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DEPARTMENT OF HEALTH

Final Report
National Key Performance Indicators
Data Quality Review

21 May 2014

SMS
Management & Technology

1 - EXECUTIVE SUMMARY

The Department of Health engaged SMS Management and Technology to review the data quality of the national Key Performance Indicators (nKPIs), a set of indicators that provides information on process of care and health outcomes, currently reported for Aboriginal and Torres Strait Islander patients of Commonwealth funded Aboriginal primary health care services.

To date there has been some concern expressed within the Aboriginal health sector that there may be issues with the data being reported for the nKPIs. The Department of Health currently has limited visibility and understanding of these potential issues, and engaged SMS to undertake a review in order to:

- Provide an assessment of the nature and extent of data quality issues and concerns in the overall system; and
- Provide advice on strategies to improve data quality

To address these objectives, SMS interviewed a number of organisations and individuals in the sector and analysed a range of data sources relating to nKPI submissions. SMS also reviewed nKPI data quality in the context of the Australian Bureau of Statistics' Data Quality Framework.

Based on this analysis, the review finds that:

1. There is no evidence of system-wide technical problems affecting nKPI data quality. Compared with the later Healthy for Life data collections (2010-2011), nKPI health services are achieving higher levels of compliance more quickly, with broadly comparable levels of data validity.
2. While the collection of nKPIs to date can be regarded as a solid start, the review identifies a number of areas of focus for improving future nKPI data collections. These include recommendations to improve the:
    a. Accuracy and completeness of data for specific indicators
    b. nKPI functionality of specific clinical information systems
    c. Tools provided to health services to preview and improve their nKPI data
3. A key determinant of future nKPI data quality will be enhancing the ongoing capability and capacity of reporting health services to capture, clean, manage and interpret their patient data.
4. While nKPI reporting compliance is high, low levels of engagement in parts of the Aboriginal health sector suggest that challenges remain in moving the nKPI collection from a reporting compliance activity to an embedded Continuous Quality Improvement (CQI) activity.

The review makes the following 33 prioritised recommendations:

High Priority

Category	Recommendation	Number
Immunisation (PI04)	+ NACCHO/ Affiliates to investigate the data capture practices in health services with high levels of immunisation data completeness, and report back to the OCHREStreams Advisory Group	2

Birth weight (PI01, PI02)	+ NACCHO/ Affiliates to investigate the data capture practices in health services with high levels of birth weight data completeness, and report back to the OCHREStreams Advisory Group	9
Communicare	+ Department of Health to consider the feasibility of engaging Communicare to update the Communicare nKPI internal report to include all indicators	17
CAT	+ Department of Health to consider the feasibility of engaging PEN to extend the CAT to include graphical previews and re-identifiability of patient groups for each indicator	20
Birth weight (PI01, PI02)	+ AIHW to raise awareness of the data sources used for nKPI reporting of birth weights through a published user guide; NACCHO/ Affiliates to provide ongoing promotion of awareness	8
General-systems	+ Department of Health to commission a data audit exercise to check the integrity of the extraction process from all compatible CIS, report back to the OCHREStreams Advisory Group, and publish the results	16
Communicare	+ Department of Health to consider the feasibility of implementing a mapping support program for Communicare health services needing support to map custom fields	18
Advisory Group	+ Department of Health to establish and maintain an OCHREStreams advisory group	26
Support	+ AIHW to develop support materials to build health services' understanding of the specific data requirements of the nKPIs	32
General-systems	+ Department of Health to determine how many reporting health services do not have clinical systems, or use incompatible systems, and report back to the OCHREStreams Advisory Group for consideration of options	14
Training	+ OCHREStreams Advisory Group to consider more effective options for providing training to health services in: o Data capture, cleansing and management o More advanced use of the Clinical Audit Tool	30

Medium Priority

Category	Recommendation	Number
CAT	+ Improvement Foundation to investigate reported issue with CAT Scheduler	21
General-indicators	+ Improvement Foundation to continue engagement with the Data Expert Group, as a vehicle for coordinated communication with software vendors	1
General-systems	+ Department of Health and Improvement Foundation to plan that any major software updates relevant to the nKPIs are released no later than three months before the next census date	15
MMEX	+ Improvement Foundation to liaise with ISA Technologies and	22

	KAMSC to monitor progress on improvements in the MMeX nKPI report + AIHW to monitor rate of data quality improvement over next two collections from MMeX health services	
Zedmed	+ Improvement Foundation to monitor progress on Zedmed data extract update	23
PractiX	+ Improvement Foundation to monitor progress on PractiX data extract update	25
Indicators that rely on pathology results	+ Improvement Foundation to monitor Royal College of Pathologists Australasia (RCPA) PUTS and PITUS standardisation projects, and their implementation time table + Improvement Foundation to liaise with the RCPA to understand project implications for pathology providers, software vendors and health services, and report to the OCHREStreams Advisory Group	6
Alcohol status (PI16)	+ NACCHO/ Affiliates to raise awareness among CIS users that an effective work around to update the patient record's date stamp is to insert additional text into the record, at the time of reviewing alcohol status	12
Support	+ Improvement Foundation to build health services' awareness of the CQI feedback functions in OCHREStreams	33
Timeliness	+ Improvement Foundation to increase health service awareness of the importance of timely data extraction using the CAT scheduler (for non-Communicare services)	34
Exception reporting	+ AIHW to monitor health service access to exception reporting, as indicator data from health service systems improves, with a view to phasing out completely over time	35
Indicators that rely on pathology results	+ Improvement Foundation to request that the Data Expert Group works towards a coordinated approach by software vendors for more complete capture of non-numeric pathology data	7
Alcohol status (PI16)	+ Improvement Foundation to provide input to support the development by software vendors of a more intuitive approach to reviewing and maintaining alcohol status in patient records	13
Engagement	+ OCHREStreams Advisory Group to seek ideas from Affiliates and key health services on ways to increase and sustain service engagement.	27
Engagement	+ OCHREStreams Advisory Group to promote awareness by health services (and affiliates) of how nKPI data is being and will be used	28
Engagement	+ OCHREStreams Advisory Group to consider how NACCHO and Affiliates can become more active partners in nKPI data submission, reporting and associated quality improvement initiatives	29
Immunisation (PI04)	+ Department of Health to consider, in consultation with States and Territories: if ACIR data feed is not feasible, remove immunisation from the nKPIs, as it is unlikely that manual	4

	maintenance of immunisation records in health service systems, for the purposes of nKPI reporting, will be sustainable	
Immunisation (PI04)	+ Department of Health to investigate the feasibility of data feeds from the ACIR system to clinical systems in health services; implement if feasible	3
Training	+ Department of Health to consider options for broader CQI support within the CQI program currently underway	34

Lower Priority

Category	Recommendation	Number
Ferret	+ Improvement Foundation to liaise with PEN over the future direction of Ferret	24
MBS items (PI03, PI07, PI08)	+ Improvement Foundation to engage with PEN and encourage plans to integrate the CAT with other billing systems + AIHW to monitor overall data quality improvements in MBS related indicators as other recommendations are implemented, and report back to the OCHREStreams Advisory Group	11
Communicare	+ If unresolvable problems in the Communicare > CAT extract are discovered through the audit process (Recommendation 16), the OCHREStreams Advisory Group should consider other reporting options	19

2 - INTRODUCTION AND BACKGROUND

2.1 - The national Key Performance Indicators

The national Key Performance Indicators (nKPIs) provide information on process of care and health outcomes for Aboriginal and Torres Strait Islander clients. The indicators focus on chronic disease prevention and management, and maternal and child health which are two key areas for achieving the objective of Closing the Gap in life expectancy between Aboriginal and Torres Strait Islander and non-Indigenous Australians.

The purpose of the nKPIs is to improve primary health care delivery by supporting Continuous Quality Improvement (CQI) activity among service providers. The nKPIs also support policy and planning at the national and state/territory level by monitoring progress and highlighting areas for improvement.

The nKPI data set was developed under the National Indigenous Reform Agreement (NIRA) at the request of the Council of Australian Governments (COAG). A Technical Working Group (TWG) was established to inform the development, specification and implementation of the nKPIs. It provides expert advice on the robustness, clinical relevance and operability of the indicators in primary health care settings. The TWG recommended 24 nKPIs to the Australian Health Ministers' Advisory Council (AHMAC).

To date, the nKPIs have been reported by 207 primary health care organisations that receive funding from the Australian Government Department of Health to provide services primarily to Aboriginal and Torres Strait Islander people. 11 indicators have been reported since the initial collection in June 2012, with a further 8 introduced from the June 2013 collection. A breakdown of the numbers of health services reporting in each collection is included in section 4.1.

The Australian Institute of Health and Welfare (AIHW) collects the nKPI data and applies a number of filters to the indicators, such as region, remoteness and organisation size. A range of analyses is produced by the AIHW on the nKPI data, including descriptive statistics and regression modelling. The first analytic report, "The First National Results for the nKPIs: June 2012 to June 2013", will be published by the AIHW in May 2014.

A summary list of the nKPIs is at Appendix 8.1.

