

**NSW  
TAG**

**2020 Review of  
the National Quality Use of Medicines Indicators  
for Australian Hospitals:  
Report on use, relevance and potential for automation  
using electronic medical records**

**July 2021**



NSW  
Therapeutic  
Advisory  
Group Inc.

Advancing  
quality use  
of medicines  
in NSW

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The development of this report was funded by NSW Health.

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## Table of Contents

<b>List of Figures and Tables</b> .....	<b>3</b>
<b>List of abbreviations</b> .....	<b>4</b>
<b>Background</b> .....	<b>5</b>
<b>Aims</b> .....	<b>5</b>
<b>Methodology</b> .....	<b>5</b>
<b>Results</b> .....	<b>6</b>
1. <i>Use of NQUM Indicators</i> .....	7
2. <i>Comparative indicator collections</i> .....	10
3. <i>Prioritisation for automation</i> .....	13
4. <i>Suggested modifications to existing NQUM Indicators</i> .....	15
5. <i>New QUM indicators suggested for development</i> .....	16
6. <i>Other issues raised</i> .....	17
<b>Discussion</b> .....	<b>18</b>
<b>Limitations</b> .....	<b>22</b>
<b>Conclusions</b> .....	<b>22</b>
<b>References</b> .....	<b>23</b>
<b>Appendices</b> .....	<b>24</b>
<b>Acknowledgments</b> .....	<b>44</b>

## List of Figures and Tables

<b>Figure 1: Participation in each survey according to jurisdictions</b> .....	<b>6</b>
<b>Figure 2: Frequency of use of NQUM Indicators</b> .....	<b>7</b>
<b>Figure 3: Frequency of amendments to NQUM Indicators</b> .....	<b>10</b>
<b>Figure 4: NQUM Indicator prioritisation for eMR automation</b> .....	<b>13</b>
<b>Table 1: Top 10 NQUM Indicators reported as used once or more (as proportion of responses)</b> .....	<b>8</b>
<b>Table 2: NQUM Indicators least used by respondents</b> .....	<b>9</b>
<b>Table 3: NQUM Indicator alignment with other current national indicator sets</b> .....	<b>11</b>
<b>Table 4: Overall prioritisation for automation into eMR</b> .....	<b>14</b>
<b>Table 5: Relative individual prioritisation for automation into eMR</b> .....	<b>14</b>
<b>Table 6: Proposed amendments to existing NQUM Indicators</b> .....	<b>15</b>

## List of abbreviations

Abbreviation	Term
<b>ACHS</b>	The Australian Council on Healthcare Standards
<b>ACSQHC</b>	The Australian Commission on Safety and Quality in Health Care
<b>AMS</b>	Antimicrobial stewardship
<b>AMS CCS</b>	Antimicrobial Stewardship Clinical Care Standard
<b>CAP</b>	Community acquired pneumonia
<b>CATAG</b>	Council of Australian Therapeutic Advisory Groups
<b>CEC</b>	Clinical Excellence Commission
<b>DOACs</b>	Direct Oral Anticoagulants
<b>DTC</b>	Drug and Therapeutics Committee
<b>eMR</b>	Electronic medical records
<b>HACs</b>	Hospital acquired complications
<b>HbA1c</b>	Glycated haemoglobin
<b>HRMs</b>	High risk medicines
<b>HSO</b>	Health Service Organisation
<b>NAPS</b>	National Antimicrobial Prescribing Survey
<b>NICE</b>	National Institute for Health and Care Excellence
<b>NSMC</b>	National Standard Medication Chart
<b>NSQHSS</b>	National Safety and Quality Health Service Standards
<b>NSW TAG</b>	New South Wales Therapeutic Advisory Group
<b>NQUM</b>	National Quality Use of Medicines
<b>PRN</b>	Pro re nata (when necessary)
<b>PSML</b>	Pharmacist Shared Medicine List
<b>QI</b>	Quality Improvement
<b>QUM</b>	Quality use of medicines
<b>SHPA</b>	Society of Hospital Pharmacists of Australia
<b>SGLT2</b>	Sodium-glucose co-transporter 2
<b>SNAPS</b>	Surgical National Antimicrobial Prescribing Survey
<b>TDM</b>	Therapeutic Drug Monitoring
<b>VicTAG</b>	Victorian Therapeutics Advisory Group
<b>VTE</b>	Venous thromboembolism

## Background

The New South Wales Therapeutic Advisory Group (NSW TAG), supported by the Clinical Excellence Commission (CEC), published a set of thirty indicators to measure and monitor Quality Use of Medicines (QUM) in Australian hospitals in 2007. With funding support from the Australian Commission in Safety and Quality in Health Care (ACSQHC), these indicators were reviewed, revised and expanded and published as the [National Quality Use of Medicine Indicators for Australian Hospitals](#) (NQUM Indicators) in 2014.<sup>1</sup> These indicators measure adherence to processes of medicines management shown to improve health outcomes.

The current thirty-seven indicators<sup>i</sup> (see [Appendix 1](#)) have seven themes:

- antithrombotic therapy;
- antibiotic therapy;
- medication ordering;
- pain management;
- continuity of care;
- hospital-wide medication management policies; and
- acute mental health care.

Practice change, evidence-based gaps in care which have been resolved and new emerging gaps mean that the NQUM Indicators require periodic review, updating and potential archiving. Moreover, the implementation and embedding of quality improvement (QI) strategies will be more achievable when measurement becomes more efficient and routine, for example by utilising electronic medical records (eMRs) for data collection.

## Aims

The review aimed to:

- determine the overall utilisation and relevance of the NQUM Indicators;
- describe clinicians' priorities for NQUM Indicator automation within eMR; and
- explore potential improvements to existing NQUM Indicators and potentially new QUM indicators.

## Methodology

A series of six online questionnaires (using the Survey Monkey® platform) were developed and distributed in sequence ([Appendix 2-6](#)), via NSW TAG and the Council of Australian Therapeutic Advisory Groups (CATAG) email distribution lists. They were also advertised in the NSW TAG weekly newsletter (TAG Mail) and Society of Hospital Pharmacists of Australia (SHPA) member network specialty stream discussion forums and SHPA weekly eNews bulletin. Clinicians, with an understanding of QUM activities, were invited to participate and circulate to appropriate colleagues. Multiple responses per hospital or health district were possible. When this occurred, responses were recorded individually, as reported usage and prioritisation for automation varied between individual clinicians and could not be combined.

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<sup>i</sup> NSW TAG has also recently published an additional [polypharmacy indicator set](#) with seven individual indicators. These are not included in this report.

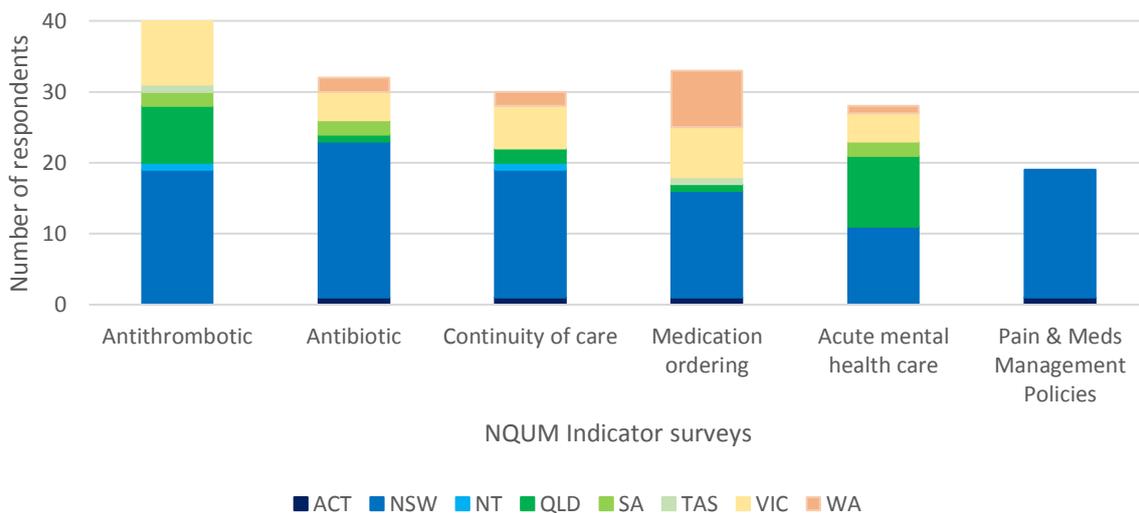
The surveys requested responses to a) participants' frequency of use of the 2014 NQUM Indicators; b) participants' prioritisation for automation of NQUM Indicators using eMR data; c) suggested improvements to existing NQUM Indicators; and d) participants' suggestions for new QUM indicators. Use of a NQUM Indicator was described if it had been measured and reported for QUM purposes within the relevant HSO in the previous 6 years (i.e. from 2014, when the most recent version of the NQUM Indicators was published). Respondents could specify use of each NQUM Indicator as "not used", "used once", "used more than one", "used frequently" and/or "used an amended version".

Responses were collated and analysed by February 2021. A number of sites and jurisdictions were contacted directly to gain more information and a better understanding of coordinated indicator activities/programs.

Responses were described according to their jurisdictions, frequency of use, frequency and type of amendments, prioritisation for automation using eMR, suggested modifications and suggestions for new QUM indicators. The NQUM Indicators were also compared with other indicator sets for similarity.

## Results

Responses were received from 186 participants across the six surveys (average 30 per survey). Responses were received from public and private health service organisations (HSOs) in metropolitan and regional Australia as well as one national pillar organisation. All Australian states and territories provided responses. Participation according to jurisdictions is displayed in Figure 1.



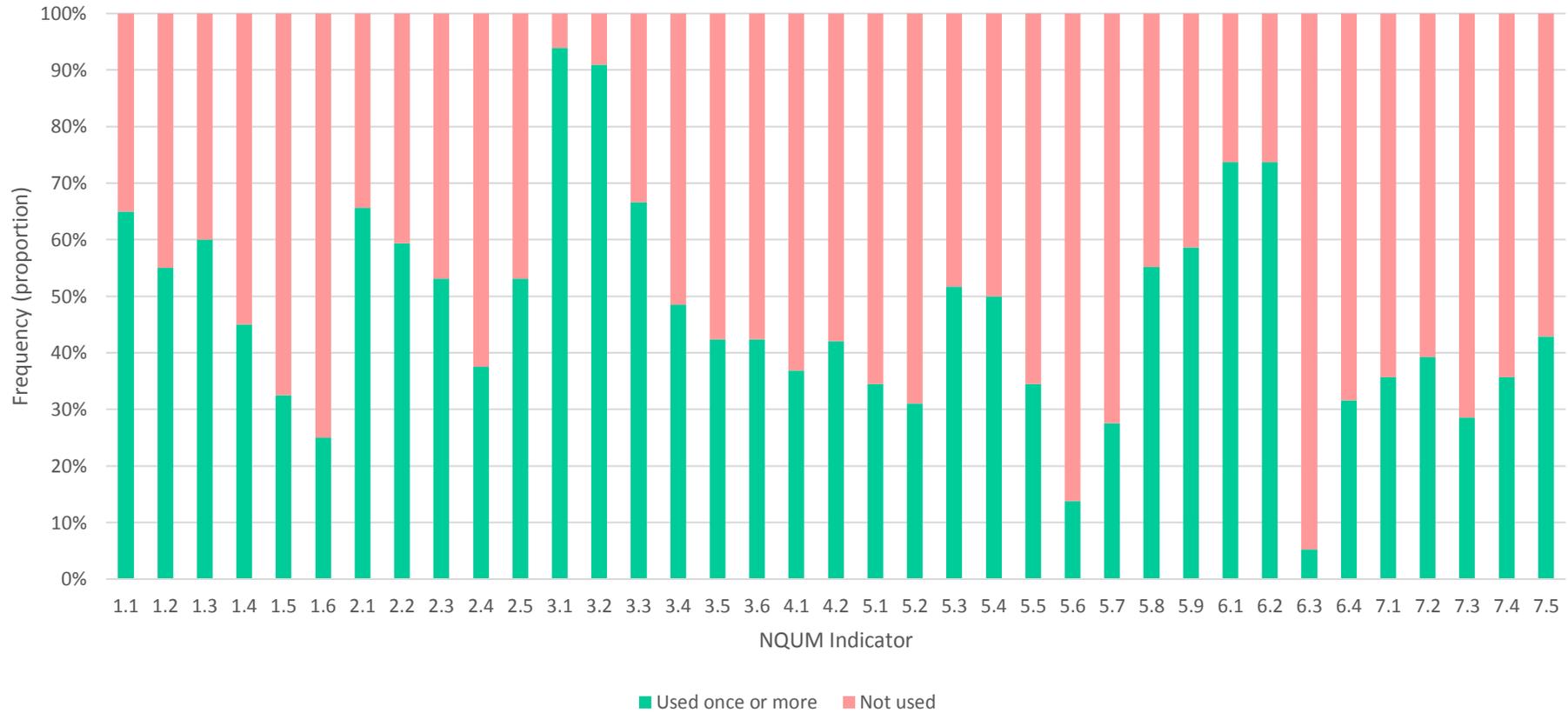
**Figure 1: Participation in each survey according to jurisdictions, n=182\***

\*Excludes four responses from one national pillar organisation.

