Australian Government
Australian Institute of Health and Welfare

National Key Performance Indicators

for Aboriginal and Torres Strait Islander primary health care

First national results June 2012 to June 2013

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This publication is part of the Australian Institute of Health and Welfare's National key performance indicators for Aboriginal and Torres Strait Islander primary health care series. A complete list of the Institute's publications is available from the Institute's website <www.aihw.gov.au>.

ISSN 2203-5737

ISBN 978-1-74249-564-4

Suggested citation

Australian Institute of Health and Welfare 2014. National Key Performance Indicators for Aboriginal and Torres Strait Islander primary health care: first national results June 2012 to June 2013. National key performance indicators for Aboriginal and Torres Strait Islander primary health care series. IHW 123. Canberra: AIHW.

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Published by the Australian Institute of Health and Welfare

Please note that there is the potential for minor revisions of data in this report. Please check the online version at <www.aihw.gov.au> for any amendments.

Contents

Acknowledgments

Devin Bowles, Sonam Shelly and Michelle Harvey of the Indigenous Community and Health Service Reporting Unit at the Australian Institute of Health and Welfare prepared this report with assistance from other unit staff, including Kathryn Sedgwick, Alex Topfer, Denise Arnold, Kate Bradbury, Xiang Wang, Richard Tuttle, Corinna Schultz, Amie Zhang and Amitha Jason. Indrani Pieris-Caldwell heads the unit, and provided guidance and comments throughout the process. Rebecca Rodgers, who assisted with the final proofread of the report, is also acknowledged. We are grateful to David Whitelaw for his independent statistical advice. Fadwa Al-Yaman is acknowledged for her comments and guidance throughout the project.

The Australian Government Department of Health funds the national Key Performance Indicator (nKPI) project. Members of the Indigenous and Rural Health Division provided substantial guidance and comments on this report. The Department of Health provided all text dealing with policy implications of the data, including the 'Opportunities for action' sections of the report, Chapter 5 'Conclusion' and the 'Implications' section of the Summary.

We would like to thank all primary health-care organisations that provided the data contained within this report. The contribution of each organisation is greatly appreciated and gratefully acknowledged.

Abbreviations

AATSIHS	Australian Aboriginal and Torres Strait Islander Health Survey
ABS	Australian Bureau of Statistics
ACIR	Australian Childhood Immunisation Register
ACR	albumin/creatinine ratio
ACT	Australian Capital Territory
AHW	Aboriginal Health Worker
AIHW	Australian Institute of Health and Welfare
BMI	body mass index
COPD	chronic obstructive pulmonary disease
CQI	continuous quality improvement
CVD	cardiovascular disease
FTE	full-time equivalent
eGFR	estimated glomerular filtration rate
GP	general practitioner
GPMP	General Practitioner Management Plan
HbA1c	glycosylated haemoglobin
MBS	Medicare Benefits Schedule
METeOR	Metadata Online Registry
mmHg	millimetres of mercury
NATSIHS	National Aboriginal and Torres Strait Islander Health Survey
nKPI	National Key Performance Indicator
NPDC	National Perinatal Data Collection
NSW	New South Wales
NT	Northern Territory
OSR	Online Service Reporting
Qld	Queensland
SA	South Australia
T2D	type 2 diabetes
Tas	Tasmania
TCA	Team Care Arrangement
Vic	Victoria
WA	Western Australia

Symbols

—	nil or rounded to zero or no trend data
. .	not applicable
n.a.	not available
↔	no change
↑	increased
↓	decreased
<	less than
≤	less than or equal to
>	greater than
≥	greater than or equal to

Summary

This is the first national report on the Indigenous primary health-care **national Key Performance Indicators** (nKPIs) data collection. It covers all the indicators collected since June 2012, and presents data analysed at the national level by jurisdiction, remoteness, and organisational size. The data are collected from over 200 primary health-care organisations receiving funding from the Australian Government Department of Health to provide services primarily to Aboriginal and Torres Strait Islander people.

The purpose of the nKPIs is to improve the delivery of primary health-care services 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 19 indicators presented in this report focus on chronic disease prevention and management and on maternal and child health. These are two key areas for achieving the objective of closing the gap in life expectancy between Aboriginal and Torres Strait Islander Australians and non-Indigenous Australians.

The nKPIs provide information on both 'process of care' indicators and 'health outcomes' for clients. The former are largely under the control of organisations and indicate good practice in primary health care. Health outcomes are influenced by the work of primary health care; however, they are also influenced by socioeconomic factors such as education, employment, income and housing, which are beyond the immediate control of primary health-care organisations.

A progress summary of the 19 nKPIs is shown at Table S1.

Key findings

For the three reporting periods covered by this report (those ending in June 2012, December 2012 and June 2013), improvements were seen for most of the process of care indicators. The national proportions increased by 5–9 percentage points for the following five indicators:

- proportion of babies with birthweight recorded
- Medical Benefits Schedule health assessments for adults
- clients with type 2 diabetes who received a Team Care Arrangement
- recording of smoking status
- recording of alcohol use status.

The analyses of data by jurisdiction indicated that organisations in Queensland and the Northern Territory performed better against almost all process of care indicators. This may be due to these jurisdictions having well-established CQI programs that encouraged the development of and reporting against KPIs for several years before the start of the nKPIs.

Organisations with a small number of clients per general practitioner performed better against a large number of indicator measures. Smaller organisations (those with a small number of clients) did better than those with more clients on several indicators, including clients aged 50 and over immunised against influenza and HbA1c results recorded.

Implications

These early results have important implications:

- They show that **improvements have occurred across most process of care indicators**. These improvements should result in better health outcomes for Aboriginal and Torres Strait Islander people.
- Of particular note is the finding that the **organisations with better performance are spread across diverse geographic and service delivery environments**. Small organisations can and often do perform well, as do larger organisations.
- The analysis also shows that **well-established CQI programs make a positive difference** and supports the view that the nKPI system itself can contribute to local CQI endeavours.
- While the process of creating sound and evidence-based benchmarks is in its early stages, it is possible to use the nKPI data to identify areas where improvements are feasible. The need for good quality data is paramount to this. There is a wide range in performance across all indicators. Service providers can compare their results with the detailed analysis on each indicator in this report as a way of informing their CQI activities. For some organisations, prompt action is indicated to identify the reasons for poor results and to develop strategies to improve the quality of services they provide.
- The report shows a number of key issues that require further investigation and/or development to inform the continuing improvement of the nKPI system itself. These include the possible development of benchmarks, and investigation of the robustness of current data gathering and recording processes in areas such as immunisation and kidney function tests. The report also highlights the need for further development of a CQI system that supports organisations in improving the delivery of primary health-care services for Aboriginal and Torres Strait Islander people.

Table S1: Progress of nKPIs over time, June 2012 to June 2013

Indicator	Change over time
PI 01: Birthweight recorded	↑
PI 02: Birthweight result	–
PI 03: MBS health assessments 0–4 years 25 years and over	 ↑ ↑
PI 04: Child immunisation	–
PI 05: HbA1c test recorded 6 months 12 months	 ↓ ↓
PI 06: HbA1c result ≤7% 6 months ≤7% 12 months	 ↑ ↑
PI 07: MBS GPMP	↑
PI 08: MBS TCA	↑
PI 09: Smoking status recorded	↑
PI 10: Smoking status result	–
PI 12: BMI result (overweight or obese)	↔
PI 13: First antenatal visit	–
PI 14: Clients aged 50+ immunised against influenza	–
PI 15: Clients with type 2 diabetes/ COPD immunised against influenza	–
PI 16: Alcohol consumption recorded	↑
PI 19: Type 2 diabetes/CVD clients with kidney function test recorded	–
PI 22: Cervical screening	–
PI 23: Clients with type 2 diabetes with blood pressure test recorded	↓
PI 24: Clients with type 2 diabetes with blood pressure ≤130/80mmHg	↑

Chapter 1

Introduction

This is the first report on the Indigenous primary health-care **national Key Performance Indicators** (nKPIs) data collection. The data in this report are collected from 206 primary health-care organisations (Aboriginal Community Controlled as well as those with other governance arrangements) that receive funding from the Australian Government Department of Health to provide services primarily to Aboriginal and Torres Strait Islander people. These data are collected and reported to health organisations to help improve the delivery of primary health care for Aboriginal and Torres Strait Islander people, to improve health outcomes and to support progress towards the Council of Australian Governments Closing the Gap targets.

