AUSTRALASIAN
CLINICAL INDICATOR REPORT

19th Edition 2010-2017

An extensive review of clinical performance

HSRG
Health Services Research Group

THE AUSTRALIAN COUNCIL ON HEALTHCARE STANDARDS

ACHS

CLINICAL INDICATOR PROGRAM

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

ABBREVIATIONS

ACEI	ACE inhibitor
ACSQHC	Australian Commission on Safety and Quality in Health Care
A2RA	Angiotensin II receptor antagonist
ACIR	Australasian Clinical Indicator Report
BSI	Bloodstream infection
CABG	Coronary artery bypass graft
CHF	Congestive heart failure
CI	Clinical Indicator
CI-CLABSI	Centrally-inserted central line-associated bloodstream infection
CLABSI	Central line-associated bloodstream infection
EBRT	External beam radiation therapy
HB	Haemoglobin
HCO	Healthcare organisation
IMRT	Intensity-modulated radiation therapy
LSCS	Lower segment caesarean section
MEBR	Megavoltage external beam radiotherapy
NSQHS	National Safety and Quality Health Service
NICU	Neonatal intensive care unit
PI-CLABSI	Peripherally-inserted central line-associated bloodstream infection
PTCA	Percutaneous transluminal coronary angioplasty
RBC	Red blood cell
SAP	Surgical antibiotic prophylaxis
TAT	Turnaround time
VTE	Venous thromboembolism

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ACKNOWLEDGEMENTS

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, POS 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

The Australian Council on Healthcare Standards' (ACHS') Clinical Indicators (CI) 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 Lucy Fisher (APHA) Ms Mary Kirkwood (APHA)	Australian Private Hospitals Association Day Hospitals Australia Australian Day Surgery Nurses Association
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Hospital in the Home	A/Prof Mary O'Reilly (HITHSA)	Hospital in the Home Society Australasia
Hospital-Wide	Dr Kim Hill (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
Internal Medicine	Prof Donald Campbell (IMSANZ)	Internal Medicine Society of Australia and New Zealand Australian College of Nursing
Maternity	Prof Michael Permezel (RANZCOG)	The Royal Australian and New Zealand College of Obstetricians and Gynaecologists Australian College of Midwives
Medication Safety	Dr Sasha Bennett (NSW TAG)	NSW Therapeutic Advisory Group Clinical Excellence Commission Australian Commission on Safety and Quality in Health Care
Mental Health	A/Prof Victor Storm (RANZCP)	The Royal Australian and New Zealand College of Psychiatrists Australian College of Mental Health Nurses
Ophthalmology	Dr Michael Hennessy (RANZCO)	The Royal Australian and New Zealand College of Ophthalmologists Australian Ophthalmic Nurses' Association
Oral Health	Dr Hugo Sachs (ADA)	Australian Dental Association Royal Australasian College of Dental Surgeons
Paediatrics	Dr Simon Fraser (PCHD, RACP)	Paediatrics and Child Health Division of The Royal Australasian College of Physicians Australian College of Children and Young People's Nurses Women's and Children's Healthcare Australasia

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
Radiology	Prof Stacy Goergen (RANZCR)	Faculty of Clinical Radiology of The Royal Australian and New Zealand College of Radiologists Medical Imaging Nurses Association Australian Society of Medical Imaging and Radiation Therapy I-MED Radiology Network
Rehabilitation Medicine	Ms Frances Simmonds (AROC, AFRM)	Australasian Rehabilitation Outcomes Centre Australasian Faculty of Rehabilitation Medicine

FOREWORD

On behalf of the Australian Council on Healthcare Standards (ACHS), I would like to present the *Australasian Clinical Indicator Report 19th Edition 2010-2017*. The report examines data sourced from a broad range of clinical speciality areas. The data provide important information regarding key aspects of healthcare delivery for members of ACHS, in addition to healthcare organisations worldwide. As in previous years, the 19th Edition of the *Australasian Clinical Indicator Report* provides key points on significant trends, strata differences and outlier effects between 2010 and 2017 for a broad range of Clinical Indicators. The report also includes commentary by professionals within the respective healthcare speciality to provide context to the complex and ever-changing healthcare environment. The *Australasian Clinical Indicator Report* provides the reader with an insight into health care in Australia and New Zealand and provides healthcare organisations with the potential to improve quality and safety within their facility.

During the development of Clinical Indicators and the *Australasian Clinical Indicator Report*, the 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 Clinical Indicator sets, which now contain 324 individual Clinical Indicators. Data from 825 healthcare organisations have been provided, which is then validated by University of Newcastle statisticians.

Working Parties were held through the year to support the continuous development of Clinical Indicator sets to ensure they remain current and valid. In 2017, Clinical Indicator sets that were reviewed include Infection Control, Radiology and Radiation Oncology.

Dr Brian Collopy has once again written the feature report contained within this report. This year's feature report, with the contribution of Mr Stephen Hancock, Statistician of Health Services Research Group (HSRG), University of Newcastle, presents the outliers issues identified by ACHS CI data. The report discusses the relevance of outliers in the in-house review of an HCO's performance, and recommends actions to be taken by outlier HCOs to reverse the outlier status.

The ACHS provides the *Australasian Clinical Indicator Report* to key health industry bodies, Federal and State Governments, our members and assessors, and other interested parties. The report is available to download from the ACHS website via www.achs.org.au/programs-services/clinical-indicator-program/acir-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 19th Edition 2010-2017* will provide you with valuable knowledge of our healthcare industry for which it was intended. In providing this insight, I would like to extend my appreciation to all collaborating colleges, associations, and societies. Their ongoing support of the Clinical Indicator Program allows us to continue our efforts to improve healthcare standards in Australia and internationally.

Prof Len Notaras AM
ACHS President
November 2018

ABOUT THE AUSTRALASIAN CLINICAL INDICATOR REPORT

This *Australasian Clinical Indicator Report (ACIR) 19th Edition 2010-2017* provides an overview of the results for each Clinical Indicator (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 2010-2017. The report highlights significant trends or variations in the data over time, which can suggest areas where there is scope to improve practice.

The Summary of Results section, commencing on page 28, 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 ACIR lists collective performance against each of the ACHS CIs. This information is published on the ACHS website: 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 CI set and provides detailed information about each CI collected in 2017. Listed within the report are the CI, its intent, the numerator, and denominator. Tables summarise the data submitted in every year since 2010 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 2017, 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 2017

IMPROVEMENTS

In 2017, there were 81 CIs which showed statistically significant trends in the desired direction. Of these, 47 CIs remained significant after allowing for changes in the composition of HCOs contributing over the period. There were seven CI sets that had an improvement in at least two-thirds of all trended CIs. They were Day Patient; Emergency Medicine; Gynaecology; Infection Control; Intensive Care; Radiation Oncology and Rehabilitation Medicine.

There were noteworthy improvements in the following sets:

Anaesthesia and Perioperative Care

3.1 Relief of respiratory distress in the recovery period (L)

The rate of respiratory stress for patients who undergo a procedure requiring tracheal intubation or insertion of a laryngeal mask (L) (CI3.1) has shown significant improvement and decreased by more than half over the last eight years from 0.64 to 0.31 per 100 patients.
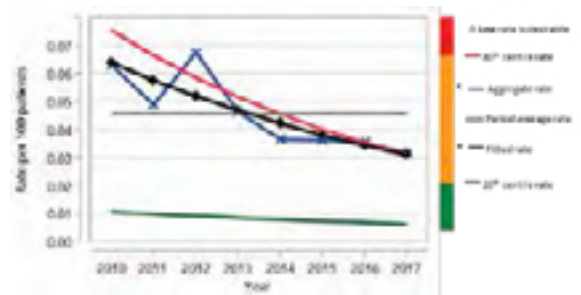
Day Patient

5.1 Unplanned return to operating room on same day as initial procedure (L)

From 2010 to 2016 the rate for unplanned return to the operating room on the same day as initial procedure (L) (CI5.1) has demonstrated significant improvement and decreased from 0.050 to 0.028 per 100 patients.
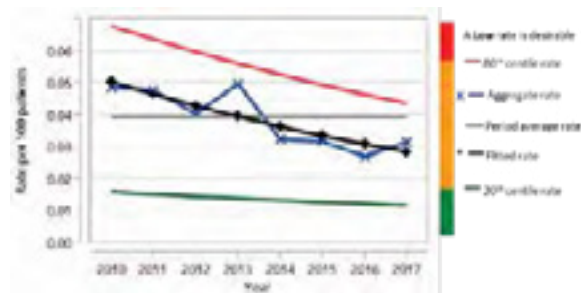
Hospital-Wide

6.1 Significant adverse blood transfusion events (L)

From 2010 to 2017 the rate of significant adverse blood transfusion events (L) (CI6.1) has displayed a significant improvement and decreased by more than half from 0.26 to 0.11, a change of 0.14 per 100 transfusions.
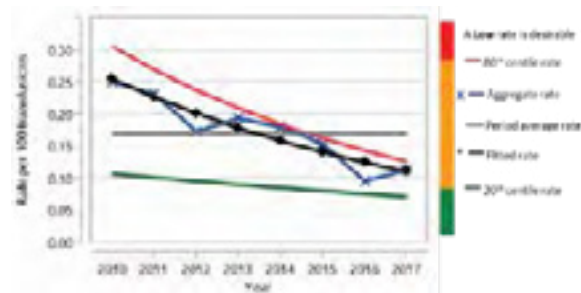
Radiation Oncology

1.1 Radiotherapy - waiting time within 28 days from the 'ready for care' date (L)

The rate of waiting time more than 28 days, from the 'ready for care' date to the date of commencing radiotherapy (L) (CI1.1) has improved significantly from 37.2 to 4.7 per 100 patients. The aggregated rate has decreased by approximately 90% from 2010 to 2017.
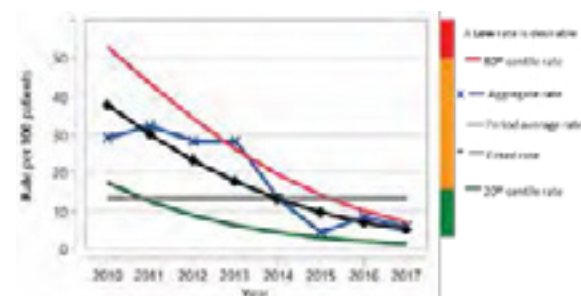
KEY RESULTS OF 2017

DETERIORATIONS

In 2017, there were 41 CIs which showed statistically significant trends in the undesirable direction. Of these, 27 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 patients who are transferred or admitted for an overnight stay as a result of aspiration (L) (CI5.1) has deteriorated from 0.017 to 0.041 per 100 patients over the last eight years. The aggregated rate has increased by approximately 1.5 times.
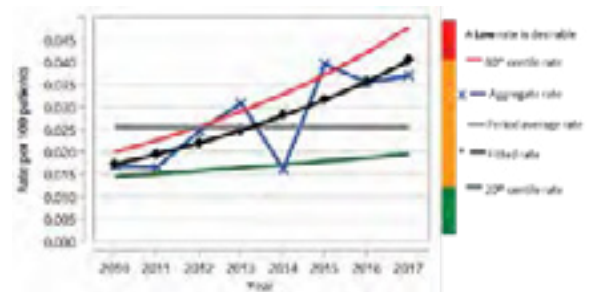
Maternity

1.2 Selected primipara - induction of labour (L)

As noted from the 2010 results, the rate of selected primipara who undergo induction of labour (L) (CI1.2) continues to deteriorate in 2017. The aggregated rate deteriorated from 28.1 to 40.1 per 100 selected primipara during the period from 2010 to 2017.
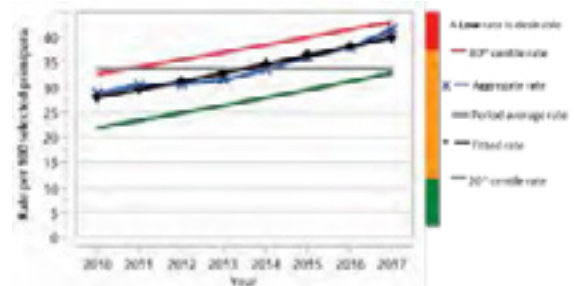
Mental Health

5.5 Physical restraint - 1 or more episodes (L)

The rate of physical restraint (L) (CI5.5) has increased by 3.5 times in the last eight years from 1.1 to 5.0 per 100 completed episodes. The aggregated rate continues to deteriorate in 2017. The deterioration observed in this area was highlighted in the previous 18th edition of ACIR.
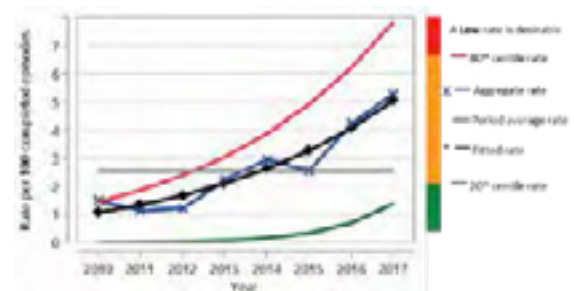
Oral Health

1.1 Restorative treatment - teeth retreated within 6 months (L)

Since 2012 the rate of permanent teeth retreatment within six months (CI1.1) following an episode of restorative treatment has deteriorated from 5.7 to 7.3 per 100 teeth restored.
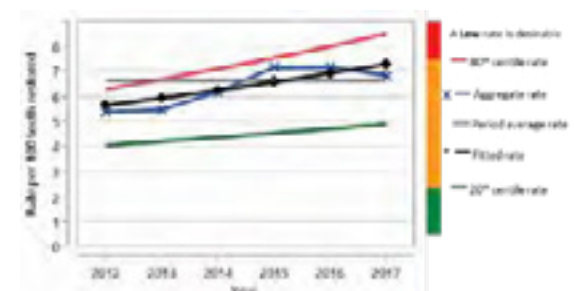
Understanding a problem is the **first step** to providing a solution!

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
Clinical Indicators 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 facilitates the process by providing secretariat support. When developing CIs, the 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 Health Services Research Group (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;130-138.

FEATURE REPORT

OUTLIER ISSUES

B Collopy FRACS, FRACMA. Clinical Advisor, Performance & Outcomes Service, ACHS

S Hancock BMath, MScStud. Statistician, University of Newcastle

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Introduction

Clinical Indicator (CI) data, reflecting hospital performance, have been collected for several years now in many countries and the ACHS CI data collection is in its 25th year. After correcting for the different sizes of hospitals and using empirical Bayesian methods to adjust the rates, the variation between hospitals can be reported in three ways: variation between all hospitals; variation between strata such as public and private, and thirdly identifying unusual rates for individual hospitals, called outliers. The aim in identifying outliers will be presented in this report. An outlier can be defined as a Bayesian corrected rate of 2 or 3 standard deviations from the overall mean for all hospitals. The ACHS uses 3 standard deviations.

An outlier, i.e. a data value significantly different from the group, as defined above, may occur with the actual CIs and also between the Healthcare Organisations (HCOs) providing data, and that difference may be in a desirable or an undesirable direction. A review of the outliers in the ACHS CI Program over the last five years reveals a remarkable numerical consistency (Tables 2 & 3). As shown in Table 3 the majority of HCOs have both desirable and undesirable outliers, and the more CIs the HCOs report data on the greater the number of outliers. Thus, the outlier data should not be used as league tables but should be used for in-house review of a facility's performance.

Table 2. Clinical Indicator outliers between 2013 and 2017

Outlier Category	Per cent of CIs
No outliers	20-27%
Undesirable outliers	11-12%
Desirable outliers	14-16%
Both desirable and undesirable outliers	47-53%

Table 3. HCO outliers between 2013 and 2017

Outlier Category	Per cent of HCOs
No outliers	9-19%
Undesirable outliers	22-26%
Desirable outliers	1%
Both desirable and undesirable outliers	55-68%

Relevance of an outlier

Whilst a desirable outlier direction represents good practice, an undesirable one may reflect problems in administrative practices, in safety and quality, and in cost issues or resource limitations. That there may be a problem with some administrative practices is evident with the Day Procedure CI reporting cancellation of a procedure after the patient's arrival due to an administrative issue. The number of outlier HCOs for this CI varied from 7% to 25% over the period 2013-2017, with the number of cancellations in those outlier HCOs around 3,000 annually. A greater proportion of the outliers were public metropolitan HCOs. Safety and quality issues may be reflected in the patient falls CI, for in the same five-year time period for each year over 100 HCOs were outliers, with more than 9,000 patient falls, which may have been avoidable, in four of those five years. A greater proportion of outliers were again public facilities as might be expected (case mix). Extra cost can be evident with the CI reflecting the rate of unplanned re-admissions within 28 days. Approximately 20% of HCOs were outliers with an average of 18,000 possibly avoidable re-admissions annually, and it is recognised that re-admissions have a longer average length of stay (LOS). Limitation of resources is demonstrated by the approximately 20% of HCO outliers for the Intensive Care Unit (ICU) indicator reflecting transfer to an ICU in another facility of around 250 very ill patients each year.

International experience

Whilst the identification of outliers across various streams of patient care can be achieved, evidence of correction of that outlier status is lacking.[1-3] It has been recognised for years that there is a relationship between volume and quality, for example as measured by the significantly lower mortality rates achieved in coronary artery bypass graft surgery by both high-volume HCOs and high-volume surgeons when compared with those with low volume.[4] However, it is difficult to achieve change and there is no consistent evidence that public release of performance data, for example in the same area of practice, improves care or changes consumer behaviour.[5] The Australian experience is similarly limited.[6]

Issues for consideration by an outlier HCO

It is necessary that steps to reverse the outlier status are taken therefore within the HCO. Prior to an ACHS on-site survey, the assessors are provided with the relevant HCO's performance with CI data. Assessors are expected to inquire of the HCO as to what actions have been taken, in particular where the data are unfavourable, in comparison with its peer group. When identified as an outlier in an undesirable direction the HCO should consider:

- the accuracy of the data
- the importance of the outlier area
- whether it is a first occurrence or a repeat one
- whether there is clinician awareness
- the personnel who should be involved in a discussion of the issue

Any undesirable outlier data should be discussed at a senior level, e.g. by a Board member (or ex-officio attendee) who is also on the HCO's Clinical Governance/Quality Committee, together with the Quality Co-ordinator (however titled), a senior staff member/s, Nurse Unit Manager and other relevant staff.

1. Actions should then include:

   (a) Is it a case-mix issue e.g. concerns mainly elderly patients with co-morbidities?

   (b) Chance variation e.g. insufficient number of cases in an outcome CI, such as wound infection

   (c) An issue of clinical technique e.g. a high rate of perineal tears

   (d) A knowledge issue e.g. limited thromboembolic prophylaxis (TEP) for high-risk medical patients

   (e) A limited resource issue e.g. delayed CT scan

2. Remedial action

   This might consist of:

   (a) Specific policy/procedure changes

   (b) Education e.g. lecture on TEP

   (c) Resource review e.g. staff prioritisation

   (d) Restriction e.g. withdrawal of clinical privileges

   (e) External advice e.g. by an individual expert or peak body panel

A case study

Body temperature < 36°C in recovery room (Anaesthetic CI 3.3)

Over the five-year period 2013-2017, the number of outlier HCOs ranged from 26-42, and the number of patients who may have avoided such an episode (with its attendant risks of increased infection and slow recovery) ranged from 12,402-17,790. The ratio of the outlier rate to the aggregate rate in that period was equal to or greater than 5.0.

Review Teams

In addition to a Board member (or ex-officio attendee) and the Quality Coordinator, the review team should consist of the Operating Room (OR) and Recovery Room (RR) nurse unit managers, the director of anaesthesia, the relevant anaesthetist and surgeon involved in a number of the cases, and a hospital or OR technician with knowledge of temperature control.

Possible Causes

With such numbers as indicated above it is unlikely to be a case-mix issue or chance variation, but more likely to be one of clinical technique, or of knowledge or of equipment.

Remedial action

Efforts to correct this problem should address the type, duration and conduct of the surgical procedures, the temperature of the OR, the adequacy of equipment (e.g. the number and type of Bair Huggers (warming blankets), and the temperature control of intravenous infusions.

Persistent outliers

Occasionally an individual HCO may remain an outlier for more than one six-month reporting period, and in one recent case, it extended to five such periods. Bearing in mind that the submission of CI data is voluntary the ACHS response is to first determine whether the HCO is in its appropriate peer group. If so the HCO will receive a letter from the ACHS and the survey team will be informed of the follow-up and what actions were taken by the relevant HCO.

Given that such an HCO has been made aware of a probable suboptimal process or outcome of care within its facility, to take no action would be unprofessional.

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THE CLINICAL INDICATOR PROGRAM: KEY FACTS 2017

In this *Australasian Clinical Indicator Report (ACIR) 19th Edition 2010-2017*, there are a total of 20 Clinical Indicator (CI) sets and in 2017 there were data submitted for 321 of the possible 324 CIs across these sets. Data within this report are submitted from Healthcare Organisations (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 2010 and 2017, the number of HCOs participating in the CI Program increased from 665 to 681, representing a 2% increase over that period. 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 2017, the total number of six-monthly data submissions generated was 29,608. The number of submissions from the private and public sectors, 15,912 and 13,696 respectively.

The highest number of six-monthly data submissions over the period 2010 to 2017 was 35,838 in 2010. *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 2010-2017

	2010	2011	2012	2013	2014	2015	2016	2017
Clinical Indicator Sets	22	22	22	22	22	21	20	20
Clinical Indicators	332	353	335	338	328	314	318	324
Reporting HCOs								
Private	329	330	329	316	317	314	302	307
Public	336	360	341	415	490	511	434	374
Total	665	690	670	731	807	825	736	681
Submissions								
Private	17,193	16,732	16,539	15,597	16,022	15,931	15,481	15,912
Public	18,645	18,426	18,354	17,298	16,615	15,192	14,745	13,696
Total	35,838	35,158	34,893	32,895	32,637	31,123	30,226	29,608

* 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 2017, 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 435 metropolitan HCOs and 246 non-metropolitan HCOs participating in the Clinical Indicator Program in 2017.

Table 5: Number of HCOs reporting by state, sector and metropolitan/non-metropolitan characteristics in 2017

Location	Private	Public	Metropolitan	Non-metropolitan	Total
New South Wales	125	116	159	82	241
Victoria	65	107	90	82	172
Queensland	62	40	71	31	102
South Australia	19	71	52	38	90
Western Australia	19	24	38	5	43
Tasmania	6	4	7	3	10
Australian Capital Territory	7	3	10	0	10
Northern Territory	1	5	2	4	6
New Zealand	3	4	6	1	7
Total	307	374	435	246	681

THE CLINICAL INDICATOR PROGRAM: KEY FACTS 2017

Clinical Indicators reported by each HCO

In 2017, the average number of individual CIs reported was 23.7, with half of all HCOs reporting between eight and 33 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 15 and 19 and the mean varied between 21.2 and 25.8.

Table 6 shows that in 2017 there were six CI sets with at least 150 HCOs providing data. While there were six CI sets where fewer than 50 HCOs participated, 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 2010-2017

Clinical Indicator Set	2010	2011	2012	2013	2014	2015	2016	2017
Anaesthesia and Perioperative Care	288	292	288	273	261	250	241	241
Day Patient	397	393	370	337	318	308	290	280
Emergency Medicine	196	195	181	174	150	137	137	112
Gastrointestinal Endoscopy	103	95	91	77	78	76	80	79
Gynaecology	82	78	65	58	52	58	61	66
Hospital in the Home	50	40	37	39	34	30	17	19
Hospital-Wide	458	481	478	466	468	525	486	431
Infection Control*	306	324	334	424	424	401	351	345
Intensive Care	105	98	104	102	107	96	93	91
Internal Medicine	81	84	74	62	46	36	32	25
Maternity†	187	186	188	184	175	170	166	157
Medication Safety	164	284	259	260	269	276	265	268
Mental Health	133	128	125	119	118	105	84	93
Ophthalmology†	87	86	77	72	75	64	66	55
Oral Health†	12	15	15	14	84	90	92	86
Paediatrics	46	47	40	37	11	29	27	21
Pathology	42	42	42	40	44	39	35	38
Radiation Oncology*	17	18	20	17	14	14	13	8
Radiology*	60	60	69	64	41	40	41	35
Rehabilitation Medicine†	122	126	122	115	105	102	122	120
Any Clinical Indicator	**665**	**690**	**670**	**731**	**807**	**825**	**736**	**681**

†Revised Clinical Indicator set introduced in 2017
*Revised Clinical Indicator set to be 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 ACIR 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 2010-2017

Of the 324 CIs in 2017, 320 are rate-based CIs, whereby data were collected for all but three of these CIs. Of these 317 CIs, 303 had a desirable direction specified (high or low rates indicating better care). Trends could be analysed for 146 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, 18 had CIs that were tested for trend. Of these, there were 12 CI sets which had more CIs moving in the desired direction than in the undesirable direction. There were seven CI sets that had an improvement in at least two-thirds of all trended CIs. They were Day Patient, Emergency Medicine, Gynaecology, Infection Control, Intensive Care, Radiation Oncology 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 81 statistically significant trends in the desirable direction, 47 remained significant after allowing for changes in the HCOs submitting, and of those 41 CIs whose trends were deteriorating, 27 remained significant. There were 25 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	10	4 (1)	3 (1)	3
Day Patient	14	14	10 (4)	3 (0)	1
Emergency Medicine	22	7	6 (3)	1 (1)	0
Gastrointestinal Endoscopy	11	11	4 (3)	4 (2)	3
Gynaecology	8	7	5 (2)	0 (0)	2
Hospital in the Home	12	-	-	-	-
Hospital-Wide	26	10	6 (5)	0 (2)	4
Infection Control	30	24	18 (12)	2 (3)	4
Intensive Care	15	5	5 (2)	0 (0)	0
Internal Medicine	18	3	0 (0)	2 (0)	1
Maternity	20	18	6 (5)	12 (11)	0
Medication Safety	20	2	1 (0)	0 (0)	1
Mental Health	27	4	1 (1)	3 (2)	0
Ophthalmology	17	7	3 (2)	1 (2)	3
Oral Health	9	4	1 (0)	2 (2)	1
Paediatrics	14	2	1 (1)	0 (0)	1
Pathology	16	-	-	-	-
Radiation Oncology	6	5	4 (4)	1 (0)	0
Radiology	8	8	1 (0)	6 (1)	1
Rehabilitation Medicine	6	6	5 (2)	1 (0)	0
Total	**317**	**147**	**81 (47)**	**41 (27)**	**25**
Percent of tested		**100%**	**55% (32%)**	**28% (18%)**	**17%**

* 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 RR 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).

