

AUSTRALASIAN CLINICAL INDICATOR REPORT

16th Edition 2007–2014



Contents

Acknowledgements	2
Contributors	2
Clinical Indicator Working Parties	2
Foreword	4
Key Results of 2014	5
About the ACHS Clinical Indicator Program	7
About the Australasian Clinical Indicator Report	9
Feature report: Day Patient Clinical Indicators – A good news story and a cautionary tale	10
The ACHS Clinical Indicator Program:	
Key Facts 2014	14
Overview	14
Clinical Indicators and data submissions	14
HCOs reporting	14
Clinical Indicators reported by each HCO	15
Clinical Indicator Trends and Variation	16
Revealing the potential to improve performance	16
Clinical Indicator trends 2007–2014	16
Variation in Clinical Indicator rates	17
Outliers	19
Abbreviations	116

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Copies available from the ACHS Performance and
Outcomes Service

Telephone: + 61 2 9281 9955

Facsimile: + 61 2 9211 9633

E-mail: pos@achs.org.au

Electronic version available at:
<http://www.achs.org.au/publications-resources/australasian-clinical-indicator-report/>

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 endorse the views expressed.

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The Australian Council on Healthcare Standards,
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Scan with a smart phone or device to access 'Retrospective ACIR Data in Full'.

Summary of results for each set of Clinical Indicators **22**

	Anaesthesia and Perioperative Care, version 5.1	23		Medication Safety, version 3	77
	Day Patient, version 5	27		Mental Health Community Based, version 2	80
	Emergency Medicine, version 5.1	32		Mental Health Inpatient, version 6	83
	Gastrointestinal Endoscopy, version 2	40		Ophthalmology, version 5	91
	Gynaecology, version 7	43		Oral Health, version 3	95
	Hospital in the Home, version 4	46		Paediatrics, version 5	98
	Hospital-Wide, version 11.2	49		Pathology, version 3	101
	Infection Control, version 4	55		Radiation Oncology, version 4	105
	Intensive Care, version 4.1	60		Radiology, version 5	107
	Internal Medicine, version 5	67		Rehabilitation Medicine, version 5	111
	Maternity (<i>previously Obstetrics</i>), version 7.2	70		Surgical, version 3	113

Tables

Table 1: Number of CI sets, CIs, HCOs reporting and data submissions in 2007–2014	14
Table 2: Number of HCOs reporting by location and public/private sector in 2014	14
Table 3: HCOs providing data for one or more CIs within each CI set in 2007–2014	15
Table 4: Summary of the trends by CI set: CIs that have statistically significant ($p < 0.05$) trends in the desirable or undesirable direction	17
Table 5: Odds ratios for CIs in each set – a high odds ratio reveals high systematic variation between HCOs	18
Table 6: Number of CIs whose mean rates were statistically significantly different by Australian states and territories/NZ, public/private, metropolitan/non-metropolitan in 2014	19
Table 7: Number of CIs, HCOs reporting and data submissions in 2014	20
Table 8: Number of CIs that had six-monthly data submissions that were outliers in 2014	21
Table 9: Number of HCOs that had CIs that were outliers in 2014	21

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Contributors

ACHS Executive

Dr Christine Dennis, Chief Executive Officer

Dr Lena Low, Executive Director – Corporate and Surveyor Workforce

Ms Linda O'Connor, Executive Director – Customer Services and Development

Dr Desmond Yen, Executive Director – International Business

ACHS Board Editorial Group

Mr Stephen Walker

Professor Geoffrey Dobb

Content and Editing

Mr Thom Bates, Project Officer, Performance and Outcomes Service (Coordinating author)

Ms Linda O'Connor, Executive Director – Customer Services and Development

Mr Myu Nathan, Manager, Performance and Outcomes Service

Ms Laura Hutchinson, Project Officer, Performance and Outcomes Service

Dr Brian Collopy, Clinical Advisor, Performance and Outcomes Service

Mr Ian McManus, Communications Manager

Professor Robert Gibberd, Director, Health Services Research Group, University of Newcastle

Mr Stephen Hancock, Senior Statistician, Health Services Research Group, University of Newcastle

Mr Jesse Snow, Photographer

Data Analysis

Professor Robert Gibberd, Director, Health Services Research Group, University of Newcastle

Mr Stephen Hancock, Senior Statistician, Health Services Research Group, University of Newcastle

Ms Phoebe Zhang, Data Analyst, Performance and Outcomes Service

Clinical Indicator Working Parties

The Australian Council on Healthcare Standards' (ACHS') Clinical Indicators (CIs) are developed by Working Parties comprised of practising clinicians (medical officers, nurses, allied health professionals in the relevant specialty field), representatives of the relevant Australian and New Zealand colleges, associations, 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 and societies prior to implementation within the collection.

CI sets are regularly reviewed to ensure:

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

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 (ADSC)	Australian Day Surgery Council Australian Day Hospital Association Australian Day Surgery Nurses Association
Emergency Medicine	Dr Chris May (ACEM)	Australasian College for Emergency Medicine College of Emergency Nursing Australasia
Gastrointestinal Endoscopy	Dr Mark Stephens (ADSC)	Australian Day Surgery Council Gastroenterological Society of Australia Gastroenterological Nurses College of Australia
Gynaecology	Dr Martin Ritossa (RANZCOG)	The Royal Australian and New Zealand College of Obstetricians and Gynaecologists Australian College of Nursing
Hospital in the Home	Dr Nick Collins (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	Ms Belinda Henderson (ACIPC)	Australasian College for Infection Prevention and Control Healthcare Infection Control Special Interest Group
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 Community Based	A/Prof Victor Storm (RANZCP)	The Royal Australian and New Zealand College of Psychiatrists Australian College of Mental Health Nurses
Mental Health Inpatient	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 Andrew Chartier	The Royal Australasian College of Dental Surgeons Australian Dental Association South Australia Dental Services
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
Pathology	A/Prof Peter Stewart (RCPA)	The Royal College of Pathologists of Australasia Australian College of Nursing
Radiation Oncology	Prof Christopher Hamilton (FACRO, 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 Institute of Radiography Australian Association of Private Radiation Oncology Practices
Radiology	Dr Nick Pang (RANZCR)	The Royal Australian and New Zealand College of Radiologists Medical Imaging Nurses Association Australian Institute of Radiography
Rehabilitation Medicine	Ms Frances Simmonds (AROC, AFRM)	Australasian Rehabilitation Outcomes Centre Australasian Faculty of Rehabilitation Medicine
Surgical	Position Vacant	The Royal Australasian College of Surgeons

Foreword

I would like to present the 16th edition of the *Australasian Clinical Indicator Report*, on behalf of the Australian Council on Healthcare Standards (ACHS). The report endeavours to facilitate the measurement of important aspects of health services for members of the ACHS, in addition to healthcare organisations worldwide. As in previous years, the 16th edition of the *Australasian Clinical Indicator Report* provides key points on significant trends, strata differences and outlier effects between 2007 and 2014 for a broad range of Clinical Indicators. The report continues to remain relevant in this ever-changing healthcare environment by ensuring input and context is provided by professionals within the respective healthcare specialty. 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 through benchmarking against others within the industry.

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 22 Clinical Indicator sets, which now contain 328 individual Clinical Indicators. Data from more than 800 healthcare organisations have been provided, which is then validated by University of Newcastle statisticians.

During 2014, the ACHS has made changes and improvements throughout the Clinical Indicator Program. Working Parties were held through the year to support the continuous development of Clinical Indicator sets to ensure they remain current and valid. Clinical Indicator sets that were reviewed in 2014 include Anaesthesia and Perioperative Care, Hospital-Wide, Internal Medicine, Medication Safety, Mental Health and Pathology.

Each year, the *Australasian Clinical Indicator Report* presents a feature report. In this year's feature report authored by Dr Brian Collopy, he presents the ACHS' experience in the use of Clinical Indicators in Day Procedure Centres over a 15 year period. Australia was the first country to develop and introduce Day Procedure Clinical Indicators, which the ACHS did with the cooperation of the Australian Day Surgery Council. A high standard of care is evident in both the free-standing and integrated Day Procedure Centres, although there are differences in the rates reported for some of the Clinical Indicators, according to the type of facility. The report indicates the increasing complexity of procedures performed in the ambulatory setting, but adds a cautionary note regarding an extension of such complexity into the "office-based" environment.

The ACHS provides this report to key health industry bodies, Federal and State Governments, our members and surveyors, and other interested parties. The report is available to download from our website at: www.achs.org.au/publications-resources/australasian-clinical-indicator-report/.

A full retrospective report is also available on the website, providing detailed results for each Clinical Indicator set.

To conclude, I have confidence that the *Australasian Clinical Indicator Report 2007–2014* 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 continued support of the Clinical Indicator Program allows us to continue our efforts to improve healthcare standards in Australia and internationally.



Adjunct Associate Professor Karen J Linegar FACN JP
President

October 2015

Key Results of 2014

This 16th edition of the *Australasian Clinical Indicator Report 2007–2014* 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, specialist societies and other clinical organisations. Their expertise provides context for the trends or variations observed in the data.

Improvements

In 2014, there were 102 CIs which showed statistically significant trends in the desirable direction. Of these, 72 CIs remained significant after allowing for changes in the number of healthcare organisations (HCOs) contributing over the period. There were four CI sets that had an improvement in at least two-thirds of all trended CIs. They were Day Patient, Emergency Medicine, Gynaecology and Mental Health Inpatient.

There were noteworthy improvements in the following sets:

Emergency Medicine

The Australasian Triage Scale (ATS) categories 2 to 5 continue to improve as noted in previous years, however there remain relatively large potential gains in ATS categories 2 to 4 (CIs 1.2–1.4). The rate for ATS category 1 patients seen immediately (CI 1.1) remains close to 100%. The rate for admitted critical care patients having total ED time exceeding four hours (CI 3.2) also improved.

Gynaecology

The rate of unplanned intraoperative or postoperative blood transfusion during gynaecological surgery for benign and malignant disease (CIs 1.1 and 1.2) has decreased by approximately half over the last eight years.

Hospital-Wide

There were improvements in the rates of undesirable events among CIs relating to inpatient falls and blood transfusion (CIs 4.2 and 6.1) and a desirable increase in the rate of same day admission in elective surgery (CI 7.1).

Infection Control

The rate of haemodialysis bloodstream infection of AV-fistula access and non-cuffed line access (CIs 3.1 and 3.3) decreased significantly to less than 0.1 per 100 patient-months.

Intensive Care

The three CIs relating to access block (CIs 1.1–1.3) improved significantly, however rapid response calls to adult ICU patients within 72 hours of ICU discharge (CI 2.1) has almost doubled over the last four years. An adult ICU-associated bloodstream infection in centrally inserted central lines (CI 4.1) has decreased to a low rate of approximately 0.5 per 1,000 line days.

Mental Health Inpatient

Notable improvements (rates decreased by at least 50%) occurred in the number of patients discharged on psychotropic medication (CI 3.1) and in attempted or actual suicide, assault by inpatients, injury to inpatients and inpatients assaulted (CIs 6.1, 6.2, 6.5 and 6.6).

Maternity

The rate of appropriate antibiotic prophylaxis administered at the time of caesarean section (CI 5.1) has increased markedly to more than 90%. In 2014, 100% of serious adverse events (CI 11.1) were addressed within the peer review process, an improvement from 80% in 2008.

Surgical

The death rate of the coronary artery graft surgery (CI 5.1) decreased as did the rate of death in elective abdominal aortic aneurysm (CI 8.1). In 2015, these CIs will be captured in the Hospital-Wide set (CIs 5.4 and 5.7).

Key Results of 2014 (continued)

Deteriorations

In 2014, there were 46 CIs which showed statistically significant trends in the undesirable direction. Of these, 25 remained significant after allowing for changes in the number of HCOs contributing over the period.

There were noteworthy deteriorations in the following sets:

Hospital in the Home

The rate of unplanned return to hospital but not returning to the hospital in the home (HITH) program (CI 2.1) deteriorated from 2.2 to 3.1, a change of 0.90 per 100 patients.

Internal Medicine

The rate of documentation of swallowing screen prior to food/fluid intake (CI 3.1) deteriorated from 85.4 to 58.1, a change of 27.3 per 100 inpatients.

Maternity

The rate of induction of labour of selected primipara (CI 1.2) increased by approximately one-fifth, from 27.4% to 33.1%.

Mental Health Inpatient

The rate of seclusion for greater than four hours (CI 5.1) deteriorated from 41.1 to 55.1, a change of 14.0 per 100 inpatients.

Ophthalmology

The readmission rate following retinal detachment surgery (CI 3.1) deteriorated from 2.1 to 4.2, a change of 2.1 per 100 patients.

Surgical

The rate of children having a pre-operative diagnosis of acute appendicitis who undergo appendectomy with normal histology (CI 1.3) deteriorated by almost 2%. In 2015, this CI will be captured in the Hospital-Wide set (CI 9.1).

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 specialty areas. It includes CIs that are relevant to inpatient, outpatient, and community health facilities, which were developed by specialist clinicians. With more than 800 participating healthcare organisations (HCOs), it is a highly valued resource developed by Australian and New Zealand clinicians.

History

The ACHS CIP was established in 1989 through the initiative and perseverance of Dr Brian Collopy¹, a surgeon and then Chairman of the ACHS Board, who still remains involved in the CIP today. The first set of CIs, the Hospital-Wide Medical CIs, was introduced into the accreditation program in 1993.

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 a HCO when delivering clinical care.

From its inception more than two decades ago, the CIP has expanded by working in collaboration with specialist colleges, societies and associations, to include a wide range of specialty areas¹, now totalling 22 CI sets.

**"If you can't measure it,
you can't manage it"**

Clinical Indicators and Healthcare Organisations

CIs do not provide definitive answers for HCOs. They are designed to indicate potential problems that may need addressing. This is achieved by identifying variations within 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

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

Supporting Clinical Indicator Program Customers

The Performance and Outcomes Service (POS) at ACHS provides email, telephone 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
- Selection of CIs is determined by HCOs
- Endorsed by 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 validation of data by University of Newcastle statisticians
- ICD coding provided (where applicable) to aid data collection
- Current literature review conducted on all new specialty areas available, providing background to the rationale for inclusion
- Developed by clinicians for clinicians to ensure relevancy and currency.

Developed by Clinicians for Clinicians

Decisions are made on each CI set by a Working Party selected to provide broad representation. The ACHS Performance and Outcomes Service facilitate the process by providing secretariat support. When developing CIs, ACHS relies on practising clinicians from specialist areas in public and private HCOs. Members of CI Working Parties encompass relevant professions, and include personnel from non-metropolitan centres and from a number of different states and territories. The Working Party Chair is selected by the lead college, society or association, which will also oversee and endorse the User Manual.²

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. Professor Robert Gibberd, who has consulted on the ACHS CIP for 16 years, is supported by Mr Stephen Hancock, a senior statistician with a nursing background, and a team that has made healthcare data its focus.

“Without data, it is just an opinion”

Comparisons of Performance

All participating HCOs receive 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. Private HCOs may nominate to compare only to a private subgroup. Reports are prepared every six months following data submission. In addition, trend reports are developed 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. This positioning does not necessarily reflect a poor performance level, as individual CIs may be associated with strong outcomes in a majority of reporting organisations. However, being in the poorer performing centile may indicate a greater opportunity for improvement.

As participation in the ACHS CIP 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 CIP's statisticians believe that, in most specialties, 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.

The focus when collecting CI data should always be to identify opportunities for improvement.

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.³

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. Considered analysis of potential reasons for trends over time and/or variation between HCOs can then be used to highlight quality issues or monitor progress of quality improvement initiatives.

“Developed by clinicians, for clinicians”

References

1. Banks G. ACHS 30 years. Sydney NSW; Australian Council on Healthcare Standards; 2004.
2. Australian Council on Healthcare Standards. ACHS 2015 Clinical Indicator Program Information Sydney NSW; ACHS; 2015.
3. Berwick DM, James B and Coye MJ. Connections between quality measurement and improvement. *Med Care* 2003; 41(1 Suppl): I30-8.

About the Australasian Clinical Indicator Report

A Printed Report

This report summarises the Clinical Indicator (CI) data collected during 2014 by the ACHS Clinical Indicator Program (CIP), and for the years since 2007 for each individual CI that was available for collection.

The report uses tables to summarise the program, its membership and any significant trends or variation in the data over time. Reviewing trends and variation can suggest areas where there is scope to improve practice.

The summary of the results section, page 22, describes observations drawn from the data across groups of CIs with a common theme (known as 'areas'). CIs within a single area are designated the same whole number (e.g. 1), with individual CIs identified after the decimal point (i.e. 1.1, 1.2, etc.).

To capture the context and circumstances that influence the data, ACHS relies on 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 follow the summaries of the data and share subheadings with the Summary of Results and 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.

Retrospective Data in Full Report

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



In the Retrospective Data in Full Report, each CI collected in 2014 has a table that describes the CI, its intent, and the significance of the numerator and denominator. Tables summarise the data submitted in every year since 2007 that the CI has been available for reporting.

For CIs of particular interest, readers should access the online data to obtain a detailed report on each CI, either by visiting the ACHS website or scanning the QR code found within the contents page of this edition of the ACIR with a smart phone or device.

Trends in the rates over time are reported with statistical significance, and the data are displayed using a graph if four or more years of data are available for 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 2014, 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 an agreed minimum number of contributors to enable comparison were 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 www.achs.org.au/publications-resources/australasian-clinical-indicator-report/, along with a description of how to read, understand and use the retrospective data.

Clinical Indicator User Manuals

CIP members can learn more details about the individual CIs in the ACHS CI User Manuals. Copies of the User Manual for each set of CIs can be accessed by CIP members 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
- uses of CI data as evidence for accreditation
- definition of terms
- numerator and denominator details.

Also included in the User Manuals are blank templates to assist HCOs to collect their data and retain details of their collection.

Feature Report: Day Patient Clinical Indicators – A good news story with a cautionary tale

Dr B. T. Collopy FRACS, FRACMA

Introduction

Australia has led the world in the introduction of Day Procedure Clinical Indicators (CIs) and this is acknowledged by the International Association for Ambulatory Surgery and the European Society of Anaesthesiology.^{1,2} They were developed by a joint Working Party of the Australian Council on Healthcare Standards (ACHS) and the Australian Day Surgery Council (ADSC), with funding assistance from the Federal Department of Health. The Working Party established a set of five CIs and the set was introduced into the ACHS accreditation program in 1997. For that year, 240 Day Procedure Centres (DPCs) addressed the CIs, reflecting the management of more than 380,000 patients. A summary of the CIs and the rates obtained for the five CIs is shown in Table A.

Some early observations were that the rates for all of the CIs were low, and that the rates for cancellation of the procedure after arrival, unplanned admission to an overnight facility and unplanned delayed discharge were significantly lower in stand-alone DPCs than integrated units. In the absence of qualitative data on specific cases, the overall low rates suggested a high standard of safety and quality in Australian DPCs. Much of the credit for these low rates can be attributed to the high standards set by the ADSC and its first surgical leader, Dr Lindsay Roberts, and to the careful planning in the development of the early stand-alone DPCs themselves. This was evident when the first of such facilities, the Dandenong Surgicentre in Victoria, under the direction of the anaesthetist, Dr George Tippett, was surveyed and accredited.

In the early years, following the introduction of Day Procedure CIs, information was sought from the DPCs about any actions, which might have followed a review of the CI data. Numerous responses were received³ and some examples of these actions were:

- Patient education e.g. advice regarding fasting and omission of certain drugs; information leaflets regarding procedures, and recovery expectations
- Alteration to surgical techniques
- Review of the type of procedures suitable for day surgery
- Revision of the list order to ensure slow recovery procedures were performed earlier
- Various other policy changes, and also drug trials.

Program maintenance

Since 1997, a regular revision of the CI set has been performed. By 2012, there were 370 DPCs reporting data on seven CIs in Version 4 of the Day Surgery CI set. This reflects the care given to more than one million patients in a calendar year. Over that time, improvement occurred with the rates for the CIs addressing failure to arrive, cancellation after arrival due to a pre-existing condition, and unplanned transfer to an overnight facility. The rates for cancellation of a procedure due to an administrative issue and delayed discharge were higher in public than in private DPCs. The overall trend for this latter CI was heading in an undesirable direction, possibly reflecting an increase in the complexity of procedures being performed in a day procedure setting.

Current version

Day Patient Version 5 was introduced for data collection in 2013. It contained 14 CIs and data were received from 337 DPCs. This represented a 20% reduction in the number reporting since 2007. The new CIs addressed the following:

- Patient assessment before admission
- Adverse events during care delivery
- The separation of unplanned transfer or overnight admission according to whether it was or was not related to the procedure
- The separation of delayed discharge according to whether it was or was not related to a clinical reason
- Departure without an escort and
- Post-discharge phone call follow-up.

The number of DPCs reporting data for 2013 on the new CIs was lower than for the longer standing CIs and ranged from 42–102 facilities, so the rates obtained for those new CIs may not truly reflect current practice across the country. For 2014, the total number of DPCs reporting was 319, i.e. a further 5% reduction. However there was some improvement with the lowest number of DPCs reporting, being 64 and 75 for the follow-up CIs (**CI 9.1** and **CI 9.2**) and 74 for the pre-admission preparation (**CI 1.1**).

The aggregate rates for the longer standing CIs remained low for both 2013 and 2014, all being less than 1%. The rates for 2014 are shown in Table B. The rate for unplanned return to the operating room has been no higher than 0.05% for well over a decade. Consideration could be given to making this CI a “critical/sentinel” event rather than being rate-based; the implication being that each event is the subject of a clinical review or root cause analysis (RCA).

There is little comparative data in the literature on Day Procedure CIs. The data, which are reported to the ACHS, compare favourably with much of what is available. For example, Lacqua and Evans reported⁴ a “cancelled elective outpatient surgery” rate, at a New York medical centre of 10%, and Osborne and Rudkin reported an unplanned overnight admission rate of 1.34% at the Royal Adelaide Hospital.⁵ However Ahmad *et al.* in a recent paper in the Canadian Journal of Plastic Surgery reported a very low rate of 0.0004% for transfer to hospital on the day of surgery.⁶ Information on the type and range of procedures performed was not available at the time of writing this paper, but presumably they were confined to plastic surgery. A shortcoming of this CI is that admission to a hospital at some period after the day of treatment is not known. Fox *et al.* have recently shown that following a day procedure, the need for hospital-based care in the first week after the procedure, may be 30-fold greater than the rate recorded on the day of the procedure.⁷ This problem could be easily identified in integrated facilities, through the patient identification (UR) number, but data collection would be more difficult in the stand-alone DPCs.

Patient and procedure selection

The maintenance of a high standard of care in the ambulatory setting is dependent upon the appropriate selection of both the patients and the procedures. Information on patient selection for day surgery is also limited. Rosero and Joshi reported that for morbid obesity surgery only 0.32% was being performed in the ambulatory setting, although the incidence of adverse postoperative outcomes, delayed discharge and unplanned hospital admissions was no greater than that reported in the non-obese.⁸ Fleischer *et al.* established a ten point risk index for unplanned hospital admission following ambulatory surgery. The risk factors included: aged 65 or older, an operating time longer than two hours, cardiac and peripheral arterial disease, malignancy, HIV, and regional or general anaesthesia. A score of four or higher indicated a high risk of subsequent hospital admission.⁹ In their Report and Recommendations for Day Surgery in Australia, the ADSC state in Appendix B that “The final decision about fitness for anaesthesia rests with the anaesthetist who is to administer the anaesthetic” and in Appendix C state that “In all cases the ultimate decision, as to the suitability of a patient for day surgery is that of the procedural anaesthetist”.¹⁰

There are few determinations in the literature on procedure selection for ambulatory surgery, although caution is evident, for example, with thyroid surgery,¹¹ and for tonsillectomy in children.¹² Minimally invasive surgery, such as laparoscopy, according to Cassinotti *et al.*, seems to be regarded as the ideal surgical approach for day-case procedures,¹³ and Rao *et al.* report on the safety of ambulatory laparoscopic surgery in more than 15,000 elderly patients.¹⁴ There is no reference in the ADSC Report and Recommendations for Day Surgery concerning the types of procedures which should or should not be performed in a day procedure setting.¹⁰

Trial of ACSQHC Core Outcome Indicators

The Australian Commission on Safety and Quality in Health Care (the Commission) at the request of the Australian Day Hospital Association (ADHA) and the Australian Day Surgery Council (ADSC) developed, in partnership with the Australian Council on Healthcare Standards (ACHS), four core indicators to reflect the safety and quality of care provided by Day Procedure Services.¹⁵ They correspond to some of the existing ACHS CIs [shown in brackets] and are as follows:

- Cancellation of booked procedure due to a pre-existing medical condition [ACHS CI 3.1]
- Unplanned return to operating room (OR) [ACHS CI 5.1]
- Delayed patient discharge for clinical reasons [ACHS CI 7.1]
- Unplanned transfer [ACHS CI 6.1].

The wording of the numerators for the delayed discharge indicator and the unplanned transfer indicator differed slightly from that of the previously collected ACHS related indicators. The Commission engaged with the ACHS to trial these four indicators through:

- Data collection as part of the ACHS data reporting from July 2013 through to June 2014
- An online provider survey and
- Group interviews of providers via teleconference.

The July 2013 – June 2014 data were analysed at the Commission’s request, according to four stratifications i.e. public stand-alone, private stand-alone, public integrated and private integrated centres. The number of procedures reflected in the data i.e. the denominators, varied from approximately 300,000 for the delayed discharge indicator to more than one million for cancellation of the procedure.

Analysis of the July 2013 – June 2014 data revealed no strata differences across the four types of centres for unplanned return to the OR. However significant differences existed for the other three indicators. As had been noted from the data received on the first version of the Day Procedure CIs, the rates were significantly lower in stand-alone than in integrated services for unplanned transfer and for unplanned delay in discharge. The rates were significantly higher in public than in private services for cancellation after arrival, unplanned transfer and delayed discharge, presumably being at least in part due to a greater case complexity (e.g. from co-morbidities) in the publicly treated patients. However in the 12 months of 2014 data there is no difference between public and private facilities for unplanned delayed discharge. Given the small number of stand-alone public facilities which provided data, and the uncertain nature of their relationship to an adjacent integrated service, independent comparison of their performance was not considered appropriate.

Representative value of the data

It is difficult to determine the proportion of day procedures reflected in the data reported to the ACHS in 2013. For example, of the approximately 5.2 million acute same day separations reported by the Australian Institute of Health and Welfare (AIHW) for that year,¹⁶ only approximately 1.4 million were for procedures, which could have a risk of an unplanned return to the OR. As around 700,000 of these procedures were gastrointestinal endoscopies, with a very low likelihood of an immediate complication requiring surgery, the denominator of nearly 850,000 reported by 276 DPCs for this CI suggests a very high field penetration. This is further supported by the reporting of a denominator of more than 410,000 patients from 232 services for the same CI, in the first six months of 2014.

Provider opinions

An online questionnaire of DPCs conducted in August 2014, as part of the Commission's project, revealed that data collection was highest for cancellation of a booked procedure, that the unplanned transfer CI was considered the most relevant, and that feasibility of data collection was considered easiest for unplanned return to the OR. Of the four CIs, delayed discharge had the lowest percentage of data collection, was considered the least relevant and had the least ease of data collection.

Approximately 75% of the DPCs advised that they used the data for quality improvement. In 80% of facilities, the data were presented to staff leaders and to their Board. The majority of the DPCs also used the data in their documentation for accreditation. In 40% of the facilities, the data were posted in the relevant unit and in 20% the data were presented to consumers.

Approximately 80% of the DPCs considered that no improvement was needed in the program. However, suggestions for improvement from the remaining 20% were mainly concerned with data collection, for example, requiring clearer definitions, further examples of data sources and more data collection resources as it remained labour intensive for some facilities.

Through two teleconferences held in August 2014, between personnel from the Commission and ACHS with representatives of public and private DPCs from various states and from stand-alone and integrated services, the following information was obtained:

1. Confirmation that in the majority of DPCs the data are presented on a regular basis to relevant persons or to a relevant multidisciplinary group, such as a Clinical Governance or Medical Advisory Committee.
2. The data are of assistance when there is a need to effect a change in the practice of a medical staff member or visiting medical officer (VMO).
3. Where a zero rate has (from previous ACHS CIs) been obtained over some time, data collection for such a CI might be ceased. If an event with a very low frequency did occur then for that event, in some DPCs, an incident report would be raised and the case discussed well before a regular reporting period.

4. One representative of a group of DPCs indicated that the delayed discharge CI was not collected as there were differences across the centres as to what was an acceptable post-procedure length of stay versus a delay.
5. Data collection by the staff in some DPCs was still a burden.

The majority of the representatives also considered that the four CIs chosen by the Commission were essential and should be retained.

Some examples of identified problems were:

- Confusion at booking between "day of surgery" (for overnight stay) and day surgery patients was responsible for an increased rate in cancellation after arrival.
- Patients admitted for one procedure having an extended or further procedure e.g. a patient booked for a cystoscopy might have a cystoscopy plus a limited transurethral prostate resection (TURP) and then require an unplanned transfer.
- DPCs with a limited or no pre-anaesthetic/pre-admission clinic might admit patients with co-morbidities, which should render them unsuitable for ambulatory surgery e.g. patients with a very high BMI.

It is important to emphasise that in the ongoing Clinical Indicator Program no qualitative data are received from the DPCs, so any deterioration in the safety or quality of care in a particular instance cannot be determined externally. Such a determination can only be made within the DPC by a clinical review process. However, the development of CIs in other areas, such as patient satisfaction concerning pain management and follow-up arrangements, could enhance the value of the CIs as measures of the quality of care in such facilities. Although a high level of patient satisfaction has been reported, problems related to pain levels, the amount of information provided and medical problems after discharge are also reported.^{17,18}

Extending ambulatory surgery?

With diminishing healthcare reimbursement in the United States (US) the majority of medical procedures were moved to be performed in dedicated day procedure facilities. There is a further move to office-based procedures and it is estimated that 10–12% of procedures are now performed in private offices across the US. Concerns about patient safety in such settings are clearly evident and the practice has been described as the "Wild West" of health care.¹⁹ Bitar *et al.* stressed that the vast majority of patients undergoing office-based surgery in a single office were healthy, with only 0.1% being American Society of Anesthesiology (ASA) class III.²⁰ However when coupled with proceduralist-administered sedation, the risks of an adverse event (AE) are likely to further increase and studies are needed to determine the true level of AEs in the office setting.²¹ Whilst the proportion of procedures performed in the office setting in Australia is uncertain, the Australian and New Zealand College of Anaesthetists (ANZCA) guidelines on sedation for procedures make it clear that there must be another medical practitioner, other than the proceduralist, to administer and monitor the sedation and/or analgesia.²² This in itself should be a discouragement to office-based procedures of any degree of complexity being performed in Australia.

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Table A: 1997 data for ACHS Day Procedure Clinical Indicators Version 1

Clinical Indicator	No. of DPCs	Rate
1.1 Failure to arrive	191	1.53%
1.2 Cancellation after arrival	190	0.91%
2.1 Unplanned return to OR	193	0.08%
3.1 Unplanned overnight admission	226	2.22%
4.1 Unplanned delay in discharge	170	0.56%

Table B: 2014 data for ACHS Day Patient Clinical Indicators Version 5

Clinical Indicator	No. of DPCs	Rate
1.1 Pre-admission assessment	74	91.0%
2.1 Failed to arrive	229	0.63%
3.1 Cancellation due to pre-existing condition	276	0.16%
3.2 Cancellation due to acute condition	274	0.20%
3.3 Cancellation due to administrative reason	276	0.53%
4.1 Adverse event due to care	99	0.12%
5.1 Unplanned return to OR	230	0.032%
6.1 Unplanned transfer related to procedure	238	0.91%
6.2 Unplanned transfer for ongoing treatment	133	0.45%
7.1 Unplanned delayed discharge for clinical reasons	153	0.42%
7.2 Unplanned delayed discharge for non-clinical reasons	111	0.28%
8.1 Discharged without escort	70	0.85%
9.1 Follow-up phone call	64	90.5%
9.2 Follow-up phone call received by patient or carer	75	79.7%

The Clinical Indicator Program: Key Facts 2014

Overview

In this edition there are a total of 328 Clinical Indicators (CIs) in 22 sets. The report includes data from both the public and private sectors, and from metropolitan and non-metropolitan healthcare organisations (HCOs). The report also includes data from New Zealand (NZ) alongside a national perspective of Australia, with the inclusion of all Australian states and territories.

Clinical Indicators and data submissions

Between 2004 and 2007, the number of HCOs participating in the Clinical Indicator Program increased from 629 to 689, representing a 10% increase. The number of participating HCOs has increased since then. In 2014, the total number of six-monthly reports was 32,637 with similar numbers from the private and public sectors, 16,022 and 16,615 respectively.

Participation is voluntary, and 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 2007, the number of six-monthly data submissions was 35,481 and reached a peak of 37,022 in 2009. **Table 1** gives the number of CIs and sets by sector, the number of reporting HCOs and the number of six-monthly CI data submissions.

Table 1: Number of CI sets, CIs, HCOs reporting and data submissions in 2007–2014

	2007	2008	2009	2010	2011	2012	2013	2014	Change from 2007
Clinical Indicator Sets	23	23	23	22	22	22	22	22	
Clinical Indicators	361	366	370	332	353	335	338	328	-9%
Reporting HCOs									
Private	350	337	321	329	330	329	316	317	-9%
Public	339	352	350	336	360	341	415	490	45%
Total	689	689	671	665	690	670	731	807	17%
Submissions									
Private	17,005	17,645	17,881	17,193	16,732	16,539	15,597	16,022	-6%
Public	18,476	18,445	19,141	18,645	18,426	18,354	17,298	16,615	-10%
Total	35,481	36,090	37,022	35,838	35,158	34,893	32,895	32,637	-8%

* 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

In previous years there were similar numbers of public and private HCOs reporting. However in 2014, there were far more public than private HCOs reporting, 490 and 317 respectively. **Table 2** shows the geographic location of the HCOs. There were 456 metropolitan HCOs and 351 non-metropolitan HCOs participating in the Clinical Indicator Program in 2014.

Table 2: Number of HCOs reporting by location and public/private sector in 2014

State	Private	Public	Total
New South Wales	127	195	322
Victoria	63	109	172
Queensland	69	65	134
South Australia	21	67	88
Western Australia	18	41	59
Tasmania	7	3	10
Australian Capital Territory	6	2	8
Northern Territory	1	5	6
New Zealand	5	3	8
Total	317	490	807

Clinical Indicators reported by each HCO

In 2014, the average number of individual CIs reported was 22.4, with 80% of HCOs reporting between two and 53 CIs. Half of all HCOs reported between six and 33 CIs (25th and 75th centiles). Half of all HCOs reported at least 16 CIs. The variation in number of CIs reported is mostly due to the nature of the HCO. For example, not all HCOs have an emergency department, intensive care unit, obstetrics, paediatrics or other specialties.

Between 2004 and 2012, the median number of CI sets reported by all HCOs in each year was four sets, whereas it was three sets in 2013 and 2014. During the last five years, the mean and median number of CIs collected by individual HCOs in each year has remained relatively stable. The median number of CIs collected varied between 16 and 18 and the mean varied between 22.4 and 24.4.

Table 3 shows that in 2014 there were seven CI sets with at least 150 HCOs providing data. While there are seven CI sets where fewer than 50 HCOs participate, a small number of HCOs may still provide a representative sample of all HCOs in Australia and New Zealand for some CIs. However, from a quality improvement perspective it means that these HCOs have less data with which to determine whether the clinical areas in these sets could potentially improve their performance.

Table 3: HCOs providing data for one or more CIs within each CI set in 2007–2014

Clinical Indicator Set	2007	2008	2009	2010	2011	2012	2013	2014
Anaesthesia and Perioperative Care	330	308	295	288	292	288	273	261
Day Patient	427	400	392	397	393	370	337	318
Emergency Medicine	209	211	210	196	195	181	174	150
Gastrointestinal Endoscopy	81	86	88	103	95	91	77	78
Gynaecology†	88	90	84	82	78	65	58	52
Hospital in the Home	46	48	48	50	40	37	39	34
Hospital-Wide	465	460	454	458	481	478	466	468
Infection Control†	284	320	325	306	324	334	424	424
Intensive Care	101	104	105	105	98	104	102	107
Internal Medicine	124	110	98	81	84	74	62	46
Maternity#	210	180	181	187	186	188	184	175
Medication Safety	172	174	176	164	284	259	260	269
Mental Health Community Based	23	28	28	21	21	15	16	14
Mental Health Inpatient	124	121	124	112	107	110	103	104
Ophthalmology	104	99	86	87	86	77	72	75
Oral Health	10	14	11	12	15	15	14	84
Paediatrics†	53	53	49	46	47	40	37	11
Pathology	45	37	49	42	42	42	40	44
Radiation Oncology†	16	18	20	17	18	20	17	14
Radiology†	67	65	66	60	60	69	64	41
Rehabilitation Medicine	114	109	112	122	126	122	115	105
Surgical	200	192	176	167	168	152	132	122
Any Clinical Indicator	689	689	671	665	690	670	731	807

Formerly Obstetrics

† Revised Clinical Indicator set introduced

Clinical Indicator Trends and Variation

Revealing the potential to improve performance

Within an individual facility, fluctuations in performance compared to 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 desirable 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 full *Australasian Clinical Indicator Report* shows the trends in the rates for each CI (if four or more years of data are available) and three measures of the variation in rates between HCOs. The variations in clinical practice are quantified by the differences between the 20th and 80th centiles, the differences between the strata, and the rates for the HCOs that are outliers.

The report also estimates the potential improvement if:

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

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

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

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

Clinical Indicator trends 2007–2014

Of the 328 CIs in 2014, 320 are rate-based CIs, whereby data were collected for all but eight of these CIs. Of these 320 CIs, 310 had a desirable direction specified (high or low rates indicating better care). Trends could be analysed for 197 of the rate-based CIs. The CIs were not analysed for trends if there were less than four years of data, no desirable direction or less than five HCOs reporting. There were 16 CI sets which had more CIs moving in the desirable direction than in the undesirable direction. There were four CI sets that had an improvement in at least two-thirds of all trended CIs. They were Day Patient, Emergency Medicine, Gynaecology and Mental Health Inpatient.

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 102 statistically significant trends in the desirable direction, 72 remained significant after allowing for changes in the HCOs submitting, and of those 46 CIs whose trends were deteriorating, 25 remained significant. There were 49 CIs that showed no statistically significant trend. The trend results are summarised in **Table 4**.