The 19 indicators in this report focus on chronic disease prevention and management and on maternal and child health. (Additional indicators are to be added progressively in the future.) These are the two key focus areas to achieve the objective of closing the gap in life expectancy between Indigenous and non-Indigenous Australians.

A list of indicators and more information on their development can be found at Appendix 1.

There is sound evidence to support the contribution that performance indicator systems can play in the delivery of effective primary health care when they are integrated with sound continuous quality improvement (CQI) strategies (Bailie et al. 2007). The nKPIs build on a body of work in Australia that integrates primary care performance data with quality improvement methods. This work includes the Australian Primary Care Collaboratives, the Audit and Best Practice for Chronic Disease program, the Northern Territory Aboriginal Health Key Performance Indicators project, the Queensland Aboriginal and Islander Health Council Health Information System, and the Healthy for Life program. CQI is one component of a broader health system response that is required to improve primary health-care delivery.

On their own, the nKPI data will not lead to positive change, improvements in service delivery or to improved outcomes. However, when used by health service providers at the local level to identify opportunities and to measure progress towards achieving change, they can make an important contribution. For some organisations, getting the most value out of the nKPIs will require substantial change to the systems and processes in place to collect high-quality data. The process of making sense of the data and adopting CQI practices requires organisational commitment, capability and capacity.

A potentially important factor influencing organisation performance on the nKPIs is the level of funding each organisation receives relative to the size of the population it serves, the level of need in the population, and the geographic context in which the organisation works. This report does not analyse performance in relation to resources. It works on the assumption that there is room for improvement regardless of the level of resourcing, while acknowledging that the level of resourcing may constrain how much improvement is possible.

This report is designed to highlight the major areas of achievement of primary health-care providers as well as the areas where improvements are needed by organisations in the delivery of services to their clients. These findings need to be understood in the context of the constraints within which organisations operate and the possibility that some results relate to data collection issues rather than to service delivery issues.

This report also needs to be seen as the start of reporting against the nKPIs. It signals many areas where the underlying data collection systems need to be further refined and developed as well as enhancements to the processes of analysis, reporting and communication. A commitment to quality improvement is something that needs to be shared across all parts of a national approach to the provision of primary health care for Aboriginal and Torres Strait Islander people.

nKPI data

As with any data collection, there are some limitations in the nKPI data that should be taken into account when interpreting the information provided in this report. These limitations include the fact that data are captured as part of service delivery processes, and the double counting of clients who attend more than one service regularly. Additionally, the Australian Institute of Health and Welfare (AIHW) noted internal inconsistencies for some data for some organisations. These data were excluded from the national analysis. A detailed description of the data collection processes and issues associated with the data, including issues related to the 'regular client' definition, is presented in Chapter 2.

Clients

The population of interest in the nKPIs is the regular client population of those primary health-care organisations that are required to report against the nKPIs. A regular client is defined as a person who has an active medical record—that is, a client who attended the primary health-care organisation at least 3 times in the last 2 years. This definition, while nationally consistent and in line with the Royal Australian College of General Practitioners definition of a patient with an active medical record, has limitations, including clients who attend multiple health organisations.

Organisations contributing nKPI data

The nKPI data have been collected for 3 reporting periods, after an initial trial involving about 80 organisations with previous data collection experience. The number of participating organisations increased from 90 in June 2012 to 206 in June 2013. Organisations reporting include Aboriginal Community Controlled Health Organisations, organisations that are not community controlled, state/territory and local government organisations, non-government organisations, auspiced organisations and Medicare Locals. Organisations may report nKPI data through OCHREStreams.

- The overall distribution of organisations reporting nKPI data shows that they are located across all jurisdictions and remoteness areas.

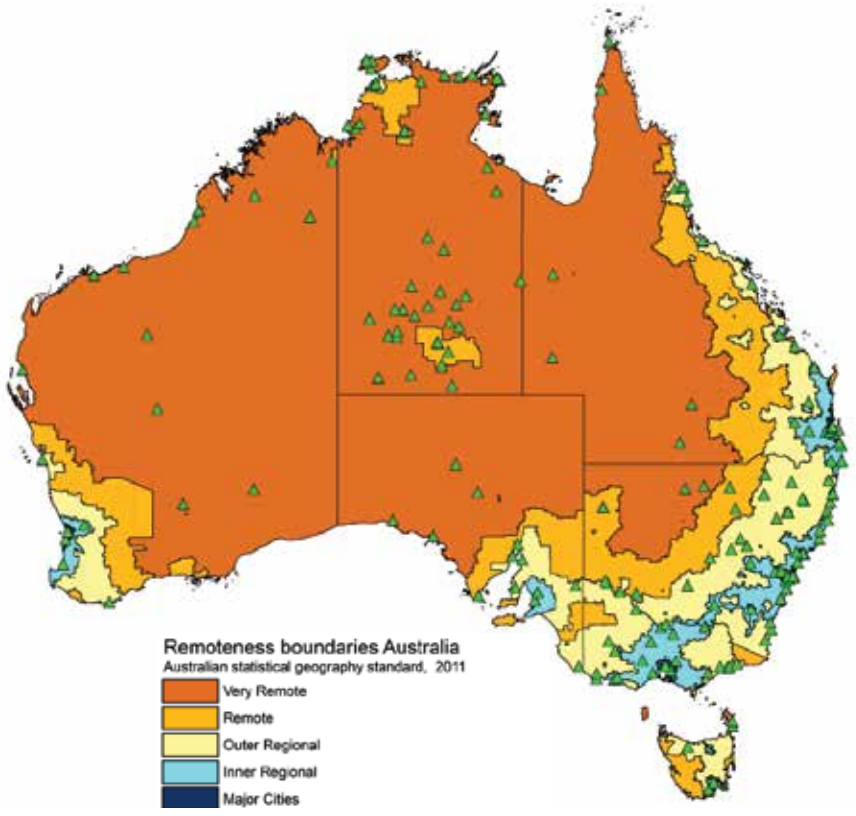
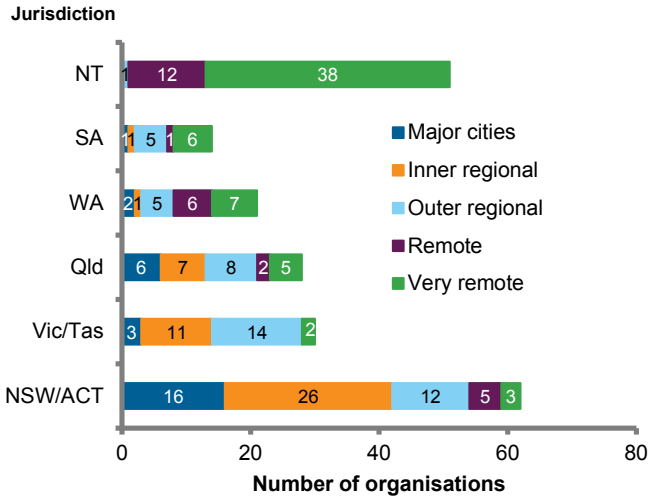


Figure 1.1: Map of organisation location: jurisdiction and remoteness

- The number of organisations disaggregated by jurisdiction and remoteness area show that more organisations are located in NSW/ACT than in other jurisdictions, followed by the NT.
- Most NT organisations are located in *Very remote* areas while most NSW/ACT organisations are in *Major cities* and *Inner regional* areas.



Note: Organisations in the Australian Capital Territory and Tasmania have been combined with those in New South Wales and Victoria, respectively, due to small numbers.

Figure 1.2: Number of organisations by jurisdiction and remoteness, June 2013

- NSW/ACT, Queensland and the NT organisations have more Indigenous regular clients than other jurisdictions.
- Total Indigenous regular clients seen represent 40% of Indigenous people nationally. Clients seen at NT organisations represent 88% of the NT Indigenous population.