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

When the desired level is high:

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

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

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 185 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 58 CIs (31% of those tested) with high RR (≥10). These occur in 14 of the 17 CI sets tested, and four CI sets with 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	-	6	6	50%
Day Patient	14	14	-	4	10	71%
Emergency Medicine	22	11	2	9	-	0%
Gastrointestinal Endoscopy	11	6	-	5	1	17%
Gynaecology	8	6	2	4	-	0%
Hospital in the Home	12	2	-	1	1	50%
Hospital-Wide	26	16	-	11	5	31%
Infection Control	30	22	5	15	2	9%
Intensive Care	15	9	1	2	6	67%
Internal Medicine	18	-	-	-	-	0%
Maternity	20	19	12	5	2	11%
Medication Safety	20	6	-	4	2	33%
Mental Health	27	18	-	11	7	39%
Ophthalmology	17	9	-	6	3	33%
Oral Health	9	8	6	2	-	0%
Paediatrics	14	-	-	-	-	0%
Pathology	16	15	1	10	4	27%
Radiation Oncology	6	-	-	-	-	-
Radiology	8	6	-	1	5	83%
Rehabilitation Medicine	6	6	-	2	4	67%
Total	**317**	**185**	**29**	**98**	**58**	**31%**
Percent of tested			**16%**	**53%**	**31%**	

* 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 2017 between the three strata: Australian states and territories/New Zealand (NZ), public/private and metropolitan/non-metropolitan. This section summarises those results, by identifying the stratum that explains most of the variation in 2017. *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 2017

Clinical Indicator Set	Number of CIs	CIs tested#	State / NZ	Public / private	Metropolitan / non-metropolitan	Any Stratum
Anaesthesia and Perioperative Care	18	11	3	3	0	6
Day Patient	14	14	1	6	0	7
Emergency Medicine	22	10	6	0	2	6
Gastrointestinal Endoscopy	11	9	1	4	0	4
Gynaecology	8	5	1	1	0	2
Hospital in the Home	12	3	0	0	0	0
Hospital-Wide	26	20	5	5	1	9
Infection Control	30	27	8	5	2	12
Intensive Care	16	9	3	4	0	5
Internal Medicine	20	0	0	0	0	0
Maternity	20	19	7	9	1	13
Medication Safety	20	6	4	1	2	4
Mental Health	29	19	9	4	1	11
Ophthalmology	17	6	5	4	0	5
Oral Health	10	9	6	0	3	7
Paediatrics	14	0	0	0	0	0
Pathology	17	10	8	0	1	8
Radiation Oncology	6	0	0	0	0	0
Radiology	8	6	2	0	0	2
Rehabilitation Medicine	6	6	1	2	0	3
Total	324	189	70	48	13	104
Percent of tested			37%	25%	7%	55%

#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 2017 there were 70 CIs with significant differences in mean rates between Australian states and territories/NZ, notably in Infection Control (8), Maternity (7), Mental Health (9) and Pathology (8).

In 2017, significant differences between the mean rates for the public and private strata were found in 48 CIs, notably in Day Patient (6) and Maternity (9).

In 2017, there were 13 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 2017 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 317 rate-based CIs (with rates that are not 0 or 100%) and 29,437 six-monthly data submissions, those CIs with no preferred direction or CIs that had less than 20 six-monthly data submissions in 2017 were excluded. There remained 203 CIs and 27,609 individual data submissions.

For the 203 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 15%, the proportion with less desirable rates was 10% and the remaining 75% of submissions were not outliers in either direction. These proportions varied between the specialities.

In 2017, five sets had more than 15% of submissions classified as outliers in the undesirable direction. They were Emergency Medicine (18%), Intensive Care (17%), Mental Health (16%), Pathology (27%) and Radiology (21%) and nine CI sets, including the just mentioned five 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 in 2017

Clinical Indicator Set	Number of CIs	CIs tested#	HCOs	Data submissions	Undesirable	Desirable
Anaesthesia and Perioperative Care	18	12	241	1,834	13%	30%
Day Patient	14	14	280	3,769	11%	19%
Emergency Medicine	22	12	112	1,241	18%	45%
Gastrointestinal Endoscopy	10	9	79	763	5%	1%
Gynaecology	8	6	65	334	6%	0%
Hospital in the Home	10	2	17	52	-	-
Hospital-Wide	23	19	431	5,575	10%	12%
Infection Control	30	26	345	3,436	3%	2%
Intensive Care	15	9	91	1,030	17%	32%
Internal Medicine	20	-	-	-	-	-
Maternity	19	19	157	3,873	6%	6%
Medication Safety	19	8	260	743	11%	8%
Mental Health	26	19	92	1,293	16%	24%
Ophthalmology	17	12	55	515	5%	7%
Oral Health	10	9	86	1,040	7%	4%
Paediatrics	13	-	-	-	-	-
Pathology	16	15	38	665	27%	38%
Radiation Oncology	6	-	-	-	-	-
Radiology	6	6	34	332	21%	44%
Rehabilitation Medicine	**6**	**6**	**120**	**1,114**	**14%**	**13%**
Total	308	203	681	27,609	10%	15%

#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 203 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 22 of the 203 CIs had no six-monthly data submissions that were outliers and 138 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 2017*

Outlier category	Number of CIs	Per cent of CIs	Data submissions		
			Range	Median	Mean
No outliers	22	11%	20 - 287	87	109
Undesirable rates only	43	21%	23 - 689	85	132
Desirable rates only	-	-	-	-	-
Outliers – undesirable and desirable rates	138	68%	20 - 747	95	142
Total	203	100%	20 - 747	93	136

*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 22 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 181 CIs (89% of the 203 tested), 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 681 HCOs that submitted one or more of the 203 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 52% 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.

CLINICAL INDICATOR TRENDS AND VARIATION

From *Table 12*, it can be seen that of the 681 HCOs considered, 352 (52%) HCOs have both desirable and undesirable rates whereas only 99 (15%) HCOs have outliers only in the undesirable direction, a total of 451 HCOs (66%) having at least one outlier in the undesirable direction.

Table 12: Number of HCOs that had CIs that were outliers in 2017*

Outlier category	Number of HCOs	Per cent of HCOs	Number of CIs			Data submissions		
			Range	Median	Mean	Range	Median	Mean
No outliers	118	17%	1 – 25	3	5	1 – 37	6	9
Undesirable rates only	99	15%	1 – 41	9	11	2 – 60	16	18
Desirable rates only	112	16%	3 – 39	16	17	3 – 78	28.5	30
Outliers – undesirable and desirable rates	352	52%	3 – 94	29	32	6 – 186	54	61
Total	**681**	**100%**	**1 – 94**	**16**	**22**	**1 – 186**	**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 not all of the 681 contributing HCOs are represented in the above table.

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

- 15% of submissions are in the desired direction and 10% in the undesirable direction. Thus, the majority of six-monthly data submissions (the remaining 75%) are not statistically different from the average (*Table 10*),

- 67% of the 681 HCOs have some clinical areas with rates that are outliers in the undesirable direction (*Table 12*).

THIS SUGGESTS THAT CIs 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 2010-2017 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/Decrasing (Desirable rate non-specified)

ANAESTHESIA AND PERIOPERATIVE CARE
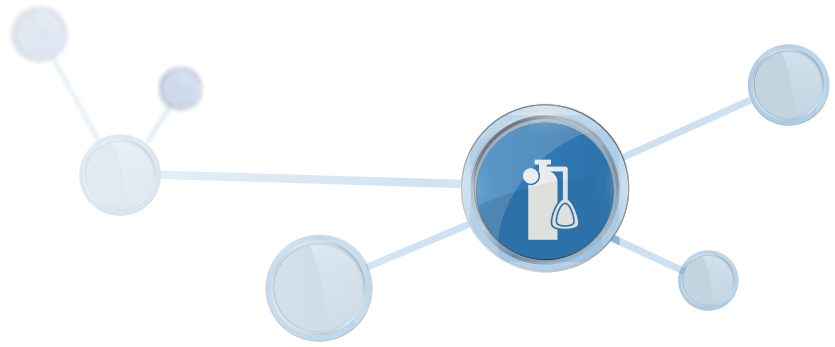
GENERAL COMMENTS

Dr Joanna Sutherland
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Australian and New Zealand College of Anaesthetists
Chair, ACHS Anaesthesia and Perioperative Care Working Party

The ACHS Clinical Indicator (CI) set for Anaesthesia and Perioperative Care was last reviewed and revised in 2014. At that time, the indicator set was renamed from "Anaesthesia" to "Anaesthesia and Perioperative Care", reflecting the changing role of anaesthetists in caring for patients throughout their perioperative journey, and also the increasing expectation of patients that high-quality perioperative care should reflect more than an isolated anaesthesia intervention. In the 21st century, the assessment of high-quality healthcare should reflect elements of team performance, including handover and communication, as well as attention to broader metrics of health status and outcomes.

At the time of indicator review, the Working Party attempted to define some new indicators which reflected the evolving practice of anaesthesia and perioperative care and also captured, as much as possible, outcomes of importance to patients and to clinicians. Wherever possible, the Working Party agreed to refer to the professional documents of the Australian and New Zealand College of Anaesthetists (ANZCA), who set the standards for professional anaesthesia and perioperative care in Australia.

FEATURE CLINICAL INDICATOR

GENERAL COMMENTS

CI 5.1: Pain intensity scores recorded regularly for surgical patients (H)

This indicator has been available for a number of years (since at least 2010) and continues to be well subscribed. ANZCA specifies (in PS 41-2013) that acute postoperative pain should be regularly assessed, based on self-reporting, and re-assessed in response to any treatment or intervention.[1] In clinical practice, it is acknowledged that multiple outcome measures are likely required "to adequately capture the complexity of the pain experience".[2] Some concern has been expressed that a narrow focus on pain scores may result in unrealistic patient (and clinician) expectations regarding the post-operative experience, and potentially in overmedication, particularly with opioids.

Nonetheless, this indicator reflects to some degree that patient pain experience is being assessed and recorded, and can enable departments and institutions to observe whether the regular assessment of pain aligns with the assessment of response to treatment, including medication. The trend over the reporting period suggests that contributing organisations have demonstrated increasing compliance with this indicator over recent years. The characteristics of the four outlier organisations are unavailable. How this process indicator relates to patient outcomes, and in particular, patient experience of care, can be further explored.

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1. Australian and New Zealand College of Anaesthetists (ANZCA). Guidelines on Acute Pain Management. Australian and New Zealand College of Anaesthetists (ANZCA); 2013.
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Dr Tracey Tay
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The move in 2014 by the Working Party to rename the ACHS "Anaesthesia" indicators as the "Anaesthesia and Perioperative Care" CIs, was a timely one. Since then, much work has been done globally to develop a standard set of outcome measures that represent the quality of care provided by anaesthetic teams, not just in the immediate perioperative period, but also during the remainder of their hospital stay and after discharge.[1,2] In addition, there has been an increasing number of evidence-based or informed "bundles" or clinical care pathways developed that include the processes that contribute to improved health outcomes for surgical patients.[3,4] Further alignment of the ACHS CI with these developments will support the collection of more complete data sets, and the improvement in care and outcomes for surgical patients.

Over time, there has been a slight reduction in the number of participating Healthcare Organisations (HCOs) across all Anaesthesia and Perioperative Care indicators, in particular since 2014. Denominators have been maintained by high patient numbers in the HCOs who have since contributed data, but the interpretation of trends must be based on the assumption that the characteristics of the new HCOs are not markedly different from those they have replaced. Notably, there was also marked variation in the number of HCOs that submitted data in each clinical indicator, from one HCO (CI1.2: Smoking cessation advised in the pre-anaesthetic consultation) to 173 HCOs (CI3.1: Relief of respiratory distress in the recovery period). Factors that underlie this variation may include ease of data collection, perceived importance of the indicator or performance in the indicator.

FEATURE CLINICAL INDICATOR

CI 1.2: Smoking cessation advised in pre-anaesthesia consultation (H)

In 2017, a single HCO reported on whether patients were advised to stop smoking preoperatively. This does not indicate that smoking advice is not being given but suggests that improvement in this area is not seen as a priority. As this was the first year for measurement of this indicator, the lack of reporting means that no baseline has been provided. This is disappointing in light of our knowledge of the benefit of smoking cessation at least four weeks prior to surgery, and the evidence that timely advice and readily available pharmacotherapy can support this short-term cessation.[5]

The preoperative period provides anaesthetists with the opportunity to play a part in addressing a global health issue, one that has special significance in Australia as we try to close the gap in health outcomes between Aboriginal and Torres Strait Islander people and other Australians. By measuring performance in this indicator, feeding back results to anaesthetists and ensuring that we take advantage of this 'teachable moment', we can reduce postoperative complications and signal our support for the reduction in the smoking-related burden of disease.

CI 3.1: Relief of respiratory distress in the recovery period (L)

The trend continues to improve for this important outcome and participation was highest of all indicators for 2017. Possible contributing factors may be decreased use of neuromuscular blocking agents, increased monitoring of neuromuscular blockade and recovery or increased use of reversal agents. The variation between HCOs in this indicator was notable. Outlier HCOs need to focus on this indicator in their quality improvement activities.

CI 3.3: Temperature <36°C in the recovery period (L)

Maintenance of normothermia is a basic goal for anaesthetists, and a component of most quality indicator and outcome matrix in anaesthesia and perioperative care. In 2017, there was an increased incidence of temperature less than 36 degrees in patients in the recovery period. This change may have been due to the addition of data from new HCOs or may represent a change in practice or case-mix, but represents a clear target for improvement.

While leadership remains with the anaesthetist, there are many factors that contribute to heat loss perioperatively. Prevention of hypothermia is very much a team effort. Nursing staff from admission through to the recovery ward and anaesthetists provide passive and active warming, surgeons can reduce time exposed to cool air, and managers can ensure that appropriate equipment and air conditioning are available.[6]

Where performance has declined, the entire operating theatre team including managers should be informed and together with the possible causes identified and addressed. Clinical quality indicators that are influenced by more than just anaesthetists are a valuable opportunity to demonstrate the importance of teamwork in improving quality of care.

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5. Moller A, Villebro N, T P. Interventions for Preoperative Smoking Cessation. Cochrane Database Systematic Review. 2005 Jul 20;3(CD002294).
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SUMMARY DATA

In 2017, there were 1,895 data submissions from 241 HCOs for 18 CIs. 10 were analysed for trend, 4 of which showed improvement, 3 deteriorated and the remainder showed no evidence of a trend. In 2017, statistically significant stratum variation was observed in 5 CIs. The rates of the 7 outcome indicators whose desirable level is defined as Low, ranged between 0.032% and 2.34%. All remaining process/structure indicators whose desirable level is defined as High, reported aggregate rates between 97.6% and 100%, except CI2.4: Prophylactic anti-emetic administered to patients with a history of PONV (H) with the rate at 74.3% (of 191 patients).15 CIs showed systematic variation, with centile gains > 50%. Outlier gains of > 25% were observed in 13 CIs.

Summary of Indicator Results

Indicator	2017							2010-2017
	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
Area 1: Pre-anaesthesia period								
1.1 Pre-anaesthesia consultation completed by anaesthetist (H)	36	98.6	NSW	4 (11%)	1,113 (89%)	1,246 (100%)	1,248	
1.2 Smoking cessation advised in pre-anaesthesia consultation (H)	1	100					-	
Area 2: Intraoperative period								
2.1 Presence of a trained assistant. (H)	18	97.8		2 (11%)	1,581 (84%)	1,873 (100%)	1,873	
2.2 Anaesthesia record compliance with ANZCA requirements (H)	43	99.6		10 (23%)	326 (79%)	409 (99%)	412	⬆✅
2.3 Time-out procedure: regional anaesthesia (H)	7	98.2					176	
2.4 Prophylactic anti-emetic administered to patients with history of PONV (H)	7	74.3		1 (14%)	14 (29%)	18 (37%)	49	

Indicator	HCOs	2017						2010-2017
		Aggregate rate %	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
Area 3: Patient recovery period								
3.1 Relief of respiratory distress in the recovery period (L)	173	0.032		12 (7%)	150 (35%)	0,327 (76%)	430	↓ ✓
3.2 PONV treatment in the recovery period (L)	100	0.912	Private	27 (27%)	3,500 (55%)	6,099 (96%)	6,379	↓ ✓
3.3 Temperature less than 36 degrees Celsius in the recovery period (L)	135	2.34		26 (19%)	15,215 (71%)	21,235 (99%)	21,386	↑ ✗
3.4 Severe pain not responding to pain protocol in the recovery period (L)	177	0.366	Private	32 (18%)	1,932 (38%)	4,103 (81%)	5,082	↓ ✓
3.5 Unplanned stay in recovery room longer than 2 hours (L)	153	1.18	Private	26 (17%)	5,734 (46%)	10,709 (85%)	12,548	
Area 4: Postoperative period								
4.1 Unplanned ICU admission within 24 hours after procedure (L)	116	0.134		16 (14%)	336 (25%)	1,050 (77%)	1,356	
4.2 Documented patient handover - operating suite to recovery area (H)	17	98.8	NSW	3 (18%)	388 (84%)	461 (100%)	462	
4.3 Documented patient handover - recovery area to ward (H)	11	97.6		3 (27%)	498 (77%)	647 (100%)	648	
Area 5: Management of acute pain								
5.1 Pain intensity scores recorded for surgical patients (H)	13	98.8		4 (31%)	91 (68%)	132 (99%)	133	↓ ✗
5.2 Daily anaesthetist review following postoperative epidural analgesia (H)	7	99.9				1 (100%)	1	
Area 6: Obstetric anaesthesia care								
6.1 Obstetric patients experiencing post-dural puncture headache (L)	14	0.8		1 (7%)	16 (14%)	65 (59%)	111	↑ ✗
6.2 Obstetric patients with risks and benefits of analgesia documented (H)	4	98.7		2 (50%)	48 (66%)	72 (99%)	73	

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

Centile gain: The centile gains are a measure of the potential gains that would be made if the overall rate were moved to the desirable rate (20th or 80th centile rate).
Outlier gain: When an HCO has an undesirable rate that is more than three standard errors from the overall rate than that HCO is referred to as having a statistically significantly high (or low) rate. The outlier gains measure the benefits of improving the rate of each of the outlier HCOs to equal the value of the overall rate.

GENERAL COMMENTS

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

In 2014–15, there were almost 10.2 million hospitalisations in Australia and 60% of these were same-day hospitalisations (6.0 million).[1]

The relevance of the Day Patient Clinical Indicators (CI) continues to grow, especially in light of increasing compliance needs, scrutiny and healthcare transparency. As we proceed to use CIs as a tool, whether this in itself 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.

As is the nature of the service, some of the interesting CI results lie around pre- and post-procedure activities. For example, CI2.1: A booked patient who fails to arrive has shown a marked decrease over the period 2010-2017 from 0.93 to 0.54 per 100 patients. This may be evidence of the continued importance of robust preadmission processes.

CI9.1 and CI9.2 deal with post-discharge and follow-up. Although some improvements are noted in CI9.2: Follow-up phone call received by patient or carer within seven days (79.6% in 2010 to 90.4% in 2017), there may be some opportunities to improve this process. A multidisciplinary Working Party was convened in June 2018 to review all CIs, and recognised that the future challenge of the Day Patient CI set will be to capture more post-discharge events – this will ensure a complete picture of patient outcomes in this growing sector.

The feedback from the 2018 Working Party suggests that these CIs have contributed to local quality improvement activities, by stimulating reflection on clinical practice, learning, and further investigation.

FEATURE CLINICAL INDICATOR

CI 6.1 Unplanned transfer or overnight admission related to the procedure. (L)

This indicator continues to be a key focus for Day Hospital practice. It is mandatory reporting for many State Health Departments; thus, can be used as a measure of patient section criteria, clinical resources and processes. Factors that can affect a Healthcare Organisations (HCO)'s rate can be the type of surgery and co-location of inpatient facility. However, the relevance remains and 2017 the annual rate was 0.84 per 100 patients, which showed a decline of 0.10 since 2013. With more HCOs choosing to submit this data, this could further indicate compliance requirements. The breakdown of main reasons for unplanned transfer further enhances the quality of data and can provide an opportunity for key clinical or process review.

REFERENCES
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SUMMARY DATA

In 2017, there were 3,769 data submissions from 280 HCOs for 14 CIs. All were analysed for trend, 10 of which showed improvement, 3 deteriorated and the remainder showed no evidence of a trend. In 2017, statistically significant stratum variation was observed in 7 CIs. The rates of the 3 indicators in Areas 1 and 9 whose desirable level is defined as High, ranged between 88% and 90.4%. The indicators whose desirable level is defined as Low, reported aggregated rates less than 1%. All CIs showed systematic variation, with centile gains > 50%. Outlier gains of > 25% were observed in 13 CIs.

Summary of Indicator Results

Indicator	2017							2010-2017
	HCOs	Aggregate rate %	Best Stratum	Outlier HCOs (%*)	Outlier Gains (%+)	Centile Gains (%⁺)	Events#	Trend
Area 1: Preadmission preparation								
1.1 Booked patients assessed before admission (H)	65	90.0	NSW	9 (14%)	12,152 (71%)	17,026 (100%)	17,034	↓ ⊗
Area 2: Procedure non-attendance								
2.1 Booked patients who fail to arrive (L)	192	0.543	Private	33 (17%)	2,285 (56%)	3,944 (96%)	4,116	↓ ✓
Area 3: Procedure cancellation								
3.1 Cancellation of the procedure after arrival due to pre-existing medical condition (L)	234	0.190	Private	28 (12%)	585 (33%)	1,209 (69%)	1,761	↓ ✓
3.2 Cancellation of the procedure after arrival due to an acute medical condition (L)	234	0.279		32 (14%)	1,135 (44%)	2,131 (82%)	2,605	
3.3 Cancellation of procedure after arrival due to administrative/ organisational reasons (L)	231	0.549	Private	37 (16%)	2,882 (56%)	4,629 (91%)	5,102	↓ ✓
Area 4: Episode of care adverse events								
4.1 Patients who experience an adverse event during care delivery (L)	118	0.070		14 (12%)	100 (29%)	267 (78%)	341	↓ ✓
Area 5: Unplanned return to the operating room								
5.1 Unplanned return to the operating room on the same day as initial procedure (L)	202	0.032		13 (6%)	56 (22%)	163 (65%)	250	↓ ✓

Indicator	2017							2010-2017
	HCOs	Aggregate rate %	Best Stratum	Outlier HCOs (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
Area 6: Unplanned transfer / admission								
6.1 Unplanned transfer or overnight admission related to procedure (L)	223	0.844	Private	34 (15%)	3,560 (44%)	7,501 (93%)		↓ ✓
6.2 Unplanned transfer or admission related to ongoing management (L)	121	0.294	Private	17 (14%)	543 (43%)	1,111 (89%)		↓ ✓
Area 7: Discharge								
7.1 Unplanned delayed discharge for clinical reasons greater than 1 hour beyond expected (L)	121	0.402		14 (12%)	918 (58%)	1,495 (94%)		↓ ✓
7.2 Unplanned delayed discharge for non-clinical reasons greater than 1 hour beyond expected (L)	94	0.504		13 (14%)	1,044 (67%)	1,530 (98%)		↑ ✗
Area 8: Departure								
8.1 Departure without an escort (L)	69	0.716		5 (7%)	1,011 (76%)	1,327 (99%)		↓ ✓
Area 9: Post-discharge follow-up								
9.1 Follow-up phone call within 7 days (H)	59	88.0		14 (24%)	7,884 (55%)	14,291 (100%)		↓ ✗
9.2 Follow-up phone call received by patient or carer within 7 days (H)	72	90.4	Private	25 (35%)	9,475 (56%)	16,992 (100%)		↑ ✓

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

Centile gain: The centile gains are a measure of the potential gains that would be made if the overall rate were moved to the desirable rate (20th or 80th centile rate).
Outlier gain: When an HCO has an undesirable rate that is more than three standard errors from the overall rate than that HCO is referred to as having a statistically significantly high (or low) rate. The outlier gains measure the benefits of improving the rate of each of the outlier HCOs to equal the value of the overall rate.