2.2 - Objectives for this review of nKPI data quality

The Department of Health is facing the following challenges:

1. nKPI data reported by the AIHW may have some inaccuracies which would reduce the value of AIHW's nKPI reporting
2. The Aboriginal health sector through the National Aboriginal Community Controlled Health Organisation (NACCHO), believes nKPI data to date is not yet valid as a basis for national reporting
3. The Department of Health has insufficient objective knowledge of:
    a. The overall degree of accuracy of the data
    b. The points in the data chain at which data quality issues may occur

Therefore, the objectives of this review are to:

+ Review the data quality of the National Key Performance Indicator (nKPI) dataset collected via the OCHREStreams system
+ Provide an assessment of the nature and extent of data quality issues and concerns in the overall system
+ Provide advice on strategies to improve data quality

2.3 - Scope of this review

In scope	Out of scope
Those data quality variables which relate to the movement and transformations of data through the data chain which begins with Clinical Information Systems (CIS) and ends at the Australian Institute of Health and Welfare (AIHW). These include: + CIS data definitions + CIS data extract for the Clinical Audit Tool (CAT) + Data transformations to calculate nKPI values	+ Clinical data quality or consistency issues due to individual health services' own data practices- i.e. the quality of data in the CIS themselves + nKPI indicator definitions + The interpretation of nKPI data by AIHW + nKPI data submissions from health services in the Northern Territory using the PCIS system

2.4 - High-level findings

1. The review has found no evidence of system-wide technical problems affecting nKPI data quality. Compared with the later Healthy for Life data collections (2010-2011), nKPI health services are achieving higher levels of compliance more quickly, with comparable levels of data validity.
2. While the collection of nKPIs to date can be regarded as a solid start, the review identifies a number of areas of focus for improving future nKPI data collections. These include recommendations to improve the:
    a. Accuracy and completeness of data for specific indicators
    b. nKPI functionality of specific clinical information systems
    c. Tools provided to health services to preview and improve their nKPI data
3. A key determinant of future nKPI data quality will be enhancing the ongoing capability and capacity of reporting health services to capture, clean, manage and interpret their patient data.
4. While nKPI reporting compliance is high, low levels of engagement in parts of the Aboriginal health sector suggest that challenges remain in moving the nKPI collection from a reporting compliance activity to an embedded CQI activity.

2.5 - The structure of this report

To aid the reader, the structural flow of this report is illustrated below in Figure 1.

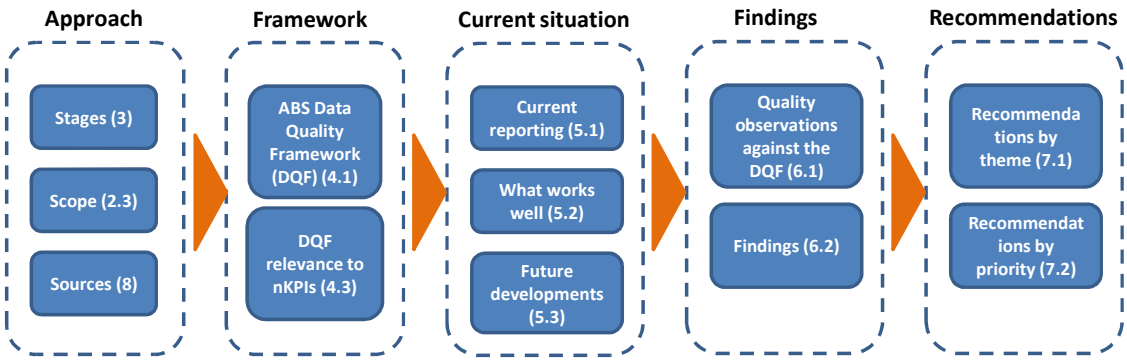

Figure 1: Report structural flow

2.6 - Glossary of terms

Term	Description
ABS	The Australian Bureau of Statistics
ACIR	The Australian Childhood Immunisation Register. Owned by Medicare.
Affiliates	The state and territory peak bodies for Aboriginal Community Controlled Health Care Organisations
AHMAC	The Australian Health Ministers' Advisory Council
AIHW	The Australian Institute of Health and Welfare
Best Practice	A Clinical Information System
CAT	Clinical Audit Tool. A software tool that allows health services to take an extraction of their CIS data for analysis and reporting purposes. Owned by PEN Computing.
CAT Scheduler	A piece of functionality with the Clinical Audit Tool that allows health services to schedule automated extraction(s) at a pre-determined point in the future.
Census date	The date on which health services are asked to extract nKPI data from their Clinical Information Systems
CIS	Clinical Information System
COAG	Council of Australian Governments
Communicare	A Clinical Information System. Owned by the vendor of the same name.

CQI	Continuous Quality Improvement
CSV	Comma Separated Value: a file format used to exchange data.
Data Expert Group	A group convened by the Improvement Foundation with the purpose of working with software vendors on a range of data issues. Membership includes major software vendors, health services and other key organisations.
DQF	Data Quality Framework. A multidimensional framework developed by the ABS for assessing data quality.
Exception report	A process overseen by the AIHW that allows health services to overwrite their extracted data for specified fields within the nKPI set.
Ferret	A Clinical Information System. Owned by PEN Computing.
Health service	A primary care health organisation
HfL	The Healthy for Life program
HL7	Health Level Seven. Standards for Healthcare Data Interchange and Interoperability in Australia.
IF	The Improvement Foundation
ISA Technologies	The software vendor that develops and maintains MMeX
KAMSC	Kimberly Aboriginal Medical Services Council
LOINC	Logical Observation Identifiers Names and Codes. A database and universal standard for identifying medical laboratory observations
MBS	Medicare Benefits Schedule
Medical Director	A Clinical Information System
MediFlex	A billing system
METeOR	Metadata Online Registry. Australia's repository for national metadata standards for health, housing and community services statistics and information.
MMeX	A Clinical Information System
NACCHO	The National Aboriginal Community Controlled Health Organisation
NeHTA	National E-Health Transition Authority

NIRA	National Indigenous Reform Agreement
nKPIs	National Key Performance Indicators. A set of indicators that provides information on process of care and health outcomes, currently reported for Aboriginal and Torres Strait Islander patients
OAG	OCHREStreams Advisory Group. A group that provides advice on the collection, use and reporting of data.
OCHREStreams	The Online Community Health Reporting Environment for health services that receive Commonwealth Government funding.
OSR	On-line Services Report. A report that many health services are required to submit via OCHREStreams.
PCIS	Primary Care Information System. A system in use in the Northern Territory and out of scope for this review.
PEN	PEN Computing, a software vendor owning a number of software packages, including the Clinical Audit Tool and Ferret.
PHMO	Public Health Medical Officer
PIRS	Patient Information Recall System
PITUS	Pathology Information Terminology Units and Standardisation. A project run by the RCPA
PractiX	A Clinical Information System
PUTS	Pathology Units and Terms. A project run by the RCPA.
RACGP	The Royal Australian College of General Practitioners
RCPA	Royal College of Pathologists Australasia
SAS	A statistical analysis software package used by the AIHW
SMS	SMS Management & Technology
Software vendors	The organisations that own various software packages used by health services.
TWG	Technical Working Group. It was established to inform the development, specification and implementation of the nKPIs.
Zedmed	A Clinical Information System.

3 - APPROACH

3.1 - Discovery and design

SMS conducted research on existing documents and reports, with a focus on identifying potential nKPI quality issues. A full list is included in Appendix 8.3. During this stage SMS consulted with the Department of Health, the AIHW and the Improvement Foundation.

3.1.1 - Developing a conceptual model of the nKPI data chain

From this initial research, a conceptual data chain model was developed outlining the data flow from collection through to reporting and the parties and systems involved at each point. This model is included in Section 5.

This model allowed SMS to begin mapping data quality issues at each point in the chain, and strategies that can be used to improve data quality at each point in the short, medium and longer term. Subsequently, this model was used for the basis of interviews and was updated and refined as new information became available.

3.2 - Data collection and analysis

3.2.1 - Analysis of individuals health services' comments to the AIHW

The AIHW provided SMS with a database of comments made by individual health services to the AIHW through their nKPI submission in OCHREStreams. These comments applied to one or more indicators where health services were concerned about the quality of their nKPI submission data. The comments were de-identified by the AIHW, so that no region, service or individual was identifiable in the analysis.

Many of these comments related to real or perceived issues that were out-of-scope for this review (for example comments on the nKPI definitions) – therefore, SMS identified and classified for analysis, only those issues that related to:

- Clinical Information Systems (system functionality and usage by health services)
- Extraction from CIS using the PEN Computer Systems Clinical Audit Tool (CAT)
- The CAT (system functionality and usage by health services)
- The CAT to OCHREStreams process

Analysing these comments allowed SMS to make an assessment of issues that related to indicators, systems and particular combinations of these.

3.2.2 - Interviews with stakeholders concerned with data quality

In order to identify data quality issues with the nKPIs, SMS interviewed a range of stakeholders who were concerned with, or impacted by actual or perceived nKPI data quality issues. SMS interviewed:

- Australian Institute of Health and Welfare (AIHW)
- NACCHO, selected PHMOs and affiliates, and selected health services
- The Improvement Foundation
- Software vendors

A full list of the organisations and individuals interviewed is attached in Appendix 8.2.

Throughout the process, SMS consulted with Department of Health representatives with the Indigenous and Rural Health Division (IHRD): Systems Effectiveness Branch, OCHREStreams and CQI.

The draft data chain model was used to structure the interviews, allowing SMS to collect issues and better understand, contextualise and validate existing issues. Issues were documented at interviews and were, analysed and grouped into themes and mapped to the data chain model. During interviews, respondents also suggested potential solutions.

3.2.3 - Discussion of identified issues

Following the collection and classification of issues from a variety of sources, SMS presented these to the Improvement Foundation and other software vendors to discuss, clarify and validate these from a technical perspective.

3.2.4 - Development of findings and recommendations

Following analysis and consultation, SMS developed findings and recommendations. Initial findings and recommendations were discussed with the Department, and form the basis of the subsequent sections in this report.

4 - WHAT IS DATA QUALITY?

4.1 - Data quality framework

The Australian Bureau of Statistics (ABS) has developed a Data Quality Framework (DQF) for use in evaluating the quality of statistical data collections[1]. This framework provides a platform for the review and assessment of collections such as the nKPIs.