There were 14 instances where more than one response was provided per hospital. However, these reflected difference experiences or expertise of respondents and were therefore reported individually. For example, in the antithrombotic therapy survey there were three responses provided from one hospital including a response from a medical advanced trainee, a staff specialist and a senior pharmacist.

## 1. Use of NQUM Indicators

Figure 2 displays the frequency of use of the 37 NQUM Indicators (either as originally designed or amended).



**Figure 2: Frequency of use of NQUM Indicators, n=182**

## 1.1 Frequently Used Indicators

Table 1 indicates the NQUM Indicators most commonly used by hospitals according to their QUM domain. NQUM Indicators for pain management (4.1 and 4.2) were not used as commonly as NQUM Indicators in the other therapeutic themes and are not displayed in Table 1.

**Table 1: Top 10 NQUM Indicators reported as used once or more (as proportion of responses), n=182**

NQUM Indicator number and description	QUM domain	Use by Respondents
<b>Antithrombotic therapy</b>		
<b>1.1 Appropriate VTE risk assessment</b>	Judicious selection	65%
<b>1.3 Appropriate enoxaparin dosing</b>	Safe and effective use	60%
<b>Antibiotic therapy</b>		
<b>2.1 Appropriate antibiotic prophylaxis for surgery</b>	Appropriate choice Safe and effective use	66%
<b>2.2 DTC-concordant use of restricted antibiotics</b>	Appropriate choice Safe and effective use	59%
<b>Medication ordering</b>		
<b>3.1 Appropriate medication reconciliation</b>	Appropriate choice Safe and effective use	94%
<b>3.2 Appropriate documentation of ADRs</b>	Appropriate choice Safe and effective use	91%
<b>3.3 Appropriate documentation of abbreviations</b>	Safe and effective use	67%
<b>Continuity of care</b>		
<b>5.9 Appropriate provision of medication list on discharge</b>	Safe and effective use	59%
<b>Hospital-wide medication management policies</b>		
<b>6.1 Appropriate potassium ampoule storage</b>	Safe and effective use	74%
<b>6.2 Timely clinical pharmacist review</b>	Judicious selection Appropriate choice	74%

## 1.2 Under-utilised NQUM Indicators

All indicators had been used by one or more respondent at some stage. However, some indicators were more commonly 'not used' and are displayed in Figure 2 and in Table 2, according to therapeutic theme and QUM domain. The NQUM Indicator least used was indicator 6.3 (by 5% of respondents).

**Table 2: NQUM Indicators least used by respondents, n=182**

NQUM Indicator number and title	QUM domain	Respondents
<b>Antithrombotic therapy</b>		
<b>1.6 Percentage of patients with atrial fibrillation that are discharged on oral anticoagulants</b>	Judicious selection	25%
<b>Continuity of care</b>		
<b>5.6 Appropriate provision of asthma action plan at discharge</b>	Safe and effective use	14%
<b>5.7 Percentage of patients receiving sedatives at discharge that were not taking them at admission</b>	Judicious selection	28%
<b>Hospital wide medication management policies</b>		
<b>6.3 Percentage of parenteral opioid dosage units that are pethidine</b>	Appropriate choice	5%
<b>Acute mental health care</b>		
<b>7.3 Percentage of patients who receive written and verbal information on regular psychotropic medicines initiated during their admission</b>	Safe and effective use	29%

## 1.3 Amendments made to NQUM Indicators

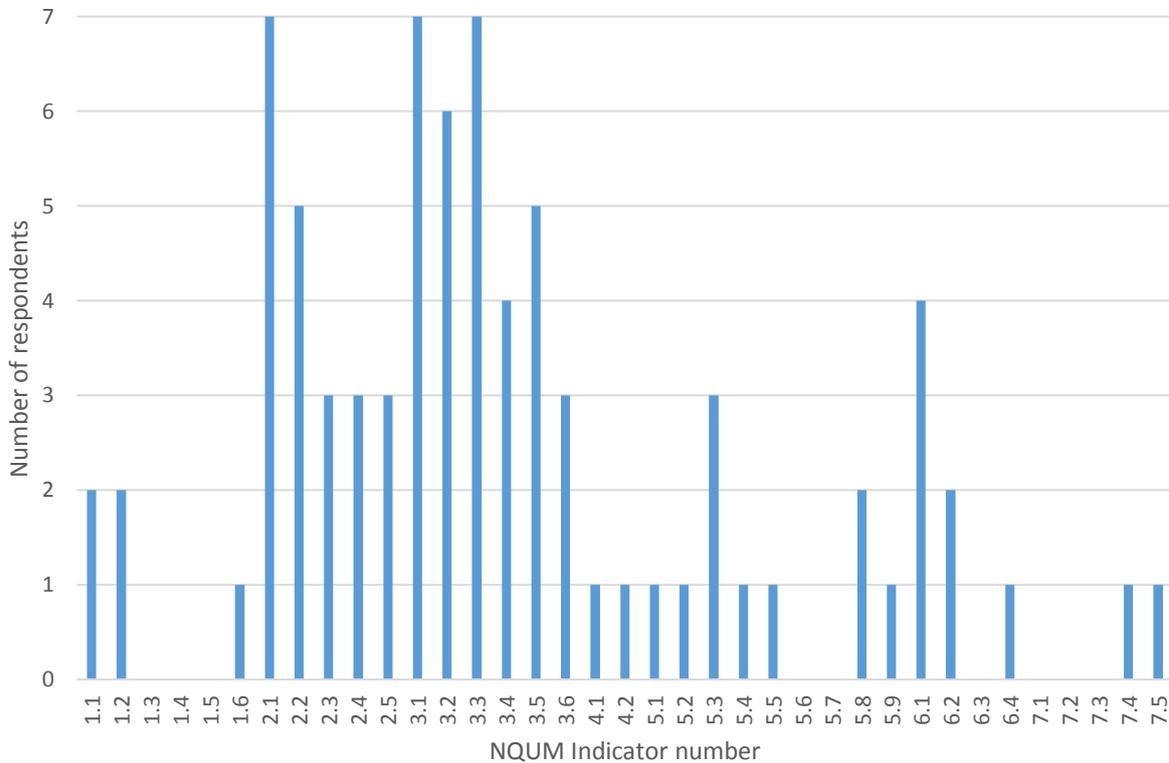
Respondents documented eighty occasions when an amended version of an NQUM Indicator had been used. The most commonly amended NQUM Indicators were 2.1, 3.1 and 3.3 (see Figure 3).

Reasons for amendment included:

- Adaptation for paediatric hospital (NQUM Indicator 5.4) and residential aged care facilities (Indicators 1.1, 1.2, 1.6)
- Modification of assessment tool into Quality Audit Reporting System (QARS)<sup>ii</sup> (NQUM Indicator 1.1, 6.1)
- Addition of venous thromboembolism (VTE) prophylaxis policy components into assessment tool (NQUM Indicator 1.1)
- Modification to capture implementation of an electronic medication transfer summary made by pharmacists (NQUM Indicator 5.3)
- Amendment to use electronic medication management system analytics and capture data electronically (NQUM Indicators 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 6.1, 6.2, 6.2)

<sup>ii</sup> [Quality Audit Reporting System](#) (QARS) is an electronic tool created by the Clinical Excellence Commission available for health entities to collect data to help drive the implementation of safety and quality systems.

- Amendment to better capture local policy/guidelines or to fit in with other program requirements (NQUM Indicators 2.1, 2.2, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 5.1, 5.2, 5.3, 5.8)
- Amendment to include whether there had been a de-escalation plan developed for antipsychotic polypharmacy (NQUM Indicator 7.5)
- Combining several indicators onto one survey to improve time efficiency for accreditation preparation (NQUM Indicators 3.1, 3.2).



**Figure 3: Frequency of amendments to NQUM Indicators, n=79**

One respondent noted they have a Cerner® PowerPlan® in the eMR for baseline monitoring for patients prescribed lithium (equivalent to NQUM Indicator 7.2). NQUM Indicator 4.1 was amended by another respondent to record pain at rest as well as movement.

## 2. Comparative indicator collections

Respondents acknowledged there was overlap in other data collected/audits performed, particularly in the antimicrobial stewardship field, which may have contributed to a reduced utility of the NQUM Indicators. Conversely, many NQUM indicators provided useful evidence for purposes of accreditation for the National Safety and Quality Health Service Standards (NSQHSS) and have mandatory reporting requirements in some HSOs. Table 3 outlines the crossover of indicator content.

**Table 3: NQUM Indicator alignment with other current national indicator sets**

	Top 10 NQUM Indicators in use			10 NQUM Indicators least commonly used		
NQUM Indicator	ACHS	NSQHSS	NSMC audit	APAC	AMS CCS	NAPS
1.1	7.1	4.1	6.1			
1.2	3.1*	4.1/4.2	6.2			
1.3	1.1	4.1/4.2				
1.4	1.2	4.1/4.15				
1.5	1.3	4.2		GP5		
1.6		4.10				
2.1	1.5, 2.1-2.9, 5.1€	3.15/3.16			8a/b/c	✓
2.2	2.1	3.15/3.16			2a/b	✓
2.3	2.2	3.15/3.16		GP5	8d	✓
2.4		3.15/3.16				✓
2.5	2.3	3.15/3.16			2a/b	✓
3.1	3.1	4.5/4.6	5.1	GP3/4/5/6		
3.2	3.2	4.7/4.8	4.1/4.2/4.3	GP4	3a*‡	✓‡
3.3	3.3		10.3/11.3	GP5		
3.4			10.7			
3.5		4.2		GP5		
3.6	3.4	4.1				
4.1	4.1	4.1				
4.2		4.11		GP7		
5.1		4.2			6b/c†	
5.2	1.1-1.3	4.2				
5.3	5.1	4.12		GP 3/7/9		
5.4	5.2	4.11	9.2	GP /7/9		
5.5	5.3**	4.11/4.12		GP9		
5.6	5.3**	4.11/4.12				
5.7	5.4	4.15				
5.8	5.5	4.12		GP 1/2		
5.9	5.6	4.11/4.12		GP 1		
6.1		4.14/4.15				
6.2	6.1	4.10	7.1	GP5		
6.3		4.14/4.15				
6.4						
7.1		4.2	11.2/11.3/11.4	GP 5		
7.2		4.2		GP 5		
7.3	3.4	4.11		GP 7/9		
7.4	3.7	4.2		GP 5		
7.5	3.5			GP 5		

\* ICU specific; € modified wording; ‡ antimicrobial specific; † Acute coronary syndrome clinical care standard<sup>2</sup>

ACHS: The Australian Council on Healthcare Standards; NSQHSS: National Safety and Quality Health Service Standards; NSMC: National Standard Medication Chart; APAC: Australian Pharmaceutical Advisory Council; AMS CCS: Antimicrobial Stewardship Clinical Care Standard; NAPS: National Antimicrobial Prescribing Survey

**The Australian Council on Healthcare Standards (ACHS)<sup>3</sup>:** A number of the NQUM Indicators have been included in ACHS accreditation programs. These indicators are already in wide use throughout Australia including the private hospital sector and may be used in the present Evaluation and Quality Improvement Program (EQulP 6), to satisfy evidence required for mandatory ACHS criteria.

**ACSQHC National Standard Medication Chart (NSMC) audit<sup>4</sup>:** This program audits the safe and quality use of paper-based medication charts which may become less necessary in sites, as electronic medication management systems are implemented and forcing functions prevent a multitude of errors usually detected by this audit.