The Day Patient Clinical Indicators were reviewed in 2018 by a multidisciplinary Working Party consisting of representatives from the Australian and New Zealand College of Anaesthetists (ANZCA), Australian Day Surgery Nurses Association (ADSNA), Australian Private Hospitals Association (APHA), Day Hospitals Australia (DHA), and Royal Australasian College of Surgeons (RACS). The revised Day Patient User Manual version 6 has been endorsed by APHA and DHA, and will be released for data collection commencing from January 2019.

EMERGENCY MEDICINE

EMERGENCY MEDICINE
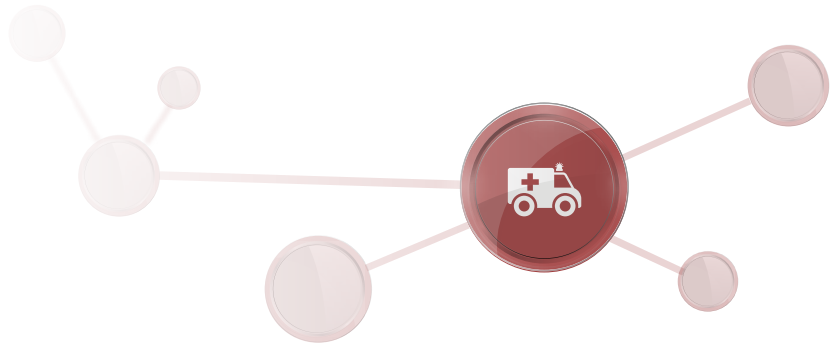
GENERAL COMMENTS

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One of the most surprising and disappointing aspects of the data on Clinical Indicators (CI) for 2017 is the marked decrease in Healthcare Organisations (HCOs) submitting data to ACHS. It is difficult to surmise why this is occurring given that many of the CIs being assessed are mandatorily requested by the government and others are direct quality measures of clinical care. Part of the explanation may be in the requirement being seen as duplicate (i.e. already being required by government); in part this may be due to the manual aspect of some analysis; partly this may be that the results are not as favourable as desired and submission is voluntary; and partly this may be that the information is being submitted to related other ACHS CIs (such as time to thrombolysis or percutaneous interventions) in cardiology data.

Encouraging HCOs to submit their data would be appropriate. This is challenging though as it is difficult given competing priorities. It is unlikely to improve unless there is more dedicated time, resources and personnel to collect and analyse information, and/or it was to become required to submit data,

FEATURE CLINICAL INDICATOR

rather than voluntary.

Area 1: Waiting time (CI1.1 – CI1.6)

'Time to being seen' is a key performance CI, on which patients, emergency practitioners, hospitals, government and the public, in general, focus. Triage is an essential function of the Emergency Departments (ED) with the aim to ensure that patients are treated in their clinical urgency for time-critical interventions. The changes in 'time to being seen' from triage are interesting.

The effort to improve 'time to being seen' must remain a focus and the data is mandatorily reported to governments. The delays usually have numerous aetiologies and there often is not a single approach for improvement. Examples include the number of patients arriving within a short time frame (may overwhelm both personnel and access to the ED); access to the ED over time (particularly if there is an access block for admitted patients); ambulance distribution of patients (especially in the metropolitan setting); an arrival of a number of patients of a high category in the same time period, and staffing and resources of ED overall. For example, establishing a streaming of patients to create a fast track area of suitable patients (often for ATS Categories 4 and 5 patients) in the ED would enable the expected time of one- or two-hours from triage to be achieved in the category.

It is disappointing that some states/jurisdictions are still well below the overall fitted rate of 75% when all areas are considered. Of note, SA had a wide distribution (91% for ATS Category 2 while 45% for ATS Category 3 patients). WA performed below the other states for nearly all ATS categories. The outlier HCOs reported rates around 50%.

It is suggested that the endeavours should focus on achieving access and flow through ED and matching personnel to achieve demands as to meet the need for timely care of patients who present to the ED as measured by time seen from triage to all categories.

CI 1.1: ATS Category 1 - medically assessed and treated immediately (H)

ATS Category 1 has always been achieved (100%) as this is a life-threatening condition such as a cardiac arrest.

CI 1.2: ATS Category 2 - medically assessed and treated within 10 minutes (H)

The rate for ATS Category 2 has decreased slightly, showing that around 80% of patients with conditions potentially assessed as imminently life-threatening at triage are treated within the expected time frame of ten minutes. In 2017, except in QLD at a rate of 64.9%, all other jurisdictions perform around 80% or slightly better. Nevertheless, the overall rate of achieving the benchmark time of less than 10 minutes in the overall analysis is falling and this trend is of concern.

CI 1.3: ATS Category 3 - medically assessed and treated within 30 minutes (H)

ATS Category 3 patients are assessed as being potentially life-threatening or situationally urgent. It has the lowest rate at 64.1% within all categories. Both NSW and VIC achieved an average rate of around 75%, while other jurisdictions were well around or below 50% which indicates they are far from the target aim of 80%.

CI 1.4: ATS Category 4 - medically assessed and treated within 60 minutes (H)

For the first time, the number of patients in ATS Category 3 is greater than that of ATS Category 4, which has been traditionally the most common category of presentation. There is, however, an ongoing concern that while VIC and NSW only just fall short of the expected 80%, the other jurisdictions are well below, reflecting less than optimal care for patients who at triage, have been assessed as having a potentially life-threatening or situationally urgent condition.

CI 1.5: ATS Category 5 - medically assessed and treated within 120 minutes (H)

This category has continued to improve. Time of 2-hours' time frame for ATS Category 5 patients who are assessed as being less urgent is achieved by most jurisdictions at around 90%.

CI 1.6: Patients who left the ED after triage without being seen (L)

Interestingly the number of HCOs reporting data to this CI has increased. The trend is for a decreased number of patients who leave prior to being seen; however, it is still a concern that patients have arrived, fearing they have a health concern and leave without being seen. Often it is the vulnerable patients, such as mental health or socially isolated patients, who leave the department unseen.

CI 4.1: ED time within 4-hours for ICU admissions (H)

This is a new CI commencing data collection in 2016. Patients requiring ICU are patients at risk of clinical deterioration and tend to consume considerable ED resources. Unfortunately, only a little over one in three of the patients in the supplied data were admitted within the four-hour benchmark. This is worse than that for the general admitted population. Delays in ICU access may be caused by challenges in ICU beds and it would likely have an impact on ED resources.

SUMMARY OF RESULTS

In 2017, there were 1,309 data submissions from 112 HCOs for 22 CIs. 7 were analysed for trend, 6 of which showed improvement, 1 deteriorated. In 2017, statistically significant stratum variation was observed in 1 CI. The rates of the 18 process indicators whose desirable level is defined as High, ranged between 27% and 99.7%. The 4 outcome indicators whose desirable level is defined as Low, reported aggregated rates between 0.38% and 3.63%. 11 CIs showed systematic variation, with centile gains > 50%. Outlier gains of > 25% were observed in 3 CIs.

Summary of Indicator Results

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOs (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
				2017				2010-2017
Area 1: Waiting time								
1.1 ATS Category 1 - medically assessed and treated immediately (H)	101	99.7		2 (2%)	41 (63%)	58 (89%)	65	↑ ✓
1.2 ATS Category 2 - medically assessed and treated within 10 minutes (H)	110	77.5		28 (25%)	20,183 (21%)	62,997 (65%)	97,535	↓ ✗
1.3 ATS Category 3 - medically assessed and treated within 30 minutes (H)	110	64.1	NSW	28 (25%)	96,141 (21%)	332,556 (72%)	460,263	↑ ✓
1.4 ATS Category 4 - medically assessed and treated within 60 minutes (H)	110	73.5		41 (37%)	68,156 (20%)	244,801 (72%)	338,240	↑ ✓
1.5 ATS Category 5 - medically assessed and treated within 120 minutes (H)	107	91.0		28 (26%)	5,666 (27%)	15,364 (74%)	20,753	↑ ✓
1.6 Patients who left the ED after triage without being seen (L)	50	3.63		16 (32%)	11,306 (24%)	34745 (72%)	48,109	↓ ✓
Area 2: ST-segment elevated myocardial infarction (STEMI) management								
2.1 STEMI patients who receive thrombolytic therapy within 30 minutes (H)	14	35.2				1 (1%)	107	
2.2 Time to balloon opening within 90 minutes (H)	2	89.5					10	
2.3 Time to balloon opening within 60 minutes (H)	2	52.6					45	
Area 3: Emergency department mental health presentations								
3.1 Mental health patients admitted from the ED within 4 hours (H)	20	30.2		4 (20%)	451 (10%)	2,040 (44%)	4,616	
3.2 Mental health patients discharged from the ED within 4 hours (H)	19	61.9		5 (26%)	788 (20%)	2,253 (58%)	3,853	
3.3 Mental health patients who did not wait following clinical documentation (L)	15	1.33		2 (13%)	36 (22%)	100 (62%)	161	↓ ✓

Indicator	2017							2010-2017
	HCOs	Aggregate rate %	Best Stratum	Outlier HCOs (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
Area 4: Critical care								
4.1 ED time within 4 hours for ICU admissions (H)	17	37.4		2 (12%)	171 (4%)	1,176 (24%)	4,864	
4.2 Rapid response system call within 4 hours of admission to the ward fro m the ED (L)	7	0.38				72 (47%)	153	
Area 5: Sepsis management								
5.1 Time of antibiotic administration for paediatric patients within 60 minutes (H)	5	30.0				3 (4%)	77	
5.2 Time of antibiotic administration for adult patients within 60 minutes (H)	4	49.8		1 (25%)	25 (8%)	145 (44%)	326	
Area 6: Discharge communication								
6.1 Documented evidence of clinical management plan provided to an ongoing care provider (H)	4	91.6		1 (25%)	6 (6%)	56 (53%)	106	
6.2 Documented evidence of patient-centred discharge information and instructions provided to the patient or carer (H)	3	72.8		1 (33%)	33 (45%)	62 (85%)	73	
Area 7: Pain management								
7.1 Documented initial pain assessment at triage (H)	5	99.9					113	
7.2 Analgesic therapy within 30 minutes for all patients with moderate or severe pain (H)	5	40.1				34 (15%)	232	
7.3 Documented pain reassessment within 30 minutes of analgesic therapy (H)	2	27.0				25 (17%)	146	
Area 8: 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)	17	1.27		3 (18%)	1,216 (25%)	2,885 (59%)	4,852	

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

Centile gain: The centile gains are a measure of the potential gains that would be made if the overall rate were moved to the desirable rate (20thor 80th centile rate).
Outlier gain: When an HCO has an undesirable rate that is more than three standard errors from the overall rate than that HCO is referred to as having a statistically significantly high (or low) rate. The outlier gains measure the benefits of improving the rate of each of the outlier HCOs to equal the value of the overall rate.

GASTROINTESTINAL

GASTROINTESTINAL ENDOSCOPY

GENERAL COMMENTS

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Chair, ACHS Gastrointestinal Endoscopy Clinical Indicator
Working Party Version 3

In Australia, as in other countries, Gastrointestinal (GI) endoscopy has become a key tool in the diagnosis and treatment of gastrointestinal pathology and diseases. High quality GI endoscopy delivers better health outcomes, provides better patient experience and reduces the cost for patients and health systems. However, significant variation in the quality of endoscopy still persists, so quality indicators have been developed to assess and compare the performance of endoscopy, as well as to identify potential areas for improvement.

The ACHS GI Endoscopy Clinical Indicator (CI) set was first introduced in 2006 and revised in 2013 for data collection, with the collaboration and endorsement of the Gastroenterology Society of Australia (GESA). In 2017, 79 Healthcare Organisations (HCOs) contributed to data analysis, and similar numbers of HCOs participation have been noted in the past five years. Systematic variation was noted in eight out of 11 CIs across all five reporting areas. Significant improvements have been observed from 2010 to 2017 in three CIs in Area 2: Adverse outcomes – colonoscopy/polypectomy, while deterioration noted in CI4.1: Oesophageal dilatation – possible perforation, and CI5.1: Aspiration following endoscopy.

In May 2018, a multidisciplinary Working Party was convened to update the CI set. The revised CI set aims to reflect contemporary GI practice, with the introduction of two new indicators in the areas of "Adenoma Detection Rate (ADR)" and "Sedation in Endoscopy". Following endorsement by the GESA and the Gastroenterological Nurses College of Australia (GENCA), the revised User Manual will be released for data collection from January 2019.

FEATURE CLINICAL INDICATOR

Area 3 Colorectal Cancer

CI 3.1 Malignancies diagnosed at Colonoscopy (N)

CI 3.2 Malignancies not detected at another colonoscopy within 5 years (L)

Colorectal cancer (CRC) has remained the second biggest cancer killer in Australia since 2015; however, up to 90 % of CRC cases are curable if detected early.[1,2] In 2006, the Australian National Bowel Cancer Screening Program was initiated, offering to screen men and women aged 55 and 65 years, and will continue to expand until screening is biennial, and extend to all eligible Australians aged from 50 to 74 years by 2020.[3]

The quality of colonoscopy is critical to the early detection and treatment of CRC. CI3.1 and CI3.2 have been used since 2013 to monitor the proportion of colonoscopies that detect bowel malignancy at any one point in time, and whether a colonoscopy had been undertaken in the preceding five years. CI3.1 captured a little more than 40,000 colonoscopies in 2017, which represents about 4.4% of 900,000 colonoscopies performed in Australia annually.[4] The rate of malignancies diagnosed with colonoscopy slightly declined from 1.2% to 0.9% from 2013 to 2017.

There was a concern for the accuracy of reporting of CI3.2 by the 11 HCOs in 2017, capturing less than 200 colonoscopy patients, and this raises questions of data validity. It is inherently difficult to access previous colonoscopy records, especially those performed at another facility. Furthermore, malignancies can occur at any time and over short time frames, so the clinical relevance of malignancies not detected at another colonoscopy within the previous five years is questionable.

Upon review of GI Endoscopy CIs in May 2018, the consensus of Working Party members is that the ADR be adopted as a more robust and valuable quality indicator to monitor the efficacy of colonoscopy. The higher ADR in the true screening setting is a validated predictor of lower risk of CRC and cancer-related mortality.[5] The Working Party expects that this new indicator would strengthen further benchmarking of quality colonoscopy in Australia.

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GASTROINTESTINAL ENDOSCOPY

SUMMARY DATA

In 2017, there were 823 data submissions from 79 HCOs for 11 CIs. All were analysed for trend, 4 of which showed improvement, 3 deteriorated and the remainder showed no evidence of a trend. In 2017, statistically significant stratum variation was observed in 4 CIs. All indicators have a desirable level defined as Low, and reported aggregate rates less than 0.6%, with the exception of Area 3, Colorectal cancer. 6 CIs showed systematic variation, with centile gains > 50%. Outlier gains of > 25% were observed in 3 CIs.

Summary of Indicator Results

Indicator	2017							2016- 2017
	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
Area 1: Failure to reach caecum								
1.1 Failure to reach caecum due to inadequate bowel preparation (L)	49	0.422	Private	7 (14%)	117 (30%)	238 (62%)	386	
1.2 Failure to reach caecum due to diseased colon (L)	43	0.268	Private	7 (16%)	43 (21%)	120 (57%)	209	
1.3 Failure to reach caecum due to instrument failure (L)	42	0.001					1	↓✅
1.4 Failure to reach caecum for any other reason (L)	44	0.270	Private	7 (16%)	91 (42%)	181 (84%)	216	↑❌
Area 2: Adverse outcomes – colonoscopy / polypectomy								
2.1 Treatment for possible perforation post-polypectomy (L)	62	0.018				1 (8%)	13	↓✅
2.2 Treatment for possible perforation post-colonoscopy (L)	62	0.020					14	↓✅
2.3 Post-polypectomy haemorrhage (L)	52	0.078		2 (4%)	4 (8%)	20 (42%)	48	↓✅
Area 3: Colorectal cancer								
3.1 Malignancies diagnosed at colonoscopy (N)	23	0.830						↓
3.2 Malignancies not detected at another colonoscopy within past 5 years (L)	11	16.667		1 (9%)	4 (13%)	21 (70%)	30	

SUMMARY DATA

| Indicator | 2017 | | | | | | | 2016- 2017 |
	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
Area 4: Oesophageal dilatation – perforation								
4.1 Oesophageal dilatation - possible perforation (L)	37	0.537		1 (3%)	12 (46%)	21 (81%)	26	⬆️❌
Area 5: Aspiration following GI endoscopy								
5.1 Aspiration following endoscopy (L)	48	0.037	Private	1 (2%)	8 (24%)	25 (74%)	34	⬆️❌

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

Centile gain: The centile gains are a measure of the potential gains that would be made if the overall rate were moved to the desirable rate (20th or 80th centile rate).
Outlier gain: When an HCO has an undesirable rate that is more than three standard errors from the overall rate than that HCO is referred to as having a statistically significantly high (or low) rate. The outlier gains measure the benefits of improving the rate of each of the outlier HCOs to equal the value of the overall rate.

GASTROINTESTINAL ENDOSCOPY

The Gastrointestinal Endoscopy Clinical Indicators were reviewed in 2018 by a multidisciplinary Working Party consisting of representatives from the Australian and New Zealand College of Anaesthetists (ANZCA), Australian Private Hospitals Association (APHA), Day Hospitals Australia (DHA), Gastroenterological Nurses College of Australia (GENCA) and Gastroenterological Society of Australia (GESA). The revised Gastrointestinal Endoscopy User Manual version 3 has been endorsed by GENCA and GESA, and will be released for data collection commencing from January 2019.
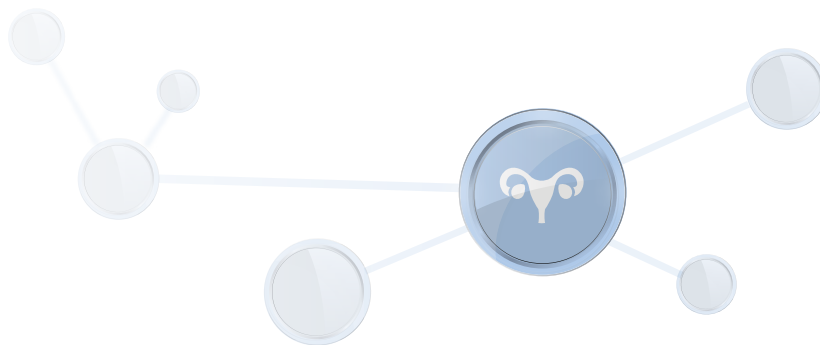
GENERAL COMMENTS

Dr Martin Ritossa
Board Member
The Royal Australian and New Zealand College of
Obstetricians and Gynaecologists
Chair, ACHS Gynaecology Working Party

The last few years have been very challenging for Gynaecological practitioners. Many products and procedures have been questioned in the media, in the legal system and most recently by the Australian Senate.

There have been two significant government reports released in 2017/18. 1) The Australian Commission on Safety and Quality in Health Care (ACSQHC) released the "Heavy menstrual bleeding clinical care standard indicators". This document guides all healthcare providers through the investigation and treatment of women with heavy menstrual bleeding. 2) The Senate inquiry report "Number of women in Australia who have had transvaginal mesh implants and related matters" provides a number of recommendations regarding the use and monitoring of vaginal mesh procedures.

The ACHS clinical indicator (CI) report has led the field on these two topics. Since 2014 ACHS has been reporting on surgical interventions for menorrhagia and the use of vaginal mesh for repair of pelvic organ prolapse. In the case of surgical intervention for menorrhagia, the indicators have demonstrated a fall in the hysterectomy rate in patients undergoing surgery for heavy menstrual bleeding from 31.9% in 2014 to 23.3% in 2017. It would suggest that ACHS can collaborate with the ACSQHC to align indicators. The use of mesh in vaginal procedures for pelvic organ prolapse has remained stable at around 9%. This may be due to a significant reduction in the use of mesh after the first FDA warnings in 2011. We should expect to see another reduction in the rate of vaginal mesh utilisation in 2018 given proprietary mesh kits have been taken off the market.

Most of the CIs have continued to improve in the trend rate. Blood transfusion for benign disease has continued to fall from a high in 2012 of 0.86% to 0.65% in 2017. Blood transfusion for malignant disease has shown a downward trend; however, there has been a rise over the last two years from a low in 2015 of 3.76% to 7.64% in 2017. This may be due to statistical variation; however, with a rising complexity of the patients undergoing surgery this trend needs to be watched. There was a significant decline in the rate of injury to a major viscous in 2017, which was pleasing after an upward trend over the last few years. Overall the rate of injury to a major viscous has remained stable over the last eight years with a fitted rate of just over 0.4%, with the highest participation rate of reporting Healthcare Organisations (HCOs). Laparoscopic management of ectopic pregnancy continues to rise with a rate of 86.2% in 2017 compared with 81.1% in 2010. Three outlier HCOs demonstrate a rate of 66.1%. The rate for the use of thromboprophylaxis in major gynaecological surgery has displayed a significant improvement since 2014. It is difficult to collect data for this indicator, while it remains relevant as thromboprophylaxis is important in the prevention of postoperative morbidity. There was one outlier with a rate of 43.8% in the reporting HCOs. If this outlier rate was applied nationally, thousands of women could be missing out on potential lifesaving prophylaxis. Education in this area need to be ongoing.

FEATURE CLINICAL INDICATOR

CI 3.1: Ectopic pregnancy managed laparoscopically (H)

Laparoscopic surgery has been considered the 'gold standard technique' for the surgical management of ectopic pregnancy since the late 1970s. Laparoscopic surgery in gynaecology has many advantages including reduced postoperative pain, less blood loss, smaller surgical scars and a faster recovery period for the patient.[1, 2] This indicator is designed as a measure of the appropriate utilisation of laparoscopic surgery in gynaecological practice, aiming to measure the safe uptake of laparoscopic procedures for ectopic pregnancies. It is not designed to push surgeons beyond their skill levels or to perform inappropriate procedures, thus patients requiring conversion to laparotomy and patients requiring a blood transfusion have been excluded as they are surrogate markers of difficult cases.

The number of HCOs reporting to this indicator has declined from 34 in 2011 to 21 in 2017. The constant high performance suggests that the indicator may have achieved its aim, thus making the need to audit obsolete.

The rate of this indicator started at the low 80% range, dropped from 85% to 54% in 2014, was back to 92% in 2015, and slightly decreased to 88% in 2017. The extreme low rate in 2014 might be due to statistical errors or represent variation in HCOs contributing data.

In 2017, 14% difference was observed in the performance between the best and worst stratum. The two outlier HCOs demonstrated a combined excess of 20 fewer patients having laparoscopic management of an ectopic pregnancy.

The data also suggests limits for some patients to access laparoscopic surgery, such as inadequately trained personnel and lack of equipment. Even an experienced surgeon may struggle if the rest of the surgical team lack experience in laparoscopic surgery, especially in emergency situations. Regional centres are less likely to have the latest equipment, including digital imaging equipment and modern energy devices that make procedures faster and safer. General practitioners should refer patients to an appropriately trained surgeon in an HCO with the appropriate equipment that can provide quality laparoscopic services.

Other factors such as the complexity of the patients, especially in emergency situations, can affect the trend. However, any HCO having patients treated with laparoscopic surgery for the ectopic pregnancy at a consistent rate of lower than 80%, should consider a review into its laparoscopic services.

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SUMMARY DATA

In 2017, there were 369 data submissions from 66 HCOs for 8 clinical indicators CIs. 7 were analysed for trend, 5 of which showed improvement, none deteriorated and the remainder showed no evidence of a trend. In 2017, statistically significant stratum variation was observed in 2 CIs. 5 CIs showed systematic variation, with centile gains > 50%. Outlier gains of > 25% were observed in 2 CIs.