Table 4: 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	16	16	9 (3)	7 (4)	0
Day Patient	14	5	4 (1)	0	1
Emergency Medicine	20	10	7 (5)	3 (1)	0
Gastrointestinal Endoscopy	11	5	2 (1)	0	3
Gynaecology	8	4	3 (3)	0	1
Hospital in the Home	8	8	2 (2)	1 (1)	5
Hospital-Wide	15	14	9 (8)	5 (5)	0
Infection Control	30	13	8 (8)	0	5
Intensive Care	16	15	9 (4)	2 (1)	4
Internal Medicine	33	9	5 (2)	3 (3)	1
Maternity	21	13	4 (4)	7 (4)	2
Medication Safety	10	9	3 (3)	2 (1)	4
Mental Health Community Based	6	4	0	1 (0)	3
Mental Health Inpatient	28	27	20 (16)	2 (1)	5
Ophthalmology	14	11	3 (2)	2 (2)	6
Oral Health	10	1	1 (0)	0	0
Paediatrics	18	0	0	0	0
Pathology	11	11	5 (4)	6 (0)	0
Radiation Oncology	6	0	0	0	0
Radiology	8	0	0	0	0
Rehabilitation Medicine	6	6	4 (2)	2 (0)	0
Surgical	19	16	4 (4)	3 (2)	9
Total	328	197	102 (72)	46 (25)	49
Percent of tested		100%	52% (37%)	23% (13%)	25%

* 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 where the desirable rate is specified as either high or low.

‡ The number in brackets is the number of CIs that had statistically significant trends after allowing for changes in the HCOs contributing the data.

Variation in Clinical Indicator rates

Using odds ratios 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 odds ratio of having an event when the poorer rate applies compared to when the better rate applies. The odds ratio is used to select CIs where there is large systematic variation in rates. If the better rate is the 80th centile, then the odds ratio is the ratio of the odds for the 80th centile and the odds for the 20th centile rates, R(80) and R(20). The formula is as follows:

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

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

Table 5 shows that there are 89 CIs (30% of those tested) with high odds ratios (≥ 10) in 19 of the 22 CI sets, and five CI sets with more than half the CIs having high odds ratios.

Table 5: Odds ratios for CIs in each CI set – a high odds ratio reveals high systematic variation between HCOs

Clinical Indicator Set	Number of CIs	CIs tested*	OR: 1 to <2	OR: 2 to <10	OR: ≥ 10	% ≥ 10
Anaesthesia and Perioperative Care	16	16	1	3	12	75%
Day Patient	14	14	0	4	10	71%
Emergency Medicine	20	19	3	14	2	11%
Gastrointestinal Endoscopy	11	11	2	8	1	9%
Gynaecology	8	7	1	3	3	43%
Hospital in the Home	8	8	2	5	1	13%
Hospital-Wide	15	15	0	8	7	47%
Infection Control	30	28	12	11	5	18%
Intensive Care	16	15	2	6	7	47%
Internal Medicine	33	27	10	13	4	15%
Maternity	21	20	8	9	3	15%
Medication Safety	10	10	2	5	3	30%
Mental Health Community Based	6	6	0	2	4	67%
Mental Health Inpatient	28	27	6	9	12	44%
Ophthalmology	14	13	6	5	2	15%
Oral Health	10	10	5	5	0	0%
Paediatrics	18	5	1	3	1	20%
Pathology	11	11	0	11	0	0%
Radiation Oncology	6	6	1	3	2	33%
Radiology	8	8	0	2	6	75%
Rehabilitation Medicine	6	6	0	2	4	67%
Surgical	19	16	8	8	0	0%
Total	328	298	70	139	89	
Percent of tested		100%	23%	47%	30%	

* The odds ratio can only be calculated where the centile is not zero or 100%.

Clinical Indicators with significant variations between strata

For each CI, the detailed results identify whether there were statistically different mean rates for 2014 between the three strata: Australian states and territories/NZ, public/private and metropolitan/non-metropolitan. This section summarises those results, by identifying the stratum that explains most of the variation in 2014. **Table 6** shows the number of CIs that were analysed, and how many had significant stratum differences by CI set.

Table 6: Number of CIs whose mean rates were statistically significantly different by Australian states and territories/NZ, public/private, metropolitan/non-metropolitan in 2014

Clinical Indicator Set	Number of CIs	CIs tested [#]	State/NZ	Public /private	Metropolitan /non metropolitan
Anaesthesia and Perioperative Care	16	14	3	6	1
Day Patient	14	14	4	7	0
Emergency Medicine	20	10	5	0	1
Gastrointestinal Endoscopy	11	10	1	3	1
Gynaecology	8	5	0	2	0
Hospital in the Home	8	6	3	1	1
Hospital-Wide	15	15	3	5	0
Infection Control	30	17	2	3	1
Intensive Care	16	13	6	8	1
Internal Medicine	33	3	0	0	1
Maternity	21	20	8	11	0
Medication Safety	10	7	2	2	2
Mental Health Community Based	6	1	0	0	0
Mental Health Inpatient	28	27	10	8	1
Ophthalmology	14	12	4	4	0
Oral Health	10	9	7	0	6
Paediatrics	18	0	0	0	0
Pathology	11	11	6	0	2
Radiation Oncology	6	2	0	0	0
Radiology	8	8	2	0	1
Rehabilitation Medicine	6	6	0	4	0
Surgical	19	15	4	1	0
Total	328	225	70	65	19
Percent of tested			31%	29%	8%

[#] At least ten HCOs must submit for the CI to be tested.

In 2013, there were 83 CIs with significant differences in mean rates between states and territories of Australia/NZ, notably in Infection Control (10), Mental Health Inpatient (8), Maternity (10) and Pathology (6). This is similar to the result from 2012. In 2014, there were 70 CIs with significant differences occurring notably in Intensive Care (6), Maternity (8), Mental Health Inpatient (10), Oral Health (7) and Pathology (6).

In 2013, significant differences between the mean rates for the public and private strata were found in 65 CIs, notably in Maternity (11), Mental Health Inpatient (7) and Intensive Care (7). In 2014, significant differences were found in 65 CIs, notably in Anaesthesia and Perioperative Care (6), Day Patient (7), Intensive Care (8), Maternity (11) and Mental Health Inpatient (8).

In 2013, there were 13 CIs with significant differences between metropolitan and non-metropolitan participants, compared to 19 CIs in 2014.

Outliers

Clinical Indicators and HCOs with significantly different rates

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.

This section uses the data for 2014 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.

Of the 320 rate-based CIs (with rates between 0 and 100%) and 32,637 six-monthly data submissions, those CIs with no preferred direction or CIs that had less than 20 six-monthly data submissions in 2014 were excluded. There remained 212 CIs and 30,789 individual data submissions.

For the 212 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 7**. The proportion of data submissions that were outliers with a desirable direction was 15%, the proportion with less desirable rates was 11% and the remaining 74% of submissions were not outliers. These proportions varied between the specialties.

In 2013, more than 15% of six-monthly data submissions in the Emergency Medicine, Intensive Care, Pathology and Rehabilitation Medicine CI sets were statistically significant in the undesirable direction. However, three of these four CI sets had a greater number of six-monthly data submissions in the favourable direction than in the unfavourable direction. In 2014, six sets had more than 15% of submissions classified as outliers. They were the five listed above for 2013 with the addition of Radiology. Again, four of these CI sets had a greater number of six-monthly data submissions in the favourable direction than in the unfavourable direction.

Table 7: Number of CIs, HCOs reporting and data submissions in 2014

Clinical Indicator Set	Number of CIs	CIs tested#	HCOs	Data submission	% Poorer	% Better
Anaesthesia and Perioperative Care	16	14	261	2,266	13%	32%
Day Patient	14	14	318	4,162	13%	16%
Emergency Medicine	20	10	150	1,478	17%	48%
Gastrointestinal Endoscopy	11	10	78	785	5%	0%
Gynaecology	8	3	52	193	4%	0%
Hospital in the Home	8	6	34	220	8%	3%
Hospital-Wide	15	15	468	5,605	13%	17%
Infection Control	30	13	424	2,876	2%	0%
Intensive Care	16	13	108	1,356	17%	28%
Internal Medicine	33	2	46	50	8%	0%
Maternity	21	20	175	4,540	7%	7%
Medication Safety	10	7	269	709	8%	4%
Mental Health Community Based	6	0	14	-	-	-
Mental Health Inpatient	28	26	104	2,372	12%	15%
Ophthalmology	14	10	75	579	5%	1%
Oral Health	10	9	84	837	7%	3%
Paediatrics	18	0	11	-	-	-
Pathology	11	10	44	461	23%	25%
Radiation Oncology	6	1	14	21	14%	5%
Radiology	8	8	41	392	22%	39%
Rehabilitation Medicine	6	6	105	1,154	17%	10%
Surgical	19	15	123	733	2%	1%
Total	328	212	807	30,789	11%	15%

There must be at least 20 six-monthly data submissions for the CI to be tested

Those CIs with a high proportion of outliers were usually associated with process measures such as access block in emergency departments and intensive care units, delays in reporting test results in pathology, and documentation of processes in rehabilitation medicine and intensive care.

Each of the 212 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 8 reveals that 25 of the 212 CIs had no six-monthly data submissions that were outliers and 128 CIs included both poorer and better six-monthly data submissions as outliers.

Table 8: Number of CIs that had six-monthly data submissions that were outliers in 2014*

Outlier category	Number of CIs	Percent of CIs	Data submissions		
			Range	Median	Mean
No outliers	25	12	21–151	42	55
Undesirable rates only	56	26	20–660	78.5	126
Desirable rates only	3	1	29–48	43	40
Outliers – both	128	60	20–736	120.5	174
Total	212	100	20–736	99.5	145

* CIs with no preferred direction or less than 20 six-monthly data submissions were excluded

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 25 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 a die. For the remaining 187 CIs, 184 (87% of the 212 tested) have six-monthly data submissions that are outliers in the undesirable direction (with or without other outlier submissions in the desirable direction – **Table 8**).

Each of the 800 HCOs that submitted one or more of the 212 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 49% of HCOs (**Table 9**). Furthermore, the table shows that HCOs that report fewer CIs (mean of seven six-monthly data submissions and four CIs) have less likelihood of having both desirable and undesirable rates compared to those reporting a greater number of CIs (mean of 62 six-monthly data submissions and 34 CIs).

Table 9: Number of HCOs that had CIs that were outliers in 2014*

Outlier category	Number of HCOs	Percent of HCOs	Number of CIs			Data submissions		
			Range	Median	Mean	Range	Median	Mean
No outliers	201	25	1–19	2	4	1–37	4	7
Undesirable rates only	93	12	1–41	8	11	2–77	15	19
Desirable rates only	115	14	1–47	15	17	2–92	29	30
Outliers – both	391	49	4–106	29	34	8–209	54	62
Total	800	100	1–106	15	21	1–209	27	38

* CIs with no preferred direction or less than 20 six-monthly data submissions were excluded. Hence not all of the 807 contributing HCOs are represented in the above table.

From **Table 9**, it can be seen that of the 800 HCOs considered, 391 HCOs have at least one outlier in the undesirable direction and 93 HCOs have outliers only in the undesirable direction, a total of 484 HCOs (61%).

The results from **Table 7** and **Table 9** show that:

- 15% of submissions are in the desirable direction and 11% in the undesirable direction. Thus the majority of six-monthly data submissions (the remaining 74%) are not statistically different from the average (**Table 7**),

however,

- 61% of the 800 HCOs have some clinical areas with rates that are outliers in the undesirable direction (**Table 9**).

This suggests that CIs have a greater role in identifying areas for review, rather than for ranking performance.

Summary of Results

This 16th edition of the *Australasian Clinical Indicator Report (ACIR) 2007–2014* provides an overview of the analysis of each Clinical Indicator (CI) set for the last eight years (for longer standing CIs), with additional commentary from the collaborating specialist healthcare colleges, societies and associations. This expertise provides context for any trends or variation observed in the data. Detailed information about each CI is available from the ACHS website, www.achs.org.au/programs-services/clinical-indicator-program/.

Retrospective data and charts for every CI collected in 2014 can be accessed under the tabs at the base of the ACIR page on the ACHS website, or by scanning the QR within the contents page with a smart phone or device.

A summary of the main observations for each set of CIs follows.

 Anaesthesia and Perioperative Care, version 5.1	23	 Medication Safety, version 3	77
 Day Patient, version 5	27	 Mental Health Community Based, version 2	80
 Emergency Medicine, version 5.1	32	 Mental Health Inpatient, version 6	83
 Gastrointestinal Endoscopy, version 2	40	 Ophthalmology, version 5	91
 Gynaecology, version 7	43	 Oral Health, version 3	95
 Hospital in the Home, version 4	46	 Paediatrics, version 5	98
 Hospital-Wide, version 11.2	49	 Pathology, version 3	101
 Infection Control, version 4	55	 Radiation Oncology, version 4	105
 Intensive Care, version 4.1	60	 Radiology, version 5	107
 Internal Medicine, version 5	67	 Rehabilitation Medicine, version 5	111
 Maternity (previously Obstetrics), version 7.2	70	 Surgical, version 3	113



Anaesthesia and Perioperative Care

VERSION 5.1

Pre-anaesthesia period

CI 1.1 Adequate pre-anaesthesia assessment of the surgical patient (H) In 2014, there were 126,738 patients reported from 56 HCOs. The annual rate was 99.1 per 100 patients. The fitted rate improved from 97.2 to 98.2, a change of 1.0 per 100 patients. In 2014, there was relatively little variation between HCOs and so the potential gains were small. In 2014, there were five outlier records from four HCOs whose combined excess was 937 fewer patients having a documented pre-anaesthesia assessment. The outlier HCO rate was 92.8 per 100 patients.

CI 1.2 Documentation of risks and benefits of anaesthesia (H) In 2014, there were 64,005 patients reported from 35 HCOs. The annual rate was 93.9 per 100 patients. The fitted rate improved from 91.4 to 93.0, a change of 1.5 per 100 patients. In 2014, the potential gains totalled 3,911 more patients who have documentation of risks and benefits. In 2014, there were ten outlier records from eight HCOs whose combined excess was 2,995 fewer patients who have documentation of risks and benefits. The outlier HCO rate was 71.0 per 100 patients.

CI 1.3 History of PONV – prophylactic anti-emetic administered (H) In 2014, there were 3,001 patients reported from 15 HCOs. The annual rate was 97.6 per 100 patients. The fitted rate improved from 79.7 to 94.9, a change of 15.2 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 13.5 per 100 patients. There were no significant stratum differences in 2013 and 2014. In 2014, there was relatively little variation between HCOs and so the potential gains were small. In 2014, there were five outlier records from five HCOs whose combined excess was 53 fewer patients to whom a prophylactic anti-emetic has been administered. The outlier HCO rate was 60.1 per 100 patients.

Intraoperative period

CI 2.1 Presence of a trained assistant (H) In 2014, there were 136,555 patients reported from 34 HCOs. The annual rate was 91.6 per 100 patients. The fitted rate deteriorated from 97.8 to 90.8, a change of 7.0 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 7.0 per 100 patients. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 11,410 more procedures where there is a trained assistant to the anaesthetist. In 2014, there were nine outlier records from six HCOs whose combined excess was 8,548 fewer procedures where there is a trained assistant to the anaesthetist. The outlier HCO rate was 55.6 per 100 patients.

CI 2.2 Anaesthesia records – compliance with the ANZCA requirements (H) In 2014, there were 150,630 patients reported from 58 HCOs. The annual rate was 97.8 per 100 patients. The fitted rate improved from 93.2 to 98.4, a change of 5.2 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 5.2 per 100 patients. There were no significant stratum differences in 2013 and 2014. In 2014, there was relatively little variation between HCOs and so the potential gains were small. In 2014, there were 14 outlier records from nine HCOs whose combined excess was 2,387 fewer compliant anaesthesia records. The outlier HCO rate was 89.3 per 100 patients.

Patient recovery period

CI 3.1 Avoiding severe respiratory distress in the recovery room (L) In 2014, there were 1,443,377 patients reported from 206 HCOs. The annual rate was 0.037 per 100 patients. The fitted rate improved from 0.065 to 0.042, a change of 0.023 per 100 patients. In 2014, the potential gains totalled 439 fewer patients who require intervention to relieve respiratory distress, corresponding to a reduction by approximately four-fifths. In 2014, there were 22 outlier records from 15 HCOs whose combined excess was 241 more patients who require intervention to relieve respiratory distress. The outlier HCO rate was 0.30 per 100 patients.

CI 3.2 Recovery – PONV treatment according to approved protocol (L) In 2014, there were 716,479 patients reported from 121 HCOs. The annual rate was 0.77 per 100 patients. The fitted rate improved from 1.2 to 0.70, a change of 0.53 per 100 patients. In 2014, the potential gains totalled 5,170 fewer patients undergoing treatment for postoperative nausea and vomiting, corresponding to a reduction by approximately four-fifths. In 2014, there were 38 outlier records from 26 HCOs whose combined excess was 3,443 more patients undergoing treatment for postoperative nausea and vomiting. The outlier HCO rate was 3.5 per 100 patients.

CI 3.3 Inadvertent hypothermia after surgery (L) In 2014, there were 1,061,862 patients reported from 172 HCOs. The annual rate was 1.6 per 100 patients. The fitted rate deteriorated from 1.1 to 2.1, a change of 1.00 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 1.00 per 100 patients. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 16,952 fewer patients with a temperature of less than 36 degrees, corresponding to a reduction by approximately four-fifths. In 2014, there were 62 outlier records from 42 HCOs whose combined excess was 12,402 more patients with a temperature of less than 36 degrees. The outlier HCO rate was 8.5 per 100 patients.



CI 3.4 Recovery – severe pain not responding to protocol (L)

In 2014, there were 1,435,198 patients reported from 207 HCOs. The annual rate was 0.34 per 100 patients. The fitted rate improved from 0.41 to 0.37, a change of 0.044 per 100 patients. In 2014, the potential gains totalled 4,294 fewer patients who have severe pain not responding to pain protocol, corresponding to a reduction by approximately four-fifths. In 2014, there were 51 outlier records from 32 HCOs whose combined excess was 2,131 more patients who have severe pain not responding to pain protocol. The outlier HCO rate was 1.4 per 100 patients.

CI 3.5 Unplanned recovery room stay exceeding 2 hours for medical reasons (L)

In 2014, there were 1,148,547 patients reported from 191 HCOs. The annual rate was 1.02 per 100 patients. The fitted rate deteriorated from 0.95 to 1.1, a change of 0.12 per 100 patients. In 2014, the potential gains totalled 10,526 fewer patients who have an unplanned stay exceeding two hours, corresponding to a reduction by approximately four-fifths. In 2014, there were 45 outlier records from 29 HCOs whose combined excess was 5,549 more patients who have an unplanned stay exceeding two hours. The outlier HCO rate was 3.9 per 100 patients.

Postoperative period

CI 4.1 Unplanned admission to the ICU within 24 hours of a procedure (L)

In 2014, there were 892,785 patients reported from 112 HCOs. The annual rate was 0.19 per 100 patients. The fitted rate deteriorated from 0.18 to 0.19, a change of 0.01 per 100 patients. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 1,474 fewer patients having an unplanned admission to ICU within 24 hours of a procedure, corresponding to a reduction by approximately four-fifths. In 2014, there were 21 outlier records from 16 HCOs whose combined excess was 617 more patients having an unplanned admission to ICU within 24 hours of a procedure. The outlier HCO rate was 0.68 per 100 patients.

Management of acute pain

CI 5.1 Documentation of pain intensity scores after major surgery (H)

In 2014, there were 26,059 patients reported from 18 HCOs. The annual rate was 68.9 per 100 patients. The fitted rate deteriorated from 97.6 to 69.4, a change of 28.2 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 28.4 per 100 patients. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 8,099 more surgical patients having pain intensity scores recorded regularly. In 2014, there were two outlier records from one HCO whose combined excess was 4,862 fewer surgical patients having pain intensity scores recorded regularly. The outlier HCO rate was 12.7 per 100 patients.

CI 5.2 Daily anaesthetist review following postoperative epidural analgesia (H)

In 2014, there were 717 patients reported from 12 HCOs. The annual rate was 99.3 per 100 patients. The fitted rate deteriorated from 99.7 to 98.2, a change of 1.5 per 100 patients. There were no significant stratum differences in 2013 and 2014. In 2014, there was relatively little variation between HCOs and so the potential gains were small. In 2014, there was one outlier record from one HCO whose combined excess was two fewer patients reviewed at least daily. The outlier HCO rate was 93.2 per 100 patients.

Obstetric anaesthesia care

CI 6.1 Minimisation of post-dural puncture headache (L)

In 2014, there were 11,240 patients reported from 17 HCOs. The annual rate was 0.62 per 100 patients. The fitted rate deteriorated from 0.31 to 0.71, a change of 0.40 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.38 per 100 patients. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 17 fewer obstetric patients who experience a post-dural puncture headache, corresponding to a reduction by approximately one-fifth. In 2014, there was one outlier record from one HCO whose combined excess was two more obstetric patients who experience a post-dural puncture headache. The outlier HCO rate was 4.4 per 100 patients.

CI 6.2 Obstetrics – surgery within 30 minutes of lower segment caesarean section (LSCS) request (H)

In 2014, there were 576 patients reported from eight HCOs. The annual rate was 96.2 per 100 patients. The fitted rate improved from 82.8 to 97.1, a change of 14.3 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 14.0 per 100 patients. There were no significant stratum differences in 2013 and 2014. In 2014, there were no potential gains. In 2014, there were five outlier records from four HCOs whose combined excess was 13 fewer caesarean section patients who commence surgery within 30 minutes. The outlier HCO rate was 44.8 per 100 patients.

CI 6.3 Obstetric patients with risks and benefits of analgesia documented (H)

In 2014, there were 1,861 patients reported from seven HCOs. The annual rate was 83.5 per 100 patients. The fitted rate improved from 65.3 to 87.3, a change of 21.9 per 100 patients. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 304 more obstetric patients who have documentation of risks and benefits of spinal anaesthesia. In 2014, there were two outlier records from one HCO whose combined excess was 134 fewer obstetric patients who have documentation of risks and benefits of spinal anaesthesia. The outlier HCO rate was 69.0 per 100 patients.



Expert Commentary

Australian and New Zealand College of Anaesthetists (ANZCA)

Introductory comments

This review of Australasian Anaesthesia CIs version 5.1 is undertaken with consideration of the review and reform of the CI set which occurred in 2014. The CIs in use from January 2015 are Anaesthesia and Perioperative Care CIs Version 6. Many of the following comments were addressed in the 2014 review process.

Pre-anaesthesia period

Despite the persistently high level of compliance with this process measure demonstrated by contributing HCOs, **CI 1.1** remains an important measure of quality anaesthesia care. The presence of lower rates from some outlier HCOs (seemingly in Victoria) is potentially of concern, although numbers are small.

Again, with small numbers it is difficult to comment on the variable trend in compliance with **CI 1.2**. However the CI per se has face validity and is retained in Version 6, as a merged CI reflecting **CIs 1.1** and **1.2**. At less than 100% compliance, the CI is likely to remain relevant and potentially useful for HCOs and departments. Lower compliance levels appear to be reported from non-metropolitan (vs metropolitan) HCOs, and public (vs private) HCOs. Again, Victoria would appear to be an outlier with lower compliance rates. These CIs align with NSQHS Standards 1, 5 and 6.¹

Intraoperative period

Of major concern is the decline in the presence of a trained assistant to the anaesthetist during the reporting period. Small numbers of HCOs have reported, and by the end of the reporting period the annual rate of compliance is less than 92%. The presence of an anaesthetic assistant is one of the cornerstones of safe patient care. It would be helpful to have knowledge of the location and type of facility as well as the type of procedure performed.²

Patient recovery period

Although the specified CIs (relief of postoperative respiratory distress, treatment of PONV, temperature less than 36 degrees and treatment of severe pain in the recovery period) have low background rates, the CIs represent clinically important conditions. PONV appears to have shown a small but significant improvement over the reporting period, possibly reflecting increased recognition by anaesthetists of the importance of prophylaxis and strong evidence base for treatment. Maintenance of normothermia for anaesthetised patients appears to be an ongoing challenge, and the increase in frequency of patients who have a temperature of less than 36 degrees on arrival to recovery should be of concern to anaesthetists. Relatively small numbers again make subgroup analysis difficult, but there is a suggestion that private HCO compliance with these recovery CIs reflects better performance than public HCOs (although casemix is likely to be a confounding factor).

Although the incidence of respiratory distress requiring intervention in recovery is low overall, its rate in public HCOs is significantly higher than private HCOs. This probably represents a difference in casemix but could also reflect the presence of trainees and out of hours cases in public HCOs.

Postoperative period

Unplanned admission to ICU remains a significant CI for HCOs despite small reporting numbers and relative stability over time.

Management of acute pain

Frequent assessment and patient self-reporting of pain intensity is necessary for appropriate postoperative pain management. Disappointingly, compliance with

CI 5.1 deteriorated significantly over the reporting period and most recently in 2014 it was less than 70%. This will be of concern for clinical anaesthetists, pain specialists and all who care for perioperative patients.^{3,4}

Obstetric anaesthesia care

Collection of rates for post-dural puncture headache will continue to be important for all HCOs, particularly for training HCOs. The small numbers reported here make any further analysis difficult. **CI 6.2** is no longer supported by Obstetric specialists and has been deleted from Version 6.

General comments

The submitted data indicate that optimal outcomes, as defined by the CIs, are sought and achieved by the majority of reporting HCOs. However, the lack of a trained assistant to the anaesthetist is again highlighted as an area of concern. It is important to attempt to elucidate whether this is regional, specific to the type of HCO or type of procedure. For all CIs, outlier HCOs should be encouraged to implement strategies that will achieve best practice.

References

1. Australian and New Zealand College of Anaesthetists (ANZCA). PS07 Recommendations for the Pre-Anaesthesia Consultation. Melbourne: ANZCA; 2008.
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3. Australian and New Zealand College of Anaesthetists (ANZCA). PS41 Guidelines on Acute Pain Management. Melbourne: ANZCA; 2013.
4. Australian and New Zealand College of Anaesthetists (ANZCA). PS03 Guidelines for the Management of Major Regional Analgesia. Melbourne: ANZCA; 2014.





Day Patient

VERSION 5

Pre-admission preparation

CI 1.1 Booked patients assessed before admission (H) In 2014, there were 143,304 patients reported from 74 HCOs. The annual rate was 91.0 per 100 patients. In 2014, the potential gains totalled 12,871 more patients who receive a pre-admission assessment. In 2014, there were 21 outlier records from 16 HCOs whose combined excess was 8,988 fewer patients who receive a pre-admission assessment. The outlier HCO rate was 64.4 per 100 patients.

Procedure non-attendance

CI 2.1 Booked patients who fail to arrive (L) In 2014, there were 772,804 patients reported from 229 HCOs. The annual rate was 0.63 per 100 patients. The fitted rate improved from 0.93 to 0.63, a change of 0.30 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.31 per 100 patients. In 2014, the potential gains totalled 4,694 fewer patients who fail to arrive, corresponding to a reduction by approximately four-fifths. In 2014, there were 58 outlier records from 39 HCOs whose combined excess was 2,711 more patients who fail to arrive. The outlier HCO rate was 3.1 per 100 patients.

Procedure cancellation

CI 3.1 Cancellation after arrival due to pre-existing medical condition (L) In 2014, there were 1,010,988 patients reported from 276 HCOs. The annual rate was 0.16 per 100 patients. There was no significant trend in the fitted rate. In 2014, the potential gains totalled 1,011 fewer patients who have a procedure cancelled, corresponding to a reduction by approximately one-half. In 2014, there were 40 outlier records from 30 HCOs whose combined excess was 314 more patients who have a procedure cancelled. The outlier HCO rate was 0.75 per 100 patients.

CI 3.2 Cancellation after arrival due to an acute medical condition (L) In 2014, there were 1,120,532 patients reported from 274 HCOs. The annual rate was 0.20 per 100 patients. The fitted rate improved from 0.28 to 0.23, a change of 0.047 per 100 patients. In 2014, the potential gains totalled 1,397 fewer patients who have a procedure cancelled, corresponding to a reduction by approximately one-half. In 2014, there were 56 outlier records from 44 HCOs whose combined excess was 597 more patients who have a procedure cancelled. The outlier HCO rate was 0.89 per 100 patients.

CI 3.3 Cancellation after arrival due to administrative /organisational reasons (L) In 2014, there were 994,324 patients reported from 276 HCOs. The annual rate was 0.53 per 100 patients. The fitted rate improved from 0.62 to 0.53, a change of 0.091 per 100 patients. In 2014, the potential gains totalled 4,821 fewer patients who have a procedure cancelled, corresponding to a reduction by approximately four-fifths. In 2014, there were 90 outlier records from 58 HCOs whose combined excess was 2,910 more patients who have a procedure cancelled. The outlier HCO rate was 2.5 per 100 patients.

Episode of care adverse events

CI 4.1 Patients who experience an adverse event during care delivery (L) In 2014, there were 275,315 patients reported from 99 HCOs. The annual rate was 0.12 per 100 patients. In 2014, the potential gains totalled 267 fewer patients who experience an adverse event, corresponding to a reduction by approximately three-quarters. In 2014, there were 16 outlier records from 14 HCOs whose combined excess was 98 more patients who experience an adverse event. The outlier HCO rate was 0.65 per 100 patients.

Unplanned return to the operating room

CI 5.1 Unplanned return to operating room on same day as initial procedure (L) In 2014, there were 838,917 patients reported from 230 HCOs. The annual rate was 0.032 per 100 patients. The fitted rate improved from 0.049 to 0.041, a change of 0.008 per 100 patients. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 161 fewer patients having an unplanned return to the operating/procedure room, corresponding to a reduction by approximately one-half. In 2014, there were seven outlier records from seven HCOs whose combined excess was 45 more patients having an unplanned return to the operating/procedure room. The outlier HCO rate was 0.31 per 100 patients.

Unplanned transfer/admission

CI 6.1 Unplanned transfer or overnight admission related to procedure (L) In 2014, there were 1,004,791 patients reported from 238 HCOs. The annual rate was 0.91 per 100 patients. In 2014, the potential gains totalled 8,422 fewer patients who have an unplanned transfer or overnight admission, corresponding to a reduction by approximately four-fifths. In 2014, there were 82 outlier records from 50 HCOs whose combined excess was 3,882 more patients who have an unplanned transfer or overnight admission. The outlier HCO rate was 2.7 per 100 patients.



CI 6.2 Unplanned transfer or admission related to ongoing management (L) In 2014, there were 435,413 patients reported from 133 HCOs. The annual rate was 0.45 per 100 patients. In 2014, the potential gains totalled 1,839 fewer patients who have an unplanned transfer or overnight admission, corresponding to a reduction by approximately four-fifths. In 2014, there were 34 outlier records from 25 HCOs whose combined excess was 947 more patients who have an unplanned transfer or overnight admission. The outlier HCO rate was 1.5 per 100 patients.

Discharge

CI 7.1 Unplanned delayed discharge exceeding 1 hour for clinical reasons (L) In 2014, there were 577,776 patients reported from 153 HCOs. The annual rate was 0.42 per 100 patients. In 2014, the potential gains totalled 2,293 fewer patients who have a delayed discharge exceeding one hour, corresponding to a reduction by approximately four-fifths. In 2014, there were 31 outlier records from 24 HCOs whose combined excess was 1,452 more patients who have a delayed discharge exceeding one hour. The outlier HCO rate was 2.7 per 100 patients.

CI 7.2 Unplanned delayed discharge exceeding 1 hour for non-clinical reasons (L) In 2014, there were 288,677 patients reported from 111 HCOs. The annual rate was 0.28 per 100 patients. In 2014, the potential gains totalled 771 fewer patients who have a delayed discharge exceeding one hour, corresponding to a reduction by approximately four-fifths. In 2014, there were 19 outlier records from 17 HCOs whose combined excess was 403 more patients who have a delayed discharge exceeding one hour. The outlier HCO rate was 1.3 per 100 patients.

Departure

CI 8.1 Departure without an escort (L) In 2014, there were 153,037 patients reported from 70 HCOs. The annual rate was 0.85 per 100 patients. In 2014, the potential gains totalled 1,281 fewer patients discharged without an escort, corresponding to a reduction by approximately four-fifths. In 2014, there were 14 outlier records from nine HCOs whose combined excess was 886 more patients discharged without an escort. The outlier HCO rate was 4.7 per 100 patients.

Post-discharge follow-up

CI 9.1 Follow-up phone call within 7 days (H) In 2014, there were 92,383 patients reported from 64 HCOs. The annual rate was 90.5 per 100 patients. In 2014, the potential gains totalled 8,804 more patients receiving a post-discharge telephone call. In 2014, there were 21 outlier records from 16 HCOs whose combined excess was 5,900 fewer patients receiving a post-discharge telephone call. The outlier HCO rate was 66.0 per 100 patients.

CI 9.2 Follow-up phone call received by patient or carer within 7 days (H) In 2014, there were 161,262 patients reported from 75 HCOs. The annual rate was 79.7 per 100 patients. In 2014, the potential gains totalled 32,723 more patients or carers receiving a post-discharge telephone call. In 2014, there were 40 outlier records from 28 HCOs whose combined excess was 14,683 fewer patients or carers receiving a post-discharge telephone call. The outlier HCO rate was 59.0 per 100 patients.



Expert Commentary

Australian Day Surgery Council (ADSC)

Pre-admission preparation

The ADSC is encouraged to see that there has been an increase in the number of HCOs which have submitted data (74 compared to 50 in 2013). The results are pleasing, however these results may not be reflected across all HCOs which have provided data for the other CIs.

Procedure non-attendance

The ADSC finds it pleasing to see that there has been a reduction in the number of patients who have failed to arrive. However, it is important that HCOs continue to review why the patients fail to arrive to ensure appropriate use of resources. Further review of the relationship between the rate of pre-admission assessment and failure to arrive would assist with this.

Procedure cancellation

This area has stabilised with slight improvement. Once again, it is important that HCOs continue to review the relationship between the rate of pre-admission assessment and this CI. Appropriate pre-admission assessment should identify a pre-existing medical condition, acute medical admission and ensure administrative and organisation processes are in place to ensure appropriate scheduling or preparation for these patients.

Episode of care adverse events

The ADSC is pleased to see that there has been an increase in the number of HCOs which have submitted data (99 compared to 67 in 2013). The results are pleasing, however, these results may not be reflected across all the HCOs who have provided data for the other CIs.

Unplanned return to the operating room

The rate within this area continues to decrease and is low, which is appropriate for the types of patients and procedures performed. However, it should be noted that return to theatre is not necessarily a negative; as it may demonstrate that early action has been taken to avoid any long term adverse outcomes.

Unplanned transfer/admission

It is pleasing to see that there has been a decrease in the number of unplanned transfers or admissions. It would be useful to know if this is directly related to the pre-admission process and HCOs are encouraged to review this process.

Discharge

It is pleasing to see that there has been a decrease in delay in discharge. It would be useful to know if this is directly related to the pre-admission process (including education and confirming discharge arrangements) and HCOs are encouraged to review this process. It is noted that there have been fewer HCOs which have contributed data for delayed discharge for non-clinical reasons.

Departure

It is pleasing to see that there has been an increase in the number of HCOs which have submitted data (70 compared to 48 in 2013). The results are pleasing, however these results may not be reflected across all the HCOs who have provided data for the other CIs.

Post-discharge follow-up

It is noted that only 64 HCOs have contributed data for 'follow up attempted within seven days' and 75 HCOs for 'follow up received within seven days'; therefore this rate may not be reflected across all HCOs. However, it is pleasing to see an increase in follow up attempted achieved.

General comments

It is disappointing that there is still a relatively low uptake of the revised CIs. HCOs are encouraged to review their data against their pre-admission assessment policies and protocols to identify whether a more effective pre-admission program may have further reduced their CI rate. However, it is pleasing to see that there has been an improvement in the data submitted.



Expert Commentary

Australian Day Surgery Nurses Association (ADSNA)

Pre-admission preparation

Pre-admission screening is crucial to the day procedure process to ensure patient safety, minimise late cancellations and minimise disruptions to operating lists. The selection of suitable patients for day surgery, patient information, assessment and preparation are essential for optimal patient outcomes.¹ Pre-admission screening has been identified as a core safety strategy in the NSQHS Standards. This is reflected in the increase in the number of pre-admission assessments reported in 2014.

Procedure non-attendance

Procedure non-attendance can be minimised by appropriate patient selection, pre-admission assessment and patient education. Non-attendance appears to have reduced quite significantly since 2007, but has remained fairly static in recent years (2012–14). These results indicate that there is further opportunity for improvement in this area to ensure changing population demographics are taken into consideration.

Procedure cancellation

Procedure cancellation is often related to pre-existing or acute medical conditions and other organisational/administrative errors. Cancellation related to medical issues can sometimes be unavoidable but can be minimised by pre-admission screening and education. There appears to be no significant trend in the data related to these areas from 2007 to 2014. Organisational/administrative errors have reduced slightly, however they offer the greatest opportunity for improvement through more robust administrative process management.

Episode of care adverse events

Minimisation of adverse events is the desirable outcome for any procedure. Pre-admission assessment is a crucial component in risk management strategies in order to minimise adverse events. Pre-admission screening assists in the identification of risk factors that may impact on the patient's care pathway as a day procedure patient. An adverse event may be unavoidable, however certain risk factors identified during the pre-admission process may result in the selection of alternative care delivery models that are safer for the patient than the day procedure pathway. Root cause analysis of adverse events enables an organisation to further understand why adverse events occur and assist strategy development to reduce future risk.

Unplanned return to the operating room

Unplanned return to the operating room has remained relatively static from 2007–2014, with a low rate being the desirable outcome. Unplanned return to the operating room can be related to several variables, but can be minimised by a robust pre-admission assessment. Any unplanned return requires root cause analysis to enable an organisation to understand the reasons behind the unplanned return and assist strategy development in order to reduce future risk.

Unplanned transfer/admission

Unplanned transfer or overnight admission related to the procedure indicates inadequate patient risk assessment and/or inadequate care, resulting in complications requiring the patient's transfer and further monitoring and management. Robust pre-admission screening is crucial to ensure minimisation of unplanned transfer or overnight admission. As expected, the data indicate higher rates in the public sector compared to the private sector, which would reflect the higher number of patients with a higher level of risk.

Unplanned transfer or overnight admission related to ongoing management is an indicator of quality of care. The NSQHS Standards have identified the importance of clinician credentialing, ongoing education and training, the implementation of robust policy and procedures, and a strong focus on risk management as key components to help ensure service quality and safety.

Discharge

The data show that delays in discharge for clinical reasons has remained relatively static. Delays due to non-clinical reasons have reduced significantly compared to 2013. This highlights the importance of discharge planning and education at the time of pre-admission. Aligning patient/carer expectations enables the patient and carer to be better informed of the surgery and post-surgery expectations, enabling a more informed choice on when the patient's surgery is scheduled in relation to social and lifestyle factors.



Departure

Ideally, patients should not be discharged without an escort for safety reasons. However, there is no information provided in relation to anaesthesia, procedure type or patient demographics to enable more meaningful commentary.

Post-discharge follow-up

Post-discharge follow-up is an essential component of the day procedure process. A phone call post-discharge enables the nurse to monitor the patient's condition post-procedure, reinforce post-procedure education, answer any questions and obtain important feedback. The increased rate of post-procedure calls can indicate how organisations view follow-up as an important aspect of care delivery.