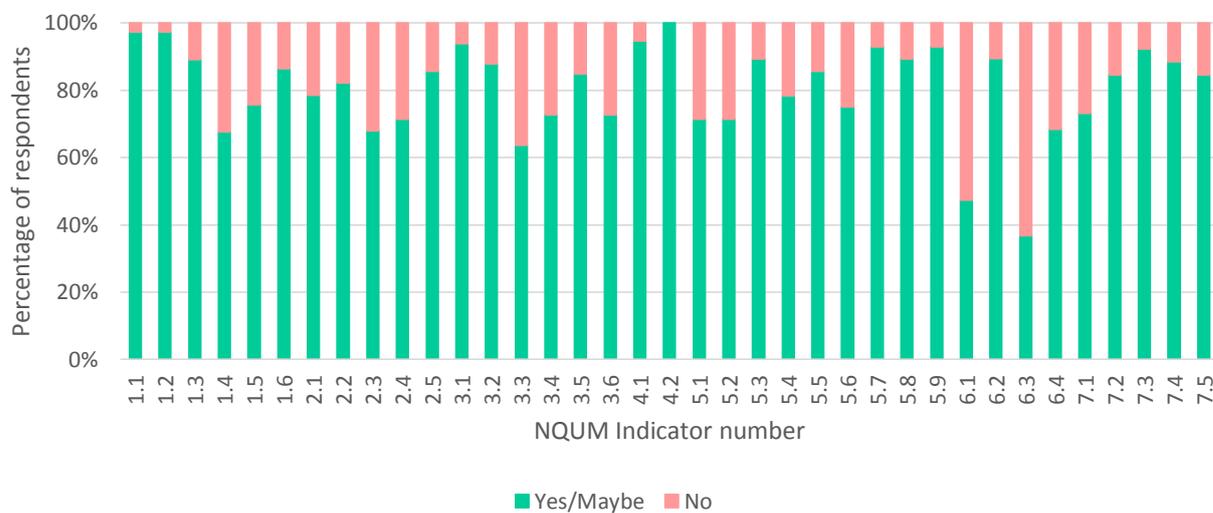
**Australian Pharmaceutical Advisory Council (APAC) Guiding Principles to Achieve Continuity in Medication Management (2005)<sup>5</sup>:** This widely recognised practice standard for continuity of care from acute to community sectors includes several guiding principles relating to the NQUM Indicators.

**National Antimicrobial Prescribing Survey (NAPS)<sup>6</sup>:** NAPS is a voluntary annual audit and review of antimicrobial use, which targets compliance with prescribing guidelines and prescribing appropriateness. It allows benchmarking against peer hospitals. More recently, there has been a surgical focused NAPS (SNAPS), which investigates procedural and post-procedural prescribing practices.

**ACSQHC Antimicrobial Stewardship Clinical Care Standard (AMS CCS)<sup>7</sup>:** This Standard provides guidance to clinicians and health service managers on delivering appropriate care when prescribing antimicrobials. It includes 8 quality statements and a set of 10 corresponding indicators. Other relevant clinical care standards (CCS) in use include acute coronary syndromes and delirium. Low back pain and sepsis are currently in development and may also have some crossover with NQUM Indicators.

### 3. Prioritisation for automation

Data collection from the eMR represents an opportunity to utilise a less resource intense mechanism to collect data, allow more comprehensive data collection/analysis, assist with monitoring of medicines use for Drug and Therapeutics Committees (DTCs) and expedite QUM-related QI project processes. Participants were asked to nominate which NQUM Indicators they believed would be beneficial to automate using eMR. Figure 4 outlines participant support for automation across all the NQUM Indicators.



**Figure 4: NQUM Indicator prioritisation for eMR automation, n = 168<sup>iii</sup>**

<sup>iii</sup> All 186 respondents had the opportunity to provide feedback. Number of responses varied per theme but a response rate of >90% was obtained for each theme with the exception of antibiotic theme with a response rate of 81%.

Table 4 outlines the NQUM Indicators given the highest and lowest rated priority for automation. The NQUM Indicator with unanimous support for automation was NQUM Indicator 4.2 (percentage of postoperative patients that are given a written pain management plan at discharge AND a copy if communicated to the primary care clinician). Conversely, the largest proportion of participants believed NQUM Indicator 6.3 should not be automated (percentage of parenteral opioid dosage units that are pethidine).

**Table 4: Overall prioritisation for automation into eMR, n=168<sup>iii</sup>**

NQUM Indicator set	Highest priority for automation (support from > 80% of respondents)	Lowest prioritisation for automation (support from < 70% of respondents)
<b>Antithrombotic</b>	1.1*, 1.2* and 1.6	1.4
<b>Antibiotic</b>	2.2, 2.5*	2.1, 2.3
<b>Medication ordering</b>	3.1*, 3.2, 3.5	3.3
<b>Pain management</b>	4.1, 4.2*	
<b>Continuity of care</b>	5.3, 5.5, 5.7*, 5.8, 5.9*	
<b>Medication management policies</b>	6.2*	6.1, 6.3, 6.4
<b>Acute mental health</b>	7.2, 7.3*, 7.4, 7.5	

\* Highest score within each NQUM Indicator set

Within each survey and corresponding NQUM Indicator set, participants were asked to nominate which ONE indicator was their highest priority for automation (see Table 5).

**Table 5: Relative individual prioritisation for automation into eMR, n=168<sup>iii</sup>**

NQUM Indicator set according to theme	Highest ranked indicator for automation in each theme
<b>Antibiotic</b>	2.1
<b>Medication ordering</b>	3.1
<b>Pain management</b>	4.2
<b>Continuity of care</b>	5.8
<b>Medication management policies</b>	6.2
<b>Acute mental health</b>	7.5

## 4. Suggested modifications to existing NQUM Indicators

Participants provided feedback on suggested amendments to update the NQUM Indicator sets. Table 6 outlines proposed amendments to the existing indicators.

**Table 6: Proposed amendments to existing NQUM Indicators**

NQUM Indicator	Proposed amendment
2.4	Better align with therapeutic guidelines stratification of community acquired pneumonia (CAP) severity.
3.1-3.6	Rebadge as “medicines documentation” or “medicines management”.
3.3	Include verification process/step (particularly important for chemotherapy orders) OR consider archiving – potentially redundant due to forcing functions in eMR (i.e. only relevant for hospitals using paper charts).
3.4	Amend to percentage of medication orders that include weight (perhaps also date of birth & basis for dose calculations).
3.6	Modernise to align with digital health system developments e.g. VicTAG chemotherapy audit toolkit. <sup>8</sup>
4.2	Remove criteria that plan is “communicated to primary care clinician” which may be difficult to capture; or modernise to align with digital health systems such as My Health Record, which includes the <a href="#">Pharmacist Shared Medicines List</a> (PSML). <sup>9</sup>
5.1-5.9	Rebadge as “transitions of care”.
5.4	Include oral direct thrombin inhibitors and Factor Xa inhibitors.
5.7	Include antipsychotics on discharge (to capture delirium population).
6.1	Percentage of medication storage areas outside pharmacy where the storage of potassium does not comply with hospital policy requirements (to address policy compliance).
6.3	Archive.
7.1-7.5	Clarify definitions of psychotropic vs antipsychotic.
7.1-7.5	Consider reframing to include other uses of psychotropics e.g. cognitive disorders or separate indicator set to capture inappropriate use of antipsychotics for patients in aged care facilities and disabilities etc.
7.1	Consider <a href="#">Medication Safety in Mental Health</a> scoping study re: variety of interpretations for “PRN” as needed for treating symptoms or mental illness, evaluation of their effects and documenting reason for or expected outcomes.
7.2	Consider separate indicator - Percentage of adults with bipolar disorder prescribed lithium who have their dosage adjusted if their plasma lithium levels are outside the optimum range.
7.4	Review with aim to monitor progress towards “improved physical health and wellbeing” in line with National Institute for Health and Clinical Excellence (NICE) indicators that apply more focused monitoring of total cholesterol:high-density lipoprotein (HDL) ratio; glucose or HbA1c; cardiovascular disease (CVD) risk assessment; blood pressure; body mass index (BMI) record; and alcohol consumption.

## 5. New QUM indicators suggested for development

Participants also provided feedback on what new indicators would be worthwhile developing. The following indicators were suggested:

- Anticoagulant-related indicators e.g. duplication of therapy, appropriate dosing, appropriate management in perioperative period, appropriate documentation of start/stop/review dates.
- Hospital-acquired complications (HACs)-related indicators e.g. percentage of patients diagnosed with hospital acquired thromboembolism who received VTE prophylaxis inappropriate to VTE risk; proportion of hospitalised patients who have received naloxone; percentage of medication complications where an opioid analgesic is implicated (e.g. drug-related respiratory complication/depression).
- Therapeutic Drug Monitoring (TDM)-related indicators e.g. antimicrobials, clozapine (including appropriate dose adjustment based on levels).
- Pharmacy service indicators e.g. uptake of antimicrobial stewardship (AMS) interventions, intravenous to oral antimicrobial switch appropriateness, time taken for pharmacists to review and verify orders, percentage of digital chemotherapy orders verified according to hospital policy, appropriate counselling regarding teratogenicity and appropriate prescribing of contraceptives for women on valproate; percentage of patients prioritised correctly for pharmacist review (including tool to identify these).
- High risk medicines (HRMs)-related e.g. appropriate prescribing of opioids/sedatives on discharge, appropriate prescribing of chemotherapy (e.g. oral methotrexate) for non-oncological conditions, monitoring system overrides for HRMs, appropriate second person checking for hydromorphone, appropriate initiation and re-commencement and consent of depot injections; appropriate clozapine titration/monitoring/documentation; percentage of patients given rapid tranquilisation who have side effects (per NICE Quality Standard)<sup>10</sup>; percentage of opioid analgesic doses that are extended release; provision of opioid de-escalation plan on discharge; percentage of patients over 65 with a drug burden index and anticholinergic burden risk documented against a validated assessment tool.
- Condition-specific indicators e.g. appropriate management of patients on sodium-glucose co-transporter 2 (SGLT2) inhibitors (also known as 'gliflozins') in the perioperative period; osteoporosis management plans for minimal trauma fractures; mental health conditions relating to borderline or antisocial disorders prescribed antipsychotics/sedatives and anxiety prescribed benzodiazepines or antipsychotics.

## 6. Other issues raised

A number of issues relating to utilisation and relevance of specific indicators also emerged from the surveys. These are summarised below.

### 6.1 Antithrombotics

Percentage of VTE risk assessment completed (NQUM Indicator 1.1) and percentage of VTE risk assessment completed within 24 hours are currently automated as part of the Cerner® Business Objects® reporting at one hospital.

### 6.2 Antibiotics

Two of the five NQUM Indicators (2.1 and 2.2) relating to surgical prophylaxis and DTC-concordant use of antibiotics, were frequently used, while other indicators in this set were under-utilised. Similar indicators are measured in other programs, such as NAPS<sup>6</sup>, Surgical NAPS (SNAPS)<sup>11</sup>, AMS CCS<sup>7</sup> and ACHS<sup>3</sup> indicators. Comments from respondents suggested clinicians were prioritising participation in these audits rather than NQUM Indicators, some of which need archiving or updating.

### 6.3 Medication ordering

The majority of respondents had implemented electronic medication management systems such that NQUM Indicator 3.3 may not have current relevance. Moreover, hospitals still using NSMC will capture this information in the NSMC audit.<sup>4</sup> There may be scope, however, to audit “unlisted” or free text medication orders in electronic medication management systems where error-prone abbreviations are more likely to occur.

### 6.4 Continuity of Care

Respondents commented that some indicators might warrant modernisation to align with digital health system developments including electronic transfer of information between systems. For instance, transfer of medicine-related information between hospital electronic medical records (eMR) and My Health Record, such as the Pharmacist Shared Medicine List (PSML).<sup>9</sup> This includes NQUM Indicators 5.8 and 5.9.

## Discussion

The value of the NQUM Indicators and their ability to drive practice change was acknowledged by all respondents.

### Utilisation of NQUM Indicators

All NQUM Indicators had been used since the 2014 update, with varying frequencies of use reported. The most frequently used indicators align with measures used in other programs. For example, NQUM Indicator 3.2 is a part of other current national indicator sets.<sup>3-6,12</sup> A similar pattern is seen with NQUM Indicators 2.1, 2.2, 3.1, 5.9 and 6.2. However, this is not the sole criterion for frequent use as demonstrated by the popularity of NQUM Indicators 1.1 and 1.3 despite only aligning with two or three other programs. Corresponding with the high frequency of use, NQUM Indicators 1.1, 1.2 and 1.3 rated highly in respondents' priority for automation into eMR. Mandatory measurement of these indicators was frequently reported. Their frequent use supports trend analysis when considering rates of hospital acquired VTE, a current focus of improving practice in HSOs.

Frequent use of the NQUM Indicators is also influenced by the need to provide evidence for accreditation purposes. Nine of the top ten most frequently used NQUM Indicators provide evidence for Standards 3 and 4 of the NSQHSS (Preventing and controlling healthcare-associated infection standard and Medication safety standard, respectively).<sup>12</sup> Accreditation requirements and mandatory reporting requirements should be factored in when considering prioritisation for indicator automation.