Summary of Indicator Results

Indicator	2017							2010-2017
	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
Area 1: Blood transfusion								
1.1 Gynaecological surgery for benign disease - unplanned intraoperative or postoperative blood transfusion (L)	48	0.65	Private	6 (13%)	47 (17%)	155 (56%)	278	↓✅
1.2 Gynaecological surgery for malignant disease - unplanned intraoperative or postoperative blood transfusion (L)	21	7.64				14 (12%)	113	↓✅
Area 2: Injury to a major viscus								
2.1 Gynaecological surgery - injury to a major viscus with repair (L)	63	0.26		6 (10%)	36 (18%)	109 (54%)	202	
Area 3: Laparoscopic management of an ectopic pregnancy								
3.1 Ectopic pregnancy managed laparoscopically (H)	21	88.3	NSW	2 (10%)	20 (25%)	53 (67%)	79	↑✅
Area 4: Thromboprophylaxis for major gynaecological surgery								
4.1 Thromboprophylaxis for major gynaecological surgery (H)	9	87.7		1 (11%)	90 (65%)	135 (98%)	138	↑✅
4.2 Re-admission for venous thromboembolism within 28 days (L)	10	0					-	
Area 5: Mesh repair								
5.1 Use of mesh repair for pelvic organ prolapse (L)	15	11.2		1 (7%)	12 (12%)	81 (81%)	100	
Area 6: Menorrhagia								
6.1 Surgical intervention for menorrhagia (L)	13	25.5				59 (17%)	354	↓✅

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

Centile gain: The centile gains are a measure of the potential gains that would be made if the overall rate were moved to the desirable rate (20th or 80th centile rate).
Outlier gain: When an HCO has an undesirable rate that is more than three standard errors from the overall rate than that HCO is referred to as having a statistically significantly high (or low) rate. The outlier gains measure the benefits of improving the rate of each of the outlier HCOs to equal the value of the overall rate.

HOSPITAL IN THE HOME

HOSPITAL IN THE HOME
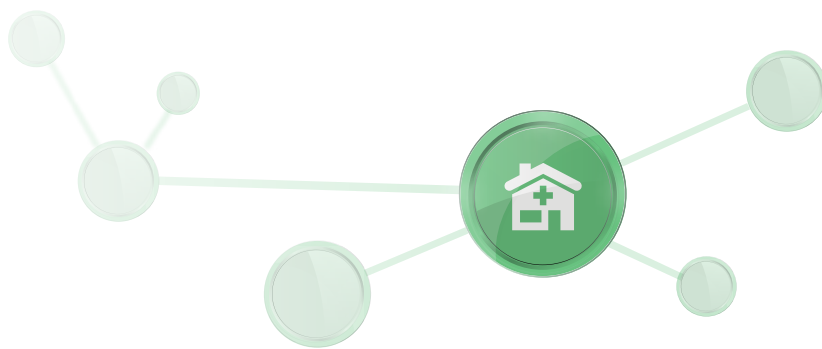
GENERAL COMMENTS

The Australian Council on Healthcare Standards

Hospital in the Home (HITH) is now a well-established component of our health care system. It is a substitute rather than an add-on to inpatient care, providing patient-centred care for patients in the comfort of the person's own home, or other suitable environment. The effectiveness of HITH services has been studied and demonstrated in reduced mortality rate, greater satisfaction with care, lower rates of complications, lower costs and no increase in hospital readmission.[1] Most Australian states and territories have HITH programs, and many Guidelines have been published to monitor HITH services to ensure high quality of HITH care for patients.[2-4]

The ACHS HITH Clinical Indicators (CIs) were reviewed in 2015 by a multidisciplinary Working Party, led by Hospital in the Home Society Australasia. The 12 CIs cover three areas: 1) patient safety, selection, communication and care co-ordination; 2) service interruption; and 3) unexpected deaths. Data collection on this new set started in 2016, and this is the second year of reporting to revised CIs, thus no trend is to be analysed at this stage.

FEATURE CLINICAL INDICATOR

CI 1.5: Unscheduled clinical assessment – adult/paediatric patient (L)

Unexpected clinical telephone calls and unscheduled clinical assessments are the two elements of an important escalation process adopted by HITH services, and both should be minimised. The aggregated rates for unscheduled clinical assessments were low in 2016 and 2017 at 0.22 and 0.37 per 100 bed days respectively, while the outlier organisations rate was 6.4 per 100 bed days. Although case-mix complexity could contribute to the high rate, further investigation would be necessary for potential improvement.

CI 2.3 Unplanned return to hospital within 24 hours – adult/paediatric patient (L)

There can be a broad range of factors impacting upon the unexpected return to hospital for HITH patients, such as patient selection, the complexity of care, escalation capability of the HITH service etc.

A patient returning to hospital within 24 hours of HITH admission may reflect an inappropriate admission to the service. Patient assessment and selection is a critical factor to the safety, efficacy, and cost effectiveness of HITH services.[5] The aggregated rates were 0.23 and 0.18 per 100 bed days in 2016 and 2017 for reporting healthcare organisations, with two outlier organisations at 0.46 per 100 bed days. This would suggest opportunities for enhancing patient assessment to ensure appropriate selected patients are accepted into the HITH services in terms of patients' need, clinical stability, home environment and social support.[6]

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SUMMARY DATA

In 2017, there were 131 data submissions from 19 HCOs for 12 clinical indicators CIs. No indicators were analysed for trend. In 2017, there were no statistically significant stratum differences. 10 of the 12 indicators whose desirable rate is defined as Low, reported aggregate rates between 0% and 1.33%. 5 of those 12 indicators had 6 or more HCOs that contributed data in 2017. Of those 5 CIs, 3 showed systematic variation, with centile gains > 50% and outlier gains of > 25%.

Summary of Indicator Results

Indicator	HCOs	Aggregate rate %*	Best Stratum	Outlier HCOS (%)	Outlier Gains (%)	Centile Gains (%)	Events	Trend
				2017				2010-2017
Area 1: Patient safety, selection, communication and care co-ordination								
1.1 Unexpected clinical telephone calls - adult/paediatric patient (N)	11	1.10						
1.2 Unexpected clinical telephone calls - neonatal patient (N)	1	0						
1.3 Unexpected administrative telephone calls - adult/paediatric patient (L)	6	0.178		1 (17%)	38 (88%)	41 (95%)	43	
1.4 Unexpected administrative telephone calls - neonatal patient (L)	1	0.000					0	
1.5 Unscheduled clinical assessment - adult/paediatric patient (L)	11	0.374		4 (36%)	72 (61%)	105 (88%)	119	
1.6 Unscheduled clinical assessment - neonatal patient (L)	2	0					0	
Area 2: Service interruption								
2.1 Unplanned return to hospital - adult/paediatric patient (L)	17	1.33		7 (41%)	117 (21%)	253 (45%)	561	
2.2 Unplanned return to hospital - neonatal patient (L)	3	0.222				3 (75%)	4	
2.3 Unplanned return to hospital within 24 hours - adult/paediatric patient (L)	14	0.177		2 (14%)	25 (35%)	54 (76%)	71	
2.4 Unplanned return to hospital within 24 hours - neonatal patient (L)	3	0.056					1	
Area 3: Unexpected deaths								
3.1 Unexpected deaths during HITH admission - adult/paediatric patient (L)	10	0.003					1	
3.2 Unexpected deaths during HITH admission - neonatal patient (L)	2	0					0	

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

Centile gain: The centile gains are a measure of the potential gains that would be made if the overall rate were moved to the desirable rate (20th or 80th centile rate).
Outlier gain: When an HCO has an undesirable rate that is more than three standard errors from the overall rate than that HCO is referred to as having a statistically significantly high (or low) rate. The outlier gains measure the benefits of improving the rate of each of the outlier HCOs to equal the value of the overall rate.

GENERAL COMMENTS

Dr Kim Hill
Representative
The Royal Australasian College of Medical Administrators
Chair, ACHS Hospital-Wide Working Party

The ACHS Hospital-Wide Clinical Indicators (CI) are designed to support clinicians and managers in providing evidence-based patient care and to give guidance to quality improvement strategies. This indicator set covers a range of significant patient safety priorities relevant to healthcare professionals from disciplines across public and private health services, as well as a selected group of surgical CIs that were seen to fit within the Hospital-wide ethos.

An indicator alone may not be the final measurement of quality of care, however, questioning indicator results that stand out from what is expected, whether that be above or below the expected outcome, can led to review or reflection on current clinical systems and practices, and subsequently better outcomes for patient safety.[1]

In considering the Hospital-Wide CIs, their strength as flags to identify potential areas for further attention is clear. It is a large set, and over time, some indicators have been added and some excluded following expert clinical advice and feedback from participating Healthcare Organisations (HCOs). But from their initial development, each indicator has been supported by a robust methodology, based on evidence, and supported by a relevant group of expert clinicians, which are ideal features of well-designed clinical indicators.[2]

This CI set is specifically designed to bring together indicators with cross-hospital/health service implications. Over time, there is variation in both the overall numbers of hospitals contributing data to the different indicators, as well as the composition of the hospitals contributing data in the group from year-to-year.

Hospitals contributing to the Hospital-Wide CIs choose those indicators for which they will provide data, and in return, can benchmark with peer hospitals to see areas of variation where further review may be required. Hospitals can decide to focus their quality improvement initiatives across all indicators in the set, or in some specific areas only, and with the flexibility to modify their indicator profile according to local priorities over time. This kind of approach often encourages participation and engagement in general.

Previous commentaries have referred to Hospital-Wide CIs relating to falls injury prevention, hospital acquired pressure injuries and responses to clinical deterioration. The two indicators reviewed in this commentary were chosen as they are across a wide range of clinical services and disciplines, and relevant to many clinicians and managers working to improve patient safety and quality of care.

FEATURE CLINICAL INDICATOR

CI 2.1 Unplanned return to the operating room during the same admission (L)

This CI is widely-accepted as a relevant component of surgical quality improvement and hospital-wide service delivery. The Australian Commission on Safety and Quality in Health Care includes unplanned return to theatre as one of its published Hospital-Acquired Complications.[3] Unplanned return to theatre during an admission can impact on patients, clinicians and the hospital, and this indicator is one of several tools of value when reviewing surgical complications and/or clinical variation, or managing risks associated with surgical care.

From 2010 to 2017, between 209 and 268 HCOs contributed data to this ACHS Hospital-Wide indicator, although the composition of the hospitals in the group has varied from year-to-year. However, even when taking this into consideration, the trend over this period shows a significant reduction in the rate of returns, which is a positive trend.

Fewer patients having unplanned returns to theatre means there are potential gains for patient experience, clinical practice and theatre access/utilisation. When this indicator is used as a flag for robust clinical and peer-review, systematic review of clinical cases that has these aspects in mind can make a valuable contribution to quality of care improvement and patient safety initiatives.

CI 5.1 Patient deaths addressed within a clinical audit process (H)

Clinical audit has been a consistent feature of quality and safety programs for many decades, and review of deaths remains one of the cornerstones of this evidence-based peer review practice.

Although death may not be an unexpected outcome given an individual patient's clinical condition, death may also be associated with an adverse event in clinical care or in systems for care. Areas for further consideration may also be identified from reviews of expected deaths. On this basis, CIs that can help measure death review processes are valuable tools for ensuring effective quality and peer review processes.

This ACHS Hospital-Wide CI relates to patient deaths addressed within a clinical audit process, and the latest Australasian Clinical Indicator Report covers the period from 2010-2017. It is interesting to note that there was a significant decline in the number of HCOs contributing to this indicator set from 2011 to 2014, but since 2014, the number of contributing organisations has increased to over 200 in 2017.

There was little variation in rate between contributing hospitals in 2017, with an overall rate of 95.4 per 100 deaths addressed within a clinical audit process. While this represents quite high levels of review for most of the contributing hospitals, it may be of interest for individual hospitals to review local structured mortality review processes to identify and address factors that may lead to an even higher review rate.

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GENERAL COMMENTS

A/Professor Virginia Plummer
Representative
Australian College of Nursing
Member, ACHS Hospital Wide Working Party

Clinical research in falls prevention is critically important. In hospitals, patients are at an increased risk of falling because they may have compounding factors such as delirium, polypharmacy and being in an unfamiliar environment.[1] Falls may lead to prolonged hospital stay and can therefore increase the cost of care.[2] Falls are ranked as the most reported and significant adverse event experienced in hospitals worldwide, so preventing falls is a key component of patient safety.[3]

Encouragingly, recent data from 2017 indicates that falls are decreasing overall. For inpatient falls, 747 submissions from 400 HCOs demonstrated that there were 25,932 fewer inpatient falls, if all reporting HCOs improved to the desirable 20th centile rate. It is worth noting that there were 166 outliers from 109 HCOs with a combined 9,550 inpatient falls. The reason for this figure may be due to the increasing numbers of admissions of people in the at-risk categories staying in hospital for longer periods.

There remains the constant reminder for health professionals to actively engage with patients and carers on falls prevention strategies, falls management practices and their level of effectiveness.

FEATURE CLINICAL INDICATOR

C1 3.1 Inpatients who develop one or more pressure injuries (L)

Hospital acquired pressure injuries (HAPI) need a multi-professional team approach rather than focusing on nurse-sensitive indicators.[4] Prevention, assessment and intervention for HAPI require collaboration on key care components, such as nutrition, positioning, support surfaces, education, pain and wound management strategies. HAPI have largely been considered as preventable, however there are exceptions. These may arise for those declining care advice or repositioning, or those who have Multiple Organ Dysfunction Syndrome.[4,5] The National Safety and Quality Health Service (NSQHS) Standards include the prevention and management of pressure injuries (PI).[6] This would be expected to enhance accuracy of reporting in this CI. Counterintuitively, a recent Australian study (2018) on the accuracy of reporting of HAPI by Barakat-Johnson et al reported less than half of participants (N=417) were found to have a true HAPI in the Incident Reporting System.[6,7] Nurses felt compelled to report every skin condition as a PI in order to improve patient safety, and failure to do so would be perceived as negligent on their part. Internationally there are calls to refocus on definitions such as 'moisture associated skin damage' or 'friction lesions'.[8] Renewed approaches to care, consideration of an exception category, and refocused definitions associated with cause may enhance reporting accuracy.

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SUMMARY DATA

In 2017, there were 6,020 data submissions from 431 HCOs for 26 CIs. 10 were analysed for trend, 6 of which showed improvement, none deteriorated and the remainder showed no evidence of a trend. In 2017, statistically significant stratum variation was observed in 6 CIs. The rates of the 4 process indicators in Areas 2, 5 and 8 whose desirable level is defined as High, ranged between 95.4% and 99.1%. 10 CIs showed systematic variation, with centile gains > 50%. Outlier gains of > 25% were observed in 9 CIs.

Summary of Indicator Results

Indicator	2017							2010-2017
	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)	265	1.00	Private	50 (19%)	17,198 (46%)	33,476 (89%)	37,655	↓ ✅
Area 2: Return to the operating room								
2.1 Unplanned return to the operating room during the same admission (L)	209	0.25		23 (11%)	855 (16%)	3,357 (64%)	5,264	↓ ✅
2.2 Reviewed cases following an unplanned return to the operating room (H)	60	99.1					15	
Area 3: Pressure injuries								
3.1 Inpatients who develop 1 or more pressure injuries (L)	365	0.07	Private	43 (12%)	2,289 (25%)	6,942 (75%)	9,201	
Area 4: Inpatient falls								
4.1 Inpatient falls (L)	400	0.32		109 (27%)	9,550 (18%)	25,932 (48%)	53,635	
4.2 Inpatient falls resulting in fracture or closed head injury (L)	370	0.01		10 (3%)	123 (9%)	530 (40%)	1,319	
4.3 Inpatient falls - patients 65 years and older (L)	219	0.51		55 (25%)	5,074 (18%)	12,305 (43%)	28,817	

Indicator	2017							2010-2017
	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
Area 5: Patient deaths								
5.1 Patient deaths addressed within a clinical audit process (H)	203	95.4		12 (6%)	756 (74%)	1,002 (99%)	1,015	
5.2 Deaths in adult patients who do not have a NFR order (L)	60	0.076	Private	14 (23%)	252 (42%)	524 (88%)	598	
5.3 Adult deaths (L)	84	0.837	Private	32 (38%)	3,513 (32%)	8,788 (79%)	11,073	
5.4 Coronary artery graft surgery (CAGS) - death (L)	24	1.04					42	↓✓
5.5 Elective coronary artery graft surgery - death (L)	10	0.968					10	
5.6 Coronary artery graft surgery patients aged 71 years or older - death (L)	10	1.99				4 (27%)	15	↓✓
5.7 Elective abdominal aortic aneurysm (AAA) open repair - death (L)	16	0					-	
Area 6: Blood transfusion								
6.1 Significant adverse blood transfusion events (L)	194	0.113		5 (3%)	24 (23%)	38 (36%)	105	↓✓
6.2 Transfusion episodes where informed patient consent was not documented (L)	109	5.71		12 (11%)	1,169 (50%)	2,136 (92%)	2,334	
6.3 RBC transfusion where Hb reading is ?100 g/L or more (L)	84	1.14	NSW	9 (11%)	86 (38%)	153 (67%)	229	
Area 7: Thromboprophylaxis								
7.1 VTE prophylaxis administered to high risk medical patients (N)	6	87.1						

Indicator	2017							2010-2017
	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
Area 8: Minimum standards for rapid response system (RRS) calls								
8.1 Rapid response system calls to adult patients (N)	112	2.92						
8.2 Rapid response system calls to adult patients within 24 hours of admission (N)	78	0.682						
8.3 Adult patients experiencing cardiopulmonary arrest (L)	156	0.087		11 (7%)	582 (35%)	1,040 (63%)	1,660	
8.4 Rapid response system attendances within 5 minutes (H)	54	96.6	NSW	7 (13%)	213 (39%)	424 (78%)	541	
8.5 Adult deaths avoided by rapid response system calls (H)	8	96.8		2 (25%)	20 (19%)	53 (49%)	108	
Area 9: Surgery								
9.1 Pre-operative acute appendicitis (children) - normal histology (L)	18	15.4					59	
9.2 Laparoscopic cholecystectomy - bile duct injury requiring operative intervention (L)	60	0.249		2 (3%)	4 (14%)	14 (48%)	29	⬇✅
9.3 Tonsillectomy - significant reactionary haemorrhage (L)	57	0.756		4 (7%)	20 (19%)	49 (46%)	106	

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

Centile gain: The centile gains are a measure of the potential gains that would be made if the overall rate were moved to the desirable rate (20th or 80th centile rate).
Outlier gain: When an HCO has an undesirable rate that is more than three standard errors from the overall rate than that HCO is referred to as having a statistically significantly high (or low) rate. The outlier gains measure the benefits of improving the rate of each of the outlier HCOs to equal the value of the overall rate.

GENERAL COMMENTS

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Dr Louise Hobbs
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Representatives
Australasian College for Infection Prevention and Control

The overall downward trend for Surgical Site Infections (SSI) suggests that current best practices and infection prevention processes are resulting in positive outcomes, with the exception of superficial SSI in Coronary Artery Bypass Graft (CABG) chest incisions.

The limitations around superficial SSI reporting and the subsequent effect on the strata variations are well known, limiting strata analysis and comparisons due to post discharge superficial SSIs being under reported. The observed trend of the variation between strata may be more reflective of inconsistent post-discharge surveillance than an actual trend. The difficulty in reporting superficial SSI identified post-discharge to the appropriate Healthcare Organisations (HCOs) is an ongoing issue. Broader inclusion of data collected by Australian public state/territory health services would increase the sample size for statistical analysis and improve the confidence intervals.

Antimicrobial Stewardship (AMS), is a key focus of the Australian Quality and Safety Commission of Health Care.[1] The aim of AMS is to prevent the emergence and transmission of multi-drug resistant organisms. Consecutive National Antimicrobial Prescribing Surveys (NAPS), undertaken over three years, showed inappropriate prescribing of antimicrobials in relation to duration, choice of agent and indication for surgical prophylaxis.[1,2] Overuse and inappropriate use of antibiotics can result in increasing levels of resistant organisms. Improving compliance with surgical prophylaxis has been identified to be a target area for Australian AMS programs.

Only a smaller number of HCOs of those submitting data on SSI for hip prosthesis (13%), knee prosthesis (13%), coronary artery by-pass surgery (15%) and caesarean sections (17%) reported data on compliance with surgical prophylaxis. This would indicate an opportunity of improvement for all facilities to review this aspect of their SSI practice bundle.

Rates of ICU and non-ICU Vancomycin Resistant Enterococci (VRE) bloodstream infections appeared to have remained unchanged over the last two survey periods. The Antimicrobial Use and Resistance in Australia (AURA) Surveillance Systems report (2016) identified through multi-locus sequence typing that VRE transmission was associated with rapid local or regional spread. Further, enterococcus species, isolated from blood cultures, were primarily associated with urinary, biliary and device associated infections.[3] This highlights an opportunity to review infection control practices associated with aseptic technique, hand hygiene and isolation practices.

The prevention of transmission of infection to and from healthcare workers is an important aspect of infection prevention and control, with direct links to patient and community safety. This prevention may include strategies to prevent exposure to blood and body substances and associated pathogens. The data presented in this report indicates that there is an upward trend in Hepatitis B vaccination rates for the reporting HCOs with a downward trend in both parenteral and non-parenteral exposure to blood and/or body fluids. Whilst this is improving, largely due to the introduction of legislation regarding vaccine preventable diseases for healthcare workers, there are still opportunities to improve this further, particularly with occupational exposures by further introduction of safety engineered devices and improvement in the use of personal protective equipment.

The data presented for influenza vaccination for permanent staff shows no true consistent improvement trend over time, though the interpretation of this data is limited due to the small number of contributing HCOs and states in this dataset. What is demonstrated by the low rate, however, are opportunities for the development of influenza vaccination uptake implementation strategies and HCOs contribution to the greater dataset to provide a more complete Australasian illustration.

FEATURE CLINICAL INDICATOR

CI 1.5 Superficial SSI to chest incision site - CABG (L)

Eight years of data (2010 – 2017) demonstrates an increasing number of superficial chest incision site infections after CABG surgery. This represents an increase in rate of 0.28 infections in every 100 procedures over this period. It should be noted that the trend from 2010 to 2013 showed a steady decline in superficial SSI infection rates after CABG surgery; isolating the increasing trend to the 2013 – 2017 period. In addition, the negative trend is only present in CABG superficial SSIs and not reflected in the CABG deep or organ/ space SSI outcome indicator which suggests post procedural infections. The negative trend could be a result of a change in post discharge surveillance method being implemented that more accurately captures CABG superficial SSIs. Analysis of the 2017 rates, broken down by state, shows QLD and NSW as the major contributors to the higher rate of CABG superficial SSIs. A root cause analysis that focuses on common factors of the HCOs demonstrating the higher rates from 2013 onwards may provide insight to this issue. Further investigation is required before actionable conclusions can be determined.

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3. Australian Commission on Safety and Quality in Health Care. Aura 2016: First Australian Report on Antimicrobial Use and Resistance in Human Health. Sydney: ACSQHC; 2016.

SUMMARY DATA

In 2017, there were 3,480 data submissions from 345 HCOs for 30 CIs. 22 were analysed for trend, 18 of which showed improvement, 2 deteriorated and the remainder showed no evidence of a trend. In 2017, statistically significant stratum variation was observed in 3 CIs. The rates of the 12 process indicators in Area 2 whose desirable level is defined as High, ranged between 86.8% and 97.7%. 17 CIs showed systematic variation, with centile gains > 50%. Outlier gains of > 25% were observed in 12 CIs.

