1.* and *2.*

Figure 1. Pre-anaesthetic Consultation

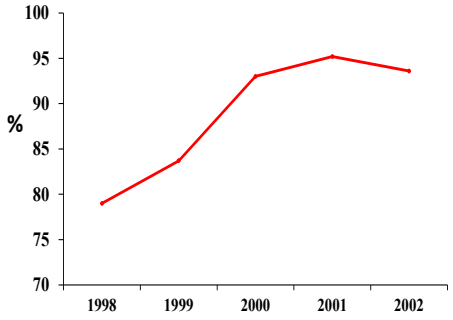
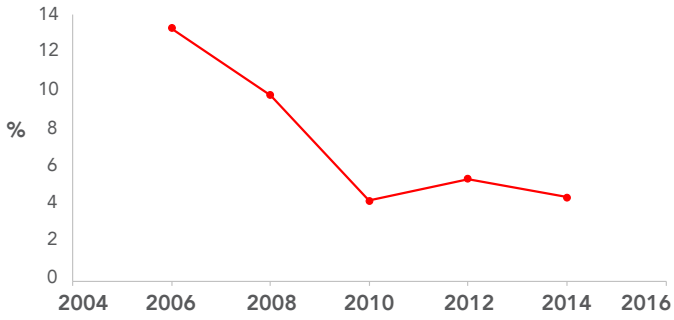


Figure 2. Inpatients on 3 or > psychotropic drugs discharge



Data use for international comparisons

The Quality in Australian Health Care Study of adverse events[3] received considerable attention at the time of publication and subsequently in 1995. It contrasted an adverse event (AE) rate in Australian hospitals of 16.6% with an AE rate of 3.7% in US hospitals, using the same study method. There was considerable concern about the comparison, but data which received less attention at the time were the associated mortality rates, being 13.6% in America but only 3.7% in Australia. The data source reviewers for each study clearly had different thresholds for an AE[4].

Using the ACHS national database can clearly demonstrate that clinical standards of care in Australia are not inferior to other countries. This has previously been demonstrated in a comparison of complications following laparoscopic cholecystectomy, repair of abdominal aortic aneurysms, carotid endarterectomy and hip joint replacement[5]. Occurrence of the colonoscopic complications of bleeding and perforation (post-polypectomy) shown in the ACHS database have also been well within internationally accepted rates[6]. Comparison in other areas of patient care requires identification of 'like' indicators. Some examples of other comparative data, using approximately similar measures, are shown in *Table 3.*

Table 3. International comparison of CI data on selected CIs

Indicator	ACHS rate	International rate
Post-operative recovery room Temp < 36°C[8]	2.34% [7]	4% [8]
Successful percutaneous coronary angiography[9]	96.1% [7]	97% [9]
Discharge from ICU between 6 pm and 6 am[10]	14.6% [7]	17.9% [10]
Injury to a viscus in gynaecological surgery[11]	0.26% [7]	0.2-0.6% [11]
Caesarean section rate[12,13]	30.4% [7] (primipara)	26% [12] (nullipara) 54% [13] (multipara)

Strengths and shortcomings

A major strength of the CI program is that the CIs are developed and reviewed in collaboration with the relevant Colleges and specialist associations and societies. This helps to ensure clinical relevance, with the focus being on clinically important and patient-centred outcomes. The process also helps to ensure that existing resources should be sufficient to allow data collection and monitoring of the CIs. Together, these factors enhance the clinical credibility of the CI data and comparisons between HCOs.

Nevertheless, participation in some of the CI sets is relatively low. Some of the reasons for this may include competition from other datasets including specialty and sub-specialty registries with clinicians putting their energy and time into these rather than the ACHS CIs. Weaknesses of the specialty and sub-specialty registries are that they do not integrate and therefore do not provide HCOs with an overall picture of their performance, and the information is often too detailed for review at HCO Executive or Board level. This may present a future opportunity for ACHS to work with these registries and their owners to include a subset of the registry outcomes in the ACHS CI dataset.

Other alternatives to the CI dataset are reports based on administrative datasets. While these are based on 'big data', they are often incomplete and are critically dependant on the timeliness and accuracy of clinical coding. Despite its

importance to most HCOs for funding, many audits of coding reveal significant inaccuracies. The relative lack of content validity in turn affects the clinical credibility of the reports based on the data, despite them providing an HCO-wide perspective on performance.

For most ACHS CIs the sample size is more than sufficient to provide assurance for benchmarking purposes and the statistical analysis provided is designed to assist HCOs in their interpretation. These, together with the robust time-series data provided in CI reports, are the major strengths of the ACHS CI program.

Future

The demand from HCO Executives, Boards and the public for information that provides assurance of safety and quality in healthcare has never been greater. The ACHS CI program and its reporting framework remain ideally positioned to be the 'go to' source of independent benchmarking information. The expectations from the public and HCOs are ever increasing, however, in terms of the presentation and completeness of the information available and the frequency of reports. The ACHS is aware to these expectations and will continue to work with the Colleges and specialist associations and societies to ensure the database and its reports meet the expectations as they evolve.

Conclusions

The ACHS national clinical database is a large one and one of its main strengths is its diversity. Its influence on the processes and outcomes as a stimulus to improve patient care can clearly be demonstrated in the favourable trend data observed to occur with many of the CIs early after their introduction. Where similar performance measures have been published the ACHS CI data compare favourably with international standards. However, of concern is the considerable variation in the numbers of HCOs reporting data on some of the CI sets. This is in part due to the requirement for HCOs to now report clinical data elsewhere to government or clinical societies, increasing the data collection burden. The ACHS recognises a need, not only to continue to improve the quality and value of its clinical database, but to promote the knowledge and use of it more widely to ensure continued improvement in patient care.

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THE CLINICAL INDICATOR PROGRAM: KEY FACTS 2018

In this *Australasian Clinical Indicator Report 20th Edition 2011-2018*, there are a total of 20 CI sets and in 2018 there were data submitted for 323 of the possible 332 CIs across these sets. Data within this report are submitted from HCOs from every state and territory within Australia and HCOs within New Zealand. These HCOs are from both the public and private sectors, and from metropolitan and non-metropolitan regions.

Clinical Indicators and data submissions

Participation in the CI Program is voluntary for HCOs. Between 2011 and 2018, the number of HCOs participating in the CI Program increased from 690 in 2011 to a peak of 825 in 2015 then decreased to 656 in 2018. This change was due to changes in the number of public HCOs reporting. While some organisations submit intermittently, most organisations make two submissions to each of their selected CIs in a year. The data are analysed and comparison reports are prepared every six months.

In 2018, the total number of six-monthly data submissions generated was 28,820. The number of submissions from the private and public sectors were 16,260 and 12,560 respectively. The highest number of six-monthly data submissions over the period 2011 to 2018 was 35,158 in 2011.

Table 4 gives the number of CIs and sets by sector, the number of reporting HCOs and the number of six-monthly CI data submissions.

Table 4: Number of CI sets, CIs, HCOs reporting and data submissions in 2011-2018

	2011	2012	2013	2014	2015	2016	2017	2018
Clinical Indicator Sets	22	22	22	22	21	20	20	20
Clinical Indicators	353	335	338	328	314	318	324	332
Reporting HCOs								
Private	330	329	316	317	314	302	307	308
Public	360	341	415	490	511	434	374	348
Total	690	670	731	807	825	736	681	656
Submissions *								
Private	16,732	16,539	15,597	16,022	15,931	15,481	15,912	16,260
Public	18,426	18,354	17,298	16,615	15,192	14,745	13,696	12,560
Total	35,158	34,893	32,895	32,637	31,123	30,226	29,608	28,820

* CI data are submitted every six months. Most HCOs submit data twice a year; however, some submit data for one-half of the year only.

HCOs reporting

Until 2012 there were similar numbers of public and private HCOs reporting. In 2018, there was more public than private HCOs reporting, 374 and 307 respectively. The geographic breakdown of the number of public and private HCOs submitting data is presented in *Table 5*. There were 431 metropolitan HCOs and 225 non-metropolitan HCOs participating in the Clinical Indicator Program in 2018.

Table 5: Number of HCOs reporting by state, sector and metropolitan/non-metropolitan characteristics in 2018

Location	Private	Public	Metropolitan	Non-metropolitan	Total
New South Wales	121	105	155	71	226
Victoria	66	103	91	78	169
Queensland	65	28	66	27	93
South Australia	20	75	57	38	95
Western Australia	18	22	36	4	40
Tasmania	7	5	8	4	12
Australian Capital Territory	8	3	11	0	11
Northern Territory	1	5	3	3	6
New Zealand	2	2	4	0	4
Total	**308**	**348**	**431**	**225**	**656**

THE CLINICAL INDICATOR PROGRAM: KEY FACTS 2018

Clinical Indicators reported by each HCO

In 2018, the average number of individual CIs reported was 24.0, with half of all HCOs reporting between nine and 33.5 CIs (25th and 75th centiles). The variation in the number of CIs reported by each HCO is mostly due to the different services provided by the HCO. For example, not all HCOs have an emergency department, intensive care unit, obstetrics, paediatrics or other specialities.

During the last five years, the mean and median number of CIs collected by individual HCOs in each year has remained relatively stable. The median number of CIs collected varied between 16 and 17 and the mean varied between 21.2 and 24.0.

Table 6 shows that in 2018 there were five CI sets with at least 150 HCOs providing data. While there are six CI sets where fewer than 50 HCOs participate, a small number of HCOs may still provide a representative sample of all HCOs in Australia and New Zealand for some CIs. However, from a quality improvement perspective, it means that these HCOs have less data with which to determine whether the clinical areas in these sets could potentially improve their performance.

Table 6: HCOs providing data for one or more CIs within each CI set in 2011-2018

Clinical Indicator Set	2011	2012	2013	2014	2015	2016	2017	2018
Anaesthesia and Perioperative Care	292	288	273	261	250	241	241	242
Day Patient	393	370	337	318	308	290	280	277
Emergency Medicine	195	181	174	150	137	137	112	96
Gastrointestinal Endoscopy	95	91	77	78	76	80	79	77
Gynaecology	78	65	58	52	58	61	66	60
Hospital in the Home	40	37	39	34	30	17	19	20
Hospital-Wide	481	478	466	468	525	486	431	418
Infection Control	324	334	424	424	401	351	345	343
Intensive Care	98	104	102	107	96	93	91	89
Internal Medicine	84	74	62	46	36	32	25	25
Maternity	186	188	184	175	170	166	157	144
Medication Safety	284	259	260	269	276	265	268	275
Mental Health	128	125	119	118	105	84	93	93
Ophthalmology	86	77	72	75	64	66	55	53
Oral Health	15	15	14	84	90	92	86	88
Paediatrics	47	40	37	11	29	27	21	35
Pathology	42	42	40	44	39	35	38	34
Radiation Oncology†	18	20	17	14	14	13	8	9
Radiology†	60	69	64	41	40	41	35	23
Rehabilitation Medicine	126	122	115	105	102	122	120	121
Any Clinical Indicator	**690**	**670**	**731**	**807**	**825**	**736**	**681**	**656**

†Revised Clinical Indicator set introduced in 2018

CLINICAL INDICATOR TRENDS AND VARIATION

Revealing the potential to improve performance

Within an individual facility, fluctuations in performance compared to the overall performance of the submitting HCOs may focus attention on areas for further investigation.

From a health system perspective, the goal would be to see an overall trend in the desired direction. For the majority of CIs which are process-based, a decrease in variation between the best performing HCOs and the remainder would demonstrate improvement across the system.

Using trends and variation from a systems perspective

The *Australasian Clinical Indicator Report* shows the trends in the rates for each CI (if four or more years of data are available) and three measures of the variation in rates between HCOs. The variations in clinical practice are quantified by the differences between the 20th and 80th centiles, the differences between the strata, and the rates for the HCOs that are outliers. The report also estimates the potential improvement if:

- the mean rate was shifted to the better centile rate,
- the mean rate was shifted to the best stratum rate, and
- outlier HCOs with less desirable rates were to shift their rate to the mean rate.

This is calculated for each year and is reported using tables and graphs. The text that summarises the results is divided into:

- a summary of the trends in the mean rates and centiles,
- a table of the differences in the strata rates if they are statistically significant, and
- the number of outlier HCOs.

To view the results in full and for more information on the methodology used in this report, refer to the documentation available on the ACHS website (www.achs.org.au/publications-resources/australasian-clinical-indicator-report/) located with this summary report.

Clinical Indicator trends 2011-2018

Of the 332 CIs in 2018, 320 are rate-based CIs, whereby data were collected for all but seven of these CIs. Of these 313 CIs, 302 had a desirable direction specified (high or low rates indicating better care). Trends could be analysed for 165 of the rate-based CIs. The CIs were not analysed for trends if there were less than four years of data, no desirable direction specified or less than five HCOs reporting. Of the 20 sets, 17 had CIs that were tested for trend. Of these, there were 14 CI sets which had more CIs moving in the desired direction than in the undesirable direction. There were eight CI sets that had an improvement in at least two-thirds of all trended CIs. They were Anaesthesia and Perioperative Care, Day Patient, Emergency Medicine, Gynaecology, Infection Control, Intensive Care, Paediatrics and Rehabilitation Medicine.

Since the trend in CIs can be due to a changing mix of contributing HCOs, the CIs were tested again to determine whether the trend remained statistically significant after allowing for changes in the HCOs submitting data. Of those 104 statistically significant trends in the desirable direction, 63 remained significant after allowing for changes in the HCOs submitting, and of those 40 CIs whose trends were deteriorating, 18 remained significant. There were 21 CIs that showed no statistically significant trend. The trend results are summarised in *Table 7*.

CLINICAL INDICATOR TRENDS AND VARIATION

Table 7: Summary of the trends by CI set: CIs that have statistically significant ($p<0.05$) trends† in the desirable or undesirable direction

Clinical Indicator Set	Number of CIs*	Number analysed†	Desirable trend‡	Undesirable trend‡	No Trend
Anaesthesia and Perioperative Care	18	16	11 (1)	5 (0)	0
Day Patient	14	14	11 (5)	2 (0)	1
Emergency Medicine	21	7	6 (4)	1 (1)	0
Gastrointestinal Endoscopy	11	11	6 (5)	3 (3)	2
Gynaecology	8	7	5 (5)	0 (0)	2
Hospital in the Home	9	0	-	-	-
Hospital-Wide	26	26	15 (8)	4 (2)	7
Infection Control	26	17	14 (10)	2 (0)	1
Intensive Care	15	5	5 (3)	0 (0)	0
Internal Medicine	18	5	3 (2)	1 (0)	1
Maternity	20	18	6 (6)	11 (8)	1
Medication Safety	20	12	6 (1)	4 (0)	2
Mental Health	27	4	1 (1)	3 (2)	0
Ophthalmology	17	7	4 (3)	1 (1)	2
Oral Health	9	5	3 (2)	1 (0)	1
Paediatrics	14	3	2 (1)	1 (1)	0
Pathology	16	0	-	-	-
Radiation Oncology	9	2	1 (1)	1 (0)	0
Radiology	9	0	-	-	-
Rehabilitation Medicine	6	6	5 (5)	0 (0)	1
Total	313	165	104 (63)	40 (18)	21
Percent of tested		100%	63% (38%)	24% (11%)	13%

* Includes only rate-based CIs where the desired rate is specified as either high or low.
† Trends are not reported for CIs with less than four years of data, or fewer than five HCOs reporting, and only rate-based indicators with desirable rate High (H) or Low (L) were tested.
‡ The number in brackets is the number of CIs that had statistically significant trends after allowing for changes in the HCOs contributing the data.

CLINICAL INDICATOR TRENDS AND VARIATION

Variation in Clinical Indicator rates

Calculating relative risk from the centiles

Given that HCOs may be large or small, there is a need to control for the differences in the random variations or confidence intervals for each HCO. To this end, 'shrunken rates' are used. The standard deviations of these 'shrunken rates' could be presented as a measure of variation between HCOs. These distributions are not symmetrical so the 20th and 80th centiles are reported. The region between these centiles contains the 'shrunken rates' for 60% of HCOs and the difference between the 20th and 80th centiles is approximately twice the standard deviation of the rates.

A measure that can be used from the centiles is the relative risk (RR) of having an event when the poorer centile applies compared to when the better centile applies. The relative risk is used to identify CIs where there is large systematic variation in rates. If the better rate is the 20th centile, then the RR is the ratio of the 80th centile to the 20th centile rates, R(80) and R(20). The formula is as follows:

When the desired level is low:

R(20) is the better rate of undesirable events (rates are usually less than 0.5).

$$\mathbf{RR} = \frac{R(80)}{R(20)}$$

When the desired level is high:

1-R(80) is the better rate of non-occurring events.

$$\mathbf{RR} = \frac{1\text{-}R(20)}{1\text{-}R(80)}$$

The RR will be calculated for CIs where there were 20 or more submissions and potential gains of at least five events. The RR was thus calculated for 186 CIs.

While the formulae may appear somewhat daunting, the interpretation is clear. Greater values in the RR indicate greater systematic variation in rates for a given CI, and it may be appropriate to determine the causes of these variations.

Table 8 shows that there are 60 CIs (32% of those tested) with high RR (≥10). These occur in 17 of the 18 CI sets tested, and six CI sets had more than half the CIs having high RR.

CLINICAL INDICATOR TRENDS AND VARIATION

Table 8: Relative Risk (RR) for CIs in each CI set – a high relative risk reveals high systematic variation between HCOs

Clinical Indicter Set	Number of CIs	CIs tested*	RR: 1 to <2	RR: 2 to <10	RR: ≥10	% ≥10
Anaesthesia and Perioperative Care	18	12	1	4	7	58%
Day Patient	14	14	-	4	10	71%
Emergency Medicine	21	12	2	9	1	8%
Gastrointestinal Endoscopy	11	6	2	3	1	17%
Gynaecology	8	6	-	5	1	17%
Hospital in the Home	9	3	-	2	1	33%
Hospital-Wide	26	16	3	10	3	19%
Infection Control	26	22	4	14	4	18%
Intensive Care	15	8	-	1	7	88%
Internal Medicine	18	-	-	-	-	0%
Maternity	20	18	12	5	1	6%
Medication Safety	20	6	-	2	4	67%
Mental Health	27	17	-	11	6	35%
Ophthalmology	17	8	1	5	2	25%
Oral Health	9	9	6	3	-	0%
Paediatrics	14	4	-	1	3	75%
Pathology	16	15	-	11	4	27%
Radiation Oncology	9	-	-	-	-	-
Radiology	9	4	-	3	1	25%
Rehabilitation Medicine	6	6	-	2	4	67%
Total	**313**	**186**	**31**	**95**	**60**	**32%**
Percent of tested			**17%**	**51%**	**32%**	

* The relative risk can only be calculated where the centiles are not zero or 100%. CIs with 20 or more submissions and where the potential gains of the CI are at least five are included in this analysis. Only rate-based indicators with desirable rate High (H) or Low (L) were tested.

CLINICAL INDICATOR TRENDS AND VARIATION

Clinical Indicators with significant variations between strata

For each CI, the detailed results identify whether there were statistically different mean rates for 2018 between the three strata: Australian states and territories/NZ, public/private and metropolitan/non-metropolitan. This section summarises those results, by identifying the stratum that explains most of the variation in 2018. *Table 9* shows the number of CIs that were analysed, and how many had significant stratum differences by CI set.

Table 9: Number of CIs whose mean rates were statistically significantly different by Australian states and territories/New Zealand, public/private, metropolitan/non-metropolitan in 2018

Clinical Indicator Set	Number of CIs	CIs tested#	State / NZ	Public / private	Metropolitan / non-metropolitan	Any Stratum
Anaesthesia and Perioperative Care	18	11	3	5	1	8
Day Patient	14	14	2	8	0	9
Emergency Medicine	22	10	6	0	2	6
Gastrointestinal Endoscopy	11	9	2	2	0	3
Gynaecology	8	5	1	2	0	3
Hospital in the Home	12	2	2	0	0	2
Hospital-Wide	26	22	10	5	1	12
Infection Control	26	23	5	2	0	6
Intensive Care	16	10	2	6	2	6
Internal Medicine	20	0	0	0	0	0
Maternity	20	19	10	9	1	15
Medication Safety	20	6	5	1	2	5
Mental Health	29	19	8	3	1	10
Ophthalmology	17	4	4	3	0	5
Oral Health	10	9	5	0	2	6
Paediatrics	14	1	1	0	0	1
Pathology	17	7	6	0	0	6
Radiation Oncology	9	0	0	0	0	0
Radiology	17	2	1	0	0	1
Rehabilitation Medicine	6	6	0	4	0	4
Total	**332**	**179**	**73**	**50**	**12**	**108**
Percent of tested			**41%**	**28%**	**7%**	**60%**

#At least ten HCOs must submit for the CI to be tested. Only rate-based indicators with desirable rate High (H) or Low (L) were tested.

In 2018 there were 73 CIs with significant differences in mean rates between states and territories of Australia/New Zealand, notably in Hospital-Wide (10), Maternity (10), Mental Health (8) and Pathology (6).

Significant differences between the mean rates for the public and private strata were found in 50 CIs, notably in Day Patient (8), Intensive Care (6) and Maternity (9).

There were 12 CIs with significant differences between metropolitan and non-metropolitan participants.

CLINICAL INDICATOR TRENDS AND VARIATION

Outliers

Clinical Indicators and HCOs with significantly different rates

This section uses the data for 2018 to identify desirable and less desirable rates. If a shrunken rate was more than three standard errors from the overall rate, this was considered to be statistically significant. These rates are called outliers.

The reporting of HCOs that are outliers is more relevant to the individual HCOs. Participating HCOs receive reports identifying those areas where their rates are statistically significantly different from the overall rate. Outliers are summarised in this report to show that they occur in all sets, and in sufficiently large numbers to suggest that all HCOs would benefit from reviewing their results.

Of the 313 rate-based CIs (with rates that are not 0 or 100%) and 28,504 six-monthly data submissions, those CIs with no preferred direction or CIs that had less than 20 six-monthly data submissions in 2018 were excluded. There remained 210 CIs and 26,840 individual data submissions.

For the 210 rate-based CIs that had a desirable direction and more than 20 six-monthly data submissions, a summary of the number of outlier data submissions is given in Table 10. The proportion of data submissions that were outliers with a desirable direction was 14.1%. The proportion with less desirable rates was 10.4% and the remaining 75.5% of submissions were not outliers in either direction. These proportions varied between the specialities.

In 2018, six sets had more than 15% of submissions classified as outliers in the undesirable direction. They were Emergency Medicine (18%), Intensive Care (19%), Mental Health (16%), Pathology (26%), Radiology (25%) and Rehabilitation Medicine (17%). Nine CI sets, including the just mentioned four sets, had a greater number of six-monthly data submissions in the favourable direction than in the unfavourable direction.

Table 10: Number of CIs, HCOs reporting and data submissions that were outliers in 2018

Clinical Indicator Set	Number of CIs	CIs tested#	HCOs	Data submissions	Undesirable	Desirable
Anaesthesia and Perioperative Care	18	12	242	1,838	12%	26%
Day Patient	14	14	277	3,820	12%	18%
Emergency Medicine	22	12	96	1,120	18%	45%
Gastrointestinal Endoscopy	10	10	77	816	5%	1%
Gynaecology	8	6	60	313	7%	1%
Hospital in the Home	10	3	19	82	-	-
Hospital-Wide	23	22	418	5,725	10%	12%
Infection Control	26	26	343	2,704	5%	4%
Intensive Care	15	9	89	1,002	19%	30%
Internal Medicine	20	-	-	-	-	-
Maternity	19	19	144	3,768	6%	6%
Medication Safety	19	6	267	777	11%	8%
Mental Health	26	19	92	1,375	16%	22%
Ophthalmology	17	13	53	550	3%	6%
Oral Health	10	9	88	997	6%	4%
Paediatrics	13	4	31	123	-	-
Pathology	16	15	34	549	26%	38%
Radiation Oncology	9	-	-	-	-	-
Radiology	17	5	23	150	25%	1%
Rehabilitation Medicine	6	6	121	1,131	17%	8%
Total	**318**	**210**	**656**	**26,840**	**10%**	**14%**

#CIs with less than 20 six-monthly data submissions were excluded. Only rate-based indicators with desirable rate High (H) or Low (L) were tested.

CLINICAL INDICATOR TRENDS AND VARIATION

Of those CIs with a high proportion of outliers (at least 20%), three quarters were process measures such as access block in emergency departments and intensive care units, delays in reporting test results in pathology and radiology, and documentation of and review processes in mental health and medication safety. About one quarter were outcome measures, such as adverse events, delays, unplanned transfers, deaths, assaults, retreatment and falls.

Each of the 210 CIs tested were categorised according to whether there were:

- no outlier six-monthly data submissions
- at least one outlier with undesirable rates, none with desirable rates
- at least one outlier with desirable rates, none with undesirable rates
- outliers with both desirable and undesirable rates

Table 11 reveals that 23 of the 210 CIs had no six-monthly data submissions that were outliers and 135 CIs included both undesirable and desirable six-monthly data submissions as outliers.

Table 11: Number of CIs that had six-monthly data submissions that were outliers in 2018*

			Data submissions		
Outlier category	Number of CIs	Per cent of CIs	Range	Median	Mean
No outliers	23	11%	20 - 291	32	80
Undesirable rates only	49	23%	21 - 698	78	122
Desirable rates only	3	1%	24 - 28	24	25
Outliers – undesirable and desirable rates	135	64%	22 - 749	97	140
Total	**210**	**100%**	**20 - 749**	**84**	**128**

*CIs with no less than 20 six-monthly data submissions were excluded. Only rate-based indicators with desirable rate High (H) or Low (L) were tested.

Can outlier rates be used to rank HCOs?

This has been suggested as a way to improve quality, even though the research literature, in general, does not support the use of 'league tables'.

For the 23 CIs with no outliers, the variation between HCOs was not statistically significant. This means that any ranking would be equivalent to that obtained from tossing a coin or dice. The remaining 187 CIs have six-monthly data submissions that are outliers in the undesirable direction (with or without other outlier submissions in the desirable direction – ***Table 11***).

Each of the 656 HCOs that submitted one or more of the 210 CIs tested were categorised according to whether there were:

- no outlier data submissions
- at least one outlier with undesirable rates, none with desirable rates
- at least one outlier with desirable rates, none with undesirable rates
- outliers with both desirable and undesirable rates

The analyses of the outlier rates by HCO reveal that the desirable rates do not cluster into HCOs that have better performance, but that both desirable and undesirable rates occur in 55% of HCOs (***Table 12***). Furthermore, the table shows that HCOs that report fewer CIs have less likelihood of having both desirable and undesirable rates compared to those reporting a greater number of CIs.

From ***Table 12***, it can be seen that of the 656 HCOs considered, 358 (55%) HCOs have both desirable and undesirable rates whereas only 83 (13%) HCOs have outliers only in the undesirable direction, a total of 441 HCOs (67%) having at least one outlier in the undesirable direction.

CLINICAL INDICATOR TRENDS AND VARIATION

Table 12: Number of HCOs that had CIs that were outliers in 2018*

			Number of CIs			Data submissions		
Outlier category	Number of HCOs	Per cent of HCOs	Range	Median	Mean	Range	Median	Mean
No outliers	108	16%	1 – 23	4	6	1 – 46	6	10
Undesirable rates only	83	13%	1 – 30	9	9	1 – 44	16	16
Desirable rates only	107	16%	2 – 37	16	17	3 – 72	28	30
Outliers – undesirable and desirable rates	358	55%	3 – 98	29	32	4 – 180	53	59
Total	**656**	**100%**	**1 – 98**	**16**	**22**	**1 – 180**	**28**	**41**

*CIs with less than 20 six-monthly data submissions were excluded. Only rate-based indicators with desirable rate High (H) or Low (L) were tested. Hence some of the contributing HCOs are represented in the above table.

The results from ***Table 10*** and ***Table 12*** show that:

- 14.1% of submissions are in the desired direction and 10.4% in the undesirable direction. Thus, the majority of six-monthly data submissions (the remaining 75.5%) are not statistically different from the average (***Table 10***),
- 67% of the 656 HCOs have some clinical areas with rates that are outliers in the undesirable direction (***Table 12***).

THIS SUGGESTS THAT CLINICAL INDICATORS HAVE A GREATER ROLE IN IDENTIFYING AREAS FOR REVIEW, RATHER THAN FOR RANKING PERFORMANCE.

SUMMARY OF RESULTS

A SUMMARY OF THE MAIN OBSERVATIONS FOR EACH SET OF CIs FOLLOWS.