References

1. Lemos P. Day Surgery. Development and Practice. London: International Association for Ambulatory Surgery, 2006.



Emergency Medicine

VERSION 5.1

Waiting time

CI 1.1 ATS Category 1 patients attended to immediately (H) In 2014, there were 24,447 patients reported from 129 HCOs. The annual rate was 99.7 per 100 patients. The fitted rate improved from 99.0 to 99.5, a change of 0.49 per 100 patients. There were no significant stratum differences in 2013 and 2014. In 2014, there was relatively little variation between HCOs and so the potential gains were small. In 2014, there were ten outlier records from seven HCOs whose combined excess was 51 fewer patients allocated ATS Category 1 who are attended to immediately. The outlier HCO rate was 96.2 per 100 patients.

CI 1.2 ATS Category 2 patients attended to within 10 minutes (H) In 2014, there were 445,243 patients reported from 144 HCOs. The annual rate was 80.5 per 100 patients. The fitted rate improved from 73.9 to 81.3, a change of 7.4 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 7.1 per 100 patients. In 2014, the potential gains totalled 57,954 more patients allocated ATS Category 2 who are attended to within ten minutes. In 2014, there were 44 outlier records from 28 HCOs whose combined excess was 18,512 fewer patients allocated ATS Category 2 who are attended to within ten minutes. The outlier HCO rate was 64.7 per 100 patients.

CI 1.3 ATS Category 3 patients attended to within 30 minutes (H) In 2014, there were 1,405,462 patients reported from 143 HCOs. The annual rate was 67.6 per 100 patients. The fitted rate improved from 61.0 to 66.3, a change of 5.2 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 4.9 per 100 patients. In 2014, the potential gains totalled 361,921 more patients allocated ATS Category 3 who are attended to within 30 minutes. In 2014, there were 51 outlier records from 35 HCOs whose combined excess was 93,903 fewer patients allocated ATS Category 3 who are attended to within 30 minutes. The outlier HCO rate was 50.7 per 100 patients.

CI 1.4 ATS Category 4 patients attended to within 60 minutes (H) In 2014, there were 1,637,503 patients reported from 143 HCOs. The annual rate was 74.7 per 100 patients. The fitted rate improved from 63.9 to 73.6, a change of 9.8 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 9.5 per 100 patients. In 2014, the potential gains totalled 336,311 more patients allocated ATS Category 4 who are attended to within 60 minutes. In 2014, there were 66 outlier records from 44 HCOs whose combined excess was 82,001 fewer patients allocated ATS Category 4 who are attended to within 60 minutes. The outlier HCO rate was 62.2 per 100 patients.

CI 1.5 ATS Category 5 patients attended to within 120 minutes (H) In 2014, there were 343,194 patients reported from 142 HCOs. The annual rate was 88.8 per 100 patients. The fitted rate improved from 85.3 to 88.9, a change of 3.6 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 3.7 per 100 patients. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 32,875 more patients allocated ATS Category 5 who are attended to within 120 minutes. In 2014, there were 34 outlier records from 23 HCOs whose combined excess was 14,510 fewer patients allocated ATS Category 5 who are attended to within 120 minutes. The outlier HCO rate was 68.2 per 100 patients.

Acute myocardial infarction (AMI) management

CI 2.1 Thrombolytic therapy administration to AMI patients within 30 minutes (H) In 2014, there were 270 patients reported from 22 HCOs. The annual rate was 48.9 per 100 patients. The fitted rate deteriorated from 72.1 to 52.2, a change of 19.9 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 19.6 per 100 patients. There were no potential gains in 2014.

Access block

CI 3.1 Mental health admitted patients whose total ED time exceeded 4 hours (L) In 2014, there were 15,626 patients reported from 22 HCOs. The annual rate was 42.1 per 100 patients. The fitted rate improved from 44.1 to 50.0, a change of 5.9 per 100 patients. In 2014, the potential gains totalled 2,729 fewer mental health admitted patients whose total ED time exceeded four hours, corresponding to a reduction by approximately one-quarter. In 2014, there were ten outlier records from six HCOs whose combined excess was 1,619 more mental health admitted patients whose total ED time exceeded four hours. The outlier HCO rate was 68.3 per 100 patients.



CI 3.2 Critical care admitted patients whose total ED time exceeded 4 hours (L)

In 2014, there were 32,356 patients reported from 25 HCOs. The annual rate was 38.1 per 100 patients. The fitted rate improved from 51.7 to 36.2, a change of 15.5 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 21.1 per 100 patients. In 2014, the potential gains totalled 5,142 fewer critical care admitted patients whose total ED time exceeded four hours, corresponding to a reduction by approximately one-third. In 2014, there were 15 outlier records from 12 HCOs whose combined excess was 3,611 more critical care admitted patients whose total ED time exceeded four hours. The outlier HCO rate was 64.5 per 100 patients.

Mental health assessment turnaround time

CI 4.1 Mean time from ED referral to assessment by a mental health worker (L) In 2014, there were 5,344 patients reported from three HCOs. The mean time from referral by an ED clinician to the mental health team to assessment by a mental health worker was 20.1 minutes.

CI 4.2 Median time from ED referral to assessment by a mental health worker (L) In 2014, there were 5,344 patients reported from three HCOs. The median time from referral by an ED clinician to the mental health team to assessment by a mental health worker was 1.3 minutes.

Paediatric patient management

CI 5.1 Mean time of first antibiotic administration in septic infants within 28 days (L) In 2014, there were ten infants reported from two HCOs. The mean time to first antibiotic per infant was 99.3 minutes.

CI 5.2 Salbutamol therapy within 30 minutes of arrival for asthma patients (H) In 2014, there were 390 patients reported from six HCOs. The annual rate was 61.5 per 100 patients. In 2014, the potential gains totalled 115 more paediatric ED patients who presented with asthma and who received salbutamol therapy within 30 minutes. In 2014, there was one outlier record from one HCO whose combined excess was 27 fewer paediatric ED patients who presented with asthma and who received salbutamol therapy within 30 minutes. The outlier HCO rate was 38.1 per 100 patients.

Discharge communication in older patients

CI 6.1 Discharge communication for ED patients aged 65 years or more (H) In 2014, there were 10,667 patients reported from nine HCOs. The annual rate was 78.5 per 100 patients. In 2014, the potential gains totalled 1,371 more patients aged 65 years or older discharged from ED to home or residential accommodation with discharge communication provided to a primary care provider. In 2014, there were five outlier records from four HCOs whose combined excess was 433 fewer patients aged 65 years or older discharged from ED to home or residential accommodation with discharge communication provided to a primary care provider. The outlier HCO rate was 66.9 per 100 patients.

CI 6.2 Documented risk assessment for ED patients aged 65 years or more (H) In 2014, there were 8,208 patients reported from eight HCOs. The annual rate was 22.6 per 100 patients. In 2014, the potential gains totalled 415 more ED patients aged 65 years or older who have had a documented risk assessment prior to discharge to home or residential accommodation. In 2014, there were four outlier records from three HCOs whose combined excess was 276 fewer ED patients aged 65 years or older who have had a documented risk assessment prior to discharge to home or residential accommodation. The outlier HCO rate was 15.5 per 100 patients.

Pain management

CI 7.1 Documented initial pain assessment score for adult abdominal or limb pain (H) In 2014, there were 12,231 patients reported from five HCOs. The annual rate was 42.7 per 100 patients. In 2014, the potential gains totalled 6,985 more ED patients with abdominal or limb pain who have a documented initial pain assessment score. In 2014, there were three outlier records from two HCOs whose combined excess was 1,486 fewer ED patients with abdominal or limb pain who have a documented initial pain assessment score. The outlier HCO rate was 27.1 per 100 patients.

CI 7.2 Documented pain re-assessment score for adult abdominal or limb pain (H) In 2014, there were 147 patients reported from two HCOs. The annual rate was 89.8 per 100 patients. There were no potential gains in 2014.

CI 7.3 Analgesic therapy within 30 minutes for adult abdominal or limb pain (H) In 2014, there were 9,703 patients reported from four HCOs. The annual rate was 31.7 per 100 patients. In 2014, the potential gains totalled 3,482 more ED patients with abdominal or limb pain who received analgesic therapy within 30 minutes.



CI 7.4 Analgesic therapy within 30 minutes for paediatric limb fracture (H) In 2014, there were 31 patients reported from two HCOs. The annual rate was 83.9 per 100 patients. There were no potential gains in 2014.

Patients who did not wait

CI 8.1 Mental health patients who did not wait following clinical documentation (L) In 2014, there were 24,795 patients reported from 14 HCOs. The annual rate was 5.5 per 100 patients. The fitted rate deteriorated from 3.8 to 5.8, a change of 2.0 per 100 patients. In 2014, the potential gains totalled 986 fewer ED patients presenting with a mental health complaint who did not wait after having clinical information documented, corresponding to a reduction by approximately two-thirds. In 2014, there were two outlier records from one HCO whose combined excess was 262 more ED patients presenting with a mental health complaint who did not wait after having clinical information documented. The outlier HCO rate was 12.3 per 100 patients.

CI 8.2 Patients who did not wait following clinical documentation (L) In 2014, there were 1,157,075 patients reported from 32 HCOs. The annual rate was 3.7 per 100 patients. The fitted rate improved from 4.8 to 3.7, a change of 1.1 per 100 patients. In 2014, the potential gains totalled 21,709 fewer ED patients who did not wait after having clinical information documented, corresponding to a reduction by approximately one-half. In 2014, there were 18 outlier records from 12 HCOs whose combined excess was 8,226 more ED patients who did not wait after having clinical information documented. The outlier HCO rate was 5.8 per 100 patients.



Expert Commentary

Australasian College for Emergency Medicine (ACEM)

Waiting time

All HCOs are doing well in ATS Category 1, for which numbers remain small with an overall downward trend. Even the 20th percentile was 99.7% suggesting that even HCOs with overall poor performance are able to respond immediately to this group of critically ill patients. Notably the number of HCOs reporting has dropped dramatically from 160 in 2013 to only 129 for 2014. The trend has been a steady drop in HCOs reporting since 2008 when there were 200 HCOs providing their data.

The compliance rate for ATS Category 2 continues to hover around the 80% mark. However this overall figure is a mix of high and low performing HCOs with most well above 80%, but a significant number well below in the 50–70% range. Efforts to improve performance in this high acuity category should concentrate on the lowest performing HCOs, which has the potential to yield significant improvements in patient safety and care.

ATS Category 3 is the standout underperformer, failing to meet the 75% benchmark for the 9th consecutive year. The number of patients surveyed continues to grow although there are 26 fewer HCOs reporting on ATS Category 3 this year. The drop in reporting HCOs has been precipitous in the last three years from 191 in 2011 to 143 in 2014. The overall rate of 67.6% represents a small improvement from 2013 figures of 66% but again, this masks an overall fall in the number of ATS Category patients seen within 30 minutes. Again, performance across HCOs is highly variable both between and within states with Western Australia being the worst performing state, followed by Queensland and South Australia. Western Australia has dropped from 23 reporting HCOs in 2013 to only ten in 2014; presumably removing higher performing non-metropolitan HCOs

which show higher ATS Category 3 compliance. South Australia dropped from 11 to seven reporting HCOs over the last year, although Queensland has bucked the trend and recruited another nine HCOs to have 40 reporting in 2014. The clear message this year again is that new initiatives to improve performance in ATS Category 3 should target the lowest performing HCOs, whose patients have the most to gain.

The ATS Category 4 cohort continues to shrink due to the dropout of 13 New South Wales and Western Australia HCOs and four South Australian HCOs, while Queensland adds another nine HCOs. The overall compliance with ATS Category 4 continues to increase over the 70% benchmark to a comfortable 74.7% in 2014. However, the satisfactory overall compliance blends the outstanding performance of some HCOs (>90%) with very poor results from the bottom 10–15% (<60%). Western Australia and South Australia failed to reach the 70% benchmark. As for ATS Category 3, there is considerable scope to improve patient access to ED via targeting low performing states and HCOs for interventions.

The fall in ATS Category 5 patient numbers continues with a dramatic fall in the number of reporting HCOs from 168 in 2013 to 142 in 2014 making it hard to judge the level of growth or lack of it in this patient cohort. The overall simplicity of these patients and longer time frame means that most HCOs deal well with this group. This Category should not be prioritised for intervention as there are considerably greater and more clinically significant gains to be made in the ATS Category 3 and 4 groups.¹

Acute myocardial infarction (AMI) management

The current CI looks at the number of patients with AMI who require reperfusion that receive thrombolysis within 30 minutes of presentation to the ED. The 2013 American College of Cardiology Foundation (ACCF)/ American Heart Association (AHA) guidelines for the management of ST elevation myocardial infarction (STEMI) state that:

- Primary percutaneous coronary intervention (PCI) is the 'recommended method of reperfusion when it can be performed in a timely manner' and that patients should either be transported directly to a PCI capable hospital
- Or
- If possible, transferred to a PCI capable hospital if they arrive at one that is unable to perform PCI, and that thrombolytic therapy should only be administered if the patient is at a non-PCI capable hospital and that the anticipated time from first medical contact (FMC) to device time for PCI will exceed 120 minutes.²

The Australian Heart Foundation also recommends PCI as preferred treatment for patients with STEMI, with the 2011 addendum to the Australian and New Zealand guidelines for management of Acute Coronary Syndromes (ACS) stating that PCI should be the preferred method of reperfusion for STEMI.³ Therefore it might be prudent to update the CI for AMI management to reflect this shift to preferred PCI. Suggested CIs include:

- Number of patients presenting to a PCI capable hospital with STEMI who undergo PCI within 90 minutes.
- Number of patients presenting to a non-PCI hospital who are transferred to PCI capable hospital who undergo PCI within 120 minutes.



- Number of patients who present to non-PCI capable hospital and can't be transferred to PCI capable hospital within 120 minutes who receive thrombolysis within 30 minutes of arrival.

Access block

The ACEM definition of Access Block is a wait for admission from the Emergency Department (ED) of more than eight hours, which has an evidence base and applies to all ED patients. What is presented currently are data pertaining to the compliance with the National Emergency Access Target (NEAT) of four hours. This CI should therefore be renamed 'NEAT Compliance for Mental Health and Critical Care patients who are admitted'.⁴

In relation to **CI 3.1** Admitted health patients – total ED time, overall, there is wide variability between HCOs with respect to this CI and therefore much room for improvement in the quality of care delivered. At best, the quality of care for mental health patients with respect to NEAT compliance was poor in 2014. This is especially so in metropolitan hospitals, with approximately half of all mental health patients waiting more than four hours for admission in these hospitals in this year.

With regards to **CI 3.2** Admitted critical care patients – total ED time >4 hours, there are large differences in the number of HCOs reporting each year for both CIs, with corresponding big changes in the observed denominators from year to year. It is most likely that any apparent trends over time are simply due to different HCOs reporting data at different time points, rather than any change in quality of care over time in a group of HCOs. If this is the case, it would therefore be better to simply list the HCOs (numbered anonymously) quoting their numbers and rate for

the relevant year in a table. What can be derived from these data is that, at best, the quality of care for mental health patients with respect to NEAT compliance is poor. This is especially so in metropolitan hospitals as around half of mental health patients wait more than four hours for admission. It should also be noted that the data presented are from a small proportion of possible HCOs for both measures (at best 9–13% of the approximately 200 eligible HCOs) depending on which year is considered, which means that the data may not be representative of most EDs.

Mental health assessment turnaround time

The numerator is the time taken for the referral by the ED clinician to the mental health team assessment. This does not take into account the time taken for the patient to be seen by the ED clinician. This means that there may be a significant delay from the time of triage and time in the waiting room before the time of mental health assessment, which is not captured by this parameter. If the patients do not have an acute behaviour disturbance associated with the presentation, then they may also have a low ATS score (4 or 5) and a prolonged stay in the waiting room.

The denominator is the number of presentations of patients with ICD-10 codes F20 to F69. This encompasses schizophrenia, major mood disorders and personality disorders but does not include developmental or behavioural disorders. It also does not include people with mixed diagnoses of both substance abuse and mental health problems, which represent a significant workload. With the national move to Activity Based Funding (ABF), coding for ED presentations that are not admitted will move to Urgency Related Groups (URGs). This is a coarser measurement and maps back

to a single ICD-10 code. Unless the primary reason for the presentation is related to mental health, then it will be missed in the denominator. Overall, it is likely that using this definition will underestimate the real number of mental health presentations and burden of disease.

There has been an improvement in the mean waiting times over the years reported, but this is associated with a reduction in the number of HCOs reporting. The small number of HCOs (only two for 2014), make this difficult to draw meaningful conclusions from these data.⁵

Paediatric patient management

With regards to **CI 5.1** Mean time of first antibiotic administration in septic infants, ACEM was concerned to see that only two HCOs reported on this CI, with only four records being examined. This lack of data therefore does not allow for any meaningful comment on the data or trends. However, with a mean time to first antibiotic per infant of 99.3 minutes, this could not be said to reflect best practice in these cases.⁶

In relation to **CI 5.2** Salbutamol therapy within 30 minutes for paediatric asthma, ACEM notes that six HCOs reported on this CI in 2014 with 390 files examined. Although there has been an improvement in the number of HCOs reporting on this since 2011, this still represents a small fraction of paediatric asthma emergency presentations. ACEM also notes that there has been improved performance against this CI, with 61.5 per 100 patients received salbutamol within 30 minutes in 2014, an improvement from 49.5 per 100 in 2011.



Discharge communication in older patients

While the rate continues to improve in relation to **CI 6.1** Discharge communication for ED patients 65 years or more in age, there is still a number of outlier HCOs whose rates do not equate with good clinical practice. This important facet of ED care needs continued emphasis if there are to be ongoing gains achieved, and the aspirational goal of 100% reached by all HCOs.

Pain management

Pain represents the most common reason for presenting to EDs, comprising approximately two-thirds of all presenting complaints. The documentation of a pain score has been found to improve analgesia provision to patients in the ED and is now a standard of care. ACEM notes that the rates of documentation of a pain score were variable. The re-assessment of a pain score is a CI of ongoing care and the results are encouraging. It has been reported that this score is often completed but not documented. It is quite possible to provide adequate care by asking the patient in another format, such as, "would you like any more medicine for your pain?"

In comparison, the rates of provision of analgesia within 30 minutes are extremely low, but improving from 2012 to 2014. The National Institute of Clinical Studies Pain Management Initiative suggests 30 minutes as the ideal time frame.⁷ It is encouraging to observe the efficient analgesia provision for paediatric patients, which was similarly observed by Hansen *et al* in 2012.⁸

The trends over time are confounded by a jump of 50% in the number of HCOs contributing over time. The overall number of HCOs contributing to the Pain Management CI is very low and that makes it

difficult to comment on national trends. Certainly 2011 seems to be an extreme outlier for pain score documentation. There are more than 100 EDs in Australia and it would be hard to make any generalisations from this very small sample.

Patients who did not wait

There is an overall improvement in the number of patients who failed to wait for care (fitted rate improvement from 4.8 to 3.7 per 100 patients) from the sample group of 1,157,075 from the 32 HCOs contributing data this year. This improvement in the rate of "did not wait patients" is most likely a consequence of the overall improvements in waiting times across the Australian Triage Categories 2–5 which is also identified in this report (**CIs 1.2–1.5**). Waiting times to see a clinician remain the chief determinant of why patients might leave prior to being seen. Any improvement in waiting time should be expected to be associated with an improvement in "did not wait" rate as we see in this report. This represents an improvement in access to emergency care.

The "did not wait" rate for mental health patients appeared to deteriorate in 2014 (fitted rate fell from 3.8 to 5.8 per 100 patients) from the sample group of 24,795 patients reported from 14 HCOs. Given the small number of HCOs reporting this CI (14 Public – nine metropolitan and five non metropolitan, and 0 Private), interpretation of the significance of this deterioration in rate is not possible. Mental health patients who fail to wait for care in EDs have been identified as a vulnerable group of patients and mechanisms to provide access to timely care for this group are an important part of quality care in emergency medicine.⁹

References

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Expert Commentary

College of Emergency Nursing Australasia (CENA)

Waiting time

Patient presentations to EDs have steadied in 2014. Although EDs continue to have 'waiting', it is reassuring to note that critically unwell patients are being cared for immediately. Using a triage system to sort the patient's acuity is vital and life saving. According to clinicians working 'on the ED floor', extended waiting times and access block seem to be directly linked. This is despite many interventions and innovative changes to practice that have occurred to address both issues.

Access block

Access block continues to be a problem in EDs across Australia. Some changes to 'ownership' of the problem have seen patients being 'pulled' into the hospital from the ED, by other services. Using this hospital-wide method results in the right patient getting to the right bed more often. The benefit is reduced length of stay for the patient, both in the ED and for their hospital stay.

Mental health assessment turnaround time

The way that mental health care is being delivered has been refocused and the reported data suggest that this is having an impact on the times that patients are staying in EDs. Specific 'in-reach' programs that target mental health patients have been evolving across Australia. It means patients are assessed more quickly and their disposition planned earlier. Relevant community services are easier to access from within the ED.

Discharge communication in older patients

Better communication with our patients has become a focus for all EDs. The importance of this is reflected by the fact this is a national standard that is attached to NSQHS accreditation; "Standard 2 – Partnering with Consumers".¹ The continued development of teams within EDs that are responsible for screening over 65 year olds for various things (falls, medications, community support) means that our overall communication has improved. In-reach services are expanding for this patient population. With support, people can return home safely to receive ongoing, low level healthcare. The development of these services has required healthcare providers to communicate succinctly and professionally with each other. ED Short Stay Units are an area where older patients can receive some additional care before being discharged. These units provide a great discharge service, which includes good communication with the patient, their relatives and relevant healthcare professionals.

Pain management

Proudly and professionally, Emergency Nurses conduct pain assessments both at Triage and when conducting initial nursing assessments. Implementing treatment to alleviate these symptoms, and ongoing re-assessment, is a large part of their daily workload. Pain management is an 'ED team' effort. The data provided do not reflect the importance emergency clinicians place on this, with the poor contribution rate. Unfortunately, accurate data collection would be highly laborious.

Patients who did not wait

Many EDs have changed their model of care to cope with the increasing number of presentations. From this, there has been a focus on early ED assessment and re-energising how we manage the patients that present to the ED that are likely to be discharged. Often patients that did not wait (DNW) are triaged with a lower category and get frustrated by the waiting times. With clinicians dedicated to the 'discharge' stream, they are being seen in a quicker time, which means fewer patients not waiting. Mental health services are increasingly engaging with their patients earlier, resulting in the improved data seen for that patient group.

General comments

Some of the CIs have a poor data return rate. Making the reporting system easier would see a wider range of stakeholders contributing. The information that could be extracted then would become more valuable for clinicians and HCOs. Although the data provided regarding mental health are impressive, anecdotally this is not the nursing clinicians' experience. Extended long waits continue for mental health patients, who are 'blocked' in many EDs across Australia for a variety of reasons.

References

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LEAD

SIZE

ALARM
SUSPEND

RECORDER

MONITOR

CHARGE

ENERGY
SELECT

OFF

PACER

PACER
OUTPUT
mA

4:1

CODE
MARKER

Medical Corporation



Gastrointestinal Endoscopy

VERSION 2

Failure to reach caecum

CI 1.1 Failure to reach caecum due to inadequate bowel preparation (L) In 2014, there were 85,247 colonoscopies reported from 44 HCOs. The annual rate was 0.45 per 100 colonoscopies. In 2014, the potential gains totalled 206 fewer incomplete colonoscopies performed, corresponding to a reduction by approximately one-half. In 2014, there were five outlier records from four HCOs whose combined excess was 70 more incomplete colonoscopies performed. The outlier HCO rate was 2.5 per 100 colonoscopies.

CI 1.2 Failure to reach caecum due to diseased colon (L) In 2014, there were 79,499 colonoscopies reported from 40 HCOs. The annual rate was 0.30 per 100 colonoscopies. In 2014, the potential gains totalled 155 fewer incomplete colonoscopies performed, corresponding to a reduction by approximately one-half. In 2014, there were nine outlier records from six HCOs whose combined excess was 72 more incomplete colonoscopies performed. The outlier HCO rate was 1.3 per 100 colonoscopies.

CI 1.3 Failure to reach caecum due to instrument failure (L) In 2014, there were 76,529 colonoscopies reported from 39 HCOs. The annual rate was 0.005 per 100 colonoscopies. There were no significant stratum differences in 2013 and 2014. In 2014, there was relatively little variation between HCOs and so the potential gains were small. In 2014, there was one outlier record from one HCO whose combined excess was one more incomplete colonoscopies performed. The outlier HCO rate was 0.18 per 100 colonoscopies.

CI 1.4 Failure to reach caecum for any other reason (L) In 2014, there were 83,034 colonoscopies reported from 39 HCOs. The annual rate was 0.31 per 100 colonoscopies. In 2014, the potential gains totalled 235 fewer incomplete colonoscopies performed, corresponding to a reduction by approximately four-fifths. In 2014, there were ten outlier records from six HCOs whose combined excess was 128 more incomplete colonoscopies performed. The outlier HCO rate was 2.1 per 100 colonoscopies.

Adverse outcomes – colonoscopy/ polypectomy

CI 2.1 Treatment for possible perforation post-polypectomy (L) In 2014, there were 59,937 colonoscopies with polypectomy reported from 63 HCOs. The annual rate was 0.050 per 100 colonoscopies with polypectomy. There was no significant trend in the fitted rate. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 20 fewer patients treated for possible perforation related

to polypectomy, corresponding to a reduction by approximately one-half. In 2014, there were three outlier records from three HCOs whose combined excess was nine more patients treated for possible perforation related to polypectomy. The outlier HCO rate was 0.47 per 100 colonoscopies with polypectomy.

CI 2.2 Treatment for possible perforation post-colonoscopy (L) In 2014, there were 69,249 colonoscopies with polypectomy reported from 63 HCOs. The annual rate was 0.023 per 100 colonoscopies. The fitted rate improved from 0.074 to 0.019, a change of 0.055 per 100 colonoscopies. There were no significant stratum differences in 2013 and 2014. There were no potential gains in 2014.

CI 2.3 Post-polypectomy haemorrhage (L) In 2014, there were 56,571 colonoscopies reported from 58 HCOs. The annual rate was 0.092 per 100 colonoscopies with polypectomy. The fitted rate improved from 0.20 to 0.11, a change of 0.087 per 100 colonoscopies with polypectomy. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.087 per 100 colonoscopies with polypectomy. In 2014, the potential gains totalled 27 fewer patients who have bleeding related to polypectomy, corresponding to a reduction by approximately one-half. In 2014, there were three outlier records from two HCOs whose combined excess was six more patients who have bleeding related to polypectomy. The outlier HCO rate was 1.1 per 100 colonoscopies with polypectomy.

Colorectal cancer

CI 3.1 Malignancies diagnosed at colonoscopy (N) In 2014, there were 38,896 colonoscopies reported from 23 HCOs. The annual rate was 1.08 per 100 colonoscopy patients.

CI 3.2 Malignancies not detected at another colonoscopy within past 5 years (L) In 2014, there were 271 patients reported from 14 HCOs. The annual rate was 17.3 per 100 patients. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 25 fewer patients diagnosed with colorectal malignancy within five years of their most recent colonoscopy, corresponding to a reduction by approximately one-half. In 2014, there was one outlier record from one HCO whose combined excess was four more patients diagnosed with colorectal malignancy within five years of their most recent colonoscopy. The outlier HCO rate was 64.3 per 100 patients.



Oesophageal dilatation – perforation

CI 4.1 Oesophageal dilatation – possible perforation (L) In 2014, there were 2,797 patients reported from 38 HCOs. The annual rate was 0.43 per 100 patients. There was no significant trend in the fitted rate. In 2014, the potential gains totalled six fewer patients treated for possible oesophageal perforation, corresponding to a reduction by approximately one-third. In 2014, there was one outlier record from one HCO whose combined excess was three more patients treated for possible oesophageal perforation. The outlier HCO rate was 2.9 per 100 patients.

Aspiration following gastrointestinal endoscopy

CI 5.1 Aspiration following endoscopy (L) In 2014, there were 85,745 endoscopy procedure with sedation reported from 43 HCOs. The annual rate was 0.016 per 100 patients. There was no significant trend in the fitted rate. There were no significant stratum differences in 2013 and 2014. There were no potential gains in 2014.



Expert Commentary

Australian Day Surgery Council (ADSC)

Failure to reach caecum

The Australian Day Surgery Council notes that the Clinical Indicators within this area are an important area to continue.

Adverse outcomes – colonoscopy/polypectomy

It is noted that it would be valuable to stratify between ‘day surgeries’ and ‘overnight stay hospitals’. The rates of perforation and of bleeding post-polypectomy are decreasing, as is the rates of perforation not related to polypectomy.

Colorectal cancer

It is suggested that data collection in this area is continued, although data may be available from other sources and may be incorrectly reported in the day surgery setting if biopsy results are not considered. The rate of malignancies not detected at a previous colonoscopy within the last five years is disturbingly high, however this will hopefully decrease with better training, bowel preparation and instruments.

Oesophageal dilatation – perforation

The incidence is so low that collection could be abandoned. Also, the collection does not differentiate between the reasons for procedure; for example, benign or malignant stricture, balloon dilatation etc.

Aspiration following gastrointestinal endoscopy

The Clinical Indicator within this area is seen as a risk of diagnostic endoscopy and although low, should be retained.

General comments

It is important to differentiate between patients in a day surgery setting and inpatients in a hospital. In the day only setting, the patients often attend for a diagnostic procedure; they are generally fitter and it must be recognised that true “informed consent” is not always possible. Inpatients that have endoscopies usually have several other comorbidities, and in many cases the more complicated procedures (e.g. large polyps) are restricted to this setting.



Gynaecology

VERSION 7

Blood transfusion

CI 1.1 Gynaecological surgery for benign disease – unplanned blood transfusion (L) In 2014, there were 35,882 patients reported from 43 HCOs. The annual rate was 0.77 per 100 patients. The fitted rate improved from 0.98 to 0.71, a change of 0.27 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.26 per 100 patients. In 2014, the potential gains totalled 146 fewer patients receiving an unplanned blood transfusion following gynaecological surgery for benign disease, corresponding to a reduction by approximately one-half. In 2014, there were four outlier records from three HCOs whose combined excess was 32 more patients receiving an unplanned blood transfusion following gynaecological surgery for benign disease. The outlier HCO rate was 2.4 per 100 patients.

CI 1.2 Gynaecological surgery for malignant disease – unplanned blood transfusion (L) In 2014, there were 1,533 patients reported from 21 HCOs. The annual rate was 6.1 per 100 patients. The fitted rate improved from 11.4 to 5.9, a change of 5.4 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 5.4 per 100 patients. In 2014, the potential gains totalled seven fewer patients receiving an unplanned blood transfusion following gynaecological surgery for malignant disease, corresponding to a reduction by approximately one-fifteenth.

Injury to a major viscus

CI 2.1 Gynaecological surgery - injury to a major viscus with repair (L) In 2014, there were 41,524 patients reported from 46 HCOs. The annual rate was 0.40 per 100 patients. There was no significant trend in the fitted rate. In 2014, the potential gains totalled 72 fewer patients suffering an injury to a major viscus, corresponding to a reduction by approximately one-third. In 2014, there were three outlier records from three HCOs whose combined excess was 14 more patients suffering an injury to a major viscus. The outlier HCO rate was 1.8 per 100 patients.

Laparoscopic management of an ectopic pregnancy

CI 3.1 Ectopic pregnancy managed laparoscopically (H) In 2014, there were 278 patients reported from 19 HCOs. The annual rate was 90.3 per 100 patients. The fitted rate improved from 71.4 to 88.6, a change of 17.2 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was

17.6 per 100 patients. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 24 more patients having laparoscopic management of an ectopic pregnancy. In 2014, there were two outlier records from two HCOs whose combined excess was nine fewer patients having laparoscopic management of an ectopic pregnancy. The outlier HCO rate was 68.9 per 100 patients.

Thromboprophylaxis for major gynaecological surgery

CI 4.1 Thromboprophylaxis for major gynaecological surgery (H) In 2014, there were 702 patients reported from seven HCOs. The annual rate was 59.0 per 100 patients. In 2014, the potential gains totalled 282 more patients receiving thromboprophylaxis. In 2014, there were two outlier records from two HCOs whose combined excess was 92 fewer patients receiving thromboprophylaxis. The outlier HCO rate was 30.8 per 100 patients.

CI 4.2 Readmission for venous thromboembolism within 28 days (L) In 2014, there were 432 patients reported from three HCOs. The annual rate was 0 per 100 patients. There were no potential gains in 2014.

Mesh repair

CI 5.1 Use of mesh repair for pelvic organ prolapse (L) In 2014, there were 332 patients reported from ten HCOs. The annual rate was 8.4 per 100 patients. In 2014, the potential gains totalled 24 fewer patients having mesh repair for pelvic organ prolapse, corresponding to a reduction by approximately four-fifths.

Menorrhagia

CI 6.1 Surgical intervention for menorrhagia (L) In 2014, there were 299 patients reported from seven HCOs. The annual rate was 41.1 per 100 patients. In 2014, the potential gains totalled 23 fewer patients undergoing a hysterectomy for menorrhagia, corresponding to a reduction by approximately one-tenth.



Expert Commentary

The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG)

Blood transfusion

Blood transfusion rates for benign gynaecological disease continue to remain stable at a rate of 0.77 per 100 patients. Blood transfusion rate for malignant gynaecological disease continue to fall and are currently at 6.1 per 100 patients, the lowest ever recorded. Increased acceptance of the risks of transfusion, as well as the need to restore abnormal pre-operative iron levels using parenteral iron, have contributed to this result. The rate of blood transfusion is slightly higher in the public system than private system which is consistent with earlier reports. Many factors may contribute to this, including patient selection. There continues to be a number of outlier HCOs whose rate of transfusion for benign disease is 2.4 per 100 patients. 'Blood and Blood Products' is now one of the ten NSQHS Standards; so hopefully this trend will continue.

Injury to a major viscus

The rate of injury to a major viscus with repair during gynaecological surgery has remained remarkably stable at around 0.4 per 100 patients. After a significant fall in HCOs reporting this CI in 2013, the uptake has risen by 21%, with 46 HCOs reporting this year. The rate of injury was lower in private HCOs than in public HCOs. There were three outlier HCOs with a rate of 1.8 per 100 patients. This may be due to patient selection or chance, however outlier HCOs should ensure that appropriate morbidity reviews are undertaken.

Laparoscopic management of an ectopic pregnancy

Laparoscopic surgery remains the most safe, reliable and cost effective way to surgically treat ectopic pregnancies.¹ The rate of laparoscopic management of ectopic pregnancy has continued to trend upwards and is currently 90%. There was a significant decrease in the number of HCOs reporting these data which may make the comparison invalid. There were two outlier HCOs with a rate of 69 per 100 patients. This may be related to complexity of the cases presenting, however outlier HCOs should ensure that they have the staff and facilities to provide laparoscopic surgery to this group of patients.

Thromboprophylaxis for major gynaecological surgery

The rate of thromboprophylaxis for major gynaecological surgery was 59 per 100 patients. As this CI has been revised recently, direct comparisons are difficult, however the rate appears lower than in previous years. In addition there were two outlier HCOs whose thromboprophylaxis rate was 30.8 per 100 patients. This year, three HCOs provided data for readmission rates for venous thromboembolism after gynaecological surgery. There were no readmissions in the 432 patients reported. This would confirm that the rate of clinical DVT after gynaecological surgery is low. There are very few studies that address the need for thromboprophylaxis in benign gynaecological surgery, however most HCOs would advocate thromboprophylaxis in abdominal surgery lasting more than 60 minutes and in high risk patients. Over the next few years, we will be able to track these rates and provide meaningful data for HCOs to use.

Mesh repair

This area consists of a new CI. In 2014, the rate of use of mesh in vaginal prolapse surgery was 8.43 per 100 patients. This CI was reported by only ten HCOs, yet of interest there were no outlier HCOs. The ideal rate of vaginal mesh repair is unknown and may vary depending on the referral patterns and skill mix of the HCO. The RANZCOG College statement on Polypropylene Vaginal Mesh Implants for Vaginal Prolapse² states that you should 'exercise caution in using transvaginal mesh implants in: primary prolapse cases, patients younger than 50, lesser grades of prolapse, posterior compartment prolapse without significant apical descent, patients with chronic pelvic pain and postmenopausal patients who are unable to use vaginal oestrogen therapy since this will be first line therapy for erosion'. After an initial rapid uptake in vaginal mesh usage, the rate of use of mesh in gynaecological surgery has decreased due to FDA warnings in the USA. This CI will provide HCOs with a rate that can be used for benchmarking purposes.



Menorrhagia

This area is made up of another new CI. Given the recent advances in conservative measures for menorrhagia and the known differences in hysterectomy rates across Australia, it was agreed to include this CI in order to provide HCOs with a benchmark for hysterectomy rates. Currently seven HCOs participated in this new CI. The hysterectomy rate was 41% and there were no outlier HCOs. It is difficult to comment on this until the participation rate increases and several years of data have built up. It needs to be remembered that the denominator is 'the number of patients undergoing surgery for menorrhagia', which includes endometrial ablations and myomectomies, but not conservative measures such as the progesterone containing intrauterine contraceptive device (IUCD). It is hoped that the rate of hysterectomy will decline steadily, as it has over the last ten years. This new CI should give health services a useful tool with which they can benchmark their HCO against other HCOs across the country.

General comments

Of significance, there were no deteriorations noted in any of the CIs in the current reporting period and there were two improvements noted in the CIs that could be marked for trend. Since 2010, there has been a decrease in the number of HCOs participating in the ACHS Gynaecology CIs. This is despite efforts to rationalise and simplify the CIs. Without effective benchmarks it is impossible for HCOs to monitor outcomes using realistic expectations. Hopefully, the recent changes to the Gynaecology CIs will lead to an uptake in participation over the coming years.

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Hospital in the Home

VERSION 4

Patient safety and selection

CI 1.1 HITH admission – 1 or more unexpected telephone calls (L) In 2014, there were 11,026 patients reported from 18 HCOs. The annual rate was 4.2 per 100 patients. The fitted rate improved from 4.5 to 3.4, a change of 1.1 per 100 patients. In 2014, the potential gains totalled 321 fewer patients making unexpected telephone calls, corresponding to a reduction by approximately two-thirds. In 2014, there were three outlier records from two HCOs whose combined excess was 140 more patients making unexpected telephone calls. The outlier HCO rate was 7.2 per 100 patients.

CI 1.2 HITH admission – 1 unscheduled staff callout (L) In 2014, there were 10,960 patients reported from 20 HCOs. The annual rate was 0.54 per 100 patients. The fitted rate improved from 1.4 to 0.86, a change of 0.57 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.58 per 100 patients. In 2014, the potential gains totalled 14 fewer patients having a single unscheduled staff callout, corresponding to a reduction by approximately one-fifth. In 2014, there were five outlier records from four HCOs whose combined excess was 13 more patients having a single unscheduled staff callout. The outlier HCO rate was 3.5 per 100 patients.