4.2 - Definition of data quality

To define data quality, the DQF states:

> *Among national statistical agencies, quality is generally accepted as "fitness for purpose". Fitness for purpose implies an assessment of an output, with specific reference to its intended objectives or aims. Quality is therefore a multidimensional concept which does not only include the accuracy of statistics, but also stretches to include other aspects such as relevance and interpretability.*[2]

According to the AIHW's METeOR specification of the nKPIs, the intended objectives of the indicators are to[3]:

1. *Indicate the major health issues pertaining to the regular client population of Indigenous-specific primary health care services (especially those of maternal health, early childhood and the detection and prevention of chronic diseases)*
2. *Outline the extent to which government-funded Indigenous-specific primary health care services collect, record and review pertinent data on these issues, and*
3. *Reveal changes in health risks or outcomes that may be driven by the quality of care that government-funded services provide to their clients.*

Of those objectives, items 1 and 2 can be reviewed even at this early stage in the life of the nKPI collection, while item 3 will only emerge as further data builds up over time. Therefore, this review will consider objectives 1 and 2 only.

4.3 - Dimensions of data quality

The DQF describes seven dimensions of data quality. These dimensions will be more or less appropriate or important for any particular data set, depending on its objectives, characteristics and circumstances of collection, and the scope and purpose of the data quality review process.

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[1] http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/1520.0Main%20Features2May%202009?opendocument&tabname=Summary&prodno=1520.0&issue=May%202009&num=&view=

[2] http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/1520.0Main%20Features2May%202009?opendocument&tabname=Summary&prodno=1520.0&issue=May%202009&num=&view=

[3] http://meteor.aihw.gov.au/content/index.phtml/itemId/481307

Figure 2: Dimensions of data quality

The seven dimensions are defined as follows:

Dimension	Description	Relevance to nKPIs	Relevance to current nKPI data quality review
1. Institutional Environment	This dimension refers to the institutional and organisational factors which may have a significant influence on the effectiveness and credibility of the agency producing the statistics. Consideration of the institutional environment associated with a statistical product is important as it enables an assessment of the surrounding context, which may influence the validity, reliability or appropriateness of the product.	**High** Aboriginal primary health care services vary greatly in size, staffing levels, degree of remoteness, mix of health services provided, approaches to data collection and management, and choice of information systems	**High** Many health service environmental factors have a bearing on the collection of data for the nKPIs, including: + Capability and capacity of staff in data entry, cleansing and management + The clinical information system at the health service + The rate of staff turnover at the health service

2. Relevance	This dimension refers to how well the statistical product or release meets the needs of users in terms of the concept(s) measured, and the population(s) represented. Consideration of the relevance associated with a statistical product is important as it enables an assessment of whether the product addresses the issues most important to policy-makers, researchers and to the broader Australian community.	**High** The right concepts must be measured for the nKPIs to be useful. For the nKPIs, the concepts and definitions have been developed by the Technical Working Group, and documented and maintained by the AIHW	**Low** The concepts measured and population represented by the nKPIs are outside the scope of the nKPI data quality review
3. Timeliness	Timeliness refers to the delay between the reference period (to which the data pertain) and the date at which the data become available	**High** If data is not made available quickly to those who need it, its value may be reduced	**Medium** Relevant aspects include: + The availability of information to health services through OCHREStreams + AIHW turnaround times for commentary on health service data + AIHW turnaround times on acceptance of health service data + AIHW turnaround times for development of health service final reports
4. Accuracy	Accuracy refers to the degree to which the data correctly describe the phenomenon they were designed to measure. This is an important component of quality as it relates to how well the data portray reality, which has clear implications for how useful and meaningful the data will be for interpretation or further analysis.	**High** If nKPI data is not sufficiently accurate, it is less able to fulfil its objectives	**High** Relevant aspects of accuracy include: + **Coverage:** consistent application of the agreed client definition for submitted data + **Non-response:** the extent to which data are missing from responses + **Response:** the extent to which responses are incomplete or incorrect + **Timing:** the extent to which the date range of submitted data is aligned with the date range of the collection + **Processing:** the extent to which errors are generated during system transformation or transmission + **Revisions:** the extent to

			which manual data revision from Exception reports introduce or perpetuate errors
5. Coherence	Coherence refers to the internal consistency of a statistical collection, product or release, as well as its comparability with other sources of information, within a broad analytical framework and over time.	**High** The nKPIs contain a number of closely related indicators. The AIHW reviews all submitted data for internal consistency. Where inconsistencies are found, health services are asked to review these data items.	**Low** Interactions between the AIHW and health services relating to data coherence are outside the scope of the nKPI data quality review
6. Interpretability	Interpretability refers to the availability of information to help provide insight into the data. Information available which could assist interpretation may include the variables used, the availability of metadata, including concepts, classifications, and measures of accuracy.	**High** Ease of interpretability may have a bearing on levels of nKPI take up and local use within health services for quality improvement	**High** Current sources of nKPI interpretability information for health services and other stakeholders are: + The AIHW METeOR specification for the nKPIs[4] + The AIHW national nKPI report (the first national report is scheduled for publication in May 2014) In addition, participating health services receive a report prepared by the AIHW following the acceptance of their data for each six monthly collection.
7. Accessibility	Accessibility refers to the ease of access to data by users, including the ease with which the existence of information can be ascertained, as well as the suitability of the form or medium through which information can be accessed.	**High** If data cannot be readily accessed by authorised users, its value may be reduced	**Medium** Relevant aspects include: + The ability of health services to view and retrieve their own submitted data through OCHREStreams + The ability of health services to initiate, respond to requests for, and manage (through OCHREStreams) data sharing with other health services

4 http://meteor.aihw.gov.au/content/index.phtml/itemId/481307

5 - THE CURRENT SITUATION

The current 207 nKPI reporting health services submit nKPI data in a range of ways, depending on their circumstances:

- Taking an extraction of their nKPI data (using the PEN CAT) from their Clinical Information System and submitting to the OCHREStreams web-based portal. Health services using MMeX as their CIS submit data directly to OCHREStreams;
- A manual submission to the OCHREStreams portal; or
- NT nKPI health services submit nKPI data to NT Health, which is compiled and submitted directly to the AIHW (out of scope for this review)

Where the AIHW identifies data quality issues with a service's nKPI submission, they contact the service for clarification. In some cases, the AIHW provides the service with an opportunity to resolve the identified issue through an exception report. This allows the service to overwrite their extracted data for specified fields within the nKPI set.

This process of reporting can be represented as a multi-stage data chain, as shown in Figure 3 below. At each stage of the chain, primary responsibility for nKPI data quality rests with different participants in the nKPI reporting system. Those with primary responsibility at each stage are also shown in Figure 3 below.

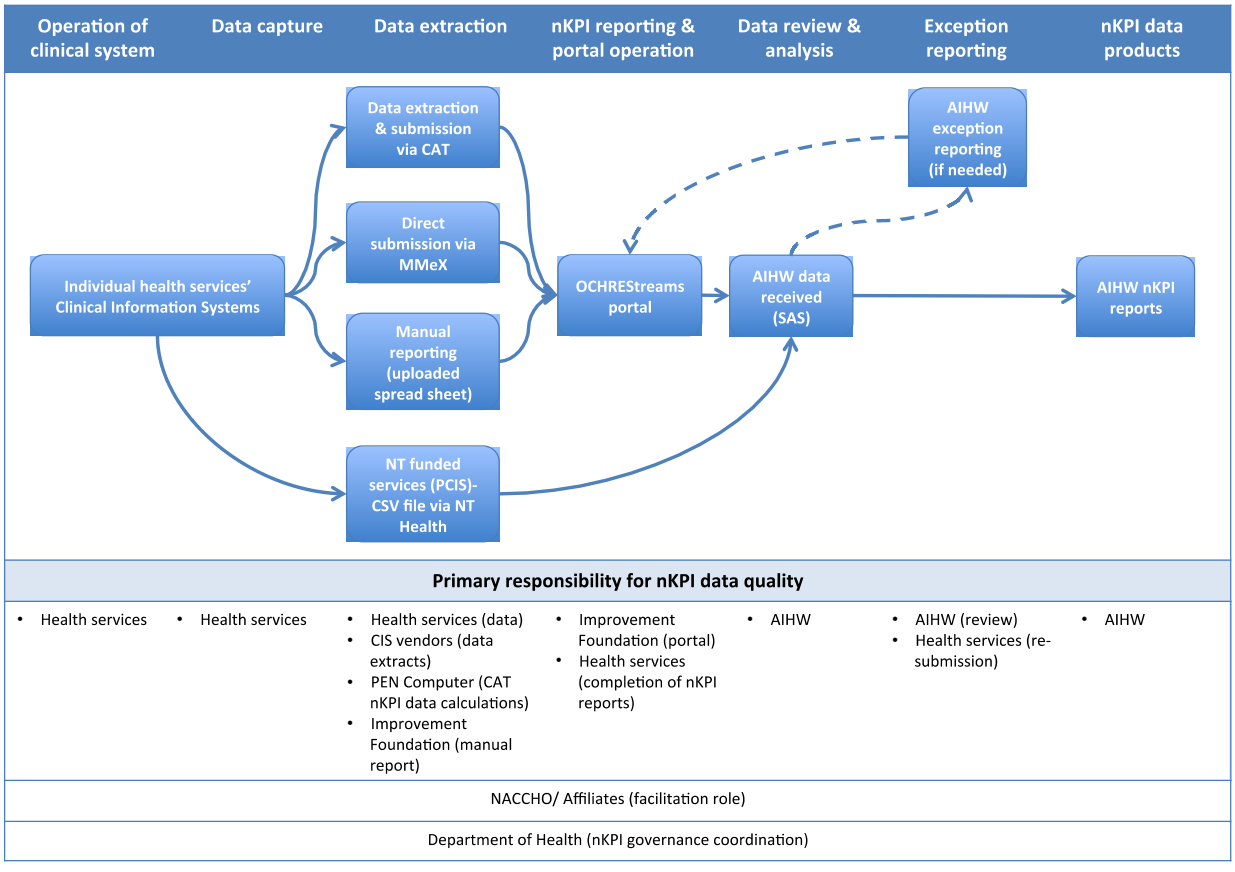

Figure 3: nKPI data chain model

5.1 - The current state of nKPI submissions

The nKPIs were introduced in June 2012 when 11 indicators were reported by 90 health services. Since then, both the number of indicators and the number of reporting health services have progressively increased.