Key for 2011 - 2018 Summary Data sections:

(H) refers to a High desirable rate
(L) refers to a Low desirable rate
(N) refers to a Not specified rate

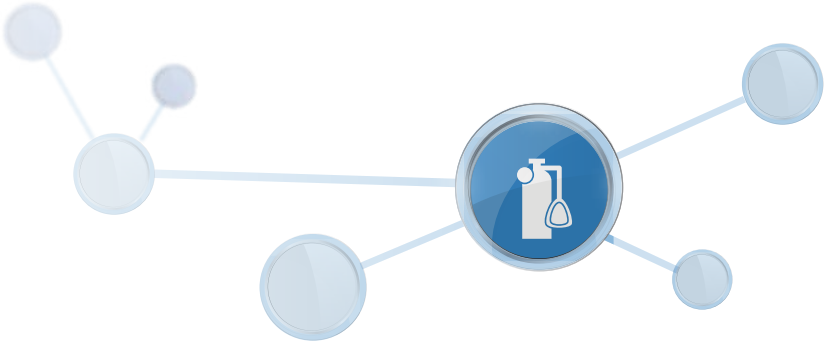
Symbols used in each Clinical Indicator Session

Rates Deteriorating

Rates Improving

Increasing/Decreasing (Desirable rate non-specified)

ANAESTHESIA AND PERIOPERATIVE CARE



GENERAL COMMENTS

Dr Joanna Sutherland
Deputy Chair of Safety and Quality Committee
Australian and New Zealand College of Anaesthetists
Member, ACHS Anaesthesia and Perioperative Care Working Party Version 7

Ideally, high quality anaesthesia clinical indicators will enable clinicians, departments and healthcare organisations improve outcomes which are important to patients. Useful indicators will be evidence based, easy to collect, difficult to misconstrue and the relationship between the selected indicator and relevant outcomes should be clear to funders, clinicians and patients. With valid and robust indicators, it should be possible to establish a performance benchmark which enables comparison between clinicians, departments and healthcare organisations for the purpose of improvement. Individual anaesthetists may collect data to comply with Continuous Professional Development (CPD) programmes. Departments may collect indicator data to promote collegial discussion and engage trainees and others in local improvement initiatives. Finally, healthcare organisations may view collection of relevant indicators as a reasonable way to demonstrate compliance with the standards required for organisational accreditation.

It is expected that most anaesthetists support clinical indicators which align with professional standards as reflected in ANZCA professional documents. Few, if any, of these standards are contentious, however it can be difficult to accurately describe indicators which are valid reflections of the relevant professional standard, and which are free of intra- or inter-observer variability, and hence appropriate for benchmarking and comparison. Indicators which do not have face validity will not be embraced by clinicians. Currently available indicators generally reflect the performance of multidisciplinary perioperative teams, rather than the performance of individual anaesthetists. Opportunities for reporting and reflection on team performance may vary between locations. Indicators which are difficult to collect will be ignored. Finally, accurate benchmarking, in order to drive improvement, will be difficult without valid and reliable measurement.

Anaesthetists, departments and healthcare organisations should be expected to "vote with their feet" where indicator collection is concerned - that is, they will collect indicators which meet their needs, are easy to collect, and produce valid and reliable information. The most commonly collected indicators are those pertaining to the immediate recovery period (3.1-3.5). The least commonly collected indicator is 1.2, relating to documentation of preoperative smoking cessation advice (despite alignment with a clear public health outcome and ANZCA guideline regarding the role of the anaesthetist as health advocate). Of note, those indicators which reflect actual patient outcomes appear to be collected and reported more frequently than those reflecting structures or processes of care.

FEATURE CLINICAL INDICATOR

CI 2.3 Time out procedure: regional analgesia

Wrong side regional anaesthesia blocks have been reported in several countries[1,2,] and anecdotal evidence suggests the same problems have occurred in Australia[3]. This indicator was introduced in the 2014 Version 6 Anaesthesia and Perioperative Care Users Manual. At that time, the working party considered that laterality errors for regional anaesthesia should be preventable with processes such as team "Time Out", which aligns with National Safety and Quality Health Service (NSQHS) Standard 5 (1st edition)[4]. The indicator is a process measure, reflecting the proportion of patients receiving regional anaesthesia who have a documented "Time Out" procedure prior to block insertion.

The number of healthcare organisations collecting this indicator has slowly increased since its introduction. The compliance with the indicator is high, and it appears that there is little variation between organisations collecting the indicator. The indicator may be useful for departments and units (operating theatre suites) wishing to demonstrate compliance with NSQHS Standard 6 (2nd edition) - Communicating for Safety[5].

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ANAESTHESIA AND PERIOPERATIVE CARE

SUMMARY OF RESULTS

In 2018 there were 1,906 submissions from 242 HCOs for 18 CIs. Sixteen were analysed for trend, 11 of which improved, 5 deteriorated and the remainder showed no evidence of trend. In 2018, significant stratum variation was observed in 6 CIs. Fourteen CIs showed greater systematic variation, with centile gains in excess of 50% of all events. Outlier gains in excess of 25% of all events were observed in 13 CIs. See Summary of Indicator Results below.

Summary of Indicator Results

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Preanaesthesia period								
1.1 Preanaesthesia consultation completed by anaesthetist (H)	38	97.7	Private	3 (8%)	1,717 (90%)	1,908 (100%)	1,910	↑ ✓
1.2 Smoking cessation advised in preanaesthesia consultation (H)	1	67.1				23 (96%)	24	
Intraoperative period								
2.1 Presence of a trained assistant (H)	21	88.9	Metropolitan	6 (29%)	6,636 (62%)	10,761 (100%)	10,764	↓ ✗
2.2 Anaesthesia record compliance with ANZCA requirements (H)	48	99.5	NSW	7 (15%)	392 (73%)	536 (99%)	539	↑ ✓
2.3 Time-out procedure: regional anaesthesia (H)	10	99.1					118	↓ ✗
2.4 Prophylactic anti-emetic administered to patients with history of PONV (H)	8	62.2				7 (41%)	17	↓ ✗
Patient recovery period								
3.1 Relief of respiratory distress in the recovery period (L)	182	0.029	Private	15 (8%)	137 (35%)	296 (76%)	391	↓ ✓
3.2 PONV treatment in the recovery period (L)	103	0.738	Private	24 (23%)	2,579 (55%)	4,460 (95%)	4,705	↓ ✓
3.3 Temperature less than 36 degrees Celsius in the recovery period (L)	136	1.97		24 (18%)	11,766 (70%)	16,703 (99%)	16,807	↑ ✗
3.4 Severe pain not responding to pain protocol in the recovery period (L)	176	0.333	Private	32 (18%)	1,579 (36%)	3,458 (79%)	4,383	↓ ✓
3.5 Unplanned stay in recovery room longer than 2 hours (L)	148	0.993		22 (15%)	4,093 (41%)	8,297 (82%)	10,071	↓ ✓

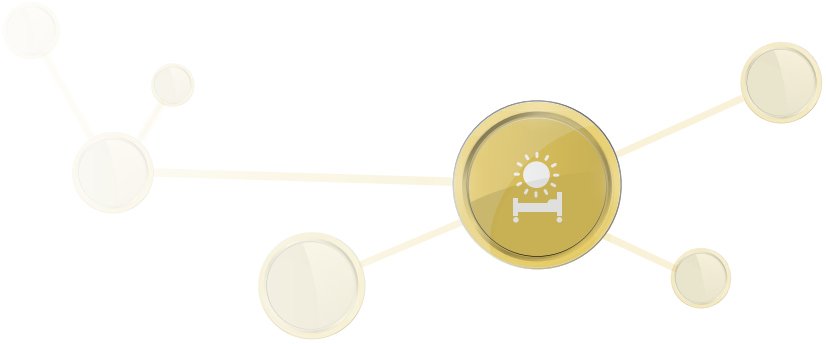
Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

Summary of Indicator Results continued

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Postoperative period								
4.1 Unplanned ICU admission within 24 hours after procedure (L)	113	0.142		17 (15%)	372 (26%)	1,079 (75%)	1,440	↓ ✓
4.2 Documented patient handover - operating suite to recovery area (H)	21	98.8		5 (24%)	472 (71%)	666 (100%)	668	↑ ✓
4.3 Documented patient handover - recovery area to ward (H)	15	96.3		3 (20%)	872 (54%)	1,602 (100%)	1,606	↑ ✓
Management of acute pain								
5.1 Pain intensity scores recorded for surgical patients (H)	11	99.4		2 (18%)	48 (91%)	52 (98%)	53	↑ ✓
5.2 Daily anaesthetist review following postoperative epidural analgesia (H)	7	100					-	↑ ✓
Obstetric anaesthesia care								
6.1 Obstetric patients experiencing post-dural puncture headache (L)	14	0.626				32 (36%)	88	↑ ✗
6.2 Obstetric patients with risks and benefits of analgesia documented (H)	6	99.7		1 (17%)	9 (45%)	18 (90%)	20	

Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

ANAESTHESIA AND PERIOPERATIVE CARE



GENERAL COMMENTS

Ms Mary Kirkwood
Australian Private Hospitals Association
Chair, ACHS Day Patient Working Party Version 6

Day surgery is now a well-established practice with rates still increasing around the world. The growth in the Australian setting is noteworthy: Between 2013/14 and 2017/18, the number of same-day separations increased at a greater rate than overnight separations (5.2% and 2.6% average per year respectively) and even more significantly, same-day separations accounted for 60% of all separations. This is an increase from 58% in 2013/14[1].

The Day surgery model supports high quality patient care with optimum rates of patient satisfaction. Patients endorse day surgery; with smaller waiting times, less risk of cancellation, lower rates of infection, and the preference of their own surroundings to convalesce[2]. Day surgery casemix has also evolved from less invasive and shorter procedures to more complex procedures and a wider casemix. This has been achieved through the advances in medications, anaesthetic and surgical technique, training, resources and equipment.

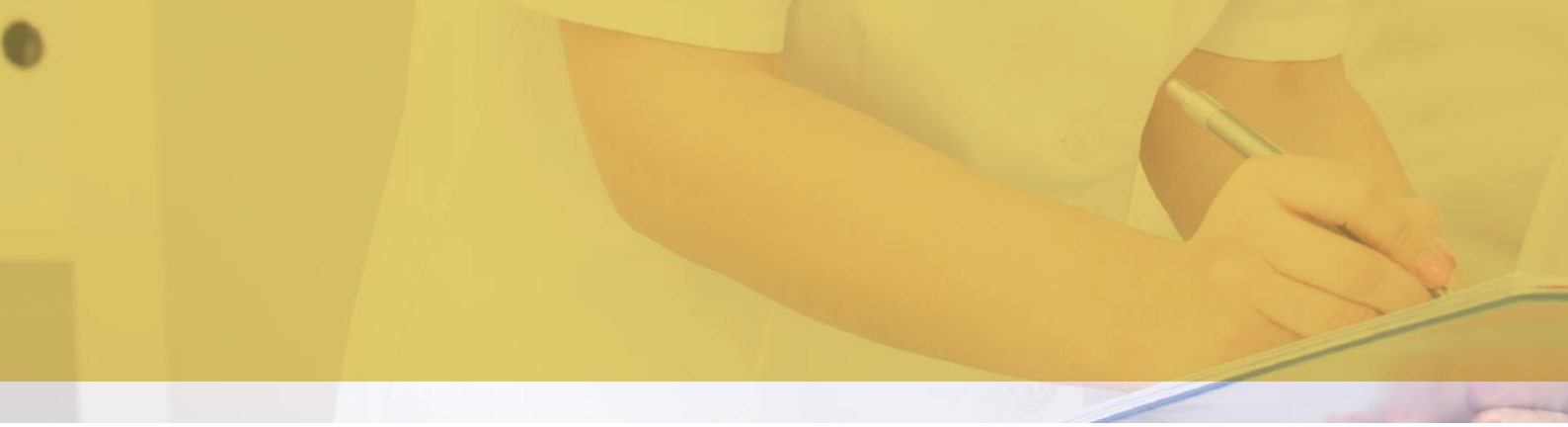
With the revision of national compliance requirements (NSQHS 2nd edition with the introduction of the Clinical Care Standards) and the introduction of state-based Risk and Safer care models, it seems timely to highlight the clinical indicators based around preadmission. Preadmission and the accuracy of the process is vital to the continued safety and growth of day surgery. A robust preadmission service will reduce cancellations and delays, improved productivity, reduce complications, increase patient experience and ultimately enhance patient safety[3]. The indicators in question relate to Preadmission Process (CI 1.1) Procedure non-attendance (CI 2.1) and Procedure Cancellation (CI 3.1, 3.2 and 3.3).

CI 1.1 (Booked patients assessed before admission) has shown a fitted rate improvement of 3.3 per 100 patients. The method of the preadmission contact can be varied - phone, preadmission clinic or even electronic. It would suggest that compliance and best practice is driving this trend, however as discussed at the multidisciplinary working party, there can be explained outliers within this indicator depending on casemix (i.e. oncology).

CI 2.1 (Booked patients who fail to arrive) has shown a fitted rate improvement of 0.33 per 100 patients. Again, the robust preadmission process will support the trend. Rates by State differed (stratum rates 0.28 to 5.37) and could be suggestive of metropolitan vs non-metropolitan HCOs, resources available and varied state government auditing requirements.

CI 3.1 (Cancellation of procedure after arrival due to pre-existing medical condition) has demonstrated a slight improvement (0.018 per 100 patients). An efficient preadmission process requires management of multiple processes, people and communication pathways. The robust process should support expected reduction within this indicator. CI 3.2 (Cancellation of procedure after arrival due to an acute medical condition) displayed no significant trend during 2018. CI 3.3 (Cancellation of procedure after arrival due to administrative/ organisational reasons) showed a fitted rate improvement of 0.064 per 100 patients for 2018. The importance of policy procedure and effective governance of the HCO will support improved rates within this indicator.

Failures to adequately collect, communicate and coordinate preadmission information can lead to decreases in patient safety, operating efficiencies, and ultimately in the satisfaction of patients, staff and surgeons. As we proceed to use the Indicators as a tool and whether this leads to improvement in the quality of patient care will depend not only on properties inherent to the indicator itself, but also on how it is used in practice.



FEATURE CLINICAL INDICATOR

CI 4.1 Patients who experience an adverse event during care delivery

Apart from having a significant impact on patient morbidity and mortality, adverse events can also result in increased healthcare costs and decreased consumer confidence. As referenced in the general commentary; the focus on safer care models as demonstrated by national and state compliance requirements has supported the collection of this indicator. Investigation of adverse events provides information on incidence and can demonstrate areas of risk and preventability whereby with greater recognition there will be improved patient outcomes.

For 2018 the fitted rate improved from 0.13 to 0.067, a change of 0.066 per 100 patients. Significantly there was a 5.76% increase in the number of HCOs reporting the data against the prior year. Full and robust governance, transparency, open disclosure and mandatory reporting are also reinforcing the collection of the indicator.

This indicator reflects the need for a safety culture that learns from adverse events. Thus, measurement of this indicator over time should help us evaluate whether improvements are occurring. Local adverse event data may also highlight patient safety issues that require addressing at an organisational level.

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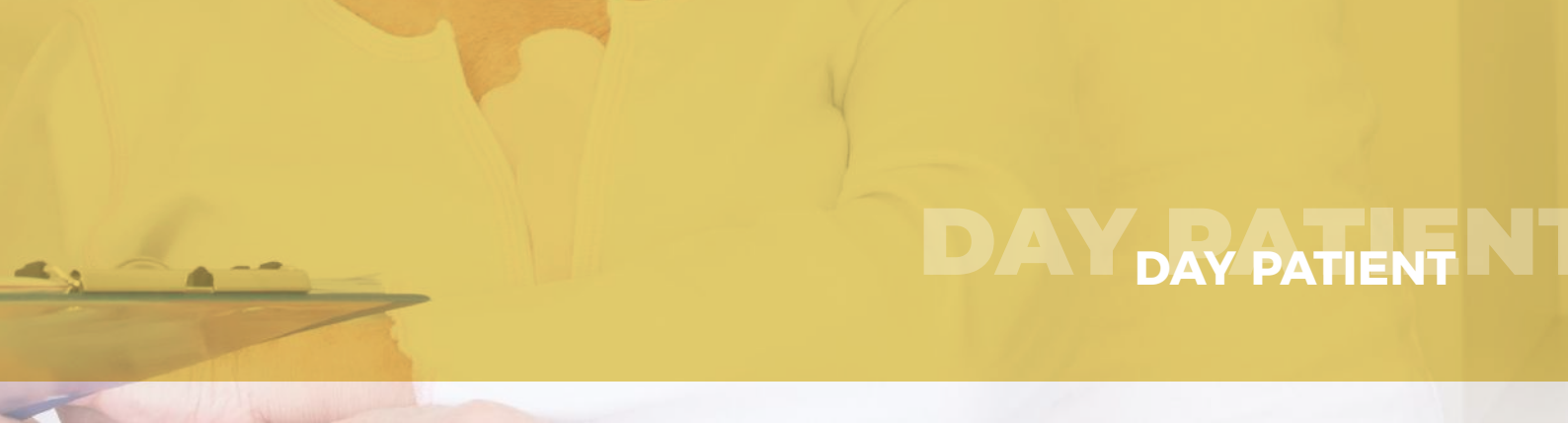


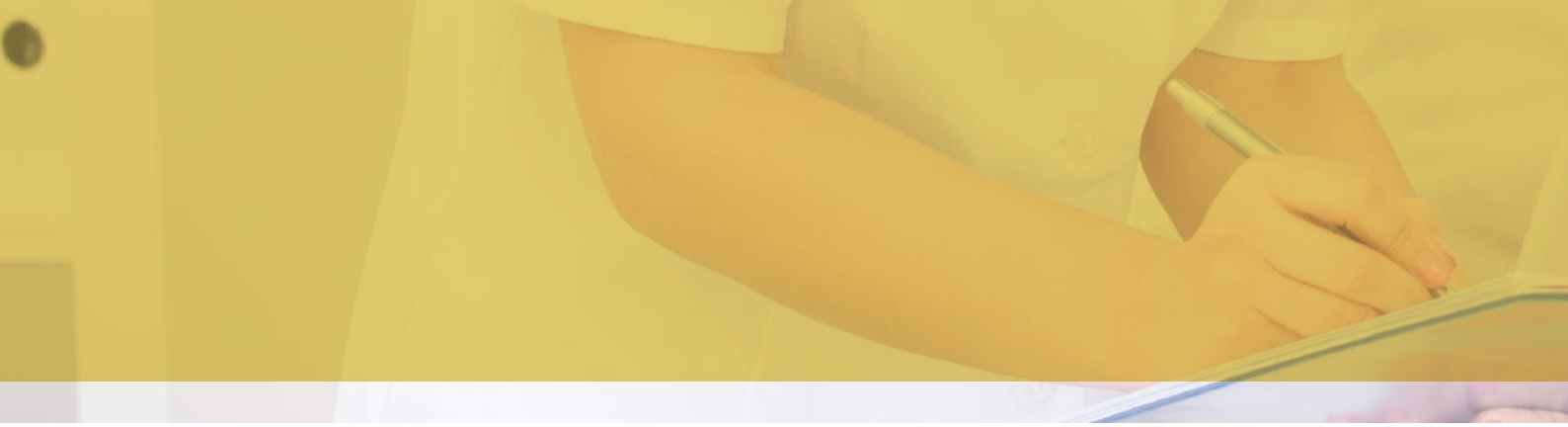
SUMMARY OF RESULTS

In 2018 there were 3,820 submissions from 277 HCOs for 14 CIs. Fourteen were analysed for trend, 11 of which improved, 2 deteriorated and the remaining CI showed no evidence of trend. In 2018, significant stratum variation was observed in 7 CIs. Fourteen CIs showed greater systematic variation, with centile gains in excess of 50% of all events. Outlier gains in excess of 25% of all events were observed in 14 CIs. See Summary of Indicator Results below.

Summary of Indicator Results

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Preadmission preparation								
1.1 Booked patients assessed before admission (H)	76	91.8	Private	15 (20%)	9,677 (66%)	14,707 (100%)	14,715	↑ ✓
Procedure non-attendance								
2.1 Booked patients who fail to arrive (L)	199	0.559		38 (19%)	2,513 (59%)	4,117 (96%)	4,280	↓ ✓
Procedure cancellation								
3.1 Cancellation of the procedure after arrival due to pre-existing medical condition (L)	227	0.183	Private	30 (13%)	483 (29%)	1,199 (73%)	1,644	↓ ✓
3.2 Cancellation of the procedure after arrival due to an acute medical condition (L)	228	0.237		32 (14%)	966 (38%)	1,966 (77%)	2,568	
3.3 Cancellation of procedure after arrival due to administrative/ organisational reasons (L)	223	0.556	Private	41 (18%)	2,953 (59%)	4,606 (93%)	4,979	↓ ✓
Episode of care adverse events								
4.1 Patients who experience an adverse event during care delivery (L)	125	0.0769		11 (9%)	100 (27%)	294 (79%)	372	↓ ✓

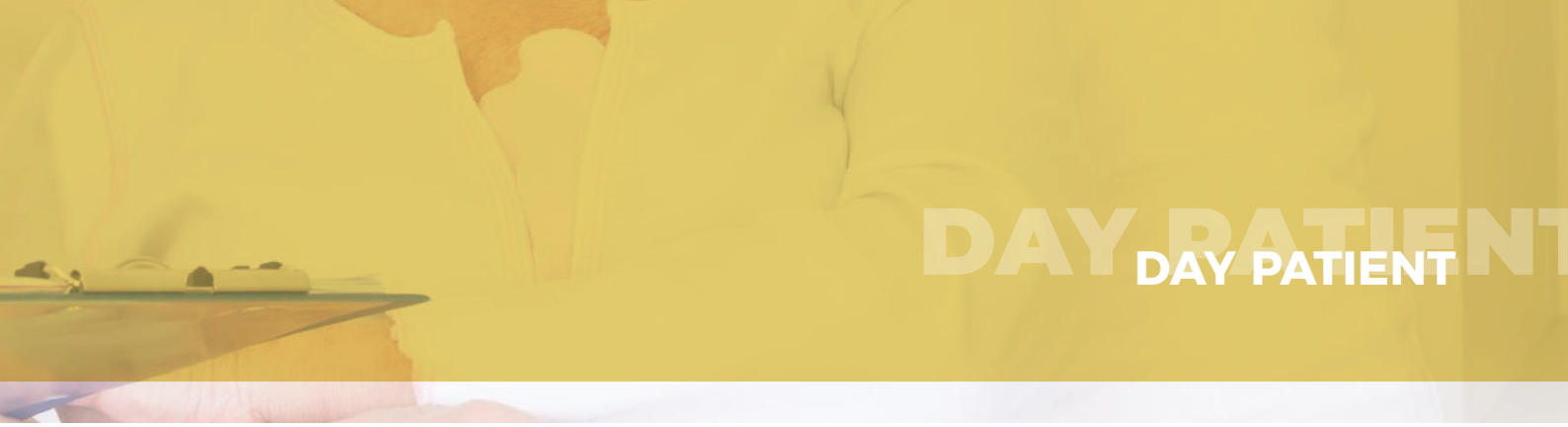
Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs



Summary of Indicator Results continued

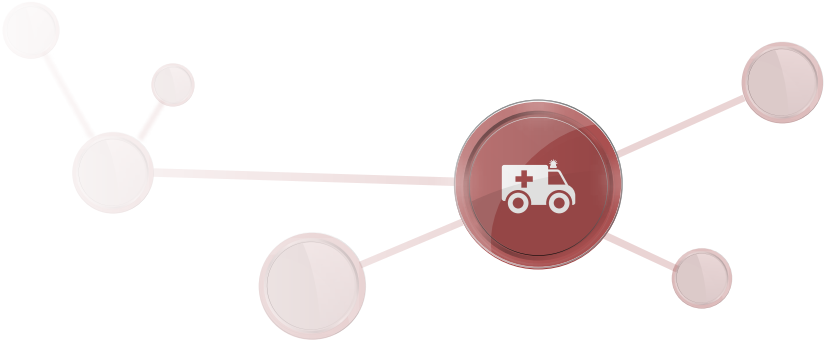
Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Unplanned return to the operating room								
5.1 Unplanned return to operating room on same day as initial procedure (L)	200	0.0367		11 (6%)	99 (34%)	232 (79%)	292	↓ ✓
Unplanned transfer / admission								
6.1 Unplanned transfer or overnight admission related to procedure (L)	217	0.646	Private	42 (19%)	3,083 (42%)	6,626 (90%)	7,327	↓ ✓
6.2 Unplanned transfer or admission related to ongoing management (L)	131	0.364	Private	17 (13%)	807 (49%)	1,522 (92%)	1,661	↓ ✓
Discharge								
7.1 Unplanned delayed discharge for clinical reasons greater than 1 hour beyond expected (L)	127	0.286	Private	21 (17%)	1,033 (62%)	1,519 (92%)	1,653	↓ ✓
7.2 Unplanned delayed discharge for non-clinical reasons greater than 1 hour beyond expected (L)	94	0.611		13 (14%)	1,391 (74%)	1,852 (99%)	1,878	↑ ✗
Departure								
8.1 Departure without an escort (L)	81	0.541		7 (9%)	844 (75%)	1,106 (98%)	1,123	↓ ✓
Post-discharge follow-up								
9.1 Follow-up phone call within 7 days (H)	72	88.1	Private	21 (29%)	8,391 (55%)	15,094 (100%)	15,121	↓ ✗
9.2 Follow-up phone call received by patient or carer within 7 days (H)	77	85.7		18 (23%)	14,853 (53%)	27,805 (100%)	27,847	↑ ✓

Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs



DAY PATIENT

EMERGENCY MEDICINE



GENERAL COMMENTS

Dr Aline Archambeau *Quality and Patient Safety Committee*
Australasian College for Emergency Medicine
Dr Rachel Goh *Quality and Patient Safety Committee - Trainee Representative*
Australasian College for Emergency Medicine

Category 1 – Waiting Time

CI 1.1 (ATS Category 1) is effectively at 100%, which is to be expected for patients presenting with a life-threatening emergency. It is noted that fewer hospitals are again reporting their data, which is disappointing as the data is already gathered for mandatory government reporting. The target of patients to be seen with conditions assessed as imminently life threatening at triage within 10 minutes (CI 1.2) is about 80%. Although this has been achieved in the past, there appears to be a further decline in this being achieved. There appears to be poor performance within Queensland and Western Australia, while the other jurisdictions perform at 80% or slightly better. A decline in organisations' report data is again noted.

This is the second consecutive year that ATS Category 3 (CI 1.3) patients represent the biggest cohort of patients admitted to the Emergency Department (ED). The proportion of patients who are seen within 30 minutes and assessed as being potentially life-threatening or situationally urgent (for example: in severe amounts of pain requiring pain relief), continues to remain suboptimal at 65.1%. This cohort of patients is the least likely to be seen within the required time period, which is disappointing and concerning as they are at risk of deterioration whilst waiting with potentially serious life-threatening pathologies. New South Wales and Victoria achieved an average of 75.5% and 81.3% respectively, however, other jurisdictions are around or below 50%. Resources have been focused on improving targets for Categories 1, 2, 4 and 5 patients, through mechanisms such as notification for Categories 1 and 2 or streaming into fast track areas for Categories 4 and 5. Category 3 patients require more focused effort to improve waiting times. A decline in the number of hospitals reporting data is noted.

There continues to be a gradual improvement in time to be being seen in CI 1.4 (ATS Category 4), overall achieving a rate of 74.2%. However, Western Australia and "other" jurisdictions continue to perform considerably worse than other states. The continued improvement in these figures is likely due to implementation of the streaming model of care seen in most EDs. Despite these improvements, it is important that a focused effort is maintained given the ongoing increased numbers of presentations to EDs. Once again, the number of hospitals reporting data for CI 1.5 (ATS Category 5) has decreased. On average, 91.5% of Category 5 patients are seen within the two hour target, which is a continued small improvement from 2017.

Interestingly, the number of hospitals reporting data for CI 1.6 (Patients who left the ED after triage without being seen) has again increased. The number of patients who left after triage without being seen has continued to fall, sitting at 2.95%. However, it remains a concern that patients have arrived, fearing health concern and leave without being seen. These are often our most vulnerable patients, including mental health or socially isolated patients.

Category 2 – STEMI Management

There is an ongoing increase in the number of organisations which provide reperfusion of STEMI patients through interventional percutaneous means, thereby decreasing the administration of thrombolysis in metropolitan areas, which may explain the decrease in number of organisations reporting data on CI 2.1 (STEMI patients who receive thrombolytic therapy within 30 minutes). Its use in regional centres without access to interventional cardiology, however, remains life-saving for many patients. Due to the decreased reporting, it makes data interpretation difficult.

The international standard of time to thrombolysis is 30 minutes. Although there has been some improvement in patients receiving thrombolysis from 35.2% to 43.8%, this continues to remain far below the expected standard and is concerning. Factors that contribute to this poor percentage include low numbers of data and individual hospital processes (i.e. junior doctors needing to seek senior advice prior to making the decision to administer thrombolysis, or unfamiliarity of staff with the process of giving thrombolysis) which add to the time taken to drug administration.

The number of hospitals submitting data on CI 2.2 (Time to balloon opening within 90 minutes) is well below that which are using percutaneous interventional cardiology for treatment of patients with STEMI. International benchmarking is for the time to be less than 90 minutes. For the four facilities submitting this data, this was achieved at 86.5%, however, this cannot be interpreted across EDs nationwide due to the low number of submissions. It should be acknowledged that several organisations have systems where patients bypass the ED due to catheterisation laboratory activation through pre-hospital ambulance notification. Finally, the number of hospitals submitting data on CI 2.3 (Time to balloon opening within 60 minutes) is again very low and a rate of around 55% was recorded. Due to the low numbers, conclusions cannot be drawn.

Category 3 – Emergency Department Mental Health Presentations

Mental Health patients are frequently from a marginalised group in society and have co-existent complex medical comorbidities. Their health concerns, if not attended in a timely fashion, may result in deterioration and a poorer outcome. It has recently become highlighted nationally by ACEM that these vulnerable patients are spending excessive numbers of hours (not infrequently over 24 hours or longer) in our busy EDs whilst awaiting admission, which is not conducive to their management.