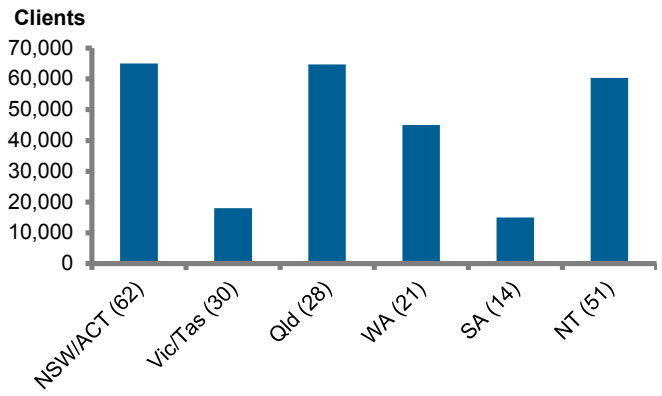


Figure 1.3: Clients by jurisdiction, June 2013

- The number of Indigenous regular clients in organisations increased consistently with increasing remoteness, with *Very remote* areas having the largest number of clients.
- Clients who were seen at *Very remote* organisations represented about 69% of the total Indigenous population in *Very remote* areas; however, this may reflect some of the double counting of clients in *Very remote* locations.

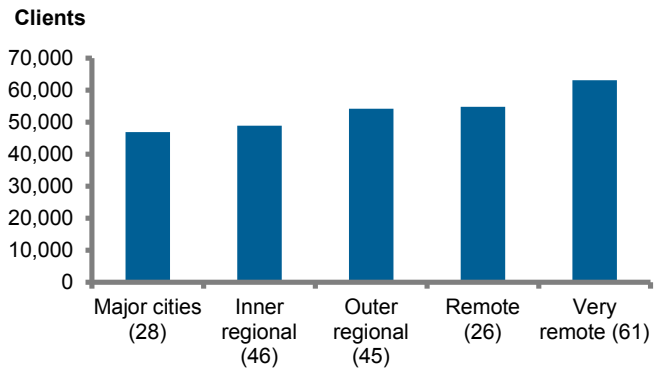
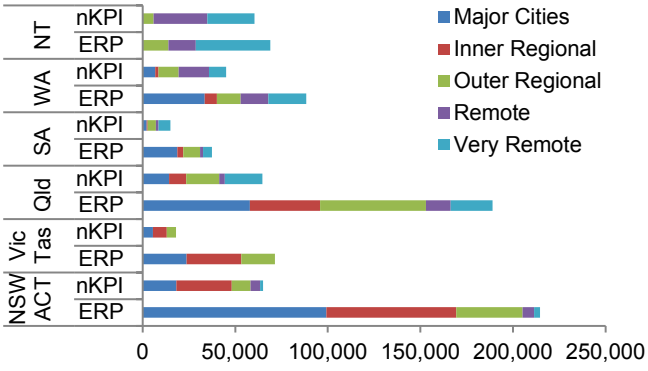


Figure 1.4: Clients by remoteness, June 2013

- The nKPI regular client population by jurisdiction and remoteness area is not necessarily in line with the estimated resident Indigenous population distribution in these areas. This should be noted when comparing data across jurisdictions and remoteness.
- It should also be noted that Indigenous people living in *Major cities* and some regional areas may have access to more health service options than in *Remote* and *Very Remote* areas. More generally, the number of nKPI health organisations available may vary in each jurisdiction or remoteness area in relation to the population in these areas.



Notes
1. Outer regional, Remote and Very remote areas of Victoria and Tasmania have been combined due to small numbers and reported in the category Outer regional.
2. ERP is the Estimated Resident Population.

Figure 1.5: Indigenous population in the nKPI collection and the general Indigenous population (ERP) as at 30 June 2011

Structure of the report

The remaining chapters are organised as follows:

- Chapter 2 presents data for each indicator at the national and jurisdictional level and by remoteness. It shows areas where performance is strongest. It also shows areas that need further improvements by ranking an organisation's performance into quartiles and describing those in the first and fourth quartiles. A summary of the nKPI results as well as national comparison data are presented at Appendix 2, while Appendix 3 expands the discussion on data quality. A guide to the figures presented in this chapter is provided at Appendix 4. Appendix 5 includes analysis of overall performance against the nKPIs by organisation size. Unless otherwise noted, all graphs are for the period ending 30 June 2013.
- Chapter 3 uses regression modelling to look at the factors that had an impact on organisational performance, and the outcomes for clients. This analysis provides insights into some potential focus areas for improving organisational performance. This chapter used data from the Online Service Reporting (OSR) collection; therefore, information on organisations that participated in both nKPI and OSR collections are presented at Appendix 6.
- Chapter 4 presents organisational performance against individual process of care indicators. It shows the extent to which organisations are able to report on each of these indicators.
- A conclusion is provided at Chapter 5.

This report also has a number of appendixes.

- A list of nKPIs is shown at Appendix 1.
- Appendix 2 summarises the nKPIs with comparisons made, where possible, with national data for Aboriginal and Torres Strait Islander people. Specifically, comparisons are made with the recent Australian Bureau of Statistics (ABS) Australian Aboriginal and Torres Strait Islander Health Survey (AATSIHS) for the smoking status and body mass index (BMI) indicators. Comparisons are also made with the National Perinatal Data Collection (NPDC) for birthweight result.
- A detailed discussion of data quality issues that should be considered when interpreting the data can be found at Appendix 3.
- Appendix 4 provides a guide to the figures discussed in this chapter.
- Appendix 5 analyses performance by organisation size.
- Appendix 6 looks at the characteristics of organisations in both the nKPI and OSR data collections.
- Appendix 7 shows detailed results of the logistic regression analysis.
- Appendix 8 provides an in-depth discussion of the logistic regression model.
- Appendix 9 lists which measures were discussed in each chapter.

Chapter 2

Organisation performance against individual indicators

This chapter presents the organisational performance against individual process of care indicators, as well as the outcomes for clients against a number of outcome indicators. Information is presented at the national level, jurisdictional level and by remoteness region. Further disaggregations such as remoteness by jurisdiction are not undertaken in this report to avoid potential identification of data specific to individual organisations.

Interquartile ranges as well as the median value for organisations are presented to show the variation across organisations.

Indicators in this chapter are organised into the following groups:

- Child and maternal health
- Health assessments and early detection
- Immunisation
- Chronic disease
- Risk factors.

Four of the 19 indicators in this report look at two or more distinct population groups. These indicators are:

- Medical Benefits Schedule (MBS) health assessment for children aged 0–4 and for adults aged 25 and over.
- Regular clients with type 2 diabetes and regular clients with chronic obstructive pulmonary disease (COPD) immunised against influenza.
- Regular clients with either type 2 diabetes or cardiovascular disease (CVD) who have had a kidney function test.
- Regular clients who were fully immunised at ages 1, 2 and 5.

In order to distinguish between the high-level indicator and its associated population groups, this report refers to them as indicator measures. As a result, there are 24 measures for the 19 indicators presented in this report. The child immunisation indicator examines three age groups; however, due to data quality issues, this indicator and its sub-components have been excluded from most analyses in this report. Due to exclusion of the child immunisation data, only 21 indicator measures are discussed at most places in this report. Of these, 16 are process of care measures and 5 are outcome measures. Process of care measures vary in terms of the complexity of the process of care that they measure. Some require action by a single health worker; others require action from multiple workers or even multiple organisations.

Indicators of any type are designed to measure something beyond themselves. For instance, recording of blood pressure and HbA1c results for clients with type 2 diabetes provides a good, though imperfect, measure of overall care for these clients. These indicators are also important in and of themselves as activities that impact on health outcomes, or health outcomes that are important to morbidity and mortality.

Additional information to assist with the analyses presented can be found in Appendixes 1–5.

This chapter discusses the top and bottom 25% of organisations. This description refers to the quartiles of performance against each indicator. The first quartile (bottom quartile or below the 25th percentile) shows the 25% of organisations that had the lowest values for the indicator; the top quartile (above the 75th percentile) separates the 25% of organisations that had the highest values for an indicator from the rest. Circumstances unique to a particular organisation may contribute to how well it performs relative to other organisations.

General data issues

There are a number data issues relevant to most nKPIs that should be considered when interpreting the results (for more details, see Appendix 3):

- The number of organisations that provided valid data is different for different measures.
- The number of organisations reporting nKPI data increased over time. New organisations were added in different reporting periods, which can affect results. For instance, the proportion of babies whose birthweight was recorded decreased in South Australia in December 2012 compared with June 2012. This decrease was primarily because a number of new organisations were introduced, which, on average, had a lower proportion of babies whose birthweight was recorded. Additionally, 26 Northern Territory Government organisations reported for the first time for the reporting period ending June 2013. Changes in the Northern Territory average, and to a lesser extent changes in the *Very remote* and national averages, should be interpreted with this in mind.
- There is some likely double counting of the same client at multiple organisations, especially at those in *Very remote* areas. However, the extent of this nationally is unknown and difficult to quantify.
- Organisations from different sectors provided data. For instance, many of the organisations were Aboriginal Community Controlled Health Organisations, but many had different governance arrangements.
- Organisations used various Patient Information Recall Systems. These may facilitate recording of information related to some indicators more than others. Additionally, some were less compatible with other components of the electronic data transfer system used by organisations to report data.