CI 1.3 HITH admission – more than 1 unscheduled staff callout (L) In 2014, there were 10,175 patients reported from 18 HCOs. The annual rate was 0.18 per 100 patients. There was no significant trend in the fitted rate. In 2014, the potential gains totalled ten fewer patients having more than one unscheduled staff callout, corresponding to a reduction by approximately one-half. In 2014, there were two outlier records from two HCOs whose combined excess was three more patients having more than one unscheduled staff callout. The outlier HCO rate was 1.7 per 100 patients.

Program interruption

CI 2.1 Unplanned return to hospital – patients not returning to HITH program (L) In 2014, there were 19,388 patients reported from 29 HCOs. The annual rate was 3.5 per 100 patients. The fitted rate deteriorated from 2.2 to 3.1, a change of 0.90 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.93 per 100 patients. In 2014, the potential gains totalled 239 fewer patients having an unplanned return to hospital who do not return to the HITH program, corresponding to a reduction by approximately one-third. In 2014, there were six outlier records from five HCOs whose combined excess was 130 more patients having an unplanned return to hospital who do not return to the HITH program. The outlier HCO rate was 6.3 per 100 patients.

CI 2.2 Unplanned return to hospital – patients returning to HITH program within 24 hours (N) In 2014, there were 18,629 patients reported from 25 HCOs. The annual rate was 2.4 per 100 patients. There was no significant trend in the fitted rate.

CI 2.3 Patients who have an unplanned return to hospital (N) In 2014, there were 23,376 patients reported from 29 HCOs. The annual rate was 4.0 per 100 patients. There was no significant trend in the fitted rate.

Unexpected deaths

CI 3.1 Unexpected deaths during HITH admission (L) In 2014, there were 12,277 patients reported from 19 HCOs. The annual rate was 0.024 per 100 patients. There was no significant trend in the fitted rate. There were no potential gains in 2014.

CI 3.2 Unexpected deaths following unplanned return to hospital (L) In 2014, there were 11,225 patients reported from 18 HCOs. The annual rate was 0.018 per 100 patients. There was no significant trend in the fitted rate. There were no potential gains in 2014.



Expert Commentary

Hospital in the Home Society Australasia (HITHSA)

Introductory comments

Hospital in the Home (HITH) services are recognised to be a safe and valued alternative to bed based care. Careful patient selection and appropriate management of deteriorating patients in the HITH setting is essential to provide safe care. These CIs offer objective measures for HITH services to benchmark. As well as reflecting quality of care and service delivery, it also needs to be noted that different HITH services may manage patients of varying complexity, resulting in differing rates for these CIs.

Patient safety and selection

A reduction in unexpected telephone calls (**CI 1.1**) may reflect improved patient selection and improved administration processes, however services with high numbers of clinically related calls may have more complex clients. It is suggested classifying the reason for the call into administrative (e.g. querying time of visit) and clinical. This would provide more relevant information. The downward trend of **CI 1.2** is a positive outcome reflecting that HITH services provide safe patient care.

Program interruption

The downward trend of **CI 2.1** is a positive outcome reflecting that HITH services provide safe patient care. It is unclear if the casemix and complexity are similar across jurisdictions, which may account for state differences. This CI may also reflect patient selection and/or complexity of patients. As more complex patients are managed in HITH it is likely callouts and unplanned visits will increase. It is suggested that the desirable level of **CI 2.2** should be low, confirming that transfer back to hospital was not appropriate.

Unexpected deaths

Unexpected death in HITH remains low, reflecting both appropriate patient selection and appropriate management of the deteriorating patient in the HITH setting.

General comments

HITH services are recognised to be a safe alternative to bed based care and this report confirms this. Careful patient selection is essential as is escalation and management of the deteriorating patient in the HITH setting. This will enable HITH services to continue to provide safe patient centred care in the patient's own home.





Hospital-Wide

VERSION 11.2

Hospital readmissions

CI 1.1 Unplanned and unexpected readmissions within 28 days (L) In 2014, there were 3,260,187 separations reported from 284 HCOs. The annual rate was 1.17 per 100 separations. The fitted rate improved from 1.5 to 1.1, a change of 0.44 per 100 separations. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.43 per 100 separations. In 2014, the potential gains totalled 33,113 fewer unplanned and unexpected readmissions within 28 days, corresponding to a reduction by approximately four-fifths. In 2014, there were 91 outlier records from 60 HCOs whose combined excess was 17,286 more unplanned and unexpected readmissions within 28 days. The outlier HCO rate was 4.2 per 100 separations.

CI 1.2 Unplanned and unexpected readmissions within 14 days (L) In 2014, there were 1,134,693 separations reported from 103 HCOs. The annual rate was 1.17 per 100 separations. The fitted rate improved from 1.6 to 0.93, a change of 0.64 per 100 separations. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.62 per 100 separations. In 2014, the potential gains totalled 11,081 fewer unplanned and unexpected readmissions within 14 days, corresponding to a reduction by approximately four-fifths. In 2014, there were 42 outlier records from 32 HCOs whose combined excess was 5,707 more unplanned and unexpected readmissions within 14 days. The outlier HCO rate was 3.6 per 100 separations.

Return to operating room

CI 2.1 Unplanned return to the operating room during the same admission (L) In 2014, there were 2,008,707 patients reported from 229 HCOs. The annual rate was 0.28 per 100 patients. The fitted rate improved from 0.39 to 0.27, a change of 0.12 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.12 per 100 patients. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 3,631 fewer patients having an unplanned return to the operating room, corresponding to a reduction by approximately one-half. In 2014, there were 47 outlier records from 31 HCOs whose combined excess was 1,174 more patients having an unplanned return to the operating room. The outlier HCO rate was 0.70 per 100 patients.

Pressure ulcers

CI 3.1 Inpatients who develop one or more pressure ulcers (L) In 2014, there were 12,670,770 bed days reported from 390 HCOs. The annual rate was 0.090 per 100 bed days. The fitted rate deteriorated from 0.072 to 0.084, a change of 0.012 per 100 bed days. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.012 per 100 bed days. In 2014, the potential gains totalled 7,880 fewer inpatients who develop one or more pressure ulcers, corresponding to a reduction by approximately two-thirds. In 2014, there were 80 outlier records from 57 HCOs whose combined excess was 2,668 more inpatients who develop one or more pressure ulcers. The outlier HCO rate was 0.20 per 100 bed days.

CI 3.2 Inpatients admitted with one or more pressure ulcers (L) In 2014, there were 2,721,234 admissions reported from 297 HCOs. The annual rate was 0.58 per 100 admissions. The fitted rate deteriorated from 0.099 to 0.67, a change of 0.57 per 100 admissions. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.52 per 100 admissions. In 2014, the potential gains totalled 12,427 fewer inpatients who are admitted with one or more pressure ulcers, corresponding to a reduction by approximately three-quarters. In 2014, there were 133 outlier records from 88 HCOs whose combined excess was 6,193 more inpatients who are admitted with one or more pressure ulcers. The outlier HCO rate was 1.4 per 100 admissions.

Inpatient falls

CI 4.1 Inpatient falls (L) In 2014, there were 13,328,834 bed days reported from 386 HCOs. The annual rate was 0.40 per 100 bed days. The fitted rate deteriorated from 0.35 to 0.39, a change of 0.036 per 100 bed days. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.043 per 100 bed days. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 22,104 fewer inpatient falls, corresponding to a reduction by approximately one-third. In 2014, there were 157 outlier records from 106 HCOs whose combined excess was 9,702 more inpatient falls. The outlier HCO rate was 0.78 per 100 bed days.



CI 4.2 Inpatient falls that require intervention

beyond standard hospital protocol (L) In 2014, there were 8,710,411 bed days reported from 288 HCOs. The annual rate was 0.064 per 100 bed days. The fitted rate improved from 0.13 to 0.076, a change of 0.058 per 100 bed days. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.058 per 100 bed days. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 4,971 fewer inpatient falls where the patient's condition requires intervention beyond standard hospital protocol, corresponding to a reduction by approximately four-fifths. In 2014, there were 50 outlier records from 37 HCOs whose combined excess was 2,711 more inpatient falls where the patient's condition requires intervention beyond standard hospital protocol. The outlier HCO rate was 0.24 per 100 bed days.

CI 4.3 Inpatient falls resulting in fracture or closed head injury (L)

In 2014, there were 10,481,271 bed days reported from 282 HCOs. The annual rate was 0.009 per 100 bed days. The fitted rate deteriorated from 0.007 to 0.009, a change of 0.002 per 100 bed days. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.002 per 100 bed days. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 344 fewer fractures or closed head injuries that result from an inpatient fall, corresponding to a reduction by approximately one-third. In 2014, there were 13 outlier records from 12 HCOs whose combined excess was 74 more fractures or closed head injuries that result from an inpatient fall. The outlier HCO rate was 0.038 per 100 bed days.

CI 4.4 Inpatient falls in patients aged 65 years or more (L)

In 2014, there were 4,736,165 bed days reported from 237 HCOs. The annual rate was 0.55 per 100 bed days. The fitted rate deteriorated from 0.49 to 0.54, a change of 0.055 per 100 bed days. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.057 per 100 bed days. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 8,935 fewer falls in inpatients aged 65 years and older, corresponding to a reduction by approximately one-third. In 2014, there were 66 outlier records from 53 HCOs whose combined excess was 3,316 more falls in inpatients aged 65 years and older. The outlier HCO rate was 0.91 per 100 bed days.

Patient deaths

CI 5.1 Deaths addressed within a clinical audit process (H)

In 2014, there were 18,662 patient deaths reported from 161 HCOs. The annual rate was 92.1 per 100 deaths. The fitted rate improved from 89.3 to 96.1, a change of 6.8 per 100 deaths. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 6.6 per 100 deaths. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 1,462 more patient deaths addressed within a clinical audit process. In 2014, there were 27 outlier records from 20 HCOs whose combined excess was 1,074 fewer patient deaths addressed within a clinical audit process. The outlier HCO rate was 58.9 per 100 deaths.

Blood transfusion

CI 6.1 Significant adverse blood transfusion events (L)

In 2014, there were 93,471 transfusions reported from 179 HCOs. The annual rate was 0.18 per 100 transfusions. The fitted rate improved from 0.28 to 0.18, a change of 0.10 per 100 transfusions. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.12 per 100 transfusions. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 97 fewer significant adverse blood transfusion events, corresponding to a reduction by approximately one-half. In 2014, there were six outlier records from six HCOs whose combined excess was 33 more significant adverse blood transfusion events. The outlier HCO rate was 1.1 per 100 transfusions.

CI 6.2 Transfusion episodes where informed patient consent was not documented (L)

In 2014, there were 18,498 transfusions reported from 92 HCOs. The annual rate was 5.8 per 100 transfusions. The fitted rate improved from 6.3 to 4.3, a change of 2.0 per 100 transfusions. In 2014, the potential gains totalled 999 fewer transfusions without documented informed patient consent, corresponding to a reduction by approximately four-fifths. In 2014, there were 15 outlier records from 11 HCOs whose combined excess was 671 more transfusions without documented informed patient consent. The outlier HCO rate was 28.0 per 100 transfusions.



CI 6.3 RBC transfusion where Hb reading is 100 g/L

or more (L) In 2014, there were 21,836 transfusions reported from 76 HCOs. The annual rate was 1.8 per 100 transfusions. The fitted rate improved from 2.6 to 1.5, a change of 1.1 per 100 transfusions. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 1.3 per 100 transfusions. In 2014, the potential gains totalled 255 fewer red blood cell transfusions, corresponding to a reduction by approximately one-half. In 2014, there were five outlier records from three HCOs whose combined excess was 132 more red blood cell transfusions. The outlier HCO rate was 7.6 per 100 transfusions.

Day of surgery admissions

CI 7.1 Admission of elective surgery patients on the day of surgery (H)

In 2014, there were 105,490 patients reported from 37 HCOs. The annual rate was 95.2 per 100 patients. The fitted rate improved from 83.6 to 92.1, a change of 8.5 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 8.2 per 100 patients. There were no significant stratum differences in 2013 and 2014. There was relatively little variation between HCOs and so the potential gains were small in 2014. In 2014, there were 15 outlier records from 12 HCOs whose combined excess was 2,608 fewer elective surgery patients admitted on the day of surgery. The outlier HCO rate was 85.0 per 100 patients.

Thromboprophylaxis

CI 8.1 VTE prophylaxis administered to high risk

medical patients (H) In 2014, there were 2,323 patients reported from 11 HCOs. The annual rate was 84.8 per 100 patients. In 2014, the potential gains totalled 264 more high risk medical patients who receive venous thromboembolism prophylaxis. In 2014, there were four outlier records from three HCOs whose combined excess was 178 fewer high risk medical patients who receive venous thromboembolism prophylaxis. The outlier HCO rate was 47.6 per 100 patients.



Expert Commentary

The Royal Australasian College of Medical Administrators (RACMA)

Hospital readmissions

The number of HCOs contributing data has decreased by 8% since 2007. There is a downward trend in **CI 1.1** (rates of unplanned and unexpected readmissions within 28 days). This would indicate continuing improvements in care and discharge planning. Not surprisingly, private HCOs have a lower rate than public HCOs, most probably related to their casemix and also to the fact that readmissions with complications may be admitted to a public HCO rather than return to a private HCO. Rates of outlier HCOs were more than three times the rate of the combined group. These HCOs should review their data in order to understand potential differences in care or discharge planning.

The rate for **CI 1.2** also continues its downward trend with, again, higher rates for public HCOs compared with private HCOs. There is state variation and the reasons for this should be investigated. This could include reviewing whether this is a data issue or whether these states have different practices related to discharge or the availability of post-discharge care. Review of readmissions is important for enabling clinicians to understand and improve their care processes.

Return to the operating room

The rate for **CI 2.1** continues its downward trend. The decrease may be related to improvements in surgical techniques, clinician training and supervision, credentialing and defining scope of practice as well as improved pre-operative assessment and postoperative practices. HCOs, particularly outlier HCOs, should continue to rigorously review return to theatre cases to identify and implement practice improvements.

Pressure ulcers

It is noted that the number of participating HCOs for this CI has increased by 48% since 2007. The rate in **CI 3.1** (inpatients who develop one or more pressure ulcers) has deteriorated in 2013 and 2014. Rates in public HCOs are significantly higher than in private HCOs and this would reflect casemix variation. HCOs have undertaken significant work to improve pressure ulcer screening, assessment, management and prevention and to improve the training of clinicians, predominantly nursing staff. This is in line with the requirements of the NSQHS Standard 8: Preventing and Managing Pressure Injuries. This area of clinical practice remains one that requires ongoing and concerted effort. The ageing of our patient population and associated co-morbidities will continue to impact on this CI.

The rate for **CI 3.2** (inpatients admitted with one or more pressure ulcers) has also deteriorated significantly. This may reflect improvements in screening and assessment by clinicians when patients are admitted and also may reflect increases in predisposing risk factors in the community. There needs to be considerable focus on pre-hospital awareness of the identification and prevention of risk factors by community healthcare providers including GPs and Residential Aged Care Facility (RACF) staff, as well as raising the awareness of consumers themselves.

Inpatient falls

The number of HCOs contributing data for falls has increased by 18% since 2007. There has been a deterioration in the rate of inpatient falls (**CI 4.1**) and inpatient falls resulting in fracture or closed head injury (**CI 4.3**). However, inpatient falls requiring interventions beyond standard hospital protocol (**CI 4.2**) has improved. This appears to be incongruent with **CIs 4.1** and **4.3** and requires further investigation in order to understand if this is an issue of interpretation of data or not.

The focus on falls screening, assessment, management and prevention needs to continue in line with NSQHS Standard 10: Preventing Falls and Harm from Falls, given the data presented, the ageing of our patient population, the associated co-morbidities and the significant harm that can result from falls. These are important CIs for all HCOs, but particularly for those which are outliers, in terms of reviewing their data and serious adverse events resulting from falls in order to identify and implement best practice system-wide initiatives. The rate for **CI 4.4** (inpatient falls – patients aged 65 or more years) has also deteriorated. This age group is obviously an area of focus for HCOs given the numbers in this patient cohort and their higher risk levels.



Patient deaths

The review of patient deaths addressed within a clinical audit process is of great value in understanding avoidable causes and improving clinical practice.

The requirement to review deaths is specifically documented in NSQHS Standard 9: Recognising and Responding to Clinical Deterioration in Acute Health Care (Action 9.2.2), as reviews will identify failures in the recognition and response systems. Death screening and review (as part of Morbidity and Mortality meetings) should be in place in all HCOs.

Blood transfusion

It is pleasing to see the decreased rate of significant adverse blood transfusion events (**CI 6.1**). The rate for **CI 6.2** (episodes where informed consent was not documented) has significantly improved over the period. There is variation between states and further work needs to be undertaken to ensure clinical staff are aware of the requirements for informed consent for blood and blood products prescribing. It is also pleasing to see the decrease in the rate of RBC transfusion where the Hb reading is 100g/L or more (**CI 6.3**) demonstrating that appropriate prescribing and administrative practices are becoming embedded and that a scarce resource is being more effectively utilised.

The work led by national and state jurisdictions and underpinned for HCOs by the NSQHS Standard 7: Blood and Blood Products, provides a framework for decreasing risks and improving safety in this clinical area. Outlier HCOs should carefully review these requirements, audit their practices against them and implement improvement strategies.

Day of surgery admissions

The number of HCOs contributing data for this CI is low. Nonetheless, the increased rate for **CI 7.1** is a good indicator of improved HCO efficiency and appropriateness of care and comfort for patients. While there was little variation between HCOs in 2014, outlier HCOs should review their clinical pathways and pre-admission practices to identify and implement improvements.

Thromboprophylaxis

The number of HCOs contributing data for this CI is low. The rate has decreased compared with the previous year but over the period from 2007 shows overall improvement. The rate in public HCOs is lower than in private HCOs and the outlier rate is only 47.6%. Further work needs to be undertaken in HCOs to continually raise awareness amongst clinicians of the importance of identifying high risk patients and administering appropriate thromboprophylaxis. It would also be useful to understand (from an ACHS perspective) why the participation rate of HCOs for this CI is low.



Expert Commentary

Australian College of Nursing (ACN)

Introductory comments

It is valuable to consider the concept of nurse sensitive CIs from the perspective of health service operations and patient care (structure and outcome indicators) as a basis of performance.¹

Hospital readmissions

Nurses are improving their discharge processes and documentation, however it has been found that nurse sensitive CIs related to 'existing chronic or long term medical conditions are not always recorded in the same hospitalisation as an indicator is detected'.²

Return to the operating room

It is noted by the College that nurses are recognising and responding to clinical deterioration earlier, beginning timely conversations with medical practitioners and other health professionals, and informing decisions on management in accordance with the National Standard 9.³

Pressure ulcers

A nurse sensitive CI is suggested where nurses must manage the prevention of hospital acquired injuries.⁴

Inpatient falls

A nurse sensitive CI is suggested where the practice of nurses must address the preventable hospital acquired injuries with the multidisciplinary team.⁴

Thromboprophylaxis

Nurses prompt medical practitioners to prescribe VTE prophylaxis if inadvertently omitted, when they follow the clinical pathway document and note when it is not ordered.

General comments

Adverse events such as falls, pressure injuries and infections are established as high priority indicators for nursing clinicians and these data elements are already identifiable within hospital activity data.⁴

References

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3. Australian Commission on Safety and Quality in Health Care (ACSQHC). Safety and Quality Improvement Guide Standard 9: Recognising and Responding to Clinical Deterioration in Acute Health Care. Sydney: ACSQHC; 2012.
4. Heslop L. Outcome detection using hospital activity data: implications for development of nursing-sensitive quality monitoring and reporting in Australia (commentary on Schreuders *et al.*). *Int J Nurs Stud* 2014; 51(3): 470–78.



Infection Control

VERSION 4

Infection surveillance

CI 1.1 Superficial SSI from the hip prosthesis procedure (L) In 2014, there were 21,964 procedures reported from 146 HCOs. The annual rate was 0.47 per 100 procedures. The fitted rate improved from 0.97 to 0.46, a change of 0.50 per 100 procedures. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.49 per 100 procedures. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 26 fewer superficial incisional surgical site infections (SSIs), corresponding to a reduction by approximately one-quarter. In 2014, there were two outlier records from two HCOs whose combined excess was four more superficial incisional SSIs. The outlier HCO rate was 4.7 per 100 procedures.

CI 1.2 Deep or organ/space SSI from the hip prosthesis procedure (L) In 2014, there were 22,125 procedures reported from 145 HCOs. The annual rate was 0.67 per 100 procedures. There was no significant trend in the fitted rate. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 50 fewer deep incisional/organ space SSIs, corresponding to a reduction by approximately one-third. In 2014, there were two outlier records from two HCOs whose combined excess was seven more deep incisional/organ space SSIs. The outlier HCO rate was 5.0 per 100 procedures.

CI 1.3 Superficial SSI from the knee prosthesis procedure (L) In 2014, there were 31,634 procedures reported from 147 HCOs. The annual rate was 0.40 per 100 procedures. The fitted rate improved from 0.81 to 0.40, a change of 0.41 per 100 procedures. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.39 per 100 procedures. In 2014, the potential gains totalled 36 fewer superficial incisional SSIs, corresponding to a reduction by approximately one-quarter. In 2014, there was one outlier record from one HCO whose combined excess was one more superficial incisional SSIs. The outlier HCO rate was 3.4 per 100 procedures.

CI 1.4 Deep or organ/space SSI from the knee prosthesis procedure (L) In 2014, there were 31,814 procedures reported from 146 HCOs. The annual rate was 0.39 per 100 procedures. There was no significant trend in the fitted rate. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 28 fewer deep incisional/organ space SSIs, corresponding to a reduction by approximately one-fifth. In 2014, there was one outlier record from one HCO whose combined excess was two more deep incisional/organ space SSIs. The outlier HCO rate was 3.3 per 100 procedures.

CI 1.5 Superficial SSI in chest incision site from the CABG procedure (L) In 2014, there were 6,199 procedures reported from 35 HCOs. The annual rate was 1.16 per 100 procedures. There was no significant trend in the fitted rate. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 23 fewer superficial incisional SSIs, corresponding to a reduction by approximately one-quarter. In 2014, there was one outlier record from one HCO whose combined excess was three more superficial incisional SSIs. The outlier HCO rate was 5.2 per 100 procedures.

CI 1.6 Deep or organ/space SSI in chest incision site from the CABG procedure (L) In 2014, there were 6,454 procedures reported from 36 HCOs. The annual rate was 0.84 per 100 procedures. There was no significant trend in the fitted rate. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 11 fewer deep incisional/organ space SSIs, corresponding to a reduction by approximately one-fifth. In 2014, there was one outlier record from one HCO whose combined excess was one more deep incisional/organ space SSIs. The outlier HCO rate was 7.2 per 100 procedures.

CI 1.7 Superficial SSI from the LSCS procedure (L) In 2014, there were 17,314 procedures reported from 73 HCOs. The annual rate was 0.69 per 100 procedures. The fitted rate improved from 0.89 to 0.57, a change of 0.33 per 100 procedures. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.30 per 100 procedures. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 83 fewer superficial incisional SSIs, corresponding to a reduction by approximately two-thirds. In 2014, there were four outlier records from four HCOs whose combined excess was 34 more superficial incisional SSIs. The outlier HCO rate was 6.3 per 100 procedures.

CI 1.8 Deep or organ/space SSI from the LSCS procedure (L) In 2014, there were 36,951 procedures reported from 89 HCOs. The annual rate was 0.17 per 100 procedures. There was no significant trend in the fitted rate. In 2014, the potential gains totalled 42 fewer deep incisional/organ space SSIs, corresponding to a reduction by approximately one-half. In 2014, there were four outlier records from four HCOs whose combined excess was ten more deep incisional/organ space SSIs. The outlier HCO rate was 2.0 per 100 procedures.



Surgical antibiotic prophylaxis (SAP)

CI 2.1 Timing of SAP for the hip prosthesis procedure (H)

In 2014, there were 403 patients reported from eight HCOs. The annual rate was 95.3 per 100 patients. In 2014, there were no significant stratum differences. In 2014, there was relatively little variation between HCOs and so the potential gains were small. In 2014, there was one outlier record from one HCO whose combined excess was seven fewer patients who receive surgical antibiotic prophylaxis within one hour prior to induction. The outlier HCO rate was 79.6 per 100 patients.

CI 2.2 Correct SAP and dose for the hip prosthesis procedure (H)

In 2014, there were 403 patients reported from eight HCOs. The annual rate was 82.6 per 100 patients. In 2014, there were no significant stratum differences. In 2014, the potential gains totalled 61 more patients who receive the correct surgical antibiotic prophylaxis and dose. In 2014, there was one outlier record from one HCO whose combined excess was 31 fewer patients who receive the correct surgical antibiotic prophylaxis and dose. The outlier HCO rate was 59.1 per 100 patients.

CI 2.3 Discontinuation of SAP within 24 hours of the hip prosthesis procedure (H)

In 2014, there were 356 patients reported from seven HCOs. The annual rate was 68.0 per 100 patients. In 2014, there were no significant stratum differences. In 2014, the potential gains totalled 99 more patients whose surgical antibiotic prophylaxis is discontinued within 24 hours. In 2014, there was one outlier record from one HCO whose combined excess was 51 fewer patients whose surgical antibiotic prophylaxis is discontinued within 24 hours. The outlier HCO rate was 29.2 per 100 patients.

CI 2.4 Timing of SAP for the knee prosthesis procedure (H)

In 2014, there were 524 patients reported from eight HCOs. The annual rate was 97.9 per 100 patients. In 2014, there were no significant stratum differences. In 2014, there was relatively little variation between HCOs and so the potential gains were small. In 2014, there was one outlier record from one HCO whose combined excess was five fewer patients who receive surgical antibiotic prophylaxis within one hour prior to induction. The outlier HCO rate was 90.8 per 100 patients.

CI 2.5 Correct SAP and dose for the knee prosthesis procedure (H)

In 2014, there were 524 patients reported from eight HCOs. The annual rate was 84.4 per 100 patients. In 2014, the potential gains totalled 79 more patients who receive the correct surgical antibiotic prophylaxis and dose. In 2014, there were two outlier records from two HCOs whose combined excess was 44 fewer patients who receive the correct surgical antibiotic prophylaxis and dose. The outlier HCO rate was 61.4 per 100 patients.

CI 2.6 Discontinuation of SAP within 24 hours of the knee prosthesis procedure (H)

In 2014, there were 430 patients reported from seven HCOs. The annual rate was 69.5 per 100 patients. In 2014, the potential gains totalled 124 more patients whose surgical antibiotic prophylaxis is discontinued within 24 hours. In 2014, there was one outlier record from one HCO whose combined excess was 50 fewer patients whose surgical antibiotic prophylaxis is discontinued within 24 hours. The outlier HCO rate was 27.3 per 100 patients.

CI 2.7 Timing of SAP for the CABG procedure (H)

In 2014, there were 32 patients reported from one HCO. The annual rate was 100 per 100 patients. There were no potential gains in 2014.

CI 2.8 Correct SAP and dose for the CABG procedure (H)

In 2014, there were 32 patients reported from one HCO. The annual rate was 81.3 per 100 patients. There were no potential gains in 2014.

CI 2.9 Discontinuation of SAP within 24 hours of the CABG procedure (H)

In 2014, there were 32 patients reported from one HCO. The annual rate was 21.9 per 100 patients. There were no potential gains in 2014.

CI 2.10 Timing of SAP for the LSCS procedure (H)

In 2014, there were 600 patients reported from three HCOs. The annual rate was 90.8 per 100 patients. In 2014, the potential gains totalled 54 more patients who receive surgical antibiotic prophylaxis within one hour prior to induction. In 2014, there was one outlier record from one HCO whose combined excess was 34 fewer patients who receive surgical antibiotic prophylaxis within one hour prior to induction. The outlier HCO rate was 70.1 per 100 patients.



CI 2.11 Correct SAP and dose for the LSCS

procedure (H) In 2014, there were 600 patients reported from three HCOs. The annual rate was 83.3 per 100 patients. In 2014, the potential gains totalled 95 more patients who receive the correct surgical antibiotic prophylaxis and dose. In 2014, there was one outlier record from one HCO whose combined excess was 59 fewer patients who receive the correct surgical antibiotic prophylaxis and dose. The outlier HCO rate was 47.3 per 100 patients.

CI 2.12 Discontinuation of SAP within 24 hours of the LSCS procedure (H) In 2014, there were 600 patients reported from three HCOs. The annual rate was 99.0 per 100 patients. There were no potential gains in 2014.

Haemodialysis access-associated bloodstream infection surveillance

CI 3.1 Haemodialysis – AV-fistula access-associated BSI (L) In 2014, there were 19,337 patient-months reported from 22 HCOs. The annual rate was 0.026 per 100 patient-months. The fitted rate improved from 0.15 to 0.050, a change of 0.095 per 100 patient-months. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.097 per 100 patient-months. There was relatively little variation between HCOs and so the potential gains were small in 2014.

CI 3.2 Haemodialysis – synthetic and native vessel graft access-associated BSI (L) In 2014, there were 964 patient-months reported from 15 HCOs. The annual rate was 0.21 per 100 patient-months. There were no potential gains in 2014.

CI 3.3 Haemodialysis – CI non-cuffed line access-associated BSI (L) In 2014, there were 62 patient-months reported from nine HCOs. The annual rate was 0 per 100 patient-months. The fitted rate improved from 5.9 to 0.14, a change of 5.7 per 100 patient-months. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 7.4 per 100 patient-months. There were no potential gains in 2014.

CI 3.4 Haemodialysis – CI cuffed line access-associated BSI (L) In 2014, there were 2,035 patient-months reported from 17 HCOs. The annual rate was 1.33 per 100 patient-months. The fitted rate improved from 2.7 to 0.82, a change of 1.8 per 100 patient-months. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 1.8 per 100 patient-months. There were no potential gains in 2014.

Vancomycin Resistant Enterococci (VRE)

CI 4.1 VRE infection within the ICU (L) In 2014, there were 69,028 ICU bed days reported from 35 HCOs. The annual rate was 1.45 per 10,000 bed days. There were no potential gains in 2014.

CI 4.2 VRE infection within non-ICU areas (L) In 2014, there were 1,904,512 non-ICU bed days reported from 56 HCOs. The annual rate was 0.17 per 10,000 bed days. There were no significant stratum differences in 2014. In 2014, the potential gains totalled 15 fewer new VRE healthcare-associated infections, corresponding to a reduction by approximately one-third. In 2014, there were two outlier records from two HCOs whose combined excess was six more new VRE healthcare-associated infections. The outlier HCO rate was 0.91 per 10,000 bed days.

Staff Immunisation

CI 5.1 Flu vaccination for permanent staff (H) In 2014, there were 13,947 employees reported from 18 HCOs. The annual rate was 52.3 per 100 employees. In 2014, there were no significant stratum differences. In 2014, the potential gains totalled 3,056 more permanent healthcare employees that receive a flu vaccination. In 2014, there were four outlier records from four HCOs whose combined excess was 1,485 fewer permanent healthcare employees that receive a flu vaccination. The outlier HCO rate was 6.7 per 100 employees.

CI 5.2 Hepatitis B vaccination for permanent staff (H) In 2014, there were 8,144 employees reported from 17 HCOs. The annual rate was 28.5 per 100 employees. In 2014, the potential gains totalled 5,026 more permanent healthcare employees that have up to date evidence of serological immunity or of vaccination for Hepatitis B. In 2014, there were two outlier records from two HCOs whose combined excess was 1,358 fewer permanent healthcare employees that have up to date evidence of serological immunity or of vaccination for Hepatitis B. The outlier HCO rate was 2.4 per 100 employees.



Occupational exposures to blood and/or body fluids

CI 6.1 Reported parenteral exposures sustained by staff (L) In 2014, there were 13,088,876 bed days reported from 371 HCOs. The annual rate was 0.034 per 100 bed days. The fitted rate improved from 0.040 to 0.034, a change of 0.006 per 100 bed days. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.005 per 100 bed days. In 2014, the potential gains totalled 1,897 fewer reported parenteral exposures, corresponding to a reduction by approximately one-third. In 2014, there were 18 outlier records from 13 HCOs whose combined excess was 372 more reported parenteral exposures. The outlier HCO rate was 0.066 per 100 bed days.

CI 6.2 Reported non-parenteral exposures sustained by staff (L) In 2014, there were 12,693,584 bed days reported from 365 HCOs. The annual rate was 0.013 per 100 bed days. The fitted rate improved from 0.015 to 0.013, a change of 0.002 per 100 bed days. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.002 per 100 bed days. In 2014, the potential gains totalled 748 fewer reported non-parenteral exposures, corresponding to a reduction by approximately one-third. In 2014, there were 18 outlier records from 14 HCOs whose combined excess was 201 more reported non-parenteral exposures. The outlier HCO rate was 0.032 per 100 bed days.



Expert Commentary

Australasian College for Infection Prevention and Control (ACIPC)

General comments

Surveillance of healthcare-associated infections (HAIs) is a cornerstone of infection prevention programs. It is a fundamental component of modern healthcare, demonstrated by the recently released National Safety and Quality Health Service (NSQHS) Standards for Australian Hospitals including 19 criteria on the prevention and control of HAIs, which specifically mandates HAI surveillance.¹ Australia does not have a formal, uniform national HAI surveillance program, however most hospitals would undertake HAI surveillance and participate in state-wide programs where they exist.

Uncertainty exists regarding methodology of HAI surveillance processes between facilities and states and territories. Whilst there have been formal validation studies at a state level,^{2,3} no national validation has been performed, and a recent review highlighted the variation of surveillance activities.⁴ Subsequently, any national level data has several limitations that will impact the strength of the data and the ability to make any comparisons. These limitations include:

The intensity of surveillance

- Not all facilities undertake post-discharge (PD) surgical site infection (SSI) surveillance. Many superficial infections occur PD, particularly in patients with short hospital stays. Further, there is no recommended method for conducting PD SSI surveillance. The inclusion or exclusion of PD SSI data greatly influences SSI rates and can often lead to underestimating true infection rates.⁵
- Some States and Territories mandate surveillance and reporting of certain infections. Evidence exists that the intensity of surveillance for these infections is actually less than non-mandatory infection reporting.⁵

- It is unknown if the methods used to detect infections and the data sources used are uniform across all participating sites (including denominator data).

Definitions and education

- It is unclear which definitions are used for the detection of HAIs, and how accurately and consistently these definitions are applied across all hospitals.
- Generally infection prevention and control staff are responsible for collecting data on HAIs. However it is unknown if these staff have been trained to collect the data in a uniform way, or if they are regularly assessed to measure agreement.

Risk adjustment

- Clearly some hospitals have patients who are at a greater risk of infection than others. To appropriately report data, risk adjustment methods should be used. Lack of risk adjustment makes any comparisons unreasonable.

Future initiatives

The Australian Commission on Safety and Quality in Health Care (ACSQHC) National Surveillance Initiative will eventually address many of the limitations listed above. Recent developments such as the adoption of national definitions and implementation guidelines for *Staphylococcus aureus* bacteraemia, *Clostridium difficile* infection and central line associated bloodstream infection is the first step toward true national HAI surveillance.⁶ It is anticipated that the ACSQHC will also work on similar initiatives for SSI surveillance in the near future.

The Australasian College for Infection Prevention and Control supports HAI surveillance as key to infection prevention, and supports the use of sound epidemiological methodology to ensure meaningful data. The College acknowledges that although the use of national data are limited, many facilities undertake high quality HAI surveillance and use their own data to improve practice and increase the safety and quality of care for their patients. The College supports the work of the ACSQHC National Surveillance Initiative to explore options for a national surveillance system to monitor HAIs.

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Intensive Care

VERSION 4.1

Access and exit block

CI 1.1 ICU – adult non-admission due to inadequate resources (L) In 2014, there were 64,850 patients reported from 62 HCOs. The annual rate was 1.8 per 100 patients. The fitted rate improved from 5.6 to 1.4, a change of 4.2 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 4.0 per 100 patients. In 2014, the potential gains totalled 1,141 fewer patients who could not be admitted to the ICU due to access block, corresponding to a reduction by approximately four-fifths. In 2014, there were 17 outlier records from 13 HCOs whose combined excess was 616 more patients who could not be admitted to the ICU due to access block. The outlier HCO rate was 7.4 per 100 patients.

CI 1.2 ICU – elective adult surgery deferred/cancelled due to bed unavailability (L) In 2014, there were 65,631 admissions reported from 63 HCOs. The annual rate was 0.78 per 100 admissions. The fitted rate improved from 2.7 to 0.62, a change of 2.1 per 100 admissions. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 1.9 per 100 admissions. In 2014, the potential gains totalled 472 fewer elective surgical cases deferred or cancelled, corresponding to a reduction by approximately four-fifths. In 2014, there were 13 outlier records from 11 HCOs whose combined excess was 250 more elective surgical cases deferred or cancelled. The outlier HCO rate was 3.7 per 100 admissions.

CI 1.3 ICU – adult transfer to another facility/area due to bed unavailability (L) In 2014, there were 59,628 patients reported from 59 HCOs. The annual rate was 0.77 per 100 patients. The fitted rate improved from 1.1 to 0.75, a change of 0.39 per 100 patients. In 2014, the potential gains totalled 436 fewer patients transferred to another facility/ICU, corresponding to a reduction by approximately four-fifths. In 2014, there were 13 outlier records from nine HCOs whose combined excess was 243 more patients transferred to another facility/ICU. The outlier HCO rate was 4.6 per 100 patients.

CI 1.4 Adult patients whose discharge from the ICU was delayed more than 6 hours (L) In 2014, there were 66,889 patients reported from 69 HCOs. The annual rate was 24.0 per 100 patients. The fitted rate improved from 25.1 to 24.6, a change of 0.50 per 100 patients. In 2014, the potential gains totalled 15,141 fewer patients whose discharge from ICU was delayed more than six hours, corresponding to a reduction by approximately four-fifths. In 2014, there were 36 outlier records from 22 HCOs whose combined excess was 5,171 more patients whose discharge from ICU was delayed more than six hours. The outlier HCO rate was 46.5 per 100 patients.

CI 1.5 Adult patients discharged from the ICU

between 6pm and 6am (L) In 2014, there were 77,545 patients reported from 78 HCOs. The annual rate was 15.3 per 100 patients. The fitted rate improved from 16.8 to 14.9, a change of 1.9 per 100 patients. In 2014, the potential gains totalled 8,253 fewer patients discharged from the ICU between 6pm and 6am, corresponding to a reduction by approximately two-thirds. In 2014, there were 43 outlier records from 28 HCOs whose combined excess was 3,363 more patients discharged from the ICU between 6pm and 6am. The outlier HCO rate was 30.5 per 100 patients.