The rate of non-metropolitan mental health patients being admitted from the ED within four hours (CI 3.1) is around 50%, although this is well below the 80% benchmark for all patients being admitted within four hours of arrival at triage. Of more concern, is the rate in metropolitan areas of around 25% which represents poor access to inpatient care and is considerably worse than the general patient population. It is noted that data reporting continues to decline. The number of HCOs reporting CI 3.2 data (Mental health patients discharged from the ED within four hours) is low. Although there has been a decrease in the number of patients discharged within four hours, non-metropolitan hospitals performed better (around 70% from 75% in 2017) compared with metropolitan (about 50% from 56% in 2017), which again remains well below the four-hour benchmark of 80%. Access to timely services remains challenging for this patient population.

There continues to be a decline in the number of mental health patients presenting to the ED who did not wait after having clinical information documented about their presenting complaint (CI 3.3) to around 0.5%. It appears that although patients spend a significantly longer time in the ED before admission or discharge, they are receiving appropriate discharge planning.

Category 4 - Critical Care

The number of hospitals reporting data on CI 4.1 (ED time within four hours for ICU admissions) has decreased. The annual rate of ED patients transferred to ICU in less than four hours has risen back to 45.2% from 37.4% in 2017. This hopefully reflects an improvement in ED and ICU liaison, however, is still not at an acceptable rate. These patients are at high risk of clinical deterioration and consume considerable ED resources, negatively impacting other ED patients. This may be caused by challenges in ICU bed availability and access block on the wards hindering ICU discharges.

The number of hospitals reporting data on CI 4.2 (Rapid response system call within four hours of admission to the ward from the ED) has increased but remains low. There has been a significant increase in the total number of rapid response system calls within four hours of being admitted to the ward; this is proportionate to the increasing number of patients admitted to the ward from ED. Despite this swell in patient numbers, hospitals have done well to decrease the annual rate of rapid response system calls from 0.38% to 0.35%.This low number is highly desirable as it indicates that unstable patients who have a clinical deterioration whilst on the wards are fewer in number, signifying appropriate ED management/escalation of these patients to critical care areas whilst in the Emergency Department.

Category 5 - Sepsis Management

Very few hospitals contributed data on CI 5.1 (Time of antibiotic administration for paediatric patients within 60 minutes). There was minimal change in the rate of antibiotic administration for paediatric patients within 60 minutes between 2017 and 2018; in fact, the rate dropped from 30% to 28.3%. This continues to be far below the 80% target for this group. This could be due to the difficulty in diagnosing sepsis in paediatric patients who often present in a non-specific way compared to the adult population. Either way, this should be fuel to encourage

organisations to focus and improve the number of patients receiving early antibiotics in sepsis.

The number of hospitals reporting CI 5.2 data (Time of antibiotic administration for adults within 60 minutes) has increased but is still fewer than would be expected for this clinical indicator. The rate of antibiotic administration for adult patients within one hour improved from 49.8% to 63.9% from 2017 to 2018, which could be due to sepsis awareness campaigns. However, this is still less than the 65.4% achieved in 2016 and should ideally be greater than 80%. Further work is required on achieving this target.

Category 6 - Discharge Communication

Communication with the ongoing care provider is an important element in a patient's management, and this is further highlighted where handover is a major focus of the second edition NSQHS Standards (Standard 6 Communicating for Safety). 2018 marks the best year thus far for documented evidence of clinical management plan provided to an ongoing care provider achieving a rate of about 95%. The number of hospitals reporting data has more than doubled, which is excellent, but remains low overall.

This year marks the best year thus far for documented evidence of patient-centre discharge information and instructions provided to the patient or carer (CI 6.2) with a rate of about 90%. This may mark a growing familiarity and ease of access to online or electronic faxed records. Ideally all patients should receive written discharge information, but practically speaking, oral information is easier to provide (and rarely documented), which makes this data difficult to audit.

Category 7 - Pain Management

Pain assessment at triage is often referred to as a "vital sign". The number of hospitals reporting data on CI 7.1 (Documented initial pain assessment at triage) has declined making it difficult to draw conclusions, but all who did had outstanding compliance, achieving 100%. The administration of analgesia therapy within 30 minutes for all patients with moderate or severe pain (CI 7.2) was achieved in only about 50% of ED patients. Given that one of the most common symptoms for which patients present to the ED is for pain management, this should be an area of focus. Results are difficult to interpret in view of the low number of data available. Additionally, a disappointingly few numbers of hospitals reported data on CI 7.3 (Documented pain reassessment within 30 minutes of analgesic therapy), and it continues to be a poorly recorded clinical indicator. For those hospitals that did record and report data, the rate was appallingly low (27%). While it is likely reassessment is undertaken between ED practitioners and a patient, it is often poorly documented.

Category 8 - Unplanned Re-attendance

A reasonable number of hospitals reported data on CI 8.1 (Patients who have an unplanned re-attendance to the ED within 48 hours of initial presentation and who require admission), and the rate of 1.5 per 100 patients is low, which is reassuring. Sometimes a patient's clinical condition deteriorates unexpectedly, and hence, all patients should be instructed to seek further medical assessment if their clinical course deteriorates compared to the time of initial consultation.

FEATURE CLINICAL INDICATOR

Area 3 Emergency department mental health presentations
CI 3.1 Mental health patients admitted from the ED within 4 hours
CI 3.2 Mental health patients discharged from the ED within 4 hours
CI 3.3 Mental health patients who did not wait following clinical documentation

Based on the data available, it is extremely apparent that Australia's health system is failing to meet the needs of people who present to ED seeking urgent mental health care. On average, only 25% of patients are meeting the target of being admitted within four hours of presentation to the ED (in metropolitan areas), and at best only 50% of patients being admitted within the desired time target (in non-metropolitan areas). We are also struggling to discharge these patients home safely within the four-hour time frame which is deeply concerning.

These long, uncertain waits in EDs increase the risks and undermine people's recovery and long-term health and wellbeing. They lead to unnecessary exposure to crowding, noise, distress and high use of restraint and seclusion. This is unacceptable for our patients. The Australian College of Emergency Medicine released a communique to highlight these consequences in October 2018 and continue to work hard to improve delivery of emergency care to mental health patients.

More work needs to be undertaken to build and sustain a functioning, integrated, mental health system that supports the prevention, early intervention and better management of mental health crises.

GENERAL COMMENTS

Kristie McKenzie College of Emergency Nursing Australasia

Within the realm of waiting time within an ED, patients assigned to ATS Category 2 and Category 3 (CIs 1.2 and 1.3) are not all being seen within the benchmark. This is concerning as patients in these categories, particularly Category 2, can be very unwell and have the potential to deteriorate rapidly often with non-delineated illness trajectories/clinical scenarios[1]. The downward trend of patients who did not wait to be seen subsequent to being triaged (CI 1.6) is also noted. A factor contributing to this could be enhanced communication both on arrival to the ED and during the triage process, as many EDs are working to improve the patient experience through enhanced levels of communication. Some EDs are moving away from the term waiting room to other names such as Patient Reception Area.

There is potentially an opportunity to improve the rate of patients who are thrombolysed within 30 minutes (CI 2.1). These patients would typically be assigned a triage category 2; if all ATS category 2 patients have treatment commenced within 10 minutes this would facilitate the administering of thrombolysis within 30 minutes, clinical best practice[2], acknowledging there are other variables to consider in this scenario such as not being able to access an appropriate treatment space due to levels of capacity in the ED and the whole hospital (access block).

The rate of discharge for mental health patients within four hours from the ED (CI 3.2) is greater than the rate of mental health patients admitted (CI 3.1), however neither rate from the perspective of patient experience is acceptable, indicating that too many of this patient cohort spend considerable amounts of time beyond four hours in a noisy and stressful ED environment. ED clinicians often struggle to cater for the high level of need of these patients whilst there are other emergencies occurring. Moreover, this environment is known to cause increased levels of distress and agitation to this patient cohort, at times contributing to episodes of acute behavioural escalation[3].

The rate of analgesic therapy within 30 minutes for patients with moderate to severe pain (CI 7.2) saw an improvement which reflects increasing awareness amongst clinicians of the importance of efficient and effective pain relief shortly after presentation. Additionally, there is a recognition that pain is subjective in nature and left untreated can contribute to traumatic and negative experiences of the ED visit from the patient perspective[4].

Sepsis management saw an improvement in the time to antibiotic administration in adult patients (CI 5.2) with a rate of 63.9 per 100 patients in 2018. The paediatric cohort rate (CI 5.1), however, was markedly lower at 28.3 per 100. Children have less of a physiological reserve and typically deteriorate more quickly than the adult patient. The results suggest a body of work needs to be undertaken to identify why there is such a difference between adult and paediatric antibiotic administration so that improvements can be made, and gains achieved in the future.

FEATURE CLINICAL INDICATOR

CI 1.2 ATS Category 2 – medically assessed and treated within 10 minutes

The annual rate of 78.9 patients per 100 is below the triage category benchmark. This is concerning as patients assigned an ATS Category 2 are usually very unwell and/or have the potential to deteriorate rapidly. Ideally EDs could develop creative solutions to ensure that all patients assigned an ATS Category 2 are seen within benchmark (10 minutes). Whilst there is a slight upward trend in the trajectory of this CI between 2017 to 2018, the results remain below benchmark, which remains clinically concerning. Some EDs have models of care whereby a medical officer must physically see the patient at triage as soon as the ATS Category is assigned. Further spread of this concept to more HCOs may assist achieving gains in the future.

CI 3.1 Mental health patients admitted from the ED within 4 hours

It is well established that the ED is not an appropriate environment for prolonged length of stays for patients with mental health issues. The environment itself can often be the cause of acute escalations in behaviour, for example, noises from cardiac monitors and the general highly audible and quick physical pace of the ED environment can be cerebrally irritating for someone already under profound cerebral and cognitive stress with potential for altered states of perception. Unfortunately, if a person's behaviour is not able to be deescalated due to some trigger, clinicians are at times forced to use sedation and restraint as a last resort to protect the patient, themselves and others in the ED, including staff and visitors. This is far from ideal, which emphasises the critical need to get the patient to the right bed at the right time to receive the right care[3].

With the rate being 30.5 per 100, translating to closely two thirds of patients awaiting a bed in the mental health unit exceeding a length of stay greater than four hours in the ED, indicates simply that gains need to be made. There is an initiative from NSW Ministry of Health to achieve zero restraint and seclusion episodes with this patient cohort. To achieve these goals, whilst enhancing the patient experience and minimising the risk of acute behavioural disturbance episodes and distress for this patient cohort, HCOs need to direct resources to improve results currently seen with measurement of this CI. The enhanced use of telemedicine to the patient's home is one example of how this might be achieved.

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SUMMARY OF RESULTS

In 2018 there were 1,206 submissions from 96 HCOs for 21 CIs. Seven were analysed for trend, 6 of which improved, 1 deteriorated. In 2018 no CIs demonstrated significant variation between strata. Ten CIs showed greater systematic variation, with centile gains in excess of 50% of all events. Outlier gains in excess of 25% of all events were observed in 4 CIs. See Summary of Indicator Results below.

Summary of Indicator Results

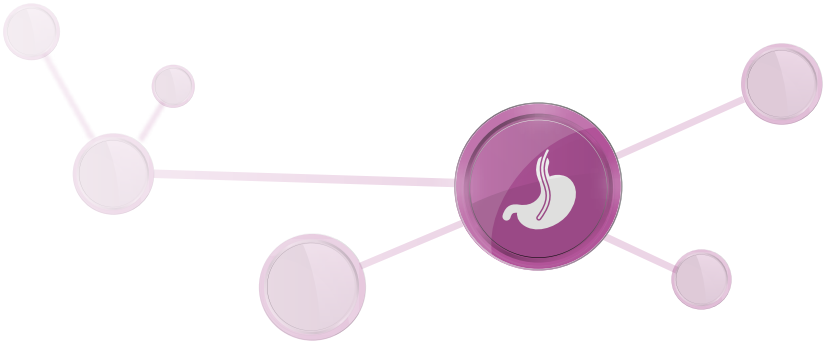
Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)⁺	Centile Gains (%)⁺	Events#	Trend
Waiting time								
1.1 ATS Category 1 - medically assessed and treated immediately (H)	89	99.8		4 (4%)	20 (49%)	35 (85%)	41	↑ ✓
1.2 ATS Category 2 - medically assessed and treated within 10 minutes (H)	93	78.9		25 (27%)	14,047 (16%)	46,874 (54%)	86,907	↓ ✗
1.3 ATS Category 3 - medically assessed and treated within 30 minutes (H)	93	65.1		22 (24%)	92,253 (22%)	274,422 (66%)	414,846	↑ ✓
1.4 ATS Category 4 - medically assessed and treated within 60 minutes (H)	93	74.2		23 (25%)	68,464 (23%)	203,914 (67%)	302,805	↑ ✓
1.5 ATS Category 5 - medically assessed and treated within 120 minutes (H)	91	91.5		24 (26%)	5,057 (28%)	13,363 (73%)	18,246	↑ ✓
1.6 Patients who left the ED after triage without being seen (L)	51	2.9		15 (29%)	8,402 (21%)	24,675 (61%)	40,132	↓ ✓
ST-segment elevated myocardial infarction (STEMI) management								
2.1 STEMI patients who receive thrombolytic therapy within 30 minutes (H)	12	43.8				13 (15%)	86	
2.2 Time to balloon opening within 90 minutes (H)	4	86.5				1 (3%)	32	
2.3 Time to balloon opening within 60 minutes (H)	4	54.2				5 (4%)	114	
Emergency department mental health presentations								
3.1 Mental health patients admitted from the ED within 4 hours (H)	15	30.5		2 (13%)	328 (9%)	1,628 (46%)	3,555	
3.2 Mental health patients discharged from the ED within 4 hours (H)	18	55.8		2 (11%)	912 (17%)	3,354 (63%)	5,351	
3.3 Mental health patients who did not wait following clinical documentation (L)	14	0.6		2 (14%)	8 (10%)	36 (43%)	84	↓ ✓

Summary of Indicator Results continued

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Critical care								
4.1 ED time within 4 hours for ICU admissions (H)	12	45.2				321 (10%)	3,196	
4.2 Rapid response system call within 4 hours of admission to the ward from the ED (L)	9	0.4		1 (11%)	10 (4%)	79 (34%)	234	
Sepsis management								
5.1 Time of antibiotic administration for paediatric patients within 60 minutes (H)	4	28.3				2 (3%)	71	
5.2 Time of antibiotic administration for adult patients within 60 minutes (H)	7	63.9				33 (17%)	193	
Discharge communication								
6.1 Documented evidence of clinical management plan provided to an ongoing care provider (H)	9	94.4		3 (33%)	25 (15%)	68 (40%)	172	
6.2 Documented evidence of patient-centred discharge information and instructions provided to the patient or carer (H)	9	87.9		5 (56%)	64 (20%)	274 (87%)	314	
Pain management								
7.1 Documented initial pain assessment at triage (H)	3	100.0		1 (33%)	2 (33%)	6 (100%)	6	
7.2 Analgesic therapy within 30 minutes for all patients with moderate or severe pain (H)	4	53.4				30 (24%)	124	
Unplanned re-attendance								
8.1 Patients who have an unplanned re-attendance to the ED within 48 hours of initial presentation and who require admission (L)	19	1.5		8 (42%)	1,911 (28%)	4,279 (62%)	6,906	

Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

GASTROINTESTINAL ENDOSCOPY



GENERAL COMMENTS

Associate Professor William Tam *Gastroenterological Society of Australia*
Chair, ACHS Gastrointestinal Endoscopy Working Party Version 3

Optimal bowel preparation is a necessary first step to performing high-quality diagnostic and therapeutic colonoscopy. While there is no worrisome trend in the proportion of patients in whom colonoscopy was unsuccessful due to poor bowel preparation (CI 1.1), subset analysis has revealed variation between public and private HCOs, and across states. The outlier records further indicate there is room for further education and promotion of this key component of high-yield colonoscopy (discussed specifically below).

Failure to achieve caecal intubation due to bowel pathology (CI 1.2) has slightly improved over the time period, while failure due to instrumental failure has convincingly improved. Tasmania did record a higher incomplete colonoscopy rate due to diseased colon in 2018, although the absolute number was small.

Both post-polypectomy and post-colonoscopy perforation (CI 2.1 and 2.2) have declined over the assessment period. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. In 2018, the number of patients requiring treatment for polypectomy-related perforation reduced by about a third. This is reassuring and may be reflective of the increased emphasis on training and education by GESA, colleges and the hospital environment.

Post-polypectomy bleeding (CI 2.3) has steadily fallen over the assessment period. The rate change was 0.083 per 100 colonoscopies with polypectomy. This is more impressive given the increasing proportion of patients who are on anticoagulants and anti-platelet medication and may be due to the adoption of endoscopic techniques which can reduce post-polypectomy bleeding (e.g. use of cold-snaring and haemostatic clips).

The number of patients diagnosed with a colorectal malignancy who have received a colonoscopy within the previous five years (CI 3.2) has decreased between 2013 and 2018. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 9.3 per 100 patients. Interestingly, there was no variation between HCOs and there were no outlier HCOs in 2018.

Oesophageal dilatation with possible perforation (CI 4.1) has increased in the assessed time period. In 2018, there were 72 records from 40 HCOs. The annual rate was 0.22 per 100 patients. The reasons for this observation are not immediately obvious. It is not related to outlier data. It may be related to changes in disease prevalence (acid-peptic, inflammatory or motility disorders) or treatment modalities (bouginage versus balloon dilatation). This is a clinical area which requires ongoing monitoring.

Aspiration following GI endoscopy (CI 5.1) has increased in the assessment period. The fitted rate deteriorated from 0.022 to 0.035, a change of 0.013 per 100 patients. In 2014, ANZCA released the PS09 professional standard background paper which discussed important aspects of anaesthesia during endoscopy and in the peri-procedural period. The importance of adequate training of anaesthetic staff, particularly in regard to use of the anaesthetic drug propofol, is a key issue of this discussion. In recognition of the important links between sedation, airway management and risks of aspiration, a new indicator, "Sedation Practice" has been introduced in the third version of the ACHS Gastrointestinal Endoscopy Clinical Indicators released in 2019 to underscore safe procedural sedation during endoscopy. The use of reversal agents for sedation recovery following endoscopy is selected as the indicator to measure the appropriate use of sedation.

FEATURE CLINICAL INDICATOR

CI 1.1 Failure to reach caecum due to inadequate bowel preparation

Adequacy of bowel preparation is fundamental for optimal bowel examination during colonoscopy. There was no detectable trend between 2011 and 2018 in the annual rate of incomplete colonoscopies due to incomplete bowel preparation, with a reported rate of 0.42 per 100 colonoscopies in 2018. However, subset analysis in 2018 showed a four-fold difference between the rate seen in the 39 private health care organisations (HCOs) compared with the 12 public HCOs, in favour of the private sector. There was also a two-fold difference between the best and worst performing Australian state (0.37 versus 0.78 per 100 colonoscopies). Furthermore, there were 10 outlier HCO records in 2018 with an overall rate of 1.6 per 100 colonoscopies. The reasons for these observations are outside the scope of this report and were not specifically assessed. It may be related to the number and type (free-standing or integrated) of HCOs, patient factors (e.g. comorbidities and ASA class) and the demographic variation across Australian states.

The report indicates that there is room for improvement. Clinicians, patients and HCOs can all play important roles in optimising bowel preparation as a necessary first step in performing quality colonoscopy. This is particularly relevant with the increasing emphasis on achieving high quality endoscopy, and this is reflected in the adoption of adenoma detection rate as a clinical indicator in the third version of the ACHS Gastrointestinal Endoscopy Clinical Indicators[1]. The Colonoscopy Clinical Care Standard[2] published by the Australian Commission on Safety and Quality in Health Care in 2018 also underscores the importance of policies and procedures which support best practice for bowel preparation. There are ample data in the literature to suggest that better bowel cleansing is achieved with a split-dose regimen and with a short 'runway time'[3,4]. Clinicians and HCOs can further support patients by enabling access to clear, written instructions, telephone hot-line for inquiries, interpreter services and translated materials.

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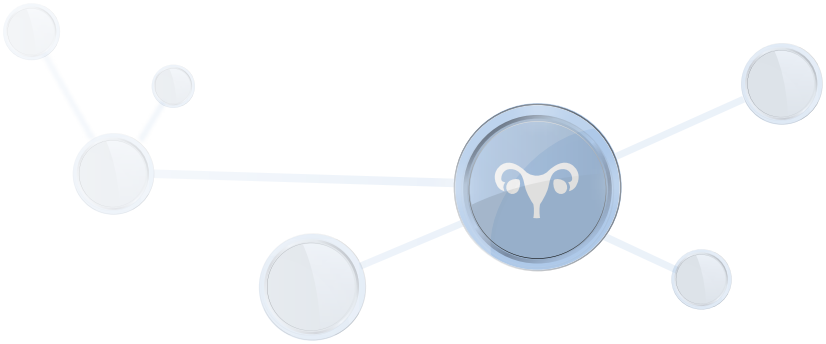
SUMMARY OF RESULTS

In 2018 there were 865 submissions from 77 HCOs for 11 CIs. Ten were analysed for trend, 6 of which improved, 2 deteriorated and the remainder showed no evidence of trend. In 2018, significant stratum variation was observed in 2 CIs. Five CIs showed greater systematic variation, with centile gains in excess of 50% of all events. Outlier gains in excess of 25% of all events were observed in 3 CIs. See Summary of Indicator Results below.

Summary of Indicator Results

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Failure to reach caecum								
1.1 Failure to reach caecum due to inadequate bowel preparation (L)	51	0.421		8 (16%)	113 (25%)	280 (62%)	452	
1.2 Failure to reach caecum due to diseased colon (L)	44	0.219		6 (14%)	44 (22%)	127 (63%)	202	↓✓
1.3 Failure to reach caecum due to instrument failure (L)	43	0.0011					1	↓✓
1.4 Failure to reach caecum for any other reason (L)	43	0.240	Private	8 (19%)	96 (43%)	190 (86%)	221	
Adverse outcomes - colonoscopy / polypectomy								
2.1 Treatment for possible perforation post-polypectomy (L)	59	0.0226					16	↓✓
2.2 Treatment for possible perforation post-colonoscopy (L)	56	0.0213				6 (40%)	15	↓✓
2.3 Post-polypectomy haemorrhage (L)	52	0.106		2 (4%)	17 (26%)	49 (74%)	66	↓✓
Colorectal cancer								
3.1 Malignancies diagnosed at colonoscopy (N)	28	0.786						↓
3.2 Malignancies not detected at another colonoscopy within past 5 years (L)	12	6.341				3 (23%)	13	↓✓
Oesophageal dilatation - perforation								
4.1 Oesophageal dilatation - possible perforation (L)	40	0.218				3 (50%)	6	↑✗
Aspiration following GI endoscopy								
5.1 Aspiration following endoscopy (L)	48	0.022	Metropolitan			10 (48%)	21	↑✗

Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs



GENERAL COMMENTS

Dr Martin Ritossa Royal Australian and New Zealand College of Obstetricians and Gynaecologists
Chair, ACHS Gynaecology Working Party Version 7

Thank you to those HCOs that contributed to Gynaecological clinical indicators for 2018. Generally, the number of participating units was up from previous years, showing strong support for the indicators. It is also pleasing to see improvement in outcomes across the indicators.

Unplanned intraoperative or postoperative blood transfusion rates following gynaecological surgery for benign conditions (CI 1.1) continue to fall, with a rate of 0.54 per 100 patients being the lowest rate recorded. Unplanned intraoperative or postoperative blood transfusions following gynaecological surgery for malignant disease (CI 1.2) remains stable at a rate of 7.6 per 100 cases. The outlier rates of 3.2 and 19.2 respectively were considerably higher than the average and outlier units should consider reviewing their transfusion procedures and policies.

Injury to a major viscus requiring repair at gynaecological surgery (CI 2.1) is also at the lowest level recorded. The rate of 0.12 per 100 cases suggests a high standard of surgical care in the participating units. One confounding factor may be the denominator which includes all gynaecological procedures. Given the decreasing hysterectomy rate and the increase of alternatives such as endometrial ablation, the falling rate may be due to procedure selection rather than surgical technique. Regardless, it is a good outcome for our patients. Consideration should be given to reviewing the denominator in the upcoming clinical indicator review.

Laparoscopic management of ectopic pregnancy (CI 3.1) is a marker for the uptake of laparoscopic surgery in the community. Overall rates remain high with the rate of 90.9 per 100 patients being one of the highest rates recorded. There was one outlier HCO with a rate of 70.2 per 100 patients. This may be due to patient complexity but also may indicate the skills of the surgeons available. This is an improvement from three HCOs last year.

Rates of thromboprophylaxis for major gynaecological surgery (CI 4.1) remains high and continues to rise with a rate of 99%. This is an outstanding result; however it is disappointing that only eight HCOs participated in this indicator.

The rate of mesh repair for pelvic organ prolapse (CI 5.1), which includes transabdominal mesh for prolapse repair, remained stable in 2018 at 8.1 per 100 patients. It should be acknowledged that 2019 marked the removal of all transvaginal mesh products for the repair of prolapse. This is a procedure that should only be performed for very specific indications in specialised units. It will be interesting to see if there is a significant change in the rate at the next report. Even though abdominal placement of mesh is a recognised procedure for recurrent prolapse, we would expect this procedure to be performed in a small number of patients, so any rise in the rate of this indicator would be a reason for HCOs to commence a clinical review. It should be noted that subspecialty units could be expected to have higher rates due to a referral bias.

The indicators would suggest hysterectomy rates are continuing to fall and the use of lower risk alternatives are increasing. The rate of hysterectomy for the surgical treatment of menorrhagia was the lowest recorded at 18 per 100 cases. Interestingly Queensland had significantly lower rates than the rest of Australia with a rate of 9 per 100 procedures.

FEATURE CLINICAL INDICATOR

CI 6.1 Surgical intervention for menorrhagia

Hysterectomy rates in Australia have fallen significantly over the last 20 years from 68.8 per 10,000 women in 2000-2001 to 47.1 per 10,000 women in 2013-2014[1]. This has been a result of the introduction of low risk alternatives such as the oral contraceptive pill, the levonorgestrel intrauterine system and second-generation endometrial ablation techniques. Despite this, Australia continues to have a higher rate than most OECD countries. In addition, there seems to be a variation of up to five times between regions within Australia[2]. Hysterectomy is not without significant costs, including procedure costs, operation risks and costs related to productivity. On the other hand, hysterectomy has the highest quality of life scores of any treatment for menorrhagia[3]. This means that any decision regarding hysterectomy needs to be a joint one between patient and surgeon taking into consideration all the risks, costs and comorbidities.

CI 6.1 looks at the rate of hysterectomy compared to the overall rate of women undergoing surgical treatment for menorrhagia. The denominator includes hysterectomy, endometrial ablation and myomectomy. Insertion of Mirena is excluded. The rate has fallen considerably from 27.1 per 100 in 2015 to 18 per 100 in 2018. The trend is significant, even allowing for the changing contribution of HCOs during that period. This would suggest a significant increase in the use of endometrial ablation in the treatment of menorrhagia. This trend was highest in Queensland with a rate of 9.35 per 100. The outlier rate of hysterectomy was 40.6 per 100 women with six outlying HCOs in 2018. That would suggest that as many as 120 women in the sample population underwent an unnecessary hysterectomy. This would support the conclusions of The Second Australian Atlas of Healthcare Variation[2], which suggests the rate of access to hysterectomy and its alternatives varies considerably between regions.

It is imperative that health units and networks throughout the country review their hysterectomy rates and ensure that women in their regions have equal access to alternative services. Second generation endometrial ablation equipment can be difficult to access in more remote areas with a high per procedure cost due to the small number of procedures performed. Nevertheless, these options should be available to all patients. It is the responsibility of all healthcare units to provide proven, cost effective services to their patients and for healthcare providers to discuss all feasible options with their patients even if the patients may have to travel to access low risk, cost effective treatments.