Summary of Indicator Results

Indicator	2017							2010-2017
	HCOs	Aggregate rate %*	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
Area 1: Infection surveillance								
1.1 Superficial SSI - hip prosthesis procedure (L)	148	0.36		1 (1%)	2 (2%)	26 (29%)	90	↓ ✅
1.2 Deep or organ / space SSI - hip prosthesis procedure (L)	149	0.52				9 (7%)	132	↓ ✅
1.3 Superficial SSI - knee prosthesis procedure (L)	149	0.29				29 (26%)	110	↓ ✅
1.4 Deep or organ / space SSI - knee prosthesis procedure (L)	147	0.28				1 (1%)	105	↓ ✅
1.5 Superficial SSI to chest incision site - CABG (L)	34	1.41		2 (6%)	11 (15%)	37 (50%)	74	↑ ❌
1.6 Deep or organ / space SSI to chest incision site - CABG (L)	35	0.72				16 (39%)	41	↓ ✅
1.7 Superficial SSI - LSCS (L)	76	0.47		5 (7%)	16 (10%)	87 (52%)	166	↓ ✅
1.8 Deep or organ / space SSI - LSCS (L)	77	0.03		2 (3%)	3 (8%)		39	↓ ✅

Indicator	2017							2010-2017
	HCOs	Aggregate rate %*	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
Area 2: Surgical antibiotic prophylaxis (SAP)								
2.1 Timing of SAP for the hip prosthesis procedure (H)	20	96.0		3 (15%)	47 (42%)	94 (85%)	111	↑ ✅
2.2 Correct SAP and dose for the hip prosthesis procedure (H)	21	91.1		3 (14%)	70 (28%)	177 (72%)	246	↑ ✅
2.3 Discontinuation of SAP within 24 hours of the hip prosthesis procedure (H)	20	90.3		3 (15%)	72 (27%)	207 (79%)	262	↑ ✅
2.4 Timing of SAP for the knee prosthesis procedure (H)	19	96.7		3 (16%)	61 (50%)	106 (88%)	121	↑ ✅
2.5 Correct SAP and dose for the knee prosthesis procedure (H)	20	92.0		4 (20%)	110 (40%)	229 (83%)	277	↑ ✅
2.6 Discontinuation of SAP within 24 hours of the knee prosthesis procedure (H)	19	86.8		3 (16%)	172 (39%)	366 (82%)	445	↑ ✅
2.7 Timing of SAP for the CABG procedure (H)	5	95.0		1 (20%)	24 (56%)	37 (86%)	43	
2.8 Correct SAP and dose for the CABG procedure (H)	4	97.7		1 (25%)	7 (44%)	15 (94%)	16	
2.9 Discontinuation of SAP within 24 hours of the CABG procedure (H)	4	97.2				10 (50%)	20	
2.10 Timing of SAP for the LSCS procedure (H)	14	95.0	Metropolitan	4 (29%)	62 (35%)	134 (76%)	176	
2.11 Correct SAP and dose for the LSCS procedure (H)	13	91.3		3 (23%)	80 (30%)	189 (70%)	269	
2.12 Discontinuation of SAP within 24 hours of the LSCS procedure (H)	12	96.8		2 (17%)	22 (22%)	77 (77%)	100	

| Indicator | 2017 | | | | | | | 2010-2017 |
	HCOs	Aggregate rate %*	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
Area 3: Haemodialysis access-associated bloodstream infection surveillance^								
3.1 Haemodialysis - AV-fistula access-associated BSI (L)	18	0.051		1 (6%)	2 (17%)		12	↓✅
3.2 Haemodialysis - synthetic and native vessel graft access-associated BSI (L)	15	0.111					3	
3.3 Haemodialysis - CI non-cuffed line access-associated BSI (L)	12	0.001					-	
3.4 Haemodialysis - CI cuffed line access-associated BSI (L)	18	1.221		1 (6%)	2 (3%)	22 (36%)	61	
Area 4: Vancomycin Resistant Enterococci (VRE)								
4.1 VRE infection within the ICU (L)	53	1.262				4 (17%)	23	↓✅
4.2 VRE infection within non-ICU areas (L)	101	0.272		2 (2%)	52 (38%)	102 (75%)	136	
Area 5: Staff Immunisation								
5.1 Flu vaccination for permanent staff (H)	43	48.1		9 (21%)	1,740 (12%)	7,501 (53%)	14,264	↓❌
5.2 Hepatitis B vaccination for permanent staff (H)	27	83.7		14 (52%)	1,131 (44%)	2,288 (90%)	2,548	↑✅
Area 6: Occupational exposures to blood and/or body fluids^^								
6.1 Reported parenteral exposures sustained by staff (L)	294	0.030	Private	9 (3%)	229 (6%)	1,565 (41%)	3,775	↓✅
6.2 Reported non-parenteral exposures sustained by staff (L)	290	0.010	Private	7 (2%)	141 (11%)	536 (41%)	1,304	↓✅

^ per 100 patient-months
^^ per 10,000 bed days
# Number of undesirable or non-compliant events
+ % of events that contribute to outlier/centile gains
* % of outlier HCOs

Centile gain: The centile gains are a measure of the potential gains that would be made if the overall rate were moved to the desirable rate (20th or 80th centile rate).
Outlier gain: When an HCO has an undesirable rate that is more than three standard errors from the overall rate than that HCO is referred to as having a statistically significantly high (or low) rate. The outlier gains measure the benefits of improving the rate of each of the outlier HCOs to equal the value of the overall rate.
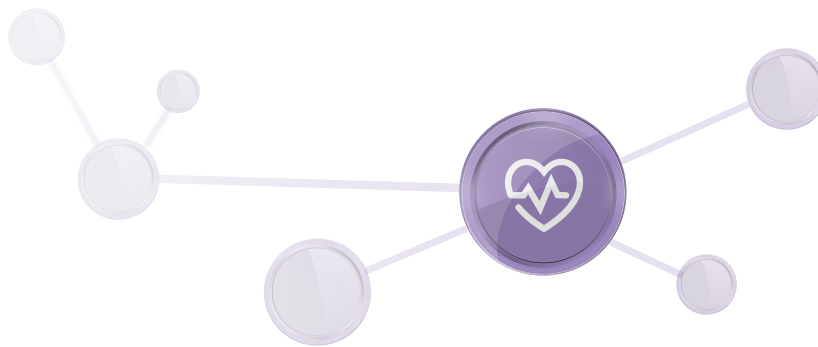
GENERAL COMMENTS

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The set of Clinical Indicators (CI) classified under Area 1, Access and exit block, reflect the resources available to Intensive Care Unit (ICU) (CIs1.1 – 1.3) and (CIs1.5 – 1.7) and hospital wards (CI1.4). There has been a small but steady improvement in this area across the set. In general, private Healthcare Organisations (HCOs) perform better than public HCOs, primarily because of case mix. The intention of these CIs is good but a number of confounding matters need to be considered and they may not reflect clinical practice at the ICU. For example, CI4.1: Delayed discharge adds to the assessment of 'strain' and is expected to reflect the state of the rest of the hospital, while it can be quite subjective and the rate can paradoxically be higher if the ICU occupancy is lower, i.e. the unit can accommodate the patients. It is of unclear clinical significance for a patient but certainly is more expensive for the system so in that sense it is useful as a management tool. NSW is notably higher than other states, but it is hard to comment on as this is not a reflection of ICU issues. The paediatric indicators (CI1.6 and CI1.7) have only been collected for two years and trends are less clear because of small numbers of contributing HCOs. Moreover, the contributing HCOs had very few paediatric admissions. For instance, in CI1.6: Paediatric discharges between 6pm and 6am, there is a total of only 473 discharges in the dataset – less than 50 admissions per HCO per year. These paediatric indicators are therefore of very limited value if the denominators are so low. This is not just because the confidence intervals around such numbers are so wide, but also because the institutions submitting data will not be reflective of paediatric intensive care more generally in Australia.

CI2.1: Rapid response system calls to patients within 48 hours of discharge from ICU is a less straightforward indicator as it may reflect premature discharge because of lack of resources as well as intensive care patient management. It may also be reflective of poorer care at a ward level. The desirable level is low, presupposing that a rapid response system call is an adverse event after ICU discharge. A high number, however, could reflect a very active Rapid Response Team (RRT) system with a lower threshold for calling. Although the data are simple to define, it requires a degree of sophistication in the collection of Medical Emergency Team (MET)/RRT data, which not all hospitals have. It can act as a good trigger for audit and review of a patient's discharge. It is too soon to comment on the outliers but they could provide an additional useful measure of strain in ICU.

There is good compliance with CI3.1: VTE prophylaxis, which has grown over the years and could be interpreted as a successful effect in making this an indicator measure, associated with better patient outcomes. It can be complex to assess because some treatments are not medically prescribed and there are a number of patients with valid reasons not to have either medication or calf compression devices. Either way it is a useful measure of adherence to a guideline for general care of a patient.

The rate of CLABSI (CI4.1) has reduced over time and it is very pleasing to see that reduction has continued long after the initial project has finished. The rates are now very low and are unlikely to be lower. This may reflect a sustained increase in the general attention to details given to patient care.

CI6.1: Empathetic practice is a new measure and will take some time to bed in. Unfortunately, only eight HCOs have submitted data. It is again complex information to collect partly because information about follow-up may not form part of the patient's medical record. There are many reasons to contact a family after a bereavement, feedback about patient care in the ICU is only one of them. It almost certainly indicates that the follow-up contact with the family after the death of a patient in ICU is not often made in many ICUs. Setting the timing to four weeks however does dichotomise things so that an ICU contacting all patients at six weeks will appear to not be contacting anyone. Hopefully the number of HCOs submitting data for this indicator will increase in the coming years allowing more ICUs to evaluate the end of life care they provide. Interpretation will be difficult as the question does not ask what the feedback is, merely that the ICU seeks it.

FEATURE CLINICAL INDICATOR

CI 1.5: ICU – adult discharge between 6pm and 6am (L)

Two single centre studies from Australian ICUs have shown that after-hours discharge from ICUs is associated with an increased risk of death, and a more recent multi-centre study and a systematic review support this finding.[1-4] In 2017, this indicator was heavily reported by HCOs and the annual rate was 15.7 after-hours discharges per 100 adult patients. This overall rate has remained very stable since 2010, with a downwards trend of only 1.0% over this time. However, there are large variations between strata, and the rate for public HCOs is around four times more than private HCOs. Rates for HCOs in NSW and VIC are over twice the rates in QLD and SA. Large numbers of outlier HCOs (32% of contributing HCOs) with high rates were identified. This high rate is disappointing given its known association with worse patient outcomes. After-hours discharge is usually not planned but becomes necessary when an unexpected admission requires an occupied ICU bed. This might be due to the consequence of efforts to reduce surgery cancellations and declined admissions. Therefore, along with patient acuity and ICU readmission, it has been considered to be an indicator of ICU capacity strain.[5]

The high rate of this CI may also reflect strained hospital resources. It also suggests a system timing issue when the ward bed does not become available until evening for an ICU patient ready for ICU discharge in the morning. This might explain the significant difference between public and private HCOs as public hospitals tend to have more acutely ill emergency admissions, whereas private hospitals are more likely to care for elective surgical patients. Similarly, there may be more ICU capacity strain in HCOs in NSW and VIC than in QLD and SA. This is an important and useful CI that can reflect and measure ICU strain in the healthcare system overall. However, fixing the issue may often be a hospital system issue which ICUs are not able to alter.

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INTENSIVE CARE

SUMMARY DATA

In 2017, there were 1,095 data submissions from 91 HCOs for 15 CIs. 5 were analysed for trend, all of which showed improvement. In 2017, statistically significant stratum variation was observed in 5 CIs. 10 CIs showed systematic variation, with centile gains > 50%. Outlier gains of > 25% were observed in 9 CIs.

Summary of Indicator Results

Indicator		2017						2010-2017
	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
Area 1: Access and exit block								
1.1 ICU - adult non-admission due to inadequate resources (L)	52	2.26		13 (25%)	761 (59%)	1,265 (99%)	1,282	↓✅
1.2 ICU - elective adult surgical cases deferred or cancelled due to unavailability of bed (L)	51	1.09	Private	11 (22%)	186 (53%)	337 (97%)	348	
1.3 ICU - adult transfer to another facility / ICU due to unavailability of bed (L)	54	0.79		10 (19%)	257 (56%)	436 (96%)	455	↓✅
1.4 ICU - adult discharge delay more than 12 hours (L)	65	14.0	Private	20 (31%)	3,504 (38%)	8,691 (95%)	9,139	
1.5 ICU - adult discharge between 6pm and 6am (L)	74	15.7	Private	24 (32%)	3,724 (33%)	9,236 (82%)	11,276	↓✅
1.6 ICU - paediatric discharge between 6pm and 6am (L)	10	8.7					41	
1.7 ICU - elective paediatric surgical cases deferred or cancelled (L)	2	0					0	
Area 2: Intensive care patient management								
2.1 Rapid response system calls to adult ICU patients within 48 hours of ICU discharge (L)	55	4.49	Private	10 (18%)	873 (32%)	2,254 (82%)	2,740	
2.2 Rapid response system calls to paediatric ICU patients within 48 hours of ICU discharge (L)	9	0.64					3	
Area 3: Intensive care patient treatment								
3.1 VTE prophylaxis in adult patients within 24 hours of ICU admission (H)	74	94.2		20 (27%)	2,157 (50%)	4,241 (98%)	4,314	

SUMMARY DATA

Indicator	2017							2010-2017
	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
Area 4: Central line-associated bloodstream infection								
4.1 Adult ICU-associated CI-CLABSI (L)	58	0.34	NSW	1 (2%)	1 (3%)	10 (28%)	36	↓✓
4.2 Paediatric ICU-associated PI-CLABSI (L)	5	0					0	
Area 5: Utilisation of patient assessment systems								
5.1 Participation in the ANZICS CORE Adult Patient Database (APD) (H)	64	97.6		11 (17%)	1,297 (84%)	1,545 (100%)	1,552	↑✓
5.2 Participation in the ANZICS CORE Paediatric Intensive Care (ANZPIC) registry (H)	6	97.5		1 (17%)	10 (91%)	10 (91%)	11	
Area 6: Empathetic practice								
6.1 Empathetic practice toward families of ICU patients (H)	8	66.5		3 (38%)	36 (22%)	115 (71%)	163	

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

Centile gain: The centile gains are a measure of the potential gains that would be made if the overall rate were moved to the desirable rate (20th or 80th centile rate).
Outlier gain: When an HCO has an undesirable rate that is more than three standard errors from the overall rate than that HCO is referred to as having a statistically significantly high (or low) rate. The outlier gains measure the benefits of improving the rate of each of the outlier HCOs to equal the value of the overall rate.

KEY FACTS

Creation of CI Set 1998

Last Revision of CI Set 2016

16 CIs across Six Clinical Areas

In 2017 Five CIs Analysed
for Trends, All Improved

GENERAL COMMENTS

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Australian College of Nursing

The updated Internal Medicine Clinical Indicator (CI) set with revised peer group stratification was released for data collection from July 2016.

The majority of the CIs (65%) have only between one to three Healthcare Organisations (HCOs) providing data with no HCO reporting in 2017 to CI4.3 and CI4.4, the two CIs within aged care dealing with delirium plans and discharge follow-up. Given the potential gains demonstrated for CI4.1: Cognition assessment for patients ≥ 65 years, it is disappointing that no data has been submitted for these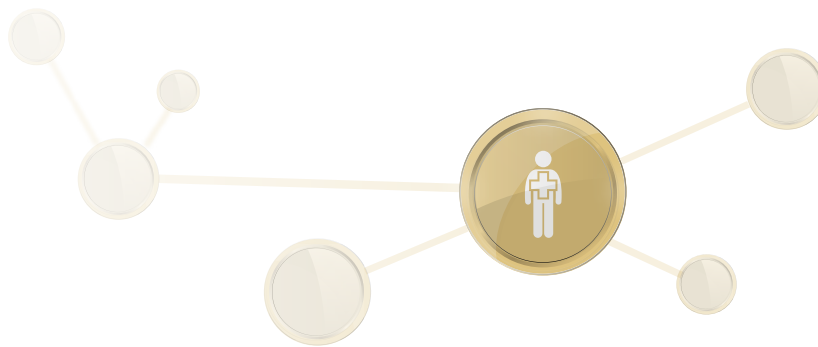 two CIs considering the importance of both CIs in the provision of effective holistic care and reduction in morbidity and mortality. Reasons for this could be usefully explored.

The reason for the low uptake needs to be explored. Strategies need to be put in place to increase participation to ensure sufficient data to optimise analysis, quality improvement, and benchmark opportunities in these important healthcare areas.

While health care and all its facets continually change, it is important that data recording practices keep up with these changes. This may mean that some data fields become mandatory to ensure health care can be reviewed, measured and improved. Streamlining of medical records may be one way of improving data recording and collection.

FEATURE CLINICAL INDICATOR

CI 5.1: COPD – chronic disease management service referral (H)

Given the evidence of improvement from National Health and Medical Research Council (NHMRC) that the physical rehabilitation is included in the Chronic Disease Management System for COPD sufferers, it is disappointing that no significant change has been observed in this area.

CI 6.1: Haematemesis/melaena with blood transfusion-gastroscopy within 24 hours (H)

CI 6.2: Haematemesis/melaena with blood transfusion and subsequent death (L)

There appears to be a continued decline in the number of HCOs submitting data to these two indicators. Review of the relevance of these CIs is necessary.

CI 7.1: Time to administration of antibiotics for patients admitted with febrile neutropenia (H)

It is disappointing to see a deterioration in the annual rate and a decrease in the number of reporting HCOs considering oncology services are now being provided across a wider range and size of HCOs.

SUMMARY DATA

In 2017, there were 110 data submissions from 25 HCOs for 18 of the 20 CIs. 3 were analysed for trend, none of which showed improvement, 2 deteriorated and the remainder showed no evidence of a trend. In 2017, no statistically significant stratum variation was observed. 4 CIs showed systematic variation, with centile gains > 50% as well as outlier gains of > 25.

Summary of Indicator Results

Indicator	HCOs	Aggregate rate %*	Best Stratum	Outlier HCOS (%)	Outlier Gains (%)	Centile Gains (%)	Events	Trend
				2017				2010-2017
Area 1: Cardiovascular disease								
1.1 CHF - prescribed ACEI / A2RA (H)	1	96.2					7	
1.2 CHF - prescribed beta blocker (H)	1	97.5					6	
1.3 CHF and AF - prescribed warfarin (H)	1	87.0					3	
1.4 CHF - chronic disease management referral including physical rehabilitation (H)	1	39.2					73	
1.5 PTCA - vessels where primary success achieved (H)	7	96.1				1 (1%)	157	↓ ⊗
Area 2: Endocrine disease								
2.1 Hospitalised patients with severe hypoglycaemia less than 2.8 mmol/L (L)	1	19.3				1 (2%)	43	
Area 3: Acute stroke management								
3.1 Acute stroke - documentation of swallowing screen conducted within 24 hours prior to food or fluid intake (H)	8	75.4		1 (13%)	19 (8%)	107 (43%)	247	
3.2 Acute stroke - documented physiotherapy assessment within 48 hours of presentation (H)	7	75.5		1 (14%)	21 (9%)	78 (33%)	233	↓ ⊗
3.3 Acute stroke - plan for ongoing community care provided to patient / family (H)	6	81.4		2 (33%)	47 (32%)	89 (61%)	145	
3.4 Acute stroke - documented treatment in a stroke unit during hospital stay (H)	6	88.0		3 (50%)	56 (45%)	107 (86%)	124	

Indicator	HCOs	Aggregate rate %*	Best Stratum	Outlier HCOS (%)	Outlier Gains (%)	Centile Gains (%)	Events	Trend
			2017					**2010-2017**
Area 4: Care of the elderly								
4.1 Medical patients 65 years or older - cognition assessment using validated tool (H)	6	68.8		2 (33%)	933 (44%)	2,014 (94%)	2,138	
4.2 Geriatric patients - documented assessment of physical function (H)	7	97.4		2 (29%)	91 (61%)	147 (99%)	148	
4.3 Documentation of delirium plan (H)	0							
4.4 Documentation of follow-up plan after discharge (H)	0							
Area 5: Respiratory disease								
5.1 COPD - chronic disease management service referral (H)	1	69.9					59	
5.2 Acute asthma - assessment of severity documented on admission (H)	1	78.0				3 (11%)	27	
5.3 Acute asthma - appropriate discharge plan documented (H)	1	68.3				5 (13%)	39	
Area 6: Gastrointestinal disease								
6.1 Haematemesis / melaena with blood transfusion - gastroscopy within 24 hours (H)	2	58.5				12 (44%)	27	
6.2 Haematemesis / melaena with blood transfusion & subsequent death (L)	1	6.12					3	
Area 7: Oncology								
7.1 Time to administration of antibiotics for patients admitted with febrile neutropenia (H)	2	62.5					12	

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

Centile gain: The centile gains are a measure of the potential gains that would be made if the overall rate were moved to the desirable rate (20th or 80th centile rate).
Outlier gain: When an HCO has an undesirable rate that is more than three standard errors from the overall rate than that HCO is referred to as having a statistically significantly high (or low) rate. The outlier gains measure the benefits of improving the rate of each of the outlier HCOs to equal the value of the overall rate.

GENERAL COMMENTS

Prof Michael Permezel
Representative
The Royal Australian and New Zealand College of
Obstetricians and Gynaecologists
Chair, ACHS Maternity Working Party

Once again, ACHS is to be congratulated for collecting this data and giving the medical colleges an opportunity to comment on collated data. By acknowledging that the medical colleges have a key role to play in improving outcomes, ACHS is showing great leadership in working with those that are most able to effect change. Some other organisations and government bodies would do well to learn from ACHS as to how to engage the profession itself.

Clinical Indicator (CI) 8.1 is particularly noteworthy in this respect. This indicator records the numbers of babies of birth weight 2750g or less born at 40 weeks' gestation or beyond. Low birth weight at term is one of the strongest predictors of neonate mortality and morbidity.[1-3] Potential sequelae of Foetal Growth Restriction (FGR) include stillbirth, acute neonatal complications (hypoglycaemia, meconium aspiration, hypoxic ischaemic encephalopathy), long-term neurological sequalae (including cerebral palsy) and increased risks of hypertension and diabetes mellitus later in life.[2] The perinatal death risk increases exponentially after 37 weeks' gestation in these foetuses, and it is recommended that the delivery of an FGR foetus occurs before 40 weeks gestation.[4,5] It is very pleasing to see that a birth weight ≤2,750g at 40 weeks gestation or beyond has been steadily improving and is now down to 1.20% after beginning at 1.80% when this data was first collected eight years ago. This indicator has improved virtually every year since its inception, and points to its contributing to the improved clinical performance in this area. A consequent reduction in perinatal mortality and morbidity is likely although difficult to prove because of low (although clinically important) rates of these outcomes. Further improvement is desirable and the downward trend should continue with further increased vigilance of staff responsible for detecting antenatal placental insufficiency. It is also gratifying to see that this is a state-wide maternity CI in VIC, and it is hoped that this indicator will gain prominence nationally.[6]

Vaginal birth following a previous primary caesarean section continues to steadily decline. The most recent rate is 11.2%, the lowest level in the eight years. Falling rates of this indicator are expected with an increasingly risk-averse maternity population, and also an increasing number of older women with lower expected future parity – the latter being of particular significance given the focus on morbid adherence of the placenta in future pregnancies as the number of previous caesarean sections increase.

FEATURE CLINICAL INDICATOR

Area 1: Outcome of the selected primipara

There has been a further decrease in the number of spontaneous vaginal births in the selected primipara (CI1.1), decreasing to its lowest level at 42.6% in 2017. There are several reasons why the number of spontaneous vaginal births may be expected to lessen over time:

1. Women are becoming more risk averse and therefore more often requesting obstetric procedures to minimise risk.[7] This applies to all women but increasingly in relation to common issues such as suspected foetal macrosomia.

2. Increasing maternal age and maternal obesity.

3. 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 Healthcare Organisations (HCOs) (33.1% vs. 48.1% 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 (L)

The rate continues to increase, reaching the as yet highest rate of 41.8% in 2017. The increase of approximately 8% over three years very likely reflects the impact of publications particularly with respect to foetal macrosomia.[8, 9] It also reflects an increasing intolerance of foetal risk with approximately one in 400 pregnancies suffering mortality or serious morbidity beyond 39.0 weeks, which would likely have been averted in most cases had labour been induced or an elective caesarean section performed.[4]

CI 1.3 Selected primipara – instrumental vaginal birth (L)

This rate has risen to 26.9% in 2017. This continuing upward trend almost certainly reflects women increasingly electing to utilise regional analgesia for pain relief in labour – a factor which is known to change rates of instrumental birth.[10] It would be informative to compare trends in instrumental birth to trends in rates of epidural analgesia during labour.

CI 1.4 Selected primipara – caesarean section (L)

The rate has now exceeded 30% for the first time in 2017. The lack of a firm trend previously was interesting in the presence of the evidence-led increase in inductions of labour. It is hoped that this first significant spike upwards does not continue to increase. Further research is needed with regard to new methods for induction of labour and cervical ripening (e.g. Foley balloon catheter). Developments in regimens for induction of labour seek to maximise the rate of vaginal birth without compromising foetal welfare.

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GENERAL COMMENTS

Helen Cooke
Maureen Hutchinson
Representatives
Australian College of Midwives

The Australian College of Midwives is disappointed to see that the indicators associated with interventions have all deteriorated. This was not balanced by neonatal morbidity as admissions to the Neonatal Intensive Care Unit (NICU) and Special Care Nursery (SCN) continue to increase.

We note the new collection of breast feeding rates for selected primiparas, and congratulate ACHS on the collection of this information. We await further data in the future to review potential improvements in the disappointing current rates.

FEATURE CLINICAL INDICATOR

CI 6.1: Selected primipara - exclusive breastfeeding (H)

The collection of CI data on exclusive breastfeeding in maternity hospitals by the ACHS is a big step forward for maternity care in Australia in that it enables regular monitoring of breastfeeding rates in large, complete populations.

The benefits of breastfeeding are well documented. These benefits are realised through effective breastfeeding (adequate nutrition and hydration) and appropriate duration of exclusive breastfeeding. The Baby Friendly Health Initiative (BFHI) recommends that for women who wish to breastfeed, their infants should be exclusively breastfed for six months. Provision of breast milk substitute to these infants is only warranted for medical indications or informed maternal request.[1]

The ACHS indicator measures exclusive breastfeeding in selected primiparous women who want to breastfeed. That is, women aged 18 to 34 having their first baby who is a singleton, term infant. Such infants should be unlikely to be given breast milk substitute in the few days between their birth and discharge from the birth hospital.

In the first year of reporting this indicator (2017), the result of 71.8% was achieved. This rate is disappointing to midwives who have worked hard to support exclusive breastfeeding in this population of women and their infants. An examination of exclusive breastfeeding rates readily available provides context for this rate.