Intensive care patient management

CI 2.1 Rapid response calls to adult ICU patients within 72 hours of ICU discharge (L) In 2014, there were 55,101 patients reported from 60 HCOs. The annual rate was 4.4 per 100 patients. The fitted rate deteriorated from 2.5 to 4.4, a change of 1.9 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 1.9 per 100 patients. In 2014, the potential gains totalled 1,843 fewer rapid response calls within 72 hours of discharge from ICU, corresponding to a reduction by approximately three-quarters. In 2014, there were 14 outlier records from ten HCOs whose combined excess was 810 more rapid response calls within 72 hours of discharge from ICU. The outlier HCO rate was 11.3 per 100 patients.

Intensive care patient treatment

CI 3.1 VTE prophylaxis in adults within 24 hours of admission to ICU (H) In 2014, there were 67,843 patients reported from 69 HCOs. The annual rate was 94.7 per 100 patients. The fitted rate improved from 74.6 to 94.4, a change of 19.8 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 17.8 per 100 patients. In 2014, the potential gains totalled 3,523 more patients given VTE prophylaxis within 24 hours. In 2014, there were 25 outlier records from 19 HCOs whose combined excess was 1,490 fewer patients given VTE prophylaxis within 24 hours. The outlier HCO rate was 85.0 per 100 patients.



Central line-associated bloodstream infection

CI 4.1 Adult ICU-associated CI-CLABSI (L) In 2014, there were 87,978 line-days reported from 45 HCOs. The annual rate was 0.50 per 1,000 line-days. The fitted rate improved from 2.2 to 0.47, a change of 1.7 per 1,000 line-days. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 1.7 per 1,000 line-days. In 2014, the potential gains totalled 14 fewer adult ICU-associated CI-CLABSI, corresponding to a reduction by approximately one-quarter.

CI 4.2 Adult ICU-associated PI-CLABSI (L) In 2014, there were 12,548 line-days reported from 32 HCOs. The annual rate was 0.66 per 1,000 line-days. There was no significant trend in the fitted rate. There was relatively little variation between HCOs and so the potential gains were small in 2014.

Utilisation of patient assessment systems

CI 5.1 Participation in the ANZICS CORE Adult Patient Database (H) In 2014, there were 68,398 admissions reported from 69 HCOs. The annual rate was 94.1 per 100 admissions. The fitted rate improved from 88.8 to 93.8, a change of 5.0 per 100 admissions. In 2014, the potential gains totalled 3,993 more complete submissions to the ANZICS Database. In 2014, there were 18 outlier records from 14 HCOs whose combined excess was 3,171 fewer complete submissions to the ANZICS Database. The outlier HCO rate was 59.5 per 100 admissions.

CI 5.2 Participation in the ANZICS CORE Critical Care Resource Survey (H) In 2014, there were 68 records reported from 40 HCOs. The annual rate was 98.5%.

Minimum standards for a rapid response system

CI 6.1 Rapid response system calls to adult patients (N) In 2014, there were 1,328,114 admissions reported from 62 HCOs. The annual rate was 35.1 per 1,000 patients. The fitted rate increased from 24.0 to 35.1, a change of 11.1 per 1,000 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 11.1 per 1,000 patients. There were no significant stratum differences in 2013 and 2014. Since it has not been specified whether high or low rates are desirable, outlier HCOs are not reported.

CI 6.2 Rapid response system calls to adult patients within 24 hours of admission (N) In 2014, there were 1,020,218 admissions reported from 46 HCOs. The annual rate was 7.4 per 1,000 patients. The fitted rate increased from 6.3 to 7.9, a change of 1.5 per 1,000 patients. There were no significant stratum differences in 2013 and 2014. Since it has not been specified whether high or low rates are desirable, outlier HCOs are not reported.

CI 6.3 Adult patients experiencing cardiopulmonary arrest (L) In 2014, there were 1,277,254 admissions reported from 59 HCOs. The annual rate was 1.1 per 1,000 patients. There was no significant trend in the fitted rate. In 2014, the potential gains totalled 743 fewer patients who have cardiopulmonary arrest, corresponding to a reduction by approximately one-half. In 2014, there were 18 outlier records from 13 HCOs whose combined excess was 260 more patients who have cardiopulmonary arrest. The outlier HCO rate was 2.2 per 1,000 patients.

CI 6.4 Deaths in adult patients who do not have an NFR order (L) In 2014, there were 702,734 admissions reported from 34 HCOs. The annual rate was 1.3 per 1,000 patients. The fitted rate deteriorated from 0.98 to 1.2, a change of 0.18 per 1,000 patients. In 2014, the potential gains totalled 751 fewer deaths in adult patients who do not have a not-for-resuscitation (NFR) order, corresponding to a reduction by approximately four-fifths. In 2014, there were 11 outlier records from seven HCOs whose combined excess was 319 more deaths in adult patients who do not have an NFR order. The outlier HCO rate was 4.4 per 1,000 patients.

CI 6.5 Adult deaths (L) In 2014, there were 1,039,207 admissions reported from 47 HCOs. The annual rate was 12.4 per 1,000 patients. The fitted rate improved from 12.9 to 11.8, a change of 1.1 per 1,000 patients. In 2014, the potential gains totalled 8,210 fewer deaths, corresponding to a reduction by approximately one-half. In 2014, there were 29 outlier records from 18 HCOs whose combined excess was 3,051 more deaths. The outlier HCO rate was 24.2 per 1,000 patients.



Expert Commentary

Joint Commentary: Australian and New Zealand Intensive Care Society (ANZICS) and College of Intensive Care Medicine of Australia and New Zealand (CICM)

Introductory comments

The Australian and New Zealand Intensive Care Society (ANZICS) and the College of Intensive Care Medicine (CICM) welcome the opportunity to comment on this year's set of CIs. Both organisations support the ACHS for their development and ongoing promotion of CIs for Intensive Care practice. This CI set provides valuable information about the performance of Intensive Care Units (ICUs) in a number of domains. Even though not all hospitals contribute to the program, the findings are likely representative of current Intensive Care practices. Contributing hospitals should interpret their own performance in light of knowledge about their patients' underlying severity of illness, casemix, processes and organisation.

Access and exit block

Inter-hospital transfers due to lack of critical care resources and an inability to admit a patient to an ICU are associated with significant increases in mortality and morbidity.¹

CIs 1.1–1.3 show a progressive reduction in refusals of admission to ICU because of inadequate resources, cancellations of elective surgery and transfers of critically ill patients due to ICU bed unavailability. Although this is reassuring, there remains considerable variability between HCOs. In some public hospitals this remains a problem. In addition, overall access to critical care measured by these CIs appears to differ around the country with hospitals in Queensland reporting greater difficulties than other areas. Provision of ICU beds has mirrored population growth over this time so it is likely that factors other than just the number of available ICU beds account for these trends. These may include increasing awareness of access to critical care services as a problem and earlier treatment of critically ill patients on wards and in EDs.

CI 1.4 suggests approximately one-quarter of ICU discharges are delayed more than six hours after patients have been deemed ready to leave. Despite wide variability amongst hospitals, this has not changed much over the past four years. Delaying a patient's discharge may be beneficial to that patient if it facilitates transfer to a ward during daylight hours rather than after-hours. However, leaving an ICU bed occupied with a patient who does not need it may also delay admission of another acutely unwell patient. After-hours discharge from ICU has consistently been associated with increased risk of death. This has not changed significantly over the past years.² After-hours discharge is a greater problem for public hospitals. The predominantly elective surgical casemix of private hospitals ensures timing of discharge can more easily be planned resulting in lower after-hours discharges.

Intensive care patient management

Over the past four years, there has been an increase in rapid response calls to patients within 72 hours of discharge from ICU, presently representing greater than 4% of all ICU discharges. These are more common in public hospitals, but there appears to be considerable variation around the country. Changing thresholds for activation of rapid responses through introduction of mandatory calling criteria at many hospitals, along with the increasing number of hospitals reporting these CIs may account for these findings. The increasing number of rapid response calls within 72 hours of ICU discharge may not represent any change in premature discharge of patients (i.e. those who might later deteriorate and require rapid response activation). This is potentially supported by the absence of any change in **CI 1.4**: discharge delay more than six hours.

Intensive care patient treatment

The only CI for this area is **CI 3.1**: VTE prophylaxis in adults within 24 hours of ICU admission. Both the overall rate and the number of HCOs submitting data in 2014 increased marginally from 2013, and 80% records have rates approaching 100%. The percentage of outlier records has fallen to 20% and the outlier rate has increased from 80% to 85% suggesting that more HCOs are addressing what appears to be a significant deviation from conventional practice. It is gratifying that more ICU patients appear to be receiving timely VTE prophylaxis, particularly when it is recognised that failure to provide it within the first 24 hours of ICU admission is associated with a 20% increase in mortality within Australia and New Zealand.³

Central line-associated bloodstream infection

This area includes **CI 4.1**: adult ICU-associated centrally-inserted and **CI 4.2**: peripherally inserted central line-associated bloodstream infections (CLABSIs). The fitted rate from centrally-inserted central lines has continued to fall since 2007 (2.2 to 0.47), whereas the rate from peripherally-inserted central lines remains relatively unchanged (although the numbers are considerably smaller). It is likely the lower rate of bloodstream infections from centrally-inserted lines is the result of adoption of checklists and guidelines designed to prevent these infections. It is gratifying that there are no outlier HCOs in either group suggesting that these measures have been successfully applied widely around Australia.



Utilisation of patient assessment systems

Collection and comparison of data are an important component of clinical practice. **CI 5.1** assesses participation in the ANZICS CORE Adult Patient Database. The rate has increased slightly since 2007 from approximately 89% to 94%, with 69 HCOs submitting data in 2014. This represents around three-quarters of the ICUs that are approved by CICM for training and less than half the total number of ICUs in Australia. The data suggest that the majority of ICUs submit complete data, but there is a distinct outlier group (18 records from 14 HCOs) whose submission rate is very much less at 59.5 submissions per 100 admissions. This outlier rate does not seem to have improved in recent years. It may be the result of inadequate resources for data collection, a need/wish to collect other data or other factors. **CI 5.2** assesses participation in the ANZICS CORE Critical Care Resources (CCR) Survey. Last year more than 140 Australian ICUs contributed data to the CCR Survey,⁴ of whom approximately half have also taken part in the ACHS CI Program. The CCR Survey provides vital information to assess the provision of ICU services throughout Australia and New Zealand. This can only provide accurate information when there is a high rate of participation from the critical care community.

Minimum standards for a rapid response system

Interpretation of **CI 6.1** may be difficult. The calling criteria for the rapid response systems are not standardised between facilities and regions. However, approximately three in four Rapid Response Teams (RRTs) are coordinated or run by the ICU, therefore this CI may in these instances be an indicator of ICU performance. In addition, it is still unclear what rate represents a good or a bad figure. A low rate may represent a small number of patients in need of medical intervention or may represent a failure to respond to patients in need of intervention. There is some evidence that the greater “dose” of care from the RRT, the greater the reduction in the rate of cardiac arrests. There is also evidence as the proportion of early emergency team calls increases, the rate of cardiac arrests and unexpected deaths decreases.^{5,6}

Interpretation of **CI 6.2** may also be difficult. A Rapid Response System (RRS) call within 24 hours of admission may represent a patient who has either not received appropriate early treatment or who has deteriorated despite treatment. A low rate may represent a small number of patients in need of subsequent medical intervention through an RRS or may represent a failure to provide a response to patients in need of intervention. A high rate may indicate that patients are not adequately stabilised prior to ward transfer. There is evidence that there is a significant increase in the number of calls for patients admitted to hospital within 24 hours. This would be in the acute phase of the admission. The introduction of the four hour rule for inpatient bed admission will potentially increase the RRS call numbers and increase the need to monitor these patients more closely.⁷

CI 6.3 and **CI 6.4** are probably most useful as markers of the impact of a RRT within a hospital. A low rate of cardiac arrests may reflect a patient cohort with a low severity of illness, timely provision of palliative care to the terminally ill avoiding unnecessary cardiac arrest calls or early intervention in acutely ill patients averting the actual occurrence of cardiac arrest. The low rate of cardiac arrests and of deaths amongst patients without a not-for-resuscitation (NFR) order in private hospitals probably reflects the high proportion of patients admitted for elective surgical procedures who are less likely to be at risk of death than emergency admissions. The high rates in outlier hospitals are difficult to interpret without knowledge of compliance with definitions or severity of illness profiles of patients. The largest meta-analysis on RRS has shown reductions in mortality and cardiac arrest rates by 21% and 38% respectively in paediatric hospitals, and a 34% reduction in cardiac arrest rates in adult hospitals. More than 80% of those who suffered a cardiac arrest in hospital had documented deterioration in vital signs in the eight hours before the arrest.^{8,9} There is evidence that Rapid Response System calls assist in end-of-life care. In about 10% of cases the RRT is involved in the decision to focus on end-of-life care and the designation NFR.^{10,11}

No major comment or inference can be drawn from **CI 6.5**. The wide variation seen on the funnel plot suggests this is due to factors other than the baseline number of hospital admissions. Of these, the most likely factors determining outcomes will be patients’ underlying severity of illness and the casemix at each hospital. The lower rate in private hospitals almost certainly reflects patients with low severity illness (predominantly elective surgical cases) who are expected to have lower mortality.



General comments

The ACHS CIs provide highly relevant comparative information and a representative picture of critical care medicine in Australia. Improved access to ICU services, high levels of compliance with process and outcome measures combined with high levels of engagement in clinical registries, are consistent with the excellent standards of critical care medicine delivered by these hospitals. Despite this, a more worrying implication is that just under one-quarter of Australian ICUs appear not to partake in either the ANZICS CORE registry or in the ACHS CI Program. All ICUs in Australia and New Zealand are strongly recommended to undertake benchmarking activities and report CIs.

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Expert Commentary

Australian College of Critical Care Nurses (ACCCN)

Introductory comments

ACCCN welcomes the opportunity to provide comment on the 2007–2014 ACIR. As the peak nursing organisation for critical care we consider the collection of CI data and reporting at a state and national level essential to ensuring optimal care is provided to the most vulnerable patients. Although data are not obtained from all ICUs, a clear picture of ICU performance in Australasia is provided against which each ICU can compare its own performance, taking note of what works well and areas where improvements can be made.

Access and exit block

Timely access to intensive care beds is essential for optimal care and outcomes for critically ill patients. The rate has continued to decrease

over the past seven years but nevertheless, almost two in every 100 patients cannot be admitted to ICU when required because of inadequate resources. The rate of access block is naturally higher for public than private HCOs likely owing to the higher number of emergency admissions and higher patient acuity within the public system. The elective surgery cancellation rate has also continued to decrease over the last seven years, however it is noted that this varies by state with Queensland demonstrating the highest number of patients (1.83 per 100) that had surgery cancelled. In 2014, fewer patients required transportation to another facility because of ICU bed unavailability. It is noted that Queensland again underperforms in this metric compared to other states.

In addition to challenges in admitting patients to the ICU, it appears that a substantial number of patients are also not discharged when deemed ready. Discharge delays of more than six hours can have a compounding effect on access to ICU services and specifically the cancellation of surgical patients for those who require postoperative ICU admission. Wider system issues with patient flow are likely to contribute to these issues and more attention is required to improve exit from the ICU given almost a quarter of all patients remain in ICU longer than six hours after they are considered appropriate for discharge. Close examination of what helps and hinders timely discharge is required to identify the most appropriate interventions and this is likely to vary by HCO. Examining practice between states may also reveal important



strategies to facilitate more timely discharge. Practice in NSW could be compared to other states that perform better against this metric.

CI 1.5 is of the most concern, where more than 15% of patients are discharged from ICU between 6pm and 6am – a time well acknowledged in the literature as being the most inopportune because of the association with increased morbidity and mortality. Although, there was a reduction in the rate of patients discharged after hours between 2007 and 2013. This has increased in 2014, highlighting a need to evaluate what factors impact more timely discharge. While data are unavailable, the concern of ACCCN is that patients are being discharged after hours to accommodate new admissions, suggesting that patients not yet considered ready for discharge are being sent to ward areas at a time when fewer health care professionals are available and where handover to specialist teams may be more difficult.

Intensive care patient management

The number of rapid response calls to adult ICU patients within 72 hours of discharge has increased in the past year. Although data are not available, this could be associated with premature discharge from ICU (especially after hours) to accommodate new admissions and thus improve metrics associated with access block. The first 72 hours after ICU discharge is a time when patients are vulnerable and often require a high degree of nursing care (compared to other patients). Likewise, families of patients are frequently anxious about this transition period and also require a high level of support. ICU Liaison nurses perform a vital role in monitoring patients discharge from ICU, guiding staff in patient specific care needs and are able to work with patients and families to work towards a timely hospital discharge.

A comparison in rapid response calls to adult ICU patients within 72 hours of discharge where an ICU Liaison nurse (or equivalent) is used would be important to guide future practice.

Intensive care patient treatment

There is likely variability in protocols for VTE prevention between HCOs, but prevention remains a focal point of patient care because this complication is relatively common within this patient population. Concern for this complication and the reasonably straight-forward management strategy is likely driving the high rate of compliance. Nevertheless it appears that 5% of all critically ill patients may not receive VTE prophylaxis. This could be due to specific contraindications for patients or other systemic issues. It is positive to note a continued increase in the number of HCOs reporting this data.

Central line-associated bloodstream infection

CLABSI rates remain low but are still to comply with 'zero tolerance'. Nevertheless, the benchmark of one per 1,000 line days has been consistently achieved for the past four years and is to be commended. The focus on CLABSI bundles and prevention strategies appears to have been effective. Reporting by a higher number of HCOs is to be encouraged to help us understand the extent of this issue more broadly. Only 45 HCOs contributed to these data in 2014 (compared to 69 who reported on VTE prophylaxis). While local reporting may seem to be sufficient by some HCOs, this does not help us to understand the problem at a national level. There is concern that HCOs with higher rates of CLABSI may not be reporting this data, falsely lowering these results nationally. Queensland appears to have the highest CLABSI rate and although this is still below the national

benchmark it is almost double that of NSW. PI-CLABSI rates are similarly low (0.66 per 1,000 line days), a slight increase from 2013. Far fewer HCOs reported PI-CLABSI rates and strategies should be implemented to improve surveillance and reporting.

Utilisation of patient assessment systems

Participation in the ANZICS CORE Adult Patient Database remains high (94.1%), although has decreased slightly from the previous year. To ensure accurate data are reported it is essential that ICUs appropriately resource this activity with skilled data collectors and FTE responsible for this work are adjusted as the annual number of ICU admissions increases. Participation in the ANZICS CORE Critical Care Resources Survey could be improved with only 40 HCOs contributing data. Highlighting the benefits of this survey is essential so that HCOs appreciate the importance of making a contribution.

Minimum standards for a rapid response system

The rate of rapid response system calls to adult patients has increased more than 10% in the past three years. There may be a number of factors contributing to this increase including higher patient acuity on the wards, increased recognition of the importance of early detection and response to patient deterioration. These figures highlight the need for appropriately resourced systems to support the increased workload and ensure timely assessment of patients. There is a substantially higher number of patients in non-metropolitan areas who die without an NFR order compared to those patients admitted to metropolitan hospitals. Understanding why these rates are higher in non-metropolitan areas is essential to institute strategies aimed at improving this metric.





Internal Medicine

VERSION 5

Cardiovascular disease

CI 1.1 CHF – prescribed ACEI or A2RA (H) In 2014, there were 70 patients reported from three HCOs. The annual rate was 91.4 per 100 patients. There was relatively little variation between HCOs and so the potential gains were small in 2014.

CI 1.2 CHF – prescribed beta blocker (H) In 2014, there were 40 patients reported from one HCO. The annual rate was 97.5 per 100 patients. There were no potential gains in 2014.

CI 1.3 CHF and AF – prescribed warfarin (H) In 2014, there were 29 patients reported from one HCO. The annual rate was 100 per 100 patients. There were no potential gains in 2014.

CI 1.4 CHF – chronic disease management referral that includes physical rehabilitation (H) No data were submitted in 2014.

CI 1.5 AMI – thrombolytic therapy within 1 hour of presentation (H) In 2014, there were 57 patients reported from five HCOs. The annual rate was 61.4 per 100 patients. The fitted rate deteriorated from 82.1 to 71.0, a change of 11.1 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 12.2 per 100 patients. There was relatively little variation between HCOs and so the potential gains were small in 2014.

CI 1.6 PTCA – vessels where primary success was achieved (H) In 2014, there were 4,958 vessels reported from nine HCOs. The annual rate was 94.3 per 100 vessels. The fitted rate deteriorated from 97.0 to 95.6, a change of 1.4 per 100 vessels. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. In 2014, the rate change was 1.4 per 100 vessels. There was relatively little variation between HCOs and so the potential gains were small. In 2014, there was one outlier record from one HCO whose combined excess was 47 fewer vessels where primary success is achieved. The outlier HCO rate was 64.6 per 100 vessels.

CI 1.7 PTCA – CABG within 24 hours (L) In 2014, there were 4,579 inpatients reported from 11 HCOs. The annual rate was 0.17 per 100 inpatients. The fitted rate improved from 0.32 to 0.12, a change of 0.20 per 100 inpatients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.20 per 100 inpatients. In 2014, the potential gains totalled six fewer patients undergoing CABG within 24 hours of a PTCA, corresponding to a reduction by approximately two-thirds. In 2014, there were two outlier records from two

HCOs whose combined excess was four more patients undergoing CABG within 24 hours of a PTCA. The outlier HCO rate was 2.0 per 100 inpatients.

Endocrine Disease

No data were submitted in 2014.

Acute stroke management

CI 3.1 Acute stroke – swallowing screen prior to food or fluid intake (H) In 2014, there were 689 inpatients reported from ten HCOs. The annual rate was 61.1 per 100 inpatients. The fitted rate deteriorated from 85.4 to 58.1, a change of 27.3 per 100 inpatients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 26.0 per 100 inpatients. In 2014, the potential gains totalled 131 more inpatients having documented evidence of a swallowing screen. In 2014, there was one outlier record from one HCO whose combined excess was 14 fewer inpatients having documented evidence of a swallowing screen. The outlier HCO rate was 32.8 per 100 inpatients.

CI 3.2 Acute stroke – brain scan within 24 hours of presentation (H) In 2014, there were 1,513 inpatients reported from 17 HCOs. The annual rate was 92.6 per 100 inpatients. There was no significant trend in the fitted rate. In 2014, the potential gains totalled 82 more patients having a documented scan within 24 hours. In 2014, there were two outlier records from one HCO whose combined excess was 28 fewer patients having a documented scan within 24 hours. The outlier HCO rate was 78.5 per 100 inpatients.

CI 3.3 Acute stroke – physiotherapy assessment within 48 hours of presentation (H) In 2014, there were 654 inpatients reported from nine HCOs. The annual rate was 85.8 per 100 inpatients. The fitted rate improved from 77.6 to 83.6, a change of 6.0 per 100 inpatients. There was relatively little variation between HCOs and so the potential gains were small in 2014.

CI 3.4 Ischaemic stroke – receipt of aspirin within 48 hours of presentation (H) In 2014, there were 533 inpatients reported from eight HCOs. The annual rate was 80.3 per 100 inpatients. The fitted rate improved from 69.9 to 80.0, a change of 10.2 per 100 inpatients. In 2014, the potential gains totalled 54 more patients receiving aspirin within 48 hours. In 2014, there were two outlier records from two HCOs whose combined excess was 19 fewer patients receiving aspirin within 48 hours. The outlier HCO rate was 40.7 per 100 inpatients.



CI 3.5 Ischaemic stroke presentation within 4.5 hours onset – intravenous thrombolysis (H)

In 2014, there were 82 inpatients reported from eight HCOs. The annual rate was 50.0 per 100 inpatients. In 2014, the potential gains totalled 13 more patients with documented evidence that an intravenous thrombolysis agent was administered.

CI 3.6 Acute stroke – plan for ongoing care provided prior to discharge (H)

In 2014, there were 359 inpatients reported from eight HCOs. The annual rate was 57.4 per 100 inpatients. In 2014, the potential gains totalled 90 more patients with evidence of a documented plan prior to discharge. In 2014, there were three outlier records from two HCOs whose combined excess was 47 fewer patients with evidence of a documented plan prior to discharge. The outlier HCO rate was 14.3 per 100 inpatients.

CI 3.7 Acute stroke – administered antihypertensive medication prior to discharge (H)

In 2014, there were 531 inpatients reported from eight HCOs. The annual rate was 84.9 per 100 inpatients. In 2014, the potential gains totalled 56 more patients who are prescribed and administered antihypertensive medication prior to discharge. In 2014, there were two outlier records from two HCOs whose combined excess was 20 fewer patients who are prescribed and administered antihypertensive medication prior to discharge. The outlier HCO rate was 69.9 per 100 inpatients.

CI 3.8 Acute stroke – treatment in a stroke unit at any time during hospital stay (H)

In 2014, there were 778 inpatients reported from eight HCOs. The annual rate was 84.2 per 100 inpatients. In 2014, the potential gains totalled 74 more patients that have documented treatment in a stroke unit. In 2014, there were two outlier records from one HCO whose combined excess was 22 fewer patients that have documented treatment in a stroke unit. The outlier HCO rate was 59.8 per 100 inpatients.

Aged care

CI 4.1 Medical patients aged 65 years or more – cognition assessment (H)

In 2014, there were 2,998 patients reported from five HCOs. The annual rate was 83.1 per 100 patients. The fitted rate improved from 71.1 to 73.1, a change of 2.0 per 100 patients. In 2014, the potential gains totalled 235 more patients who have had their cognition assessed. In 2014, there were two outlier records from one HCO whose combined excess was 219 fewer patients who have had their cognition assessed. The outlier HCO rate was 47.4 per 100 patients.

CI 4.2 Geriatric patients – documented assessment of physical function (H)

In 2014, there were 2,981 patients reported from four HCOs. The annual rate was 92.9 per 100 patients. In 2014, the potential gains totalled 141 more patients having documented objective assessment of physical function. In 2014, there was one outlier record from one HCO whose combined excess was 29 fewer patients having documented objective assessment of physical function. The outlier HCO rate was 88.9 per 100 patients.

CI 4.3 Medical patients aged 65 years or more – vitamin D prescribed for deficiency (H)

In 2014, there were 19 patients reported from one HCO. The annual rate was 94.7 per 100 patients. There were no potential gains in 2014.

Respiratory disease

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

In 2014, there were 113 patients reported from one HCO. The annual rate was 70.8 per 100 patients. There were no potential gains in 2014.

CI 5.2 Acute asthma – initial severity assessment documented (H)

In 2014, there were 78 patients reported from three HCOs. The annual rate was 98.7 per 100 patients. There were no potential gains in 2014.

CI 5.3 Acute asthma – ongoing severity assessment documented (H)

In 2014, there were 76 patients reported from two HCOs. The annual rate was 96.1 per 100 patients. In 2014, there was relatively little variation between HCOs and so the potential gains were small. In 2014, there was one outlier record from one HCO whose combined excess was two fewer patients for whom there is objective assessment of severity, in addition to the initial assessment. The outlier HCO rate was 0 per 100 patients.

**CI 5.4 Acute asthma – documented evidence of an appropriate discharge plan (H)**

In 2014, there were 78 patients reported from three HCOs. The annual rate was 73.1 per 100 patients. There were no potential gains in 2014.

Gastrointestinal disease**CI 6.1 Haematemesis/melaena with blood transfusion – gastroscopy within 24 hours (H)**

In 2014, there were 52 patients reported from two HCOs. The annual rate was 80.8 per 100 patients. There was relatively little variation between HCOs and so the potential gains were small in 2014.

CI 6.2 Haematemesis/melaena with blood transfusion – cause of bleeding diagnosed (H)

In 2014, there were 162 patients reported from three HCOs. The annual rate was 71.0 per 100 patients. There was relatively little variation between HCOs and so the potential gains were small in 2014.

CI 6.3 Haematemesis/melaena with blood transfusion – surgical staff notification (H)

In 2014, there were 40 patients reported from one HCO. The annual rate was 55.0 per 100 patients. There were no potential gains in 2014.

CI 6.4 Haematemesis/melaena with blood transfusion – operation (N)

In 2014, there were 162 patients reported from three HCOs. The annual rate was 4.9 per 100 patients.

CI 6.5 Haematemesis/melaena with blood transfusion and endoscopic therapy – operation (N)

In 2014, there were 162 patients reported from three HCOs. The annual rate was 3.1 per 100 patients.

CI 6.6 Haematemesis/melaena with blood transfusion – death (L)

In 2014, there were 150 patients reported from two HCOs. The annual rate was 0 per 100 patients. There were no potential gains in 2014.

Renal disease**CI 7.1 Renal biopsy – macroscopic haematuria within 24 hours of the procedure (L)**

In 2014, there were 523 inpatients reported from six HCOs. The annual rate was 3.3 per 100 inpatients. The fitted rate improved from 5.1 to 2.0, a change of 3.1 per 100 inpatients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 3.0 per 100 inpatients. In 2014, the potential gains totalled ten fewer patients who develop macroscopic haematuria, corresponding to a reduction by approximately one-half.

Oncology**CI 8.1 Pre-menopausal patients with Stage II breast carcinoma – poly-chemotherapy (H)**

In 2014, there were 75 patients reported from three HCOs. The annual rate was 80.0 per 100 patients. In 2014, the potential gains totalled seven more patients treated with poly-chemotherapy.



Maternity (previously Obstetrics)

VERSION 7.2

Outcome of selected primipara

CI 1.1 Selected primipara who have a spontaneous vaginal birth (H) In 2014, there were 49,730 primipara reported from 154 HCOs. The annual rate was 45.4 per 100 primipara. The fitted rate deteriorated from 45.8 to 44.5, a change of 1.3 per 100 primipara. In 2014, the potential gains totalled 4,622 more selected primipara who have a spontaneous vaginal birth. In 2014, there were 29 outlier records from 19 HCOs whose combined excess was 1,538 fewer selected primipara who have a spontaneous vaginal birth. The outlier HCO rate was 28.0 per 100 primipara.

CI 1.2 Selected primipara who undergo induction of labour (L) In 2014, there were 48,825 primipara reported from 154 HCOs. The annual rate was 33.7 per 100 primipara. The fitted rate deteriorated from 27.4 to 33.1, a change of 5.7 per 100 primipara. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 5.7 per 100 primipara. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 4,569 fewer selected primipara who undergo induction of labour, corresponding to a reduction by approximately one-quarter. In 2014, there were 11 outlier records from ten HCOs whose combined excess was 469 more selected primipara who undergo induction of labour. The outlier HCO rate was 46.6 per 100 primipara.

CI 1.3 Selected primipara who undergo instrumental vaginal birth (L) In 2014, there were 49,723 primipara reported from 151 HCOs. The annual rate was 25.6 per 100 primipara. The fitted rate deteriorated from 23.9 to 25.1, a change of 1.3 per 100 primipara. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 1.3 per 100 primipara. In 2014, the potential gains totalled 2,828 fewer selected primipara who undergo an instrumental vaginal birth, corresponding to a reduction by approximately one-fifth. In 2014, there were 14 outlier records from 11 HCOs whose combined excess was 595 more selected primipara who undergo an instrumental vaginal birth. The outlier HCO rate was 38.3 per 100 primipara.

CI 1.4 Selected primipara who undergo caesarean section (L) In 2014, there were 49,393 primipara reported from 151 HCOs. The annual rate was 28.7 per 100 primipara. The fitted rate deteriorated from 28.1 to 28.8, a change of 0.66 per 100 primipara. In 2014, the potential gains totalled 3,070 fewer selected primipara undergoing caesarean section, corresponding to a reduction by approximately one-fifth. In 2014, there were 23 outlier records from 15 HCOs whose combined excess was 996 more selected primipara undergoing caesarean section. The outlier HCO rate was 45.4 per 100 primipara.

Vaginal birth after caesarean section (VBAC)

CI 2.1 Vaginal delivery following previous birth of caesarean section (N) In 2014, there were 19,716 deliveries reported from 113 HCOs. The annual rate was 12.5 per 100 deliveries. Since it has not been specified whether high or low rates are desirable, outlier HCOs are not reported.

Major perineal tears and surgical repair of the perineum

CI 3.1 Selected primipara – intact perineum (H) In 2014, there were 33,345 primipara reported from 137 HCOs. The annual rate was 15.8 per 100 primipara. In 2014, the potential gains totalled 3,964 more selected primipara with an intact perineum or unsutured perineal tear. In 2014, there were 18 outlier records from 12 HCOs whose combined excess was 488 fewer selected primipara with an intact perineum or unsutured perineal tear. The outlier HCO rate was 7.3 per 100 primipara.

CI 3.2 Selected primipara – episiotomy and no perineal tear (L) In 2014, there were 31,753 primipara reported from 122 HCOs. The annual rate was 33.4 per 100 primipara. In 2014, the potential gains totalled 3,457 fewer selected primipara undergoing episiotomy without perineal tear, corresponding to a reduction by approximately one-quarter. In 2014, there were 20 outlier records from 13 HCOs whose combined excess was 973 more selected primipara undergoing episiotomy without perineal tear. The outlier HCO rate was 50.0 per 100 primipara.

CI 3.3 Selected primipara – perineal tear and NO episiotomy (L) In 2014, there were 31,780 primipara reported from 123 HCOs. The annual rate was 44.7 per 100 primipara. In 2014, the potential gains totalled 1,823 fewer selected primipara sustaining a perineal tear without episiotomy, corresponding to a reduction by approximately one-tenth. In 2014, there were 11 outlier records from nine HCOs whose combined excess was 369 more selected primipara sustaining a perineal tear without episiotomy. The outlier HCO rate was 63.4 per 100 primipara.

CI 3.4 Selected primipara – episiotomy and perineal tear (L) In 2014, there were 31,411 primipara reported from 119 HCOs. The annual rate was 6.18 per 100 primipara. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 969 fewer selected primipara undergoing episiotomy and sustaining a perineal tear, corresponding to a reduction by approximately one-third. In 2014, there were 17 outlier records from 13 HCOs whose combined excess was 345 more selected primipara undergoing episiotomy and sustaining a perineal tear. The outlier HCO rate was 13.1 per 100 primipara.



CI 3.5 Selected primipara – surgical repair of perineum for third degree tear (L)

In 2014, there were 33,303 primipara reported from 137 HCOs. The annual rate was 5.1 per 100 primipara. The fitted rate deteriorated from 4.1 to 5.2, a change of 1.0 per 100 primipara. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 1.0 per 100 primipara. In 2014, the potential gains totalled 802 fewer selected primipara undergoing surgical repair of the perineum for third degree tear, corresponding to a reduction by approximately one-third. In 2014, there were seven outlier records from six HCOs whose combined excess was 139 more selected primipara undergoing surgical repair of the perineum for third degree tear. The outlier HCO rate was 10.1 per 100 primipara.

CI 3.6 Selected primipara – surgical repair of perineum for fourth degree tear (L)

In 2014, there were 33,641 primipara reported from 141 HCOs. The annual rate was 0.37 per 100 primipara. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 35 fewer selected primipara undergoing surgical repair of the perineum for fourth degree tear, corresponding to a reduction by approximately one-quarter. In 2014, there were three outlier records from three HCOs whose combined excess was eight more selected primipara undergoing surgical repair of the perineum for fourth degree tear. The outlier HCO rate was 4.7 per 100 primipara.

General anaesthesia for caesarean section

CI 4.1 General anaesthetic for caesarean section (L)

In 2014, there were 60,240 caesareans reported from 137 HCOs. The annual rate was 6.2 per 100 caesareans. There was no significant trend in the fitted rate. In 2014, the potential gains totalled 1,655 fewer women having a general anaesthetic for a caesarean section, corresponding to a reduction by approximately one-third. In 2014, there were 18 outlier records from 15 HCOs whose combined excess was 452 more women having a general anaesthetic for a caesarean section. The outlier HCO rate was 11.1 per 100 caesareans.

Antibiotic prophylaxis and caesarean section

CI 5.1 Appropriate prophylactic antibiotic at the time of the caesarean section (H)

In 2014, there were 39,765 caesareans reported from 87 HCOs. The annual rate was 91.3 per 100 caesareans. The fitted rate improved from 72.6 to 94.6, a change of 22.0 per 100 caesareans. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 20.8 per 100 caesareans. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 3,015 more women who receive an appropriate prophylactic antibiotic at the time of caesarean section. In 2014, there were 16 outlier records from 12 HCOs whose combined excess was 1,531 fewer women who receive an appropriate prophylactic antibiotic at the time of the caesarean section. The outlier HCO rate was 68.5 per 100 caesareans.

Pharmacological thromboprophylaxis and caesarean section

CI 6.1 Unplanned LSCS – pharmacological thromboprophylaxis (H)

In 2014, there were 10,963 caesareans reported from 60 HCOs. The annual rate was 75.8 per 100 caesareans. In 2014, the potential gains totalled 2,491 more women who receive appropriate pharmacological thromboprophylaxis. In 2014, there were 25 outlier records from 17 HCOs whose combined excess was 1,207 fewer women who receive appropriate pharmacological thromboprophylaxis. The outlier HCO rate was 36.6 per 100 caesareans.

CI 6.2 Planned LSCS – pharmacological thromboprophylaxis (H)

In 2014, there were 12,200 caesareans reported from 51 HCOs. The annual rate was 69.1 per 100 caesareans. In 2014, the potential gains totalled 3,552 more women who receive appropriate pharmacological thromboprophylaxis. In 2014, there were 15 outlier records from 12 HCOs whose combined excess was 1,669 fewer women who receive appropriate pharmacological thromboprophylaxis. The outlier HCO rate was 22.2 per 100 caesareans.



Postpartum haemorrhage/blood transfusion

CI 7.1 Vaginal birth – blood transfusion (L) In 2014, there were 124,218 vaginal births reported from 147 HCOs. The annual rate was 1.3 per 100 vaginal births. The fitted rate deteriorated from 1.2 to 1.4, a change of 0.20 per 100 vaginal births. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.21 per 100 vaginal births. In 2014, the potential gains totalled 620 fewer women who give birth vaginally who receive a blood transfusion, corresponding to a reduction by approximately one-third. In 2014, there were 11 outlier records from eight HCOs whose combined excess was 182 more women who give birth vaginally who receive a blood transfusion. The outlier HCO rate was 2.9 per 100 vaginal births.

CI 7.2 Caesarean section – blood transfusion (L) In 2014, there were 64,946 caesareans reported from 138 HCOs. The annual rate was 1.3 per 100 caesareans. The fitted rate improved from 1.7 to 1.4, a change of 0.30 per 100 caesareans. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.26 per 100 caesareans. In 2014, the potential gains totalled 374 fewer women who undergo caesarean section who receive a blood transfusion, corresponding to a reduction by approximately one-third. In 2014, there were nine outlier records from seven HCOs whose combined excess was 98 more women who undergo caesarean section who receive a blood transfusion. The outlier HCO rate was 3.4 per 100 caesareans.

Intrauterine growth restriction (IUGR)

CI 8.1 Babies – birth weight less than 2750g at 40 weeks gestation or beyond (L) In 2014, there were 61,357 deliveries reported from 120 HCOs. The annual rate was 1.6 per 100 deliveries. The fitted rate improved from 1.9 to 1.6, a change of 0.31 per 100 deliveries. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.31 per 100 deliveries. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 118 fewer babies born with birth weight less than 2750g at 40 weeks gestation or beyond, corresponding to a reduction by approximately one-tenth. In 2014, there was one outlier record from one HCO whose combined excess was four more babies born with birth weight less than 2750g at 40 weeks gestation or beyond. The outlier HCO rate was 8.4 per 100 deliveries.