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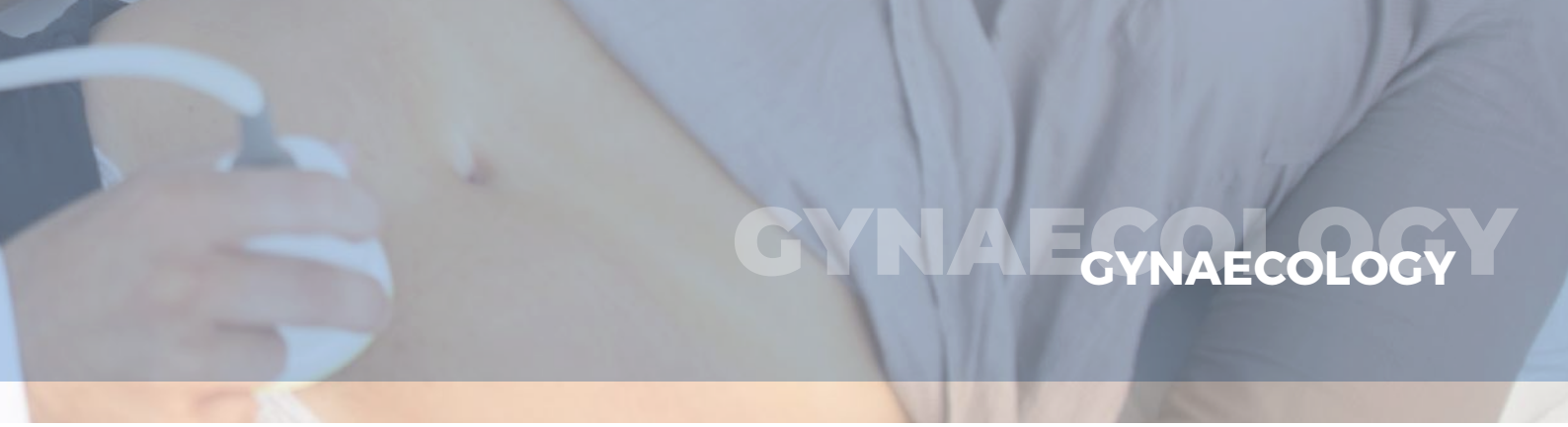


SUMMARY OF RESULTS

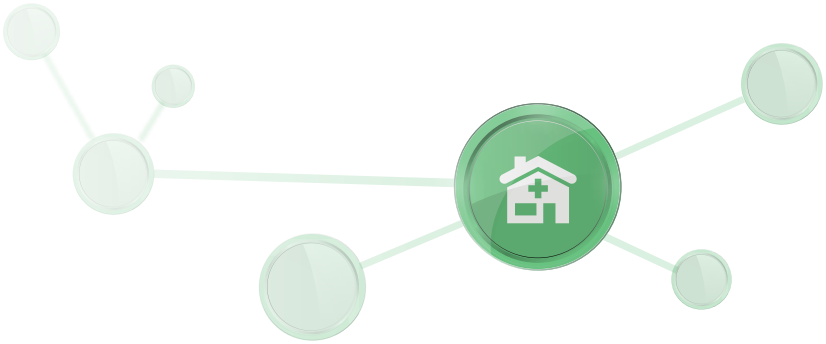
In 2018 there were 344 submissions from 60 HCOs for 8 CIs. Seven were analysed for trend, 5 of which improved and the remainder showed no evidence of trend. In 2018, significant stratum variation was observed in 3 CIs. Four CIs showed greater systematic variation, with centile gains in excess of 50% of all events. Outlier gains in excess of 25% of all events were observed in 4 CIs. See Summary of Indicator Results below.

Summary of Indicator Results

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Blood transfusion								
1.1 Gynaecological surgery for benign disease - unplanned intraoperative or postoperative blood transfusion (L)	42	0.5	Private	4 (10%)	62 (29%)	171 (80%)	213	↓ ✓
1.2 Gynaecological surgery for malignant disease - unplanned intraoperative or postoperative blood transfusion (L)	18	7.6		1 (6%)	24 (19%)	53 (43%)	124	
Injury to a major viscus								
2.1 Gynaecological surgery - injury to a major viscus with repair (L)	58	0.1	Private	1 (2%)	2 (2%)	30 (33%)	92	↓ ✓
Laparoscopic management of an ectopic pregnancy								
3.1 Ectopic pregnancy managed laparoscopically (H)	28	90.9		1 (4%)	8 (14%)	34 (60%)	57	↑ ✓
Thromboprophylaxis for major gynaecological surgery								
4.1 Thromboprophylaxis for major gynaecological surgery (H)	8	99.0		2 (25%)	6 (67%)	8 (89%)	9	↑ ✓
4.2 Re-admission for venous thromboembolism within 28 days (L)	10	0.0					1	
Mesh repair								
5.1 Use of mesh repair for pelvic organ prolapse (L)	14	8.1		3 (21%)	34 (63%)	51 (94%)	54	
Menorrhagia								
6.1 Surgical intervention for menorrhagia (L)	14	18.0	Qld	4 (29%)	120 (29%)	162 (39%)	411	↓ ✓

Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

HOSPITAL IN THE HOME



GENERAL COMMENTS

Dr Michael Montalto
Hospital in the Home Society Australasia

New services need new ways of demonstrating quality. Hospital in the Home (HITH) has been in existence in Australian hospitals for over 20 years. While that probably no longer qualifies it as 'new' in the common use of the term, in terms of hospital clinical specialties, it remains new. In 2019, Hospital in the Home held its first international conference, itself arguably an indicator of professional and organisational development.

Research into the links between structure, process and outcomes continue in our emerging field. In this regard, the ACHS Clinical Indicators have been leading the development of quality measures, rather than resulting from them. We expect, and indeed hope, that as more work on outcomes is published in this field, these indicators will be validated, refined and modified. But for now, they remain a common language with which units and hospitals can discuss their work.

There are always variables that a sensible reader ought to consider. It must be acknowledged that HITH still remains a tapestry of models, staffing, coverage, patient severity and clinical scope. The major variables that might affect the collection and interpretation of these indicators are HITH units that: do not operate 24 hours; use third party providers; do not provide a full suite of hospital clinical services and therefore have a lower clinical severity profile to match.

Over the next decade, the emphasis on hospital substitution and acute home based care will grow. These indicators are recommended to those who want to enter this field, or wish to expand, as useful markers of quality to assist that growth and development.

FEATURE CLINICAL INDICATOR

CI 2.1 Unplanned return to hospital – adult/paediatric patient

This CI remains the most popular indicator collected and submitted and, it is thus reasonable to suggest, the most useful. Nineteen HCOs contributed data on almost 70,000 HITH episodes. It would appear that not only are more HCOs submitting data, but HITH is growing. The overall rate of unplanned return of a HITH patient to hospital remains less than 1%. This suggests that hospitals are choosing their patients carefully and delivering care in a way that ensures completion of the HITH episode. This reassures patients and referring clinicians that HITH is capable of doing what is says it can do.

SUMMARY OF RESULTS

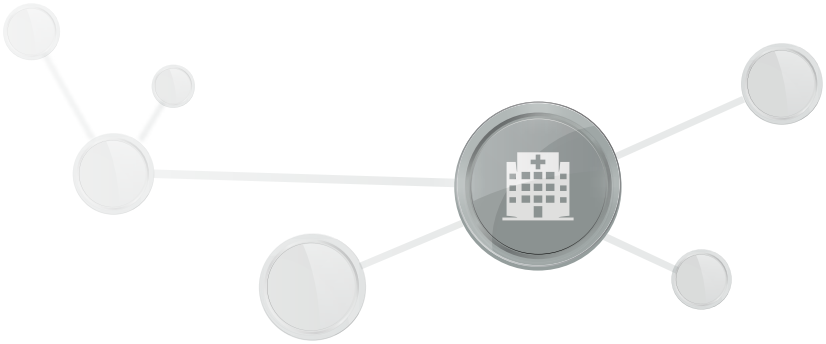
In 2018 there were 135 submissions from 20 HCOs for 9 CIs. None were analysed for trend. In 2018, significant stratum variation was observed in 2 CIs. Five CIs showed greater systematic variation, with centile gains in excess of 50% of all events. Outlier gains in excess of 25% of all events were observed in 3 CIs. See Summary of Indicator Results below.

Summary of Indicator Results

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Patient safety, selection, communication and care co-ordination								
1.1 Unexpected clinical telephone calls - adult/paediatric patient (N)	10	0.723						
1.3 Unexpected administrative telephone calls - adult/paediatric patient (L)	7	0.143		2 (29%)	13 (50%)	20 (77%)	26	
1.5 Unscheduled clinical assessment - adult/paediatric patient (L)	13	0.438	Vic	4 (31%)	38 (27%)	100 (70%)	143	
Service interruption								
2.1 Unplanned return to hospital - adult/paediatric patient (L)	19	0.778		6 (32%)	112 (21%)	298 (55%)	544	
2.2 Unplanned return to hospital - neonatal patient (L)	2	0.739		1 (50%)	5 (38%)	9 (69%)	13	
2.3 Unplanned return to hospital within 24 hours - adult/paediatric patient (L)	16	0.152	Vic	2 (13%)	6 (6%)	70 (74%)	94	
2.4 Unplanned return to hospital within 24 hours - neonatal patient (L)	2	0					-	
Unexpected deaths								
3.1 Unexpected deaths during HITH admission - adult/paediatric patient (L)	10	0.0058					2	
3.2 Unexpected deaths during HITH admission - neonatal patient (L)	1	0					-	

Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

HOSPITAL-WIDE



GENERAL COMMENTS

Dr David Rankin Royal Australasian College of Medical Administrators
Chair, ACHS Hospital-Wide Working Party Version 13

Clinical Indicators are an invaluable tool to prompt clinicians and management within an organisation to identify areas where patient outcomes may be able to be improved. These indicators are not diagnostic, rather they are a screening tool that provides guidance on areas that may warrant further exploration.

Each organisation is different. Every patient brings their unique social status, health literacy, motivation, comorbidities and stage in disease progression. Each staff member or visiting specialist comes with their own understanding of how the health system works, relationships with peers, attitude to managers, the rewards they receive from service delivery and their work-life balance. Each director arrives at meetings with their own understanding of the key attributes of a high performing health service.

Against the plethora of expectations, operational data and management reports available today, the ACHS Hospital-Wide CIs provide a unique picture of your health service in comparison to your peers. The Hospital-Wide Indicators are presented in a way that enables your hospital's performance to be reviewed on the dimensions of both the trend and variance. A hospital that achieves comparative average performance may include individual outliers that warrant exploration. The nature of the data sets may generate significant swings from year to year. It is important to look back and compare current performance with how your organisation performed on that measure in previous years.

In evaluating your health service's performance, you are encouraged to focus on overall performance and not fixate on a single measure to celebrate great performance or determine poor practice. Indicators need to be viewed together to develop a compound picture of hospital wide performance. In choosing which clinical indicators to explore further, it is important to balance the indicator's impact on both patient experience and value - the product of outcome over cost.

Many of the Hospital-Wide indicators in this report have been stable over the past few years. While this may imply the hospitals participating in the survey have reached a common status of good practice, it is important to examine the variance within each group. Some hospitals consistently achieve better results than their peers. Unfortunately, the report does not indicate whether there are consistent high performers, or whether the individual hospitals excel in only one or a limited number of indicators.

One of the aims of the Hospital-Wide Indicator report is to generate discussion and facilitate further exploration. Please share the results of the report with clinicians and operational managers. It is the clinicians that deliver patient care and therefore enable changes in patient outcomes. Discussing the results with your peers in other organisations will result in shared ideas and joint progress towards excellence in healthcare delivery.

FEATURE CLINICAL INDICATOR

CI 1.1 Unplanned and unexpected readmissions within 28 days

While many readmissions are planned as part of good clinical practice or required by the staged nature of the intervention, unplanned readmissions imply a systems failure. Admission to hospital imposes a material inconvenience on patients, particularly where that admission is unexpected and follows what was expected to be the admission that addressed their health condition. Unplanned readmissions arise from multiple causes. The patient's condition may be inherently unstable and their course of disease progression unpredictable. Factors such as primary care access, availability of home-based support services and the strength of social networks may be challenging for the hospital to modify.

There are several factors, however, that are under the hospital's direct control that may increase the rates of hospital readmission. Soft factors such as the timelines of the distribution of discharge information, ensuring a common understanding of post discharge expectations, establishing a trusting relationship with the patient and the family and ensuring patient concerns are addressed are all factors which may lead to unexpected readmissions.

With 264 HCOs submitting data, there were 42 outliers with a readmission rate of 3.6% compared to the industry average of 1.04%. The marked difference between private (0.54%) and public (3.23) raises issues around the comparative case mix of the two groups. Examining the box plot for both public and private hospitals demonstrates a small number of extreme outliers in both groups. The projected gain of 37,213 fewer admissions each year identifies a significant potential opportunity for improved effectiveness and fiscal savings to the health system.

4.2 Inpatient falls resulting in fracture or closed head injury

Inpatient falls resulting in fracture or closed head injury aligns with the Australian Commission on Safety and Quality in Healthcare's second group of Hospital Acquired Complications. Falls resulting in fracture represent a serious complication in inpatient care and are often the trigger for transition from independence to assisted living.

Falls arise from a range of factors. Some, such as age, syncope, patient cognitive function or determination to be independent may not be modifiable within a healthcare setting. This is reflected in the rate (20) which sits at a between half to two thirds of the overall HCO rate and appears to be rising. The overall rate has been stable over the past four years at between 8 - 10 falls per 10,000 bed days, with the 2018 rate being 9.

The relative stability of this indicator masks the continued significant variation between healthcare organisations, with six HCOs generating a quarter of the excess inpatient falls.

GENERAL COMMENTS

Associate Professor Virginia Plummer
Australian College of Nursing
Member, ACHS Hospital-Wide Working Party Version 13

Falls are the most common adverse events that affect older persons in hospital[1], however there is a growing body of evidence on improving patient safety[2] and quality and safety standards governance[3]. Falls may lead to prolonged hospital stay and increase the human and fiscal cost of care[4], therefore preventing falls is a key component of safe and quality patient care[4].

Recent data from 2018 indicates that there has been further reduction in falls this year throughout all categories of inpatient falls as shown above, drawing attention to improved outcomes of the work of clinicians, educators, policymakers and researchers. For inpatient falls (CI 4.1), 749 submissions from 393 HCOs demonstrated that there were 24,940 fewer inpatient falls, if all reporting HCOs improved to the desirable 20th centile rate. It is worth noting that there were 164 outliers from 108 HCOs with a combined excess of 9,483 more inpatient falls. Reasons may include increasing admissions in the at-risk age groups and clinical categories including those with cognitive impairment. Active participation by patient and carers in falls safety in hospitals needs to be valued and promoted by clinicians[5].

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SUMMARY OF RESULTS

In 2018 there were 6,099 submissions from 418 HCOs for 26 CIs. Twenty three were analysed for trend, 15 of which improved, 1 deteriorated and the remainder showed no evidence of trend. In 2018, significant stratum variation was observed in 7 CIs.

Eleven CIs showed greater systematic variation, with centile gains in excess of 50% of all events. Outlier gains in excess of 25% of all events were observed in 9 CIs. See Summary of Indicator Results below.

Summary of Indicator Results

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Area 1: Hospital readmissions								
1.1 Unplanned and unexpected readmissions within 28 days (L)	264	1.04	Private	42 (16%)	18,970 (47%)	37,213 (91%)	40,788	↓ ✓
Area 2: Return to the operating room								
2.1 Unplanned return to the operating room during the same admission (L)	204	0.252		28 (14%)	1,025 (20%)	3,485 (67%)	5,189	↓ ✓
2.2 Reviewed cases following an unplanned return to the operating room (H)	58	99.7		2 (3%)	3 (75%)	3 (75%)	4	↑ ✓
Area 3: Pressure injuries								
3.1 Inpatients who develop 1 or more pressure injuries (L)	366	0.065	Private	39 (11%)	1,855 (22%)	6,093 (73%)	8,300	↓ ✓
Area 4: Inpatient falls								
4.1 Inpatient falls (L)	393	0.308		108 (27%)	9,483 (18%)	24,940 (48%)	52,160	↓ ✓
4.2 Inpatient falls resulting in fracture or closed head injury (L)	366	0.009		6 (2%)	114 (9%)	459 (35%)	1,299	↓ ✓
4.3 Inpatient falls - patients 65 years and older (L)	233	0.474		59 (25%)	4,463 (16%)	11,996 (43%)	27,618	↓ ✓
Area 5: Patient deaths								
5.1 Patient deaths addressed within a clinical audit process (H)	215	96.7		17 (8%)	535 (78%)	676 (98%)	688	↑ ✓
5.2 Deaths in adult patients who do not have a NFR order (L)	54	0.070	Private	6 (11%)	144 (29%)	378 (76%)	497	↓ ✓
5.3 Adult deaths (L)	98	0.727		30 (31%)	3,361 (30%)	9,802 (88%)	11,107	↓ ✓

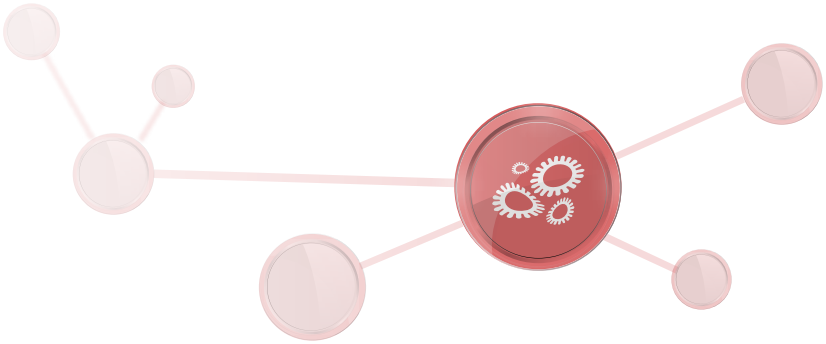
Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

Summary of Indicator Results continued

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Area 5: Patient deaths *(cont.)*								
5.4 Coronary artery graft surgery (CAGS) - death (L)	28	1.01				2 (4%)	47	↓ ✓
5.5 Elective coronary artery graft surgery - death (L)	14	1.22				1 (5%)	19	
5.6 Coronary artery graft surgery patients aged 71 years or older - death (L)	13	2.14	Private			2 (10%)	21	
5.7 Elective abdominal aortic aneurysm (AAA) open repair - death (L)	15	1.14					2	
Area 6: Blood transfusion								
6.1 Significant adverse blood transfusion events (L)	189	0.111		4 (2%)	14 (14%)	33 (34%)	97	↓ ✓
6.2 Transfusion episodes where informed patient consent was not documented (L)	103	2.07		10 (10%)	319 (49%)	530 (81%)	651	
6.3 RBC transfusion where Hb reading is 100 g/L or more (L)	84	1.40	NSW	7 (8%)	121 (37%)	221 (68%)	325	
Area 7: Thromboprophylaxis								
7.1 VTE prophylaxis administered to high risk medical patients (N)	5	91.9						↑
Area 8: Minimum standards for rapid response system calls								
8.1 Rapid response system calls to adult patients (N)	111	3.62						↑
8.2 Rapid response system calls to adult patients within 24 hours of admission (N)	79	0.785						↑
8.3 Adult patients experiencing cardiopulmonary arrest (L)	158	0.071		11 (7%)	232 (18%)	550 (43%)	1,274	↓ ✓
8.4 Rapid response system attendances within 5 minutes (H)	56	95.9	NSW	5 (9%)	285 (32%)	714 (81%)	883	
8.5 Adult deaths avoided by rapid response system calls (H)	8	94.1		2 (25%)	59 (29%)	142 (69%)	206	↑ ✓
Area 9: Surgery								
9.1 Pre-operative acute appendicitis (children) - normal histology (L)	21	16.4	NSW	1 (5%)	8 (9%)	19 (20%)	94	↑ ✗
9.2 Laparoscopic cholecystectomy - bile duct injury requiring operative intervention (L)	56	0.115				3 (23%)	13	↓ ✓
9.3 Tonsillectomy - significant reactionary haemorrhage (L)	56	0.363		2 (4%)	5 (10%)	24 (50%)	48	

Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

INFECTION CONTROL



GENERAL COMMENTS

Dr Peta-Anne Zimmerman
Brenda Anderson
Sharyn Hughes
Debra Lee
Australasian College for Infection Prevention and Control

The number of participating HCOs is inconsistent across the CIs. Submission of data to the ACHS is on a voluntary basis though there are mandatory reporting requirements for healthcare associated infection (HAI) surveillance across several governmental jurisdictions. Australia does not have a national coordinated HAI surveillance program, yet the National Safety and Quality Health Service Standards for Australian Hospitals[1] has mandated this surveillance be reported. Within the data presented here, it is clear that there have been a number of HCOs no longer contributing data, specifically in CIs 1.3 Superficial Surgical Site Infection (SSI) knee prosthesis (149-36), 1.4 Deep SSI knee prosthesis (147-73), resulting in a significant decrease in available data. The new SSI CIs (1.5, 1.6, 1.7) have only 12 HCOs contributing so far, and 18-19 contributing to the new vaccination indicators (5.3, 5.4, 5.5). This voluntary submission of data could conceivably contribute to dilution and/or biases, as there is no minimum CI dataset required.

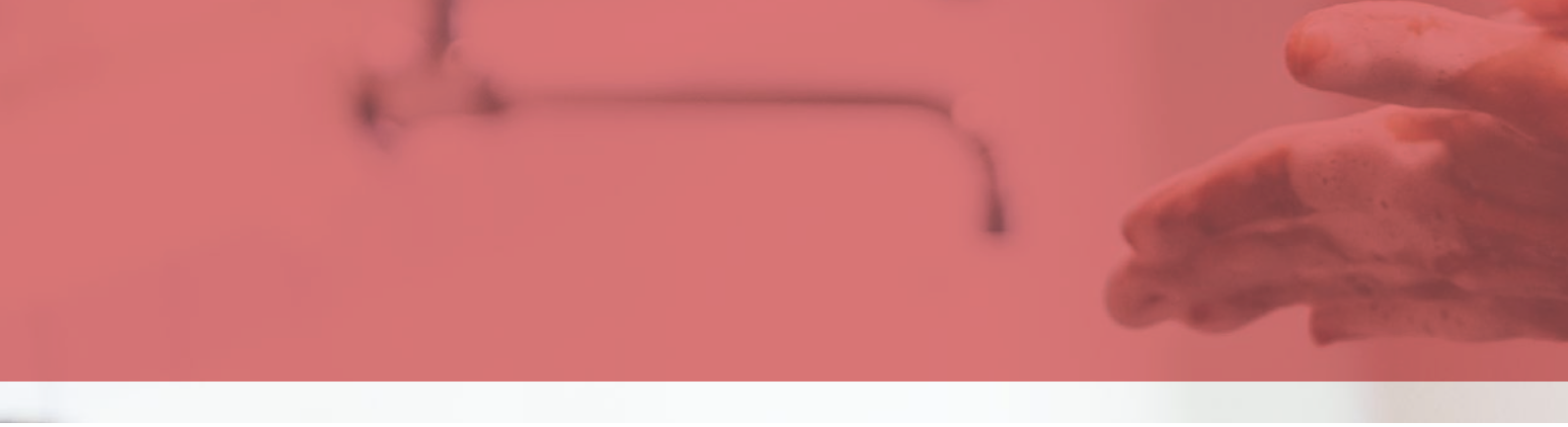
It is estimated that 175,000 HAIs occur in Australia each year[2] and without consistency in HAI surveillance methodology, including risk adjustment and stratification, and HCO participation, there can be no true benchmarking of data. It is therefore important that standardised surveillance continues to be raised as a matter of importance across all jurisdictions and within HCO clinical governance structures, particularly at a national level[3]. A key area within this is the surveillance of multi-resistant organisms (MROs).

Surveillance of vancomycin resistant Enterococci (VRE) infection within the ICU setting (CI 4.1), as reported here, is important with the Anti-microbial Use and Resistance in Australia report[4] indicating that ongoing surveillance should continue. There is, however, a need to consider other new and emerging MRO surveillance.

One MRO for consideration would be carbapenemase-producing Enterobacteriacaea (CPE). ACSQHC[5] and the World Health Organization[6] have identified CPE as an MRO of concern due to the increasing antibiotic resistant bacteria being detected globally. The National Alert System for Critical Antimicrobial Resistances (CARAlert)[7] has established CPE as notifiable, dependent upon the state or territory[8]. Considering this emergence of new and important MROs there is scope for future CIs to include surveillance of CPE, for detection both in the community and healthcare settings as it carries a burden similar to VRE in both settings.

CIs representing organisational healthcare worker safety had low HCO contributions and therefore low denominator numbers. It is unclear if the reported results are generalisable across the entire Australian healthcare context. Immunisation rates for Hepatitis B in permanent Category A staff (those with direct contact with blood or body substances) (CI 5.2) have shown a steady improvement since 2015 which hopefully reflects the efficacy of compulsory vaccination programs across the jurisdictions. Lower rates in other vaccine preventable diseases (CI 5.1, 5.3, 5.4 and 5.5) may be an indicator of the difficulty in producing vaccination evidence in the adult population which will be alleviated in future with the recent introductions of the Australian Immunisation Register[9] and My Health Record[10]. Measles, mumps, rubella (MMR) immunisation rates for permanent staff (CI 5.3) are a new indicator and at 77.4% are less than the national target of >95%.

Established surveillance of occupational exposures (OE) to blood and body substances (CI 6.1 and 6.2) enables identification of clinical practices and contexts where staff may be at risk of occupational acquisition of blood-borne viruses (BBV). Workers are far more likely to report parenteral injury than non-parenteral due to perceived risk to self, and this is reflected in the rates reported. The reporting data should be utilised by organisations to reduce the risks to the workforce. Conversely, however, rates that are very low may indicate that staff are not encouraged to report and/or able to access or receive appropriate follow up care.



FEATURE CLINICAL INDICATOR

3.2 Haemodialysis - Centrally inserted cuffed line access associated blood stream infections (BSI)

The data for centrally inserted cuffed line access associated BSI 2011-2018 has revealed a deteriorating rate per 100 patient months. The aggregate data for each year fluctuates between 0.75 in 2012 to 1.87 in 2015. These two extremes suggest that the observed deteriorating rate in BSI is still within normal variations of the average rate 1.2 per 100 patient months.

A significant decline in participation of almost 50% in the last three years 2016 – 2018, has seen the number of HCOs submitting data for 2018 drop to 13. The low participation by HCOs will naturally decrease the confidence for accuracy of the data represented as it may contribute to a skewed dataset. The findings provided are a loose indicator of the current trend Australasian wide and could be demonstrating reasonable fluctuations of the norm.

Several states and territories collect similar clinical indicators. The Victorian Coordinating Centre (VICNISS) has reported access associated BSI for patients with permanent central lines in their annual report 2017/2018 as 1 event per 100 patient months, from 39 participating dialysis facilities[11]. This is within the normal variations of the average rate 1.2 per 100 patient months observed in this report.

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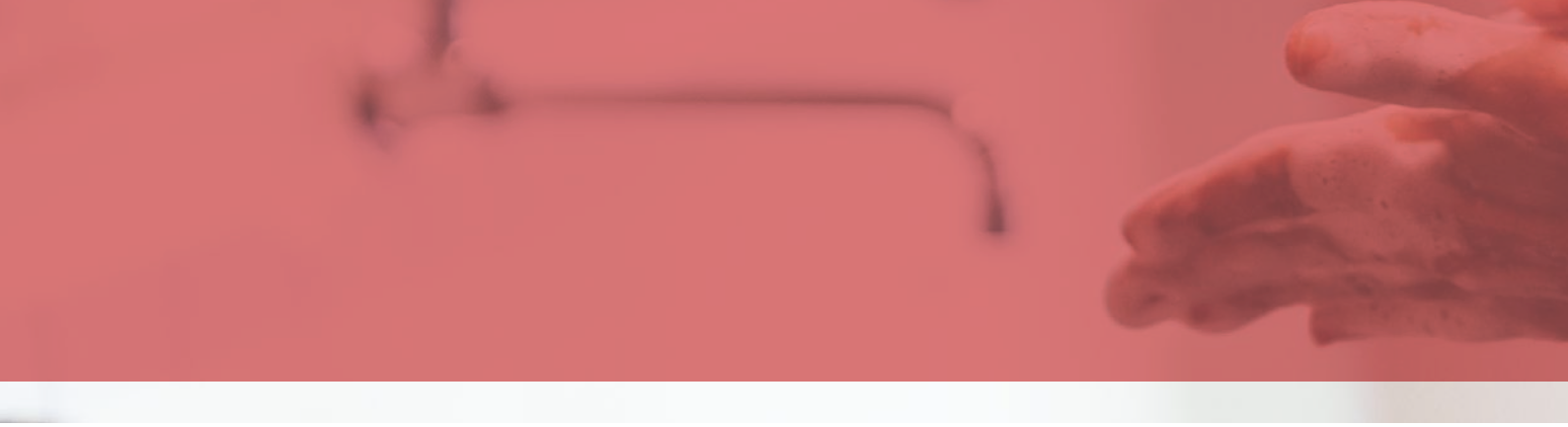
SUMMARY OF RESULTS

In 2018 there were 2,704 submissions from 343 HCOs for 26 CIs. Seventeen were analysed for trend, 14 of which improved, 2 deteriorated and the remaining CI showed no evidence of trend. In 2018, significant stratum variation was observed in 6 CIs. Fifteen CIs showed greater systematic variation, with centile gains in excess of 50% of all events. Outlier gains in excess of 25% of all events were observed in 11 CIs. See Summary of Indicator Results below.