Low use of NQUM Indicators by survey respondents should not necessarily be seen to devalue those indicators. In many cases, an indicator's importance was acknowledged by the respondents; however, other priorities including implementation of eMR and COVID-19 pandemic preparation and management had intervened.

Widespread participation in the NAPS and SNAPS audits were reported by respondents which may have impacted on use of the antimicrobial NQUM Indicators. These comprehensive snapshot audits cross-over with parameters measured for NQUM Indicators 2.1, 2.2, 2.3, 2.4 and 2.5 suggesting there may be a duplication of work and potentially less utility for these NQUM Indicators. However, SNAPS and NAPS are labour intensive audits performed annually, whereas the NQUM antibiotic indicator set is more targeted and therefore enable snapshot audits that may help monitor activity and quality improvement progress between annual audits. Additionally, availability of the AMS CCS and corresponding clinical indicators was reported to be frequently used by respondents, which may also contribute to reduced utility of the NQUM antibiotic indicator set.

Despite strong evidence that discharge medication prescription in diseases such as acute coronary syndrome and heart failure lead to improved patient outcomes<sup>13,14</sup> there was a low reported use of NQUM Indicators 5.1 and 5.2, which was also noted in the previous review. The previous study highlighted a common perception that specialist clinical units may have been collecting indicator data because it reflects directly on their prescribing practices.<sup>15</sup> It is unclear what impacted on the low utility in this review; however, it is likely that the value of these indicators would be enhanced if indicator collection and feedback was undertaken as a

collaborative, multidisciplinary exercise. There is significant potential for collaborative data collection for NQUM Indicators 1.6, 4.1, 4.2, 5.1, 5.2 and 5.6. Moreover, collaboration is more likely to drive and maintain practice change. Despite their relative low utility, it was suggested that indicators relating to HRMs or serious medical conditions (such as the aforementioned indicators) should be prioritised for automation. Development of Acute Coronary Syndromes CCS in 2019 supports the suggestion that these NQUM Indicators should be prioritised for automation.

### **Considerations for NQUM Indicator automation**

Frequency of use should not be the sole criterion for NQUM Indicator automation. Some indicators are targeted at special patient groups that may attend specialist hospitals and therefore rate lower in reported utilisation. For example, NQUM Indicator 3.4 (percentage of paediatric medication orders that include the correct dose per kilogram (or body surface area) AND an effective safe total dose) were not used in hospitals whose focus is adult medicine. This may also apply to NQUM Indicator 3.6 (percentage of patients receiving cytotoxic chemotherapy whose treatment is guided by a hospital approved chemotherapy treatment protocol). A significant proportion of respondents have electronic chemotherapy prescribing systems, which may enable automated data collection.

Nevertheless, availability of data points in eMR, collection of relevant data points and interoperability of electronic systems will be significant factors when considering automation of NQUM Indicators in addition to standardised practice (or lack thereof) across health system organisations with respect to processes or systems. For example, in order to automate NQUM Indicator 5.6 (percentage of patients with asthma that are given a written asthma action plan at discharge AND a copy is communicated to the primary care clinician), a standardised approach to electronically documenting asthma action plans and whether they were communicated to the primary care clinician would be required. Data would then need to be extracted from various sources (e.g. eMR and My Health Record) to facilitate electronic reporting. Conversely, NQUM Indicator 1.1 (percentage of hospitalised adult patients that are assessed for risk of venous thromboembolism) requires data from one system only (for hospitals using Cerner® eMR) and would be easier to automate. In fact, one respondent reported there is already automated reporting in place assessing NQUM Indicator 1.1 using Cerner® Business Objects® reporting. Future consideration should be given to interoperability with other eMR or outcome data for more meaningful assessment of quality measurement and performance.

Respondents suggested that another method by which to assess prioritisation for automation would be to prioritise NQUM Indicators that assess practice involving HRMs in order to monitor risk mitigation strategies and requirements of the NSW High-Risk Medicines Management Policy Directive ([PD2020\\_045](#)).<sup>16</sup> This may include NQUM Indicators 1.3, 1.4, 1.5, 1.6, 2.3, 3.6, 5.7, 6.1 and 6.3.

Whilst NQUM Indicator 6.4 (percentage of submissions for formulary listing of new chemical entities for which the Drug and Therapeutics Committee [DTC] has access to adequate information for appropriate decision making) remains important, it relies on information obtained outside the medical record (whether electronic or not) and data collection by DTCs

or equivalent. Electronic DTC software applications, which standardise records across hospitals, may facilitate data collection and indicator measurement.

### **Potential modification and archiving of NQUM Indicators**

An important consideration in the utility and retention of the NQUM Indicators is their currency with evidence-based guidelines. NQUM Indicator review must be constant and indicators developed or modified to meet current guideline recommendations.

Australian guideline recommendations assessing pneumonia severity changed in the most recent edition of Therapeutic Guidelines Antibiotic. Validated tools including SMART-COP<sup>17</sup> and CORB<sup>18</sup> have been replaced by clinical parameters or 'red flags' which can be used to help identify pneumonia severity and guide medication therapy choices.<sup>19</sup> As a result, NQUM Indicator 2.4 (Percentage of adult patients with community acquire pneumonia that are assessed using an appropriate validated objective measure of pneumonia severity) will need updating to reflect these new recommended practices.

The same also applies to NQUM Indicator 5.4 (percentage of patients on warfarin that receive written information regarding warfarin management prior to discharge) which would benefit from inclusion of direct acting oral anticoagulants (DOACs) now licensed for many of the same indications as warfarin, a significant change in practice since the last publication of the NQUM Indicators in 2014.

Changes in terminology and expanded QUM targets must also be considered. For example, 'antimicrobial' is now a major focus of quality health care strategies including NSQHSS Standard 3 'Preventing and controlling healthcare-associated infection'.<sup>12</sup> It is a more appropriate term than 'antibiotic' for the existing antibiotic indicator set and specifically NQUM Indicator 2.2. Other terminology changes suggested by respondents were rebadging the medication ordering indicator set to 'medicines documentation' or 'medicines management', rebadging the continuity of care indicator set to 'transitions of care', clarifying psychotropic versus antipsychotic for NQUM Indicator 7.1, which may help capture inappropriate use of antipsychotics for patients in aged care facilities and amending NQUM Indicator 5.7 to include antipsychotics as well as sedatives to capture inappropriate prescribing in delirium.

NQUM Indicator 6.3 (percentage of parenteral opioid dosage units that are pethidine) was initially driven by results from a NSW TAG project in 2002/3 Improving Analgesia in Hospital Emergency Departments – Optimising Use of Pethidine, which identified that pethidine was widely used in hospital emergency departments, despite safer alternatives being available.<sup>20</sup> A clinical practice change is evident by many respondents reporting removal of pethidine from hospital formularies. This has likely been driven by several factors including the 2002 NSW TAG project, use of NQUM Indicator 6.3, NSW TAG letters written to NSW DTCs in 2016 and 2018 outlining the CEC's NSW Maternal and Perinatal Root Cause Analysis Review Committee recommendations to remove pethidine from formulary. However, the results of our survey are primarily confined to public hospitals and anecdotal reports suggest pethidine remains a QUM issue for private hospitals.

Use of NQUM Indicators 4.1 and 4.2 was noted to be low in the current survey as well as the previous review (although there was strong support for automation in this review, likely

indicating the recent focus on opioid stewardship in HSOs). Respondents noted that modification of both indicators may be warranted. NQUM Indicator 4.1 may benefit with inclusion of a patient's functional capacity, rather than unidimensional pain scores alone. It was also proposed that NQUM Indicator 4.2 should monitor the content of the written pain management plan in order that reduced opioid-related harm is achieved. Suggested content change included assessment of functional capacity, multimodal analgesia, and instructions for use, risks and de-escalation in the pain management plan. Any amended indicators will require further consultation and consideration for field testing.

### **Development of new QUM indicators**

Respondents provided substantial feedback about new potentially useful QUM indicators. A frequent theme that featured were indicators relating to HRMs particularly in the evolving field of opioid stewardship. Use of opioids such as fentanyl and hydromorphone are now recognised as QUM challenges. The ACSQHC's HACs list of adverse events includes at least one medication complication where drug related respiratory complications/depression could be caused by opioid analgesics.<sup>21</sup> In light of this and feedback from respondents, there appears to be a need for opioid-specific medication management indicators targeting issues such as inappropriate use of extended release opioids/transdermal patches and prescribing at discharge when newly commenced in hospital among others.

Use of new technologies including TDM as well as new medicines including SGLT2 inhibitors would be a valuable field to explore for development of new indicators. Respondents noted the potential for development of indicators with relevance across various healthcare settings. For example, the use of antipsychotics in behavioural and psychological symptoms of dementia in geriatric wards and aged care facilities, as well as use of antipsychotics for acute mental health purposes, would be useful. Another example is the use of NQUM Indicators such as 5.1 and 5.2 at various times of the patient's journey (e.g. at discharge from hospital, at entry and discharge from cardiac rehabilitation programs and at relevant times thereafter).

Many antibiotic-related practices are covered by a combination of NAPS, AMS CCS and/or ACHS antibiotic indicators (although how well these are integrated to give a view of a hospital's overall concordance with antibiotic-related best practice is unclear). However, there are currently no indicators assessing TDM, utility and appropriateness of electronic approval systems, uptake of AMS interventions, antibiotic shortages, time delays in antibiotic administration or intravenous (IV) to oral switch. These gaps could be addressed in QUM indicator development or modification following appropriate consultation.

When deliberating over development of new indicators, it is important to consider an indicator's ability to be applied to multiple settings and/or patients populations e.g. paediatric patients and patients in aged care facilities. Also, future consideration should be given to interoperability with other eMR or linkage to outcome data for more meaningful assessment of quality measurement and performance. Newly developed indicators will require wide consultation and field testing in accordance with previous NSW TAG development processes.

## Limitations

It is not known how many hospitals or HSOs could have responded to these nationally distributed surveys. It is likely that the COVID-19 pandemic affected participation. Furthermore, the invitation for survey participation focused on the public hospital sector. Only three responses from the private hospital sector were received. The respondents were considered representative of Australian public hospitals in metropolitan, regional and rural locations. For example, this is demonstrated by responses to the acute mental health NQUM Indicator survey where a quarter of respondents (7/28) were from regional hospitals across four Australian states. The investigators consider that a broad experience of indicator utility was captured and results are likely generalisable, particularly for hospitals in the public hospital sector. Reports from the ACHS of indicator usage show high use of QUM indicators in the private hospital sector and representation of this sector should be included in any relevant working groups for indicator modification or development.

The surveys did not enquire about barriers to NQUM Indicator use, which should be considered in the context of future modifications to the indicator sets. The review also did not include the recently developed NSW TAG QUM Indicators for Polypharmacy.<sup>22</sup>

## Conclusions

Results indicate the NQUM Indicators are useful tools to measure quality use of medicines and are used relatively frequently by a broad range of Australian HSOs. However, practice change, evidence-based gaps in care now resolved and new emerging gaps mean review and update of the indicators is needed. A steering committee was convened in early 2021 to review data and make recommendations regarding future direction of the NQUM Indicator sets and consider funding models to facilitate the update. Modified or newly developed indicators will require wide consultation and field testing. NSW TAG will continue to liaise with eHealth and other relevant stakeholders to advocate for automation of NQUM Indicators within eMR systems.