In addition to these considerations, many of the indicators discussed in this chapter should be interpreted in light of additional information that applies to some measures only, noted in the 'Things to consider when interpreting the data' box below.

Box 1: Things to consider when interpreting the data

The nKPIs, like performance indicator systems generally, are useful but imperfect measures of system characteristics that are agreed to be important. In order to maximise their usefulness, data users need to understand where and how the nKPI data might depart from the reality that the indicators are attempting to measure. These notes are designed to help nKPI data users appreciate and work constructively with the data that appear in this report and in service-level reports.

Babies' records: The two indicators related to birthweight include any baby with a record at the health organisation. This may mean that some babies whose parents are regular clients are not included in these indicators. It may also lead to babies being included who visited the organisation purely for acute care, and whose carers may not have been able to confirm birthweight. Babies without a medical record, whose information is recorded in their mother's record, would not be counted.

Multiple births should not count toward birthweight results; however, anecdotal evidence suggests that such exclusion may not always have occurred.

Differential BMI testing may occur in some organisations. That is, BMI may be more likely to be measured in clients who look underweight, overweight or obese. This would result in the apparent proportion of overweight or obese clients being higher than it actually is. However, the fact that there is a lower proportion of overweight and obese regular clients than in the AATSIHS data suggests this effect is unlikely to be very important.

Influenza vaccination does not record clients who are offered a vaccination but refuse. While some clients may be reluctant to have the injection, this does not change whether or not they are at increased risk from influenza.

Opposite trends for recording and results: In two sets of related indicators—HbA1c tests and blood pressure tests—the proportion of clients who had information recorded declined over time, while the proportion that had a positive result increased over time. Beyond normal fluctuation, the most likely explanation for this is an increase in the number of regular clients with type 2 diabetes. Data from Healthy for Life show an upward trend in the number of clients with type 2 diabetes (AIHW 2013), which could reflect increased incidence, more complete diagnosis, and better outreach to unhealthy people in the community. New clients and newly diagnosed clients may be less likely to have their HbA1c or blood pressure under control.

MBS items are not claimed by all organisations, either because they do not have a general practitioner (GP) present, they are not eligible to claim them or because they choose not to do so. Therefore, the indicators based on MBS items may not reflect all related health-care activities carried out in an organisation. For instance, children may be receiving comprehensive health checks but these may be provided within a model of care that does not suit or allow for the check to be claimed as an MBS item.

Pathology results held at the organisation may not reflect all pathology tests that have occurred for its regular clients. Organisations without systems in place may not have recorded the information, or results may not have been picked up accurately.

Access to allied health providers may be limited in some areas, in which case Team Care Arrangements (TCAs) may not be practical. This is often the case in remote regions.

Recording of alcohol consumption is not restricted to a particular test or format for this indicator. Organisations can use tests such as the AUDIT or AUDIT-C, or simply record whether or not the client consumes alcohol.

Shared care arrangements between hospitals and primary health organisations, or between primary care organisations, or between primary health care organisations and other providers of similar care are not consistently supported by automatic data sharing. This could lead to lower rates of data recording for some indicators. For instance, organisations may find it more difficult to obtain antenatal records if antenatal care occurred elsewhere. Similarly, it will be difficult for organisations to obtain information on their regulr clients who may choose to receive cervical screening elsewhere.

Continued

Small organisation denominators: All relevant organisations were included in the analyses, without any differentiation for organisation size. This means that the set of organisation percentages used to compute quartiles (for example) are based on client sets that can range from very small to very large (Appendix Figure A5.1). Where an organisation has a small denominator, small changes in the numerator can have a large impact on the overall proportion for that organisation. This is true for all the indicator measures in this chapter. The proportion of organisations with a denominator of less than 20 clients exceeded 10% of all contributing organisations for 14 of the 21 measures. These measures have been flagged with a note. One measure, clients with COPD immunised against influenza, had 87% of organisations with a denominator of less than 20. This was substantially higher than all other measures.

Smoking status categories are not yet fully agreed. For example, there is not yet universally accepted guidance on how long a person needs to have quit smoking to be considered an ex-smoker rather than a smoker. An increased number of types of ex-smokers might enhance data quality and lead to more frequent updating of clients' records.

Time-stamped records normally ensure that a record or activity is fairly recent. However, the smoking status recorded and smoking status result indicators are based on the most recent record for the client, regardless of how old that record is. Therefore, the indicator may not reflect current smoking status of the regular client population unless the data have been collected recently for all or most clients.

A. First antenatal visit

Headline results

Nationally, 35% of Aboriginal and Torres Strait Islander regular clients had their first antenatal visit before 13 weeks of pregnancy as at June 2013 (Figure 2.A1).

Trend data are not available. Organisations located in *Remote* areas had the highest proportion of antenatal visits before 13 weeks of pregnancy as well as the highest proportion with no data recorded (Figure 2.A2).

Organisation performance (Figure 2.A3):

- Five (5) organisations had 100% of clients attending their first antenatal visit before 13 weeks of pregnancy.
- Twenty-six (26) organisations had no pregnant women attending before 13 weeks of pregnancy.
- In the top 25% of organisations, at least 47% of women had their first antenatal visit before 13 weeks of pregnancy.
- In the bottom 25% of organisations, fewer than 16% of women had their first antenatal visit before 13 weeks of pregnancy.

Variation in the timing of first antenatal visit by age at pregnancy: Women aged 20–34 were more likely than those in other age groups to attend antenatal care before 13 weeks of pregnancy. A high proportion (36%) of women aged less than 20 had their first antenatal visit later than 20 weeks of pregnancy (Figure 2.A4).

Organisation size did not greatly affect the proportion of women attending their first antenatal visit before 13 weeks of pregnancy. A few small organisations had 100% of women having their first antenatal visit before 13 weeks (Appendix Figure A5.1).

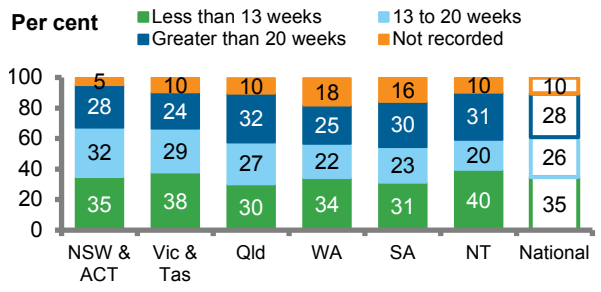


Figure 2.A1: Timing of first antenatal visit, by jurisdiction

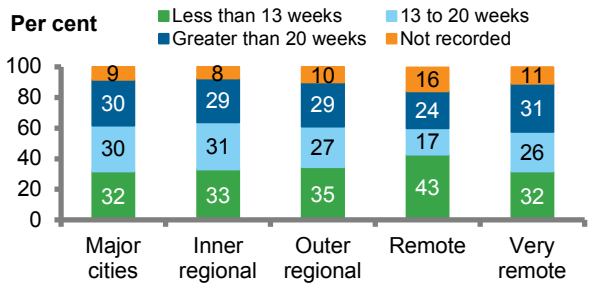


Figure 2.A2: Timing of first antenatal visit, by remoteness

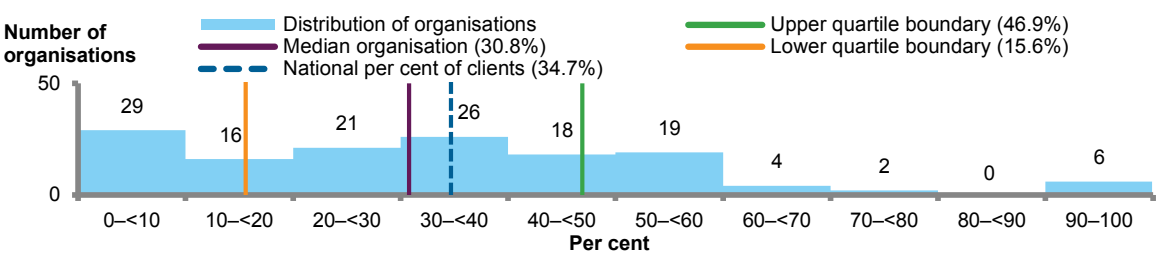


Figure 2.A3: Distribution of percentage of clients whose first antenatal visit was before 13 weeks of pregnancy, by organisation

Why is this important?