Summary of Indicator Results

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Area 1: Infection surveillance								
1.1 Deep or organ / space SSI - hip prosthesis procedure (L)	151	0.534				27 (18%)	147	↓ ✓
1.2 Deep or organ / space SSI - knee prosthesis procedure (L)	152	0.356				4 (3%)	143	↓ ✓
1.3 Deep or organ / space SSI to chest incision site - CABG (L)	36	0.719				9 (25%)	36	↓ ✓
1.4 Deep or organ / space SSI - LSCS (L)	73	0.137	Private	1 (1%)	9 (20%)	25 (56%)	45	↓ ✓
1.5 Deep or organ/space SSI - open colon surgery (L) (L)	12	3.50					9	
1.6 Deep or organ/space SSI - open rectal surgery (L) (L)	12	3.32				9 (56%)	16	
1.7 Deep or organ/space SSI - laparoscopic-assisted large bowel resection (L) (L)	12	1.69					8	
Area 2: Surgical antibiotic prophylaxis (SAP)								
2.1 Timing of SAP for the hip prosthesis procedure (H)	27	98.0		2 (7%)	3 (8%)	20 (51%)	39	↑ ✓
2.2 Correct SAP and dose for the hip prosthesis procedure (H)	29	93.9		3 (10%)	40 (29%)	96 (70%)	138	↑ ✓
2.3 Discontinuation of SAP within 24 hours of the hip prosthesis procedure (H)	28	89.9		3 (11%)	84 (39%)	183 (86%)	213	↑ ✓
2.4 Timing of SAP for the knee prosthesis procedure (H)	26	98.2		5 (19%)	17 (36%)	38 (81%)	47	↑ ✓
2.5 Correct SAP and dose for the knee prosthesis procedure (H)	28	94.5		3 (11%)	45 (27%)	130 (77%)	168	↑ ✓

Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs



Summary of Indicator Results continued

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Area 2: Surgical antibiotic prophylaxis (SAP) *(Cont.)*								
2.6 Discontinuation of SAP within 24 hours of the knee prosthesis procedure (H)	28	89.7		3 (11%)	158 (50%)	290 (92%)	316	↑ ✓
2.7 Timing of SAP for the LSCS procedure (H)	21	92.3		3 (14%)	76 (36%)	180 (85%)	211	
2.8 Correct SAP and dose for the LSCS procedure (H)	22	92.7	NSW	2 (9%)	80 (34%)	182 (78%)	234	
2.9 Discontinuation of SAP within 24 hours of the LSCS procedure (H)	19	91.1		3 (16%)	168 (60%)	269 (96%)	279	
Area 3: Haemodialysis access-associated bloodstream infection surveillance								
3.1 Haemodialysis - AV-fistula access-associated BSI (L)	17	0.103		2 (12%)	2 (20%)	3 (30%)	10	
3.2 Haemodialysis - centrally inserted cuffed line access-associated BSI (L)	13	1.55				4 (17%)	23	↑ ✗
Area 4: Vancomycin Resistant Enterococci (VRE)								
4.1 VRE infection within the ICU (L)	49	1.75 (per 10,000 beddays)		1 (2%)	2 (7%)	13 (45%)	29	↓ ✓
Area 5: Staff Immunisation								
5.1 Flu vaccination for permanent staff (H)	63	54.7		15 (24%)	2,533 (18%)	7,907 (55%)	14,433	↓ ✗
5.2 Hepatitis B vaccination for permanent staff (H)	37	84.8	NSW	13 (35%)	1,326 (34%)	2,887 (75%)	3,847	↑ ✓
5.3 MMR vaccination for permanent staff (H)	18	77.4	NSW	5 (28%)	878 (34%)	1,712 (66%)	2,606	
5.4 Pertussis vaccination for permanent staff (H)	19	71.5		6 (32%)	842 (25%)	1,663 (49%)	3,378	
5.5 Varicella vaccination for permanent staff (H)	19	81.2	NSW	5 (26%)	820 (37%)	1,214 (55%)	2,227	

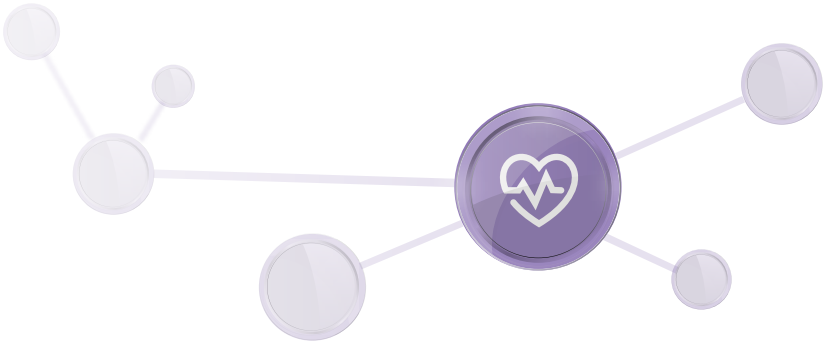
Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

Summary of Indicator Results continued

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Area 6: Occupational exposures to blood and/or body fluids								
6.1 Reported parenteral exposures sustained by staff (L)	300	0.028		16 (5%)	321 (9%)	1,668 (48%)	3,471	↓ ✓
6.2 Reported non-parenteral exposures sustained by staff (L)	297	0.010	Private	7 (2%)	151 (13%)	570 (47%)	1,222	↓ ✓

Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

INTENSIVE CARE



GENERAL COMMENTS

Associate Professor Mary White
Australian and New Zealand Intensive Care Society Chair,
ACHS Intensive Care Working Party Version 5

Dr Felicity Hawker
College of Intensive Care Medicine of Australia and New Zealand Member,
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Collectively, the five clinical indicators assessing adult access and exit block (CI 1.1-1.5) have improved progressively since 2011. The data, however, show that a bimodal distribution is emerging. Better resourced HCOs that are more likely to be private and metropolitan have rates that are lower and therefore more desirable. On the other hand, HCOs that are public, non-metropolitan and for some indicators in NSW and Victoria tend to have higher rates that are consequently less desirable. The issue of resource is complicated and not always within an HCO's control. Strategies that target improving staffing and other resources in non-metropolitan HCOs continue to be discussed and developed by both ANZICS and CICM.

The rate for rapid response system calls to adult ICU patients within 48 hours of ICU discharge (CI 2.1) is marginally lower in 2018. Whether the desired rate is high or low for this indicator is somewhat controversial as a rapid response system call is always desirable if it provides appropriate treatment for a deteriorating patient.

The rates for VTE prophylaxis (CI 3.1), adult central line-associated bloodstream infections (CI 4.1) and use of patient assessment systems (CI 5.1-5.3) remained relatively constant in 2018. This is the result of targeted strategies and collaborative action amongst ICUs. The high rates of VTE prophylaxis and participation in the ANZICS database indicate a speciality that is engaged in systemic safety and quality measures and a willingness to be benchmarked against peers.

It is unfortunate that the dataset does not seem to contain data from HCOs that admit large numbers of critically ill children; the data suggest a low volume of paediatric admissions and complexity. As such, the report does not accurately reflect the performance of Australian intensive care units admitting children in 2018. It is noted that more than half of the contributing HCOs to the overall dataset are in the private sector, where very few children receive intensive care.

In relation to the CIs aimed at paediatric patients:

CI 1.6 (ICU - paediatric discharge between 6pm and 6am) - there are 451 discharges in the 2018 dataset, compared to an estimated 10,000 admissions of children to Australian ICUs in the same period (ANZICS CORE data). The 11 HCOs contributing this outcome are very low-volume sites (mean 44 admissions per year); consequently, it is hard to infer anything meaningful from the report. The rate of after-hours discharge (6%) is much lower than expected, with the equivalent figure in the ANZPIC Registry figure approximately 10%. The reported adult rate is 12.3%. Although after hours discharge from ICU is associated with greater risk of subsequent mortality in adults, this association does not hold in children, perhaps because of the much lower mortality rate in the paediatric ICU population. Nevertheless, it is a frequently collected and reported clinical indicator.

CI 1.7 (ICU - elective paediatric surgical cases deferred or cancelled) - the dataset contains a total of five elective paediatric surgery cases at two HCOs.

CI 2.2 (Rapid response system calls to paediatric ICU patients within 48 hours of ICU discharge) - two RRT calls to 427 paediatric discharges are reported. The low rate (0.47%) is likely to reflect low acuity, given the low volume HCOs that appear to have contributed data.

CI 4.2 (Paediatric ICU-associated PI-CLABSI) - although a CLABSI rate of 0 per 1000 line-days can only be applauded, again the low numbers of contributing HCOs and denominator line days mean that this cannot be taken to represent the true picture in larger ICUs admitting children.

CI 5.2 (Participation in the ANZICS CORE Paediatric Intensive Care (ANZPIC) registry) - there appeared to be one HCO that admitted five children in 2018 that did not report data to the ANZPIC Registry.

Overall the responses to the paediatric indicators (CIs 1.6, 1.7, 2.2, 4.2, 5.2) were disappointing and clearly not representative of the paediatric intensive care unit (PICU) population. Consequently, the rates reported for these five paediatric indicators cannot be regarded as benchmarks as they represent at best around 20% of the paediatric intensive care population and for some indicators very much less.

CI 6.1 (Empathetic practice toward families of ICU patients) - whereas the other CIs (excluding those limited to PICU patients) have over 50 HCOs contributing data, only nine HCOs contributed data for this indicator in 2018. This suggests that less than 20% of HCOs regularly provide follow up for the next of kin or a family member after the death of a patient in the ICU or within 48 hours of discharge from the ICU. In the small proportion of HCOs that have provided data, there has been a steady increase in the rate of follow up contact with at least one family member from 52.2 per 100 patient deaths in 2016 to 71.1 per hundred in 2018. Importantly, for these nine HCOs, the 20th centile rate has increased from 2.14 in the same period to 63.9 per 100 deaths, indicating the families of most patients who die in ICU have follow up contact in these institutions. This contact is appreciated by family members[1] and provides an opportunity to discuss any aspects of ICU care and to provide a referral to other agencies if financial or other issues e.g. sleep disturbance are troubling family members[2]. Collection and reporting of empathetic practice should be encouraged.

FEATURE CLINICAL INDICATOR

CI 1.2 ICU – elective adult surgical cases deferred or cancelled due to unavailability of bed

The result for CI 1.2 is a concern and is possibly affected by 1.4 (below) as well as resource issues more generally as highlighted earlier.

CI 1.4 ICU – adult discharge delay more than 12 hours

Adult discharge delay more than 12 hours is usually an indicator of 'back of hospital' issues impacting ICU patient flow. The increase in overall admissions and length of hospital stay has resulted in a decrease in beds available to ICU patients when they are deemed ready for discharge. Data not collected as part of this survey are the impact of this 'exit block' on entry or admission to ICU. It is intuitive to imagine that the delay in discharge impacts the ability to rapidly admit patients from ED or the wards to ICU, which can adversely affect patient outcomes. Intensive care is a relatively expensive resource and occupancy of ICU by patients not requiring intensive care is not a good use of such a resource.

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GENERAL COMMENTS

Dr Frances Lin
Australian College of Critical Care Nurses
Member, Australian College of Critical Care Nurses Quality Advisory Panel
Member, ACHS Intensive Care Working Party Version 5

The Australian College of Critical Care Nurses (ACCCN) is pleased to provide this commentary on the Intensive Care Clinical Indicator report included here. The intensive care CIs report provides HCOs with important data on intensive care CIs and enables them to have a sense of how their performances compare against national data. The contributing intensive care units (ICUs) should monitor their data trends on patient and organisational outcomes and take actions promptly if needed. ACCCN encourages all ICUs to contribute to the data collection and refer to this publication in their ongoing quality improvement initiatives. Readers should note that some of the CIs were revised or added in 2015 (first data collection in 2016) thus data was only available from 2016 for these indicators.

Average ICU adult non-admission rate due to inadequate resources (CI 1.1) improved from 2.1% to 1.7%, with a change of 0.42 per 100 adult admissions from the 2017 to 2018. The rate is worse in public hospitals (2.1%) than private hospitals (0.08%). HCOs are reminded that delayed admission to ICU contributes to significant mortality for critically ill patients[1], therefore ICU admission delays should be avoided, if possible, for critically ill patients. It is noted that the number of elective surgical cases deferred or cancelled (CI 1.2), and adult transfer to another facility (CI 1.3) due to unavailability of beds have been in a downward trend. Further, overall adult ICU discharge delay of more than 12 hours (CI 1.4) shows a slight downward trend but there is still room for improvement, especially in the public sector.

Rapid response system calls for adult ICU patients within 48 hours of ICU discharge (CI 2.1) remain steady at 4.4% in 2018, with the rate for public hospitals (5.8%) much higher than the private sector (1.78%). Rapid response calls are important strategies to identify deteriorating patients early and prevent adverse events. The outcome of these rapid response calls should be monitored and analysed to ensure that patients are not being prematurely discharged to the ward from ICU.

The VTE prophylaxis in adult patients within 24 hours of ICU admission (CI 3.1) shows a high level of compliance with a steady rate of 94.1% in 2018.

CI 6.1 (Empathetic practice toward families of ICU patients) was added to the dataset in the 2015 review. It indicates that the percentage of occasions where at least one family member received follow-up contact within 4 weeks of the patient's death. The report shows an upward trend from 2016-2018, however, the number of HCOs contributing to this dataset has been very low, with a range of 7-9 HCOs annually during the 2016-2018 period. HCOs are strongly encouraged to report this data.

FEATURE CLINICAL INDICATOR

CI 1.5 ICU – adult discharge between 6pm and 6am

This report shows that the rate for adult ICU discharges between 6pm and 6am was 12.3% in 2018, which was slightly lower than previous years. The paediatric discharge between 6pm and 6am (CI 1.6) was much lower than adults. A recent systematic review and meta-analysis found that ICU patients who were discharged after hours had significantly higher in-hospital death rates and ICU readmission rates than those who were discharged at other times, which is consistent with previous research evidence[2]. What contributed to these in-hospital deaths and ICU readmissions, however, remains unclear as reported in this systematic review[2]. Future rigorous research is needed to identify the contributing factors to after hours morbidity and mortality.

CI 4.1 Adult ICU-associated CI-CLABSI

While this report shows a promising continuous downward

trend with the rate at 0.34 per 1,000 lines days, CLABSI contributes to significant morbidity and mortality. An in-depth analysis of the CLABSI cases and regular audit of current CLABSI prevention practices may provide important insight on why CLABSIs continue to occur in some facilities. In addition, the data shows that in 2018, among the 54 HCOs that contributed to the data collection, there were 32 CLABSI cases, which means that some of these HCOs did not have any CLABSI cases. In their evaluation study on modifiable and non-modifiable risk factors to CLABSI in Victorian hospitals, Spelman and colleagues found that modifiable organisational factors such as ultrasound guidance for central venous catheter localisation, and increased availability of sessional medical specialists were independently associated with protection against CLABSI[3]. Learnings may be possible by researching the practices between the ICUs that had CLABSIs and the ones which did not.

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SUMMARY OF RESULTS

In 2018 there were 1,116 submissions from 89 HCOs for 15 CIs. Five were analysed for trend, all of which improved. In 2018, significant stratum variation was observed in 7 CIs. Ten CIs showed greater systematic variation, with centile gains in excess of 50% of all events. Outlier gains in excess of 25% of all events were observed in 9 CIs. See Summary of Indicator Results below.

Summary of Indicator Results

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Access and exit block								
1.1 ICU - adult non-admission due to inadequate resources (L)	52	1.35	Private	12 (23%)	511 (61%)	822 (98%)	841	↓✓
1.2 ICU - elective adult surgical cases deferred or cancelled due to unavailability of bed (L)	51	0.820	Private	12 (24%)	172 (57%)	286 (95%)	300	
1.3 ICU - adult transfer to another facility / ICU due to unavailability of bed (L)	54	0.665	Private	10 (19%)	230 (55%)	396 (95%)	415	↓✓
1.4 ICU - adult discharge delay more than 12 hours (L)	62	12.7	Private	20 (32%)	3,635 (42%)	7,478 (86%)	8,713	
1.5 ICU - adult discharge between 6pm and 6am (L)	72	12.3	Private	26 (36%)	3,399 (36%)	7,810 (83%)	9,452	↓✓
1.6 ICU - paediatric discharge between 6pm and 6am (L)	11	5.99		2 (18%)	6 (22%)	11 (41%)	27	
1.7 ICU - elective paediatric surgical cases deferred or cancelled (L)	2	0					-	

Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

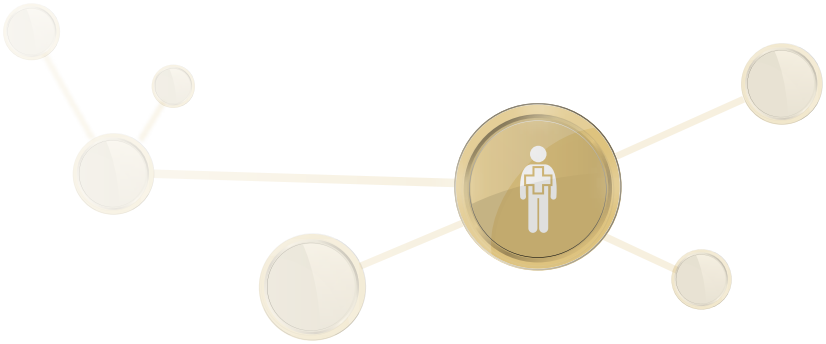
SUMMARY OF RESULTS

Summary of Indicator Results continued

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Intensive care patient management								
2.1 Rapid response system calls to adult ICU patients within 48 hours of ICU discharge (L)	56	4.442	Private	9 (16%)	875 (33%)	2,223 (84%)	2,653	
2.2 Rapid response system calls to paediatric ICU patients within 48 hours of ICU discharge (L)	8	0.468					2	
Intensive care patient treatment								
3.1 VTE prophylaxis in adult patients within 24 hours of ICU admission (H)	74	94.1		23 (31%)	2,386 (54%)	4,368 (98%)	4,442	
Central line-associated bloodstream infection								
4.1 Adult ICU-associated CI-CLABSI (L)	54	0.342	NSW			3 (9%)	32	↓✓
4.2 Paediatric ICU-associated PI-CLABSI (L)	5	0					-	
Utilisation of patient assessment systems								
5.1 Participation in the ANZICS CORE Adult Patient Database (APD) (H)	64	97.2		10 (16%)	1,559 (80%)	1,934 (100%)	1,942	↑✓
5.2 Participation in the ANZICS CORE Paediatric Intensive Care (ANZPIC) registry (H)	6	99.4		1 (17%)	7 (64%)	11 (100%)	11	
5.3 Participation in the ANZICS CORE Critical Care Resources survey (N)	32	96.2	Not applicable – measures percentage of compliant HCOs					
Empathetic practice								
6.1 Empathetic practice toward families of ICU patients (H)	9	71.1		1 (11%)	22 (22%)	63 (64%)	98	

Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

INTERNAL MEDICINE



GENERAL COMMENTS

Associate Professor Virginia Plummer
Australian College of Nursing Member,
ACHS Internal Medicine Working Party Version 6

As Australia's population ages, increasing numbers of older people with a broad range of chronic conditions, complications and comorbidities are admitted to hospital[1,2]. The prevalence of cognitive impairment is higher in older adults[3] and studies have found that there appears to be a bidirectional association with functional decline[4]. It is, therefore, important that cognition assessment is undertaken for medical patients aged 65 years or older (CI 4.1), in addition to physical assessment on admission (CI 4.2). Essential data is captured for monitoring care, predicting functional outcomes and managing complications that are preventable and treatable.

There were seven submissions from four HCOs, the number gradually declining over seven years from 14 in 2011 for CI 4.1 (Medical patients 65 years or older – cognition assessment using validated tool) and nine submissions from five HCOs declining at a similar rate from 15 in 2011 for CI 4.2 (Geriatric patients – documented assessment of physical function). Declining numbers of HCOs is unlikely to be perceived as lack of importance of the indicator, rather it may be due to mandatory reporting of the same data to other agencies such as Aged Care Assessment Screening (ACAS).

The annual rate for assessment of cognition function was 77.5%, and notably the annual rate for assessment of physical function which was 98.3% and very little variation between the HCOs with small potential gains. The use of standardised measures such as Mini Mental State Examination MMSE, the Functional Independence Measure (FIM) and Barthel's index are likely to contribute to both the annual rates and the low variation.

Two outlier records were from one HCO whose combined excess was 401 fewer patients who have had their cognition assessed. As already noted, physical assessment rates were higher at 93.8 per 100 patients, there were two outlier records from one outlier HCO with a combined excess of 37 fewer patients receiving a documented objective assessment of physical function. Factors that may contribute to this variation include pressure to admit patients, for example meeting emergency department access targets, including to admit 'boarders' from other clinical units and pressure to discharge early, resulting in incomplete or inadequate discharge planning. It is essential that assessment of older patients extends beyond physical function to better include standardised cognition assessment[4] monitoring and predictive approaches to care and that clinicians across related disciplines work together to ensure patients are screened on admission for optimum outcomes of care.

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SUMMARY OF RESULTS

In 2018 there were 117 submissions from 25 HCOs for 18 CIs. Five were analysed for trend, 3 of which improved, 1 deteriorated and the remaining CI showed no evidence of trend. In 2018, significant stratum variation was observed in 0 CIs. Three CIs showed greater systematic variation, with centile gains in excess of 50% of all events. Outlier gains in excess of 25% of all events were observed in 3 CIs. See Summary of Indicator Results below.

Summary of Indicator Results

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Cardiovascular disease								
1.1 CHF - prescribed ACEI / A2RA (H)	1	90.9				7 (32%)	22	
1.2 CHF - prescribed beta blocker (H)	1	96.3					11	
1.3 CHF and AF - prescribed warfarin (H)	1	95.5					1	
1.4 CHF - chronic disease management referral including physical rehabilitation (H)	1	34.4					147	
1.5 PTCA - vessels where primary success achieved (H)	6	96.5				18 (17%)	105	
Endocrine disease								
2.1 Hospitalised patients with severe hypoglycaemia less than 2.8 mmol/L (L)	2	16.9					43	
Acute stroke management								
3.1 Acute stroke - documentation of swallowing screen conducted within 24 hours prior to food or fluid intake (H)	8	77.6		2 (25%)	29 (11%)	87 (33%)	266	↑✓
3.2 Acute stroke - documented physiotherapy assessment within 48 hours of presentation (H)	8	80.4		1 (13%)	6 (3%)	74 (32%)	233	↓✗
3.3 Acute stroke - plan for ongoing community care provided to patient / family (H)	7	82.2		1 (14%)	19 (14%)	60 (44%)	137	↑✓
3.4 Acute stroke - documented treatment in a stroke unit during hospital stay (H)	7	84.0		2 (29%)	25 (14%)	126 (69%)	182	↑✓

Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

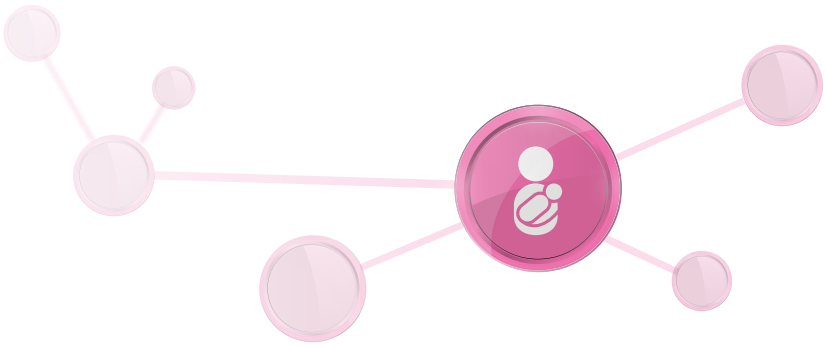
INTERNAL MEDICINE

Summary of Indicator Results continued

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Care of the elderly								
4.1 Medical patients 65 years or older - cognition assessment using validated tool (H)	4	77.5		1 (25%)	401 (52%)	733 (96%)	764	
4.2 Geriatric patients - documented assessment of physical function (H)	5	98.3		1 (20%)	37 (52%)	67 (94%)	71	
Respiratory disease								
5.1 COPD - chronic disease management service referral (H)	2	54.5				1 (1%)	76	
5.2 Acute asthma - assessment of severity documented on admission (H)	4	69.2		1 (25%)	13 (27%)	19 (40%)	48	
5.3 Acute asthma - appropriate discharge plan documented (H)	4	71.8					44	
Gastrointestinal disease								
6.1 Haematemesis / melaena with blood transfusion - gastroscopy within 24 hours (H)	3	71.9				8 (30%)	27	
6.2 Haematemesis / melaena with blood transfusion & subsequent death (L)	2	2.4					2	
Oncology								
7.1 Time to administration of antibiotics for patients admitted with febrile neutropenia (H)	4	38.2					21	

Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

MATERNITY



GENERAL COMMENTS

Dr Vijay Roach
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The data in this report provides an invaluable insight into maternity care trends. These trends are illuminating for both providers and consumers. In addition to trends, the ability to create a snapshot of current activity is of particular importance to patient education and counselling. Many women want to know what to expect on their pregnancy and birth journey. The likelihood of a spontaneous vaginal birth when attempting a planned vaginal delivery, the likelihood of perineal trauma and the likelihood of success with an attempted VBAC are each important examples of information that women need in order to make informed and realistic decisions around birth. We congratulate ACHS for another year of excellent work.

The 2018 data is generally positive for maternity care in many areas. CI 8.1 measures the rate of profound intrauterine growth restriction (IUGR) in babies delivered beyond their due date. This was a relatively new CI when introduced by ACHS in 2011 but is gaining wide acceptance given the high morbidity and mortality associated with failure to diagnose the severely growth restricted fetus. It is very reassuring to see the improvement has been sustained in better diagnosis and before the due date. There has essentially been a 33% reduction in the incidence of severe IUGR at or beyond 40 weeks - a remarkable impact of this indicator.

CI 2.1 evaluates the rate of vaginal birth after caesarean section (VBAC) in all those with one previous birth that was a caesarean section. The rate appears to be stabilising at around 12% but the trend is for this to decrease. It is noteworthy that the largest cohort study to date in Australia is a prospective study of 2,345 pregnancies. It found a tripling of the rate of perinatal mortality or serious infant outcome in the planned VBAC group versus the planned elective caesarean birth group (0.9% versus 2.4%, relative risk 0.39). The postpartum haemorrhage (PPH) rate was also lower in the planned caesarean birth group[1]. It seems unlikely that VBAC rates will markedly increase in the presence of an increasingly risk averse maternity population.

The rate of PPH requiring blood transfusion (CIs 7.1 and 7.2) is noticeably lower for caesarean birth (1.12 / 100 caesarean births – CI 7.1), than for vaginal births (1.34 / 100 vaginal births – CI 7.2). The steady fall in this indicator for caesarean birth has not been mirrored with vaginal births. Overall the rate of PPH would appear to be in decline which is unlikely to be a reporting issue as anecdotally more and more units are "weighing" to measure blood loss rather than "estimating". There may be an impact of the WOMAN trial with increasing use of tranexamic acid in the management of PPH[2].

Also pleasing to see is a steady decline in the incidence of surgical repair of the perineum for fourth degree tears amongst primiparous women (CI 3.6) - from 0.37 per 100 births in 2011 to 0.24 per 100 births in 2018. This is the lowest figure in the 9-year period and follows a progressive trend. Long term faecal incontinence is a devastating complication of childbirth[3] and a positive trend in the incidence of fourth degree tear is most welcome. The absence of this trend in third degree tears is much less concerning as clinicians become increasingly aware of this issue and more vigilant in the diagnosis of the more subjective third degree tear.

FEATURE CLINICAL INDICATOR

Area 1 Outcome of selected primipara
CI 1.1 Selected primipara - spontaneous vaginal birth
CI 1.2 Selected primipara – induction of labour
CI 1.3 Selected primipara - instrumental vaginal birth
CI 1.4 Selected primipara – caesarean section

There has been a further decrease in the number of spontaneous vaginal births in the selected primipara (CI 1.1), decreasing to its lowest level at 41.2%. There are several reasons why the number of spontaneous vaginal births continues to lessen over time:

a) Women are becoming more risk averse and therefore more often requesting of obstetric procedures to minimise risk[4]. This applies to all women but increasingly in relation to common issues such as suspected fetal macrosomia.
b) Increasing maternal age and maternal obesity.
c) Reducing maternal parity with the consequential reduced morbidity from caesarean section in subsequent pregnancies.

Stratum differences were again demonstrated in relation to private and public HCOs (33.3% vs 45.6% respectively). This is expected as most of the above factors are more prevalent in the private than public sector.

CI 1.2 (Selected primipara – induction of labour) continues to increase in an almost linear fashion at a rate of approximately 2% per year - such that it has increased from 30.7% in 2012 to 44.0% in 2018. Underlying this increase is a series of publications across an array of pregnancy conditions in which earlier birth by induction is preferable to awaiting spontaneous labour[5]. In contemporary maternity care this is most pertinent with respect to fetal macrosomia[6]. It also reflects an increasing intolerance of fetal risk with approximately 1 in 400 pregnancies suffering mortality or serious morbidity beyond 39.0 weeks[7], that would likely have been averted in most cases had labour been induced or an elective caesarean section performed.

The rate of instrumental vaginal birth in selected primipara (CI 1.3) was essentially unchanged in 2018 relative to 2017 but still consistent with an overall upward trend. As stated in previous commentaries, an increased rate of instrumental birth is expected where women are increasingly able to utilise regional analgesia for pain relief in labour[8,9].

After looking to stabilise at around 29-30%, the caesarean section rate in selected primipara (CI 1.4) now exceeds 31%. For the explanation, we need to look at an increasingly "risk averse" population who are older, more obese and with a lower planned future parity. Lowering in the rates of transfusion for haemorrhage, fourth degree tears and caesarean section under general anaesthesia all reflect more risk averse mothers who are opting for caesarean section in preference to a long difficult labour, an increased likelihood of a difficult instrumental birth, PPH and serious trauma to the pelvic floor.

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GENERAL COMMENTS

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Member ACHS Maternity Working Party Version 8
Helen Cooke *Australian College of Midwives*

Comparing quality indicator rates for maternity services over the previous eight years are particularly interesting this year given the national focus on recommendations to reduce the rate of stillbirth[1] and standardisation of evidence based provision of antenatal care[2] published in late 2018. The decreasing number of HCOs that had data submitted for indicators each year makes it difficult to determine if the change in indicator rates over time reflected change in practice or outcome. It is possible that the poorer results in most CIs indicate loss of data from higher performing organisations.