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# Appendices

## Appendix 1: NQUM Indicator summary

No.	Indicator	QUM domain addressed by indicator
<b>Antithrombotic therapy</b>		
1.1	Percentage of hospitalised adult patients that are assessed for risk of venous thromboembolism	Judicious selection
1.2	Percentage of hospitalised adult patients that receive venous thromboembolism prophylaxis appropriate to their level of risk	Judicious selection Appropriate choice
1.3	Percentage of patients prescribed enoxaparin whose dosing schedule is appropriate	Safe and effective use
1.4	Percentage of patients prescribed hospital initiated warfarin whose loading doses are consistent with a drug and therapeutics committee approved protocol	Safe and effective use
1.5	Percentage of patients with an INR above 4 whose dosage has been adjusted or reviewed prior to the next warfarin dose	Safe and effective use
1.6	Percentage of patients with atrial fibrillation that are discharged on oral anticoagulants	Judicious selection
<b>Antibiotic therapy</b>		
2.1	Percentage of patients undergoing specified surgical procedures that receive an appropriate prophylactic antibiotic regimen	Appropriate choice Safe and effective use
2.2	Percentage of prescriptions for restricted antibiotics that are concordant with drug and therapeutics committee approved criteria	Appropriate choice Safe and effective use
2.3	Percentage of patients in whom doses of empirical aminoglycoside therapy are continued beyond 48 hours	Safe and effective use
2.4	Percentage of adult patients with community acquired pneumonia that are assessed using an appropriate validated objective measure of pneumonia severity	Judicious selection
2.5	Percentage of patients presenting with community acquired pneumonia that are prescribed guideline concordant antibiotic therapy	Appropriate choice Safe and effective use
<b>Medication ordering</b>		
3.1	Percentage of patients whose current medicines are documented and reconciled at admission	Appropriate choice Safe and effective use
3.2	Percentage of patients whose known adverse drug reactions are documented on the current medication chart	Appropriate choice Safe and effective use
3.3	Percentage of medication orders that include error-prone abbreviations	Safe and effective use
3.4	Percentage of paediatric medication orders that include the correct dose per kilogram (or body surface area) AND an effective and safe total dose	Safe and effective use
3.5	Percentage of medication orders for intermittent therapy that are prescribed safely	Safe and effective use
3.6	Percentage of patients receiving cytotoxic chemotherapy whose treatment is guided by a hospital approved chemotherapy treatment protocol	Appropriate choice Safe and effective use
<b>Pain management</b>		
4.1	Percentage of postoperative patients whose pain intensity is documented using an appropriate validated assessment tool	Judicious selection Safe and effective use
4.2	Percentage of postoperative patients that are given a written pain management plan at discharge AND a copy is communicated to the primary care clinician	Safe and effective use

<b>Continuity of care</b>		
5.1	Percentage of patients with acute coronary syndrome that are prescribed appropriate medicines at discharge	Judicious selection Appropriate choice
5.2	Percentage of patients with systolic heart failure that are prescribed appropriate medicines at discharge	Judicious selection Appropriate choice
5.3	Percentage of discharge summaries that include medication therapy changes and explanations for changes	Safe and effective use
5.4	Percentage of patients on warfarin that receive written information regarding warfarin management prior to discharge	Safe and effective use
5.5	Percentage of patients with a new adverse drug reaction (ADR) that are given written ADR information at discharge AND a copy is communicated to the primary care clinician	Safe and effective use
5.6	Percentage of patients with asthma that are given a written asthma action plan at discharge AND a copy is communicated to the primary care clinician	Safe and effective use
5.7	Percentage of patients receiving sedatives at discharge that were not taking them at admission	Judicious selection
5.8	Percentage of patients whose discharge summaries contain a current, accurate and comprehensive list of medicines	Appropriate choice Safe and effective use
5.9	Percentage of patients who receive a current, accurate and comprehensive medication list at the time of hospital discharge	Safe and effective use
<b>Hospital-wide medication management policies</b>		
6.1	Percentage of medication storage areas outside pharmacy where potassium ampoules are available	Safe and effective use
6.2	Percentage of patients that are reviewed by a clinical pharmacist within one day of admission	Judicious selection Appropriate choice Safe and effective use
6.3	Percentage of parenteral opioid dosage units that are pethidine	Appropriate choice
6.4	Percentage of submissions for formulary listing of new chemical entities for which the drug and therapeutics committee has access to adequate information for appropriate decision making	Appropriate choice Safe and effective use
<b>Acute mental health care</b>		
7.1	Percentage of as required (PRN) psychotropic medication orders with documented indication, dose (or dose range), frequency and maximum daily dose specified	Safe and effective use
7.2	Percentage of patients taking lithium who receive appropriate monitoring during their inpatient episode	Safe and effective use
7.3	Percentage of patients who receive written and verbal information on regular psychotropic medicines initiated during their admission	Safe and effective use
7.4	Percentage of patients taking antipsychotic medicines who receive appropriate monitoring for the development of metabolic side effects	Safe and effective use
7.5	Percentage of patients prescribed two or more regular antipsychotic medicines at hospital discharge	Judicious selection Safe and effective use

## Appendix 2 - Antithrombotic therapy NQUM Indicator survey

### Antithrombotic Therapy NQUM Indicator Survey

#### Introduction

Thank you for participating in this survey, which is the first in a series of surveys, to evaluate the ongoing utility of the various [National Quality Use of Medicines \(NQUM\) Indicators for Australian Hospitals](#), their suitability for automation (i.e. enabling electronic reporting in hospitals with electronic Medical Records/Medicines Management Systems) and their relative prioritisation for automation.

The NQUM Indicators aim to assist hospitals and clinicians evaluate the safety and quality of medicines management in their health service in areas where there are known gaps between evidence and practice. However, for the indicators to remain useful, they need to be relevant to contemporary practice and incorporate the latest evidence.

This survey will focus on QUM Indicators for ANTITHROMBOTIC THERAPY only. The remaining QUM indicator topics will be surveyed in due course.

NSW TAG would like to request that all relevant clinicians (pharmacists, doctors and nurses) have the opportunity to respond to this survey. This may include: members of stewardship programs for anticoagulants, VTE or antithrombotics, haematologists and other clinicians, pharmacy directors, QUM, DUE and/or senior pharmacists with a good understanding of the recent QUM activities of their hospital/Health Service Organisation (HSO). More than one respondent per hospital/HSO is welcome.

Please note the relevant timeframe for informing the responses to this survey is from 2014 onwards, when the most recent version of the NQUM Indicators was published.

**The survey consists of 14 questions and takes approximately 15 minutes to complete.** Responses may be saved and/or edited until the survey is submitted.

**The survey is open from 28 January 2020 to 18 February 2020.**

Ethics approval has been granted by the St Vincent's Hospital Network HREC. Participation in the survey is deemed to be consent. However, you may change your mind and withdraw from the study at any stage. No identifiable information will be published. Your contact details are collected in case NSW TAG needs to clarify a survey response. The collated (non-identifiable) responses will be written in a report that will be found on the NSW TAG website. The results may also be presented at conference proceedings.

[Next](#)

### Antithrombotic Therapy NQUM Indicator Survey

#### Demographics

Data will be non-identifiable for reporting purposes

\* 1. Name and position of person completing the survey

(This will not be used for any comparisons; only for follow-up purposes if needed)

\* 2. Name of participant's hospital/health service organisation (HSO).  
(Please provide name in full)

NB. No hospitals/HSOs will be identifiable in the survey report. This information will be used to group hospitals, when relevant.

\* 3. In which jurisdiction does your hospital/ Local Health District/ HSO operate?

4. Contact telephone number:

\* 5. Contact email address (for follow-up purposes only if clarification required):

\* 6. Does your hospital/LHD/HSO have electronic Medicines Management Systems (eMMS) currently implemented?

Select all that apply

No; paper medication charts only

Cerner

MedChart

Critical care prescribing system (e.g. eRIC/ICCA)

Antimicrobial approval system (e.g. eASY, Guidance etc)

Chemotherapy prescribing system (e.g. MOSAIQ)

Other (please specify)

7. For those hospitals/HSOs using hybrid systems (i.e. paper charts and eMMS) for medication prescribing/administration, please briefly outline how this may impact monitoring performance of quality use of antithrombotics.

[Prev](#) [Next](#)

**Antithrombotic Therapy NQUM Indicator Survey**

**Usefulness**

\* 8. Please indicate the frequency with which you have used the following Antithrombotic Therapy NQUM Indicators.

**NB: you may select multiple tick boxes if more than one answer applies e.g. 'used once' AND 'used an amended version'. Please outline amendments and reasons for the amendments in the comments field below**

	Not used(0)	Used once (1)	Used more than once (2)	Used frequently (3)	Used an amended version (4)
1.1 Percentage of admitted adult patients that are assessed for risk of venous thromboembolism	<input type="checkbox"/>				
1.2 Percentage of hospitalised adult patients that receive venous thromboembolism prophylaxis appropriate to their level of risk	<input type="checkbox"/>				
1.3 Percentage of patients prescribed enoxaparin whose dosing schedule is appropriate	<input type="checkbox"/>				
1.4 Percentage of patients prescribed hospital initiated warfarin whose loading doses are consistent with a drug and therapeutics committee approved protocol	<input type="checkbox"/>				
1.5 Percentage of patients with an INR above 4 whose dosage has been adjusted or reviewed prior to the next warfarin dose	<input type="checkbox"/>				
1.6 Percentage of patients with atrial fibrillation that are discharged on oral anticoagulants	<input type="checkbox"/>				
5.4 Percentage of patients on warfarin that receive written information regarding warfarin management prior to discharge	<input type="checkbox"/>				

Comments: Please indicate what amendments (if any) were made to the existing indicators and why.

**Antithrombotic Therapy NQUM Indicator Survey**

**Prioritisation for automation in electronic Medical Records/Management Systems**

\* 8. Please indicate which of the following antithrombotic therapy NQUM indicators would be a priority for your hospital to build into electronic Medical Records/Management Systems.

Outline reasons why/why not in the comments section

	Yes	No	Maybe
1.1 Percentage of hospitalised adult patients that are assessed for risk of venous thromboembolism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1.2 Percentage of hospitalised adult patients that receive venous thromboembolism prophylaxis appropriate to their level of risk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1.3 Percentage of patients prescribed enoxaparin whose dosing schedule is appropriate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1.4 Percentage of patients prescribed hospital initiated warfarin whose loading doses are consistent with a drug and therapeutics committee approved protocol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1.5 Percentage of patients with an INR above 4 whose dosage has been adjusted or reviewed prior to the next warfarin dose	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1.6 Percentage of patients with atrial fibrillation that are discharged on oral anticoagulants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.4 Percentage of patients on warfarin that receive written information regarding warfarin management prior to discharge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 10. Which indicator would be the highest priority for automation in your hospital? (1/10)

**Antithrombotic Therapy NQUM Indicator Survey**

Other Antithrombotic Therapy Indicators/DUEs

11. What other indicators/DUEs have you used or undertaken related to the quality use of antithrombotic medicines? 

12. Please outline what, if any, indicators/DUEs related to antithrombotic use have mandatory reporting requirements at your hospital/LHD/H SO: 

13. What changes/additions do you recommend to the current NQUM Indicator set for antithrombotic therapy?

Some examples may include:

- detecting duplication of antithrombotic therapy
- appropriate dosing of DOACs
- appropriate management of DOACs in peri-operative period
- Indicator 5.4 amended to include DOACs (rather than warfarin only)
- peri-operative therapy - bridging/appropriate withholding?
- stroke management 

14. If you have already automated indicator reporting: 

a) Please describe which indicator(s) and how this has been achieved?

b) Has this been linked to any other eMR or outcome data?

c) How are the results used? e.g. how often are they measured?; who receives reports of results?; what processes do they inform etc?

**Antithrombotic Therapy NQUM Indicator Survey**

Thank you for your participation.

Thank you for your participation. It is greatly appreciated. A report of survey results will be published on the NSW TAG website (nswtag.org.au) in 2020 and will inform discussions with relevant stakeholders.

## Appendix 3 - Antibiotic therapy NQUM Indicator survey



**NSW  
TAG**

NSW  
Therapeutic  
Advisory  
Group Inc.

Advancing  
quality use  
of medicines  
in NSW

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**Antibiotic Therapy NQUM Indicator Survey**

**Introduction**

Thank you for participating in this survey, which is part of a series of surveys, to evaluate the ongoing utility of the various [National Quality Use of Medicines \(NQUM\) Indicators for Australian Hospitals](#), their suitability for automation (i.e. enabling electronic reporting in hospitals with electronic Medical Records/Medicines Management Systems) and their relative prioritisation for automation.

The National QUM Indicators aim to assist hospitals and clinicians evaluate the safety and quality of medicines management in their health service in areas where there are known gaps between evidence and practice. However, for the indicators to remain useful, they need to be relevant to contemporary practice and incorporate the latest evidence.

This survey will focus on the National QUM Indicators for ANTIBIOTIC THERAPY only. The remaining QUM indicator topics will be surveyed in due course.

NSW TAG would like to request that all relevant clinicians (pharmacists, doctors and nurses) have the opportunity to respond to this survey. This may include: Antimicrobial Stewardship (AMS) program members, pharmacy directors, AMS, QUM, DUE and/or senior pharmacists and clinical governance units with a good understanding of recent QUM activities of their hospital/Health District/ Health Service Organisation (HSO). More than one respondent per hospital/HSO is welcome.

Please note the relevant timeframe for informing the responses to this survey is from 2014 onwards, when the most recent version of the NQUM Indicators was published.

**The survey consists of 15 questions and takes approximately 15 minutes to complete.** Responses may be saved and/or edited until the survey is submitted.

**The survey is open from 25 February 2020 to 17 March 2020.**

Ethics approval has been granted by the St Vincent's Hospital Network HREC. Participation in the survey is deemed to be consent. However, you may change your mind and withdraw from the study at any stage. No identifiable information will be published. Your contact details are collected in case NSW TAG needs to clarify a survey response. The collated (non-identifiable) responses will be written in a report that will be found on the NSW TAG website. The results may also be presented at conference proceedings.