- An early antenatal visit can reduce the risk of health complications for the mother and the baby as substantial health impacts can occur in the first trimester during critical periods of brain development.
- Collecting data on the timing of first antenatal visits can inform knowledge of clinical practice and patient behaviour.

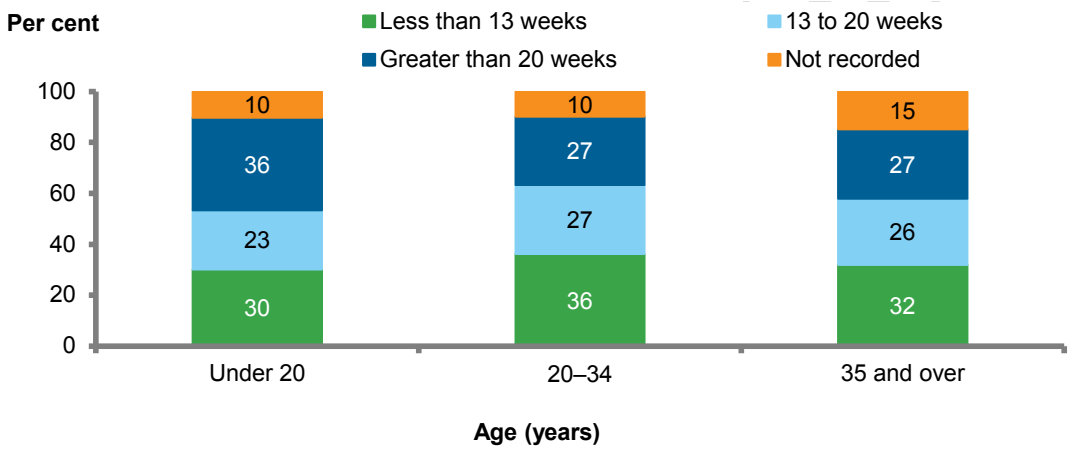


Figure 2.A4: Timing of first antenatal visit, by age

Opportunities for action

- June 2013 was the first time data were collected on this indicator. Improvement on this indicator is possible, though the degree of organisational influence is affected by women's health literacy and other factors, including access to staff qualified to provide antenatal care.
- Completeness of recording of antenatal visits is important—nationally, 10% of clients' first antenatal visit was not recorded.
- All organisations could work towards achieving 47% of women having their first antenatal visit within 13 weeks of pregnancy. One-quarter of all organisations currently achieve this. NPDC data showed that, in 2011, 45.9% of Aboriginal and Torres Strait Islander women attended their first antenatal visit within 13 weeks of pregnancy (AIHW NPDC unpublished). This is a reasonable starting point to consider as a benchmark that organisations could initially work towards.
- More research is required into the barriers women face in accessing antenatal care.

Things to consider

- Babies' records
- Shared care arrangements
- Small organisation denominators.

B. Birthweight recorded by the organisation

Headline results

Nationally, 58% of Aboriginal and Torres Strait Islander babies born in the previous year had their birthweight recorded at the primary health-care organisation as at June 2013 (Figure 2.B1).

Trend showed an increase of about 7 percentage points between June 2012 and June 2013 (Figure 2.B1). There were improvements in most jurisdictions and remoteness areas (figures 2.B1 and 2.B2).

Organisation performance (Figure 2.B3):

- Twenty-eight (28) organisations achieved 100%.
- Eighteen (18) organisations did not record birthweight for any babies born.
- The top 25% of organisations recorded birthweight for 88% or more of their clients.
- The bottom 25% of organisations recorded birthweight for 22% or fewer of their clients.

Variation in recording between organisations was large, with substantial numbers recording birthweight either for 0–10% of babies or 90–100% (Figure 2.B3). Substantial variation in recording is also seen by jurisdiction and by remoteness region (figures 2.B4 and 2.B5).

Organisation size (indicated by number of regular clients) had no clear relationship with performance (Figure A5.1).

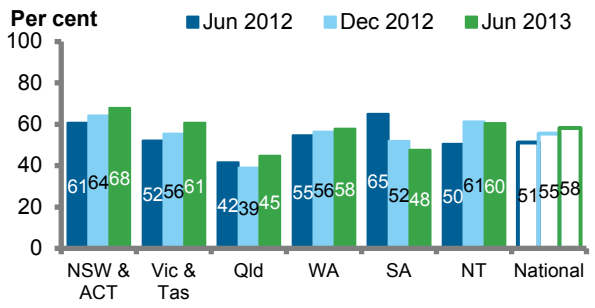


Figure 2.B1: Birthweight recorded, by jurisdiction

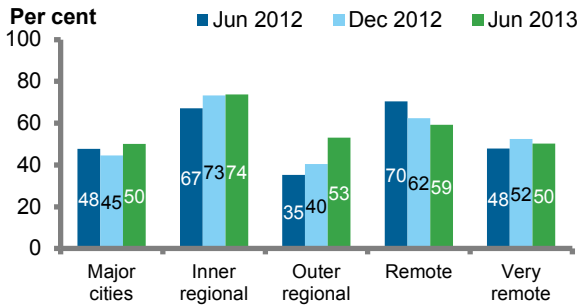


Figure 2.B2: Birthweight recorded, by remoteness

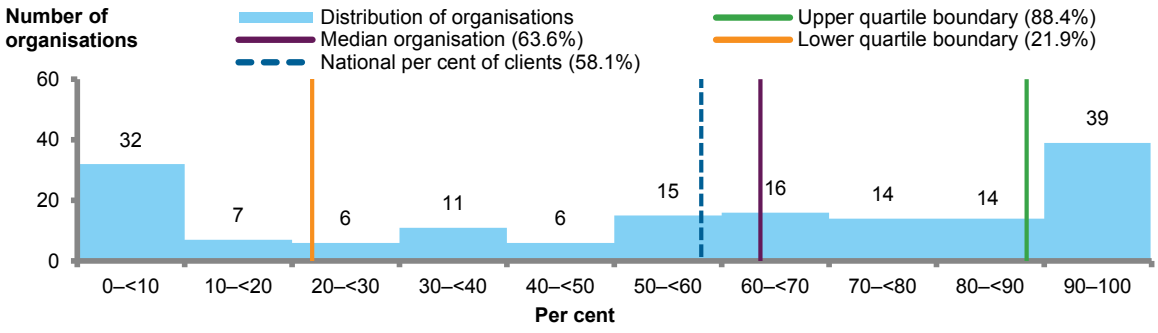


Figure 2.B3: Distribution of percentage of birthweights recorded, by organisation

Why is this important?

- Collecting data on birthweight facilitates early intervention and the provision of clinically appropriate care to reduce the risk of subsequent adverse health outcomes (McCormick et al. 1992). It also supports accurate measurement of the prevalence of low and high birthweight babies among the Indigenous population.
- Low birthweight is associated with an increased risk of developing chronic disease later in life (AIHW 2011).

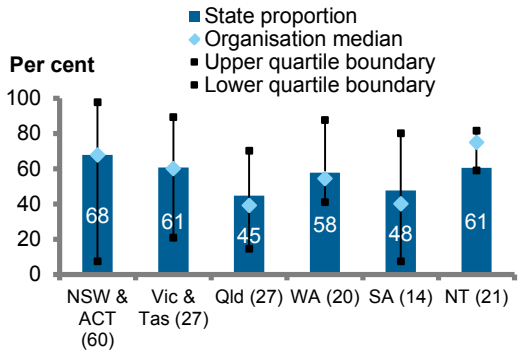


Figure 2.B4: Birthweight recorded, by jurisdiction, with median and quartile boundaries of organisations

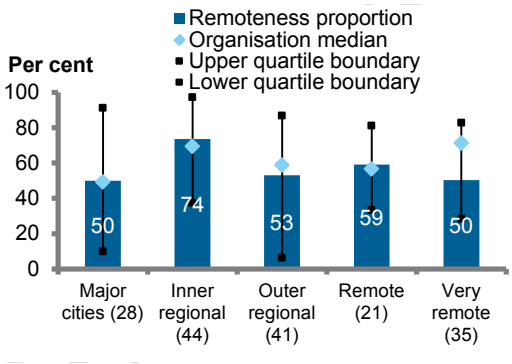


Figure 2.B5: Birthweight recorded, by remoteness, with median and quartile boundaries of organisations

Opportunities for action

- Improvements at the national level and in all but one jurisdiction over the 3 data collections from June 2012 demonstrate good work by many organisations against this indicator.
- The bottom 25% of organisations have opportunity to improve against this indicator—they are recording birthweight for less than 32% of the babies born who had a record at the organisation. This level of performance is unrelated to organisation size or location and indicates an area of potential CQI activity.
- All organisations could work towards achieving 88% recording of birthweight.
- One-quarter of all organisations currently achieve this. Early childhood development is a key priority for improving health outcomes.
- Organisations with poor results may want to review whether their data are being captured within their Patient Information Recall Systems but not in a way that is electronically extracted for nKPI reporting.