The data indicate that overall, in 2018 compared to earlier years, selected primiparas had more intervention (induction, instrumental birth, caesarean section, episiotomy), less women succeeded at vaginal birth after caesarean section, and slightly more infants had a low Apgar score at five minutes of age or were admitted to a special care nursery. CI rates improved in the areas of blood transfusion after caesarean section and repair of fourth degree anal sphincter trauma. The difference in number of HCOs submitting these data over time and the difference in HCOs providing data for CIs 3.5 and 3.6 in 2018 make it difficult to determine if there was an actual decrease in the rate of third- and fourth-degree perineal trauma collectively in 2018. Some literature report recent examination of research to determine if use of episiotomy will prevent anal sphincter trauma[3]. Since 2017 a bundle of non-evidence-based interventions were introduced at some maternity services with an aim of reducing the rate of anal sphincter trauma[4]. The data presented here did not demonstrate any protection of the anal sphincter from damage.

It was pleasing to observe a decrease in the number of IUGR babies being born at term. These findings suggest that clinicians may be better at detecting these babies and delivering earlier to reduce the risk of stillbirth.

FEATURE CLINICAL INDICATOR

CI 6.1 Selected primipara – exclusive breastfeeding

It is encouraging to see a slight increase in HCOs able to submit data for this indicator where other indicators have seen a reduction in the number of HCOs submitting data. With only two years of data there is little trend to observe in the rate of exclusive breastfeeding. Australian maternity services in 2018 encouraged rapid transfer home of mothers and infants. For births in 2016, the Australian Institute of Health and Welfare reported that the median length of postnatal stay in hospital was three days with almost 70 per cent of women home within three days[5]. Short postnatal stays in hospital should provide less opportunity for interruption of breastfeeding with use of formula but the increasing demand on postnatal ward midwives to care for compromised infants and women with chronic illnesses or who have had surgical intervention leaves less time for supporting women learning the skill of breastfeeding. For these healthy term infants of women who wish to breastfeed, a rate of almost 30 per cent receiving formula before discharge provides significant opportunity for improvement in exclusive breastfeeding rates in the years to come.

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SUMMARY OF RESULTS

In 2018 there were 3,969 submissions from 144 HCOs for 20 CIs. Seventeen were analysed for trend, 6 of which improved, 10 deteriorated and the remaining CI showed no evidence of trend. In 2018, significant stratum variation was observed in 8 CIs. Three CIs showed greater systematic variation, with centile gains in excess of 50% of all events. Outlier gains in excess of 25% of all events were observed in 1 CI. See Summary of Indicator Results below.

Summary of Indicator Results

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Area 1: Outcome of selected primipara								
1.1 Selected primipara - spontaneous vaginal birth (H)	127	41.2		12 (9%)	919 (4%)	3,782 (15%)	25,553	↓ ✗
1.2 Selected primipara - induction of labour (L)	127	44.0	NSW	3 (2%)	242 (1%)	2,411 (13%)	18,958	↑ ✗
1.3 Selected primipara - instrumental vaginal birth (L)	126	26.8		6 (5%)	423 (4%)	1,900 (16%)	11,560	↑ ✗
1.4 Selected primipara - caesarean section (L)	126	31.1		20 (16%)	1,124 (8%)	2,561 (19%)	13,446	↑ ✗
Area 2: Vaginal birth after caesarean section (VBAC)								
2.1 Vaginal delivery following previous birth of caesarean section (N)	110	12.1						↓
Area 3: Major perineal tears & surgical repair of the perineum								
3.1 Selected primipara - intact perineum (H)	106	9.37		3 (3%)	167 (1%)	2,515 (10%)	24,056	↓ ✗
3.2 Selected primipara - episiotomy and no perineal tear (L)	93	36.9		7 (8%)	397 (4%)	1,966 (21%)	9,253	↑ ✗
3.3 Selected primipara - perineal tear and NO episiotomy (L)	93	42.1	NSW	11 (12%)	502 (5%)	2,968 (29%)	10,308	↓ ✓
3.4 Selected primipara - episiotomy and perineal tear (L)	89	8.94	NSW	6 (7%)	370 (17%)	1,143 (53%)	2,144	↑ ✗
3.5 Selected primipara - surgical repair of perineum for third degree tear (L)	115	4.96	Private	2 (2%)	57 (4%)	513 (36%)	1,419	
3.6 Selected primipara - surgical repair of perineum for fourth degree tear (L)	128	0.245					75	↓ ✓

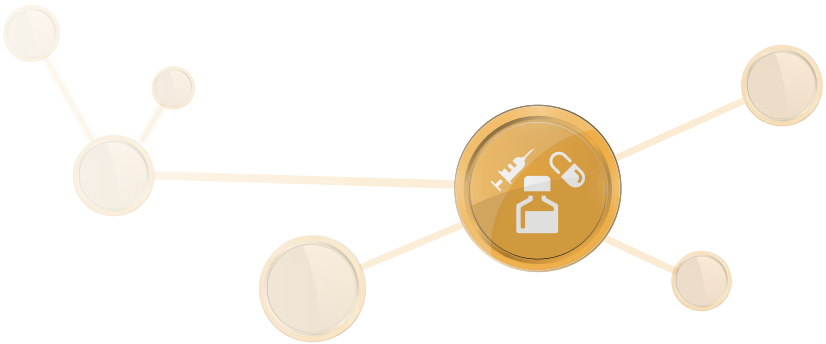
Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

Summary of Indicator Results continued

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Area 4: General anaesthesia for caesarean section								
4.1 General anaesthetic for caesarean section (L)	119	5.22	Private	14 (12%)	464 (15%)	1,538 (48%)	3,179	↓ ✓
Area 5: Antibiotic prophylaxis & caesarean section								
5.1 Appropriate prophylactic antibiotic at time of caesarean section (H)	98	94.4		16 (16%)	1,029 (43%)	2,043 (86%)	2,382	↑ ✓
Area 6: Exclusive breastfeeding								
6.1 Selected primipara - exclusive breastfeeding (H)	54	71.2		6 (11%)	293 (5%)	1,498 (25%)	5,985	
Area 7: Postpartum haemorrhage / blood transfusions								
7.1 Vaginal birth - blood transfusion (L)	124	1.34	Private	9 (7%)	201 (15%)	583 (43%)	1,348	↑ ✗
7.2 Caesarean section - blood transfusion (L)	119	1.12	Private	5 (4%)	80 (12%)	311 (48%)	648	↓ ✓
Area 8: Intrauterine growth restriction (IUGR)								
8.1 Babies - birth weight less than 2,750 g at 40 weeks gestation or beyond (L)	104	1.21		1 (1%)	7 (1%)	67 (13%)	528	↓ ✓
Area 9: Apgar score								
9.1 Term babies - Apgar score of less than 7 at 5 minutes post-delivery (L)	126	1.22	Private	4 (3%)	86 (4%)	491 (25%)	1,928	↑ ✗
Area 10: All admissions of a term baby to special care nursery or neonatal intensive care nursery								
10.1 Term babies - transferred or admitted to NICN or SCN (L)	116	10.6		25 (22%)	2,539 (17%)	8,568 (56%)	15,369	↑ ✗
Area 11: Specific maternal peripartum adverse events								
11.1 Specific maternal peripartum adverse events addressed within peer review process (H)	23	99.9					1	

Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

MEDICATION SAFETY



GENERAL COMMENTS

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Two hundred and seventy-five HCOs undertook at least one clinical audit using the ACHS CIs for Medication Safety Version 4 during 2018. Private HCOs were the major users (72%) as compared to public hospitals and three-quarters of all HCOs were based in metropolitan areas. In general, there appears to be stability or improvement across the system with regard to medication safety as reflected by 2018 audit results, although results regarding medication-related processes at admission (CIs 3.1 and 6.1) and the low uptake of CIs in specific therapeutic areas is concerning. A review of the collated CI results can be found in the next section.

Clinical auditing provides several important outcomes. It assists HCOs to understand the processes, systems and outcomes of care that they deliver and ensure it is reliable, safe and of high quality; it ensures HCOs comply with National Safety and Quality Health Service (NSQHS) standards of care; it drives continuous quality improvement; it informs jurisdictions of performance and drives changes in policy and investment around safety and quality; and lastly, it has the potential to identify emerging issues. Given the limited resources and increasing demand for audits, HCOs need to carefully consider how often and which CIs need to be measured to ensure that they are targeting their gaps and demonstrating improvements over time.

Medication-related accreditation assessments since 2013 have focused on evaluation of an organisation's systems and outcomes known to be generally less than optimal across Australia and/or to cause significant preventable harm to the Australian population. These include reduction of healthcare-associated infection, inappropriate antimicrobial use, documentation of adverse drug reactions (ADRs) and medication reconciliation. Furthermore, HCOs are required to identify local areas requiring safety and quality improvement and prioritise potential risk. These locally identified gaps should also be monitored and reported to drive local quality improvement activity in order to achieve performance that meets nominated targets. Of concern is the reduced uptake of CIs targeting known areas of suboptimal quality use of medicines in HCOs such as antithrombotic and antibiotic therapies.

The ACHS CI set was expanded in 2015 and incorporates 18 of the 37 National Quality Use of Medicine (QUM) Indicators for Australian Hospitals. The ACSQHC released the second edition of the NSQHS Standards in November 2017 with HCOs to be assessed against the standards in the next edition from January 2019. The results in this current ACHS Medication Safety Report will be the last assessment against the first edition of the NSQHS Standards.

The 2018 results suggest there is wide variation in sample sizes being used in clinical auditing. HCOs need to ensure that the sample size that they select will provide as true a picture of practice as is feasibly possible and will convince stakeholders of a process for the need for action when suboptimal results are obtained.

The implementation of electronic medical records and medication management systems (eMR and eMMS, respectively) not only represents the ability to improve acquisition of data but may also represent diversion of existing resources, need for new resources and systems, the upskilling

of staff to ensure appropriate utility, and the development of new relationships and workflows. The need for clinical auditing is even more critical given the huge change in workflow that these new technologies present. Many of these CIs may be used for 'before and after' studies of eMR and/or eMMS implementations and the results in 2018 suggest that this has been occurring in some jurisdictions. Some CIs should become less important with the implementation of eMMS e.g. use of error-prone abbreviations, ADR charting; however, emergence and measurement of other potential medication safety issues need to be considered.

The most commonly reported CI continues to be CI 6.3 (Medication errors - adverse event requiring intervention), which was undertaken by 252 HCOs. While it seemingly improved overall, there was variation between jurisdictions and between public and private hospitals. A few hospitals reported significant rates above the average rate and this should prompt further investigation in these HCOs, although it may signify improved reporting rather than increased adverse events requiring intervention. How HCOs use this 'automated' indicator to guide their medication safety practices requires investigation.

Similar to 2017 results, the most popular non-automated indicators (CIs 1.1 - 6.1) during the 2018 audit year were CIs 3.1, 3.2, 3.3, 5.5, and 5.6, demonstrating a focus on processes that target medication reconciliation at admission, inpatient medication charting and communication of medication information for ongoing care after discharge. The numbers of HCOs using CIs 3.1 (Percentage of patients whose current medications are documented and reconciled at admission) and 3.2 (Percentage of patients whose known adverse drug reactions are documented on the current medication chart) increased significantly in 2018. The number of patients being audited using CI 5.6 (Percentage of patients who receive a current, accurate and comprehensive medication list at the time of hospital discharge) also increased substantially from previous years.

2018 again saw variation in clinical audit results across the HCOs and, although there is an ability for HCOs to recognise under-performance compared to one's peers, there is also a need to share the successful strategies being employed by higher-performing HCOs. The 2018 rate of completed medication reconciliation at admission (58%) using CI 3.1 was substantially less than that reported in 2017 (76%) but the number of HCOs and patients increased dramatically. This increase in patient denominator numbers was due to uptake by five Queensland hospitals (all from or predominantly in the public sector) and provides a robust representation of their rate (57%). The patient denominator numbers suggest that analysis of electronic medication records was able to be used to obtain this clinical audit result.

Seventeen Victorian HCOs reporting on CI 3.1 showed significant variation in their rates with an aggregate rate (77%) lower than that reported in 2017 (85%). Western Australia reported a high average rate (92%) but there was wide variation and results suggest audits were part of 'before and after' studies. Clearly the results show an urgent need for medication reconciliation at admission to improve in almost all auditing hospitals. Sharing of information about the interventions undertaken by the WA hospitals reporting the high CI result would be useful.

Interestingly and in contrast to CI 3.1, a process that is likely to accompany medication reconciliation at admission, the review of patients by a clinical pharmacist within one day of admission (CI 6.1) was not utilised by many of HCOs and auditing HCO numbers and patient denominator numbers have been decreasing since 2016. Given that the CI 6.1 rate continues to decline and the relative ease in measuring this indicator, these results together with the CI 3.1 results indicate the potential for increasing risk of medication-related harm at admission and should be of concern to health administrators and clinicians. Moreover, of the nine HCOs that used CI 6.1, only one was a private HCO (11%). This is striking given that 72% of auditing hospitals are private HCOs. The results both from the perspective of CI uptake and CI rates warrant global and local investigation.

Medication charting of ADRs (CI 3.2) is generally high (97%); however, metropolitan hospitals had higher ADR charting

on charts than non-metropolitan hospitals, 98% versus 90%. There was also little jurisdictional variation although WA HCOs demonstrated significant potential for improvement. The patient numbers suggest that eMMS assisted auditing in NSW and Victoria.

The 2018 average rate of error-prone abbreviations (EPA) in medication orders (CI 3.3) was approximately 5 in 100 medication orders and is higher than that reported in 2018 (4.1%). Further, the rate of EPA use was higher in non-metropolitan hospitals (8.4%) compared to metropolitan hospitals (3.1%). Victorian hospitals have continued to perform significantly better (i.e. lower usage rate of error prone abbreviations) than other jurisdictions. There remains further room for improvement although the implementation of eMMS in many hospitals should reduce this source of medication error. Public hospitals (predominantly in Victoria) audited a substantially greater number of medication orders in their samples than private hospitals and may have used the CI to demonstrate the value of eMMS implementations.

The results from audits using CIs 5.5 (Percentage of patients whose discharge summaries contain a current, accurate and comprehensive list of medicines) and 5.6 show that the uptake of CI 5.6 was much greater in terms of HCOs and patient numbers than in previous years. Audit results (55%) showed substantial room for improvement. Similar numbers of public and private HCOs used CI 5.6 but public hospitals revealed a six-fold increased number of patients suggesting that eMMS analysis was again used to obtain the result. In contrast to the suboptimal result for CI 5.6, the result for CI 5.5 was 97%, similar to the 2018 result of 99%. As stated in the 2018 commentary, the CI 5.5 result is dubious and warrants further investigation. Fewer HCOs used CI 5.5 and patient numbers were also reduced with similar numbers of private and public hospitals undertaking the CI 5.5 audit. HCOs may not be undertaking repeat audits using this CI because of apparent high results; however, the results suggest methods for sampling and auditing require local review.

The numbers of HCOs undertaking audits involving antibiotic therapy (CIs 2.1, 2.2 and 2.3), antithrombotic therapy (CIs 1.1, 1.2 and 1.3) and pain management (CI 4.1) were low [average 3.9, (range 1-8)] and further reduced from 2018 levels. This is of significant concern given that these CIs target commonly encountered medication safety issues; although it may be that other measures are being used by HCOs to measure the safety and quality of care involving use of these medications.

Although 72% of all HCOs represented the private HCO sector, there were generally far greater indicator denominator numbers (patients, charts, orders) in the public HCO sector. This may or may not be appropriate.

It is unclear which hospitals were undertaking accreditation during 2018 and what impact this has on the use of the CIs. Only one CI appears to be routinely used by the majority of hospitals - CI 6.3. Given the high-level reporting of this indicator and the variation in results (public versus private and between jurisdictions), reporting of how this CI influences care would be useful. This also applies to CI 6.2 (Adverse drug reactions reported to TGA), which, while being easily obtained, is only reported by 87 HCOs in 2017.

The ACHS CI set provides the use of validated CIs targeted at well-recognised gaps in medication safety. The collation of CI results provides benchmarking information but importantly HCOs need to look at their results and previous results to assess their need for further quality improvement intervention. Comparisons of the results between sectors, whether public versus private or metropolitan versus rural, need to be interpreted very cautiously as they may not have been measured using the same methodology or have the same casemix.

It remains critically important that clinical audits that address local issues as well as well-recognised evidence-based gaps are well-resourced in busy resource-limited health care environments. Recent implementation of technology such as eMMS are beginning to have a substantial impact on clinical auditing processes and results and information regarding their impact is required. Feedback from HCOs regarding audits in the area of medication safety should be regularly obtained to ensure appropriate responsiveness in the health care system.

SUMMARY OF RESULTS

In 2018 there were 1,010 submissions from 275 HCOs for 20 CIs. Eleven were analysed for trend, 6 of which improved, 3 deteriorated and the remainder showed no evidence of trend. In 2018, significant stratum variation was observed in 1 CI. Thirteen CIs showed greater systematic variation, with centile gains in excess of 50% of all events. Outlier gains in excess of 25% of all events were observed in 6 CIs. See Summary of Indicator Results below.

Summary of Indicator Results

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Antithrombotic therapy								
1.1 Percentage* of patients prescribed enoxaparin whose dosing schedule is appropriate (H)	4	93.6					24	
1.2 Percentage* of patients prescribed hospital initiated warfarin whose loading doses are consistent with a Drug and Therapeutics Committee approved protocol (H)	5	80.5		1 (20%)	9 (56%)	15 (94%)	16	
1.3 Percentage* of patients with an INR above 4 whose dosage has been adjusted or reviewed prior to the next warfarin dose (H)	8	96.1				1 (17%)	6	↑✓
Antibiotic therapy								
2.1 Percentage* of prescriptions for restricted antibiotics that are concordant with drug and therapeutics committee approved criteria (H)	5	81.7					15	↑✓
2.2 Percentage* of patients in whom doses of empirical aminoglycoside therapy are continued beyond 48 hours (L)	1	0					-	
2.3 Percentage* of patients presenting with community acquired pneumonia that are prescribed guideline concordant antibiotic therapy (H)	2	80.1				31 (89%)	35	
Medication ordering								
3.1 Percentage* of patients whose current medications are documented and reconciled at admission (H)	45	58.4		6 (13%)	3,749 (16%)	22,011 (91%)	24,060	↓✗
3.2 Percentage* of patients whose known adverse drug reactions are documented on the current medication chart (H)	76	97.0		26 (34%)	914 (69%)	745 (56%)	1,320	↑✓
3.3 Percentage* of medication orders that include error-prone abbreviations (L)	26	4.82		7 (27%)	1,149 (45%)	1,563 (62%)	2,538	

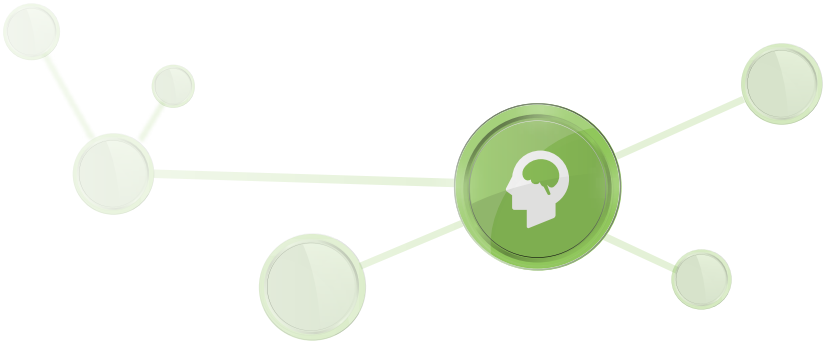
Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

Summary of Indicator Results continued

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Medication ordering *(cont.)*								
3.4 Percentage* of patients receiving cytotoxic chemotherapy whose treatment is guided by a hospital approved chemotherapy treatment protocol (H)	3	99.9				1 (50%)	2	
Pain management								
4.1 Percentage* of postoperative patients that are given a written pain management plan at discharge AND a copy is communicated to the primary care clinician (H)	2	71.0					18	
Continuity of care								
5.1 Percentage* of discharge summaries that include medication therapy changes and explanations for changes (H)	11	85.0		2 (18%)	37 (25%)	123 (83%)	148	↑✓
5.2 Percentage* of patients discharged on warfarin that receive written information regarding warfarin management prior to discharge (H)	8	88.0				49 (88%)	56	
5.3 Percentage* of patients with a new adverse drug reaction (ADR) that are given written ADR information at discharge AND a copy is communicated to the primary care clinician (H)	1	100					-	
5.4 Percentage* of patients receiving sedatives at discharge that were not taking them at admission (L)	2	10.2				10 (83%)	12	
5.5 Percentage* of patients whose discharge summaries contain a current, accurate and comprehensive list of medicines (H)	16	97.2	NSW	8 (50%)	175 (74%)	193 (81%)	237	↑✓
5.6 Percentage* of patients who receive a current, accurate and comprehensive medication list at the time of hospital discharge (H)	23	55.3		4 (17%)	6,300 (19%)	32,328 (99%)	32,716	↑✓
Hospital wide policies								
6.1 Percentage* of patients that are reviewed by a clinical pharmacist within one day of admission (H)	9	63.3		1 (11%)	70 (13%)	307 (57%)	541	↓✗
6.2 Adverse drug reactions reported to TGA (N)	80	0.110						↓
6.3 Medication errors - adverse event requiring intervention (L)	252	0.009		12 (5%)	425 (50%)	730 (86%)	847	↑✗

Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

MENTAL HEALTH



GENERAL COMMENTS

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In 2018 more than 90 HCOs, mostly private, have contributed to the indicator collection. The activity of collecting and reviewing data and reflecting on performance is a critical healthcare improvement exercise for HCOs. The RANZCP again thanks and commends the ACHS for progressing this important collection.

FEATURE CLINICAL INDICATOR

CI 3.1 Discharged on 2 or more psychotropic medications from 1 sub-group category (excluding antipsychotics)
CI 3.3 Discharge on 2 or more antipsychotic medications

Prescribing practices are examined by five indicators (CIs 3.1-3.5). Of this group, CIs 3.1 and 3.3 address polypharmacy. CI 3.1 captures data on the number of patients discharged on two or more psychotropics from a single subgroup category such as antidepressants, mood stabilisers or sedatives. This indicator will change in future collections to be split out into the three subgroups. Indicator 3.3 captures data on the number of patients discharged on two or more anti-psychotics and will continue unchanged in future collections. Since being added to the indicator collection in 2016 the number of participating HCOs providing this indicator data has steadily grown from 12 to 28, as has the total denominator, more than tripling to 9,511. These are important indicators as polypharmacy is in many instances, expensive, ineffective and potentially harmful[1]. Participating organisations show significant variation in practice. Antipsychotic polypharmacy for the bottom 20th centile of HCOs is at or below 16 per 100 consumers, however the top 80th centile of HCOs have rates at or above 43 per 100 consumers. A low rate is desirable but while there is no clear trend downwards at this stage, it is an immature collection. We look forward to future reports and the likelihood that this collection will drive consistent practice aligned to the evidence and improve health care for the mentally ill.

CI 5.4 Seclusion more than 4 hours in 1 episode

CI 5.4 has remained unchanged since 2011. It collects data on the proportion of seclusion episodes that extend beyond four hours. It is classified as a process indicator. That is arguable, most in the mental health sector are familiar with the negative impact of seclusion, particularly prolonged seclusion on patients, staff and services as a whole[2]. The number of HCOs submitting this data is declining. That is regrettable. The trend in the data from participating organisations is in a desirable direction, downwards from more than half of all seclusion episodes in 2011, to less than one in five in 2018. It would be important to know whether this was, as it should be, a more general trend in all mental health services.

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GENERAL COMMENTS

Joumana Khoury
Australian College of Mental Health Nurses
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These CIs are a demonstrated way to assess the quality of care in mental health services by examining the incidence of specific events or incidents that occur within the mental health services. Measuring and reporting the quality of care will heighten efforts to develop quality programs that can assess performance of mental health services at multiple levels of the healthcare system. These mental health CIs help us understand a system (both national and at a state level), compare it and improve it because the information that is provided is relevant, focused and measurable.

The CIs can be used for multiple purposes depending on the user (managers, clinicians, regulators, patients) including to: document the quality of care; benchmark, that is make comparisons over time and between services; make judgments about services; set service or system priorities; organise care; support accountability, regulation, and accreditation; support quality improvement; and, if a private patient, support patient choice of providers.

These CIs are a measurable way to link other clinical and patient safety standards such as the NSQHS to the performance of mental health benchmarks. They are also a good source of information about clinical domains that can be the background to quality and systems improvements that aim to bring about sustainable interventions for change and service redesign and clinical effectiveness within our mental health services.

The relevance of the topics for measurement is quantifiable and provides much needed information in various systems about clinician's diagnosis and care planning, whether care is consulted with the consumer and care planning is signed by consumer/carer, it also addresses the physical health of a consumer, how medications are prescribed, reconciled and the communication to consumers surrounding the medications and side effects. The monitoring of electroconvulsive therapy (ECT), the use of seclusion and restraint, and the major critical incidents such as suicide, assault, self-harm, length of stay, mental health status, continuity of care including community care and MDT reviews are important areas and workable indicators that demonstrate what services are providing and how measuring these CIs can assist in improving the overall mental health services.

The difference between these CIs and other broader indicators is that the clinical indicators are more suitable for internal quality improvement, while other performance indicators are appropriate for external appraisals, however they do cross over substantially. The CIs are succinct measures with an aim to describe as much about a mental health system as possible so that the information extracted can be used to develop quality care provisions and system redesign.

FEATURE CLINICAL INDICATOR

Area 5 Use of seclusion and restraint

Early identification of problems in a healthcare system is one of the most important reasons for collecting these CIs. Seclusion and restraint are considered controversial practices in mental health services and the ongoing use of seclusion and restraint practices for managing mental health service consumers highlights the constant need for addressing safety and quality of care within our mental health services. The collective performance of a group of organisations gives insight into the potential to improve quality care provisions when the collecting of relevant data and when the calculating of rates is undertaken consistently. These CIs are extremely important as reducing the use of these coercive practices requires outcome measures that show evidenced commitment to changing clinical practice in addition to informing clinical and organisational leadership, system redesign and quality care provisions that are reflective of consumer needs. This information and data analysis can also be used to influence changes in legal, ethical and safety aspects of mental health service delivery and expectations of care.

As demonstrated in the results of the CIs, there has been a variable decline in the number of persons secluded (CI 5.3 Percent of persons secluded), the rates (CI 5.1 Rate of seclusion) and duration of seclusion (CI 5.2 Average duration of seclusion episodes) and a general decline in the use of seclusion for more than four hours in one episode of care (CI 5.4). This, it could be argued, has contributed to the variable changes (primarily decline) in both mechanical (CI 5.6 Mechanical restraint – 1 or more episodes) and physical restraint (CI 5.5 Physical restraint – 1 or more episodes) as a possible subsequent consequence to the variable use of seclusion. These data results are reflected in the state and national campaigns to minimise the use of seclusion and restraint practices. I believe that by evaluating these clinical indicators there has been a demonstrated robustness across different service locations and patient groups; and this has equated to a concentrated effort and ability to improve the quality, and safety of care, and facilitate change in clinician behaviours and systems of mental health care.

There are many limitations in these CIs, however, which are similar to those of all audit and review tools: the ability to define and quantify what is meant by quality of care for seclusion and restraint or optimal patient outcome; the availability of evidence upon which to develop these indicators; the robustness and validity of the instruments used; the accuracy of clinical codes; the provision of feedback to clinicians; and the integration of the findings into quality improvement strategies across mental health systems.

SUMMARY OF RESULTS

In 2018 there were 1,591 submissions from 93 HCOs for 27 CIs. 3 were analysed for trend, 1 of which improved and 2 deteriorated. In 2018, significant stratum differences were observed in 5 CIs. 18 CIs showed greater systematic variation, with centile gains in excess of 50% of all events. Outlier gains in excess of 25% were observed in 16 CIs. See Summary of Indicator Results below.