Initiation of breastfeeding in primiparous women was 71% in Australian women surveyed in 2012 for the Australian Longitudinal Study on Women's Health. Exclusive breastfeeding rates were not reported.[2] For women surveyed for the 2014-15 National Health Survey, the exclusive breastfeeding rate to four months was almost 62%.[3] The World Health Organisation compared national exclusive breastfeeding rates to five months of age, and found that Australia's rate of 15% was higher than the rate reported for the United Kingdom, Greece, Italy, Belgium, Sweden and Ireland. New Zealand's rate was slightly higher than Australia being about 17%. The Netherlands, the United States, Germany, Canada, Spain and Portugal all had exclusive breastfeeding rates at five months that were higher than the rate in Australia.[4]

Plunket provides health services to approximately 90% of babies born in New Zealand and publishes annual breastfeeding rates for the infants in their care. For 2017, they reported an exclusive breastfeeding rate to six weeks of age of 52%. A further 34% of infants were partially breastfed by six weeks of age.[5]

These national breastfeeding rates are not specific to the short time between an infant's birth and discharge from hospital. For this shorter time period it is expected that the exclusive breastfeeding rate would be higher than for infants that reach six weeks of age. The ACHS indicator rate of 71.8% is higher than the exclusive breastfeeding rates reported for the older infants.

In future years of monitoring this indicator it is hoped that the trend will be upwards, and that a rate of around 85% will be achieved in the next few years.

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SUMMARY DATA

In 2017, there were 4,075 data submissions from 157 HCOs for 20 CIs. 18 were analysed for trend, 6 of which showed improvement, 11 deteriorated, and the remainder showed no evidence of a trend. In 2017, statistically significant stratum variation was observed in 7 CIs. CI2.1: Vaginal delivery following previous birth of caesarean section, desirable level unspecified, decreased. 4 CIs showed systematic variation, with centile gains > 50%. Outlier gains of > 25% were observed in 2 CIs.

Summary of Indicator Results

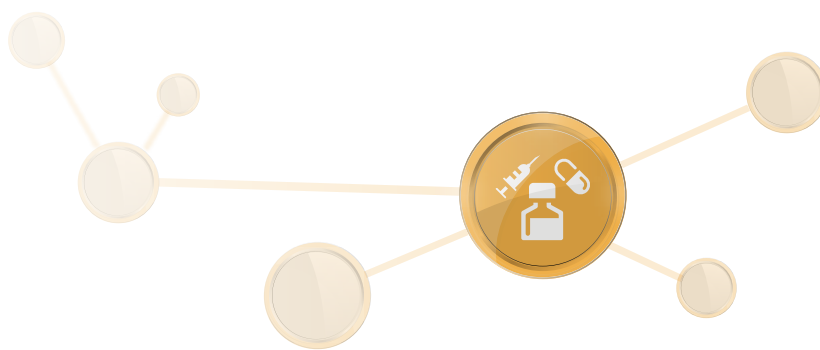| Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
				2017				2010-2017
Area 1: Outcome of selected primipara								
1.1 Selected primipara - spontaneous vaginal birth (H)	135	42.6		17 (13%)	1,088 (4%)	3,653 (14%)	25,727	↓⊗
1.2 Selected primipara - induction of labour (L)	139	41.8		5 (4%)	373 (2%)	3,352 (18%)	19,070	↑⊗
1.3 Selected primipara - instrumental vaginal birth (L)	135	26.9		7 (5%)	596 (5%)	2,448 (20%)	12,088	↑⊗
1.4 Selected primipara - caesarean section (L)	134	30.4		17 (13%)	1,156 (8%)	2,441 (18%)	13,719	↑⊗
Area 2: Vaginal birth after caesarean section (VBAC)								
2.1 Vaginal delivery following previous birth of caesarean section (N)	110	11.2						↓
Area 3: Major perineal tears & surgical repair of the perineum								
3.1 Selected primipara - intact perineum (H)	107	11.4		9 (8%)	330 (1%)	3,258 (13%)	24,466	↓⊗
3.2 Selected primipara - episiotomy and no perineal tear (L)	93	35.7		8 (9%)	547 (6%)	2,106 (23%)	9,265	↑⊗
3.3 Selected primipara - perineal tear and NO episiotomy (L)	93	41.0	NSW	10 (11%)	584 (6%)	2,972 (28%)	10,458	↓✓
3.4 Selected primipara - episiotomy and perineal tear (L)	92	8.5	NSW	6 (7%)	423 (20%)	1,089 (51%)	2,143	↑⊗
3.5 Selected primipara - surgical repair of perineum for third degree tear (L)	123	4.90	Private	5 (4%)	74 (5%)	0,538 (36%)	1,499	↑⊗
3.6 Selected primipara - surgical repair of perineum for fourth degree tear (L)	135	0.275				9 (10%)	89	↓✓

MATERNITY

Indicator	2017							2010-2017
	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)	127	0.056	Private	16 (13%)	354 (10%)	1,453 (43%)	3,385	↓ ✅
Area 5: Antibiotic prophylaxis & caesarean section								
5.1 Appropriate prophylactic antibiotic at time of caesarean section (H)	102	93.7		19 (19%)	1204 (42%)	2,555 (89%)	2,864	↑ ✅
Area 6: Exclusive breastfeeding								
6.1 Selected primipara - exclusive breastfeeding (H)	50	71.8		4 (8%)	270 (5%)	1,804 (31%)	5,889	
Area 7: Postpartum haemorrhage / blood transfusions								
7.1 Vaginal birth - blood transfusion (L)	135	1.41	Private	8 (6%)	178 (12%)	662 (43%)	1,529	↑ ❌
7.2 Caesarean section - blood transfusion (L)	129	1.33	Private	6 (5%)	66 (8%)	365 (45%)	808	↓ ✅
Area 8: Intrauterine growth restriction (IUGR)								
8.1 Babies - birth weight less than 2,750 g at 40 weeks gestation or beyond (L)	105	1.20				61 (11%)	580	↓ ✅
Area 9: Apgar score								
9.1 Term babies - Apgar score of less than 7 at 5 minutes post-delivery (L)	127	1.30	Private	3 (2%)	33 (2%)	491 (23%)	2,110	↑ ❌
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)	117	10.5		25 (21%)	2,678 (17%)	8,666 (56%)	15,578	↑ ❌
Area 11: Specific maternal peripartum adverse events								
11.1 Specific maternal peripartum adverse events addressed within peer review process (H)	20	99.7		1 (5%)	5 (71%)	7 (100%)	7	

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

Centile gain: The centile gains are a measure of the potential gains that would be made if the overall rate were moved to the desirable rate (20th or 80th centile rate).
Outlier gain: When an HCO has an undesirable rate that is more than three standard errors from the overall rate than that HCO is referred as having a statistically significantly high (or low) rate. The outlier gains measure the benefits of improving the rate of each of the outlier HCOs to equal the value of the overall rate.

MEDICATION SAFETY

GENERAL COMMENTS

Dr Sasha Bennett
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NSW Therapeutic Advisory Group
Chair, ACHS Medication Safety Working Party

A total of 286 Healthcare Organisations (HCOs) undertook at least one clinical audit using the ACHS Clinical Indicators (CIs) for Medication Safety Version 4 in 2017. In general, there appears to be stability or improvement across the system with regard to medication safety as reflected by 2017 audit results, particularly in medication reconciliation processes and provision of information at discharge. A review of the collated CI results can be found in the next section.

The use of clinical auditing has a number of outcomes. They assist HCOs to understand the processes, systems and outcomes of care that they deliver and ensure it is reliable, safe and of high quality; they ensure health service organisations are meeting mandatory requirements or comply with National Safety and Quality Health Service (NSQHS) Standards of care; they drive continuous quality improvement; they inform jurisdictions of performance and drive changes in policy and investment around safety and quality; and lastly, they have the potential to identify emerging issues. Given the limited resources and increasing demand for audits, hospitals 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.

The exciting implementation of electronic medical records and medication systems (eMR and eMeds, respectively) not only presents the ability to improve acquisition of data but may also represent diversion of existing resources, the 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 are likely to be measured in 'before and after' studies of eMR and/or eMeds. Some should become less important with the implementation of eMeds e.g. use of error-prone abbreviations, ADR charting; however, the emergence and measurement of other potential medication safety issues need to be considered.

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 reduced healthcare-associated infection, inappropriate antimicrobial use, documentation of adverse drug reactions and medication reconciliation. Furthermore, HCOs are required to identify local areas requiring safety and quality improvement and to prioritise potential risk. These locally identified gaps should also be monitored, reported and drive local quality improvement activity in order to achieve performance that meets nominated targets.

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 Australian Commission on Safety and Quality in Health Care (ACSQHC) released the second edition of the NSQHS Standards in November 2017 with HCOs to be assessed against the standards in this next edition from January 2019. Thus, the results in this current ACHS Medication Safety Report have been assessed against the first edition of the NSQHS Standards.

FEATURE CLINICAL INDICATOR

The most commonly reported CI was CI6.3: Number of medication errors resulting in an adverse event requiring intervention per number of occupied bed days, which was undertaken by 244 HCOs. The most popular non-automated indicators (CIs1.1 – 6.1) during the 2017 audit year were CIs 3.1, 3.2, 3.3, 5.5 and 5.6 demonstrating a focus on processes that targeted medication reconciliation at admission, inpatient medication charting and communication of medication information for ongoing care after discharge. Up to 43 HCOs used these CIs to evaluate their care with respect to medication safety. The number of HCOs undertaking audits involving antibiotic therapy, antithrombotic therapy and pain management was low (average 4.7, range 1-11), and is of concern given that these remain commonly encountered medication safety issues. It may be that other measures are being used by HCOs to measure the safety and quality of care involving use of these medications.

In 2017, there was variation in clinical audit results across HCOs. Although there is an ability for HCOs to recognise under-performance, there is a need for dissemination of what are the successful strategies being employed by higher-performing HCOs. In general, the 2017 rate of completed medication reconciliation at admission (76%) improved but significant gaps remain. Some jurisdictions performed better than others with VIC HCOs reporting the best rate of 85% in 2017.

Medication charting of Adverse Drug Reactions (ADR) is generally high; however, metropolitan hospitals had higher ADR charting on charts than non-metropolitan hospitals, 98% versus 87%. There was also some jurisdictional variation with WA demonstrating significant potential for improvement. The rate of error-prone abbreviations (EPA) in medication orders, approximately four in 100 medication orders, appears to be similar to that reported in 2016; however, the rate of EPA use was almost three-fold greater in non-metropolitan hospitals compared to metropolitan hospitals. Furthermore, VIC hospitals performed significantly better (i.e. lower usage rate of error prone abbreviations) than other jurisdictions. Hence there remains further room for improvement although the implementation of electronic medication management systems in many hospitals may improve this potential source of medication error.

A far greater number of patients were audited using CI5.5: Percentage of patients whose discharge summaries contain a current, accurate and comprehensive list of medicines at discharge and CI5.6: Percentage of patients who receive a current, accurate and comprehensive medication list at the time of hospital discharge, than in previous years, although the number of HCOs were similar. This improves the robustness of the data and probably demonstrates the more widespread focus within HCOs and by accrediting agencies on the need for continuity of medicines management post-discharge. However, an average rate of 99% for current, accurate and comprehensive medication lists in discharge summaries (CI5.5) is an unlikely result and suggests further analysis of audit processes or results is required. The result is in contrast to the result of audits involving CI5.6: Percentage of patients who receive a current, accurate and comprehensive medication list at discharge, which had an average rate of 46%.

Although 70% 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. Of concern is that no private HCOs conducted audits regarding antibiotic therapy, and antithrombotic CIs were assessed in very few private HCOs. This may be because other audits involving antimicrobial and antithrombotic use are being conducted. However, given that a number of these indicators have particular relevance to hospitals performing surgery, and that there is continued antibiotic and antithrombotic CI use in the public health care sector albeit low, this gap requires further investigation. A similar concern with regard to antibiotic therapy arises given non-metropolitan hospitals were more likely to conduct audits using CIs2.1-2.3 than metropolitan hospitals.

It is unclear which hospitals were undertaking accreditation during 2017 and what impact this has on the use of the CIs. Only one CI (CI6.3) appears to be routinely used by the majority of hospitals. 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 CI6.2: Reporting of adverse drug reactions 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 hospitals 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 nonmetropolitan, need to be interpreted very cautiously as they may not have been measured using the same methodology or have the same case-mix.

It remains critically important that clinical audits addressing local issues as well as well-recognised evidence-based gaps are well-resourced in busy, resource-limited healthcare environments. Recent implementation of technology such as electronic medication management systems will 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 healthcare system.

SUMMARY DATA

In 2017, there were 974 data submissions from 268 HCOs for 20 CIs. 2 were analysed for trend, 1 of which showed improvement and the other showed no evidence of a trend. In 2017, statistically significant stratum variation was observed in 1 CI. 10 CIs showed systematic variation, with centile gains > 50%. Outlier gains of > 25% were observed in 8 CIs.

Summary of Indicator Results

Indicator	2017							2010-2017
	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
Area 1: Antithrombotic therapy								
1.1 Percentage of patients prescribed enoxaparin whose dosing schedule is appropriate (H)	3	94.9					18	
1.2 Percentage of patients prescribed hospital initiated warfarin whose loading doses are consistent with a Drug and Therapeutics Committee approved protocol (H)	6	61.1				31 (84%)	37	
1.3 Percentage of patients with an INR above 4 whose dosage has been adjusted or reviewed prior to the next warfarin dose (H)	11	95.8				1 (9%)	11	
Area 2: Antibiotic therapy								
2.1 Percentage of prescriptions for restricted antibiotics that are concordant with drug and therapeutics committee approved criteria (H)	6	77.9		1 (17%)	33 (16%)	128 (64%)	201	
2.2 Percentage of patients in whom doses of empirical aminoglycoside therapy are continued beyond 48 hours (L)	2	0.0					-	
2.3 Percentage of patients presenting with community acquired pneumonia that are prescribed guideline concordant antibiotic therapy (H)	3	49.1				18 (67%)	27	

Indicator	2017							2010-2017
	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
Area 3: Medication ordering Hospital wide policies								
3.1 Percentage of patients whose current medications are documented and reconciled at admission (H)	28	75.8		5 (18%)	498 (28%)	1,542 (88%)	1,748	
3.2 Percentage of patients whose known adverse drug reactions are documented on the current medication chart (H)	43	96.7		16 (37%)	818 (74%)	732 (66%)	1,111	
3.3 Percentage of medication orders that include error-prone abbreviations (L)	25	4.13	Metropolitan	10 (40%)	906 (38%)	1,121 (46%)	2,416	
3.4 Percentage of patients receiving cytotoxic chemotherapy whose treatment is guided by a hospital approved chemotherapy treatment protocol (H)	2	99.7		1 (50%)	2 (50%)	3 (75%)	4	
Area 4: 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)	1	52.0					48	
Area 5: Continuity of care								
5.1 Percentage of discharge summaries that include medication therapy changes and explanations for changes (H)	13	0.885		7 (54%)	78 (23%)	224 (66%)	339	
5.2 Percentage of patients discharged on warfarin that receive written information regarding warfarin management prior to discharge (H)	7	87.2		4 (57%)	69 (58%)	111 (94%)	118	

Indicator	2017							2010-2017
	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
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 clinics (H)	7	53.1					68	
5.4 Percentage of patients receiving sedatives at discharge that were not taking them at admission (L)	1	22.7					5	
5.5 Percentage of patients whose discharge summaries contain a current, accurate and comprehensive list of medicines (H)	13	98.6		10 (77%)	109 (68%)	15 (9%)	160	
5.6 Percentage of patients who receive a current, accurate and comprehensive medication list at the time of hospital discharge (H)	17	46.0		1 (6%)	5,237 (29%)	16,195 (91%)	17,889	
Area 6: Hospital wide policies								
6.1 Percentage of patients that are reviewed by a clinical pharmacist within one day of admission (H)	10	63.7		1 (10%)	119 (18%)	306 (47%)	655	
6.2 Adverse drug reactions reported to TGA (N)	87	0.10						
6.3 Medication errors - adverse event requiring intervention (L)	244	0.015		14 (6%)	923 (61%)	1,450 (95%)	1,523	↓ ✓

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

Centile gain: The centile gains are a measure of the potential gains that would be made if the overall rate were moved to the desirable rate (20th or 80th centile rate).
Outlier gain: When an HCO has an undesirable rate that is more than three standard errors from the overall rate than that HCO is referred to as having a statistically significantly high (or low) rate. The outlier gains measure the benefits of improving the rate of each of the outlier HCOs to equal the value of the overall rate.

MEDICATION SAFETY

MENTAL HEALTH

GENERAL COMMENTS

Dr Bill Kingswell
Representative
The Royal Australian and New Zealand College of Psychiatrists
Chair, ACHS Mental Health Working Party version 8

Grant Sara
Representative
The Royal Australian and New Zealand College of Psychiatrists
Member, ACHS Mental Health Working Party

The Royal Australian and New Zealand College of Psychiatrists (RANZCP) welcomes the opportunity to provide feedback to the ACHS on the Mental Health Clinical Indicator (CI) data for the *Australasian Clinical Indicator Report (ACIR) 19th Edition 2010-2017*.

The RANZCP encourages all psychiatrists to measure and reflect on their care in order to continuously learn and improve. The ACHS indicators have been recently revised, and address many critical issues in the provision of safe and effective mental health care. We commend the ACHS on the considerable work involved in the development of this report and believe that it will be a valuable resource to promote ongoing improvements and reductions in variation across mental health care.

As with all data, caution is needed in interpretation. The recent revision of the indicator set means that it is difficult to examine long term trends. The number of services contributing varies from four for some indicators to closer to 40 for others. Therefore, it is important to ask whether the results reported are representative of all mental health services, and whether variation between indicators or over time might be due to small or changing service numbers. These are not criticisms of the current report: the RANZCP encourages psychiatrists and mental health services to participate actively in the collection and use of these indicators to understand and improve their

care. Greater involvement will lead to a larger and more robust dataset for these indicators over time. Service users, consumers, families and policy makers who are interested in national trends or comparisons can look to other national data collections to complement the data provided in this report. The Australian Institute of Health and Welfare's Mental Health Services in Australia provides the most comprehensive source of data on the performance of Australian mental health services.[1] This includes national comparative data on several seclusion and restraint indicators.

In preparing this commentary the RANZCP consulted with a number of our Fellows to ensure that our response reflects direct clinical experience and expertise, with our comments on featured CIs outlined below.

FEATURE CLINICAL INDICATOR

CI 3.3 Polypharmacy with antipsychotics (L)

Polypharmacy with antipsychotics is expensive, potentially harmful and there is no evidence that it is any more effective than monotherapy (except in some very limited circumstances).[2,3] This is a new indicator and although the number of participating Healthcare Organisations (HCOs) is low, the number has almost doubled from 2016 to 2017, and the denominator has more than doubled. The fitted rate shows a slight downward trend. Hopefully, the increasing participation in the data collection signals a keen interest and commitment to a very simple approach to healthcare improvement, ceasing ineffective treatment.

CI 6.4 Sexual assault (L)

In 2016 and 2017 the ACHS Mental Health Clinical Indicators captured data on sexual assault as a proportion of all those assaulted. While the proportion of assaults reported as being of a sexual nature was low, approximately 2.3% of all assaults, any sexual assault is unacceptable. The issue was recently in the spotlight in VIC with the release of the Mental Health Complaints Commissioner's report – The Right to be Safe.[4] The report focused on an examination of complaints of sexual assault made to the Commission and made recommendations to address 'significant avoidable harms'. With increasing participation from HCOs in providing this data, the collection will mature and properly quantify the issue, illustrate the trends and inform services on the effectiveness of the remedies attempted.[4]

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3. Ortiz-Orendain J, Castiello-de Obeso S, Colunga-Lozano LE, Hu Y, Maayan N, Adams CE. Antipsychotic Combinations for Schizophrenia. The Cochrane Library. 2017 Jan 1.
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MENTAL HEALTH

SUMMARY DATA

In 2017, there were 1,500 data submissions from 92 HCOs for 29 CIs. 4 were analysed for trend, 1 of which showed improvement, 2 deteriorated and the other decreased (desirable level not specified). In 2017, statistically significant stratum variation was observed in 7 CIs. 19 CIs showed systematic variation, with centile gains > 50%. Outlier gains of > 25% were observed in 17 CIs.

Summary of Indicator Results

Indicator	HCOs	Aggregate rate %	Best Stratum	2017 Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	2010-2017 Trend
Area 1: Diagnosis and care planning								
1.1 Individual care plan (H)	49	76.3	Private	5 (10%)	5,321 (45%)	11,667 (99%)	11,786	
1.2 Individual care plan signed by consumer (H)	39	73.1		13 (33%)	2,557 (33%)	6,011 (77%)	7,811	
1.3 Individual care plan signed by carer (H)	17	47.2	NSW	6 (35%)	1,032 (22%)	2,974 (63%)	4,729	
Area 2: Physical examination of patients								
2.1 Physical examination documented within 24 hours of admission (H)	49	78.8	NSW	11 (22%)	2,469 (37%)	6,036 (91%)	6,609	
Area 3: Prescribing patterns								
3.1 Discharged on 2 or more psychotropic medications from 1 sub-group category (excluding antipsychotics) (L)	30	32.0	NSW	7 (23%)	1,121 (25%)	2,764 (61%)	4,522	
3.2 Percentage* of patients who receive written and verbal information on regular psychotropic medicines initiated during their admission (including antipsychotics) (H)	5	87.7		1 (20%)	74 (56%)	123 (93%)	132	
3.3 Discharged on 2 or more antipsychotic medications (L)	21	27.9		6 (29%)	342 (20%)	845 (49%)	1,709	
3.4 Metabolic side effects for consumers commencing antipsychotic medications (H)	4	84.2		2 (50%)	36 (40%)	84 (94%)	89	
3.5 Metabolic side effects for consumers taking regular antipsychotic medications (H)	4	86.6		2 (50%)	43 (44%)	84 (86%)	98	

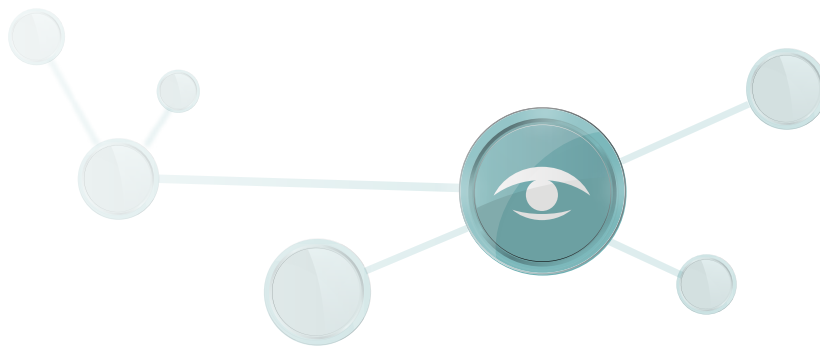| Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
				2017				2010-2017
Area 4: Electroconvulsive therapy								
4.1 Mean number of ECT treatments (L)	36	7.2	n/a	n/a	n/a	n/a	n/a	
Area 5: Use of seclusion and restraint								
5.1 Rate of seclusion (Seclusion episodes per 1,000 bed days) (L)	23	5.26		4 (17%)	344 (25%)	792 (58%)	1,365	
5.2 Average duration of seclusion episodes (Hours per episode) (L)	19	24.0	n/a	n/a	n/a	n/a	n/a	
5.3 Percent of persons secluded (L)	25	4.08		8 (32%)	195 (32%)	346 (56%)	619	
5.4 Seclusion more than 4 hours in 1 episode (L)	22	0.259		4 (18%)	96 (28%)	194 (58%)	337	↓✅
5.5 Physical restraint - 1 or more episodes (L)	23	5.30		6 (26%)	248 (31%)	592 (73%)	813	↑❌
5.6 Mechanical restraint - 1 or more episodes (L)	20	0.24		3 (15%)	15 (52%)	26 (90%)	29	
Area 6: Major critical incidents								
6.1 Suicide (L)	77	0.021				2 (14%)	14	
6.2 Consumers who assault (L)	58	0.68	Private	14 (24%)	259 (68%)	363 (96%)	380	
6.3 Consumers assaulted (L)	48	0.57	Private	9 (19%)	156 (64%)	233 (95%)	245	
6.4 Sexual assault (L)	21	2.27	Private	3 (14%)	6 (50%)	7 (58%)	12	
6.5 Significant self-mutilation (L)	78	0.27		5 (6%)	49 (27%)	123 (67%)	184	
Area 7: Length of stay								
7.1 Acute unit - length of stay more than 28 days (L)	52	16.3		18 (35%)	1,046 (18%)	2,538 (43%)	5,882	

MENTAL HEALTH

Indicator		2017						2010-2017
	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
Area 8: Mental Health Act status								
8.1 Involuntary admission status (N)	12	17.9						
8.2 Change to less restrictive admission status (H)	4	45.0		1 (25%)	9 (3%)	99 (35%)	279	
Area 9: Continuity of care								
9.1 Discharge summary / letter provided to consumer or nominated carer (H)	40	78.2		10 (25%)	2,770 (44%	5,476 (87%)	6,326	
9.2 Discharge summary / letter provided to service providing ongoing care (H)	36	75.0		12 (33%)	2,174 (36%)	5,164 (85%)	6,072	
9.3 Three-monthly multidisciplinary review (H)	8	56.3				62 (78%)	80	↓ ⊗
Area 10: Community care								
10.1 Consumers contacted by community service (N)	10	97.6						
10.2 Consumers seen face-to-face by community service (N)	14	86.2						↓

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

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Outlier gain: When an HCO has an undesirable rate that is more than three standard errors from the overall rate than that HCO is referred to as having a statistically significantly high (or low) rate. The outlier gains measure the benefits of improving the rate of each of the outlier HCOs to equal the value of the overall rate.