Next

**Antibiotic Therapy NQUM Indicator Survey**

**Demographics**

Data will be non-identifiable for reporting purposes

\* 1. Name and position of person completing the survey

*(This will not be used for any comparisons only for follow-up purposes if needed)*

\* 2. Name of participant's hospital/health service organisation (HSO).  
(Please provide name in full)

*NB. No hospitals/HSOs will be identifiable in the survey report. This information will be used to group hospitals, when relevant.*

\* 3. In which jurisdiction does your hospital/ Local Health District/ HSO operate?

4. Contact telephone number:

\* 5. Contact email address (for follow-up purposes only if clarification required):

\* 6. Does your hospital/LHD/HSO have electronic Medicines Management Systems (eMMS) currently implemented?

Select all that apply

- No; paper medication charts only
- Camer
- MedChart
- Critical care prescribing system (e.g. eRIC/ICCA)
- Antimicrobial approval system (e.g. eASY, Guidance etc)
- Chemotherapy prescribing system (e.g. MOSAIC)
- Other (please specify)

7. For those hospitals/HSOs using hybrid systems (i.e. paper charts and eMMS) for medication prescribing/administration, please briefly outline how this may impact monitoring performance of antibiotic QUM processes.

Prev
Next

### Antibiotic Therapy NQUM Indicator Survey

#### Usefulness

\* 8. Please indicate the frequency with which you have used the following Antibiotic Therapy NQUM Indicators.

NB: you may select multiple tick boxes if more than one answer applies e.g. 'used once' AND 'used an amended version'. Please outline amendments and reasons for the amendments in the comments field below

	Not used(0)	Used once (1)	Used more than once (2)	Used frequently (3)	Used an amended version (4)
2.1 Percentage of patients undergoing specified surgical procedures that receive an appropriate prophylactic antibiotic regimen	<input type="checkbox"/>				
2.2 Percentage of prescriptions for restricted antibiotics that are concordant with drug and therapeutics committee approved criteria	<input type="checkbox"/>				
2.3 Percentage of patients in whom doses of empirical aminoglycoside therapy are continued beyond 48 hours	<input type="checkbox"/>				
2.4 Percentage of adult patients with community acquired pneumonia that are assessed using an appropriate validated objective measure of pneumonia severity	<input type="checkbox"/>				
2.5 Percentage of patients presenting with community acquired pneumonia that are prescribed guideline concordant antibiotic therapy	<input type="checkbox"/>				

Comments: Please indicate what amendments (if any) were made to the existing indicators and why.

Prev Next

### Antibiotic Therapy NQUM Indicator Survey

#### Prioritisation for automation in electronic Medical Records/Managements Systems

\* 5. Please indicate which of the following antibiotic therapy indicators would be a priority for your hospital to build into electronic Medical Records/Medicines Management Systems.

Outline reasons why/why not in the comments section

	Yes	No	Maybe
2.1 Percentage of patients undergoing specified surgical procedures that receive an appropriate prophylactic antibiotic regimen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.2 Percentage of prescriptions for restricted antibiotics that are concordant with drug and therapeutics committee approved criteria	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.3 Percentage of patients in whom doses of empirical aminoglycoside therapy are continued beyond 48 hours	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.4 Percentage of adult patients with community acquired pneumonia that are assessed using an appropriate validated objective measure of pneumonia severity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.5 Percentage of patients presenting with community acquired pneumonia that are prescribed guideline concordant antibiotic therapy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 10. Which indicator would be the highest priority for automation in your hospital/LHD/HSO?

Prev Next

**Antibiotic Therapy NQUM Indicator Survey**

Other Antibiotic Therapy Indicators/DUEs/Reporting

**11. Do you participate in surveys of national (or jurisdictional) antibiotic use?**

Tick all that are relevant. 

NAPS (National Antimicrobial Prescribing Survey)

NAUSP (National Antimicrobial Utilisation Surveillance Program)

Other (please specify)

**12. What other indicators/DUEs have you used or undertaken related to the quality use of antimicrobial medicines?**



**13. Please outline what, if any, indicators/DUEs related to antimicrobial use have mandatory reporting requirements at your hospital/LHD/HSO?** 

**14. What changes/additions do you recommend to the current NQUM indicator set for antibiotic therapy?**

Some examples may include:

- new indicators surrounding TDM
- new indicator assessing utility of electronic approval systems
- update or archive 2.4 CAP scoring system in line with Therapeutic Guideline changes



**15. If you have already automated indicator reporting:** 

a) Please describe which indicator(s) and how this has been achieved?

b) Has this been linked to any other eMR or outcome data?

c) How are the results used? e.g. how often are they measured?; who receives reports of results?; what processes do they inform etc?

**Antibiotic Therapy NQUM Indicator Survey**

Thank you for your participation.

Thank you for your participation. It is greatly appreciated. A report of survey results will be published on the NSW TAG website ([nswtag.org.au](http://nswtag.org.au)) in 2020 and will inform discussions with relevant stakeholders.

## Appendix 4 – Medication ordering NQUM Indicator survey

**Medication Ordering NQUM Indicator Survey**

**Introduction**

Thank you for participating in this survey, which is part of a series of surveys, to evaluate the ongoing utility of the various [National Quality Use of Medicines \(NQUM\) Indicators for Australian Hospitals](#), their suitability for automating (i.e. enabling electronic reporting in hospitals with electronic Medical Records/Medicines Management Systems) and the relative prioritisation for automation.

The NQUM Indicators aim to assist hospitals and clinicians evaluate the safety and quality of medicines management in their health service in areas where there are known gaps between evidence and practice. However, for the indicators to remain useful, they need to be relevant to contemporary practice and incorporate the latest evidence.

This survey will focus on QUM Indicators for MEDICATION ORDERING only.

NSW TAG would like to request that all relevant clinicians (pharmacists, doctors and nurses) have the opportunity to respond to this survey. This may include: Oncology/Haematology clinicians, senior pharmacy management, QUM, DUE, oncology/haematology or senior pharmacists with a good understanding of the recent QUM activities of their hospital/ Health District/ Health Service Organisation (HSO). More than one respondent per hospital/HSO is welcome.

Please note the relevant timeframe for informing the responses to this survey is from 2014 onwards, when the most recent version of the QUM Indicators was published.

**The survey consists of 14 questions and takes approximately 15 minutes to complete.** Responses may be saved and/or edited until the survey is submitted. Please note, responses are saved automatically. If you wish to withdraw part way through completing the survey, please email [sharna.glover@svha.org.au](mailto:sharna.glover@svha.org.au).

**The survey is open from 18 August 2020 to 11 September 2020.**

Ethics approval has been granted by the St Vincent's Hospital Network HREC. Participation in the survey is deemed to be consent. However, you may change your mind and withdraw from the study at any stage. No identifiable information will be published. Your contact details are collected in case NSW TAG needs to clarify a survey response. The collated (non-identifiable) responses will be written in a report that will be found on the NSW TAG website. The results may also be presented at conference proceedings.



1 / 8 17%

Next

**Medication Ordering NQUM Indicator Survey**

**Demographics**

Data will be non-identifiable for reporting purposes

**\* 1. Name and position of person completing the survey**

*(This will not be used for any comparisons; only for follow-up purposes if needed)*

**\* 2. Name of participant's hospital/health service organisation (HSO).  
(Please provide name in full)**

*NB. No hospitals/HSOs will be identifiable in the survey report. This information will be used to group hospitals, when relevant.*

**\* 3. In which jurisdiction does your hospital/ Local Health District/ HSO operate?**

**4. Contact telephone number:**

**\* 5. Contact email address (for follow-up purposes only if clarification required):**

**\* 6. Does your hospital/LHD/HSO have electronic Medicines Management Systems (eMMS) currently implemented?**

Select all that apply

- No; paper medication charts only
- Cerner
- MedChart
- Critical care prescribing system (e.g. eRICICCA)
- Antimicrobial approval system (e.g. eASY or Guidance etc)
- Chemotherapy prescribing system (e.g. MOSAIQ)
- Other (please specify)

**7. For those hospitals/HSOs using hybrid systems (i.e. paper charts and eMMS) for medication prescribing/administration, please briefly outline how this may impact monitoring performance of medication ordering processes.**



2 / 6 33%

Prev

Next

**Medication Ordering NQUM Indicator Survey**

Indicator Usefulness

\* 8. Please indicate the frequency with which you have used the following Medication Ordering NQUM Indicators.

NB: you may select multiple tick boxes if more than one answer applies e.g. 'used once' AND 'used an amended version'. Please outline amendments and reasons for the amendments in the comments field below

	Not used(0)	Used once (1)	Used more than once (2)	Used frequently (3)	Used an amended version (4)
3.1 Percentage of patients whose current medicines are documented and reconciled at admission	<input type="checkbox"/>				
3.2 Percentage of patients whose known adverse drug reactions are documented on the current medication chart	<input type="checkbox"/>				
3.3 Percentage of medication orders that include error-prone abbreviations	<input type="checkbox"/>				
3.4 Percentage of paediatric medication orders that include the correct dose per kilogram (or body surface area) AND an effective and safe total dose	<input type="checkbox"/>				
3.5 Percentage of medication orders for intermittent therapy that are prescribed safely	<input type="checkbox"/>				
3.6 Percentage of patients receiving cytotoxic chemotherapy whose treatment is guided by a hospital approved chemotherapy treatment protocol	<input type="checkbox"/>				

Comments: Please indicate what amendments (if any) were made to the existing indicators and why.

3 / 6  50%

Prev Next

**Medication Ordering NQUM Indicator Survey**

Prioritisation for automation in electronic Medical Records/Managements Systems

\* 9. Please indicate which of the following Medication Ordering NQIM Indicators would be a priority for your hospital to build into electronic Medical Records/Medicines Management Systems.

Outline reasons why/why not in the comments section

	Yes	No	Maybe
3.1 Percentage of patients whose current medicines are documented and reconciled at admission	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.2 Percentage of patients whose known adverse drug reactions are documented on the current medication chart	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.3 Percentage of medication orders that include error-prone abbreviations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.4 Percentage of paediatric medication orders that include the correct dose per kilogram (or body surface area) AND an effective and safe total dose	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.5 Percentage of medication orders for intermittent therapy that are prescribed safely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.6 Percentage of patients receiving cytotoxic chemotherapy whose treatment is guided by a hospital approved chemotherapy treatment protocol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 10. Which indicator would be the highest priority for automation in your hospital/LHD/HSO?

4 / 6  67%

Prev Next

### Medication Ordering NQUM Indicator Survey

#### Other Medication Ordering Indicators/DUEs

11. What other indicators/DUEs have you used or undertaken related to medication ordering? 

12. Please outline what, if any, indicators/DUEs related to medication ordering have mandatory reporting requirements at your hospital/LHD/HSO: 

13. What changes/additions do you recommend to the current NQUM indicator set for medication ordering?

Some examples may include:

- unapproved variations to chemotherapy protocols
- receipt of a medicine for which there is a known ADR
- appropriate and timely therapy for stroke patients
- provision of appropriate deprescribing plans




14. If you have already automated indicator reporting: 

a) Please describe which indicator(s) and how this has been achieved?

b) Has this been linked to any other eMR or outcome data?

c) How are the results used? e.g. how often are they measured?; who receives reports of results?; what processes to they inform etc?

5 / 8  83%

### Medication Ordering NQUM Indicator Survey

#### Thank you for your participation.

Thank you for your participation. It is greatly appreciated. A report of survey results will be published on the NSW TAG website (reswtag.org.au) in 2020 and will inform discussions with relevant stakeholders.

6 / 8  100%

## Appendix 5 – Continuity of Care NQUM Indicator survey

### Continuity of Care NQUM Indicator Survey

#### Introduction

Thank you for participating in this survey, which is part of a series of surveys, to evaluate the ongoing utility of the various [National Quality Use of Medicines \(NQUM\) Indicators for Australian Hospitals](#), their suitability for automation (i.e. enabling electronic reporting in hospitals with electronic Medical Records/Medicines Management Systems) and their relative prioritisation for automation.

The NQUM Indicators aim to assist hospitals and clinicians evaluate the safety and quality of medicines management in their health service in areas where there are known gaps between evidence and practice. However, for the indicators to remain useful, they need to be relevant to contemporary practice and incorporate the latest evidence.

This survey will focus on QUM Indicators for CONTINUITY OF CARE only.

NSW TAG would like to request that all relevant clinicians (pharmacists, doctors and nurses) have the opportunity to respond to this survey. This may include: pharmacy directors, QUM, DUE and/or senior pharmacists with a good understanding of the recent QUM activities of their hospital/Health District/ Health Service Organisation (HSO). More than one respondent per hospital/HSO is welcome.