Things to consider

- Babies' records
- Shared care arrangements
- Small organisation denominators.

C. Birthweight result

Headline results

Nationally, 12% of Aboriginal and Torres Strait Islander babies born in the previous year had a low birthweight as at June 2013, and 85% had a normal birthweight (Figure 2.C1).

The proportion of low birthweight babies was lowest in Queensland, and highest in *Very remote* areas (figures 2.C1 and 2.C2). Overall, however, differences in the proportion between remoteness areas and jurisdictions were relatively small.

Organisation performance for those with birthweight recorded (Figure 2.C3):

- In the top 25% of organisations, 1% of babies or less were low birthweight.
- In the bottom 25% of organisations, 18% of babies or more were low birthweight.

Comparison with other national data shows that a similar proportion of Indigenous babies at organisations providing nKPI data were born of low birthweight (Figure 2.C4).

Variation was smaller than for the proportion of babies with a result recorded (Figure 2.C3). This could be because health organisations have less influence over the actual birthweight than the recording of results.

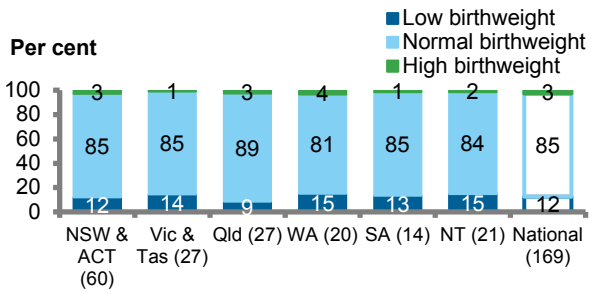


Figure 2.C1: Birthweight result (low, normal and high), by jurisdiction

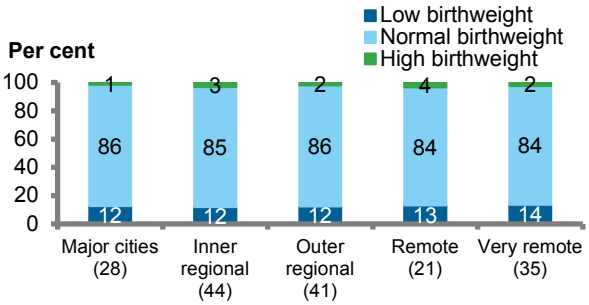


Figure 2.C2: Birthweight result (low, normal and high), by remoteness

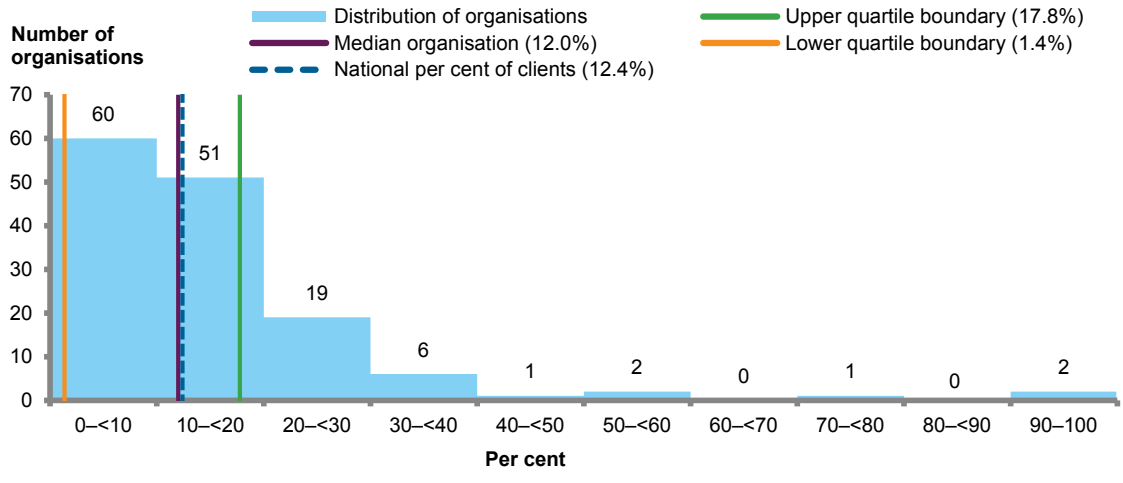


Figure 2.C3: Distribution of percentage of low birthweights, by organisation

Why is this important?

Detecting low and high birthweight:

- facilitates the provision of clinically appropriate care for the child and mother
- informs knowledge of the prevalence of high and low birthweight babies.

Both low and very high birthweight are associated with an increased risk of developing chronic disease later in life (AIHW 2011; Hadfield et al. 2009).

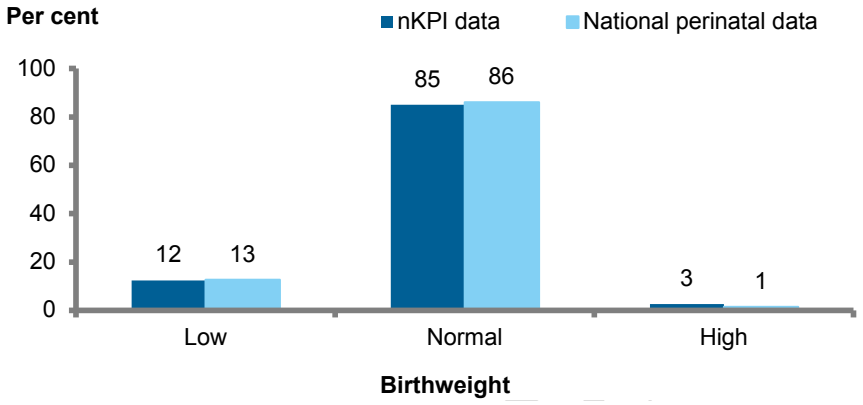


Figure 2.C4: Birthweight result for Indigenous babies: comparison of nKPI and NPDC data

Opportunities for action

- June 2013 was the first time data were collected for this indicator.
- Low birthweight is influenced by a range of social determinants outside the control of organisations. A high number or proportion of low birthweight babies does not indicate poor organisational performance but it does point to an area of need.
- Organisations with a high percentage of low birthweight, or a worsening trend, could review whether their current maternal and child health-care services are effectively targeting prevention and follow-up for vulnerable mothers and babies.

Things to consider

- Babies' records
- Shared care arrangements
- Small organisation denominators
- Multiple births.

D. MBS health assessment (item 715) for children aged 0–4

Headline results

Nationally, 26% of Aboriginal and Torres Strait Islander children aged 0–4 received an MBS health assessment in the previous 12 months to June 2013 (Figure 2.D1).

Trend showed an increase of 3 percentage points between June 2012 and June 2013. *Inner regional*, *Remote* and *Very remote* areas all showed signs of improvement (figures 2.D1 and 2.D2).

Organisation performance (Figure 2.D3):

- Seven (7) organisations provided MBS health assessments to more than 70% of children.
- Twenty-one (21) organisations did not provide any MBS health assessments.
- In the top 25% of organisations, at least 40% of children had an MBS health assessment.
- In the bottom 25% of organisations, 9% or fewer of children had an MBS health assessment.

Variation was least in South Australia and *Remote* areas (figures 2.D4 and 2.D5).

Organisation size suggests both smaller and larger organisations had a similar performance. Most organisations provided health assessments for 48% of children or fewer (Appendix Figure A5.1).