Apgar score

CI 9.1 Term babies – Apgar score less than 7 at 5 minutes post-delivery (L) In 2014, there were 178,994 babies reported from 145 HCOs. The annual rate was 1.3 per 100 babies. In 2014, the potential gains totalled 800 fewer term babies born with an Apgar score of less than 7 at five minutes post-delivery, corresponding to a reduction by approximately one-third. In 2014, there were ten outlier records from nine HCOs whose combined excess was 130 more term babies born with an Apgar score of less than 7 at five minutes post-delivery. The outlier HCO rate was 2.4 per 100 babies.

Admission of term babies to NICN or SCN

CI 10.1 Term babies – transferred/admitted to NICN or SCN (L) In 2014, there were 161,603 babies reported from 143 HCOs. The annual rate was 9.5 per 100 babies. The fitted rate deteriorated from 9.6 to 10.1, a change of 0.52 per 100 babies. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 10,625 fewer inborn term babies transferred/admitted to a neonatal intensive care nursery (NICN) or special care nursery (SCN), corresponding to a reduction by approximately two-thirds. In 2014, there were 47 outlier records from 28 HCOs whose combined excess was 2,957 more inborn term babies transferred/admitted to a NICN or SCN. The outlier HCO rate was 16.7 per 100 babies.

Peer review of serious adverse events

CI 11.1 Serious adverse events addressed within the peer review process (H) In 2014, there were 2,247 adverse events reported from 28 HCOs. The annual rate was 100 per 100 serious adverse events. The fitted rate improved from 44.3 to 99.2, a change of 54.9 per 100 serious adverse events. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 38.7 per 100 serious adverse events. There were no significant stratum differences in 2013 and 2014. There were no potential gains in 2014.



Expert Commentary

The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG)

Outcome of selected primipara

There has been a further small increase in the number of spontaneous vaginal births in the selected primipara (**CI 1.1**), but it remains at around 46%. There are several reasons why the number of spontaneous vaginal births will be expected to continue to decline:

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

Stratum differences were again demonstrated in relation to private and public HCOs (35.2% versus 52.0% respectively). This was expected as most of the above factors are more prevalent in the private sector than the public sector.

The rate for **CI 1.2**: 'Selected primipara – induction of labour' has continued to increase, reaching its highest rate of 33.7%. As commented on previously, further increases in induction of labour rates are very likely to continue as evidence continues to accumulate that induction not only improves fetal outcomes in the presence of many pregnancy complications but may actually reduce the likelihood of caesarean section. Paramount in the last 12 months is the paper by Boulvain *et al* which suggests lowered rates of caesarean section after induction of labour for suspected macrosomia.

The rate for **CI 1.3**: 'Selected primipara – instrumental vaginal birth', remains at just over 25% and shows a slight upward trend. The most likely explanation is differences in the utilisation of regional analgesia for pain relief in labour; a factor which is known to change rates of instrumental birth. Unfortunately, data on epidural utilisation is not part of this data set.

The rate for **CI 1.4**: 'Selected primipara – caesarean section', remains remarkably constant at around 29.0%. This rate has barely changed over the last seven years and shows no clear trend upward. A rising caesarean section rate continues to be observed throughout developed countries for reasons specified already. These include a more risk averse population of women, who are older and less likely to have many future pregnancies (and therefore less likely to have complications of a previous caesarean section in subsequent pregnancies). The higher rate in the private sector is to be expected, given that the drivers for caesarean section are even more pronounced in that sector.

Vaginal birth after caesarean section (VBAC)

Vaginal delivery following a previous primary caesarean section remains at a fairly constant figure of around 12–13%. There is only a slight fall relative to 2013 (12.9% to 12.5%). Falling rates of this CI might have been expected with the publication in 2012 showing better fetal outcomes and lower rates of severe maternal haemorrhage in women who plan an elective caesarean section rather than plan a vaginal birth after a primary caesarean section.

Major perineal tears and surgical repair of the perineum

The rate for **CI 3.1**: 'Selected primipara – intact perineum' is remarkably constant across HCOs at around 15%. This is reassuring given differing practices in episiotomy thresholds, suggesting that obstetricians and midwives are not performing unnecessary episiotomies.

The rate for **CI 3.2**: 'Selected primipara – episiotomy and no perineal tear' remains fairly constant at around 32–33%. The optimal rate of episiotomy is unknown. Opinion is divided as to whether a mediolateral episiotomy affects the incidence of obstetric anal sphincter injuries (OASIS) and/or anorectal incontinence from neural injury. These injuries are some of the worst outcomes for women delivering vaginally. Rates are expected to be higher in the private sector (39%) where there are more instrumental births in association with greater utilisation of regional analgesia for pain relief in labour.

The rate for **CI 3.3**: 'Selected primipara – perineal tear and NO episiotomy' vary quite markedly across the states with the lowest rate in Victoria (39.8%) and highest rate in Queensland (51.1%). As expected, this is the exact opposite of the rates of 'episiotomy and no tears' where Victoria is the highest (41.3%) and Queensland is the lowest (25.5%). Exactly the same regional differences were observed in 2013.

The rate for **CI 3.4**: 'Selected primipara – episiotomy and perineal tear', remains around 6%. It is interesting that the state with the lowest episiotomy rate (Queensland) has the highest rate of both 'episiotomy' and 'vaginal tear' (9.1%), perhaps suggesting that delayed use of an episiotomy makes it more likely to end up with both episiotomy and tears.



For **CI 3.5**: 'Selected primipara – surgical repair of perineum for third degree tear', the public HCO rate is more than twice that of the private HCOs (6.32% vs 2.72%). There may be several reasons for this, with one reason being under reporting of third degree tears in the private sector. Also, if the more difficult instrumental births were less likely to be performed in the private sector (possibly due to a more risk averse population), a lower rate of major perineal tears would be expected.

The rate for **CI 3.6** remains very low at 0.37%. There is no clear trend over time. The low numbers make comparison more difficult, however the diagnosis is more objective than that of third degree tears.

General anaesthesia for caesarean section

The rate for **CI 4.1**, 'General anaesthetic for caesarean section' has remained constant at 6.05–6.52%; however the private HCO rate is much lower than the public HCO rate (3.20 versus 7.79 per 100 caesareans). Higher rates of general anaesthesia in public HCOs are likely attributable to multiple factors including technical difficulties in morbidly obese patients and the ability to perform a "code" GA caesarean section in a public HCO in the event of sudden severe fetal compromise in a situation not suitable for instrumental birth.

Antibiotic prophylaxis and caesarean section

The rate for **CI 5.1**: 'Appropriate prophylactic antibiotic at time of caesarean section' has been in the range of 90–93% for the last three years. Further increases may prove difficult for many reasons. All hospitals should regularly audit compliance with local guidelines across a sample of CIs which should, from time to

time, include antibiotic prophylaxis at caesarean section. It is noteworthy that unlike some overseas guidelines, the College is not prescriptive as to the timing of antibiotic administration. Whilst there is evidence that early administration (before skin incision) is more effective in the prevention of postpartum febrile morbidity, there is also unequivocal evidence that anaphylaxis with the fetus in utero can be followed by long term sequelae.

Pharmacological thromboprophylaxis and caesarean section

The rate for **CI 6.1**: 'Pharmacological thromboprophylaxis and unplanned caesarean section' is 75.8% which is a little down from the previous value of 80.9%. The rate should not be 100% in view of circumstances where the risk of life-threatening bleeding will exceed the risk of thromboembolism. Dramatically lower rates in New South Wales (16.7%) compared to other states (62.3%–87.3%) reflect guideline differences. This should not have impacted however, as the wording of the CI is to reflect compliance with guidelines (not whether thromboprophylaxis was administered). Lower rates in private (50.0%) may reflect a relative absence of clinical guidelines in that setting.

CI 6.2 shows a wide variation between those states reporting, suggesting guideline differences between Western Australia (34.1%) and Victoria (88.3%). The contemporary presence or absence of maternal deaths from thromboembolism would be expected to influence guideline development in individual states.

Postpartum haemorrhage/ blood transfusion

Whilst rates for **CI 7.1**: 'Vaginal birth – blood transfusion' have remained low since 2008 (1.11–1.32%), there are 620 centile gains and the private HCO rate is much lower than the public rate. Postpartum haemorrhage (PPH) rates seem to be rising worldwide, so it is pleasing to see that this CI is still low. The difference in private (0.82%) and public (1.56%) rates is likely to reflect things such as less physiological third stage management which carries treble the rate of PPH. Different casemix may also contribute.

The rate for **CI 7.2**, 'Blood transfusions at planned caesarean section' is more than twice as high in public HCOs (1.79%) as in private HCOs (0.77%). Higher rates of blood transfusion in the public sector at caesarean section may reflect:

- Longer labours in the public sector as evidenced by the lower threshold for caesarean section in the private sector and,
- The more complex caesarean sections being delivered in the public sector e.g. placenta accreta.

The rates for South Australian HCOs (1.92%) remain higher than other states (1.04–1.64%). This was also observed in 2013 and remains unexplained.



Intrauterine growth restriction (IUGR)

The rate for **CI 8.1**: 'Birth with birth weight less than 2,750g at 40 weeks gestation or beyond' has been steadily improving and is now down to 1.55% after beginning at 1.85% over seven years ago. Failure to diagnose intrauterine growth restriction remains the most obvious preventable factor in perinatal mortality at term. It is also an increasingly recognised contributor to the developmental origins of adult disease. It has been rewarding to see this statistic falling over the five year period and it could be suggested that introducing this CI is partly responsible for this highly desirable improvement. Further improvement is desirable and the downward trend should continue with further increased vigilance of staff responsible for antenatal care in detecting antenatal placental insufficiency.

Apgar score

While year to year changes of **CI 9.1** are small, it is disturbing that the rate of low five minute Apgar scores has stabilised at around 1.3%. The markedly higher rates of low Apgar scores in the public (1.51%) relative to the private (0.82%) sector, may reflect casemix or other factors such as rates of continuous electronic fetal monitoring. It should be noted that Apgar scores are very subjective and open to bias – yet remain the only parameter of newborn condition that is available in nearly all labours. The College applauds those centres that have introduced routine cord biochemistry of all births to have objective measurement of fetal condition at all births.

Admissions of term babies to NICN or SCN

Variation between HCOs in admissions to NICN or SCNs can be both negative and positive. Low admission rates might reflect better care (e.g. better management of gestational diabetes resulting in less neonatal hypoglycaemia) or alternatively it might reflect less vigilance in the diagnosis and/or management of neonatal hypoglycaemia. The same would apply to respiratory compromise and the other common indicators for term babies being admitted to NICN/SCNs. It is disturbing to note that statistics around admissions of a term baby to NICN with grade 2 or 3 hypoxic ischaemic encephalopathy are not collected by anyone. The Australian and New Zealand Neonatal Network (ANZNN) specifically does not collect these data – yet it is a strong predictor of cerebral palsy in term infants.

Peer review of serious adverse events

The rate of peer review of serious adverse events has increased to 100% in 2014. Most hospitals now have well developed systems for critical (sentinel) event monitoring that goes hand in hand with an evaluation process. As hospitals have jurisdictional reporting requirements, and each hospital has processes around these incidents, it is not surprising that this rate is high.

General comments

The numbers of participating HCOs are greater for those CIs that are more easily collected, are objective and have clinical meaning. Therefore, neonatal outcome measures (e.g. IUGR, low Apgar scores, admission to SCBU/NICU) expectedly feature more prominently than say thromboprophylaxis which is more controversial and not routinely collected.

References

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Expert Commentary

Australian College of Midwives (ACM)

Introductory comments

The Australian College of Midwives welcomes the opportunity to comment on the data for the 16th edition of the ACIR and welcomes the change of the name for the CI set relating to maternity care.

Outcome of selected primipara

The difference in caesarean section (CS) rates between the private and public HCOs may be reflective of the differing dynamics of midwifery and obstetric interactions in care provision in both the antenatal and intrapartum periods. This may support the argument for midwifery models of care for all normal risk primiparous women regardless of level of health insurance.

Vaginal birth after caesarean section (VBAC)

This remains unchanged irrespective of the work and policy driven change being done locally around VBAC. There are still only small amounts of data for comparison, which makes meaningful conclusions unsafe.

Major perineal tears and surgical repair of the perineum

Although the increasing rate of third degree tears could be considered concerning it may indicate improved categorisation of tears previously reported as second degree and may lead to improved care and follow up for these women in the postnatal period.

Antibiotic prophylaxis and caesarean section

It is difficult to draw conclusions given the small number of HCOs reporting.

Pharmacological thromboprophylaxis and caesarean section

It is difficult to draw conclusions given the small number of HCOs reporting. There is a wide spread of rates for this CI which may be as a result of the lack of professional Clinical Guidelines in this area.

Postpartum haemorrhage/ blood transfusion

The increased rate for this CI may be reflective of the changes in the massive blood transfusion policy, which now recommends the early rather than late administration of blood.

Apgar score

The College notes that no conclusions can be made for this area.

Admissions of term babies to NICN or SCN

The persistently high rate of babies admitted to the NICN or SCN may reflect the funding model for qualified babies and a lack of staffing resource in the provision of care for these babies if co-located with their mothers.

Peer review of serious adverse events

The College has no comment about the CI outcomes. However, the Australian College of Midwives fully supports the ongoing clinical review of adverse and serious clinical events and the ongoing development of refined definitions and criteria for reporting.

General comments

The CIs continue to highlight differences in outcomes between public and private HCOs and in some CIs between jurisdictions. If nothing else, these results provide information to guide women in selecting their options for birth place.



Medication Safety

VERSION 3

Reporting mechanisms

CI 1.1 Adverse drug reactions reported to TGA (N)

In 2014, there were 771,183 separations reported from 95 HCOs. The annual rate was 0.14 per 100 drug reactions. The fitted rate increased from 0.11 to 0.14, a change of 0.027 per 100 separations.

Medication errors

CI 2.1 Medication errors – adverse event requiring intervention (L)

In 2014, there were 9,057,654 bed days reported from 241 HCOs. The annual rate was 0.012 per 100 bed days. The fitted rate improved from 0.077 to 0.007, a change of 0.070 per 100 bed days. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.066 per 100 bed days. In 2014, the potential gains totalled 944 fewer medication errors resulting in an adverse event requiring intervention, corresponding to a reduction by approximately four-fifths. In 2014, there were 18 outlier records from 13 HCOs whose combined excess was 536 more medication errors resulting in an adverse event requiring intervention. The outlier HCO rate was 0.066 per 100 bed days.

Documentation of known adverse drug reactions

CI 3.1 Known adverse drug reactions documented in current medication chart (H)

In 2014, there were 28,404 patients reported from 54 HCOs. The annual rate was 96.2 per 100 patients. The fitted rate improved from 77.7 to 95.5, a change of 17.8 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. In 2014, the rate change was 17.4 per 100 patients. There was relatively little variation between HCOs and so the potential gains were small. In 2014, there were 22 outlier records from 18 HCOs whose combined excess was 608 fewer patients whose known adverse drug reactions are documented on the current medication chart. The outlier HCO rate was 74.9 per 100 patients.

Medication orders with error-prone abbreviations

CI 4.1 Medication orders with error-prone abbreviations (L)

In 2014, there were 72,955 medication orders reported from 33 HCOs. The annual rate was 5.2 per 100 medication orders. The fitted rate improved from 7.9 to 3.8, a change of 4.1 per 100 medication orders. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 4.5 per 100 medication orders. In 2014, the potential gains totalled 2,963 fewer medication orders that include error-prone abbreviations, corresponding to a reduction by approximately three-quarters. In 2014, there were eight outlier records from seven HCOs whose combined excess was 1,706 more medication orders that include error-prone abbreviations. The outlier HCO rate was 24.8 per 100 medication orders.

Warfarin management

CI 5.1 Warfarin – abnormal bleeding (L)

In 2014, there were 1,820 separations reported from 16 HCOs. The annual rate was 2.4 per 100 separations. The fitted rate deteriorated from 0.28 to 2.2, a change of 2.0 per 100 separations. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 1.6 per 100 separations. In 2014, the potential gains totalled 37 fewer patients receiving warfarin as an inpatient who experience abnormal bleeding, corresponding to a reduction by approximately four-fifths. In 2014, there were two outlier records from two HCOs whose combined excess was 17 more patients receiving warfarin as an inpatient who experience abnormal bleeding. The outlier HCO rate was 7.2 per 100 separations.

CI 5.2 Warfarin – INR/prothrombin reading exceeding 5 (L)

In 2014, there were 2,738 separations reported from 16 HCOs. The annual rate was 3.5 per 100 separations. There was no significant trend in the fitted rate. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 23 fewer patients receiving warfarin as an inpatient with an INR reading exceeding 5, corresponding to a reduction by approximately one-fifth. In 2014, there was one outlier record from one HCO whose combined excess was two more patients receiving warfarin as an inpatient with an INR reading exceeding 5. The outlier HCO rate was 28.0 per 100 separations.



CI 5.3 Warfarin – written drug information upon

discharge (H) In 2014, there were 1,233 patients reported from 14 HCOs. The annual rate was 77.7 per 100 patients. There was no significant trend in the fitted rate. In 2014, the potential gains totalled 259 more patients discharged on warfarin who receive written drug information prior to discharge. In 2014, there were five outlier records from four HCOs whose combined excess was 132 fewer patients discharged on warfarin who receive written drug information prior to discharge. The outlier HCO rate was 23.1 per 100 patients.

CI 5.4 Warfarin – dosage review following high INR

result (H) In 2014, there were 282 patients reported from 17 HCOs. The annual rate was 84.0 per 100 patients. The fitted rate deteriorated from 95.5 to 86.9, a change of 8.6 per 100 patients. In 2014, the potential gains totalled 39 more patients on warfarin with an INR of 4 or above whose dosage has been adjusted or reviewed prior to the next warfarin dose. In 2014, there were two outlier records from one HCO whose combined excess was 28 fewer patients on warfarin with an INR of 4 or above whose dosage has been adjusted or reviewed prior to the next warfarin dose. The outlier HCO rate was 7.5 per 100 patients.

CI 5.5 Warfarin – starting doses consistent with

hospital approved protocol (H) In 2014, there were 241 patients reported from eight HCOs. The annual rate was 73.9 per 100 patients. There was no significant trend in the fitted rate. In 2014, the potential gains totalled 54 more patients whose starting doses of warfarin are consistent with a hospital approved protocol. In 2014, there were three outlier records from two HCOs whose combined excess was 23 fewer patients whose starting doses of warfarin are consistent with a hospital approved protocol. The outlier HCO rate was 21.3 per 100 patients.

Aminoglycoside monitoring

CI 6.1 Aminoglycoside toxicity – dosage adjustment

prior to next dose (H) In 2014, there were 28 patients reported from two HCOs. The annual rate was 64.3 per 100 patients. There were no potential gains in 2014.



Expert Commentary

Therapeutic Goods Administration (TGA)

Introductory comments

The TGA's Post-market Surveillance Branch (PMSB) is a part of the Monitoring and Compliance Division. It is responsible for ongoing post-market monitoring of all therapeutic goods, including medicines (e.g. prescription, over-the-counter and complementary medicines), vaccines, biologicals and medical devices.

The PMSB protects public health and safety by ensuring therapeutic goods supplied in Australia maintain appropriate levels of quality, safety and efficacy/performance, and that advertising of therapeutic goods is done in accordance with applicable laws and regulations. When necessary, the PMSB takes appropriate regulatory actions (e.g. recall actions). The PMSB works closely with stakeholders, including consumers, health professionals, industry, government and international counterparts, to ensure that the regulatory framework within which it operates is able to adapt to the latest scientific developments and emerging community expectations. It is committed to ongoing improvement in these processes to maximise the effectiveness and efficiency of the TGA's post-market monitoring activities.

Documentation of known adverse drug reactions (**CI 3.1**) is outside the TGA's purview. Also, as a regulatory agency, the TGA is unable to comment on medications with error-prone abbreviations (**CI 4.1**). The Quality Use of Medicines is one of the central objectives of Australia's National Medicines Policy – a well-established endorsed framework based on partnerships. Governments – Commonwealth, States and Territories – health educators, health practitioners, and other healthcare providers and suppliers, the medicines industry, healthcare consumers and the media work together to promote the objectives of the policy.

In this context, the TGA supports the continued collection and reporting of data related to medication safety.

Reporting mechanisms

Data on adverse events collected by the TGA between 2007 and 2014 reflect a similar rate of reporting by HCOs as shown in **CI 1.1**. During this time period, the rate of reporting has remained relatively consistent, with a slight increase in the rate over the last four years. The slight increase in the rate of reports over this time period may be reflective of a range of activities the TGA has undertaken to encourage improved reporting of adverse events across all categories of reporters and for all therapeutic goods. As an example, the TGA and NPS MedicineWise worked together in 2014 to create two interactive online learning modules designed to improve adverse event reporting by health professionals in relation to medicines, vaccines and medical devices.

Medication errors

After a peak in 2007 and a decline over the following four year period, the rate for **CI 2.1** has remained relatively low for the last four years. The TGA seeks information from a variety of sources when monitoring the safety of therapeutic goods.

In particular, the TGA promotes quality use of medicines and encourages all hospitals to have systems in place to ensure that adverse events are identified and reported, both internally and to the TGA.

Such reports are particularly important to the TGA for a number of reasons:

- HCOs have early experience with new medicines and/or their use in people with co-morbidities who would be excluded from clinical trials, and therefore may detect new signals.
- Patients may present to a HCO following a serious adverse event.

The TGA also encourages individual health professionals to report adverse events. The TGA continues to investigate barriers to reporting, as well as develop mechanisms to make submitting adverse drug reactions (ADRs) faster, easier and more integrated into existing work systems, such as online reporting facilities.

Warfarin management

The TGA is concerned that the annual rate of non-same day separations receiving warfarin as an inpatient who experienced abnormal bleeding (**CI 5.1**) increased from 0.33 per 100 separations in 2012 to 1.52 per 100 separations in 2013 and continued this increase in 2014. However, the 2012 result was markedly lower than the rate in 2011, which was 1.79 per 100 separations. It is not clear to the TGA why variations between years are occurring. As three new oral anticoagulants (NOACs), dabigatran, rivaroxaban and apixaban, are now widely available, including the monitoring of these newer medicines in this set should be considered. The TGA encourages the collection of data on reporting rates of warfarin and the NOACs, but has no specific comment on **CIs 5.2–5.5**.

Aminoglycoside monitoring

The limited amount of data submitted for **CI 6.1** makes it difficult to make a specific comment. The potential for these medicines to exacerbate morbidity and mortality does need to be monitored. As with anticoagulant medicines, the collection of data on adverse events arising from the use of other new antibiotics entering the market is encouraged by the TGA. The TGA suggests that a larger number of HCOs be encouraged to collect data on this CI.



Mental Health Community Based

VERSION 2

Community

CI 1.1 Registered consumers seen face-to-face by the community service (N) In 2014, there were 68,190 consumers reported from 14 HCOs. The annual rate was 81.6 per 100 consumers. The fitted rate increased from 76.2 to 84.0, a change of 7.9 per 100 consumers.

CI 1.2 Consumers/nominated carers with greater than 24 treatment days over 3 months (N) In 2014, there were 46,362 consumers reported from 13 HCOs. The annual rate was 20.1 per 100 consumers. The fitted rate increased from 4.0 to 22.8, a change of 18.8 per 100 consumers. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 14.9 per 100 consumers.

CI 1.3 Consumers/nominated carers with at least 3 face-to-face contacts within a 7 day period (N) In 2014, there were 54,699 consumers reported from 13 HCOs. The annual rate was 31.7 per 100 consumers. The fitted rate increased from 17.6 to 29.0, a change of 11.4 per 100 consumers. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 10.8 per 100 consumers.

CI 1.4 Consumers – admitted to hospital for psychiatric reasons in the first year of treatment (L) In 2014, there were 27,525 consumers reported from ten HCOs. The annual rate was 19.3 per 100 consumers. The fitted rate deteriorated from 12.2 to 16.1, a change of 3.9 per 100 consumers. In 2014, the potential gains totalled 2,922 fewer consumers who were admitted to hospital for psychiatric reasons in the first year of treatment, corresponding to a reduction by approximately one-half. In 2014, there were two outlier records from one HCO whose combined excess was 1,355 more consumers who were admitted to hospital for psychiatric reasons in the first year of treatment. The outlier HCO rate was 35.0 per 100 consumers.

Care planning

CI 2.1 Consumers – current completed care plans (H) In 2014, there were 2,512 consumers reported from three HCOs. The annual rate was 60.0 per 100 consumers. In 2014, the potential gains totalled 879 more consumers with current completed care plans. In 2014, there was one outlier record from one HCO whose combined excess was 170 fewer consumers with current completed care plans. The outlier HCO rate was 51.0 per 100 consumers.

CI 2.2 Carers – involvement in care plan development (H) In 2014, there were 2,152 consumers reported from two HCOs. The annual rate was 49.6 per 100 consumers. In 2014, there was relatively little variation between HCOs and so the potential gains were small. In 2014, there was one outlier record from one HCO whose combined excess was 30 fewer carers involved in developing care plans. The outlier HCO rate was 22.0 per 100 consumers.



Expert Commentary

The Royal Australian and New Zealand College of Psychiatrists (RANZCP)

Introductory comments

Community care provided by specialised mental health services includes delivery of clinical assessments and interventions that must be closely coordinated with actions to improve social integration and personal recovery. Services that participate in the ACHS Clinical Indicator Program (CIP) will find this information valuable for benchmarking and guiding actions to improve care. The limited number of services that have participated, and relatively small number of consumer experiences represented compared with the scope of national services, limit extrapolation of the results.

Community

The optimal result of any CI is one that indicates consumers are either receiving better care, or achieving better outcomes. Interpretation requires an understanding of the models of care operating, which may appropriately vary depending on service context. The overall trend of a slow increase in the proportion of registered consumers seen face-to-face is welcome, although the 20th centile of 70% is potentially concerning. However, variation is of unclear significance given variation in how phone triage activity is recorded. The increase in the proportion of consumers or nominated carers with greater than 24 treatment days over a three month period and the proportion of consumers or nominated carers with three or more face-to-face contacts within a seven day period; suggests a welcome increase in capacity of some services to provide periods of increased intensity of service. Both the trend towards increased number of

consumers who were admitted to hospital for psychiatric reasons, and variability in performance, suggests that the overall goal of providing care in the community is still not achieved for many individuals. Whether this represents increased appropriate access to inpatient care for people with more severe problems, or failure of community care requires exploration by each participating service.

Care planning

All attempts to both monitor and increase the involvement of consumers and carers in care planning are welcome, as the importance of these activities is well established. However, the very small number of services continuing to report data for this CI makes the significance of the apparent improved rates unclear, and questions if alternate mechanisms to evaluate these important activities are required.

General comments

It is encouraging that some services participating in the CIP appear to have made gains in their ability to increase intensity of community care for some periods, but the increasing proportion of consumers admitted raises significant questions about whether there has been change in the overall capacity of services to deliver sustainable effective care. Exploration of alternate mechanisms to both monitor and improve the involvement of consumers and carers in care planning appears worthy of consideration.



Expert Commentary

Australian College of Mental Health Nurses (ACMHN)

Introductory comments

The number of participating HCOs continues to diminish generally. This affects generalisability and also impacts upon the confidence of interpretation of the results.

Community

The upward trend is noted in face-to-face contacts although some change relative to the previous year is noted in those particular results. Improvements in face-to-face contact may represent a better distribution of personnel or points at which service is offered and delivered, but may also be indicative of an emphasis being placed upon care and treatment offered in this modality. A stratification of this area based on telepsychiatry or geography may help to improve the clarity of this CI.

Significant gains continue to be measured in the percentage of people seen for more than 24 days over a three month period. This may be viewed as a positive improvement in the accessibility of service or possibly based on clinical need if acuity of demand was accounting for contact. Given that the rate of contact for three or more face-to-face contacts in a 7-day period is 31.7 per 100 consumers, this latter interpretation holds fast. The fitted rate for admission of people in the first year of treatment has seen an increasing trend over the data capture period, which follows from earlier interpretation of acuity of demand. However, convergence of the 20th and 80th percentile rates is noted.

Care planning

Very small numbers of participating HCOs are reported in this area, with numbers declining over time. Volatility in the rate of current completed care plans is seen in the reported periods, although some clear ground has been gained over the previous 12 month period and is approaching more satisfactory levels. Volatility is also noted in carer participation in care plan development although only two HCOs participated, rendering interpretation almost impossible.

General comments

The data are increasingly difficult to comment on when HCOs numbers are low. It may be of value to give consideration to increasing the granularity of measures to allow for more considered and detailed assessment and interpretation of results.



Mental Health Inpatient

VERSION 6

Diagnosis and care planning

CI 1.1 Inpatients allocated a diagnosis within 24 hours of admission (H) In 2014, there were 41,743 inpatients reported from 69 HCOs. The annual rate was 95.6 per 100 inpatients. The fitted rate improved from 92.8 to 94.5, a change of 1.7 per 100 inpatients. In 2014, there was relatively little variation between HCOs and so the potential gains were small. In 2014, there were 24 outlier records from 20 HCOs whose combined excess was 971 fewer inpatients allocated a diagnosis within 24 hours of admission. The outlier HCO rate was 81.5 per 100 inpatients.

CI 1.2 Documented diagnosis upon discharge (H) In 2014, there were 45,004 inpatients reported from 64 HCOs. The annual rate was 92.8 per 100 inpatients. The fitted rate improved from 86.7 to 92.8, a change of 6.1 per 100 inpatients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 6.1 per 100 inpatients. In 2014, the potential gains totalled 3,153 more inpatients with a diagnosis on hospital discharge recorded in the medical record. In 2014, there were 29 outlier records from 20 HCOs whose combined excess was 1,356 fewer inpatients with a diagnosis on hospital discharge recorded in the medical record. The outlier HCO rate was 82.1 per 100 inpatients.

CI 1.3 Inpatients with an individual care plan (H) In 2014, there were 30,067 inpatients reported from 52 HCOs. The annual rate was 89.6 per 100 inpatients. The fitted rate improved from 78.5 to 88.3, a change of 9.7 per 100 inpatients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 9.9 per 100 inpatients. In 2014, the potential gains totalled 2,999 more inpatients with an individual care plan, which is constructed and regularly reviewed with the consumer. In 2014, there were 25 outlier records from 17 HCOs whose combined excess was 1,350 fewer inpatients with an individual care plan, which is constructed and regularly reviewed with the consumer. The outlier HCO rate was 71.5 per 100 inpatients.

Physical examination of patients

CI 2.1 Physical examination documented within 48 hours of admission (H) In 2014, there were 36,916 inpatients reported from 65 HCOs. The annual rate was 88.4 per 100 inpatients. The fitted rate improved from 83.3 to 88.6, a change of 5.4 per 100 inpatients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 6.0 per 100 inpatients. In 2014, the potential gains totalled 3,949 more inpatients with a complete documented physical examination within 48 hours of admission. In 2014, there were 26 outlier records from 18 HCOs whose combined excess was 1,628 fewer inpatients with a complete documented physical examination within 48 hours of admission. The outlier HCO rate was 71.0 per 100 inpatients.

Prescribing patterns

CI 3.1 Inpatients on 3 or more psychotropic medications at the time of discharge (L) In 2014, there were 20,234 inpatients reported from 40 HCOs. The annual rate was 4.4 per 100 inpatients. The fitted rate improved from 8.4 to 4.0, a change of 4.4 per 100 inpatients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 4.9 per 100 inpatients. In 2014, the potential gains totalled 850 fewer inpatients on three or more psychotropic medications from one sub-group category on discharge, corresponding to a reduction by approximately four-fifths. In 2014, there were seven outlier records from four HCOs whose combined excess was 481 more inpatients on three or more psychotropic medications from one sub-group category on discharge. The outlier HCO rate was 27.7 per 100 inpatients.

Electroconvulsive therapy

CI 4.1 Acute inpatients undergoing more than 12 non-maintenance treatments of ECT (L) In 2014, there were 4,161 patients reported from 58 HCOs. The annual rate was 8.1 per 100 patients. The fitted rate improved from 11.4 to 7.7, a change of 3.7 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 3.2 per 100 patients. In 2014, the potential gains totalled 153 fewer patients undergoing more than 12 treatments of electroconvulsive therapy, corresponding to a reduction by approximately one-third. In 2014, there were nine outlier records from six HCOs whose combined excess was 73 more patients undergoing more than 12 treatments of electroconvulsive therapy. The outlier HCO rate was 30.2 per 100 patients.



CI 4.2 Major medical complications while undergoing ECT (L) In 2014, there were 4,067 patients reported from 53 HCOs. The annual rate was 0.47 per 100 patients. There was no significant trend in the fitted rate. In 2014, the potential gains totalled nine fewer patients experiencing major medical complications while undergoing electroconvulsive therapy, corresponding to a reduction by approximately one-third. In 2014, there was one outlier record from one HCO whose combined excess was two more patients experiencing major medical complications while undergoing electroconvulsive therapy. The outlier HCO rate was 6.7 per 100 patients.

Use of seclusion and restraint

CI 5.1 Inpatients having at least 1 episode of seclusion (L) In 2014, there were 27,134 inpatients reported from 38 HCOs. The annual rate was 6.1 per 100 inpatients. The fitted rate improved from 9.6 to 6.1, a change of 3.5 per 100 inpatients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 3.6 per 100 inpatients. In 2014, the potential gains totalled 1,175 fewer inpatients having at least one episode of seclusion, corresponding to a reduction by approximately two-thirds. In 2014, there were eight outlier records from six HCOs whose combined excess was 366 more inpatients having at least one episode of seclusion. The outlier HCO rate was 12.1 per 100 inpatients.

CI 5.2 Inpatients having 2 or more episodes of seclusion (L) In 2014, there were 1,350 inpatients reported from 28 HCOs. The annual rate was 25.2 per 100 inpatients. The fitted rate improved from 39.9 to 28.7, a change of 11.3 per 100 inpatients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 11.2 per 100 inpatients. In 2014, the potential gains totalled 25 fewer inpatients having at least two episodes of seclusion, corresponding to a reduction by approximately one-fifteenth.

CI 5.3 Seclusion – more than 4 hours in 1 episode (L) In 2014, there were 1,608 inpatients reported from 31 HCOs. The annual rate was 52.2 per 100 inpatients. The fitted rate deteriorated from 41.1 to 55.1, a change of 14.0 per 100 inpatients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 15.5 per 100 inpatients. In 2014, the potential gains totalled 550 fewer inpatients having seclusion for more than four hours, corresponding to a reduction by approximately one-half. In 2014, there were four outlier records from two HCOs whose combined excess was 185 more inpatients having seclusion for more than four hours. The outlier HCO rate was 81.2 per 100 inpatients.

CI 5.4 Seclusion – not reviewed by sight at least half-hourly (L) In 2014, there were 1,219 inpatients reported from 26 HCOs. The annual rate was 0.082 per 100 inpatients. The fitted rate improved from 0.97 to 0.14, a change of 0.83 per 100 inpatients. There were no potential gains in 2014.

CI 5.5 Seclusion – major complications (L) In 2014, there were 1,354 inpatients reported from 25 HCOs. The annual rate was 0.22 per 100 inpatients. There was no significant trend in the fitted rate. There were no potential gains in 2014.

CI 5.6 Mean number of episodes of seclusion (L) In 2014, there were 1,250 secluded patients reported from 27 HCOs. The average number of seclusions per secluded patient was 1.76. There were no potential gains in 2014.

CI 5.7 Inpatients having at least 1 episode of physical restraint (L) In 2014, there were 21,364 inpatients reported from 30 HCOs. The annual rate was 3.0 per 100 inpatients. The fitted rate deteriorated from 1.7 to 2.1, a change of 0.40 per 100 inpatients. In 2014, the potential gains totalled 614 fewer inpatients having at least one episode of physical restraint, corresponding to a reduction by approximately four-fifths. In 2014, there were nine outlier records from seven HCOs whose combined excess was 231 more inpatients having at least one episode of physical restraint. The outlier HCO rate was 5.2 per 100 inpatients.

CI 5.8 Physical restraint – major complications (L) In 2014, there were 597 patients reported from 14 HCOs. The annual rate was 0.17 per 100 patients. There was no significant trend in the fitted rate. There were no potential gains in 2014.

Major critical incidents

CI 6.1 Inpatients with an attempted or actual suicide (L) In 2014, there were 54,134 inpatients reported from 80 HCOs. The annual rate was 0.29 per 100 inpatients. The fitted rate improved from 0.56 to 0.28, a change of 0.28 per 100 inpatients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.28 per 100 inpatients. In 2014, the potential gains totalled 40 fewer inpatients with an attempted or actual suicide, corresponding to a reduction by approximately one-quarter.



CI 6.2 Inpatients who assault (L) In 2014, there were 49,120 inpatients reported from 69 HCOs. The annual rate was 0.94 per 100 inpatients. The fitted rate improved from 2.5 to 1.3, a change of 1.2 per 100 inpatients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 1.2 per 100 inpatients. In 2014 the potential gains totalled 427 fewer inpatients who assault, corresponding to a reduction by approximately four-fifths. In 2014, there were 14 outlier records from ten HCOs whose combined excess was 216 more inpatients who assault. The outlier HCO rate was 4.7 per 100 inpatients.

CI 6.3 Inpatients who assault on 2 or more occasions (L) In 2014, there were 395 inpatients reported from 35 HCOs. The annual rate was 22.3 per 100 inpatients. There was no significant trend in the fitted rate. In 2014, the potential gains totalled ten fewer inpatients who assault twice or more, corresponding to a reduction by approximately one-tenth.

CI 6.4 Inpatients who undertake significant self-mutilation (L) In 2014, there were 50,805 inpatients reported from 74 HCOs. The annual rate was 0.38 per 100 inpatients. The fitted rate improved from 0.54 to 0.37, a change of 0.17 per 100 inpatients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.13 per 100 inpatients. In 2014, the potential gains totalled 134 fewer inpatients who undertake significant self-mutilation, corresponding to a reduction by approximately two-thirds. In 2014, there were five outlier records from four HCOs whose combined excess was 47 more inpatients who undertake significant self-mutilation. The outlier HCO rate was 1.9 per 100 inpatients.

CI 6.5 Inpatients suffering significant other injuries (L) In 2014, there were 40,039 inpatients reported from 53 HCOs. The annual rate was 0.11 per 100 inpatients. The fitted rate improved from 0.53 to 0.13, a change of 0.40 per 100 inpatients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.40 per 100 inpatients. In 2014, the potential gains totalled 23 fewer inpatients suffering significant other injuries, corresponding to a reduction by approximately one-half. In 2014, there were two outlier records from two HCOs whose combined excess was four more inpatients suffering significant other injuries. The outlier HCO rate was 1.4 per 100 inpatients.