GENERAL COMMENTS

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

Cataract surgery is one of the safest and most effective surgeries in all of medicine. The Clinical Indicators (CIs) demonstrate the trend that cataract surgery is becoming safer every year in Australia in terms of rate of unplanned re-admissions, unplanned overnight admissions and anterior vitrectomy rates, where anterior vitrectomy is a surrogate for the operative complication of posterior capsular rupture.

It is interesting that the funnel plots demonstrate the highest outlier gains in CIs of unplanned readmission and of anterior vitrectomy after cataract surgery. It is likely that this may relate to case-mix, training level of surgeons, and, in the case of readmissions, of patients' social supports. It may be valuable for Healthcare Organisations (HCOs) with significant excess rates to examine their processes.

The rate of unplanned readmissions after glaucoma surgery is pleasingly low. There are apparent differences in rates between HCOs, and the particular case mix of these HCOs must be considered in interpreting these results.

There appear to be disparities between HCOs in use of micro-invasive glaucoma surgery. These differences may be associated with the clinical details of the patients being treated, familiarity of surgeons with these techniques and funding mechanisms at play in different HCOs. It is likely that the disparities will reduce with time as the ophthalmic community gains more familiarity with the micro-invasive devices, and develops a greater consensus regarding their role.

The rates of post-operative endophthalmitis, readmission and reoperation after retinal detachment surgery are pleasingly low. In particular, the rates of reoperation are lower than would be expected from published studies.[1,2]

FEATURE CLINICAL INDICATOR

CI 1.2: Cataract surgery - treatment within 28 days due to endophthalmitis (L)

CI 1.5: Cataract surgery - antibiotic prophylaxis (H)

Post-operative endophthalmitis is one of the most severe complications of cataract surgery, therefore, it should be tracked. The rate of readmissions due to post-operative endophthalmitis in 2017 was pleasingly low.

Use of antibiotic prophylaxis in cataract surgery has been found in a single major study to reduce the rate of post-operative endophthalmitis.[3] Although there is some controversy around the generalisability of this result, there is a movement towards intracameral antibiotics becoming a standard of care. There were several HCOs that demonstrated significant excess of patients who were not treated with antibiotic prophylaxis, possibly placing patients at risk. It is important that the CI1.5 is tracked, and if possible, correlated with the HCO's endophthalmitis rate.

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SUMMARY DATA

In 2017, there were 612 data submissions from 55 HCOs for 17 CIs. 7 were analysed for trend, 3 of which showed improvement, 1 deteriorated and the remainder showed no evidence of a trend. In 2017, statistically significant stratum variation was observed in 3 CIs. The rates of the 3 out of 4 indicators whose desirable level is defined as High, reported aggregated rates in excess of 90%. All remaining 13 indicators have desirable level defined as Low, 10 of which reported aggregate rates of 0.5% or less. 9 CIs showed systematic variation, with centile gains > 50%. Outlier gains of > 25% were observed in 6 CIs.

Summary of Indicator Results

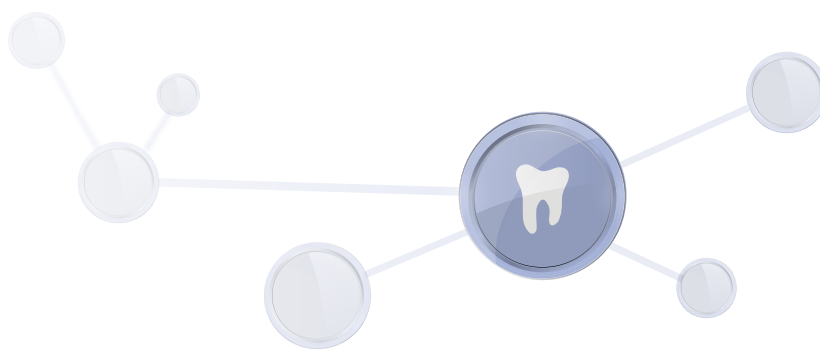| Indicator | 2017 | | | | | | | 2010-2017 |
	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
Area 1: Cataract surgery								
1.1 Cataract surgery - unplanned readmissions within 28 days (L)	49	0.203		1 (2%)	51 (44%)	100 (85%)	117	↓✅
1.2 Cataract surgery - treatment within 28 days due to endophthalmitis (L)	42	0.013				3 (43%)	7	
1.3 Cataract surgery - unplanned overnight admission (L)	40	0.194	NSW	4 (10%)	30 (33%)	81 (90%)	90	↓✅
1.4 Cataract surgery - anterior vitrectomy (L)	44	0.501	Private	4 (9%)	55 (20%)	150 (55%)	272	↓✅
1.5 Cataract surgery - antibiotic prophylaxis (H)	15	90.4		2 (13%)	1,234 (62%)	1,993 (100%)	1,994	
1.6 Cataract surgery - toxic anterior segment syndrome (TASS) (L)	15	0					0	
1.7 Cataract surgery - planned second eye cataract surgery (L)	5	0					0	
Area 2: Intraocular glaucoma surgery								
2.1 Intraocular glaucoma surgery - unplanned readmissions within 28 days (L)	17	3.05	Private	1 (6%)	16 (35%)	41 (89%)	46	
2.2 Intraocular glaucoma surgery - micro-invasive glaucoma surgery (MIGS) (H)	13	62.7		3 (23%)	71 (24%)	167 (58%)	289	
2.3 Intraocular glaucoma surgery - treatment within 28 days due to endophthalmitis (L)	17	0					0	
2.4 Intraocular glaucoma surgery - more than one overnight stay (L)	10	1.67		1 (10%)	9 (90%)	10 (100%)	10	

Indicator	2017							2010-2017
	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
Area 3: Retinal detachment surgery								
3.1 Retinal detachment surgery - readmissions within 28 days (L)	13	2.14				35 (38%)	91	
3.2 Retinal detachment surgery - treatment within 28 days due to endophthalmitis (L)	15	0.093				1 (20%)	5	
3.3 Retinal detachment surgery - more than one overnight stay (L)	9	0.53				3 (75%)	4	
3.4 Retinal detachment surgery - unplanned reoperation within 28 days (L)	15	1.59		2 (13%)	9 (13%)	23 (34%)	68	
Area 4: Toric intraocular lens implantation								
4.1 Intraocular lens implantation with planning record present at time of surgery (H)	17	100.0					2	
4.2 Toric intraocular lens implantation with planning record present at time of surgery (H)	16	91.4		3 (19%)	593 (82%)	719 (100%)	720	↓ ⊗

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

Centile gain: The centile gains are a measure of the potential gains that would be made if the overall rate were moved to the desirable rate (20th or 80th centile rate).
Outlier gain: When an HCO has an undesirable rate that is more than three standard errors from the overall rate than that HCO is referred to as having a statistically significantly high (or low) rate. The outlier gains measure the benefits of improving the rate of each of the outlier HCOs to equal the value of the overall rate.

GENERAL COMMENTS

Dr Hugo Sachs
President
Australian Dental Association
Chair, ACHS Oral Health Working Party

The version 4 of the Oral Health Clinical Indicators (CI) was reviewed in 2016, led by the Australian Dental Association (ADA). The data collection using the updated CIs has commenced from January 2017. This is the first time the reporting captured data using this revised set of CIs.

Two new CIs are introduced in Area 1 – Unplanned returns to the dental centre. CI1.1: Demonstrated that the trend of the unplanned returns for restorative care for permanent teeth has been deteriorating from 2012 to 2017. The analysis does not allow or access causal factors, which would include the type of restorative material used, the type of dental healthcare provider providing the service, and the experience of the dental healthcare provider providing the service. CI1.4 captures denture remade within 12 months. The analysis groups both complete and partial dentures together. Potentially more valuable information could be gleaned by separating the two classes of denture. In regard to partial dentures, delineation between all plastic and chrome metal base dentures would also be helpful. A delineation between immediate tooth replacement dentures would also assist in the analysis of potential causes of denture remakes. CI1.2 and CI1.3 are new CIs on complications following routine or surgical exodontia. Both rates are low, and significant statistical difference between metropolitan and non-metropolitan areas has been observed for both CIs.

Area 2 – Endodontic treatment is a new area. The vast majority of endodontic treatment should be easily completed within six months as results would normally be achieved in less than two months from the commencement of treatment. The reported completion rate in CI2.1 was 68.7%. A third of endodontic treatment not completed within six months indicates a poor result, and possible poor patient outcomes.

All three CIs in Area 3 – Children's dental care have been used for data collection for years. There is a significant increase in the number of restorative services delivered from 2014 to 2017 in CI3.1. This might correlate to the introduction of the Medicare Child Dental Benefit Schedule (CDBS). Failure rates have remained relatively favourable, and the result of the 80th centile is also pleasing. However, what the statistics do reveal is that the caries surgical treatment rates are not falling. CI3.2 showed that the pulpotomy rate has increased numerically since 2014; this would also seem to correlate to the introduction of the CBDS. Failure rates are relatively unchanged and the 80th centile rate has improved and steadied, which is a pleasing result. CI3.3 suggested an increase of fissure sealant services with the introduction of the CBDS and an increased usage rate. The rate of replacement remains relatively unchanged over the last eight years of reporting. The higher failure/re-treatment rates in non-metropolitan areas need to be further explored.

The paucity of Healthcare Organisations (HCOs) reporting to CI4.1 on bite-wing radiographs made this CI a futile exercise. Problems related to standardising the analysis of the radiographs could be one reason for poor reporting.

FEATURE CLINICAL INDICATOR

CI 3.1 Restorative treatment (children) – teeth retreated within 6 months (L)

From 2012 to 2017, the 80th centile rate has decreased significantly, which is an excellent result. The indicator reflects conventional surgical intervention of dental caries. The use of concentrated remineralisation or cariostatic agents (sometimes referred to as "minimal intervention dentistry") is a useful and cost-effective means of treating carious lesions in both children and adults, particularly in deciduous teeth and early caries in permanent teeth where aesthetics is not a consideration.[1-3] In permanent teeth, the early lesions and caries progression can be successfully slowed or halted using concentrated remineralisation or cariostatic agents to the point where a traditional restorative process is not required or can be delayed for significant time spans. This type of treatment should be considered as the initial treatment of choice.[1-3]

The ADA Schedule Item number for concentrated remineralisation and/or cariostatic agents, application – single tooth is 123. It would be interesting to run a comparative study between the two treatment options – the use of concentrated remineralisation or cariostatic agents, or the conventional surgical intervention, including adverse outcomes and cost efficiency.

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ORAL HEALTH

SUMMARY DATA

In 2017, there were 1,040 data submissions from 86 HCOs for 9 CIs. 4 were analysed for trend, 1 of which showed improvement, 2 deteriorated and the remainder showed no evidence of a trend. In 2017, statistically significant stratum variation was observed in 2 CIs. All indicators in this set are outcome indicators. The rates of the 8 indicators whose desirable level is defined as Low, ranged between 1.55% and 6.85%. 1 CI showed systematic variation, with centile gains > 50%. Outlier gains of > 25% were not observed in any of the CIs.

Summary of Indicator Results

Indicator	2017							2010-2017
	HCOs	Aggregate rate %*	Best Stratum	Outlier HCOS (%)	Outlier Gains (%)	Centile Gains (%)	Events	Trend
Area 1: Unplanned returns to the dental centre								
1.1 Restorative treatment - teeth retreated within 6 months (L)	68	6.85		11 (16%)	1,251 (6%)	6,523 (30%)	21,547	↑ ⊗
1.2 Routine extraction - complications within 7 days (L)	66	1.55	Metropolitan	6 (9%)	164 (10%)	593 (35%)	1,685	
1.3 Surgical extraction - complications within 7 days (L)	42	2.82		3 (7%)	14 (5%)	056 (19%)	294	
1.4 Denture remade within 12 months (L)	40	2.50		5 (13%)	171 (20%)	586 (68%)	856	↑ ⊗
Area 2: Endodontic treatment								
2.1 Endodontic treatment - same tooth within 6 months of initial treatment (H)	60	68.7	QLD	2 (3%)	208 (11%)	508 (26%)	1,964	
2.2 Endodontic treatment - teeth extracted within 12 months (L)	62	3.14				3 (1%)	207	
Area 3: Children's dental care								
3.1 Restorative treatment (children) - teeth retreated within 6 months (L)	73	2.49		6 (8%)	333 (6%)	1,100 (19%)	5,875	↓ ✓
3.2 Pulpotomy (children) - deciduous teeth extracted within 6 months (L)	66	3.83		1 (2%)	4 (2%)	65 (30%)	216	
3.3 Fissure sealant treatment (children) - retreatment within 24 months (L)	76	2.51		21 (28%)	1,169 (13%)	1,730 (19%)	8,923	

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

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PAEDIATRICS
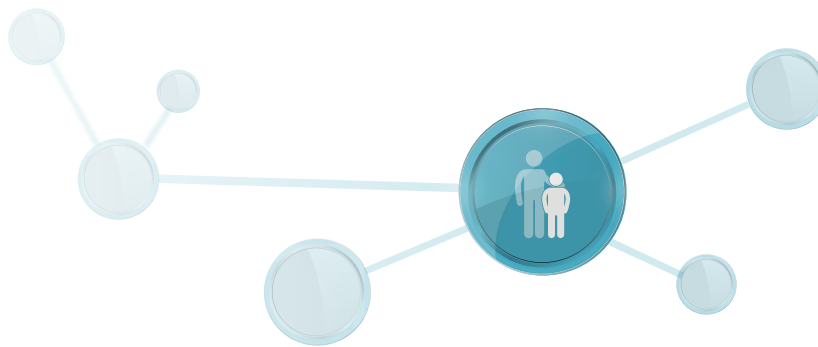
GENERAL COMMENTS

Dr Tara Flemington
Representative
Australian College of Children & Young People's Nurses

In recent times, systematic efforts to improve the quality, safety, and value of health care have grown. Improvement of healthcare provision is now included in the education of healthcare professionals as a standard competency, and the collection and analysis of benchmarking data is crucial to measuring organisational change and the effectiveness of interventions. Recording the incidence and trends of adverse events in the paediatric population is key to ensuring the safety of children in the healthcare system.

Medication errors that are clinically significant are an important cause of patient morbidity and mortality.[1] The ACHS data record the incidence of a selection of paediatric adverse events from 2014 to 2017. There was no clear trend in the incidence of medication error reports over the time-period, ranging from 0.18 to 0.42 per 100 paediatric admissions. A potential explanation for this finding is that medication errors are both under-recognised and under-reported.[2,3] This is likely also the case for paediatric adverse events in general.[4]

Evidence that the ongoing roll-out of electronic medication prescribing in the inpatient setting will improve patient safety is somewhat limited. While computerised support may reduce drug dosing errors, there is inadequate evidence to assess its impact on preventable adverse medication events and harm.[5] Maximising the potential of technology through data mining of electronic clinical information systems will support more accurate medication error detection and the development of effective mitigation techniques.[2]

The ACHS data record a drastic reduction in paediatric adverse events in both paediatric and non-paediatric areas from 2016 to 2017. While the mechanism of this change is unclear, it would be beneficial to explore preceding factors at the reporting healthcare facilities and translate new knowledge across the State. While the data do not describe the mechanism of these adverse events, it is known that a disproportionate number of paediatric adverse events occur in children admitted with a mental health diagnosis, suggesting that ongoing work and resources allocation in this field are crucial.

REFERENCES
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2. Westbrook JI, Li L, Lehnbom EC, et al. What Are Incident Reports Telling Us? A Comparative Study at Two Australian Hospitals of Medication Errors Identified at Audit, Detected by Staff and Reported to an Incident System. International Journal for Quality in Health Care. 2015 Jan 12;27(1):1-9.
3. Rees P, Edwards A, Powell C, et al. Patient Safety Incidents Involving Sick Children in Primary Care in England and Wales: A Mixed Methods Analysis. PLoS medicine. 2017 Jan 17;14(1):e1002217.
4. Chapman SM, Fitzsimons J, Davey N, Lachman P. Prevalence and Severity of Patient Harm in a Sample of UK-Hospitalised Children Detected by the Paediatric Trigger Tool. BMJ open. 2014 Jul 1;4(7):e005066.
5. Roumeliotis N, Sniderman J, Taddio A, Rochon P, Parshuram C. Abstract P-456: Impact of Electronic Strategies on Medication Errors and Harm in Hospitalized Children. Pediatric Critical Care Medicine. 2018 Jun 1;19(6S):188-189.

SUMMARY DATA

In 2017, there were 86 data submissions from 21 HCOs for 14 CIs. 2 were analysed for trend, 1 of which showed improvement and the other showed no evidence of a trend. In 2017, statistically significant stratum variation was not observed in this indicator set. 4 of these 14 indicators had 5 or more HCOs that contributed data in 2017. All 4 of these CIs showed systematic variation, with centile gains > 50% as well as outlier gains of > 25%.

Summary of Indicator Results

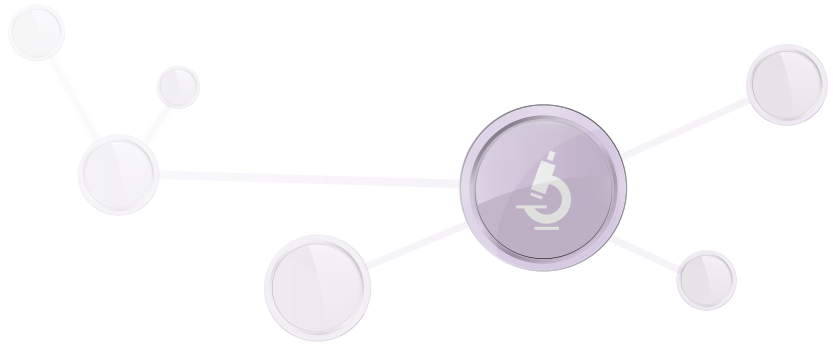| Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
Area 1: Appropriateness								
1.1 Registered nurses with paediatric basic life support qualifications (H)	10	91.7		1 (10%)	15 (47%)	30 (94%)	32	
1.2 Medical practitioners with paediatric basic life support qualifications (H)	1	100					0	
1.3 Paediatric patients admitted to a paediatric ward/area (H)	8	94.6		3 (38%)	532 (44%)	1,209 (100%)	1,210	⬆✅
Area 2: Adverse events								
2.1 Medication errors (L)	9	0.18		1 (11%)	7 (28%)	21 (84%)	25	
2.2 Adverse events when not in a paediatric ward/area (L)	4	0.09					3	
2.3 Adverse events in a paediatric ward/area (L)	5	0.91		1 (20%)	31 (44%)	66 (94%)	70	
Area 3: Documentation								
3.1 Completed asthma action plan - paediatrics (H)	3	93.1		1 (33%)	12 (60%)	19 (95%)	20	
3.2 Paediatric surgery post-procedural report (H)	2	99.5		1 (50%)	18 (86%)	21 (100%)	21	
3.3 Physical assessment completed by medical practitioner and documented (H)	1	100					0	
3.4 Physical assessment completed by registered nurse and documented (H)	1	100					0	
3.5 Medical discharge summary completed - paediatrics (H)	2	89.4		1 (50%)	78 (46%)	168 (100%)	168	

PAEDIATRICS

Indicator		2017						2010-2017
	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
Area 4: Paediatric anaesthesia								
4.1 Paediatric patients who fast 6 hours prior to anaesthesia (H)	3	79.7		1 (33%)	35 (29%)	119 (98%)	121	
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						

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

Centile gain: The centile gains are a measure of the potential gains that would be made if the overall rate were moved to the desirable rate (20th or 80th centile rate).
Outlier gain: When an HCO has an undesirable rate that is more than three standard errors from the overall rate than that HCO is referred to as having a statistically significantly high (or low) rate. The outlier gains measure the benefits of improving the rate of each of the outlier HCOs to equal the value of the overall rate.

GENERAL COMMENTS

A/Prof Peter Stewart
Representative
The Royal College of Pathologists of Australasia
Chair, ACHS Pathology Working Party

A new series of Pathology Clinical Indicators (CI) were implemented in 2016. This series of CIs are notable with the introduction of new indicators in anatomical pathology and measurements of whole of service. In addition, new indicators for blood grouping, HIV screening and troponin testing have been introduced.

As a consequence of the major changes, cumulative data is only available for the years 2016 and 2017. Trends will be of interest with further yearly data submissions. The new CIs are based on clinical expectation and needs, balanced by what would be achievable in the laboratory.

Disappointing features of the data reporting include the low submission rate of the private sector, and non-metropolitan Healthcare Organisations (HCOs). Attempts must be made to remedy this in the future so that a comprehensive picture can be obtained reflecting the overall pathology service in the Australasian context.

FEATURE CLINICAL INDICATOR

CI 1.3: Serum / plasma troponin for ED – in lab to validated < 50 minutes (H)

CI 1.4: Serum / plasma troponin from ED – collected to in lab < 60 minutes (H)

The transportation of specimens is often not in the control of the laboratory. Factors such as off-site collection and transport affect the overall collection and result validation. To monitor both laboratory and non-laboratory factors, CI1.3 and CI1.4 were introduced. There are well established clinical care pathways for myocardial ischaemia in which troponin measurement plays a key role. The troponin indicators are based on the expected in-lab-to-validated turnaround time < 50 minutes, and the aggregate rate of 26 reporting HCOs was 79.4%. Recognising the potential problems with transport, the collected-to-in-lab turnaround time for samples received from Emergency Department (ED) was set at 60 minutes, and the aggregate rate of 29 reporting HCOs was 83.9%. In other words, 1/5 collections were not received in the lab within 60 minutes. This should be regarded as an unsatisfactory result. These two CIs have shown that a collection-to-validation turnaround time of 60 minutes for troponin, as is used in the clinical pathways, is often difficult for the lab to achieve.

CI 3.1: AP Complexity level 4 MBS item – received to validated time < 96 hours (H)

CI 3.2: AP complexity level 6&7 MBS item – received to validated < 7 days (H)

CI 3.3: Structured reporting for anatomical pathology (H)

CI3.1 and CI3.2 have been designed to provide a snapshot of the overall service of an anatomical pathology department. The rate of MBS items of level 4 complexity or level 6&7 complexity within received-to-validated turnaround time was 81.9% and 73.6% respectively in 2017. It was pleasing to see that the structured report (CI3.3) rate in 2017 was 97.5%. These indicators generally meet clinical needs, while suggesting an opportunity for improvement in the turnaround times. Unfortunately, there are only 14 HCOs submitting data, and no data from private laboratories for these indicators. With the low submission rate, the results may not be representative of anatomical pathology services in Australia.

SUMMARY DATA

In 2017, there were 680 data submissions from 38 HCOs for 17 CIs. None were analysed for trend since these indicators dated from 2016. In 2017, statistically significant stratum variation was observed in 4 CIs. All indicators in this set are process indicators. The rates for the 14 indicators whose desirable level is defined as High, ranged between 42.9% and 97.5%.12 CIs showed systematic variation, with centile gains > 50%. Outlier gains of > 25% were observed in 8 CIs.