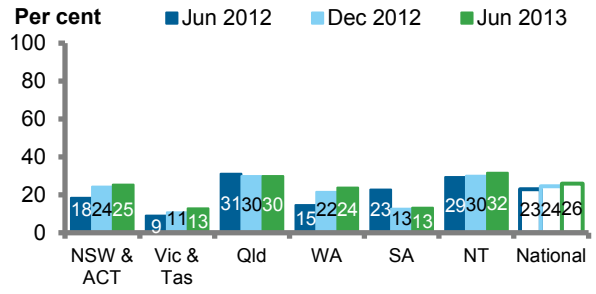


Figure 2.D1: MBS health assessment in the past 12 months (ages 0–4), by jurisdiction

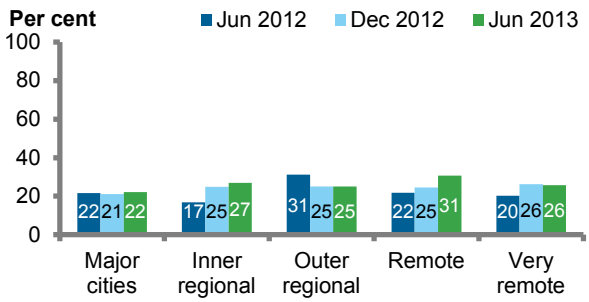


Figure 2.D2: MBS health assessment in the past 12 months (ages 0–4), by remoteness

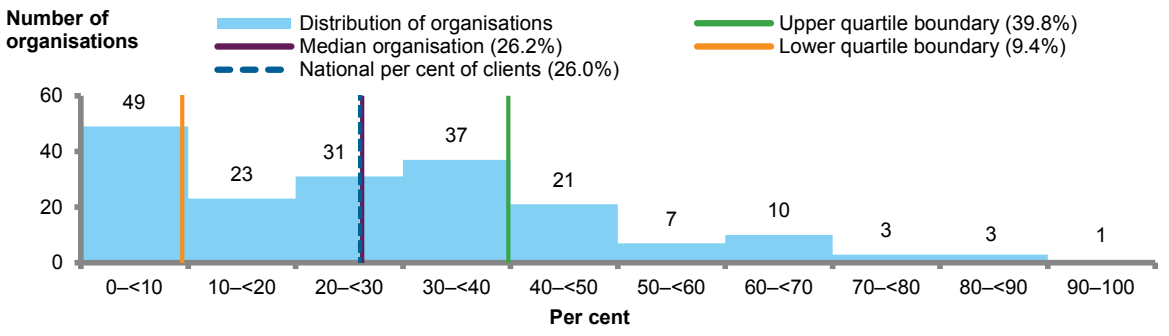


Figure 2.D3: Distribution of percentage of MBS health assessment in the past 12 months (ages 0–4), by organisation

Why is this important?

Recording whether health assessments have been done:

- illustrates how well the organisation is targeting early detection, diagnosis and intervention
- shows system's responsiveness to incentives for health assessments and reach of the program.

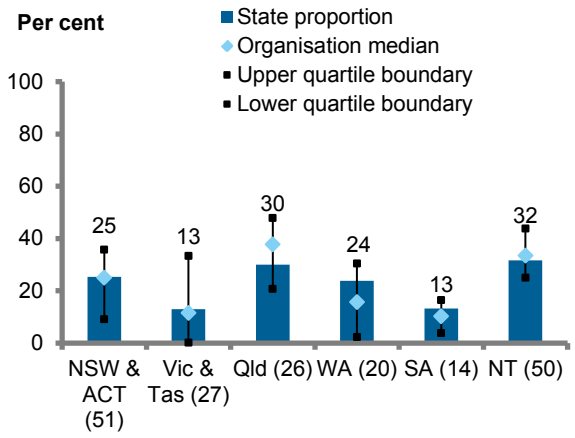


Figure 2.D4: MBS health assessment in the past 12 months (ages 0–4), by jurisdiction, with median and quartile boundaries of organisations

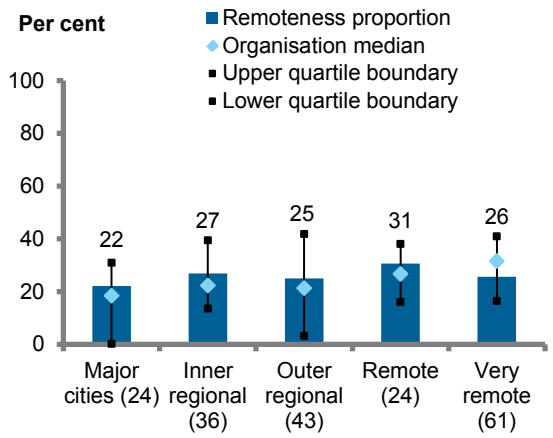


Figure 2.D5: MBS health assessment in the past 12 months (ages 0–4), by remoteness, with median and quartile boundaries of organisations

Opportunities for action

- Improvement on this indicator is achievable as shown by the results at the national level since June 2012.
- The 25% of organisations that had conducted a health assessment for 9% or fewer of their regular clients aged 0–4 have an opportunity to review current practices and priorities and the potential benefits of doing more. The data suggest that all organisations can work towards achieving a benchmark of over 40%—at present 25% of organisations achieve this.
- Some organisations may be conducting health checks for children aged 0–4 but either might not be eligible to claim MBS items or are not completing checks in a way that meets all the requirements for MBS billing. This may be due to the preferred model of care, level of access to a GP or to difficulties in establishing and sustaining the required business processes (Bailie et al. 2013).

Things to consider

- MBS items
- Small organisation denominators.

E. MBS health assessment (item 715) for adults aged 25+

Headline results

Nationally, 37% of Aboriginal and Torres Strait Islander regular clients aged 25 and over received a health assessment in the past 24 months as at June 2013 (Figure 2.E1).

Trend showed an increase of 6 percentage points between June 2012 and June 2013. Queensland and Western Australia—as well as *Inner regional*, *Remote* and *Very remote* areas—showed improvements (figures 2.E1 and 2.E2).

Organisation performance (Figure 2.E3):

- Thirteen (13) organisations provided MBS health assessments for more than 70% of adult clients.
- Twelve (12) organisations did not provide any MBS health assessments for their adult clients.
- In the top 25% of organisations, at least 51% of clients had an MBS health assessment.
- In the bottom 25% of organisations, 18% clients or fewer had an MBS health assessment.

Variation was less in the Northern Territory and *Remote* areas (figures 2.E4 and 2.E5).

Organisation size indicates that the performance of both the smaller and larger services was similar. It was some of the smaller services (with fewer than 1,000 clients) that provided health checks for the highest proportion of adults (Appendix Figure A5.1).

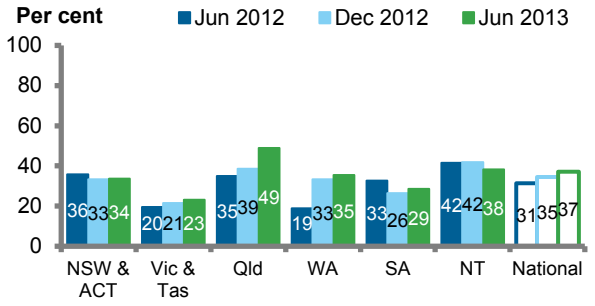


Figure 2.E1: MBS health assessment in the past 24 months (ages 25 and over), by jurisdiction

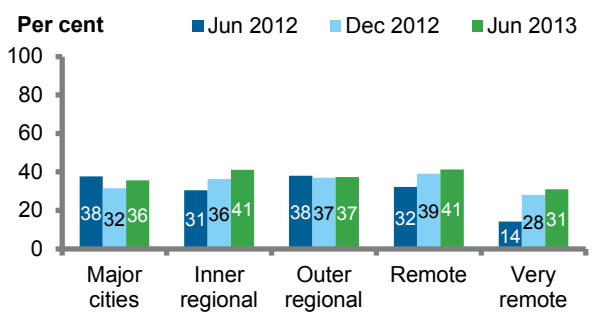


Figure 2.E2: MBS health assessment in the past 24 months (ages 25 and over), by remoteness