The following table sets out the details of indicators reported by health services to date.

Collection period	Number of Indicators	Number of health services reporting nKPIs (AIHW figures)
June 2012	11	90
December 2012	11	173
June 2013[5]	19	206
December 2013	19	207

5.1.1 - nKPI exception reporting June 2013 collection[6]

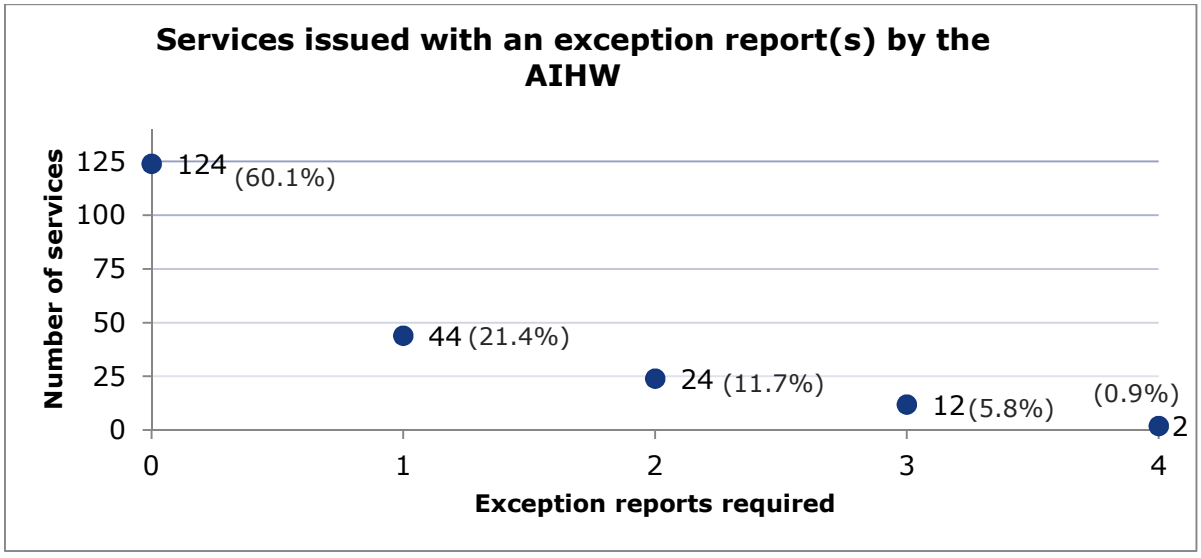

Figure 4: Exception reporting, June 2013 collection

In the June 2013collection, 124 health services (60.1% of total) submitted their nKPI data without requiring an exception report.

Of the 82 health services invited to review aspects of their data through an exception report,

- 44 (21.4% of total services)) resolved the data quality issues through one exception report
- 24 (11.7%) resolved through a second exception report
- 12 (5.8%) resolved through a third exception report
- 2 (0.9%) resolved through a fourth exception report

[5] 26 NT government organisations began reporting in June 2013, while only two reported in the preceding period
[6] Figures between the two graphs may not directly add up due to differences in how some services and CIS are counted, therefore the implications extrapolated are indicative.

5.1.2 - nKPI submissions: CIS in use and data quality issues

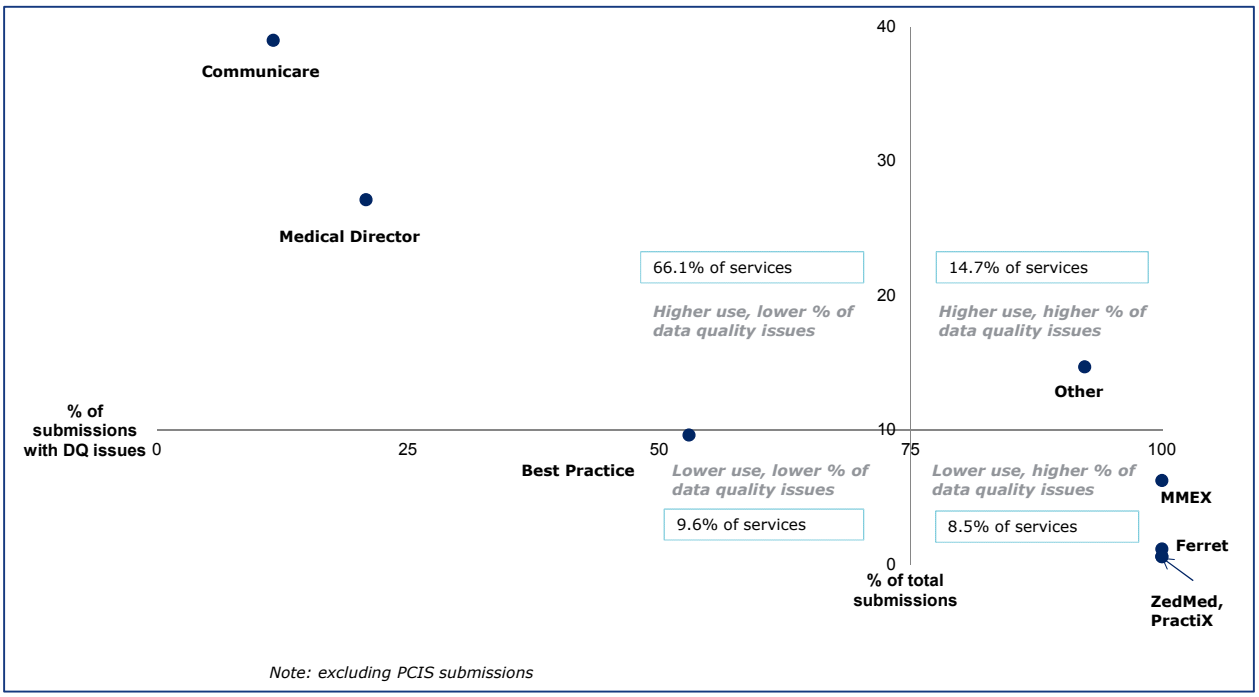

Figure 5: CIS in use and data quality issues

There were 206 nKPI submissions across a range of CIS in June 2013. In 97 of these submissions, the AIHW identified one or more data quality issues. For the purposes of this review, the NT health services submitting from the PCIS system are excluded.

Within the remaining 176 (non-PCIS) submissions, Communicare and Medical Director are used by two-thirds (66.1%) of nKPI health services. Within these services a lower proportion of data quality issues was identified by the AIHW.

33.90% of health services submitted nKPI data through some other CIS (i.e. not Communicare or Medical Director). These included Best Practice, MMeX, Ferret, Zedmed, PractiX and Other (not known by AIHW). Collectively, these health services represented a relatively low proportion of total health services reporting, but services using these systems had a relatively high proportion of data quality issues.

- 11 health services submitted using MMeX. In all of these submissions, the AIHW identified data quality issues
- 26 health services submitted with a CIS labelled 'Other'. In 24 of these submissions, the AIHW recognised that there was a data quality issue
- Two health services submitted using Ferret, one using Zedmed and one using PractiX. In all of these submissions, the AIHW identified data quality issues.

In summary, the two CIS used most widely by reporting health services produced relatively high quality nKPI data.

5.2 - What is working well?

Following the December 2013 nKPI collection, it is clear that many aspects of nKPI reporting are working well. In many cases, where problems have been encountered progress is already being made, or is currently being planned, to resolve them.

Wherever possible, comparisons are drawn with the Healthy for Life (HfL) reporting program[7]. As a whole, early results on the process of submitting nKPI data suggest improvements over previous Healthy for Life collections.

5.2.1 - nKPI submission completeness and timeliness

nKPI experience	Healthy for Life experience
+ In the December 2013 collection, 199 (96%) of the 207 nKPI health services responded by the due date. + (The period between census date and due date for data is 1 month)	+ In the final HfL collection, 39 (46%) of the 85 HfL health services responded by the due date. + (The period between census date and due date for data was 1.5 months)

5.2.2 - nKPI data quality

nKPI experience	Healthy for Life experience
+ In the June 2013 collection, just over 60% of health services successfully submitted their nKPI data without requiring an exception report.	+ In the HfL 2010-2011 collection only 27% of initial data submissions were reported as having no data quality issues[8]
+ nKPI organisations required an average of 0.67 exception reports in December 2013.	+ HfL organisations required an average of 0.93 resubmissions in June 2011
+ A large majority of services (ranging from 82 to 95%) are providing valid data across the 19 indicators (AIHW – nKPI first national results)	+ These figures are comparable with the final Healthy for Life report, in terms of the proportion of services reporting valid data (AIHW, HfL, Results for July 2007 – June 2011, p 14).

In summary, comparing the most recent nKPI submissions with HfL, figures suggest nKPI health services are achieving higher levels of compliance more quickly, with comparable levels of data validity.

In comparing results from the two data collections, it is worth noting that the 207 nKPI reporting health services represent a broader spectrum of health service data management capability, whereas the 85 HfL services were regarded as amongst the higher performing services.

[7] Healthy for Life was an Australian Government program that funded around 100 health services between 2007 and 2011. Its purpose was to improve the health of Aboriginal and Torres Strait Islander mothers, babies and children, improve the early detection and management of chronic disease and reduce the incidence of adult chronic disease by focusing on primary health-care services providing care to Aboriginal and Torres Strait Islander people (AIHW, 2011). Approximately 85 of these services reported data across 10 Essential Indicators covering maternal and child health and chronic disease care.

[8] AIHW, HfL, Results for July 2007 – June 2011, p 12

5.2.3 - Health service comments on nKPI submissions

Reporting health services are able to include comments to AIHW in their reports, either at individual indicator level or at global level. Analysis of de-identified comments suggests the following:

- There is no evidence from health services' perspective of system-wide issues in the nKPI collection process from CIS through the CAT to OCHREStreams.
- There have been concerns noted with the MMeX submission to OCHREStreams, however, these are well known and there are promising developments that suggest future improvements in this area which are outlined below.
- Many health services comment that they are working to get better at their data capture and management practices in order to improve their nKPI submission for future collections
- A high proportion of comments lodged to the AIHW are issues that are attributable to health services' own clinical practices and/or their use of their Clinical Information System.