Summary of Indicator Results

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
Area 1: Chemical pathology								
1.1 Serum / plasma potassium for ED - in lab to validated time less than 40 minutes (H)	33	67.1	NSW	9 (27%)	9,237 (25%)	20,736 (55%)	37,440	
1.2 Serum / plasma potassium from ED - collected to in lab time less than 60 minutes (H)	35	84.7		14 (40%)	8,320 (46%)	16,015 (88%)	18,267	
1.3 Serum / plasma troponin for ED - in lab to validated time less than 50 minutes (H)	26	79.4		12 (46%)	1,532 (24%)	2,828 (44%)	6,491	
1.4 Serum / plasma troponin from ED - collected to in lab time less than 60 minutes (H)	29	83.9		11 (38%)	2,310 (42%)	4,744 (86%)	5,502	
Area 2: Haematology								
2.1 Haemoglobin for ED - in lab to validated time less than 40 minutes (H)	36	92.9		12 (33%)	1,990 (22%)	4,759 (52%)	9,107	
2.2 Haemoglobin from ED - collected to in lab time less than 60 minutes (H)	36	84.9		15 (42%)	9,560 (42%)	20,350 (88%)	23,006	
2.3 Blood group for ED - in lab to validated time less than 60 minutes (H)	20	42.9	VIC	6 (30%)	777 (19%)	1,797 (43%)	4,159	
2.4 Blood group from ED - collected to in lab time less than 60 minutes (H)	24	88.6		6 (25%)	438 (38%)	879 (76%)	1,163	
2.5 Blood group from ED - recollections (L)	21	7.3				220 (42%)	521	

	2017							2010-2017
Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
Area 3: Anatomical pathology								
3.1 AP complexity level 4 MBS item - received to validated time less than 96 hours (H)	14	81.9		5 (36%)	801 (23%)	2,331 (68%)	3,411	
3.2 AP complexity level 6 & 7 MBS item - received to validated time less than 7 days within a calendar month (H)	14	73.6		2 (14%)	32 (9%)	139 (38%)	362	
3.3 Structured reporting for Anatomical Pathology (H)	8	97.5		1 (13%)	5 (38%)	11 (85%)	13	
Area 4: Microbiology								
4.1 Urine microscopy for ED - in lab to validated time less than 4 hours (H)	12	84.7		4 (33%)	880 (51%)	1,634 (95%)	1,711	
4.2 Urine microscopy from ED - collection to in lab time less than 60 minutes (H)	25	66.4		9 (36%)	1,643 (32%)	3,973 (77%)	5,169	
4.3 HIV antigen-antibody screening - in lab to validated time less than 24 hours (H)	15	83.3	VIC	5 (33%)	343 (29%)	867 (72%)	1,203	
Area 5: Whole of service								
5.1 Point of care testing register (N)	10	66.7					n/a	
5.2 Misidentified episodes (L)	29	0.321	NSW	15 (52%)	704 (19%)	1,875 (51%)	3,668	

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

Centile gain: The centile gains are a measure of the potential gains that would be made if the overall rate were moved to the desirable rate (20th or 80th centile rate).
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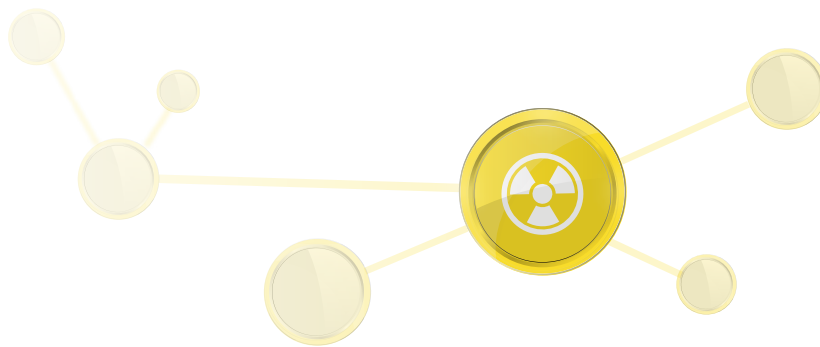
GENERAL COMMENTS

Professor Jeremy Millar
Representative
Faculty of Radiation Oncology, The Royal Australian and New Zealand College of Radiologists
Chair, ACHS Radiation Oncology Working Party

The number of Healthcare Organisations (HCOs) reporting Radiation Oncology Clinical Indicators (CI) varied from three to eight, covering less than 10% of patients treated with radiation therapy in Australia in 2017. The data need to be interpreted with this in mind. The total number of HCOs reporting to CI 1.2: MEBR – prospective clinical trials fell from eight in 2016 to five in 2017, but the total denominator increased from 281 to 1084, while the rate decreased from 26% to 5.6%. This seems likely to be due to the change in HCOs reporting to this CI. The fall in the number of patients who entered into trials is hard to interpret. It could be because HCOs with a high rate of clinical trials stopped data submission in 2017, while HCOs with a low rate of clinical trials joined and reported. The same phenomenon may have affected other CIs.

Most of the CIs have shown positive trends over time. Some are starting to approach an upper or lower boundary, such as the CI1.1: Waiting time, CI2.2: Referral letter, CI3.1: IMRT for nasopharyngeal carcinoma, and CI3.2: EBRT for prostate cancer. The high levels of achievement in these CIs is a credit to the specialty. On the other hand, these CIs have become increasingly redundant because they allow little discrimination between high- and low-performing units.

One CI appears stable over recent time – CI2.1: Staging annotation for the radiotherapy course. This is surprising because accurate determination of treated cancer stage is a foundation of best-practice radiation therapy planning. There was no record of stage in almost 20% of cases reported.

The explanation might be that these represent a mixture of treated lesions including some with no established staging system, or are from palliative treatments of metastatic diseases when the formal record of 'stage' might be a bit redundant to the treating clinician.

In order for CIs to remain relevant, and to keep up with advances in the field, a multidisciplinary working party, composed of radiation oncology providers met in May 2017 to review and revise these indicators. A group consensus developed a new set of nine indicators, version 5, to commence data collection in 2018. These CIs incorporate technological and research advances in radiation therapy, highlight the importance of a multidisciplinary approach and treatment planning in improving health outcomes, and continue to address the delays involved in the management process.

The ACHS encourages the uptake of the revised radiology oncology CIs. These new indicators are more relevant to modern radiation oncology and are not so burdensome to collect; because of this, more Australian radiation oncology units might report, allowing better estimates of Australian practice, and better opportunities for benchmarking.

FEATURE CLINICAL INDICATOR

CI 1.1: Radiotherapy - waiting time within 28 days from the 'ready for care' date (L)

The CI1.1 serves as an example for many aspects of the use of these ACHS indicators, and the nuances of their practical use. There has been a persistent improvement in this CI over time.

A conventional explanation for this is that the expansion and proliferation of radiotherapy centres since the Baume report, perhaps with increasing competition to 'old' public services, has increased the capacity and the eagerness for radiation oncology units to treat new patients.[1] Evidence-based models suggest nearly 50% of all cancer patients should receive radiation treatment at some point in their illness. Australian rates still fall short of this, although the scope and scale of radiation therapy has increased.[2] One reason is the substitution of other treatment modalities for some cancers. The falling waiting time may also be due to the decrease in patient population for whom radiation is indicated, e.g. a rapid fall in the fraction of men with newly diagnosed prostate cancer who need to be treated with radiation.

It is true, in general, that it is a good thing that waiting times have decreased. However, it is not true that the patients treated with radiation therapy are a homogenous group, with a consistent urgency to start treatment. For example, patients with squamous cell carcinoma of the lung, or aggressive brain tumours need to start treatment urgently, while men with intermediate risk prostate cancer on androgen deprivation, or patients with acoustic neuromas, do not have the same urgency. The indicator will vary between units with their patient mix. The revised version 5 CIs have tried to recognise some of this variability.

Another feature of CI1.1 is that while reported by a modest number of HCOs, it does appear to show improvements that might reflect improvements in the systematic access to treatment. It also illustrates the compliance burden, and the problem of quality data not using information that is meaningful to the front-line clinician. The waiting time is defined as time between the 'Ready-for-Care' (RFC) date and the first treatment. This RFC is a date which can be ambiguous in practice, and variable in its use. It can change with circumstance; a clinician and a patient may agree on a RFC date, but circumstances often change and the RFC date might change. Someone has to keep track of this, and update it, and someone has to do the calculation with all patients to report the statistics. In some cases, this is a statistic required to be reported to a number of jurisdictions (State, Federal, and perhaps others), and sometimes at different time periods. The precise RFC date is also in some ways a meaningless date; radiation oncologists just want to get their patients started as soon as practicable, while monitoring and re-documenting new RFC dates does not appear to add more value to patient care. The capture of data not routinely justified by a CI can be fraught because clinicians are not as committed to its timely accurate recording.

Overall, the waiting time CI captures a concept clinically meaningful for patients, and it does show an improving pattern over time. The data collection is not overly time-consuming, and the data can be used to monitor and drive local institutional performance. The revised version 5 allows more granularity in waiting time CIs.

REFERENCES
1. Baume P. A Vision for Radiotherapy: Report of the Radiation Oncology Inquiry.: Department of Health; 2002.
2. Barton MB, Gabriel GS, Delaney GP. Testing Criterion-Based Benchmarking for the Appropriate Use of Radiotherapy. Radiotherapy and Oncology. 2018 Jun 4.

RADIATION ONCOLOGY

SUMMARY DATA

In 2017, there were 58 data submissions from 8 HCOs for 6 clinical indicators CIs. 5 were analysed for trend, 4 of which showed improvement and 1 deteriorated. In 2017, there was no statistically significant stratum variation observed in these 6 CIs. 5 CIs showed systematic variation, with centile gains > 50%. Outlier gains of > 25% were observed in 3 CIs.

Summary of Indicator Results

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
			2017					2010-2017
Area 1: Consultation process								
1.1 Radiotherapy - waiting time within 28 days from the 'ready for care' date (L)	8	5.91		2 (25%)	25 (15%)	89 (54%)	166	↓ ✅
1.2 MEBR - prospective clinical trials (H)	5	5.63		1 (20%)	41 (4%)	694 (68%)	1,022	↑ ✅
Area 2: Treatment process								
2.1 Staging annotation for current radiotherapy course (H)	6	81.8		2 (33%)	616 (62%)	989 (100%)	990	↓ ❌
2.2 Current referral letter on file (H)	5	99.1		1 (20%)	5 (45%)	10 (91%)	11	↑ ✅
Area 3: Outcome process								
3.1 IMRT for nasopharyngeal cancer (H)	3	100					-	
3.2 EBRT for prostate cancer (H)	5	92.2		1 (20%)	8 (53%)	14 (93%)	15	↑ ✅

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

Centile gain: The centile gains are a measure of the potential gains that would be made if the overall rate were moved to the desirable rate (20th or 80th centile rate).
Outlier gain: When an HCO has an undesirable rate that is more than three standard errors from the overall rate than that HCO is referred to as having a statistically significantly high (or low) rate. The outlier gains measure the benefits of improving the rate of each of the outlier HCOs to equal the value of the overall rate.

RADIOLOGY
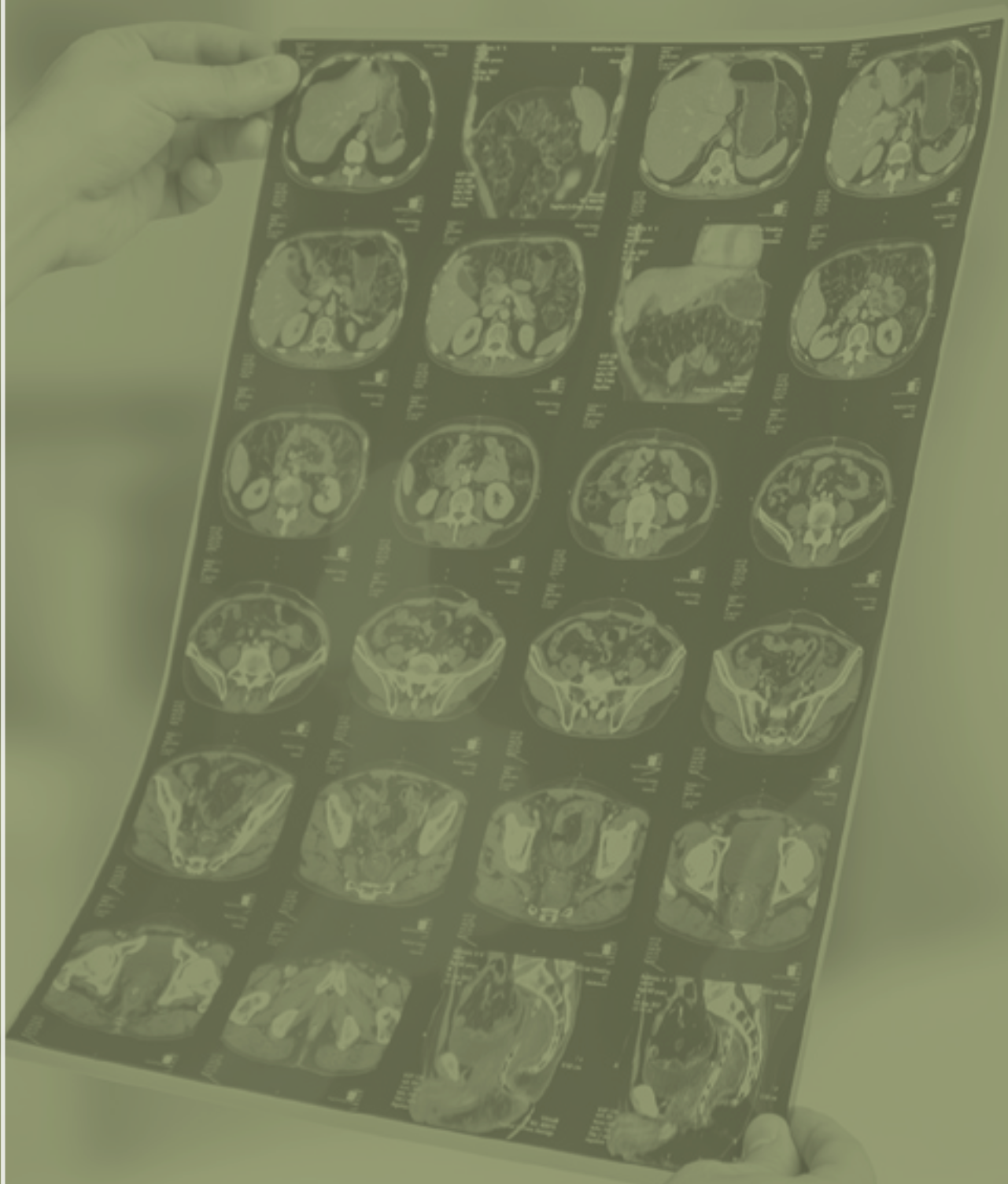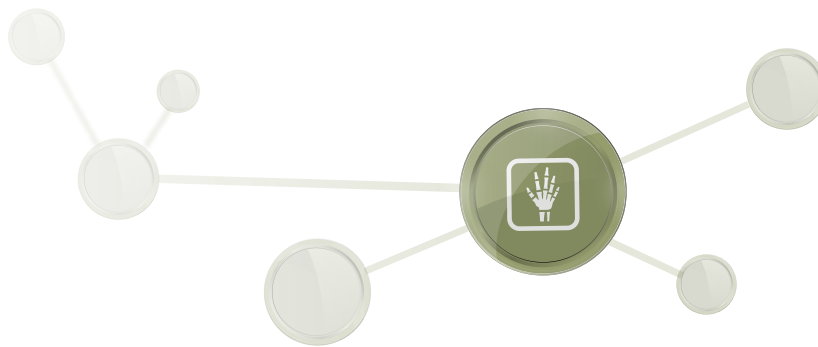
GENERAL COMMENTS

Dr John Richards
Dr Leanne Du
Representatives
The Royal Australian and New Zealand College of Radiologists

The RANZCR is pleased to be able to provide commentary on the *Australasian Clinical Indicator Report 19th Edition 2010 - 2017*. Area 1 – report availability continues to be a Key Performance Indicator (KPI), which addresses the core business of the radiology specialty. Area 2 and Area 3 monitor the rate of clinical adverse events and report addenda.

The slight improvement from 2014 to 2016 in CI1.1: Emergency department / critical care unit plain radiography reports has been marred by a deterioration in the 2017 figures. It would suggest further investigation if this minor deterioration become evident in subsequent years. The CI1.2: Inpatient unit plain radiography reports showed a similar pattern as CI1.1 and deteriorated in 2017. Performance of NSW is superior to other States, providing a performance target for services outside NSW. This difference in performance may be related to levels of investment, health priorities, clinical practices, adopted TAT (Turnaround Time) performance targets and data collection methodologies. CI1.3 and CI1.4 – annual performance for CT has been maintained since 2014, in spite of changes in clinical practices and underlying demands. Within this category, NSW and VIC outperform other States. Minor deterioration has been observed in CI1.5 and CI1.6 on ultrasound performance.

There is a continued slow downward trend in the rate of adverse events (CI2.1), suggesting an ongoing improvement in clinical safety. The use of report addendums has slightly increased since 2014. The possible causes leading to the increasing use of report addendums can be further explored.

The College recommends that the ACHS continues to work towards a uniform data collection methodology and standards in order to improve data integrity. Collection of standardised CIs can provide an impetus for healthcare organisations (HCOs) to benchmark and improve quality of care.

FEATURE CLINICAL INDICATOR

CI 1.2: Inpatient unit plain radiography reports (L)

CI 1.3: Emergency department / critical care unit CT scan reports (L)

NSW has demonstrated better performance in CI 1.2 and CI 1.3 compared with other States in 2017. Further investigation would be helpful to identify contributing factors which may include individual Healthcare Organisation (HCO)'s priorities, levels of investment, clinical practices, variations in setting local TAT targets and data collection methodologies. This data may be useful for improving performance targets for services outside NSW.

CI 3.1 Report addendum (N)

The Australia and New Zealand HCOs reported the use of report addendums at a rate of 0.59%, remaining significantly below the reported rates of 1.7% in literature.[1] The large gap is concerning for either a cultural reluctance and/or suboptimal mechanisms for report review within our HCOs.

This low rate presents difficulty in the interpretation of the significance of any fluctuations. The change in use of report addendums can reflect error detection, as well as other potential variations in our organisational culture or clinical practices.

REFERENCES
1. Hussain S, Hussain JS, Karam A, Vijayaraghavan G. Focused Peer Review: The End Game of Peer Review. Journal of the American College of Radiology. 2012 Jun 1;9(6):430-433.

SUMMARY DATA

In 2017, there were 403 data submissions from 35 HCOs for 8 CIs. 8 indicators were analysed for trend, of those 6 CIs with desirable level defined as Low, 1 showed improvement, 4 deteriorated and the remainder showed no evidence of a trend. The two indicators from Areas 2 and 3 whose desirable level was undefined both showed evidence of a trend. In 2017, statistically significant stratum variation was observed in 1 CI. The rates for the 6 process indicators in Area 1 whose desirable level is defined as Low, ranged between 12.3% and 34.9%. All 6 of these CIs showed systematic variation, with centile gains > 50% as well as outlier gains of > 25%.

Summary of Indicator Results

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
				2017				2010-2017
Area 1: Report availability								
1.1 Emergency department / critical care unit plain radiography reports (L)	31	34.9		12 (39%)	12,874 (34%)	34,101 (90%)	38,050	↑ ⊗
1.2 Inpatient unit plain radiography reports (L)	34	33.4	NSW	10 (29%)	8,650 (39%)	19,169 (86%)	22,348	↑ ⊗
1.3 Emergency department / critical care unit CT scan reports (L)	29	8.50		6 (21%)	1,393 (51%)	2,632 (97%)	2,718	↓ ✓
1.4 Inpatient unit CT scan reports (L)	32	12.3		8 (25%)	995 (33%)	2,758 (92%)	3,012	
1.5 Emergency department / critical care unit ultrasound scan reports (L)	29	12.5		4 (14%)	355 (39%)	699 (76%)	921	↑ ⊗
1.6 Inpatient unit ultrasound scan reports (L)	32	17.0		6 (19%)	897 (34%)	2,242 (86%)	2,604	↑ ⊗
Area 2: Adverse events								
2.1 Adverse events (N)	23	0.030						↓
Area 3: Report addendum								
3.1 Report addendum (N)	19	0.588						↑

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

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REHABILITATION MEDICINE

REHABILITATION MED
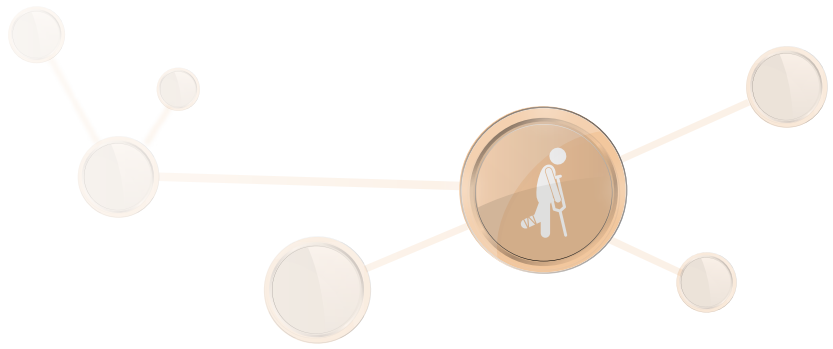
GENERAL COMMENTS

Ms Frances Simmonds
Representative
Australasian Faculty of Rehabilitation Medicine

The Australasian Faculty of Rehabilitation Medicine and the Australasian Rehabilitation Outcomes Centre (AROC) again acknowledge and are proud of the continuing high rate of compliance with the ACHS Rehabilitation Medicine Clinical Indicators (CI). 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. This demonstrates a continuing commitment to provide best-practice evidence based clinical care to our population of individuals living and coping with disability.

Outcome and process measures demonstrated by these CIs show a continued improvement in five out of six CIs, although variation has been observed across reporting Healthcare Organisations (HCOs). This improvement is also reflected in shorter lengths of stay and more functional improvement for similar diagnostic groups, demonstrated by AROC benchmarking data.

FEATURE CLINICAL INDICATOR

CI 4.1: Discharge plan on separation (H)

CI 6.1 Destination after discharge from a rehabilitation program (H)

While the private sector outperformed the public sector in CI4.1 and CI6.1 in 2017, the data should be interpreted very cautiously, because these data are not case-mix adjusted.
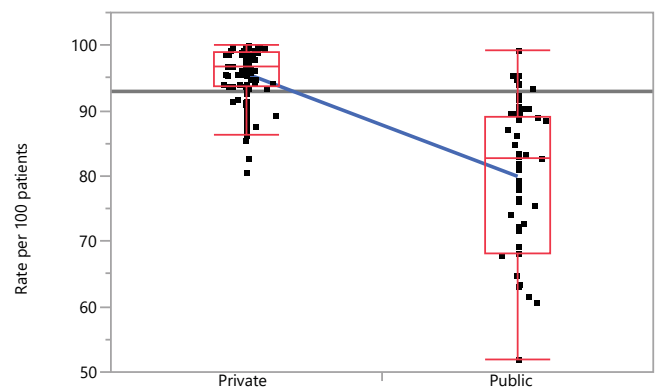
CI 4.1: Discharge plan on separation (H)

Boxplot of Rates by Public / Private
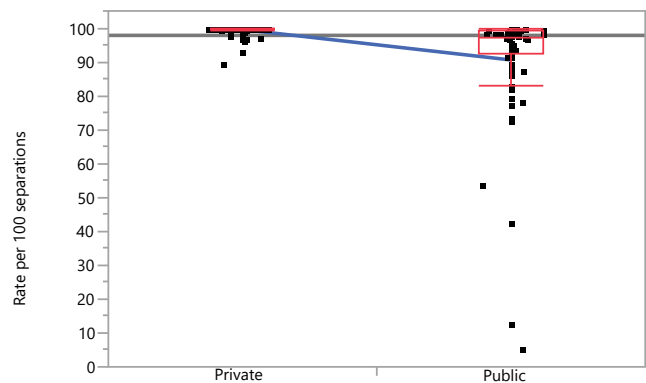
CI 6.1 Destination (accomodation) after discharge from a rehabilitation program (H)

Boxplot of Rates by Public / Private

SUMMARY DATA

In 2017, there were 1,114 data submissions from 120 HCOs for 6 CIs. All 6 were analysed for trend, 5 of which showed improvement, and 1 deteriorated. In 2017, statistically significant stratum variation was observed in 2 CIs. The rates for all 6 indicators whose desirable level is defined as High, ranged between 92.9% and 98.6%. All CIs showed systematic variation, with centile gains > 50% as well as outlier gains of > 25%.

Summary of Indicator Results

Indicator	HCOs	Aggregate rate %	Best Stratum	Outlier HCOS (%*)	Outlier Gains (%+)	Centile Gains (%+)	Events#	Trend
				2017				2010-2017
Area 1: Timely assessment of function on admission								
1.1 Functional assessment within 72 hours of admission (H)	101	98.2		15 (15%)	666 (61%)	1,052 (97%)	1,087	⬆️✅
Area 2: Assessment of function prior to episode end								
2.1 Functional assessment within 72 hours before end of rehabilitation (H)	97	98.6		18 (19%)	419 (55%)	711 (93%)	765	⬆️✅
Area 3: Timely establishment of a multidisciplinary team rehabilitation plan								
3.1 Multidisciplinary team plan within 7 days (H)	101	97.9		13 (13%)	777 (68%)	1,110 (97%)	1,140	⬆️✅
Area 4: Multidisciplinary discharge documentation								
4.1 Discharge plan on separation (H)	97	97.8	Private	18 (19%)	848 (71%)	1,170 (98%)	1,200	⬇️❌
Area 5: Functional gain achieved by rehabilitation program								
5.1 Functional gain following completed rehabilitation program (H)	116	96.4		19 (16%)	834 (38%)	1,741 (79%)	2,217	⬆️✅
Area 6: Discharge destination								
6.1 Destination after discharge from a rehabilitation program (H)	93	92.9	Private	29 (31%)	1,378 (39%)	2,786 (78%)	3,565	⬆️✅

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

Centile gain: The centile gains are a measure of the potential gains that would be made if the overall rate were moved to the desirable rate (20th or 80th centile rate).
Outlier gain: When an HCO has an undesirable rate that is more than three standard errors from the overall rate than that HCO is referred to as having a statistically significantly high (or low) rate. The outlier gains measure the benefits of improving the rate of each of the outlier HCOs to equal the value of the overall rate.

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