Summary of Indicator Results Results

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Area 1: Diagnosis and care planning								
1.1 Individual care plan (H)	61	90.1		11 (18%)	2,230 (24%)	9,509 (97%)	9,766	
1.2 Individual care plan signed by consumer (H)	43	71.5		15 (35%)	3,010 (33%)	6,711 (73%)	9,141	
1.3 Individual care plan signed by carer (H)	26	50.2		8 (31%)	914 (19%)	3,716 (78%)	4,781	
Area 2: Physical examination of patients								
2.1 Physical examination documented within 24 hours of admission (H)	52	81.0	NSW	14 (27%)	2,367 (36%)	5,895 (91%)	6,492	
Area 3: Prescribing patterns								
3.1 Discharged on 2 or more psychotropic medications from 1 sub-group category (excluding antipsychotics) (L)	34	37.7	NSW	11 (32%)	1,584 (24%)	3,933 (60%)	6,530	
3.2 Percentage* of patients who receive written and verbal information on regular psychotropic medicines initiated during their admission (including antipsychotics) (H)	9	88.2		2 (22%)	56 (30%)	144 (78%)	185	
3.3 Discharged on 2 or more antipsychotic medications (L)	28	34.7		5 (18%)	531 (16%)	1,780 (54%)	3,299	
3.4 Metabolic side effects for consumers commencing antipsychotic medications (H)	10	89.3		3 (30%)	100 (53%)	169 (89%)	189	
3.5 Metabolic side effects for consumers taking regular antipsychotic medications (H)	10	92.2		3 (30%)	71 (49%)	137 (94%)	146	
Area 4: Electroconvulsive therapy	HCOs	Mean	20th centile		Median		80th centile	
4.1 Mean number of ECT treatments (L)	40	7.0	4.2		7.8		9.9	
Area 5: Use of seclusion and restraint								
5.1 Rate of seclusion (Seclusion episodes per 1,000 bed days) (L)	24	6.19 (per 1,000)		7 (29%)	806 (38%)	1,536 (72%)	2,147	
5.2 Average duration of seclusion episodes (Hours per episode) (L)	19	19.9 hours all HCOs, 3.9 hours after the following two removed. Justice Health & Forensic Mental Health Network (64.2 hrs one HCO) Child and Adolescent Mental Health Service (CAMHS) (86.2 hrs, one HCO)						

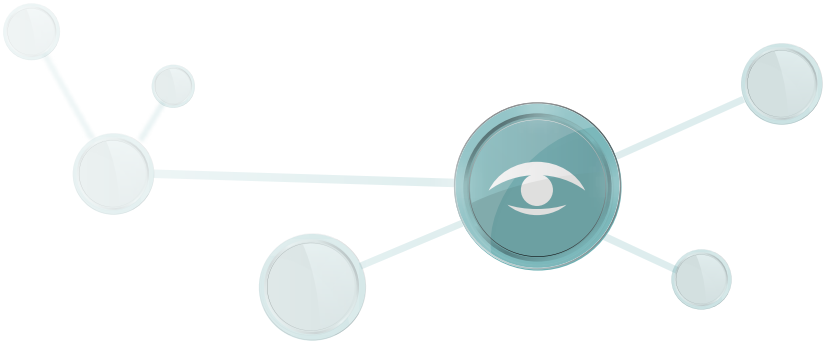
Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

Summary of Indicator Results continued

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
5.3 Percent of persons secluded (L)	20	3.87		6 (30%)	189 (35%)	332 (62%)	533	
5.4 Seclusion more than 4 hours in 1 episode (L)	22	0.154 (per episode)		5 (23%)	108 (35%)	120 (39%)	308	↓✓
5.5 Physical restraint - 1 or more episodes (L)	20	4.66		7 (35%)	179 (28%)	325 (50%)	650	↑✗
5.6 Mechanical restraint - 1 or more episodes (L)	17	0.291		3 (18%)	15 (41%)	33 (89%)	37	
Area 6: Major critical incidents								
6.1 Suicide (L)	78	0.018					20	
6.2 Consumers who assault (L)	53	0.780	Private	8 (15%)	229 (64%)	340 (95%)	357	
6.3 Consumers assaulted (L)	43	0.245	Private	4 (9%)	47 (50%)	83 (88%)	94	
6.4 Sexual assault (L)	21	6.12	Qld	2 (10%)	4 (27%)	4 (27%)	15	
6.5 Significant self-mutilation (L)	70	0.298		5 (7%)	39 (23%)	112 (65%)	173	
Area 7: Length of stay								
7.1 Acute unit - length of stay more than 28 days (L)	51	17.4		15 (29%)	1,248 (18%)	3,118 (46%)	6,770	
Area 8: Mental Health Act status								
8.1 Involuntary admission status (N)	10	12.2						
8.2 Change to less restrictive admission status (H)	3	49.5		1 (33%)	9 (5%)	34 (18%)	186	
Area 9: Continuity of care								
9.1 Discharge summary / letter provided to consumer or nominated carer (H)	46	78.4		12 (26%)	2,966 (42%)	6,339 (90%)	7,079	
9.2 Discharge summary / letter provided to service providing ongoing care (H)	38	77.5		11 (29%)	1,878 (32%)	4,777 (82%)	5,861	
9.3 Three-monthly multidisciplinary review (H)	6	92.4		1 (17%)	3 (60%)	4 (80%)	5	↓✗
Area 10: Community care								
10.1 Consumers contacted by community service (N)	8	99.3						
10.2 Consumers seen face-to-face by community service (N)	11	95.3						↑

Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

OPHTHALMOLOGY



GENERAL COMMENTS

A/Prof R.C. Andrew Symons
Royal Australian and New Zealand College of Ophthalmologists

The Ophthalmic CIs show continuation of overall trends towards improved safety and reliability of cataract (CIs 1.1-1.7), glaucoma (CIs 2.1-2.4) and retinal detachment (CIs 3.1-3.4) procedures.

An interesting feature of the indices for intraocular glaucoma surgery (CIs 2.1-2.4) was that not only had the proportion of procedures being performed using microinvasive approaches increased but that the number of cases reported had increased significantly from 775 to 885 in 2017 and 2018 respectively with the same number of healthcare organisations participating. It is likely that increased familiarity with the use and efficacy of microinvasive glaucoma implant devices within the ophthalmic profession is driving an increase in surgical numbers. This is likely to provide improved intraocular pressure control for Australian glaucoma patients.

It is interesting to compare the performance of private and public institutions across the indicators relating to cataract surgery (CIs 1.1-1.7). Public institutions appeared to perform worse on unplanned readmissions within 28 days after cataract surgery (CI 1.1), unplanned overnight admissions after cataract surgery (CI 1.3) and requirement for anterior vitrectomy (CI 1.4). There are multiple possible reasons for these apparent differences in performance, including casemix and the responsibility that these institutions have for training registrars. It is also possible that patients requiring unplanned admission or readmission were preferentially referred to public institutions where they could benefit from generous medical staffing and technological resources. It will be interesting to determine whether increased use of surgical simulators will help to reduce anterior vitrectomy rates[1]. It would be useful for institutions to stratify their unplanned admissions and anterior vitrectomy cases according to presence or absence of known risk factors in order to determine whether the observed rates are commensurate with casemix or whether other potentially remediable factors may be at work.

FEATURE CLINICAL INDICATOR

CI 1.5 Cataract surgery – antibiotic prophylaxis

A particular concern for cataract surgery was the large number of patients who did not receive antibiotic prophylaxis (CI 1.5). Although the rate has improved since 2017, there were still 1630 patients identified out of 23,090 having cataract surgery where antibiotic prophylaxis was not used. There is evidence that these patients are likely to be at higher risk of development of endophthalmitis[2]. A relatively small number of healthcare organisations was identified as contributing most of the patients who were recorded as having been deprived of antibiotic prophylaxis, and it would be useful for these organisations to consider their processes.

CI 4.2 Toric intraocular lens implantation with planning record present at time of surgery

It is not explicable how toric intraocular lenses could be safely implanted without the benefit of the planning record being present at the time of surgery (CI 4.2). A small number of healthcare organisations are responsible for the majority of cases where the planning records were not present. These organisations should determine whether there has been a breakdown in their procedures or whether there are problems with the integrity of their data collection for the Australasian Clinical Indicator Report. It is pleasing that there is a steady increase in the numbers of toric intraocular lenses being implanted. This is likely to yield significant refractive benefits to Australian patients[3].

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SUMMARY OF RESULTS

In 2018 there were 597 submissions from 53 HCOs for 17 CIs. Seven were analysed for trend, 4 of which improved, 1 deteriorated and the remainder showed no evidence of trend. In 2018, significant stratum variation was observed in 3 CIs. Six CIs showed greater systematic variation, with centile gains in excess of 50% of all events. Outlier gains in excess of 25% of all events were observed in 3 CIs. See Summary of Indicator Results below.

Summary of Indicator Results

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Cataract surgery								
1.1 Cataract surgery - unplanned readmissions within 28 days (L)	44	0.135		2 (5%)	14 (21%)	34 (51%)	67	↓✓
1.2 Cataract surgery - treatment within 28 days due to endophthalmitis (L)	42	0.008					4	
1.3 Cataract surgery - unplanned overnight admission (L)	37	0.098	Private	5 (14%)	19 (45%)	35 (83%)	42	↓✓
1.4 Cataract surgery - anterior vitrectomy (L)	45	0.322		1 (2%)	21 (13%)	62 (39%)	157	↓✓
1.5 Cataract surgery - antibiotic prophylaxis (H)	18	92.9	NSW	3 (17%)	1,337 (82%)	1,629 (100%)	1,630	
1.6 Cataract surgery - toxic anterior segment syndrome (TASS) (L)	17	0.009					2	
1.7 Cataract surgery - planned second eye cataract surgery (L)	6	0.135				3 (75%)	4	
Intraocular glaucoma surgery								
2.1 Intraocular glaucoma surgery - unplanned readmissions within 28 days (L)	16	0.760	NSW			6 (60%)	10	
2.2 Intraocular glaucoma surgery - micro-invasive glaucoma surgery (MIGS) (H)	13	71.9				122 (49%)	249	
2.3 Intraocular glaucoma surgery - treatment within 28 days due to endophthalmitis (L)	15	0.077					1	
2.4 Intraocular glaucoma surgery - more than one overnight stay (L)	6	0					-	

Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

Summary of Indicator Results continued

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Retinal detachment surgery								
3.1 Retinal detachment surgery - readmissions within 28 days (L)	10	2.55		1 (10%)	11 (19%)	16 (28%)	58	↓✓
3.2 Retinal detachment surgery - treatment within 28 days due to endophthalmitis (L)	12	0.029					1	
3.3 Retinal detachment surgery - more than one overnight stay (L)	6	0					-	
3.4 Retinal detachment surgery - unplanned reoperation within 28 days (L)	12	2.06		2 (17%)	7 (14%)	13 (26%)	50	
Toric intraocular lens implantation								
4.1 Intraocular lens implantation with planning record present at time of surgery (H)	17	100					1	
4.2 Toric intraocular lens implantation with planning record present at time of surgery (H)	18	96.6		2 (11%)	274 (94%)	293 (100%)	293	↓✗

Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

GENERAL COMMENTS

Dr Hugo Sachs
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ACHS Oral Health Working Party Version 4

The CIs provide the capacity to compare the Australian picture with international research reports. Overall the set shows some improvements in outcomes, though CI 1.1 (Restorative treatment – teeth retreated within 6 months) shows a steady increase in retreatments of restored teeth which is of concern. In regard to CI 2.1 (Endodontic treatment – same tooth within 6 months of initial treatment) the number of completed endodontic treatments remains to my mind an exceptionally poor result. For HCOs this figure should be investigated as to the cause.

FEATURE CLINICAL INDICATOR

CI 1.2 Routine extraction – complications within 7 days

Postoperative complications associated with exodontia are numerous and varied. They include dry socket, postoperative bleeding, infection, jaw fracture, swelling, haematoma and neurosensory alteration (dythesias, anaesthesias, etc.) A brief review of the literature shows a concentration of statistical incidence rates for dry socket. Abu Younis & Abu Hantash[1] reports an incidence rate of 3.2%, while Babatunde & Godspower[2] reported an incidence of 1.4%. International reports vary from 1 to 6% in general and a female to male incidence ratio of 2 to 1.

The incidence rate for metropolitan HCOs of 1.27% and non-metropolitan rate of 1.97% comes well within the reported literature incidence (though these statistics are not specific to dry sockets alone). The significant variation between the two groups is interesting, but in the overall picture a very acceptable result. Maintenance of these outcomes is imperative, but it may be beneficial to subgroup the cause of the return so that comparisons for a specific post-operative complication like dry socket can be made.

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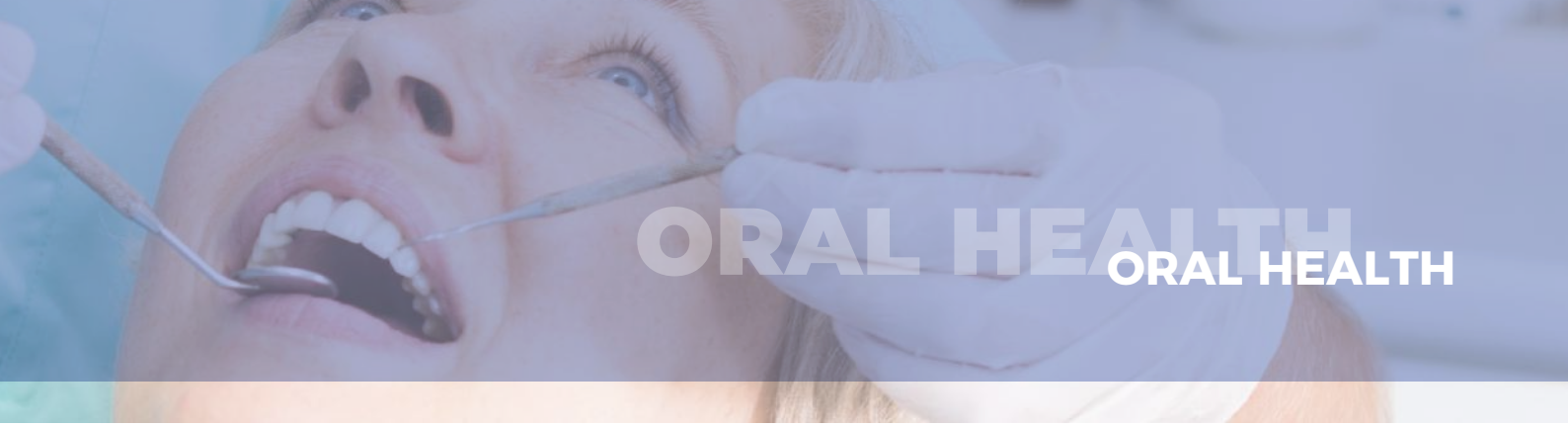


SUMMARY OF RESULTS

In 2018 there were 997 submissions from 88 HCOs for 9 CIs. Five were analysed for trend, 3 of which improved, 1 deteriorated and the remaining CI showed no evidence of trend. In 2018, significant stratum variation was observed in 3 CIs. One CI showed greater systematic variation, with centile gains in excess of 50% of all events. Outlier gains in excess of 25% of all events were observed in 0 CIs. See Summary of Indicator Results below.

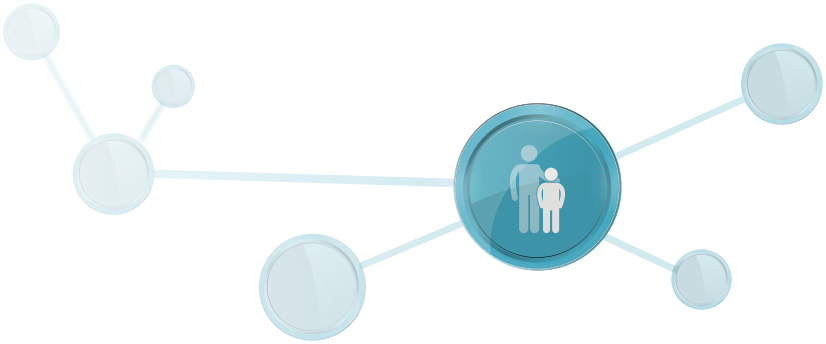
Summary of Indicator Results

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Unplanned returns to the dental centre								
1.1 Restorative treatment - teeth retreated within 6 months (L)	68	6.34		12 (18%)	1,237 (6%)	6,005 (31%)	19,102	↑ ✗
1.2 Routine extraction - complications within 7 days (L)	64	1.52	Metropolitan	6 (9%)	95 (6%)	586 (38%)	1,550	
1.3 Surgical extraction - complications within 7 days (L)	39	2.63		1 (3%)	20 (7%)	80 (26%)	302	
1.4 Denture remade within 12 months (L)	36	2.10	NSW	4 (11%)	108 (18%)	368 (60%)	611	↓ ✓
Endodontic treatment								
2.1 Endodontic treatment - same tooth within 6 months of initial treatment (H)	58	69.8		2 (3%)	211 (12%)	461 (26%)	1,804	
2.2 Endodontic treatment - teeth extracted within 12 months (L)	62	3.04				12 (7%)	172	
Children's dental care								
3.1 Restorative treatment (children) - teeth retreated within 6 months (L)	72	2.20	SA	4 (6%)	311 (7%)	1,262 (28%)	4,553	↓ ✓
3.2 Pulpotomy (children) - deciduous teeth extracted within 6 months (L)	63	3.68				24 (14%)	169	
3.3 Fissure sealant treatment (children) - retreatment within 24 months (L)	75	2.36		14 (19%)	657 (8%)	887 (11%)	8,112	↓ ✓

Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

PAEDIATRICS

PAEDIATRICS



GENERAL COMMENTS

Sharon Anne McAuley
Paediatric and Child Health Division, Royal Australasian College of Physicians
Paediatric Medical Lead, Patient Safety & Quality Service, Clinical Excellence Queensland
Member, ACHS Paediatrics Working Party Version 5

Appropriateness

From 2017-2018, there was a large increase in HCOs providing data to CI 1.1 (Registered nurses with paediatric basic life support qualifications), from ten up to 22 HCOs, thereby increasing both the total numerator and denominators nearly fivefold. This increases the validity of the data provided which indicates that the rate of up-to-date basic life support (BLS) skills of 81.6 per 100 registered nurses is a more accurate reflection than the previous years' higher rates would indicate. The variation between HCOs in 2018 describes three outlier organisations. The outlier rate was 66.1 per 100 registered nurses. This clinical indicator is an area for future monitoring and improvement, particularly with regard to the outliers.

Only two HCOs provided data in 2018 to CI 1.2 (Medical practitioners with paediatric basic life support qualifications). A rate of 95%, whilst admirable, cannot be said to be representative of the population of medical practitioners. Medical practitioners need to be trained in BLS and organisations should be aware of which staff are up-to-date in their training and have evidence of this. Many paediatric doctors would be formally trained in advanced paediatric life support. Whether this training is up-to-date and being captured from an organisational point of view is unknown. A conversation around the importance of organisations capturing the data may need to occur to ensure the usefulness of this indicator. Who is this data for? Why is it being collected? Compliance or excellence? Accreditation?

The number of HCOs providing data to CI 1.3 (Paediatric patients admitted to a paediatric ward/area) varies from year to year but in 2018, 17 HCOs provided the relevant information, resulting in the largest number of admissions at 39,948. The annual rate in 2018 shows that in 87.7 per 100 paediatric admissions the children are being cared for in a dedicated paediatric area. The trend over the six years is one of improvement. The potential gains data indicates that in 2018, had this CI been achieved fully, an extra 4,914 paediatric patients would have been cared for in a paediatric dedicated area. The outlier HCO rate was 57.6 per 100 admissions meaning that in less than 60% of admissions in these three outlier HCOs, the paediatric patients were cared for in an appropriately paediatric area.

Adverse events

The data captured in 2018 shows an annual rate of 0.25 medication errors per 100 paediatric admissions (CI 2.1 Medication errors). This data is too crude to be meaningful clinically. It has been well established that medication errors occur for many reasons - prescription and administration being the main categories. More information is required to make the data meaningful. A low rate does not equate to a safer environment necessarily. It could be due to a low reporting rate in the HCO. Clarification around the meaning of an adverse event, what type of harm was caused would help with interpretation of the data and make it more useful. Errors associated with omissions can be very different to errors of commission.

In 2018 no adverse events were recorded per 100 paediatric admissions (CI 2.2 Adverse events when not in a paediatric ward/area). In 2016, the rate was 2.86. There is insufficient information provided on this indicator to draw any meaningful quality improvement conclusions. In relation to CI 2.3 (Adverse events in a paediatric ward/area), 16 HCOs provided data, resulting in a rate of 0.87 of adverse events per 100 paediatric admissions. The potential gains totalled fewer adverse events involving paediatric patients, corresponding to a reduction by approximately four fifths. It is difficult to comment on the outlier HCO rate of 2.5 per 100 paediatric admissions. Without context, no conclusions can be drawn from the results. Is a high rate desirable, meaning that there is an open, just culture with a healthy reporting rate or is a low rate desirable, as less adverse

events may be happening? A breakdown of the Severity Assessment Code (SAC) of the adverse events would make the data more useful as the extent of reported patient harm could be analysed.

Documentation

In 2018, there were four records from two HCOs reporting on CI 3.2 (Paediatric surgery post-procedural report), giving an annual rate of 99.7 per 100 separations. This is an excellent rate, the low HCO contributor rate notwithstanding. A useful patient safety indicator which has an immediate impact on patient care, it would be interesting to see when, how and to whom the Surgeon's Operation report was available. Is it that the surgeon dictates the surgical notes immediately after surgery, which are then typed several days later and not actually available to all relevant clinicians until a week later? Or do all the written or electronic medical records align and are always visible to treating clinicians? Are the post procedural instructions documented in a separate note? More information on this would make this CI a more useful Indicator.

Only one HCO provided information on CI 3.3 (Physical assessment completed by medical practitioner and documented), reporting an annual rate of 97.6 per 100 paediatric admissions. As it stands the low number of HCO contributions to this indicator means that it cannot be used for benchmarking. It would be interesting to understand the intent of this CI and perhaps it should be nuanced in the future to make it more useful. Again, only one HCO provided data on CI 3.4 (Physical assessment completed by registered nurse and documented), giving a rate of 100, with no potential gains or outlier gains being identified. Perhaps it is time for this CI to be removed or nuanced. The lack of take up by other HCOs could suggest that it is not felt to be useful in its current format.

In 2018, five records from three HCOs were provided to CI 3.5 (Medical discharge summary completed – paediatrics), giving an annual rate of 74.5 per 100 separations. In 2018, the potential gains mean that 887 more paediatric patients would have had a timely completed discharge summary. Of note, one outlier record had a rate of 23.2 per 100 separations. This meant that there was a combined excess of 458 fewer paediatric patients with a completed medical discharge summary. This result would be useful to that particular HCO. What would make it more useful, however, is if the time in which they were to be completed was also shown. Is it that the outlier HCO has a very tight, unachievable time to completion target compared to other HCOs who may have more time to meet the target? Comparing organisations against a timed target, with variable time key performance targets within the organisations means that the results cannot truly be compared with each other.

Paediatric anaesthesia

In 2018, the annual rate for CI 4.1 (Paediatric patients who fast 6 hours prior to anaesthesia) was 78.3 per 100 paediatric patients, compared to 91 per 100 paediatric patients in 2015. Occasionally patients are inadvertently fed by either the staff or their parents whilst awaiting procedures as there has been a gap in communication or understanding. This can lead to delays in treatments and procedures and preoperative respiratory adverse events. Further information on how long the patients fasted and whether intravenous fluids were given would be interesting to capture as there is a risk of hypoglycaemia associated with prolonged fasting. The corollary is that the age of the patient is also a relevant demographic as the fasting guidelines may differ according to the child's age - babies under six months of age, for example, may have infant formula (no thickeners) until four hours preoperatively. The number of contributing HCOs reporting on both CI 4.2 (Adverse event due to non-adherence to paediatric fasting guidelines) and CI 4.3 (Parent/guardian present at induction of anaesthesia) were too low to provide commentary.

Characteristics of contributing HCOs

It would be interesting to see what number of clinical facilities in Queensland are in the public sector and how many in the private sector. Sixty-three percent of the organisations in this dataset were private and this may not be representative of where children are cared for in Queensland. Private and public hospitals may have different clinical capabilities and the patients may differ in their demographics. Again, the metropolitan vs non-metropolitan ratio of the ACHS dataset describes mainly children cared for in metropolitan facilities (77%). Is this representative of Queensland as a whole?

FEATURE CLINICAL INDICATOR

CI 1.1 Registered nurses with paediatric basic life support qualifications
CI 1.2 Medical practitioners with paediatric basic life support qualifications

Variation in the expectations of the HCOs with regard to BLS qualification requirements exists across Australia. Some HCOs strive to have a set number of nurses and doctors who are qualified in BLS on any set shift. Others have elected to explicitly state their requirements e.g. annual Paediatric Life Support competency training. Others have elected to align with the National Safety and Quality Health Service (NSQHS) Standards (2nd edn) 8.11 to ensure that response systems to deteriorating patients include provision for rapid access to at least one clinician with advanced life support skills at all times[1]. Rosters are developed and maintained to enable rapid access to this clinician at all times. In most large health services, this clinician will be accessed through the rapid response system.

Statewide standards exist such as the Queensland Health Clinical Services Capability Framework (CSCF), which advises that all healthcare workers caring for children in health facilities should be competent in providing basic life support to children[2]. The medical and nursing staff escorting all non-critical, inter- and intra-hospital transfers of children have also been identified as a key group that require clinicians competent in providing paediatric life support. The Australian Resuscitation Council guidelines state that all those trained in CPR should refresh their CPR skills at least annually[3]. It would be interesting to understand whether the clinicians had up-to-date (within the previous 12 months) BLS skills, and could be considered for future CIs.

CI 2.1 Medication errors

The data captured in 2018 shows an annual rate of 0.25 medication errors per 100 paediatric admissions. Manias et al[4] reported an Australian medication error rate of hospitalised children of 0.31% per combined admission and presentation, or 6.58 medication errors per 1000 bed days. A total of 2753 medication errors were reported over the four-year period. The two most common severity outcomes were: the medication error occurred before it reached the child (n = 749, 27.2%) and the medication error reached the child who required monitoring to confirm that it resulted in no harm (n = 1519, 55.2%). The data provided by the Paediatric CIs report data would be more useful if the subcategories of the medication errors were provided.

It has been well established that medication errors occur for many reasons - prescription and administration being the main categories. Common types of medication errors included overdose (n = 579, 21.0%) and dose omission (n = 341, 12.4%)[4]. The most common cause relating to communication involved misreading or not reading medication orders (n = 804, 29.2%)[4]. Key contributing factors involved communication relating to children's transfer across different clinical settings (n = 929, 33.7%) and the lack of following policies and procedures (n = 617, 22.4%)[4]. A low rate dose does not equate to a safer environment necessarily. It could be due to a low reporting rate in the HCO. Clarification around the meaning of an adverse event, what type of harm was caused would help with interpretation of the data and make it more useful. Errors associated with omissions can be very different to errors of commission. Dispensing medication error rate would be a useful paediatric CI. It can cause patient harm and can involve many stakeholders-pharmacists, doctors, nurses and parents/carers. Wrong drug dispensing can occur in many ways; wrong drug, wrong dose, wrong strength/preparation, wrong quantity/volume.

Paediatric patients are at a higher risk of medication errors due to challenges in changing weights and changing challenging routes of administration. The latter presents several challenges to the clinicians as intravenous access can be an issue in paediatric patients and doses may vary depending on route of administration - intravenous, intranasal, intramuscular, oral, buccal, nasogastric or via transpyloric tube. Medication errors may be related to professional practice, health products, procedures, and systems, including prescribing, ordering, product labelling, packaging, nomenclature, compounding, dispensing, distribution, administration, education, monitoring, or use[5-7].

When considering the Australian literature collectively across the three reviews of medication safety (2002, 2008 and 2013)[8],

the proportion of all hospital admissions that are medication-related is between 2% and 3%. There were 9.3 million separations from Australian hospitals in 2011-2012, which would suggest a medication hospital admission rate of 230,000 annually[8]. With an average cost per separation in 2011-12 of $5,204, this suggests the annual cost of medication-related admissions is $1.2 billion[8].

The seven rights of medication administration (right medication, right patient, right time, right dose, right route, right indication and right documentation) and additionally the right to refuse need to be addressed. Medication manipulation and adjustment for medications based on clinical status is essential when prescribing and having access to a clinical pharmacist would assist with decreasing medication incidents. Intravenous medication safety initiatives, use of standard medication concentrations for infusions, dose error reduction software for infusion devices, electronic prescribing, use of the digital health record and antimicrobial stewardship all have roles to play in medication safety.

CI 3.1 Completed asthma action plan - paediatrics

In relation to an asthma action plan, do we need to expand to reactive airways or differentiate between pre-school wheeze and asthma? By using the term asthma action plan only and not asthma/wheeze action plan, we may be missing many patients under the age of five. The treatment can be very different in the under-fives compared to the over fives due to different pathologies. Both groups, however, should go home with an asthma action plan or a wheeze action plan.

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PAEDIATRICS

GENERAL COMMENTS

Sandra Miles
Australian College of Children and Young People's Nurses

The panel is to be commended for an excellent set of CIs that are relevant to paediatric acute care, and ACCYPN thanks ACHS for the opportunity to comment on these indicators. The inclusion of the family in one indicator is valuable, and the fact that they are multidisciplinary is in line with care expectations. Future consideration could be given to some more nursing focused CIs.

Support for a paediatric-specific ward is very important due to the anatomical and physiological differences between children and adults, as well as developmental, behavioural and psychosocial differences and children's different responses to illness and treatments. There have been many instances where children have been cared for in the same room as adult male patients who display inappropriate behaviours and language. Protecting our children in a hospital setting is very important, since they are a vulnerable population, susceptible to lifelong difficulties following such events.

Medication errors are appropriately a number one priority. A simple decimal placement error, which can increase a dose ten-fold, can lead to critical adverse events. Paediatric-focused staff are critical to recognising the potential for this error to occur and maintaining systems to prevent it.

Asthma plans are critical for preventing unnecessary death from asthma, so it is excellent for this to be included. It is not uncommon for families without knowledge of how to prevent and treat asthma episodes for their children to result in repeated hospitalisation, with many leading to intensive care unit stays.

More education is needed on the critical aspect of fasting times before surgery, having been an early supporter and educator of this concept and research many years ago.