5.2.4 - Services' contact with Improvement Foundation help desk

As part of the arrangements for operating and maintaining OCHREStreams, the Improvement Foundation provides a help desk function to assist health services on a wide range of topics. Based on help desk data provided by the IF, analysis indicates that only 1.7% of total contacts with the OCHREStreams help desk during the last two years were attributable to data submission questions or problems which could not be immediately resolved by the help desk. In these cases, the IF strongly recommended that the service include a comment about the problem to the AIHW.

The low proportion of data quality calls to the help desk suggests that system data quality is not perceived as a major concern by health services.

5.2.5 - Improvements across process of care indicators

While the nKPI set is a new collection, to date some of the indicators have been reported up to four times by some health services (June 2012, Dec 2012, June 2013, Dec 2013).

In the nKPI: First National Results (June 2012 to June 2013), the AIHW reports overall improvements in nKPIs covered by multiple reporting periods, namely:

- The proportion of babies with birth weight recorded
- MBS health assessments for adults
- Clients with Type 2 diabetes who received a Team Care Arrangement
- Recording of smoking and alcohol status

Additionally, an encouraging number of health services are reporting complete, or near-complete, results for various process of care indicators, for example:

- 28 organisation achieved 100% recording for birth weight
  - The top[9] 25% of organisations recorded birth weight for 88% or more of their clients
- 8 organisations achieved 100% recording for smoking status
  - The top 25% of organisations recorded smoking status for 88% or more of their clients
- 4 organisations achieved 100% for recorded of alcohol consumption status
  - The top 25% of organisations recorded alcohol status for 68% or more of their clients

As the AIHW proposes, these results from top 25% of health services suggest that complete, or near complete recording for certain indicators is achievable and that improvement may be possible for

[9] It is important to note that the term 'top 25%' is not used as a value judgement or as an assessment of better clinical care or health outcomes. Rather, it is used in the same context as AIHW's nKPI: First National Report to indicate the proportion of health services reporting the highest, or most complete, results on each indicator.

these indicators, among the health services who reporting lower results (AIHW, nKPI –First National Results)

5.2.6 - Major Clinical Information Systems in use

The major Clinical Information Systems in use (Communicare and Medical Director) are relatively under-represented in health services' comments to the AIHW and require proportionately fewer exception reports to resolve data quality issues (SMS analysis of health services' comments to the AIHW; figures provided by the AIHW).

Within these systems, there have been some issues such as internal reporting, mapping of custom fields, and timing of data extractions. However, as a whole, health services using Communicare and Medical Director are able to submit nKPI data relatively smoothly and without incident.

5.2.7 - Use of the OCHREStreams portal

Submitting nKPI data to the OCHREStreams portal has been a smooth process for most nKPI health services to date. Of the 207 health services that have uploaded an nKPI submission to OCHREStreams since inception, nearly 75% have never needed more than one upload to complete the process (figures provided by OCHREStreams team).

In addition, a number of health services are using the OCHREStreams portal outside of standard data collection months. Approximately 20-30 health services may upload at least once per month. In addition to those uploading monthly, another 20–30 health services may upload data in a month that is outside of a collection period.

5.3 - Future developments

5.3.1 - System based improvements

Analysis has suggested that less common CIS account for a relatively higher proportion of data quality issues. However, within these systems, there are promising developments that suggest that the overall quality of nKPI data may improve in future collections.

CIS	Planned or Potential Developments
MMeX	There have been reports of promising developments with ISA Technologies on the future direction of MMeX – a CIS used by approximately 10 nKPI reporting health services (AIHW). Through a close working relationships with the Kimberley Aboriginal Medical Services Council (KAMSC), ISA Technologies is making updates to MMeX that are expected to significantly improve the quality of the nKPI submission to OCHREStreams within a 6 to 12 month timeframe. Consequently, KAMSC expects the nKPI data to be good enough to use as the basis for CQI within the region.
PractiX and Zedmed	IF has reported that updates are either scheduled or being discussed to improve the quality of the extract provided by PractiX and Zedmed.
Unintegrated billing software	PEN has reported that they plan to integrate the CAT with certain billing systems that are currently not supported, starting with Mediflex. This is expected to reduce the reliance on exception reporting for those services that are currently unable to automatically extract nKPI data from their billing system. PEN also reported the possibility of updating the Ferret software, which is currently problematic for nKPI reporting.

5.3.2 - Pathology results

There have been encouraging developments with two initiatives being run by the Royal College of Pathologists of Australasia (RCPA), addressing the standardisation of pathology messaging. This is an important e-health initiative as health services, affiliates and vendors have noted that receiving pathology results in inconsistent formats causes difficulties in data recording and reporting. In the context of this nKPI review, pathology results, if not formatted and coded correctly, are not captured properly in health services' clinical information systems and are therefore not included in reporting for those nKPIs that are related to pathology coding.

The first initiative, Australian Pathology Units and Terms (APUTS) project, was designed to *"establish guidelines for the use of terminology and standardised units covering each of the pathology disciplines."* (RCPA, online) It was completed in 2013 and a set of standards and guidelines for pathology units and terms have been published http://www.rcpa.edu.au/Library/Practising-Pathology/PTIS/APUTS-Downloads

The follow-on initiative – Pathology Information, Terminology and Units Standardisation (PITUS) project – is currently working towards implementing the standards developed in APUTS. More specifically PITUS is focused on: Standards Implementation; Request Modelling and Terminology; Safety in Reporting; Harmonisation; and Report Modelling and Terminology.

This is not expected to be an instant cure for the complex issues around how pathology results are coded and transmitted. However, as these standards are further developed and applied it is anticipated that the benefits of more consistent pathology messaging will flow through to nKPI reporting health services, particularly in terms of consistent storage in Clinical Information Systems.

5.3.3 - Data Expert Group

There is also potential to increase software vendor engagement through the continuation of the work of Data Expert Group convened by the Improvement Foundation. Under the direction of the RACGP's eGuidelines Coalition, this group comprised representatives from major software vendors, health services and other organisations (including the Medical Software Industry Association of Australia, Royal Australian College of General Practitioners, the National E-Health Transition Authority and the Improvement Foundation).

The purpose of the Data Expert Group is to work with software vendors on what data elements to collect. Building on the initial work of this group will be an important element of continually improving the nKPIs from a systems perspective through greater vendor engagement (which should also drive broader e-health benefits).

6 - FINDINGS

6.1 - Data quality observations – high level

The following table shows high-level observations drawn from the review findings, mapped against the relevant ABS dimensions of data quality

Dimension	Description	Relevance	Observations and summary findin
Institutional Environment	This dimension refers to the institutional and organisational factors which may have a significant influence on the effectiveness and credibility of the agency producing the statistics. Consideration of the institutional environment associated with a statistical product is important as it enables an assessment of the surrounding context, which may influence the validity, reliability or appropriateness of the product.	**High**	Observations: + Some health services lack capal accurate data entry, data reviev + A number of health services are – Not currently fully compatibl – Producing nKPI reports with – Using custom fields without – Not integrated with a billing + There are a number of health se these health services, so the pr + Many health services have high data management skills
Timeliness	Timeliness refers to the delay between the reference period (to which the data pertain) and the date at which the data become available	**Medium**	Observations: + For most health services the au nKPI reporting faster than repo + At the back end, OCHREStream data submissions, exception rep + However, a substantial number only is this method labour-inter exception reporting and delays + Measures to reduce: – The number of health service – The use of exception reports will increase overall data quality increasing timeliness.
Accuracy	Accuracy refers to the degree to which the data correctly describe the phenomenon they were designed to measure. This is an important component of quality as it relates to how well the data portray reality, which has clear implications for how useful and meaningful the data will be for interpretation or further analysis.	**High**	Observations: **Coverage:** the agreed regular client c Audit Tool, so coverage is consistent f the health service in calculating indica Reducing the number of health service **Non-response**: for many health serv use of exception reports to complete t system, pathology data incorrectly for a separate billing system. A range of measures is recommended **Response**: for many health services, exception reports or manual reports t Reasons for this include: immunisatio status not actively updated in patient

			system with known nKPI reporting err health services to capture and mainta A range of measures is recommended **Timing**: Ideally, data extracts for all 24 months leading up to the collectio end date for the extract can be specifi using Medical Director, no end date ca taken automatically using the CAT Sch date is problematic, as health services For health services using Medical Dire made, one or more further extracts w A range of measures is recommended **Processing**: No evidence of system p There is, however, clear evidence to c that some values produced in the Com values between the two systems to ch Improvements to the MMeX nKPI repo quality within 12 months. This report expected that this will allay health ser recommended in this report to increas **Revisions**: To date, on average arou these resulted in exception reports be This manual intervention introduces th Over time, revision errors will be redu
Interpretability	Interpretability refers to the availability of information to help provide insight into the data. Information available which could assist interpretation may include the variables used, the availability of metadata, including concepts, classifications, and measures of accuracy.	**High**	Observations: The current sources of nKPI interpreta + The AIHW METeOR specification + The AIHW national nKPI report In addition, participating health servic + A report prepared by the AIHW + Within OCHREStreams, access t Many in the Aboriginal health sector b + Progressively improve the quali + Embed the nKPIs in health serv Recommendations for providing furthe
Accessibility	Accessibility refers to the ease of access to data by users, including the ease with which the existence of information can be ascertained, as well as the suitability of the form or medium through which information can be accessed.	**Medium**	Observations: All reporting health services are able t + View and retrieve their submitte service level of 99% availability + Initiate, respond to requests for Anecdotally, not all health services kn awareness and capability, and increas

[10] 99% availability during extended business hours, excluding scheduled maintenance