CI 6.6 Inpatients assaulted by staff/visitors/other inpatients (L) In 2014, there were 36,181 inpatients reported from 48 HCOs. The annual rate was 0.55 per 100 inpatients. The fitted rate improved from 1.1 to 0.61, a change of 0.49 per 100 inpatients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.47 per 100 inpatients. In 2014, the potential gains totalled 183 fewer inpatients assaulted, corresponding to a reduction by approximately four-fifths. In 2014, there were 12 outlier records from seven HCOs whose combined excess was 114 more inpatients assaulted. The outlier HCO rate was 2.7 per 100 inpatients.

Readmissions to hospital

CI 7.1 Unplanned readmissions within 28 days (L) In 2014, there were 54,823 separations reported from 81 HCOs. The annual rate was 5.4 per 100 separations. The fitted rate improved from 8.3 to 5.4, a change of 2.8 per 100 separations. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 2.8 per 100 separations. In 2014, the potential gains totalled 1,828 fewer unplanned readmissions within 28 days, corresponding to a reduction by approximately one-half. In 2014, there were 19 outlier records from 16 HCOs whose combined excess was 631 more unplanned readmissions within 28 days. The outlier HCO rate was 12.6 per 100 separations.

Mortality

CI 8.1 Inpatient deaths (L) In 2014, there were 54,656 inpatients reported from 77 HCOs. The annual rate was 0.060 per 100 inpatients. The fitted rate improved from 0.089 to 0.060, a change of 0.029 per 100 inpatients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.028 per 100 inpatients. In 2014, the potential gains totalled 20 fewer inpatient deaths, corresponding to a reduction by approximately one-half. In 2014, there were two outlier records from two HCOs whose combined excess was four more inpatient deaths. The outlier HCO rate was 0.78 per 100 inpatients.



Continuity of care

CI 9.1 Discharge summary/letter upon discharge (H)

In 2014, there were 39,465 inpatients reported from 65 HCOs. The annual rate was 74.0 per 100 inpatients. The fitted rate improved from 73.3 to 74.2, a change of 0.95 per 100 inpatients. In 2014, the potential gains totalled 8,247 more inpatients who have a discharge summary or letter at discharge. In 2014, there were 25 outlier records from 19 HCOs whose combined excess was 3,845 fewer inpatients who have a discharge summary or letter at discharge. The outlier HCO rate was 32.0 per 100 inpatients.

CI 9.2 Final discharge summary recorded within 2 weeks of discharge (H)

In 2014, there were 35,392 inpatients reported from 58 HCOs. The annual rate was 81.1 per 100 inpatients. The fitted rate improved from 75.3 to 79.0, a change of 3.7 per 100 inpatients. In 2014, the potential gains totalled 5,907 more inpatients who have a final discharge summary recorded within two weeks of discharge. In 2014, there were 22 outlier records from 16 HCOs whose combined excess was 2,130 fewer inpatients who have a final discharge summary recorded within two weeks of discharge. The outlier HCO rate was 59.2 per 100 inpatients.

Long term care

CI 10.1 Inpatients having a multidisciplinary review (H)

In 2014, there were 253 inpatients reported from 20 HCOs. The annual rate was 92.1 per 100 inpatients. The fitted rate improved from 88.9 to 93.6, a change of 4.7 per 100 inpatients. In 2014, the potential gains totalled 17 more inpatients who have a multidisciplinary review recorded every three months. In 2014, there were two outlier records from two HCOs whose combined excess was 11 fewer inpatients who have a multidisciplinary review recorded every three months. The outlier HCO rate was 17.6 per 100 inpatients.

Length of stay

CI 11.1 Inpatient length of stay exceeding 30 days (L)

In 2014, there were 47,020 inpatient episodes reported from 71 HCOs. The annual rate was 14.4 per 100 inpatient episodes. The fitted rate improved from 18.1 to 14.2, a change of 3.9 per 100 inpatient episodes. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 3.9 per 100 inpatient episodes. In 2014, the potential gains totalled 2,479 fewer inpatients in an acute unit with a length of stay exceeding 30 days, corresponding to a reduction by approximately one-third. In 2014, there were 28 outlier records from 20 HCOs whose combined excess was 956 more inpatients in an acute unit with a length of stay exceeding 30 days. The outlier HCO rate was 24.3 per 100 inpatient episodes.

Admission

CI 12.1 Voluntary inpatient admissions (N)

In 2014, there were 21,491 admissions reported from 34 HCOs. The annual rate was 74.1 per 100 admissions. The fitted rate increased from 48.1 to 70.1, a change of 22.0 per 100 admissions. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 17.4 per 100 admissions.



Expert Commentary

The Royal Australian and New Zealand College of Psychiatrists (RANZCP)

Introductory comments

Access to high quality inpatient care is an essential complement to community care for some individuals with mental illness. Services that participate in the ACHS Clinical Indicator Program will find this information valuable for benchmarking and guiding actions to improve care. A larger number of HCOs have participated in this set compared to the mental health community based CIs, but care must be taken extrapolating results.

Diagnosis and care planning

The ongoing trend of incremental improvement in documenting diagnosis at admission and discharge is welcome; as is the improvement in proportion of inpatient separations with an individual care plan which is constructed and regularly reviewed with the consumer. However the significant number of outlier services indicates opportunities remain for improvement.

Physical examination of patients

The expectation that a physical examination is documented for each consumer within 48 hours of admission is an important marker of attending to the physical health of consumers, although noting action to support improved physical health is also essential. The mild trend improvement is supported by a pleasing improvement in the 20th centile despite remaining outlier services.

Prescribing patterns

After initial significant gains from 2007–09, there has been limited change in the proportion of consumers discharged on three or more psychotropic medications from one sub-group category. It is pleasing to see the small number of outlier HCOs, but ongoing effort by all HCOs are required to maintain this and improve further where possible.

Electroconvulsive therapy

Whilst there has been a trend in reduction of acute inpatients undergoing more than 12 treatments of non-maintenance ECT, there has been limited change in recent years. The optimum rate for this CI is not defined, as a minority of patients may appropriately require a longer course of ECT. However outlier services with higher rates may need to review the reasons for this. Caution should be taken in interpreting differences between states or public/private hospitals without casemix information. The ongoing reduction in the (low) major complications of ECT reinforces both the safety of this treatment, and actions to further improve this service.

Use of seclusion and restraint

All mental health services must maintain ongoing efforts to support the national direction to minimise both seclusion and restraint. The seclusion and restraint CIs are complex to interpret, and consistent with the challenges that may arise in addressing this important issue. There is still a pleasing trend of the reducing number of inpatient admissions with at least one, or two or more episodes of seclusion. However the increasing rate of seclusion episodes over a four hour duration, and the slower increase in the use of restraint emphasise the need to ensure well intentioned changes do not have inadvertent adverse outcomes. Outlier HCOs may

need to review these cases as current strategies are possibly not achieving desired changes in consumer experience and safety.¹

Major critical incidents

Maintaining the safety of individuals within inpatient care should be a high priority for services. The widespread reduction in rates of all critical incidents is therefore an important achievement, but one that will require ongoing attention if further gains are to be made. Again it is important that outlier services investigate if their status relates to casemix, environmental or practice issues, and use this information to improve care.

Readmissions to hospital

Readmission to hospital is an important CI of the successful transition from inpatient to community care. The ongoing reduction of unplanned readmissions is therefore a positive achievement, however the high readmission rates of outlier HCOs is of concern.

Mortality

There has been a return to trends of ongoing reduction in inpatient deaths, improving on an existing low rate, with only two outlier HCOs.

Continuity of care

Discharge summaries are a vital component of continuity of care. There continues to be limited change in performance in completing discharge summaries either at the time of discharge or within two weeks of discharge, with wide variation in performance between services. The implications of this for consumer experience, safety and outcomes should drive further improvement, especially in outlier services.



Long term care

The low number of inpatients who remain in hospital over three months is reflected in the limited number of records contributing to construction of this CI. In this context, whilst appropriate multidisciplinary review is an important element of inpatient care, it is difficult to draw clear conclusions regarding the data trend, except that the low number of outlier HCOs with poorer performance is pleasingly low.

Average length of stay

There continues to be further reduction in length of stay in acute inpatient care. Whilst this is pleasing if it reflects improved capacity to appropriately discharge earlier to community care, the impact of high bed occupancies and focus in ED performance may also impact upon length of stay with less clear benefit for consumers. It is notable that despite reduced average length of stay, unplanned readmission rates have not increased.

Admission

The proportion of admissions that occur on a voluntary basis continues to increase; with 74% of voluntary admissions in 2014. However, the number of HCOs providing data has further declined making meaningful interpretation of the data difficult without further information. It should be noted that approximately 40% of mental health admissions to public mental health wards are involuntary.²

General comments

Many factors may influence the ability to draw conclusions about the broader mental health system from this data. However, this does not prevent participating HCOs from using these CIs to review and improve their own performance. They should be commended for all efforts to do this.

References

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Expert Commentary

Australian College of Mental Health Nurses (ACMHN)

Diagnosis and care planning

The College notes that **CI 1.1** and **CI 1.2** are important CIs with no difference in performance across health services. Whilst regular care plan review is important, the requirement to engage people in the process and provide a copy of the plan to those involved in a timely manner is a target to aim for. To have a CI reflecting this may have more relevance for future measurement.

Physical examination of patients

The College notes improvements in performance across health services. Reducing the timeframe to physical examination within 24 hours in acute inpatient units would be recommended as an improvement to this CI, which reflects best practice.

Use of seclusion and restraint

A reduction in restrictive interventions and an encouraging trend is noted in regards to **CI 5.1**. Measuring episodes per 1,000 bed days would be a more useful CI to measure frequency of seclusion use for benchmarking purposes in line with state and national indicators. The College notes an improved performance of **CI 5.2** across health services in line with the national safety priority to reduce restrictive interventions set back in 2005. **CI 5.4** has no clinical meaning for most jurisdictions which are required by legislation to review patients in seclusion at a minimum of every 15 minutes. A more relevant CI might be seclusion hours per 1,000 bed days as a measure of seclusion duration, which is not currently reflected in the CI set.

A pleasing downward trend is noted in regard to **CI 5.7**. An opportunity exists to redefine this restrictive intervention. The definition 'mechanical restraint' as the descriptive definition rather than 'physical restraint' must more accurately reflect policy and legislative definitions across jurisdictions. The inclusion of a mechanical restraint indicator per 1,000 bed days would be welcomed along with physical restraint per 1,000 bed days. A definitional change within **CI 5.8** is suggested to 'mechanical restraint' as a more accurate definition of this restrictive intervention. This would align with national and state policy definitions of restrictive interventions.

Major critical incidents

CI 6.3 is an important indicator of harm. A minor reduction across health services is noted. This is encouraging in the context of reducing restrictive interventions.

Continuity of care

In regard to **CI 9.1**, the provision of written information to patients and carers at the day of discharge is considered best practice. The introduction of a CI to reflect the percentage of patients who receive a copy of their discharge summary at the day of discharge would be reflecting best practice. **CI 9.2** has less relevance if best practice is to provide information to patients, carers and ongoing providers on the day of discharge or shortly after. Services are measuring the percentage of patients who are contacted by the MHS within seven days of discharge. The two week timeframe in this CI is irrelevant in this context and does not reflect best practice expectations.

Long term care

It is suggested that **CI 10.1** is retained as a measure reflecting the national standards for mental health services requirement.





Ophthalmology

VERSION 5

Cataract surgery

CI 1.1 Cataract surgery – readmission within 28 days (L) In 2014, there were 57,041 patients reported from 54 HCOs. The annual rate was 0.25 per 100 patients. There was no significant trend in the fitted rate. In 2014, the potential gains totalled 98 fewer readmissions within 28 days, corresponding to a reduction by approximately two-thirds. In 2014, there were three outlier records from two HCOs whose combined excess was 54 more readmissions within 28 days. The outlier HCO rate was 1.1 per 100 patients.

CI 1.2 Cataract surgery – readmission within 28 days due to endophthalmitis (L) In 2014, there were 56,934 patients reported from 54 HCOs. The annual rate was 0.018 per 100 patients. The fitted rate improved from 0.050 to 0.021, a change of 0.028 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.029 per 100 patients. There were no potential gains in 2014.

CI 1.3 Cataract surgery – unplanned overnight admission (L) In 2014, there were 53,916 patients reported from 56 HCOs. The annual rate was 0.38 per 100 patients. The fitted rate improved from 0.59 to 0.43, a change of 0.16 per 100 patients. In 2014, the potential gains totalled 188 fewer patients who had an unplanned overnight admission, corresponding to a reduction by approximately four-fifths. In 2014, there were 11 outlier records from seven HCOs whose combined excess was 102 more patients who had an unplanned overnight admission. The outlier HCO rate was 1.5 per 100 patients.

CI 1.4 Cataract surgery – anterior vitrectomy (L) In 2014, there were 64,654 patients reported from 57 HCOs. The annual rate was 0.60 per 100 patients. There was no significant trend in the fitted rate. In 2014, the potential gains totalled 224 fewer patients having an anterior vitrectomy, corresponding to a reduction by approximately one-half. In 2014, there were three outlier records from two HCOs whose combined excess was 66 more patients having an anterior vitrectomy. The outlier HCO rate was 1.8 per 100 patients.

Intraocular glaucoma surgery

CI 2.1 Intraocular glaucoma surgery – readmission within 28 days (L) In 2014, there were 1,543 patients reported from 22 HCOs. The annual rate was 3.2 per 100 patients. The fitted rate deteriorated from 2.6 to 4.0, a change of 1.5 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 1.3 per 100 patients. In 2014, the potential gains totalled 22 fewer readmissions within 28 days, corresponding to a reduction by approximately one-third.

CI 2.2 Intraocular glaucoma surgery – readmission within 28 days due to endophthalmitis (L) In 2014, there were 1,500 patients reported from 21 HCOs. The annual rate was 0.067 per 100 patients. There was no significant trend in the fitted rate. There were no potential gains in 2014.

CI 2.3 Intraocular glaucoma surgery – LOS exceeding 3 days (L) In 2014, there were 1,082 patients reported from 13 HCOs. The annual rate was 2.1 per 100 patients. There was no significant trend in the fitted rate. There were no potential gains in 2014.

Retinal detachment surgery

CI 3.1 Retinal detachment surgery – readmissions within 28 days (L) In 2014, there were 4,919 patients reported from 13 HCOs. The annual rate was 5.0 per 100 patients. The fitted rate deteriorated from 2.1 to 4.2, a change of 2.1 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 1.8 per 100 patients. In 2014, the potential gains totalled 132 fewer readmissions within 28 days, corresponding to a reduction by approximately one-half. In 2014, there were two outlier records from one HCO whose combined excess was 59 more readmissions within 28 days. The outlier HCO rate was 11.3 per 100 patients.

CI 3.2 Retinal detachment surgery – unplanned readmission within 28 days due to endophthalmitis (L) In 2014, there were 4,339 patients reported from 12 HCOs. The annual rate was 0.023 per 100 patients. There was no significant trend in the fitted rate. There were no potential gains in 2014.



CI 3.3 Retinal detachment surgery – LOS exceeding

4 days (L) In 2014, there were 4,026 patients reported from seven HCOs. The annual rate was 0.84 per 100 patients. The fitted rate improved from 1.7 to 0.40, a change of 1.3 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.90 per 100 patients. In 2014, the potential gains totalled 20 fewer patients with a LOS exceeding four days, corresponding to a reduction by approximately one-half. In 2014, there were three outlier records from two HCOs whose combined excess was 14 more patients with a LOS exceeding four days. The outlier HCO rate was 3.6 per 100 patients.

CI 3.4 Retinal detachment surgery – unplanned re-operation within 28 days (L) In 2014, there were 4,341 patients reported from 12 HCOs. The annual rate was 3.1 per 100 patients. There was no significant trend in the fitted rate. In 2014, the potential gains totalled 107 fewer patients having an unplanned re-operation within 28 days, corresponding to a reduction by approximately three-quarters. In 2014, there were four outlier records from three HCOs whose combined excess was 58 more patients having an unplanned re-operation within 28 days. The outlier HCO rate was 11.2 per 100 patients.

Toric intraocular lens implantation

CI 4.1 Intraocular lens implantation – planning record at time of surgery (H) In 2014, there were 10,266 patients reported from 11 HCOs. The annual rate was 100 per 100 patients. There were no potential gains in 2014.

CI 4.2 Toric lens implantation (N) In 2014, there were 10,266 patients reported from 11 HCOs. The annual rate was 30.5 per 100 patients.

CI 4.3 Toric intraocular lens implantation – planning record at time of surgery (H) In 2014, there were 3,130 patients reported from 11 HCOs. The annual rate was 100 per 100 patients. There were no potential gains in 2014.



Expert Commentary

The Royal Australian and New Zealand College of Ophthalmologists (RANZCO)

Cataract surgery

The statistics for cataract surgery continue to demonstrate excellent safety with low rates of endophthalmitis and unplanned readmissions. The rate of endophthalmitis has significantly reduced over the years. This is largely attributable to higher rates of use of intracameral antibiotics. Intracameral antibiotics have been reported to reduce endophthalmitis rates overseas in the peer-reviewed literature. Other factors may have been general reduction in incision size, which may decrease the chance of postoperative wound leak, which is a risk factor for endophthalmitis.

Other parameters such as readmission, anterior vitrectomy rates and unplanned overnight admissions did not show any significant change in the fitted rates. As per the data from previous years there are public HCOs that show high rates of readmission, endophthalmitis, unplanned overnight admissions and anterior vitrectomy. Victoria showed high rates of readmissions within 28 days and anterior vitrectomy. HCOs with high numbers of excess events may benefit by searching for systemic causes. It is possible that differences in data capture or differential casemix account for some of the variability between HCOs.^{1,2}

Intraocular glaucoma surgery

Glaucoma surgery is a complex and increasingly subspecialised field. The data show a significant deterioration in the rate of readmissions within 28 days. This may be due to the success of glaucoma medications, which means that glaucoma surgery is nowadays only performed in severe cases of glaucoma. These cases are more complex and difficult and this may explain the deterioration in readmission rates.^{3,4}

Retinal detachment surgery

It is a great concern that the unplanned readmission rate has risen for the fifth consecutive year. This rise would appear to be driven by a single HCO which reported twice. This HCO should examine its internal procedures to determine whether the high excess event rate was related to aberrant reporting standards or whether there is systemic problem in management of retinal detachments. It is surprising that the rate of unplanned readmissions is greater than the combined rates of unplanned re-operations and readmissions for endophthalmitis. Therefore many of the unplanned readmissions are currently unaccounted for, which should be considered by the HCO with excess readmissions.

The rate of readmission for endophthalmitis after retinal detachment surgery was pleasingly low in 2014. The rate of length of stay greater than four days after retinal detachment surgery was consistent with the range over the last few years. The reduction in the rate since the last decade may be related to the recent general availability of and surgeon familiarity with transconjunctival vitrectomy techniques. Interestingly, a single HCO providing the largest number of procedures had a very significant excess event rate. It would be worthwhile for this HCO to determine whether there are systemic factors responsible.

The rate of unplanned re-operation within 28 days is consistent with trends over the last few years. It is notable that a HCO with one of the largest patient volumes had a very significant excess rate of unplanned re-operations. This HCO ought to consider the causes of this excess, which may relate to surgical factors or patient factors, such as excess traumatic or complex retinal detachments. It is unclear why

New South Wales should have a higher median and larger spread of unplanned re-operations than the other states.

Toric intraocular lens implantation

The rate of toric lens implantation is consistent with international data. Toric lens implantation requires more detailed surgical planning and therefore it would be expected that the planning record always be present at the time of surgery.⁵

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Expert Commentary

Australian Ophthalmic Nurses' Association (AONA)

General comments

The Australian Ophthalmic Nurses' Association (AONA) continues to support the Ophthalmology CI reports as the evidence provided is beneficial to ophthalmic nursing practice. The report, by identifying areas of deterioration and where gains are made, enables nursing practice to adapt and work towards optimal care of patients undergoing these procedures.

Although there is in principal an agreement with the extensive checking of toric lenses, there were some reservations held by some members about their application across the diversity of practices, therefore it is interesting to observe the trends and outcomes to evaluate ophthalmic nursing practice in this area.

AONA aims to support ophthalmic nurses in remaining committed to developing better practice in response to the ever changing face of ophthalmic practice demographics, disease definition and surgical techniques along with patients' expectations. AONA welcomes the opportunity to participate in this report.



Oral Health

VERSION 3

Unplanned returns to the dental centre

CI 1.1 Restorative treatment – teeth retreated within 6 months (L) In 2014, there were 197,310 tooth restorations reported from 61 HCOs. The annual rate was 6.2 per 100 teeth restored. In 2014, the potential gains totalled 3,993 fewer teeth retreated within six months, corresponding to a reduction by approximately one-quarter. In 2014, there were 17 outlier records from 14 HCOs whose combined excess was 1,077 more teeth retreated within six months. The outlier HCO rate was 9.1 per 100 teeth restored.

CI 1.2 Routine extraction – complications within 7 days (L) In 2014, there were 65,092 simple extractions reported from 61 HCOs. The annual rate was 1.9 per 100 simple extractions. In 2014, the potential gains totalled 761 fewer attendances for complications within seven days, corresponding to a reduction by approximately one-half. In 2014, there were 14 outlier records from eight HCOs whose combined excess was 298 more attendances for complications within seven days. The outlier HCO rate was 4.4 per 100 simple extractions.

CI 1.3 Surgical extraction – complications within 7 days (L) In 2014, there were 6,172 attendances for surgical extractions reported from 33 HCOs. The annual rate was 2.6 per 100 surgical extractions. In 2014, the potential gains totalled 71 fewer attendances for complications within seven days, corresponding to a reduction by approximately one-third. In 2014, there were six outlier records from five HCOs whose combined excess was 30 more attendances for complications within seven days. The outlier HCO rate was 11.6 per 100 surgical extractions.

CI 1.4 Denture remade within 12 months (L) In 2014, there were 16,428 dentures reported from 36 HCOs. The annual rate was 2.5 per 100 dentures. The fitted rate improved from 2.9 to 2.5, a change of 0.46 per 100 dentures. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 239 fewer dentures remade within 12 months, corresponding to a reduction by approximately one-half. In 2014, there were three outlier records from three HCOs whose combined excess was 29 more dentures remade within 12 months. The outlier HCO rate was 5.0 per 100 dentures.

Endodontic treatment

CI 2.1 Endodontic treatment – same tooth within 6 months of initial treatment (H) In 2014, there were 5,077 treatments reported from 29 HCOs. The annual rate was 56.7 per 100 treatments. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 369 more completed courses of endodontic treatment. In 2014, there were three outlier records

from two HCOs whose combined excess was 95 fewer completed courses of endodontic treatment. The outlier HCO rate was 30.6 per 100 treatments.

CI 2.2 Endodontic treatment – teeth extracted within 12 months (L) In 2014, there were 9,149 treatments reported from 53 HCOs. The annual rate was 5.6 per 100 teeth. In 2014, the potential gains totalled 89 fewer extractions, corresponding to a reduction by approximately one-tenth. In 2014, there was one outlier record from one HCO whose combined excess was nine more extractions. The outlier HCO rate was 14.5 per 100 teeth.

Children's dental care

CI 3.1 Restorative treatment (children) – teeth retreated within 6 months (L) In 2014, there were 130,929 teeth reported from 69 HCOs. The annual rate was 2.7 per 100 teeth. In 2014, the potential gains totalled 778 fewer retreatments, corresponding to a reduction by approximately one-fifth. In 2014, there were nine outlier records from seven HCOs whose combined excess was 257 more retreatments. The outlier HCO rate was 5.1 per 100 teeth.

CI 3.2 Pulpotomy (children) – deciduous teeth extracted within 6 months (L) In 2014, there were 5,238 teeth reported from 54 HCOs. The annual rate was 3.5 per 100 teeth. There was relatively little variation between HCOs and so the potential gains were small in 2014.

CI 3.3 Fissure sealant treatment (children) – retreatment within 24 months (L) In 2014, there were 127,046 teeth reported from 64 HCOs. The annual rate was 2.7 per 100 teeth. In 2014, the potential gains totalled 774 fewer retreatments, corresponding to a reduction by approximately one-fifth. In 2014, there were ten outlier records from eight HCOs whose combined excess was 288 more retreatments. The outlier HCO rate was 4.8 per 100 teeth.

Radiographs

CI 4.1 Radiographs (bite-wing) that meet all 8 criteria (H) In 2014, there were 126 bite-wing radiographs reported from two HCOs. The annual rate was 65.9 per 100 bite-wing radiographs. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 23 more bite-wing radiographs that meet the criteria.



Expert Commentary

Chairperson, ACHS Oral Health Clinical Indicator Working Party

Introductory comments

The Chairperson of the ACHS Oral Health CI Working Party welcomes the results for 2014. Most CIs applied new measures from 2012, following significant revision of the Version 3 User Guide, so may represent just three years of trend data at this time. It is most pleasing to see a greatly expanded number of HCOs submitting Oral Health data, increasing from 14 in 2013 to 84 HCOs in 2014, due to many additional public sector HCOs submitting from Victoria for the first time, and separation of SA public clinics' data from one state-wide aggregate into individual sites as HCOs. There are nine out of the ten Oral Health CIs that are utilised well by between 29 and 69 public sector HCOs.

Unplanned returns to the dental centre

Unplanned returns and retreatment of several common dental procedures for adults are described under Area 1. Children's dental care is measured separately. The rate of teeth retreated within six months increased slightly from 5.5% to 6.2% when comparing 2014 results with last year. The rate of returns for complications following both simple and surgical extractions also rose slightly from 1.6% to 1.9% and from 1.8% to 2.6% respectively. The rate of denture remakes within a year continues a positive long term fitted trend of improvement, from 2.9% to 2.5% over the past eight years. The provision of successful dentures to mainly elderly clients offers improved functional capability to eat and speak, while providing aesthetically pleasing replacement for teeth that were extracted, often many years before.

In 2014, compared with 2012, there are twice as many cases available for analysis for review of quality of care in respect to both restorations and extractions returns and about three times as many denture cases included in the analysis. The increased number of HCOs submitting data from both Victoria and identified from rural areas in 2014 contributes in some way to the small increases in observed rates of returns for adult dental care, identified by strata variations. The overall quality of care remains high with less than 2.6% of extraction and denture services presenting as unplanned returns.

Endodontic treatment

More than half of the clients who started root canals had treatment successfully completed in a prompt and clinically appropriate time. The overall rate of endodontic completion within six months of commencement improved from about 49% in 2012 and 2013, up to 57% in 2014. There may be a number of factors at play as to why the rate is not higher. Clients may choose not to have the procedure completed and subsequently have the teeth extracted, and some procedures may take longer than six months to complete or be referred to another HCO for specialist care. The rate of timely completion is much higher for general care compared to that initiated at emergency visits.

The current rate of extraction of teeth within 12 months of commencing root canal treatment is 5.6%. This is similar to rates reported for the previous two years (5.9% and 5.5%). Root canal treatments may not be successful for a number of reasons, including initial case assessment of advanced pulpal/periapical pathology, the status of the remaining tooth structure and if patients present for emergency (pain/problem) versus general dental care. Some procedures may initially attempt

to resolve the patients' pulpal pain by emergency endodontic treatment, but if the pain persists and/or abscesses fail to resolve by subsequent dressing or treatment visits, then extraction may be indicated to relieve symptoms or treat persistent pathological conditions.

Children's dental care

Children's restoration (fillings) retreatment rates have been sustained at a low rate of 2.7% in both 2013 and 2014, across public sector dental clinics, with a three-fold increase in the cases submitted for analysis. This rate is less than half that of the similar adult restoration rate (CI 1.1). Pulp treatments aim to save compromised teeth, but a number of treated deciduous (baby) teeth may subsequently require extraction, due to ongoing pathology. Extraction following pulp treatment in deciduous teeth (CI 3.2) that are eventually going to exfoliate is sometimes required to remove the cause of the infection. The current rate of 3.5 per 100 teeth receiving pulp treatment, is positively below the recent average rate between 2010 and 2013 (3.7%), and has substantially improved since earlier years' results.

The current very low rate of 2.7 teeth requiring restoration within two years from every 100 fissure sealed teeth (CI 3.1) is a sustained positive set of results, maintained at about this level since 2010. Preventive services, such as fissure sealants, are a proven public health and non-invasive clinical preventive measure in the control of tooth decay for children at risk. A very low retreatment rate of about or below 2.7 per 100 teeth has been sustained for the past five years by public sector HCOs. All children's Oral Health CIs show positively sustained very low levels of returns and retreatments over several years.



Radiographs

There are very few HCOs contributing data for **CI 4.1**: Maximum diagnostic ability of bite-wing radiographs. Only two HCOs have submitted annually over each of the past three years. The data from all other CI areas can be calculated using a database report from electronic patient records information systems, but **CI 4.1** requires a visual review of each case/radiograph against the eight assessment criteria. This is a more time-consuming manual review and audit process that may be perceived to be a barrier to collection. It is probably the main reason why more HCOs do not contribute data to this specific CI.

General comments

Results in 2014 demonstrate improvement or sustained very low levels of retreatment or returns, as described by the dental indicator measures of various aspects of quality dental care. There has been a substantial rise in the number of denominator cases for most of the Oral Health CIs with increases between half and double in 2014 compared with previous years. The improved diversity and quantity of the submissions permits more detailed analysis and stratification by metropolitan/rural and by state for the first time.



Paediatrics

VERSION 5

Appropriateness

CI 1.1 Registered nurses – paediatric basic life support qualifications (H) In 2014, there were 320 registered nurses reported from six HCOs. The annual rate was 94.1 per 100 registered nurses. There were no significant stratum differences in 2014. There was relatively little variation between HCOs and so the potential gains were small in 2014.

CI 1.2 Medical practitioners – paediatric basic life support qualifications (H) No data have been submitted in 2014.

CI 1.3 Paediatric patients admitted to a paediatric ward/area (H) In 2014, there were 16,512 admissions reported from five HCOs. The annual rate was 80.4 per 100 paediatric admissions. In 2014, there were no significant stratum differences. In 2014, the potential gains totalled 2,221 more paediatric patients admitted to a dedicated paediatric ward/area. In 2014, there were three outlier records from two HCOs whose combined excess was 1,385 fewer paediatric patients admitted to a dedicated paediatric ward/area. The outlier HCO rate was 55.8 per 100 paediatric admissions.

Adverse events

CI 2.1 Medication errors (L) In 2014, there were 3,396 admissions reported from four HCOs. The annual rate was 0.21 per 100 paediatric admissions. In 2014, there were no significant stratum differences. In 2014, the potential gains totalled six fewer adverse medication incidents, corresponding to a reduction by approximately four-fifths.

CI 2.2 Adverse events – not in a paediatric ward/area (L) No data have been submitted in 2014.

CI 2.3 Adverse events – paediatric ward/area (L) No data have been submitted in 2014.

Documentation

CI 3.1 Completed asthma action plan (H) In 2014, there were 247 separations reported from three HCOs. The annual rate was 87.9 per 100 separations. In 2014, the potential gains totalled 29 more paediatric separations with asthma plans.

CI 3.2 Paediatric surgery post-procedural report (H) In 2014, there were 343 separations reported from one HCO. The annual rate was 100 per 100 separations.

CI 3.3 Physical assessment by medical practitioner (H) No data have been submitted in 2014.

CI 3.4 Physical assessment by registered nurse (H) No data have been submitted in 2014.

CI 3.5 Completed medical discharge summary (H) No data have been submitted in 2014.

Paediatric ICU

CI 4.1 Unplanned return to PICU (L) In 2014, there were 185 patients reported from one HCO. The annual rate was 0.54 per 100 patients.

CI 4.2 Adverse events – clinical handover between registered nurses in PICU (L) In 2014, there were 185 admissions reported from one HCO. The annual rate was 0 per 100 admissions.

CI 4.3 Adverse events – clinical handover between medical practitioners in PICU (L) In 2014, there were 185 patients reported from one HCO. The annual rate was 0 per 100 patients.

CI 4.4 Adverse events – clinical handover to another area (L) In 2014, there were 185 patients reported from one HCO. The annual rate was 0 per 100 patients.

Paediatric anaesthesia

CI 5.1 Paediatric patients who fast 6 hours prior to anaesthesia (L) No data have been submitted in 2014.

CI 5.2 Adverse event due to non-adherence to paediatric fasting guidelines (L) In 2014, there were 988 paediatric patients reported from one HCOs. The annual rate was 0 per 100 paediatric patients.

CI 5.3 Parent/guardian present at induction of anaesthesia (H) No data have been submitted in 2014.



Expert Commentary

Paediatrics and Child Health Division of The Royal Australasian College of Physicians (RACP)

Introductory comments

Created by clinicians, this set of CIs has been developed to enable benchmarking of care across Australasia. 'Immunisation as a proxy of hospital care' was removed at the last review, due to its dependence on primary care.

Appropriateness

Care was delivered in an appropriate environment in more than 80% of cases from the records submitted. However within this figure are large fluctuations; with a single facility admitting just over half of the children to paediatric units. The result of this is that children are looked after in unsuitable areas, but also that children are looked after by people without the necessary skills in paediatric resuscitation.

Adverse events

Using medication error, the most common of adverse events as a proxy for paediatric adverse events indicates a quite variable incidence of error. Perhaps a greater range of adverse event is needed to demonstrate safety, such as the use of Clinical Deterioration Tools.

Documentation

It is noted that documentation in the reports submitted was good.

Paediatric ICU

There was only one HCO that submitted data and they showed no or very low rates of adverse practice.

Paediatric anaesthesia

There was again a very small data set that demonstrated no cause for concern.

General comments

In total only 11 HCOs contributed data. This is a disappointing number which has been decreasing since 2006, when 53 HCO submitted data. There were not sufficient data for any CIs to draw meaningful conclusions. Can it be that HCOs are now using other means to benchmark their practice? Or is it that the increasing availability of state data allows for generation of reports more readily without double handling data? Either way, it is a challenge that ACHS has to recognise and react to.



Expert Commentary

Australian College of Children and Young People's Nurses (ACCYPN)

Appropriateness

It is noted by the College that **CI 1.1** shows a recording of a 94.1% rate for registered nurses caring for paediatric patients with up-to-date paediatric basic life support qualifications which is a positive result; however HCOs should be aiming for 100%. There continues to be a significant number of children not cared for in a dedicated paediatric unit. ACCYPN supports the RACP Policy (2009) which recommends that children and adolescents be accommodated separately to adults to ensure that their clinical needs are met.¹ ACCYPN would encourage HCOs to continue to improve in this CI.

Adverse events

The reporting of 'Adverse events – medication errors' needs to be clarified as it is unclear if the incorrect dosing errors reported are related to prescribing errors or administration errors. The lack of reporting of adverse events occurring 'when not in a paediatric ward' and 'in a paediatric ward' may relate to the lack of information being included in HCO's clinical incident reporting systems.

Documentation

The low reporting rate for asthma management plans may be related to a lack of information recorded or a lack of this process within clinical practice. Further clarification is required from the HCO as to their ability to report. For HCOs that report on the post-surgical documentation, the result is exceptional. However the number of HCOs reporting is low, therefore it cannot be extrapolated to the general population. The lack of reporting of **CI 3.3** and **CI 3.4** would suggest that this information is unable to be collected. The number of HCOs reporting on 'medical discharge summary completed' is also low, and therefore cannot be extrapolated to the general population.

Paediatric ICU

The low level of reporting by HCOs in this area is most likely indicative of the HCO's capacity to collect the data rather than a willingness to contribute.

Paediatric anaesthesia

The low level of reporting by HCOs in this area is, similarly to 'Paediatric ICU', most likely indicative of the HCO's capacity to collect the data rather than a willingness to contribute.

General comments

The changes to the CIs are a positive approach. The challenge is for HCOs to collect the data so that they are able to report on all CIs. ACHS is well placed to work to influence changes in the Clinical Incident reporting systems to collect information regarding the location of the child or adolescent (dedicated ward or adult ward) when the incident occurs.

References

1. The Royal Australasian College of Physicians (RACP). Policy on the co-location of adults with children and adolescents in healthcare settings. Sydney: RACP; 2009.



Pathology

VERSION 3

Chemical pathology

CI 1.1 Serum/plasma potassium for ED or urgent – validated report within 60 minutes (H) In 2014, there were 135,302 requests reported from 41 HCOs. The annual rate was 80.8 per 100 requests. The fitted rate deteriorated from 83.7 to 82.4, a change of 1.3 per 100 requests. In 2014, the potential gains totalled 12,965 more validated serum/plasma potassium report results within 60 minutes. In 2014, there were 13 outlier records from ten HCOs whose combined excess was 4,302 fewer validated serum/plasma potassium report results within 60 minutes. The outlier HCO rate was 73.7 per 100 requests.

Haematology

CI 2.1 Haemoglobin from ED – received to validated time within 40 minutes (H) In 2014, there were 130,825 requests reported from 40 HCOs. The annual rate was 92.0 per 100 requests. The fitted rate improved from 84.9 to 91.0, a change of 6.1 per 100 requests. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 7.1 per 100 requests. In 2014, the potential gains totalled 6,386 more validated haemoglobin reports within 40 minutes. In 2014, there were 21 outlier records from 15 HCOs whose combined excess was 2,938 fewer validated haemoglobin report results within 40 minutes. The outlier HCO rate was 83.2 per 100 requests.

CI 2.2 Haemoglobin from ED – collected to validated time within 60 minutes (H) In 2014, there were 167,971 requests reported from 37 HCOs. The annual rate was 87.0 per 100 requests. The fitted rate improved from 77.8 to 83.2, a change of 5.5 per 100 requests. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 6.1 per 100 requests. In 2014, the potential gains totalled 9,572 more validated haemoglobin report results within 60 minutes. In 2014, there were 25 outlier records from 16 HCOs whose combined excess was 4,591 fewer validated haemoglobin report results within 60 minutes. The outlier HCO rate was 78.8 per 100 requests.

CI 2.3 Coag from ED – received to validated time within 40 minutes (H) In 2014, there were 26,267 requests reported from 40 HCOs. The annual rate was 68.1 per 100 requests. The fitted rate improved from 52.5 to 64.2, a change of 11.7 per 100 requests. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 12.4 per 100 requests. In 2014, the potential gains totalled 3,010 more validated coagulation report results within 40 minutes. In 2014, there were 16 outlier records from 12 HCOs whose combined excess was 994 fewer validated coagulation report results within 40 minutes. The outlier HCO rate was 57.7 per 100 requests.

CI 2.4 Coag from ED – collected to validated time within 60 minutes (H) In 2014, there were 23,978 requests reported from 37 HCOs. The annual rate was 69.5 per 100 requests. The fitted rate deteriorated from 63.8 to 60.6, a change of 3.3 per 100 requests. In 2014, the potential gains totalled 1,954 more validated coagulation report results within 60 minutes. In 2014, there were 16 outlier records from 11 HCOs whose combined excess was 865 fewer validated coagulation report results within 60 minutes. The outlier HCO rate was 51.8 per 100 requests.