FEATURE CLINICAL INDICATOR

CI 1.1 Registered nurses with paediatric basic life support qualifications
The decrease in numbers of registered nurses with paediatric BLS qualifications is concerning. Perhaps this reflects an access problem to paediatric BLS courses? It may reflect a downturn in education emphasis on BLS in light of research about its effectiveness (or lack thereof). There is a tendency for hospitals to run adult and paediatric BLS sessions together, which may mask how many nurses have completed the paediatric component of BLS.

A requirement for all postgraduate paediatric courses to have a BLS component or link to a hospital BLS course would be an appropriate recommendation from ACHS. Another recommendation would be for all paediatric specialty nurses to complete a postgraduate specialty course.

CI 1.3 Paediatric patients admitted to a paediatric ward/area
An excellent result for paediatric patients being admitted to a paediatric ward/area.

CI 4.1 Paediatric patients who fast 6 hours prior to anaesthesia
Fasting for 6 hours prior to anaesthesia should be a priority for education.

SUMMARY OF RESULTS

In 2018 there were 163 submissions from 35 HCOs for 14 CIs. Three were analysed for trend, 2 of which improved and 1 deteriorated. In 2018, significant stratum variation was observed in 1 CI. Eight CIs showed greater systematic variation, with centile gains in excess of 50% of all events. Outlier gains in excess of 25% of all events were observed in 7 CIs. See Summary of Indicator Results below.

Summary of Indicator Results

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Appropriateness								
1.1 Registered nurses with paediatric basic life support qualifications (H)	22	81.6	NSW	3 (14%)	105 (29%)	336 (92%)	367	↓ ✗
1.2 Medical practitioners with paediatric basic life support qualifications (H)	2	95.0					1	
1.3 Paediatric patients admitted to a paediatric ward/area (H)	17	87.7		3 (18%)	2,882 (59%)	4,914 (100%)	4,922	↑ ✓
Adverse events								
2.1 Medication errors (L)	22	0.3		1 (5%)	45 (51%)	73 (82%)	89	
2.2 Adverse events when not in a paediatric ward/area (L)	5	0.0					-	
2.3 Adverse events in a paediatric ward/ area (L)	16	0.9		3 (19%)	113 (50%)	218 (97%)	225	↓ ✓
Documentation								
3.1 Completed asthma action plan - paediatrics (H)	3	91.8				14 (56%)	25	
3.2 Paediatric surgery post-procedural report (H)	2	99.7		1 (50%)	16 (94%)	17 (100%)	17	
3.3 Physical assessment completed by medical practitioner and documented (H)	1	97.6					1	
3.4 Physical assessment completed by registered nurse and documented (H)	1	100.0					-	
3.5 Medical discharge summary completed - paediatrics (H)	3	74.5		1 (33%)	458 (49%)	887 (95%)	930	

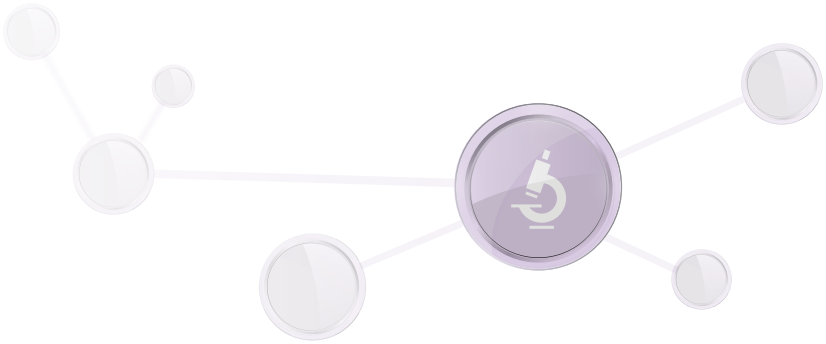
Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

Summary of Indicator Results continued

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Paediatric anaesthesia								
4.1 Paediatric patients who fast 6 hours prior to anaesthesia (H)	3	78.3		1 (33%)	60 (41%)	144 (99%)	146	
4.2 Adverse event due to non-adherence to paediatric fasting guidelines (L)	1	0.0					-	
4.3 Parent/guardian present at induction of anaesthesia (N)	1	100.0						

Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

PATHOLOGY



GENERAL COMMENTS

Dr Daman Langguth
Royal College of Pathologists of Australasia
Chair, Board of Professional Practice and Quality, Royal College of Pathologists of Australia

The 2018 ACIR report with respect to the pathology indicators shows a wide variety of responses with significant improvement in some areas such as structured reporting (AP) and urine microscopy (Microbiology) but with falls in performance in other areas such as the point of care test register (Whole of service). There continues to be wide variation across the states and territories of nearly all indicators, likely reflecting differing resources given to pathology and emergency. It is clear from the data that many HCOs have not put in place system changes to allow the targets set to be achieved given the lack of progress in some measures over the last three years. Looking over the data and statistical analysis this will likely have many possible causes, though this should not dissuade HCOs from addressing the issues at hand. It is disappointing that so few HCOs participate in many of the reportable measures with only one private HCO enrolling. The numbers of HCOs participating in many of the measures is so low that generalisable comments are difficult to make and that the results of the survey are likely biased and do not reflect real world data.

FEATURE CLINICAL INDICATOR

CI 1.3 Serum/plasma troponin for ED – in lab to validated time less than 50 minutes
CI 1.4 Serum/plasma troponin from ED – collected to in lab less than 60 minutes

The performance of troponin perhaps best reflects a pathology measure that affects patient outcome in health but also admission/discharge status. The percentage of results collected and taken to the lab in 60 minutes has declined slightly since 2016, though it is likely that some underperforming laboratories are negatively impacting on the high performance of many other laboratories. The numbers of troponin results released within one hour has declined since 2016 to only 69.6. This does not reflect well on laboratory performance in an area that has multiple knock on effects in urgent patient management. This must be addressed to remedy a falling performance standard in pre-analytical and analytical testing that will be negatively impacting on hospital performance.

SUMMARY OF RESULTS

In 2018 there were 583 submissions from 34 HCOs for 16 CIs. None were analysed for trend. In 2018, significant stratum variation was observed in 2 CIs. 11 CIs showed greater systematic variation, with centile gains in excess of 50% of all events. Outlier gains in excess of 25% of all events were observed in 7 CIs. See Summary of Indicator Results below.

Summary of Indicator Results

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Chemical pathology								
1.1 Serum / plasma potassium for ED - in lab to validated time less than 40 minutes (H)	29	61.3	NSW	10 (34%)	8,001 (22%)	19,773 (54%)	36,357	
1.2 Serum / plasma potassium from ED - collected to in lab time less than 60 minutes (H)	30	84.5		10 (33%)	7,768 (52%)	13,509 (90%)	15,008	
1.3 Serum / plasma troponin for ED - in lab to validated time less than 50 minutes (H)	23	69.6		8 (35%)	1,761 (22%)	4,306 (55%)	7,900	
1.4 Serum / plasma troponin from ED - collected to in lab time less than 60 minutes (H)	24	83.0		7 (29%)	2,336 (50%)	4,269 (92%)	4,660	
Haematology								
2.1 Haemoglobin for ED - in lab to validated time less than 40 minutes (H)	32	90.7	NSW	14 (44%)	2,544 (26%)	5,061 (52%)	9,670	
2.2 Haemoglobin from ED - collected to in lab time less than 60 minutes (H)	30	83.2		11 (37%)	8,230 (52%)	14,161 (90%)	15,756	
2.3 Blood group for ED - in lab to validated time less than 60 minutes (H)	17	41.4		6 (35%)	588 (15%)	1,564 (41%)	3,843	
2.4 Blood group from ED - collected to in lab time less than 60 minutes (H)	20	90.4		5 (25%)	281 (42%)	506 (76%)	668	
2.5 Blood group from ED - recollections (L)	19	6.6		1 (5%)	11 (3%)	160 (47%)	340	

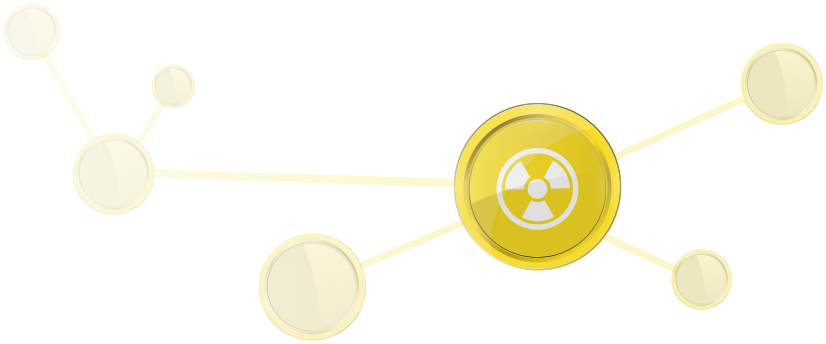
Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

Summary of Indicator Results continued

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Anatomical pathology								
3.1 AP complexity level 4 MBS item - received to validated time less than 96 hours (H)	13	80.8		6 (46%)	806 (21%)	2,561 (68%)	3,756	
3.2 AP complexity level 6 & 7 MBS item - received to validated time less than 7 days within a calendar month (H)	13	74.2		1 (8%)	19 (5%)	164 (47%)	346	
3.3 Structured reporting for Anatomical Pathology (H)	7	99.5					2	
Microbiology								
4.1 Urine microscopy for ED - in lab to validated time less than 4 hours (H)	12	90.3		3 (25%)	451 (49%)	828 (90%)	923	
4.2 Urine microscopy from ED - collection to in lab time less than 60 minutes (H)	19	59.3		4 (21%)	1,215 (27%)	3,519 (79%)	4,450	
4.3 HIV antigen-antibody screening - in lab to validated time less than 24 hours (H)	13	85.2		4 (31%)	253 (17%)	791 (52%)	1,511	
Whole of service								
5.1 Point of care testing register (N)	12	52.4%		Not applicable – measures percentage of compliant HCOs				
5.2 Misidentified episodes (L)	25	0.3		9 (36%)	598 (19%)	1,287 (41%)	3,141	

Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs


RADIATION ONCOLOGY
RADIATION ONCOLOGY



GENERAL COMMENTS

A/Prof Jeremy Millar
Royal Australian and New Zealand College of Radiologists
Chair, Quality Improvement Committee, Faculty of Radiation Oncology, Royal Australian and New Zealand College of Radiologists
Chair, ACHS Radiation Oncology Working Party Version 5

The ACHS radiation oncology CIs were reviewed by a multidisciplinary group for the ACHS in the winter of 2017. A new version of the CIs was created, version 5, and endorsed by the tripartite professional groups for initial use in 2018.

The new indicators were created on the basis of the experience with previous versions and to take into account changes in performance over time of the 'old' CIs; changes in the radiation oncology practice environment and norms; and to take into account indicators that might be standardised, reliable, valid, tractable, and efficient to collect. At the same time the review was mindful that the version 5 indicators should conserve some links to the past, in order to assure some consistency in the indicators and opportunity to follow radiation oncology unit performance over a longer period of time.

This report is the first opportunity to review performance of these indicators and of radiation oncology unit practice. Ironically, these reports can have as much to say about the performance of the 'examiner' as about the performance of the 'examined'. What has changed about the 'examiner'? And how have the 'examined' done?

In relation to the consultation process, waiting time indicators were retained in this version. The wording changed slightly to reference as a standard the number of days set by professional groups, as they might change over time, rather than adhere to a rigid fixed standard. This change reflected the recognition that there has been a steady improvement in waiting times over the 2010s, but that professional groups might change the targets over time as the increased capacity of radiation oncology units in Australia might allow definition of more ambitious but still achievable aspirational targets. In 2018 the actual target for radical patients (CI 1.1 Patients for radical treatment - waiting time from the 'ready for care' date more than the faculty guidelines) has remained unchanged and the data shows that the rates of waiting times exceeding the target were about the same as in 2017. There were no differences within stratum, meaning that so far as the data could show, small numbers admittedly, there was no discernible difference in waiting times depending on state or territory, public or private, or metropolitan versus non-metropolitan.

Staging (CI 2.1 Staging annotation for current radiotherapy course) seems to be less well recorded in the medical record than in the past. This is regrettable. High-quality cancer care is associated with the written annotation of the stage of cancer by the treating doctor. The thoughtful assignment of stage crystallises a summary of the treating doctor's assessment of the disease-extent and disease-prognosis. It is a necessary element of decision-making. Gliding over it can lead to sloppy or careless thinking, or miscommunication with other healthcare providers or patients and their families.

Some of the indicators are new. The numbers of contributing centres are low. This may reflect problems with definitions, or perhaps novelty of the indicator. With the data available the performance in these indicators shows a range of performance levels, with some obvious room for improvement in the rate of treatment plan peer-review, rate of single-fraction palliative radiation treatments for bone metastases, and the use of adjuvant androgen deprivation for high risk prostate cancer. In each of these cases there is high-level evidence to support the need for higher performance in these indicators than the ACHS has measured, so we all would appear to have room to improve and this supports the useful nature of these CIs. It will be of interest to see the direction of the data over the next few years.

FEATURE CLINICAL INDICATOR

CI 3.3 Androgen deprivation therapy

One of the new CIs in version 5 is CI 3.3, targeting high levels of the use of adjuvant androgen-deprivation after external beam treatment for prostate cancer. The rationale for this is that multiple randomised trials have demonstrated a survival advantage for men with high-risk disease when androgen-deprivation is added for between 18 months to 36 months (or life-long) to the external beam treatment (EBT) in the attempted curative management of the prostate cancer.

Horwitz et al[1] reported a ten-year follow-up of radiation therapy oncology group protocol 92–02 in 2008, showing for locally advanced disease 28 months of androgen deprivation therapy (ADT) improved the prostate-cancer-specific survival of men treated with 65–70 gray, compared with just four months of ADT. The DART 01/05 trial reported by Zapatero et al[2] showed an improvement in overall survival with the same duration of 28 months of ADT, compared with 4 months, but using a higher dose of EBT (78 gray). Bolla et al[3] reported the EORTC 22863 showing an improvement in overall survival at ten years from just under 40% in the group treated with EBT alone, compared with just over 58% in the men treated with three years of ADT with the EBT. Finally, an Australian trial, TROG 03–04 showed a cancer-specific survival benefit at ten years for men treated with 18 months of adjuvant ADT combined with EBT, compared with just EBT and 6 months of ADT. International and Australian evidence-based guidelines recommend prolonged ADT with EBT for the curative treatment of prostate cancer in men with high risk disease. It seems incontrovertible that, for most men with high-risk disease having radical EBT for prostate cancer, the addition of ADT for at least 18 months cures more men.

From a small sample of 104 patients from five radiation oncology units, only 71% were reported as being on adjuvant androgen deprivation a year after the EBT. There are several potential explanations. The data might be unrepresentative. We know that in Victoria[4], at least, between 2010 and 2015 there were large variations in the proportion of men with high-risk disease treated with EBT who also had ADT, depending on their private-public status, and depending on their location (they were less likely to receive adjuvant androgen deprivation if they were from metro sites). So perhaps the reporting sites were derived more from metropolitan sites, or private sites, and so pulling down the proportion of men reported as being treated with ADT, but not representing the larger population. Another explanation might be that indeed ADT might not be indicated in every man with high-risk disease. They might refuse it, willing to take the higher risk of cancer recurrence and death; or the clinician might judge that frailty and co-morbidities contraindicate the ADT in some men, despite the evidence of better disease control. In this case, though, about 29% of men does seem a high proportion to have the use of ADT contraindicated.

We do have other data to help put this in context. The Prostate Cancer Outcomes Registry (Victoria) (PCOR-Vic) data shows, in a much larger data-set of 920 high-risk men, the rate of use of ADT in high-risk disease in the 2010–2015 period was 84% overall[4]. There was large variation over different treatment settings and over time. In men with high-risk disease it increased from 78% in 2010 to 83% in 2015. The PCOR-Vic data, however, only captures the fact of EBT with ADT, not the duration, so some of the men in the PCOR-Vic who were recorded as having EBT with ADT may not have

had 18 months or more in duration. In the USA, the rates of ADT usage with EBT has been in the same range: 75% in 2005 to 80% in 2012[5]. In this case, also, there was no record of the length of ADT use. In the United States and in Australia, other big datasets suggest an upper limit of around 80% of men receiving any ADT with EBT for treatment of high-risk disease.

The ACHS CI and the PCOR data will provide feedback over time and perhaps encourage higher rates of management strategies that improve survival. In the case of PCOR, the rate of use of ADT with EBT one year after the treatment for high-risk prostate cancer has also been adopted as a Quality Indicator[6]. In the case of PCOR-Vic, and soon PCOR-ANZ, quality indicators are provided back to clinicians and hospitals on a six-monthly basis. Up until now this has mainly been to urologists, but with the development of a suite of quality indicators relevant to radiation oncology management of prostate cancer, radiation oncologists will soon be getting more regular feedback about their use of ADT in high-risk men and comparing it with the rate employed by deidentified peers. The effect of the PCOR and the ACHS data together should be mutually reinforcing and it will be of interest to watch for change in both datasets.

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GENERAL COMMENTS

Rachel Kearvell
Australian Society of Medical Imaging and Radiation Therapy Member,
ACHS Radiation Oncology Working Party Version 5

Considering there are over 90 radiation oncology facilities in Australia, the report shows only a small number of HCOs provided data on these CIs in 2018. CIs 1.1 (Patients for radical treatment – waiting time from the 'ready for care' date more than the faculty guidelines) and 1.2 (Patients for palliative treatment – waiting time from the 'ready for care' date more than the faculty guidelines) focus on wait times for different treatment intents. The Australian Institute for Health and Welfare (AIHW) have recently mandated annual reporting on radiation therapy waiting times for public services and optional reporting for private services. In the 2016-17 AIHW report[1], wait times data was published for 63,300 records demonstrating a much higher participation rate of HCOs and the difference between a voluntary and mandated data collection process. Whilst the ACHS CIs report different aspects of waiting times, without the volume of contributing HCOs, the benefit of benchmarking against other service providers is lacking.

The recent review, however, resulted in a refresh of the clinical indicators that data is to be collected for. These new CIs (1.3 - 3.3) provide good benchmarks for HCOs to compare their service against.

FEATURE CLINICAL INDICATOR

CI 3.2 Motion Management

There are many different methods to capture the motion of a lung tumour during the treatment planning process. Intensity-modulated radiation therapy (IMRT) and stereotactic ablative body radiotherapy (SABR) treatments require a high level of accuracy as even small deviations may mean you will not deliver the treatment that was planned, and this could result in underdosing the tumour or overdosing the surrounding healthy tissues. It is therefore imperative to capture the motion of the tumour at the planning stage so that an accurate description of the dose that will be delivered can be assessed and the most appropriate plan provided.

This is the first-time data has been reported for this CI and it is hoped an improvement is seen in the 2019 data.

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RADIATION ONCOLOGY

SUMMARY OF RESULTS

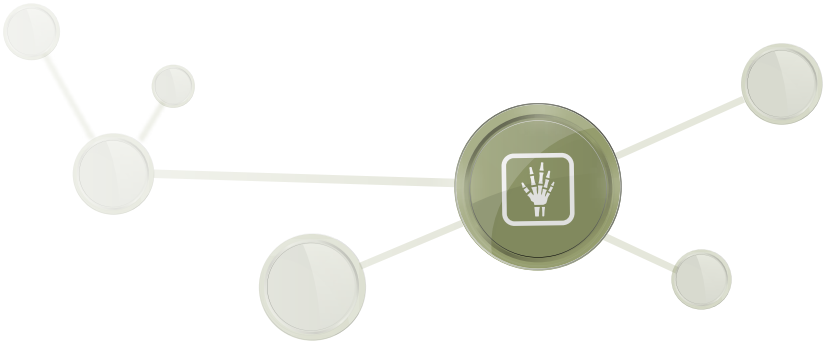
In 2018 there were 79 submissions from 9 HCOs for 9 CIs. 2 were analysed for trend, 1 of which improved, 1 deteriorated. In 2018, significant stratum variation was observed in none of the CIs. 5 CIs showed greater systematic variation, with centile gains in excess of 50% of all events. Outlier gains in excess of 25% of all events were observed in 4 CIs. See Summary of Indicator Results below.

Summary of Indicator Results

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Consultation process								
1.1 Patients for radical treatment - waiting time from the 'ready for care' date more than the faculty guidelines (L)	9	8.29		4 (44%)	165 (27%)	513 (85%)	602	↓✓
1.2 Patients for palliative treatment - waiting time from the 'ready for care' date more than the faculty guidelines (L)	9	13.5		4 (44%)	274 (36%)	473 (61%)	770	
1.3 Multidisciplinary meeting involvement (H)	4	41.4				35 (28%)	123	
Treatment process								
2.1 Staging annotation for current radiotherapy course (H)	7	78.0		2 (29%)	404 (32%)	947 (75%)	1,270	↓✗
2.2 Treatment prolongation (L)	5	11.2		1 (20%)	15 (30%)	40 (80%)	50	
2.3 Treatment plan peer review (H)	4	24.4				20 (15%)	136	
Treatment delivery								
3.1 Single fractionation for bone metastases (H)	5	36.2					381	
3.2 Motion management (H)	6	67.4		1 (17%)	6 (10%)	48 (80%)	60	
3.3 Androgen deprivation therapy (H)	5	71.2				9 (30%)	30	

Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

RADIOLOGY



GENERAL COMMENTS

In 2018 there were 23 HCOs submitting data on the Radiology Clinical Indicators. There were no events in either interventional radiology or diagnostic radiology which were of the highest severity assessment code of SAC1. Although some events were reported as SAC2 (a lower risk event), the number of adverse events were low, reflecting high performance amongst the HCOs submitting data.

Extravasation during an intravenous contrast CT procedure is one of the risks when receiving contrast agents. The data from the submitting HCOs indicates that there is an increasing variability amongst the cohort, but the overall rate remains low. There is a large amount of case-mix risk with extravasation, so it is likely that these factors contribute to the variability within the set.

There were few organisations submitting data on image guided biopsy adverse events, which reflects the number of HCOs overall submitting data and that these procedures are generally performed in larger HCOs which see a more complex mix of patients.

Computed Tomography (CT) dosimetry is used to measure the dose index of radiation output from CT scanners. This measurement of output is to ensure that patients are not receiving too much radiation during their imaging procedures. This radiation dose should be within the reference levels in the National Diagnostic Reference Levels (NDRLs). The radiation dose has become an important element of continuous improvement with strategies to tailor CT scans to the patient. This is still an area for improvement with the aggregate rate of head CT exams and abdominal pelvic CT exams dosing above the NRDLs at 15.9% and 18.4% respectively.

The identification of patients and their consent prior to procedures was excellent with all organisations having time-out procedures specific to radiological examinations; standardised processes in place to address correct patient, site and procedure; and through audit to demonstrate that the appropriate processes and procedures were followed prior to any procedure from the reporting organisations. This standardisation across institutions is encouraging and is a basic measure to reduce avoidable harm to patients.

Critical test result notification is a qualitative measure to determine if an organisation has in place measures to report any result or finding that may be considered life threatening or could result in severe morbidity requiring clinical attention. This measure was more variable than patient identification and consent but was generally well adhered to with the rates of procedures and policies in place at 91.3% and 89.5% respectively. This is an encouraging measure that supports quality improvement and better patient care within the healthcare organisation.

SUMMARY OF RESULTS

In 2018 there were 388 submissions from 23 HCOs for 9 CIs. None were analysed for trend. In 2018, significant stratum variation was observed in 1 CI. Three CIs showed greater systematic variation, with centile gains in excess of 50% of all events. Outlier gains in excess of 25% of all events were observed in 1 CI. See Summary of Indicator Results below.

Summary of Indicator Results

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
Adverse Patient Events								
1.1 Number of Severity Assessment Code (SAC) 1 or Incident Severity Rating (ISR) 1 incidents - interventional radiology examinations (L)	17	0					-	
1.2 Number of Severity Assessment Code (SAC) 1 or Incident Severity Rating (ISR) 1 incidents - diagnostic radiology examinations (L)	20	0					-	
1.3 Number of Severity Assessment Code (SAC) 2 or Incident Severity Rating (ISR) 2 incidents - interventional radiology examinations (L)	17	0.013					4	
1.4 Number of Severity Assessment Code (SAC) 2 or Incident Severity Rating (ISR) 2 incidents - diagnostic radiology examinations (L)	20	0.002		1 (5%)	3 (12%)	13 (52%)	25	
1.5 Contrast extravasation during an IV contrast enhanced CT procedure (L)	20	0.274		2 (10%)	37 (10%)	166 (45%)	368	
1.6 Percutaneous trans pleural biopsy of lung or mediastinum requiring unexpected overnight admission (L)	9	1.46				3 (33%)	9	
1.7 Image-guided percutaneous core biopsy of liver requiring unexpected overnight admission (L)	9	0					-	

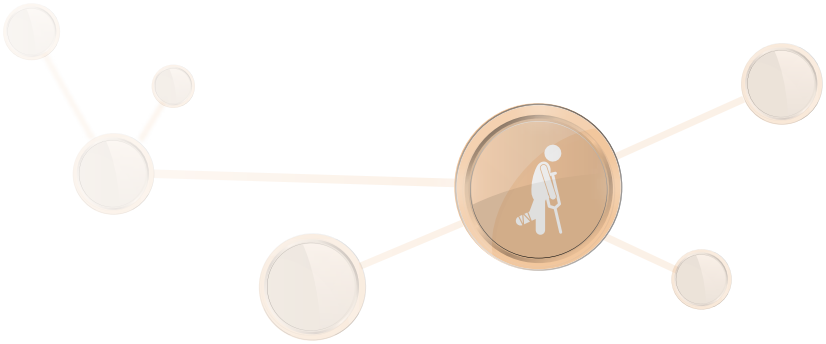
Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

Summary of Indicator Results continued

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%)*	Outlier Gains (%)+	Centile Gains (%)+	Events#	Trend
CT Dosimetry								
2.1 CTDIvol for non-contrast CT head examinations (L)	15	15.9		4 (27%)	79 (37%)	205 (95%)	216	
2.2 CTDIvol for portal venous phase of abdominal pelvic CT examinations (L)	16	18.4		2 (13%)	54 (21%)	195 (74%)	263	
Patient identification and consent								
3.1 Patient identification and consent (1) (H)	18	100						
3.2 Patient identification and consent (2) (H)	14	100						
3.3 Patient identification and consent (3) (H)	14	100						
3.4 Patient identification and consent (4) (H)	1	100						
Critical test result notification								
4.1 Critical test result notification (1) (H)	14	91.3						
4.2 Critical test result notification (2) (H)	10	89.5						
4.3 Critical test result notification (3) (H)	10	78.9						
4.4 Critical test result notification (4) (H)	1	100						

Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs


REHABILITATION MEDICINE



GENERAL COMMENTS

Tim Geraghty
President, Australasian Faculty of Rehabilitation

The Australasian Faculty of Rehabilitation Medicine and the Australasian Rehabilitation Outcomes Centre (AROC) acknowledge and are proud of the continuing high rate of compliance with the ACHS Rehabilitation Medicine CIs.

This should be seen in the context of very high compliance in provision of detailed outcome data (including data items required to calculate the CIs) to AROC, and a strong culture of continuous improvement within the Rehabilitation Medicine community and demonstrates a continuing commitment to provide best-practice, evidence based clinical care to our population of individuals.

Outcome and process measures demonstrated by these clinical indicators show a continued improvement, with few outlier data points. All CIs showed improvement compared to 2017 data except for CI 4.1 (Discharge plan on separation) for which the rate was the same as in 2017.

This improvement is also reflected in shorter lengths of stay and more functional improvement for similar diagnostic groups, demonstrated by AROC benchmarking data.

Where differences in indicator outcomes are evident between sectors (public compared with private facilities) or jurisdictions, they should be interpreted very cautiously, because these data are not casemix adjusted.

SUMMARY OF RESULTS

In 2018 there were 1,131 submissions from 121 HCOs for 6 CIs. Six were analysed for trend, 5 of which improved, and the remaining CI showed no evidence of trend. In 2018, significant stratum variation was observed in 4 CIs. Six CIs showed greater systematic variation, with centile gains in excess of 50% of all events. Outlier gains in excess of 25% of all events were observed in 6 CIs. See Summary of Indicator Results below.

Summary of Indicator Results

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
Timely assessment of function on admission								
1.1 Functional assessment within 72 hours of admission (H)	101	98.7		21 (21%)	592 (64%)	878 (95%)	920	↑ ✓
Assessment of function prior to episode end								
2.1 Functional assessment within 72 hours before end of rehabilitation (H)	96	99.2	Private	19 (20%)	245 (47%)	471 (90%)	522	↑ ✓
Timely establishment of a multidisciplinary team rehabilitation plan								
3.1 Multidisciplinary team plan within 7 days (H)	101	98.8		25 (25%)	458 (59%)	739 (95%)	776	↑ ✓
Multidisciplinary discharge documentation								
4.1 Discharge plan on separation (H)	94	97.8	Private	15 (16%)	1,021 (76%)	1,325 (99%)	1,343	
Functional gain achieved by rehabilitation program								
5.1 Functional gain following completed rehabilitation program (H)	117	97.9	Private	28 (24%)	598 (39%)	1,163 (76%)	1,535	↑ ✓
Discharge destination								
6.1 Destination after discharge from a rehabilitation program (H)	93	94.2	Private	29 (31%)	1,162 (36%)	2,325 (72%)	3,223	↑ ✓

Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

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