6.2 - Review findings

6.2.1 - Indicators

Category	Finding	Detail
Immunisation	Immunisations can happen in many places away from the health service (especially in non-remote settings), reducing the ability of health services to maintain complete immunisation records within their CIS	The most complete data on immunisation is the Australian Childhood Immunisation Register (ACIR), owned by Medicare Communicare does not recommend that clinicians regard the CIS as the master record for immunisation (due to the risk of over- or under-immunisation)
Indicators that rely on pathology results	Incorrectly formatted or coded pathology messages do not get picked up for nKPIs	Not all pathology providers are using HL7 formatting for pathology messaging LOINC coding is sometimes incorrectly or inconsistently applied by pathology providers. Some non-numeric pathology data is not successfully stored in CIS
PI01, PI02: Birth weight	Some health services are not consistently capturing birth weight of new babies in the expected location	There is inconsistency between health services in way birth weight is captured and recorded in CIS for reporting. In some health services, babies' weight is recorded in the mothers' file (meaning it is not picked up by the CAT and so not included in nKPI figures) Babies' weight is also sometimes stored as unstructured data in the CIS (e.g. a scanned paper file emailed from a hospital), and so not picked up for nKPI reporting
PI03, PI07, PI08: MBS items	For health services where the clinical information system and billing system are not integrated, these indicators require manual calculations, entered through exception reports	This makes nKPI reporting more time consuming for health services, there is a greater risk of errors being introduced, and it perpetuates reliance on exception reporting However, PEN reports plans to integrate the CAT with some billing systems, starting with Mediflex In time this should make nKPI submissions more accurate and less time consuming
PI16: Alcohol status	Once status is recorded it retains the original date stamp until the record is physically changed- so, a clinician could review and confirm that a patient still drinks alcohol but unless they add something new to the record it will retain its original date (and possibly be excluded from the nKPI count)	This impacts health services that use Communicare and Medical Director

6.2.2 - Systems

Category	Finding	Detail
Communicare	Health services cannot generate an internal nKPI report in Communicare	Health services cannot compare Communicare nKPI values with CAT nKPI values. Differences (e.g. often due to differing regular client definitions), may lead health services may think that CAT extract is 'wrong' but not know how to investigate the report further.
	Many health services have not yet successfully mapped custom fields to the equivalent standard fields	This means that in those health services some indicators are either unreported or under-reported by the automated process NB: Not all custom fields are necessarily able to be mapped to standard fields- e.g. a check box value cannot be mapped to free text field
	Some Communicare health services remain unconvinced that the Communicare- CAT integration is producing correct values	Some perceptions can be attributed to confusion caused by differing regular client definition However, perceptions remain and will only be dispelled by an objective audit exercise
	The Communicare extract to CAT may be inherently problematic	In Communicare's view, despite best efforts in developing its data extract, the results of Communicare health services reporting through the CAT are "an interpretation of an interpretation". Communicare believes that allowing its health services to report directly to OCHREStreams would result in improved data fidelity
Medical Director	No specific system findings	
CAT	The current nKPI preview in CAT does not allow re-identification of patient subsets for follow up	Most health services are unaware that saved queries can be created in CAT to preview the results for each indicator and allow health services to create identified patient 'hit lists' for follow up. However, even if health services are aware, many will not have the skills to create and maintain the saved queries
	Anecdotally, updates to the CAT cause problems with scheduled CAT extracts	Isolated reports of software updates to the CAT causing health service scheduled extracts to drop out
MMeX	To date, all nKPI reports from MMeX health services have had significant data quality issues	Overrepresented in data quality comments to the AIHW Reported issues include: + Separability for health services sharing patient records + Extracting data for certain indicators Through work by ISA Technologies to resolve known issues, KAMSC expects major data quality

		improvements for the June 2014 collection and further improvements in the December 2014 collection
Zedmed	Zedmed (used by a small number of nKPI reporting health services) data extract is out of date, and does not pick up all indicators	nKPI reporting using Zedmed will only be partially successful, as more recent indicators are not yet being extracted Zedmed has contracted PEN to update its data extract- should be ready in time for the December 2014 collection
Ferret	Ferret (used by a small number of nKPI reporting health services) data is difficult for the CAT to extract due to its customisability	Ferret is typically highly customised- each site is very different
	Ferret is often used in conjunction with Medical Director- the CAT can be set up to extract from one or the other, but not both	Therefore, the data held in Ferret is typically not available to CAT for automated reporting
	PEN Computer Systems are currently considering the future direction of Ferret, but no decisions have been announced	
PractiX	PractiX (used by a small number of nKPI reporting health services) data extract is out of date	nKPI reporting using PractiX will only be partially successful, as more recent indicators are not yet being extracted. PractiX is currently 'talking' to PEN about updating its data extract
General	System update timing	Timing of nKPI-relevant CIS system updates (i.e. too close to census dates) has caused difficulties for some health services where they are not willing or able to update their CIS immediately and may therefore report with an older version of CIS There can also be support challenges for vendors where updates are introduced too close to a census date
	Manual reporting	Data from manual reporting is significantly lower quality than data from automated reporting. Reasons for manual reporting include: + Health services not using CIS at all (anecdotal) + Health services using incompatible CIS + Health services in the process of migrating from one CIS to another (a one-off reason) + Health services in complex consortium or auspicing arrangements where data is not retrievable or not separable
		Anecdotally, some reporting health services still do not have clinical information systems, or use incompatible

		systems

6.2.3 - People

High Level Category	Finding	Detail
Skills and training	Insufficient skills in data entry and data cleansing overall	Some health services have limited skills in use of their CIS, leading to + Data being entered in the wrong places within the Clinical Information System + Structured data recorded in an unstructured manner (e.g. alcohol consumption recorded in progress notes rather than in the correct box). Some health services have a limited understanding of the functionality of the Clinical Audit Tool + The CAT is not utilised to its full potential as a tool to improve data quality within the service
	Insufficient understanding of the specific data requirements for the nKPIs	Confusion around nKPI regular client definition (as this often differs from how an individual health service, defines a regular client or patient) Limited understanding of where information is recorded in CIS for nKPI reports
	Style of training provided to date (webinars) does not suit many health services- different approach needed	Health services and affiliates reported that webinars are of limited value and not suited to retaining knowledge. Face to face training is preferred where possible.
	Training to date has focused only on nKPI reporting	Amongst, some health services this has resulted in: + a compliance-based perspective on the nKPIs + where it is used, a limited understanding of the CAT as a tool for improving overall data quality
	Many services are unaware of the CQI feedback functions in OCHREStreams	Some affiliates and health services reported low levels of awareness of time series comparative graphs in OCHREStreams (Most health services only report to OCHREStreams as required for nKPIs or the OSR – even though there is the capability for health services to upload data more regularly).
	High levels of staff churn in the Aboriginal Health sector	Training has to be continuously available in order to be effective
Engagement	Many health services are not highly engaged by the nKPIs (compliance activity only)	Many health services regard nKPI reporting as a compliance activity only, and do not see any potential local benefit.

		Communication & explanation have not been adequate
		Health services (and affiliates) would like a simple, clear definition and explanation of each indicator and the data which needs to be captured for each indicator.
		Health services are unaware of the uses to which the data will be put.
		Differing client definitions are preventing many health services from generating local CQI benefit, leading to lower motivation to invest time in improving nKPI results
	Potential exists for state affiliates to have a more formal role with nKPIs	Potential for affiliates to: + Working with health services to provide CQI training and improve data quality levels (and therefore more accurate nKPI reporting) + Providing nKPI support to health services, to help them better understand (and act upon) results + Working with groups of health services on collaborative projects to improve data quality or health care delivery quality This would complement the assistance and interpretation provided by the AIHW.
	Potential exists for NACCHO to develop a closer relationship with AIHW	NACCHO could have a greater role and input into the interpretation of nKPI results. This could help to get higher levels of sector engagement.

6.2.4 - Processes

High Level Category	Finding	Detail
Access to records	In some health services, non-GP staff do not have access to patient records	This can result in the creation of separate, manual records which do not find their way into the nKPIs unless used for exception reports
	In some health services, visiting doctors retain patient records in their own systems	This results in nKPI-relevant data not being recorded in health services' own CIS, potentially leading to undercounting
Timing of data extract	Where health services do not extract their data on (or very close to) the census date, data quality is impacted	The 31 December census date makes it difficult for many health services to take their data extract at the AIHW-preferred time. This issue affects health services using Medical Director as their Clinical Information System. Health services using other systems, such as Communicare and MMeX, can select the dates of extraction.
Service data practices	Many health services report that their practices for data entry and data cleansing either need improving or need adapting for nKPI data requirements	
	In some health services, administrative contacts often recorded as clinical contacts within Clinical Information Systems	In certain situations, this may impact upon health services which update individual patient records but not actually treat these patients. This can result in certain patients being included in the regular client definition as a result of administrative updates in a health service's clinical information system, rather than as a result of a clinical consultation.
Exception reporting	Exception reporting is being used for a wider range of purposes than its original purpose of catering for situations where aspects of data quality was poor and there was no time for the health service to correct it at source (i.e. within the CIS)	There is an over-reliance on exception reporting to improve nKPI data. Improving data through exception reports creates additional work for the health service and the AIHW, and does not necessarily lead to data improvement within the CIS.