Anatomical pathology

CI 3.1 Small biopsy – received to validated time within 44 hours (H) In 2014, there were 9,795 biopsies reported from 14 HCOs. The annual rate was 58.2 per 100 biopsies. The fitted rate deteriorated from 61.5 to 56.9, a change of 4.6 per 100 biopsies. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 2,294 more validated small biopsy results within 44 hours. In 2014, there were six outlier records from five HCOs whose combined excess was 1,079 fewer validated small biopsy results within 44 hours. The outlier HCO rate was 23.5 per 100 biopsies.

CI 3.2 Large biopsy – received to validated time within 92 hours (H) In 2014, there were 966 biopsies reported from 13 HCOs. The annual rate was 61.2 per 100 biopsies. The fitted rate deteriorated from 63.0 to 53.9, a change of 9.0 per 100 biopsies. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 115 more validated large biopsy results within 92 hours. In 2014, there were two outlier records from one HCO whose combined excess was 52 fewer validated large biopsy results within 92 hours. The outlier HCO rate was 23.4 per 100 biopsies.



CI 3.3 Small biopsy – collected to validated time

within 48 hours (H) In 2014, there were 9,311 biopsies reported from 13 HCOs. The annual rate was 56.8 per 100 biopsies. The fitted rate deteriorated from 58.5 to 56.3, a change of 2.2 per 100 biopsies. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 1,763 more validated small biopsy results within 48 hours. In 2014, there were five outlier records from four HCOs whose combined excess was 1,073 fewer validated small biopsy results within 48 hours. The outlier HCO rate was 19.9 per 100 biopsies.

CI 3.4 Large biopsy – collected to validated time

within 96 hours (H) In 2014, there were 4,436 biopsies reported from 13 HCOs. The annual rate was 42.2 per 100 biopsies. The fitted rate deteriorated from 48.4 to 44.1, a change of 4.3 per 100 biopsies. In 2014, the potential gains totalled 1,038 more validated large biopsy results within 96 hours. In 2014, there was one outlier record from one HCO whose combined excess was 86 fewer validated large biopsy results within 96 hours. The outlier HCO rate was 37.3 per 100 biopsies.

Microbiology

CI 4.1 CSF microscopy results for ED – validated report within 40 minutes (H)

In 2014, there were 482 samples reported from 14 HCOs. The annual rate was 67.8 per 100 samples. The fitted rate improved from 71.8 to 76.4, a change of 4.6 per 100 samples. In 2014, the potential gains totalled 43 more validated CSF results within 40 minutes.

CI 4.2 CSF microscopy results for ED – validated report within 60 minutes (H)

In 2014, there were 549 samples reported from 11 HCOs. The annual rate was 72.1 per 100 samples. The fitted rate improved from 59.0 to 77.1, a change of 18.1 per 100 samples. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 18.4 per 100 samples. In 2014, there was relatively little variation between HCOs and so the potential gains were small. In 2014, there were three outlier records from three HCOs whose combined excess was 29 fewer validated CSF results within 60 minutes. The outlier HCO rate was 17.2 per 100 samples.





Expert Commentary

The Royal College of Pathologists of Australasia (RCPA)

Introductory comments

The Royal College of Pathologists of Australasia (RCPA) has previously commented on some of the shortcomings of the CIs for pathology. Some elements are outside the control of the laboratory and some definitional issues arise that affect the data. New CIs should help to clarify the issues and identify where laboratory performance could be improved.

Chemical pathology

In regard to ED Potassium times, the RCPA does not agree with the use of the word 'deteriorated' when it is stated that the "fitted rate deteriorated from 83.7 to 82.4, a change of 1.3 per 100 requests". The trend line shows considerable variance and it is doubtful that a change of 1.3% has any significance. The funnel plot for outlier analysis supports previous comments that there is more likely to be variance within larger HCOs as they are by no means homogeneous in their organisational structure and service offered. Smaller non-metropolitan HCOs have a smaller range of options in laboratory design and service provision including instrumentation; hence their variance is likely to be smaller. The RCPA does not believe the changes seen in Chemical Pathology ED potassium rates are significant, and do not represent a deterioration.

Haematology

Results for **CI 2.1** and **CI 2.2** have shown a consistent and sustained continual improvement over the entire time period 2008–2014, reflecting a commitment of laboratories to the improvement of service delivery and turnaround times which is likely to contribute to improvement in patient flows and reduced patient length of

stay in EDs.¹ In this case metropolitan labs do better than non-metropolitan labs, but there are some labs where performance is significantly below the majority. It is not clear as to why the Northern Territory is worse than the rest of Australia in these parameters, but there are only five contributing HCOs so it may be a sampling issue. Data for **CI 2.3** show consistent and sustained improvement over time – most likely reflecting improvements to internal laboratory processes. However it is difficult to see a consistent trend in **CI 2.4**. There are very wide disparities between the best and worst performing labs in both New South Wales and Victoria. Again, the Northern Territory underperforms compared to the other states with regard to this parameter. Given the difference between data for **CI 2.3** and **CI 2.4**, it is likely that this may reflect issues with either specimen transport or delayed addition of coagulation tests significantly after the time of specimen collection.

Anatomical pathology

The Anatomical pathology CIs (as included in the 2007–2014 reports) were ambiguous as to the time period over which the audit was conducted, and the cohort of cases to be included. This led to some laboratories cherry-picking the cases upon which they provided data, producing quite meaningless results when compared with other laboratories employing more inclusive criteria. This may explain why all data sets show no significant improvement and a number show declines with New South Wales underperforming the other states.

We are pleased to note that in the new draft CIs, the ambiguity over time period and case selection will be removed. Data collected hitherto should now be more meaningful, even if there is an apparent drop in the

percentage of cases meeting the (old) Level 4 target due to the inclusion of a broader range of Level 4 biopsy types. Furthermore, we are pleased that a "Quality" CI other than turnaround time (TAT) will be included in the new CIs (Use of structured reports in cancer resections).

Microbiology

There is a wide spread of results across contributing labs for both parameters making it difficult to draw meaningful conclusions. KPIs or CIs are not well documented in peer-reviewed literature. The CSF indicator while being important clinically was not used or reported extensively. The suggested new CIs are more relevant in that both are high volume tests performed widely in hospitals. The timing of results delivery should be readily obtained. It may take varied time from collection to receipt in lab but collection time is poorly recorded. Microbiology is different from the blood testing disciplines because the test results may be NEG or POS (in simple terms) but a POS test result will usually require a confirmatory test for validation.

General comments

The RCPA, as for previous years of datasets, questions if any significant conclusions can be drawn from these results. The new CIs under development should provide a clearer and more consistent dataset and we look forward to reviewing the results of these in due course.

References

1. Li L, Georgiou A, Vecellio E *et al*. The effect of laboratory testing on emergency department length of stay: a multi-hospital longitudinal study applying a cross-classified random-effect modeling approach. *Acad Emerg Med* 2015; 22(1): 38–46.



Radiation Oncology

VERSION 4

Consultation process

CI 1.1 Radiotherapy – waiting time exceeding 28 days (L) In 2014, there were 1,790 patients reported from 13 HCOs. The annual rate was 8.83 per 100 patients. In 2014, there were no significant stratum differences. In 2014, the potential gains totalled 94 fewer patients waiting more than 28 days before commencing radiotherapy, corresponding to a reduction by approximately one-half. In 2014, there were three outlier records from three HCOs whose combined excess was 42 more patients waiting more than 28 days before commencing radiotherapy. The outlier HCO rate was 25.2 per 100 patients.

CI 1.2 MEBR – prospective clinical trials (H) In 2014, there were 134 patients reported from six HCOs. The annual rate was 16.4 per 100 patients. In 2014, there were no significant stratum differences. In 2014, the potential gains totalled 57 more patients who have informed consent recorded before receiving radiotherapy.

Treatment process

CI 2.1 Staging annotation for current radiotherapy course (H) In 2014, there were 6,038 patients reported from eight HCOs. The annual rate was 82.1 per 100 patients. In 2014, the potential gains totalled 1,081 more patients who have staging information present, in a dedicated field, about the current radiotherapy course. In 2014, there were seven outlier records from four HCOs whose combined excess was 555 fewer patients who have staging information present, in a dedicated field, about the current radiotherapy course. The outlier HCO rate was 62.7 per 100 patients.

CI 2.2 Current referral letter on file (H) In 2014, there were 1,850 patients reported from ten HCOs. The annual rate was 96.4 per 100 patients. The fitted rate improved from 79.6 to 97.6, a change of 17.9 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 15.6 per 100 patients. In 2014, there was relatively little variation between HCOs and so the potential gains were small. In 2014, there were four outlier records from three HCOs whose combined excess was 36 fewer patients who have letter on file to the referring doctor and general practitioner regarding the current radiotherapy course. The outlier HCO rate was 87.4 per 100 patients.

Outcome process

CI 3.1 Nasopharyngeal cancer – IMRT (H) In 2014, there were 35 patients reported from eight HCOs. The annual rate was 91.4 per 100 patients. There were no potential gains in 2014.

CI 3.2 Prostate cancer – EBRT (H) In 2014, there were 279 patients reported from seven HCOs. The annual rate was 44.1 per 100 patients. In 2014, the potential gains totalled 81 more patients who had definitive EBRT for prostate cancer.



Expert Commentary

Faculty of Radiation Oncology of The Royal Australian and New Zealand College of Radiologists (RANZCR)

Consultation process

As an increasing number of patients have a combination of chemotherapy, proceeding on to radiotherapy, or concurrent chemoradiotherapy, there are going to be factors relating to the time point at which a patient is ready for care. As most courses of radiotherapy have little impact upon blood counts, thus the bone marrow, there may be a circumstance in which patients are actually 'ready for care', but are still unwell and recovering from the chemotherapy, thus have a delay in their treatment. It is still appropriate that **CI 1.1** be included, but it needs to be recognised that there are many variables that contribute to the fact that a patient has a waiting time greater than 28 days, that do not specifically reflect a delay in treatment course. It can be a measure of the time to recovery from prior treatment. Similarly the patient may be recovering from surgery. Thus there is an increasing recognition that the 'ready for care' date may need to be flexible. It is still relevant to continue with this as a measure of adequacy of care, but noting that there are variables that can influence this specific date.

CI 1.2 is an index that reflects the number of patients having MEBR that end up on prospective clinical trials. As a general rule the number of patients entered on clinical trials is somewhere between 2–4%. Whilst the aim is to increase this number, the numbers are always going to be low compared to the total population treated. Given this circumstance, it is uncertain as to whether this should be maintained as a good measure of adequate medical treatment.

Treatment process

CI 2.1 is an index that measures the number of patients who have staging information relating to their current radiotherapy course. It should be recognised that staging information can come from a number of different sources: the initial surgical consultation, pre-surgery status, the intraoperative to postoperative findings, and subsequent final pathology report. Thus in some centres the staging information may reflect the information prior to surgery, whereas in others it may reflect information relating to post surgery status. Therefore if this is to be relevant, then it is necessary to define at what time point the staging information is collated for a specific stage to be applied. The fairest call is that it be based upon all the relevant information (clinical, imaging, biochemical where appropriate) prior to surgery. It should be noted that there are ongoing discussions to determine what patient related information such as age, performance score, concurrent comorbidities etc, should be incorporated into the staging system such that it becomes more relevant. It is reasonable to continue with this as an index, but consider defining the appropriate time point at which the staging is applied.

It is exceedingly important that there be a letter on file relating to the assessment of the patient at initial presentation, and informing the general practitioner, and all referring specialists, that this patient is going to receive a course of radiotherapy (**CI 2.2**). There has been improvement in terms of the proportion of patients who have a letter on file. However at any one time this number can vary, relating to the secretarial support provided to generate this letter. Digital based recording is an alternative option, whilst it is not yet widespread. This index should be maintained as a means of assessing 'adequacy of care'.

Outcome process

IMRT for nasopharyngeal cancer (**CI 3.1**) is the current standard of care for patients with nasopharyngeal cancer. However not all departments are going to see a patient with nasopharyngeal cancer. There is a relatively small number of HCOs that have provided data. It is in the Australian environment and an infrequently confronted malignancy. It is however the disease for which IMRT is the current standard and unlikely that there is going to be significant variation over time. This is a worthwhile index to continue with.

EBRT for prostate cancer (**CI 3.2**) is an index reflecting the number of patients who have high dose external beam radiotherapy for prostate cancer. There is a relatively modest number of HCOs providing data. There are a number of variables that would influence this particular circumstance. It relates to how active the Urologist is within the area of the HCO. Whilst current evidence would suggest the likelihood of control is greater with a higher dose, the significant variable is that as stereotactic ablative radiotherapy becomes a more dominant treatment mode, the number of fractions being delivered is going to be less, and the total dose is obviously less. Thus for the moment it is worthwhile continuing with this index, but noting it may need a revised description within the next 2–3 years, as high-dose few fraction treatment may become the future standard of care.



Radiology

VERSION 5

Report availability

CI 1.1 ED/CCU – plain radiography reports (L) In 2014, there were 107,306 requests reported from 36 HCOs. The annual rate was 30.3 per 100 requests. In 2014, the potential gains totalled 30,195 fewer reports not available, corresponding to a reduction by approximately four-fifths. In 2014, there were 16 outlier records from ten HCOs whose combined excess was 10,223 more reports not available. The outlier HCO rate was 60.0 per 100 plain radiography examinations ordered.

CI 1.2 Inpatient unit – plain radiography reports (L) In 2014, there were 44,094 requests reported from 35 HCOs. The annual rate was 28.7 per 100 plain radiography examinations ordered. There were no significant stratum differences in 2014. In 2014, the potential gains totalled 11,258 fewer plain radiography reports not available, corresponding to a reduction by approximately four-fifths. In 2014, there were 11 outlier records from eight HCOs whose combined excess was 4,532 more plain radiography reports not available. The outlier HCO rate was 61.7 per 100 plain radiography examinations ordered.

CI 1.3 ED/CCU – CT scan reports (L) In 2014, there were 25,641 requests reported from 31 HCOs. The annual rate was 10.2 per 100 CT scans ordered. In 2014, the potential gains totalled 2,509 fewer CT scan reports not available, corresponding to a reduction by approximately four-fifths. In 2014, there were 16 outlier records from 14 HCOs whose combined excess was 1,260 more CT scan reports not available. The outlier HCO rate was 25.0 per 100 CT scans ordered.

CI 1.4 Inpatient unit – CT scan reports (L) In 2014, there were 15,865 requests reported from 31 HCOs. The annual rate was 12.5 per 100 CT scans ordered. In 2014, the potential gains totalled 1,579 fewer CT scan reports not available, corresponding to a reduction by approximately three-quarters. In 2014, there were six outlier records from five HCOs whose combined excess was 791 more CT scan reports not available. The outlier HCO rate was 40.7 per 100 CT scans ordered.

CI 1.5 ED/CCU – ultrasound scan reports (L) In 2014, there were 6,531 requests reported from 30 HCOs. The annual rate was 10.7 per 100 ultrasound scans ordered. In 2014, the potential gains totalled 634 fewer ultrasound reports not available, corresponding to a reduction by approximately four-fifths. In 2014, there were eight outlier records from seven HCOs whose combined excess was 301 more ultrasound reports not available. The outlier HCO rate was 37.9 per 100 ultrasound scans ordered.

CI 1.6 Inpatient unit – ultrasound scan reports (L)

In 2014, there were 12,263 requests reported from 31 HCOs. The annual rate was 12.8 per 100 ultrasound scans ordered. In 2014, there were no significant stratum differences. In 2014, the potential gains totalled 1,456 fewer ultrasound reports not available, corresponding to a reduction by approximately four-fifths. In 2014, there were ten outlier records from eight HCOs whose combined excess was 572 more ultrasound reports not available. The outlier HCO rate was 31.5 per 100 ultrasound scans ordered.

Adverse events

CI 2.1 Adverse events (N) In 2014, there were 1,429,574 imaging studies reported from 29 HCOs. The annual rate was 0.045 per 100 patients. Since it has not been specified whether high or low rates are desirable, outlier HCOs are not reported.

Report addendum

CI 3.1 Report addendum (N) In 2014, there were 1,286,018 radiology reports reported from 20 HCOs. The annual rate was 0.31 per 100 radiology reports. Since it has not been specified whether high or low rates are desirable, outlier HCOs are not reported.



Expert Commentary

The Royal Australian and New Zealand College of Radiologists (RANZCR)

Introductory comments

RANZCR is pleased to be able to provide commentary on the ACIR 2007–2014. The change of focus in the report to cover the important areas of report availability, adverse clinical events and report addenda is welcomed as it addresses the core business of radiodiagnosis. The College continues to strongly recommend that further work be conducted to refine data collection methodology in order to improve consistency and integrity of data, which is essential for confidence of interpretation. Collection of standardised performance metrics provide an impetus and a tool for HCOs to benchmark and improve quality of care.

Report availability

The College strongly supports the timely availability of radiology reports to emergency departments (EDs), critical care units (CCUs) and inpatient units as pivotal in achieving the best clinical outcomes and required treatment time frames. The College recommends that this measure be expanded to include not only a focus on reporting within a clinically relevant time, but also a measure which captures the number of studies that remain unreported over time.

There has been a reduction in the number of HCOs with up to 38 participating in the data collection process in 2014 compared to 54 HCOs in 2013. A more detailed breakdown of report availability for ED/CCU and inpatient units has been provided for plain films, CT and ultrasound scans, which potentially provides a more relevant clinical measure of turnaround time (TAT). Unfortunately, data analysis is limited by the HCOs reporting against their own guidelines, which have not been specified. This heterogeneity in individual HCO standards limits appropriate comparison and subsequent data analysis.

The previous 24 hour TAT standard for data collection is not a clinically relevant time frame for ED which now needs to meet the four hour NEAT targets. Whilst it is important that HCOs are able to formulate their own reporting guidelines suitable to their service needs, it remains necessary to provide standards around the clinically relevant time frames for report availability in each patient group. For example, ED may require TATs for all modalities in the order of 1–2 hours following the examination, whereas a same day service may be clinically appropriate for less acutely unwell inpatients. Some HCOs may have adopted 'report available' rather than 'finalised' alone in their definition of TAT while others may have set long or impossibly short TATs. Not having set benchmark standards for TATs erodes data analysis and the interpretation of potential centile gain is also clouded. The rate of 30.3 per 100 ED plain radiograph reports not available remains similar in magnitude to the 24 hour rate in 2013 (25%). The poorer performance in non-metropolitan HCOs (n=7) with a rate of 63.6% of reports not available, and the 16 outlier records, may reflect the smaller sample sizes, access to in-house versus outsourced reporting, reporting using PACS versus film, typist and other supporting service availability, as well as being HCO guideline dependent.

The availability of reports for CT and US is significantly better than plain radiographs with the non-availability of reports at rates of 10–12%. This level of performance may be at the expense of the plain radiography reporting with the ever increasing demand for high-end imaging modalities requiring reallocation of limited resources.

There are no significant stratum differences apart from some minor variations between states with NSW and Vic at 21.0% and 15.5% respectively. This seems due to the

wide variances with a few outlier sites significantly skewing the data. These outliers may reflect a local shortage of radiology reporting or other resources and it would be interesting to determine the underlying causes in the future.

Adverse events

The College agrees that adverse events in the complex field of radiology need to be reported and reviewed systematically to improve both procedural guidelines and develop an effective safety culture. We also agree that it is important that staff follow the policies and procedures outlined by their HCO to minimise their recurrence. This adverse event rate 0.045% is low compared to reports in the literature with the reported incidence varying from 0.06%¹ in the outpatient setting, with other studies reporting that rates in HCOs range from about 2.9% to 3.7%.² This most likely reflects the high quality and safety of radiology practice in Australia. Whilst this could be confounded by differences in reporting criteria and compliance the large sample size mitigates against this bias. Standardisation of reporting criteria and procedures across the participating HCOs to identify significant clinical incidents using a Severity Assessment Code (SAC1-3) is recommended by the College.

Care needs to be taken to ensure there is a robust reporting system for reporting adverse events and near misses; a non-punitive way of conducting a root cause analysis; and a system for actioning improvements. The College has made the Radiology Adverse Events Register (RAER) available online, which enables and encourages the recording of both adverse events and near misses in order to improve both quality and patient safety in the radiology setting.



Report addendum

The College acknowledges the usefulness of report addenda. Addenda may be added for a variety of reasons including when more information comes to light or when a second opinion is sought during the review process. It is believed that when this is done openly in communication to the referrer, it becomes a learning exercise in line with quality improvement principles which can lead to better patient outcomes. The reported addendum rate of 0.31% is low compared to the literature which suggests a rate of approximately 1.7% might be expected.³ The lower rate may reflect differences in local practice and reporting compliance. The basic error rate in radiology reports whilst low is likely to be similar to overseas experience. The introduction of a random audit process to second read a small sample of reports for discrepancies would also be a useful quality improvement tool that is recommended and encouraged by the College.

General comments

RANZCR commends the work of ACHS for the compilation of the ACIR focusing on report availability, adverse clinic event rates, and report addenda. Whilst there remains room for improvement in report availability, particularly plain radiographs, it is pleasing that the reported rate of adverse clinical events and report addenda is low. Caution in interpretation of the latter however is recommended as the rates stated are below those in the published literature, which may reflect a reporting or data collection bias.

Radiology is a rapidly evolving and growing specialty and thus would benefit from regular review, input and recommendations by the College into a balanced scorecard suite of indicators – for example:

- Service performance using report availability, episodes of care and workforce FTE data
- Patient safety using adverse event and addenda rate
- Quality using peer review rate
- Customer focus using complaints rate.

Leadership from the ACHS national standardised aggregation of data are essential to strengthen our health system and ensure a high standard of practice within our HCOs.

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Expert Commentary

Medical Imaging Nurses Association (MINA)

Introductory comments

The Medical Imaging Nurses Association (MINA) of Australia is pleased to have an opportunity to provide commentary on the Radiology version 5 CIs contained within the ACIR 2007–2014 16th edition. It is noted with interest that there is a variation in some of the CIs reported, enabling more specific analysis of report availability trends. However CIs of specific adverse events have been substituted for **CI 2.1** relying on the HCOs adhering to the CI reporting guidelines in a similar manner to ensure accuracy of these data.

Report availability

There continues to be an overall reduction in the number of examination reports not being available to the referring Doctor within the HCO specified time frame. This continued improvement may be due to increased awareness of timely reporting and improved work flow processes, enabling faster report turnaround times assisted by PACS/RIS. A growing uptake of speech recognition software may also be having a positive impact on timely reporting. **CI 1.1** demonstrated that the non-metropolitan HCO strata rate was 63.6 per 100 requests compared to 28.4 per 100 for metropolitan HCOs. This may be contributed to fewer non-metropolitan sites having access to electronic/remote reporting and this rate should improve in time as these HCOs go online. The outlier HCO rate for each modality represented in the CIs was reported from a relatively small number of HCOs, therefore it must be assumed that a small number of HCOs are having difficulty reaching their individual reporting targets.

Adverse events

Although **CI 2.1** does not report on specific adverse events, it is encouraging to note an overall reduction of approximately four-fifths. There were no reports from the private sector and 97% of the adverse events reported were from metropolitan HCOs. High risk interventional radiological procedures should always be undertaken in a setting with robust policies and procedures in place, with staff who are trained to recognise and treat such adverse events and with emergency back-up when required. It is hoped that the decrease in the number of adverse events reported is a reflection of an increased safety and reporting culture and not a reflection on the change in CI reporting.

Report addendum

The results of **CI 3.1** show that the rate of report addenda is 0.31 per 100 reports. It is noted that it is not specified whether a high or low rate is desirable for this CI. An HCO with a healthy reflective reporting culture will encourage report addenda as a valuable tool in quality improvement. There were 20 HCOs reporting on **CI 3.1** which is a reduced number in comparison with other CIs. An increase in the number of HCOs reporting on **CI 3.1** will demonstrate an emphasis on reflective reporting, which influences patient outcomes.

General comments

The data supplied has formed the basis of this review and response. There is a heavy emphasis within the CIs of availability of reports for referring clinicians. This enables clinical decisions on treatment options to be made in a timely manner, thereby improving patient outcomes. A generic CI for adverse events does not allow for specific analysis of clinical/non-clinical specific adverse events. If there was a significant rise in the rate it would be difficult to identify contributing factors from the supplied data. There is an assumption that the individual HCOs would be able to identify and reflect on their individual data, although benchmarking **CI 2.1** against other HCOs may be difficult. MINA is pleased to be able to review and comment on the CIs and thanks the ACHS once again for this opportunity.



Rehabilitation Medicine

VERSION 5

Timely assessment of function on admission

CI 1.1 Functional assessment within 72 hours of admission (H) In 2014, there were 59,195 patients reported from 102 HCOs. The annual rate was 97.7 per 100 patients. The fitted rate improved from 94.8 to 97.6, a change of 2.8 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 2.7 per 100 patients. In 2014, there was relatively little variation between HCOs and so the potential gains were small. In 2014, there were 36 outlier records from 25 HCOs whose combined excess was 720 fewer patients for whom there is documented evidence of a functional assessment within 72 hours. The outlier HCO rate was 91.3 per 100 patients.

Assessment of function prior to episode end

CI 2.1 Functional assessment within 72 hours of cessation of rehabilitation program (H) In 2014, there were 55,324 inpatients reported from 100 HCOs. The annual rate was 98.7 per 100 inpatients. The fitted rate improved from 94.2 to 98.5, a change of 4.3 per 100 inpatients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 4.2 per 100 inpatients. In 2014, there was relatively little variation between HCOs and so the potential gains were small. In 2014, there were 27 outlier records from 19 HCOs whose combined excess was 309 fewer inpatients for whom there is documented evidence of a functional assessment within 72 hours of cessation of the rehabilitation program. The outlier HCO rate was 92.4 per 100 inpatients.

Timely establishment of a multidisciplinary rehabilitation plan

CI 3.1 Multidisciplinary team plan within 7 days (H) In 2014, there were 50,579 patients reported from 104 HCOs. The annual rate was 98.3 per 100 patients. The fitted rate improved from 97.6 to 97.8, a change of 0.20 per 100 patients. In 2014, there was relatively little variation between HCOs and so the potential gains were small. In 2014, there were 31 outlier records from 22 HCOs whose combined excess was 503 fewer patients for whom there is a documented established multidisciplinary rehabilitation plan within seven days of patient admission. The outlier HCO rate was 91.0 per 100 patients.

Multidisciplinary discharge documentation

CI 4.1 Discharge plan on separation (H) In 2014, there were 52,119 separations reported from 102 HCOs. The annual rate was 98.1 per 100 separations. The fitted rate deteriorated from 98.4 to 97.6, a change of 0.81 per 100 separations. In 2014, there was relatively little variation between HCOs and so the potential gains were small. In 2014, there were 29 outlier records from 23 HCOs whose combined excess was 636 fewer separations for which there is an appropriate discharge plan. The outlier HCO rate was 88.2 per 100 separations.

Functional gain achieved by rehabilitation program

CI 5.1 Functional gain following completed rehabilitation program (H) In 2014, there were 51,622 patients reported from 103 HCOs. The annual rate was 96.0 per 100 patients. The fitted rate improved from 95.0 to 95.5, a change of 0.49 per 100 patients. In 2014, there was relatively little variation between HCOs and so the potential gains were small. In 2014, there were 26 outlier records from 18 HCOs whose combined excess was 607 fewer patients discharged for whom there is documented evidence of functional gain. The outlier HCO rate was 88.7 per 100 patients.

Discharge destination

CI 6.1 Return to pre-episode or new accommodation allowing for greater independence (H) In 2014, there were 48,316 patients reported from 99 HCOs. The annual rate was 87.7 per 100 patients. The fitted rate deteriorated from 88.9 to 88.0, a change of 0.82 per 100 patients. In 2014, the potential gains totalled 3,829 more patients discharged to their pre-episode form of accommodation, or a form of accommodation that allows for greater independence. In 2014, there were 44 outlier records from 31 HCOs whose combined excess was 1,769 fewer patients discharged to their pre-episode form of accommodation, or a form of accommodation that allows for greater independence. The outlier HCO rate was 72.2 per 100 patients.



Expert Commentary

Australasian Faculty of Rehabilitation Medicine (AFRM)

General comments

The Australasian Faculty of Rehabilitation Medicine (AFRM) and the Australasian Rehabilitation Outcomes Centre (AROC) are proud of the continuing high rate of compliance with the ACHS Rehabilitation Medicine CIs. This should be seen in the context of very high compliance in the provision of detailed outcome data (including data items required to calculate the CIs) to AROC, and a culture of continuous improvement within the Rehabilitation Medicine community. This demonstrates a commitment to evidence-based clinical care to our disabled population.

Outcome and process measures demonstrated by these CIs show a continued improvement and fewer outliers; improvement which is also reflected by the shorter lengths of stay and more functional improvement for similar diagnostic groups demonstrated by AROC benchmarking data. Where differences in CI outcomes are evident between sectors (public compared with private facilities) or jurisdictions, they should be interpreted very cautiously because these data are not casemix adjusted.



Surgical

VERSION 3

Paediatric surgery

CI 1.1 Pyloromyotomy – mucosal perforation (L)

In 2014, there were 80 patients reported from five HCOs. The annual rate was 1.3 per 100 patients. There was no significant trend in the fitted rate. There were no potential gains in 2014.

CI 1.2 Paediatric appendicectomy – normal histology (L)

In 2014, there were 1,126 appendicectomies reported from 17 HCOs. The annual rate was 17.2 per 100 appendicectomies. The fitted rate deteriorated from 14.6 to 16.6, a change of 1.9 per 100 appendicectomies. In 2014, the potential gains totalled 19 fewer children who undergo an appendicectomy with normal histology, corresponding to a reduction by approximately one-fifteenth.

CI 1.3 Paediatric appendicectomy – intra-abdominal pathology (L)

In 2014, there were 925 appendicectomies reported from 14 HCOs. The annual rate was 5.4 per 100 appendicectomies. The fitted rate deteriorated from 3.7 to 5.6, a change of 1.9 per 100 appendicectomies. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 1.9 per 100 appendicectomies. In 2014, the potential gains totalled 17 fewer children undergo an appendicectomy with normal histology but significant other intra-abdominal pathology, corresponding to a reduction by approximately one-third.

Urology

CI 2.1 TUR for benign prostatomegaly – average operating time (N)

In 2014, there were 641 patients reported from 16 HCOs. The average operating time was 54.4 minutes.

CI 2.2 TUR for benign prostatomegaly – average LOS (N)

In 2014, there were 797 patients reported from 17 HCOs. The average length of stay was 2.47 days.

CI 2.3 TUR for benign prostatomegaly – average weight of tissue (N)

In 2014, there were 327 patients from eight HCOs. The average weight of tissue was 18.6 grams.

CI 2.4 TUR for benign prostatomegaly – blood transfusion (L)

In 2014, there were 2,754 patients reported from 46 HCOs. The annual rate was 2.5 per 100 patients. The fitted rate improved from 3.5 to 2.6, a change of 0.83 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.76 per 100 patients. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled eight fewer patients having a TUR for benign prostatomegaly who have a blood transfusion, corresponding to a reduction by approximately one-tenth.

CI 2.5 TUR for benign prostatomegaly – unplanned readmission within 28 days (L)

In 2014, there were 1,845 patients reported from 28 HCOs. The annual rate was 5.3 per 100 patients. The fitted rate deteriorated from 4.2 to 6.0, a change of 1.8 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 1.8 per 100 patients. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 41 fewer patients having an unplanned readmission within 28 days, corresponding to a reduction by approximately one-third. In 2014, there was one outlier record from one HCO whose combined excess was three more patients having an unplanned readmission within 28 days. The outlier HCO rate was 20.5 per 100 patients.

Orthopaedic surgery

CI 3.1 Total hip joint replacement – postoperative in-hospital infection (L)

In 2014, there were 3,341 patients reported from 31 HCOs. The annual rate was 0.45 per 100 patients. The fitted rate improved from 0.96 to 0.60, a change of 0.36 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.39 per 100 patients. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled six fewer patients undergoing primary total hip joint replacement (THJR) having a post-operative in-hospital infection, corresponding to a reduction by approximately one-third.

Plastic surgery

CI 4.1 Completely excised malignant skin tumours (H)

In 2014, there were 7,150 excisions reported from 20 HCOs. The annual rate was 90.4 per 100 excisions. There was no significant trend in the fitted rate. In 2014, the potential gains totalled 330 more completely excised malignant skin tumours. In 2014, there were nine outlier records from six HCOs whose combined excess was 159 fewer completely excised malignant skin tumours. The outlier HCO rate was 82.9 per 100 excisions.



Cardiothoracic surgery

CI 5.1 Coronary artery graft surgery – death (L)

In 2014, there were 6,156 patients reported from 28 HCOs. The annual rate was 1.1 per 100 patients. The fitted rate improved from 1.9 to 1.2, a change of 0.69 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 0.71 per 100 patients. In 2014, the potential gains totalled 17 fewer patients who die in the same admission as having coronary artery graft surgery (CAGS), corresponding to a reduction by approximately one-quarter.

CI 5.2 Elective coronary artery graft surgery – death (L)

In 2014, there were 2,501 patients reported from 16 HCOs. The annual rate was 0.88 per 100 patients. There was no significant trend in the fitted rate. There were no significant stratum differences in 2013 and 2014. There were no potential gains in 2014.

CI 5.3 Coronary artery graft surgery patients aged 71 years or more – death (L)

In 2014, there were 1,655 patients reported from 19 HCOs. The annual rate was 1.8 per 100 patients. There was no significant trend in the fitted rate. In 2014, the potential gains totalled 13 fewer patients aged 71 years or greater who die in the same admission as CAGS, corresponding to a reduction by approximately one-third. In 2014, there was one outlier record from one HCO whose combined excess was three more patients aged 71 years or greater who die in the same admission as CAGS. The outlier HCO rate was 10.0 per 100 patients.

Neurosurgery

CI 6.1 Neurosurgery – neurosurgical infection (L)

In 2014, there were 6,923 patients reported from 11 HCOs. The annual rate was 1.2 per 100 patients. There was no significant trend in the fitted rate. There were no significant stratum differences in 2013 and 2014. In 2014, the potential gains totalled 16 fewer patients having a neurosurgical infection in hospital, corresponding to a reduction by approximately one-tenth.

CI 6.2 Neurosurgery – new neurological deficit following procedure (L)

In 2014, there were 7,063 patients reported from 11 HCOs. The annual rate was 1.3 per 100 patients. There was no significant trend in the fitted rate. In 2014, the potential gains totalled 38 fewer patients with a new neurological deficit following neurosurgery, corresponding to a reduction by approximately one-third. In 2014, there was one outlier record from one HCO whose combined excess was seven more patients with a new neurological deficit following neurosurgery. The outlier HCO rate was 3.7 per 100 patients.

General surgery

CI 7.1 Laparoscopic cholecystectomy – operative intervention for bile duct injury (L)

In 2014, there were 13,247 patients reported from 68 HCOs. The annual rate was 0.38 per 100 patients. There was no significant trend in the fitted rate. In 2014, the potential gains totalled 34 fewer patients having a bile duct injury requiring operative intervention, corresponding to a reduction by approximately two-thirds. In 2014, there were four outlier records from two HCOs whose combined excess was 15 more patients having a bile duct injury requiring operative intervention. The outlier HCO rate was 3.8 per 100 patients.

Vascular surgery

CI 8.1 Elective abdominal aortic aneurysm (AAA) repair – death (L)

In 2014, there were 294 patients reported from 15 HCOs. The annual rate was 1.7 per 100 patients. The fitted rate improved from 2.8 to 1.4, a change of 1.4 per 100 patients. This trend was also significant after allowing for the changing composition of HCOs contributing over the period. The rate change was 1.6 per 100 patients. There were no potential gains in 2014.

CI 8.2 Carotid endarterectomy – stroke (L)

In 2014, there were 524 patients reported from 15 HCOs. The annual rate was 3.8 per 100 patients. There was no significant trend in the fitted rate. In 2014, the potential gains totalled 13 fewer patients having a carotid endarterectomy who have a stroke, corresponding to a reduction by approximately one-half. In 2014, there was one outlier record from one HCO whose combined excess was five more patients having a carotid endarterectomy who have a stroke. The outlier HCO rate was 22.9 per 100 patients.

Otolaryngology

CI 9.1 Tonsillectomy – significant reactionary haemorrhage (L)

In 2014, there were 12,561 patients reported from 62 HCOs. The annual rate was 0.57 per 100 patients. There was no significant trend in the fitted rate. In 2014, the potential gains totalled 22 fewer patients who have a significant reactionary haemorrhage following tonsillectomy, corresponding to a reduction by approximately one-quarter. In 2014, there was one outlier record one HCO whose combined excess was seven more patients who have a significant reactionary haemorrhage following tonsillectomy. The outlier HCO rate was 6.6 per 100 patients.



Abbreviations

Abbreviations

ACE Inhibitor	ACEI	Healthcare organisation	HCO
Angiotensin II receptor antagonist	A2RA	Hospital in the home	HITH
Abdominal aortic aneurysm	AAA	Intensive care unit	ICU
Acute coronary syndrome	ACS	Intensity-modulated radiation therapy	IMRT
Australian Commission on Safety and Quality in Health Care	ACSQHC	Lower segment caesarean section	LSCS
Atrial fibrillation	AF	Megavoltage external beam radiotherapy	MEBR
Acute myocardial infarction	AMI	Neonatal intensive care unit	NICU
Australasian triage scale	ATS	Percutaneous coronary intervention	PCI
Bloodstream infection	BSI	Post-discharge	PD
Blood sugar level	BSL	Peripherally-inserted central line-associated bloodstream infection	PI-CLABSI
Coronary artery bypass graft	CABG	Postoperative nausea and vomiting	PONV
Congestive heart failure	CHF	Peer review audit tool	PRAT
Clinical Indicator	CI	Percutaneous transluminal coronary angioplasty	PTCA
Centrally-inserted central line-associated bloodstream infection	CI-CLABSI	Red blood cell	RBC
Central line-associated bloodstream infection	CLABSI	Residential care facility	RCF
Chronic obstructive pulmonary disease	COPD	Registered nurse	RN
Continuing professional development	CPD	Surgical antibiotic prophylaxis	SAP
Emergency department	ED	Surgical site infection	SSI
External beam radiation therapy	EBRT	Turnaround time	TAT
Healthcare-associated infection	HAI	Vaginal birth after caesarean section	VBAC
Haemoglobin	Hb	Venous thromboembolism	VTE

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or the ACHS Clinical Indicator Program
should be directed to:**

**ACHS Performance and Outcomes
Service (POS)**

**Australian Council on Healthcare
Standards (ACHS)**

**5 Macarthur Street
Ultimo NSW 2007**

 **+61 2 9281 9955**

 **+61 2 9211 9633**

 **pos@achs.org.au**

 **www.achs.org.au**



The Australian Council on Healthcare Standards (ACHS)

5 Macarthur Street, Ultimo NSW 2007 Australia

+ 61 2 9281 9955 + 61 2 9211 9633

achs@achs.org.au www.achs.org.au