Please note the relevant timeframe for informing the responses to this survey is from 2014 onwards, when the most recent version of the NQUM Indicators was published.

**The survey consists of 14 questions and takes approximately 15 minutes to complete.** Responses may be saved and/or edited until the survey is submitted.

**The survey is open from 30 June 2020 to 27 July 2020.**

Ethics approval has been granted by the St Vincent's Hospital Network HREC. Participation in the survey is deemed to be consent. However, you may change your mind and withdraw from the study at any stage. No identifiable information will be published. Your contact details are collected in case NSW TAG needs to clarify a survey response. The collated (non-identifiable) responses will be written in a report that will be found on the NSW TAG website. The results may also be presented at conference proceedings.

[Next](#)

### Continuity of Care NQUM Indicator Survey

#### Demographics

Data will be non-identifiable for reporting purposes

\* 1. Name and position of person completing the survey

(This will not be used for any comparisons; only for follow-up purposes if needed)

\* 2. Name of participant's hospital/health service organisation (HSO)  
(Please provide name in full)

*NB. No hospitals/HSOs will be identifiable in the survey report. This information will be used to group hospitals, when relevant.*

\* 3. In which jurisdiction does your hospital/ Local Health District/ HSO operate?

4. Contact telephone number:

\* 5. Contact email address (for follow-up purposes only if clarification required):

\* 6. Does your hospital/LHD/HSO have electronic Medicines Management Systems (eMMS) currently implemented?

Select all that apply

No; paper medication charts only

Cerner

MedChart

Critical care prescribing system (e.g. eRIC/ICCA)

Antimicrobial approval system (e.g. eASY or Guidance etc)

Chemotherapy prescribing system (e.g. MOSAID)

Other (please specify)

7. For those hospitals/HSOs using hybrid systems (i.e. paper charts and eMMS) for medication prescribing/administration, please briefly outline how this may impact on measuring performance in medication-related continuity of care:

[Prev](#) [Next](#)

**Continuity of Care NQUM Indicator Survey**

Usefulness

1. Please indicate the frequency with which you have used the following Continuity of Care NQUM Indicators. **ND: you may select multiple tick boxes if more than one answer applies e.g. 'used once' AND 'used an amended version'. Please outline amendments and reasons for the amendments in the comments field below.**

	Not used(0)	Used once (1)	Used more than once(2)	Used frequently (3)	Used an amended version (4)
5.1 Percentage of patients with acute coronary syndromes that are prescribed appropriate medicines at discharge	<input type="checkbox"/>				
5.2 Percentage of patients with systolic heart failure that are prescribed appropriate medicines at discharge	<input type="checkbox"/>				
5.3 Percentage of discharge summaries that include medication therapy changes and explanations for changes	<input type="checkbox"/>				
5.5 Percentage of patients with a new adverse drug reaction (ADR) that are given written ADR information at discharge AND a copy is communicated to the primary care clinician	<input type="checkbox"/>				
5.6 Percentage of patients with asthma that are given a written asthma action plan at discharge AND a copy is communicated to the primary care clinician	<input type="checkbox"/>				
5.7 Percentage of patients receiving medicines at discharge that were not taking them at admission	<input type="checkbox"/>				
5.8 Percentage of patients whose discharge summaries contain a current, accurate and comprehensive list of medicines	<input type="checkbox"/>				
5.9 Percentage of patients who receive a current, accurate and comprehensive medication list at the time of hospital discharge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments: Please indicate what amendments (if any) were made to the existing indicators and why.

Previous Next

**Continuity of Care NQUM Indicator Survey**

Feasibility for automation in electronic Medical Records/Medicine Management Systems

4. Please indicate which of the following continuity of care indicators would be a priority for your hospital to build into electronic Medical Records/Medicine Management Systems.

Outline reasons why/why not in the comments section

	Yes	No	Maybe
5.1 Percentage of patients with acute coronary syndromes that are prescribed appropriate medicines at discharge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.2 Percentage of patients with systolic heart failure that are prescribed appropriate medicines at discharge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.3 Percentage of discharge summaries that include medication therapy changes and explanations for changes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.5 Percentage of patients with a new adverse drug reaction (ADR) that are given written ADR information at discharge AND a copy is communicated to the primary care clinician	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.6 Percentage of patients with asthma that are given a written asthma action plan at discharge AND a copy is communicated to the primary care clinician	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.7 Percentage of patients receiving medicines at discharge that were not taking them at admission	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.8 Percentage of patients whose discharge summaries contain a current, accurate and comprehensive list of medicines	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.9 Percentage of patients who receive a current, accurate and comprehensive medication list at the time of hospital discharge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Which indicator would be the highest priority for automation in your hospital? (1-5)

Previous Next

**Continuity of Care NQUM Indicator Survey**

Other Continuity of Care Indicators/DUEs

11. What other Indicators/DUEs have you used or undertaken related to the continuity of care area? 

12. Please outline what, if any, Indicators/DUEs related to continuity of care use have mandatory reporting requirements at your hospital/LHD/H SO: 

13. What changes/additions do you recommend to the current NQUM Indicator set for continuity of care?

*Some examples may include:*

- new Indicator for provision of de-escalation plan for sedative medications
- update 5.2 to include HFREF terminology 

14. If you have already automated indicator reporting: 

a) Please describe which Indicator(s) and how this has been achieved?

b) Has this been linked to any other eMR or outcome data?

c) How are the results used? e.g. how often are they measured?; who receives reports of results?; what processes to they inform etc?

**Continuity of Care NQUM Indicator Survey**

Thank you for your participation.

Thank you for your participation. It is greatly appreciated. A report of survey results will be published on the NSW TAG website (nswtag.org.au) in 2020 and will inform discussions with relevant stakeholders.

## Appendix 6 – Acute mental health care NQUM Indicator survey

### Acute Mental Health Care NQUM Indicator Survey

#### Introduction

Thank you for participating in this survey, which is part of a series of surveys, to evaluate the ongoing utility of the various [National Quality Use of Medicines \(NQUM\) Indicators for Australian Hospitals](#), their suitability for automating (i.e. enabling electronic reporting in hospitals with electronic Medical Records/Medicines Management Systems) and their relative prioritisation for automation.

The NQUM Indicators aim to assist hospitals and clinicians evaluate the safety and quality of medicines management in their health service in areas where there are known gaps between evidence and practice. However, for the indicators to remain useful, they need to be relevant to contemporary practice and incorporate the latest evidence.

This survey will focus on NQUM Indicators for **ACUTE MENTAL HEALTH CARE** only. The remaining QUM indicator topics will be surveyed in due course.

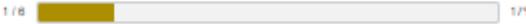
NSW TAG would like to request that all relevant clinicians (pharmacists, doctors and nurses) have the opportunity to respond to this survey. This may include: mental health program directors and team members, Directors of Pharmacy, QUM, DUE, or senior pharmacists with a good understanding of the recent QUM activities of their hospital/Health District/ Health Service Organisation (HSO). More than one respondent per hospital/HSO is welcome.

Please note the relevant timeframe for informing the responses to this survey is from 2014 onwards, when the most recent version of the NQUM Indicators was published.

**The survey consists of 14 questions and takes approximately 15 minutes to complete.** Responses are saved automatically and can be edited until the survey is complete (when using the same computer). If you wish to withdraw part way through completing the survey, please email [sharna.glover@svha.org.au](mailto:sharna.glover@svha.org.au).

**The survey is open from 16 September 2020 to 28 October 2020.**

Ethics approval has been granted by the St Vincent's Hospital Network HREC. Participation in the survey is deemed to be consent. However, you may change your mind and withdraw from the study at any stage. No identifiable information will be published. Your contact details are collected in case NSW TAG needs to clarify a survey response. The collated (non-identifiable) responses will be written in a report that will be found on the NSW TAG website. The results may also be presented at conference proceedings.

1 / 6  17%

[Next](#)

### Acute Mental Health Care NQUM Indicator Survey

#### Demographics

Data will be non-identifiable for reporting purposes

\* 1. Name and position of person completing the survey   
*(This will not be used for any comparisons; only for follow-up purposes if needed)*

\* 2. Name of participant's hospital/health service organisation (HSO).  
(Please provide name in full)

*NB. No hospitals/HSOs will be identifiable in the survey report. This information will be used to group hospitals, when relevant.* 

\* 3. In which jurisdiction does your hospital/ Local Health District/ HSO operate? 

4. Contact telephone number: 

\* 5. Contact email address (for follow-up purposes only if clarification required): 

\* 6. Does your hospital/LHD/HSO have electronic Medicines Management Systems (eMMS) currently implemented?

Select all that apply 

No; paper medication charts only

Cermer

MedChart

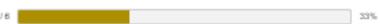
Critical care prescribing system (e.g. eRIC/ICCA)

Antimicrobial approval system (e.g. eASY or Guidance etc)

Chemotherapy prescribing system (e.g. MOSAIC)

Other (please specify)

7. For those hospital/HSOs using hybrid systems (i.e. paper charts and eMMS) for medication prescribing/administration, please briefly outline how this may impact monitoring performance of quality use of medicines used in acute mental health care: 

2 / 6  33%

[Prev](#) [Next](#)

**Acute Mental Health Care NQUM Indicator Survey**

**Usefulness**

\* 8. Please indicate the frequency with which you have used the following Acute Mental Health Care NQUM Indicators.

NS: you may select multiple tick boxes if more than one answer applies e.g. 'used once' AND 'used an amended version'. Please outline amendments and reasons for the amendments in the comments field below

	Not used(0)	Used once (1)	Used more than once (2)	Used frequently (3)	Used an amended version (4)
7.1 Percentage of as required (PRN) psychotropic medication orders with documented indication, dose (or dose range), frequency and maximum daily dose specified	<input type="checkbox"/>				
7.2 Percentage of patients taking lithium who receive appropriate monitoring during their inpatient episode	<input type="checkbox"/>				
7.3 Percentage of patients who receive written and verbal information on regular psychotropic medicines initiated during their admission	<input type="checkbox"/>				
7.4 Percentage of patients taking antipsychotic medicines who receive appropriate monitoring for the development of metabolic side effects	<input type="checkbox"/>				
7.5 Percentage of patients prescribed two or more regular antipsychotic medicines at hospital discharge	<input type="checkbox"/>				

Comments: Please indicate what amendments (if any) were made to the existing indicators and why.

3 / 8  50%

Prev
Next

**Acute Mental Health Care NQUM Indicator Survey**

**Prioritisation for automation in electronic Medical Records/Managements Systems**

\* 9. Please indicate which of the following Acute Mental Health Care NQUM Indicators would be a priority for your hospital to build into electronic Medical Records/Medicines Management Systems.

Outline reasons why/why not in the comments section

	Yes	No	Maybe
7.1 Percentage of as required (PRN) psychotropic medication orders with documented indication, dose (or dose range), frequency and maximum daily dose specified	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7.2 Percentage of patients taking lithium who receive appropriate monitoring during their inpatient episode	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7.3 Percentage of patients who receive written and verbal information on regular psychotropic medicines initiated during their admission	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7.4 Percentage of patients taking antipsychotic medicines who receive appropriate monitoring for the development of metabolic side effects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7.5 Percentage of patients prescribed two or more regular antipsychotic medicines at hospital discharge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

Comments:

Comments:

Comments:

Comments:

\* 10. Which indicator would be the highest priority for automation in your hospital/LHD/HSO?

4 / 8  85%

Prev
Next

**Acute Mental Health Care NQUM Indicator Survey**

Other acute mental health care Indicators/DUEs

11. What other indicators/DUEs have you used or undertaken related to the quality use of medicines in acute mental health care? 

12. Please outline what, if any, indicators/DUEs related to acute mental health care have mandatory reporting requirements at your hospital/LHD/H SO: 

13. What changes/additions do you recommend to the current NQUM indicator set for acute mental health care?

*Some examples may include:*

- appropriate loading regimen and/or oral tolerability test prior to initiation of depot antipsychotic therapy
- clozapine prescribing appropriateness, duration and/or monitoring
- monitoring for adverse effects in those taking psychotropics
- appropriate use of emergency sedation
- counselling regarding teratogenicity potential
- documentation of consent for new medication
- appropriate lamotrigine duration and monitoring
- interventions following overdose
- prescription of benzodiazepines for those receiving ECT



14. If you have already automated indicator reporting: 

a) Please describe which indicator(s) and how this has been achieved?

b) Has this been linked to any other eMR or outcome data?

c) How are the results used? e.g. how often are they measured?; who receives reports of results?; what processes to they inform etc?

5 / 8  63%

Prev Next

**Acute Mental Health Care NQUM Indicator Survey**

Thank you for your participation on this survey.