7 - RECOMMENDATIONS

7.1 - The ideal future state of nKPI reporting

Based on the findings of this review (Section 6), the following summary ideal future state for nKPI reporting has been used as the basis for the recommendations detailed below (from Section 7.2)

- **Indicators**
  - Pathology results are completely stored in Clinical Information Systems and are formatted and coded consistently and in reportable form
  - The CAT is integrated with services' billing systems allowing automatic extraction of MBS data for all health services
  - Immunisation data is fully reported
  - Birth weight data is consistently recorded in reportable form
- **Systems**
  - Health services use a CIS that is compatible with the CAT and/or OCHREStreams
  - Health services use a CIS that produces accurate, up to date data extracts
  - Health services use automated reporting (i.e. data extraction directly from their CIS)
  - Health services are able to preview their nKPI data in a way that allows them to identify patient subsets for data improvement
- **People**
  - Health services are highly engaged with the nKPIs
  - Health services understand the purpose, rationale and data requirements of the nKPIs
  - Health services are confident in the quality of the nKPI data extracted from their Clinical Information Systems
  - Health service staff are skilled in data entry, data management and the use of data for CQI, and receive ongoing support for these activities
- **Processes**
  - Health services are committed to the continual improvement of data practices and data quality
  - Exception reporting is needed less and less, and is progressively phased out

7.2 - Recommendations by theme

7.2.1 - Indicators

	Category	Recommendation	Depende Recomm
1	**General**	+ Improvement Foundation to continue engagement with the Data Expert Group, as a vehicle for coordinated communication with software vendors	
2	**Immunisation (PI04)**	+ NACCHO/ Affiliates to investigate the data capture practices in health services with high levels of immunisation data completeness, and report back to the OCHREStreams Advisory Group	26
3		+ Department of Health to investigate the feasibility of data feeds from the ACIR system to clinical systems in health services; consider implementing if feasible	
4		+ Department of Health to consider, in consultation with States and Territories: if ACIR data feed is not feasible, remove immunisation from the nKPIs, as it is unlikely that manual maintenance of immunisation records in health service systems, for the purposes of nKPI reporting, will be sustainable	3
5	**Indicators that rely on pathology results**	+ Continue to rely on exception reporting in the short term (for pathology results)	
6		+ Improvement Foundation to monitor Royal College of Pathologists Australasia (RCPA) PUTS and PITUS standardisation projects, and their implementation time table + Improvement Foundation to liaise with the RCPA to understand project implications for pathology providers, software vendors and health services, and report to the OCHREStreams Advisory Group	26
7		+ Improvement Foundation to request that the Data Expert Group works towards a coordinated approach by software vendors for more complete capture of non-numeric pathology data	1
8	**Birth weight (PI01, PI02)**	+ AIHW to raise awareness of the data sources used for nKPI reporting of birth weights through a published user guide; NACCHO/ Affiliates to provide ongoing promotion of awareness	
9		+ NACCHO/ Affiliates to investigate the data capture practices in health services with high levels of birth weight data completeness, and report back to the OCHREStreams Advisory Group	26
10	**MBS items (PI03, PI07, PI08)**	+ Continue to rely on exception reporting in the short term (for MBS items)	
11		+ Improvement Foundation to engage with PEN and encourage plans to integrate the CAT with other billing systems + AIHW to monitor overall data quality improvements in MBS related indicators as other recommendations are implemented, and report back to the OCHREStreams Advisory Group	26

12	**Alcohol status (PI16)**	+ NACCHO/ Affiliates to raise awareness among CIS users that an effective work around to update the patient record's date stamp is to insert additional text into the record, at the time of reviewing alcohol status	
13		+ Improvement Foundation to provide input to support the development by software vendors of a more intuitive approach to reviewing and maintaining alcohol status in patient records	

7.2.2 - Systems

	Category	Recommendation	Depende Recomm
14	**General**	+ Department of Health to determine how many reporting health services do not have clinical systems, or use incompatible systems, and report back to the OCHREStreams Advisory Group for consideration of options	26
15		+ Department of Health and Improvement Foundation to plan that any major software updates relevant to the nKPIs are released no later than three months before the next census date	
16		+ Department of Health to commission a data audit exercise to check the integrity of the extraction process from all compatible CIS, report back to the OCHREStreams Advisory Group, and publish the results	26
17	**Communicare**	+ Department of Health to consider the feasibility of engaging Communicare to update the Communicare nKPI internal report to include all indicators	
18		+ Department of Health to consider the feasibility of implementing a mapping support program for Communicare health services needing support to map custom fields	
19		+ If unresolvable problems in the Communicare > CAT extract are discovered through the audit process (Recommendation 16), the OCHREStreams Advisory Group should consider other reporting options	16
20	**CAT**	+ Department of Health to consider the feasibility of engaging PEN to extend the CAT to include graphical previews and re-identifiability of patient groups for each indicator	
21		+ Improvement Foundation to investigate reported issue with CAT Scheduler	
22	**MMEX**	+ Improvement Foundation to liaise with ISA Technologies and KAMSC to monitor progress on improvements in the MMeX nKPI report	

		+ AIHW to monitor rate of data quality improvement over next two collections from MMeX health services	
23	**Zedmed**	+ Improvement Foundation to monitor progress on Zedmed data extract update	
24	**Ferret**	+ Improvement Foundation to liaise with PEN over the future direction of Ferret	
25	**PractiX**	+ Improvement Foundation to monitor progress on PractiX data extract update	

7.2.3 - People

	Category	Recommendation	Depende Recomm
26	**Advisory Group**	+ Department of Health to establish and maintain an OCHREStreams advisory group	
27	**Engagement**	+ OCHREStreams Advisory Group to seek ideas from Affiliates and key health services on ways to increase and sustain service engagement.	26
28		+ OCHREStreams Advisory Group to promote awareness by health services (and affiliates) of how nKPI data is being and will be used	26
29		+ OCHREStreams Advisory Group to consider how NACCHO and Affiliates can become more active partners in nKPI data submission, reporting and associated quality improvement initiatives	26
30	**Training**	+ OCHREStreams Advisory Group to consider more effective options for providing training to health services in: ○ Data capture, cleansing and management ○ More advanced use of the Clinical Audit Tool	26
31	**Support**	+ Department of Health to consider options for broader CQI support within the CQI program currently underway	
32		+ AIHW to develop support materials to build health services' understanding of the specific data requirements of the nKPIs	
33		+ Improvement Foundation to build health services' awareness of the CQI feedback functions in OCHREStreams	

7.2.4 - Processes

	Category	Recommendation	Dependen Recomme
34	**Timeliness of data extraction**	+ Improvement Foundation to increase health service awareness of the importance of timely data extraction using the CAT scheduler (for non-Communicare services)	21
35	**Use of Exception Reporting**	+ AIHW to monitor health service access to exception reporting, as indicator data from health service systems improves, with a view to phasing out completely over time	

7.3 - Recommendations by priority

Please note that these tables do not include recommendations 5 and 10, as these refer to continuation of existing practices.

7.3.1 - High Priority

Number	Category	Recommendation	Anticipated cost to implement
2	**Immunisation (PI04)**	+ NACCHO/ Affiliates to investigate the data capture practices in health services with high levels of immunisation data completeness, and report back to the OCHREStreams Advisory Group	Low
9	**Birth weight (PI01, PI02)**	+ NACCHO/ Affiliates to investigate the data capture practices in health services with high levels of birth weight data completeness, and report back to the OCHREStreams Advisory Group	Low
17	**Communicare**	+ Department of Health to consider the feasibility of engaging Communicare to update the Communicare nKPI internal report to include all indicators	Low
20	**CAT**	+ Department of Health to consider the feasibility of engaging PEN to extend the CAT to include graphical previews and re-identifiability of patient groups for each indicator	Low
8	**Birth weight (PI01, PI02)**	+ AIHW to raise awareness of the data sources used for nKPI reporting of birth weights through a published user guide; NACCHO/ Affiliates to provide ongoing promotion of awareness	Medium
16	**General- systems**	+ Department of Health to commission a data audit exercise to check the integrity of the extraction process from all compatible CIS, report back to the OCHREStreams Advisory Group, and publish the results	Medium
18	**Communicare**	+ Department of Health to consider the feasibility of implementing a mapping support program for Communicare health services needing support to map custom fields	Medium
26	**Advisory Group**	+ Department of Health to establish and maintain an OCHREStreams advisory group	Medium
32	**Support**	+ AIHW to develop support materials to build health services' understanding of the specific data requirements of the nKPIs	Medium
14	**General- systems**	+ Department of Health to determine how many reporting health services do not have clinical systems, or use incompatible systems, and report back to the OCHREStreams Advisory Group for consideration of options	High
30	**Training**	+ OCHREStreams Advisory Group to consider more effective options for providing training to health services in: ○ Data capture, cleansing and management	High

- More advanced use of the Clinical Audit Tool

7.3.2 - Medium Priority

Number	Category	Recommendation	Anticipated cost to implement	I
21	CAT	+ Improvement Foundation to investigate reported issue with CAT Scheduler	None	I
1	General- indicators	+ Improvement Foundation to continue engagement with the Data Expert Group, as a vehicle for coordinated communication with software vendors	Unknown	I
15	General- systems	+ Department of Health and Improvement Foundation to plan that any major software updates relevant to the nKPIs are released no later than three months before the next census date	None	D I
22	MMEX	+ Improvement Foundation to liaise with ISA Technologies and KAMSC to monitor progress on improvements in the MMeX nKPI report + AIHW to monitor rate of data quality improvement over next two collections from MMeX health services	None	I A
23	Zedmed	+ Improvement Foundation to monitor progress on Zedmed data extract update	None	I
25	PractiX	+ Improvement Foundation to monitor progress on PractiX data extract update	None	I
6	Indicators that rely on pathology results	+ Improvement Foundation to monitor Royal College of Pathologists Australasia (RCPA) PUTS and PITUS standardisation projects, and their implementation time table + Improvement Foundation to liaise with the RCPA to understand project implications for pathology providers, software vendors and health services, and report to the OCHREStreams Advisory Group	Low	I
12	Alcohol status (PI16)	+ NACCHO/ Affiliates to raise awareness among CIS users that an effective work around to update the patient record's date stamp is to insert additional text into the record, at the time of reviewing alcohol status	Low	N
33	Support	+ Improvement Foundation to build health services' awareness of the CQI feedback functions in OCHREStreams	Low	I
34	Timeliness	+ Improvement Foundation to increase health service awareness of the importance of timely data extraction using the CAT scheduler (for non-Communicare services)	Low	I
35	Exception reporting	+ AIHW to monitor health service access to exception reporting, as indicator data from health service systems improves, with a view to phasing out completely over time	Low	A
7	Indicators that rely on pathology	+ Improvement Foundation to request that the Data Expert Group works towards a coordinated approach by	Medium	I

	results		software vendors for more complete capture of non-numeric pathology data		
13	**Alcohol status (PI16)**	+	Improvement Foundation to provide input to support the development by software vendors of a more intuitive approach to reviewing and maintaining alcohol status in patient records	Medium	I
27	**Engagement**	+	OCHREStreams Advisory Group to seek ideas from Affiliates and key health services on ways to increase and sustain service engagement.	Medium	C C
28	**Engagement**	+	OCHREStreams Advisory Group to promote awareness by health services (and affiliates) of how nKPI data is being and will be used	Medium	C C
29	**Engagement**	+	OCHREStreams Advisory Group to consider how NACCHO and Affiliates can become more active partners in nKPI data submission, reporting and associated quality improvement initiatives	Medium	C C
4	**Immunisation (PI04)**	+	Department of Health to consider, in consultation with States and Territories: if ACIR data feed is not feasible, remove immunisation from the nKPIs, as it is unlikely that manual maintenance of immunisation records in health service systems, for the purposes of nKPI reporting, will be sustainable	Medium	D
3	**Immunisation (PI04)**	+	Department of Health to investigate the feasibility of data feeds from the ACIR system to clinical systems in health services; implement if feasible	High	D
34	**Training**	+	Department of Health to consider options for broader CQI support within the CQI program currently underway	Unknown	D

7.3.3 - Lower priority

Number	Category	Recommendation	Anticipated cost to implement	Imp
24	**Ferret**	+ Improvement Foundation to liaise with PEN over the future direction of Ferret	None	Impr
11	**MBS items (PI03, PI07, PI08)**	+ Improvement Foundation to engage with PEN and encourage plans to integrate the CAT with other billing systems + AIHW to monitor overall data quality improvements in MBS related indicators as other recommendations are implemented, and report back to the OCHREStreams Advisory Group	Medium	Impr AIHW
19	**Communicare**	+ If unresolvable problems in the Communicare > CAT extract are discovered through the audit process (Recommendation 16), the OCHREStreams Advisory Group should consider other reporting options	Medium	OCH Grou

8 - APPENDICES

8.1 - Summary of nKPIs

Indicator	Description
PI01: Birth weight recorded	Proportion of Aboriginal and/or Torres Strait Islander babies born within the previous 12 months whose birth weight has been recorded at the primary health care service.
PI02: Birth weight low, normal or high	Proportion of Aboriginal and/or Torres Strait Islander babies born within the previous 12 months whose birth weight results were categorised as one of the following: • Low (less than 2,500 grams) • Normal (2,500 grams to less than 4,500 grams) • High (4,500 grams and over).
PI03: Health assessment (MBS item 715)	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 0-4 years and who have received a Medicare Benefits Schedule (MBS) Health Assessment for Aboriginal and Torres Strait Islander People within the previous 12 months AND number of regular clients who are Indigenous, aged 25 years and over and who have received an MBS Health Assessment for Aboriginal and Torres Strait Islander People within the previous 24 months.
PI04: Fully immunised children	Proportion of Aboriginal and/or Torres Strait Islander children who are regular clients, aged: • 12 months to less than 24 months; • 24 months to less than 36 months; • 60 months to less than 72 months; and who are 'fully immunised'.
PI05: HbA1c test recorded (clients with Type 2 diabetes)	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, have Type II diabetes and who have had an HbA1c measurement result recorded at the primary health care service within the previous 6 months AND proportion of regular clients who are Indigenous, have Type II diabetes and who have had an HbA1c measurement result recorded at the primary health care service within the previous 12 months.
PI06: HbA1c result (clients with Type 2 diabetes)	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, have Type II diabetes and whose HbA1c measurement result, recorded within either the previous 6 months or 12 months, was categorised as one of the following: • less than or equal to 7%; • greater than 7% but less than or equal to 8%;

	• greater than 8% but less than 10% or; • greater than or equal to 10%
PI07: GP Management Plan (MBS item 721)	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, have a chronic disease and who have received a GP Management Plan (MBS Item 721) within the previous 24 months.
PI08: Team Care Arrangement (MBS item 723)	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, have a chronic disease and who have received a Team Care Arrangement (MBS Item 723) within the previous 24 months.
PI09: Smoking status recorded	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 15 years and over and whose smoking status has been recorded at the primary health care service.
PI10: Smoking status result	Proportion of regular clients who are Indigenous, aged 15 years and over and whose smoking status has been recorded as one of the following: • current smoker; • ex-smoker or; • never smoked.
PI12: Body Mass Index (overweight or obese)	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 25 years and over and who have had their BMI classified as overweight or obese within the previous 24 months.
PI13: First antenatal care visit	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, who gave birth within the previous 12 months and who had gestational age recorded at their first antenatal care visit with results either: • less than 13/40 weeks; • 13/40 weeks to less than 20/40 weeks; • at or after 20/40 weeks or; • no result.
PI14: Influenza immunisation (50 years and over)	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 50 years and over and who are immunised against influenza.
PI15: Influenza immunisation (Type 2 diabetes or COPD clients)	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 15-49 years, are recorded as having Type II diabetes or chronic obstructive pulmonary disease (COPD) and are immunised against influenza.
PI16: Alcohol consumption recorded	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 15 years and over and who have had their alcohol consumption status recorded at the primary health care service within the previous 24 months.
PI18: Kidney function test	Proportion of regular clients who are Aboriginal and/or Torres Strait

recorded (Type 2 diabetes of CVD clients)	Islander, aged 15 years and over, are recorded as having a selected chronic disease and have had a kidney function test.
PI22: Cervical screening recorded	Proportion of female regular clients who are Aboriginal and/or Torres Strait Islander, aged 20 to 69 years, who have not had a hysterectomy and who have had a cervical screening within the previous 2 years, 3 years and 5 years.
PI23: Blood pressure recorded (clients with Type 2 diabetes)	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, have Type 2 diabetes and who have had a blood pressure measurement result recorded at the primary health care service within the previous 6 months.
PI24: Blood pressure less than or equal to 130/80mmHg (clients with Type 2 diabetes)	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, have Type 2 diabetes and whose blood pressure measurement result, recorded within the previous 6 months, was less than or equal to 130/80 mmHg.

8.2 - Organisations and individuals interviewed

- **Department of Health**
  - Brendan Gibson
  - Helen Sked (OCHREStreams)
  - Bridget Carrick (Continuous Quality Improvement)
- **Australian Institute of Health and Welfare (AIHW)**
  - Indrani Pieris-Caldwell
  - Devin Bowles
  - Kathryn Sedgwick
  - Denise Arnold
  - Alex Topfer
- **Australian Primary Health Care Research Institute**
  - Karen Gardener
- **National Aboriginal Community Controlled Health Organisation (NACCHO)**
  - Katie Panaretto
  - Jason Agostino
- **Aboriginal Health Council of South Australia (AHCSA)**
  - David Scrimgeour
  - Beth Humerston
  - Isaac Hill
- **The Victorian Aboriginal Community Controlled Health Organisation (VACCHO)**
  - Louise Lyons
- **Aboriginal Health Council of Western Australia**
  - Chantal Ferguson
  - Marie Yau
- **Aboriginal Medical Services Alliance Northern Territory (AMSANT)**
  - Margaret Cotter
  - Liz Moore
  - Alex Hope
- **Many Rivers Aboriginal Medical Service Council**
  - Jill McDonald
- **Kimberly Aboriginal Medical Service Council (KAMSC)**
  - Lucy Falcocchio
  - Jason King
- **Improvement Foundation**
  - Julian Flint
  - Kirsty Smith
  - David Milazzo
- **PEN Computing**
  - Christine Chidgey
  - Paul Matthews
- **Communicare**
  - Brian Dunstan
  - Greg Robinson

8.3 - Document log

8.3.1 - Sources relating to high-level data quality issues

- Improvement Foundation Proposal. 2013. OCHREStreams Communicare Data Mapping Proposal. 24 June 2013. Prepared for the Department of Health, Commercial in Confidence.
- Queensland Aboriginal & Islander Health Council. 2013. nKPI Report 1, QAIHC Community Controlled Health Services. December 2013.
- Deeble Institute Report. 2013. Reducing the Burden of Reporting in Aboriginal Health Services: An Assessment of Progress.
- Department of Health teleconference. 2013. Actions arising from external consultation for nKPI report
- The Australian Institute of Health and Welfare. 2013. National Key Performance Indicators for Aboriginal and Torres Strait Islander primary health care. First national results. June 2012 to June 2013. Embargoed Draft-in-confidence.
- Menzies School of Health Research. 2013. Sentinel Sites Evaluation Report. Available from http://www.menzies.edu.au/page/Research/Projects/Health_systems_research/Sentinel_Sites_Evaluation_SSE/
- National Aboriginal Community Controlled Health Organisation. 2013. NACHHO Feedback: Draft report on National Key Performance Indicators for Aboriginal and Torres Strait Islander Primary Health Care. First National Results June 2012 to June 2013.
- Allen and Clarke. 2013. Evaluation of the Northern Territory Continuous Quality Improvement (CQI) Investment Strategy. Final Report. 30 June 2013. Prepared for the Australian Government Department of Health.
- The Lowitja Institute 2013. National Appraisal of Continuous Quality Improvement Initiatives in Aboriginal and Torres Strait Islander Primary Health Care. Final Report. March 2013.

8.3.2 - Sources relating to individual service-level data issues

- Health Services' feedback to AIHW (June 2012 round)
- Health Services' feedback to AIHW (December 2012 round)
- Health Services' feedback to AIHW (June 2013 round)

8.3.3 - Other documents consulted

- The Australian Institute of Health and Welfare. 2011. Healthy for Life: results for July 2007-June 2011
- Australian Bureau of Statistics. 2009. Data Quality Framework. http://www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts/1520.0Main%20Features1May%202009?opendocument&tabname=Summary&prodno=1520.0&issue=May%202009&num=&view=