Thank you for your participation. It is greatly appreciated. A report of survey results will be published on the NSW TAG website (nswtag.org.au) in 2020 and will inform discussions with relevant stakeholders.

6 / 8  100%

Prev Done

## Appendix 7 - Pain management and hospital-wide medication management policies NQUM Indicator survey

**Pain Management and Hospital-wide Medication Management Policies NQUM Indicator Survey**

**Introduction**

Thank you for participating in this survey, which is part of a series of surveys, to evaluate the ongoing utility of the various [National Quality Use of Medicines \(NQUM\) Indicators for Australian Hospitals](#), their suitability for automation (i.e. enabling electronic reporting in hospitals with electronic Medical Records/Medicines Management Systems) and their relative prioritisation for automation.

The NQUM Indicators aim to assist hospitals and clinicians evaluate the safety and quality of medicines management in their health service in areas where there are known gaps between evidence and practice. However, for the indicators to remain useful, they need to be relevant to contemporary practice and incorporate the latest evidence.

This survey will focus on the NQUM Indicators for PAIN MANAGEMENT and HOSPITAL-WIDE MEDICATION MANAGEMENT POLICIES.

NSW TAG would like to request that all relevant clinicians (pharmacists, doctors and nurses) have the opportunity to respond to this survey. This may include: analgesic/opioid stewardship program members, clinical governance units, pharmacy directors, QUM, DUE and/or senior pharmacists with a good understanding of the recent QUM activities of their hospital/Health District/ Health Service Organisation (HSO). More than one respondent per hospital/HSO is welcome.

Please note the relevant timeframe for informing the responses to this survey is from 2014 onwards, when the most recent version of the QUM Indicators was published.

**The survey consists of 14 questions and takes approximately 15 minutes to complete.** Responses are saved automatically and can be edited until the survey is complete (when using the same computer). If you wish to withdraw part way through completing the survey, please email [sharna.glover@svha.org.au](mailto:sharna.glover@svha.org.au).

**The survey is open from 3 November 2020 to 4 December 2020.**

Ethics approval has been granted by the St Vincent's Hospital Network HREC. Participation in the survey is deemed to be consent. However, you may change your mind and withdraw from the study at any stage. No identifiable information will be published. Your contact details are collected in case NSW TAG needs to clarify a survey response. The collated (non-identifiable) responses will be written in a report that will be found on the NSW TAG website. The results may also be presented at conference proceedings.

Next

**Pain Management and Hospital-wide Medication Management Policies NQUM Indicator Survey**

**Demographics**

Data will be non-identifiable for reporting purposes

\* 1. Name and position of person completing the survey

*(This will not be used for any comparisons; only for follow-up purposes if needed)*

\* 2. Name of participant's hospital/health service organisation (HSO).  
(Please provide name in full)

*NB. No hospitals/HSOs will be identifiable in the survey report. This information will be used to group hospitals, when relevant.*

\* 3. In which jurisdiction does your hospital/ Local Health District/ HSO operate?

4. Contact telephone number:

\* 5. Contact email address (for follow-up purposes only if clarification required):

\* 6. Does your hospital/LHD/HSO have electronic Medicines Management Systems (eMMS) currently implemented?

Select all that apply

No; paper medication charts only

Cerner

MedChart

Critical care prescribing system (e.g. eRIC/ICCA)

Antimicrobial approval system (e.g. eASY or Guidance etc)

Chemotherapy prescribing system (e.g. MOSAID)

Other (please specify)

7. For those hospitals/HSOs using hybrid systems (i.e. paper charts and eMMS) for medication prescribing/administration, please briefly outline how this may impact monitoring of performance related to QUM processes for pain management or hospital-wide medication management policies.

Prev
Next

**Pain Management and Hospital-wide Medication Management Policies NQUM Indicator Survey**

Usefulness

\* 6. Please indicate the frequency with which you have used the following Pain Management and Hospital-wide Medication Management Policy NQUM Indicators.

NOTE: you may select multiple tick boxes if more than one answer applies e.g. 'used once' AND 'used an amended version'. Please outline amendments and reasons for the amendments in the comments field below

	Not used (0)	Used once (1)	Used more than once (2)	Used frequently (3)	Used an amended version (4)
4.1 Percentage of postoperative patients whose pain intensity is documented using an appropriate validated assessment tool	<input type="checkbox"/>				
4.2 Percentage of postoperative patients that are given a written pain management plan at discharge AND a copy is communicated to the primary care clinician	<input type="checkbox"/>				
6.1 Percentage of medication storage areas outside pharmacy where potassium ampoules are available	<input type="checkbox"/>				
6.2 Percentage of patients that are reviewed by a clinical pharmacist within one day of admission	<input type="checkbox"/>				
6.3 Percentage of parenteral opioid dosage units that are pethidine	<input type="checkbox"/>				
6.4 Percentage of submissions for formulary listing of new chemical entities for which the drug and therapeutic committee has access to adequate information for appropriate decision making	<input type="checkbox"/>				

Comments: Please indicate what amendments (if any) were made to the existing indicators and why.

Prev Next

**Pain Management and Hospital-wide Medication Management Policies NQUM Indicator Survey**

Prioritisation for automation in electronic Medical Records/Managements Systems

\* 5. Please indicate which of the following NQUM Indicators would be a priority for your hospital to build into electronic Medical Records/Medicines Management Systems.

Outline reasons why/why not in the comments section

	Yes	No	Maybe
4.1 Percentage of postoperative patients whose pain intensity is documented using an appropriate validated assessment tool	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4.2 Percentage of postoperative patients that are given a written pain management plan at discharge AND a copy is communicated to the primary care clinician	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.1 Percentage of medication storage areas outside pharmacy where potassium ampoules are available	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.2 Percentage of patients that are reviewed by a clinical pharmacist within one day of admission	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.3 Percentage of parenteral opioid dosage units that are pethidine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.4 Percentage of submissions for formulary listing of new chemical entities for which the drug and therapeutics committee has access to adequate information for appropriate decision making	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 10. Which indicator would be the highest priority for automation in your hospital/LHD/HSO?

Prev Next

**Pain Management and Hospital-wide Medication Management Policies NQUM Indicator Survey**

Other Pain management and Hospital-wide medication management Indicators/DUEs

11. What other Indicators/DUEs have you used or undertaken related to pain management and/or hospital-wide medication management policies? 

12. Please outline what, if any, Indicators/DUEs related to pain management and/or hospital-wide medication management policies have mandatory reporting requirements at your hospital/LHD/HSO: 

13. What changes/additions do you recommend to the current NQUM Indicator set for pain management and/or hospital-wide medication management policies?

*Some examples may include:*

- provision of written de-escalation plan for opioids on discharge
- addition of opioid stewardship indicators e.g. percentage of patients provided supply of opioids on discharge who haven't received any PRN supply within previous 24 hours
- identification of patients at high risk of medication-related harm
- provision of deprescribing plans for proton pump inhibitors and other potentially inappropriate medicines
- provision of in-hospital medication review



14. If you have already automated indicator reporting: 

a) Please describe which indicator(s) and how this has been achieved?

b) Has this been linked to any other eMR or outcome data?

c) How are the results used? e.g. how often are they measured?; who receives reports of results?; what processes to they inform etc?

Prev
Next

**Pain Management and Hospital-wide Medication Management Policies NQUM Indicator Survey**

Thank you for your participation.

Thank you for your participation. It is greatly appreciated. A report of survey results will be published on the NSW TAG website ([nswtag.org.au](http://nswtag.org.au)) in 2020 and will inform discussions with relevant stakeholders.

Prev
Done

# Acknowledgments

## NSW TAG Project Team

Dr Alexandra (Sasha) Bennett, Executive Officer NSW TAG  
Ms Sharna Glover, QUM Project Officer NSW TAG  
Ms Sarah Dinh, QUM Project Officer NSW TAG  
Dr Don Lohitha Wanasinghe, Project Officer, NSW TAG  
A/Prof Winston Liauw, Chair, NSW TAG Electronic Medical Record Quality Use of Medicines Working Group and member, NSW TAG Management Committee

NSW TAG thanks the members from the NSW TAG medSMART Group and the NSW TAG Electronic Medical Record Quality Use of Medicines Working Group for their advice and feedback in the review of the 2014 NQUM Indicators.

NSW TAG thanks CATAG and SHPA for distributing the invitation to participate in the surveys to its members.

NSW TAG thanks Prof Sarah Hilmer, Chair, NSW TAG Management Committee and Prof Asad Patanwala, Chair, NSW TAG Editorial Committee for their review of the report.

## Survey Respondents

The following hospitals and health districts and organisations provided responses to the surveys and we gratefully acknowledge their contribution. We thank all individual respondents to the surveys.

Antimicrobial Stewardship Expert Advisory Committee, CEC, NSW  
Australian Commission on Safety and Quality in Health Care, NSW  
Albury Wodonga Health, VIC  
Alfred Health, VIC  
Alice Springs Hospital, NT  
Auburn Hospital, NSW  
Austin Health, VIC  
Ballarat Health Service, VIC  
Bankstown-Lidcombe Hospital, NSW  
Barwon Health, VIC  
Bowral District Hospital, NSW  
Blacktown/Mt Druitt Hospitals, NSW  
Braidwood Multi-Purpose Service, NSW  
Caboolture Hospital, QLD  
Cabrini Health Service, VIC  
Cairns and Hinterland Hospital and Health Service, QLD  
Calvary Mater Newcastle, NSW  
Calvary Public Hospital, ACT  
Canberra Hospital and Health Services, ACT  
Central Adelaide Local Health Network, SA  
Central Coast Local Health District, NSW  
Chris O'Brien Lifehouse, NSW  
Clinical Excellence Commission, NSW  
Coffs Harbour Clinical Network, NSW  
Colac Area Health, VIC  
Concord Hospital, NSW  
Cumberland Hospital, NSW  
Department of Health, TAS  
Dubbo Base Hospital, NSW  
Eastern Health, VIC  
Fremantle hospital, WA  
Gold Coast Hospital and Health Service, QLD  
Goulburn Valley Health, VIC  
Herberton Hospital, QLD  
Hornsby Hospital, NSW  
Hunter New England Local Health District, NSW  
Ipswich Hospital, QLD  
John Hunter Hospital, NSW  
Joyce Palmer Health Service, QLD  
King Edward Memorial Hospital, WA  
Logan Hospital Metro South Hospital and Health Service, QLD  
Liverpool Hospital, NSW  
Mackay Hospital and Health Service, QLD  
Maitland Hospital, NSW  
Mercy Health, VIC  
Metro North Hospital and Health Service, QLD  
Mid North Coast Local Health District, NSW  
Monash Health, VIC  
Murrumbidgee Local Health District, NSW  
Nepean Hospital, NSW  
Nepean Blue Mountains Local Health District, NSW  
North Metropolitan Health Service, WA  
Northam Regional Hospital, WA  
Northern Beaches Hospital, NSW  
Northern NSW Local Health District, NSW  
Orange Health Service, NSW  
Peninsula Health, VIC  
Perth Children's Hospital, WA  
Peter MacCallum Cancer Centre, VIC  
Port Macquarie Base Hospital, NSW  
Port Pirie Hospital, SA  
Primary Health Care, Top End Health Service, NT  
Prince Charles Hospital, QLD  
Prince of Wales Hospital, NSW  
Princess Alexandra Hospital, QLD  
Queen Elizabeth Hospital, SA  
Rockingham General hospital, WA  
Royal Darwin Hospital, NT  
Royal Hobart Hospital, TAS  
Royal North Shore Hospital, NSW  
Royal Prince Charles Hospital, QLD

Royal Victorian Eye and Ear Hospital, VIC  
Shoalhaven District Memorial Hospital, NSW  
Sir Charles Gairdner Hospital, WA  
St George Hospital, NSW  
St John of God Subiaco, WA  
St Vincent's Public Hospital, NSW  
St Vincent's Public Hospital, VIC  
South East Sydney Local Health District, NSW  
South West Sydney Local Health District, NSW  
Southern NSW Local Health District, NSW  
Sunshine Coast University Hospital, QLD  
Sydney Adventist Hospital, NSW  
Sydney and Sydney Eye Hospital, NSW

Sydney Children's Hospital, NSW  
Sydney Local Health District, NSW  
Townsville University Hospital, QLD  
Tweed Hospital, NSW  
WA Country Health Service, WA  
Wagga Wagga Base Hospital, NSW  
Western Health, VIC  
Westmead Children's Hospital, NSW  
Westmead Hospital, NSW  
West Moreton Hospital and Health Service, QLD  
Wimmera Health Care Group, VIC

Back to [Contents](#) page