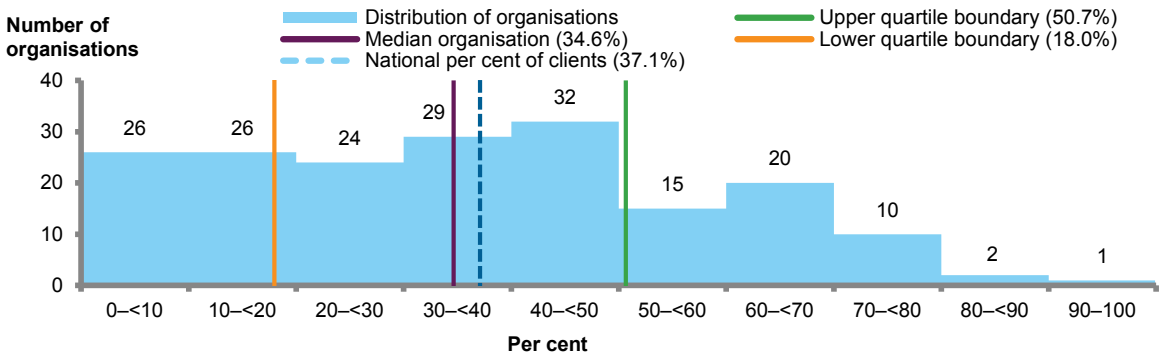


Figure 2.E3: Distribution of percentage of MBS health assessment in the past 24 months (ages 25 and over), by organisation

Why is this important?

Recording whether health assessments have been done:

- helps to show how well the organisation is targeting early detection, diagnosis and intervention in adult clients
- illustrates system responsiveness to incentives for health assessments and reach of the program.

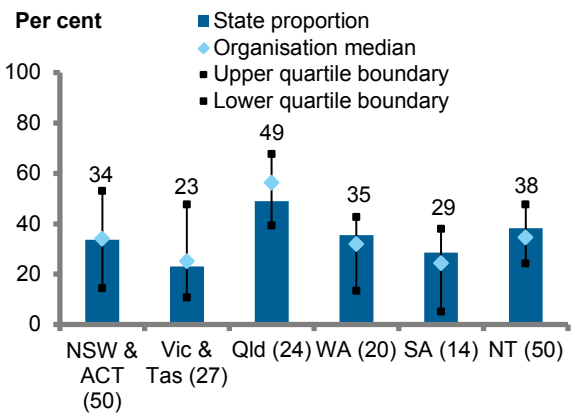


Figure 2.E4: MBS health assessment in the past 24 months (ages 25 and over), by jurisdiction, with median and quartile boundaries of organisations

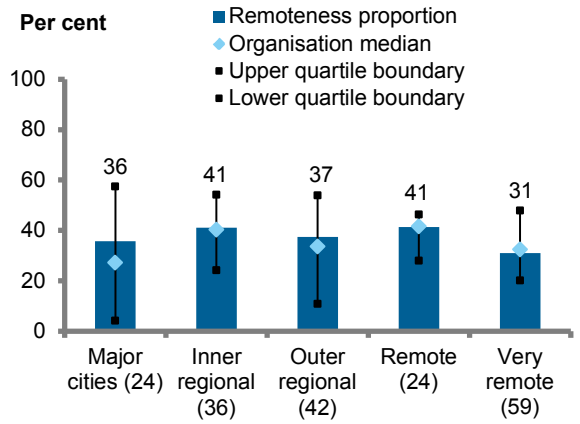


Figure 2.E5: MBS health assessment in the past 24 months (ages 25 and over), by remoteness, with median and quartile boundaries of organisations

Opportunities for action

- Further improvement on this indicator is achievable as shown by the results at the national level since June 2012.
- The 25% of organisations that have health assessments in place for 18% or fewer of their clients have an opportunity to review current practices and priorities and the potential benefits from doing more. The data suggest that all organisations can work towards achieving a benchmark of over 50% of their regular clients with MBS health assessments, as one quarter of organisations achieve this.
- Development of a benchmark for this indicator is desirable and it may not necessarily be 100% of the population. Factors to consider include the prevalence of the main conditions identified through the assessment, the performance of the screening tools used and the availability of follow-up services.

Things to consider

- MBS items.

F. Cervical screening

Headline results

Nationally, 31% of female Aboriginal and Torres Strait Islander regular clients had a cervical screening in the previous 2 years as at June 2013 (Figure 2.F1). In comparison, 37% had a screening in the previous 3 years, and 43% had a screening in the previous 5 years.

Trend data are not available. In each screening time period, Northern Territory and *Very remote* areas had the highest proportions of clients screened (figures 2.F1 and 2.F2).

Organisation performance (Figure 2.F3):

- In 2 organisations, 80–<90% of women were screened for cervical cancer.
- Nine (9) organisations had no women who had a cervical screening.
- In the top 25% of organisations, at least 47% of clients had a cervical screening in the previous 2 years.
- In the bottom 25% of organisations, 17% of clients or fewer had a cervical screening in the previous 2 years.

Variation between organisations was greatest in Western Australia and in *Remote* areas (figures 2.F4 and 2.F5).

Organisation size and the proportion of women who had a cervical screening in the previous 2 years showed that more small organisations than large or medium-sized ones screened over 70% of women for cervical cancer. However, overall, less than 50% of women in services of all sizes had a cervical screening (Appendix Figure A5.1).

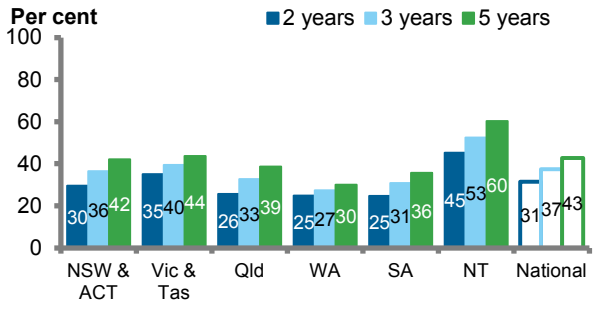


Figure 2.F1: Cervical screening, by jurisdiction

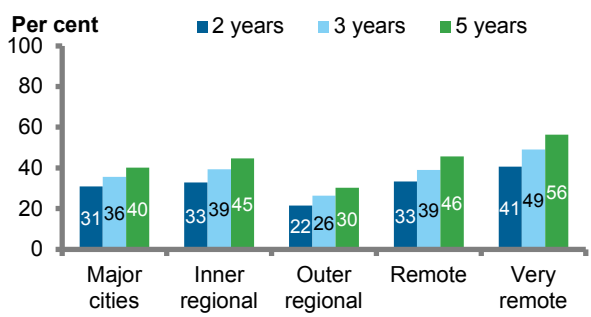


Figure 2.F2: Cervical screening, by remoteness

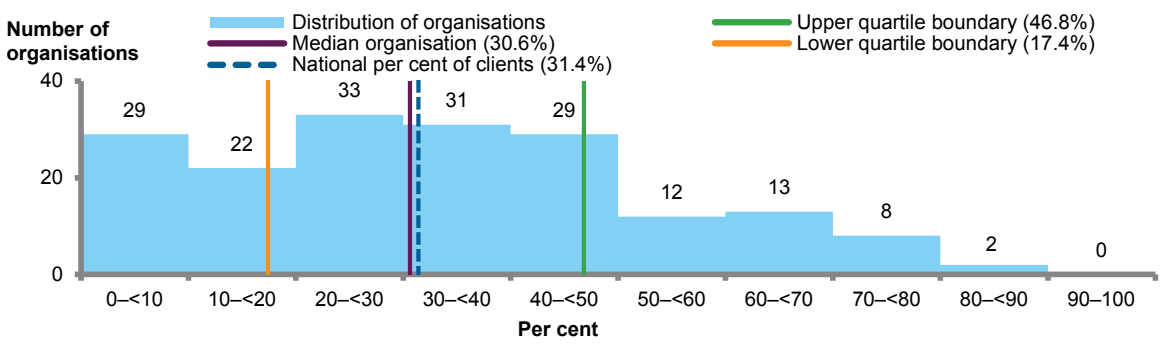


Figure 2.F3: Distribution of percentage of cervical screenings, by organisation

Why is this important?

Cervical cancer is a major cause of the burden of disease for Aboriginal and Torres Strait Islander women.

Cervical cancer screening:

- is recommended every 2 years for most women aged 18 and over—including women who have been vaccinated against human papillomavirus (DoHA 2014).
- reduces the incidence of squamous cell cancers in Australia (Luke et al. 2007; Wain 2007).

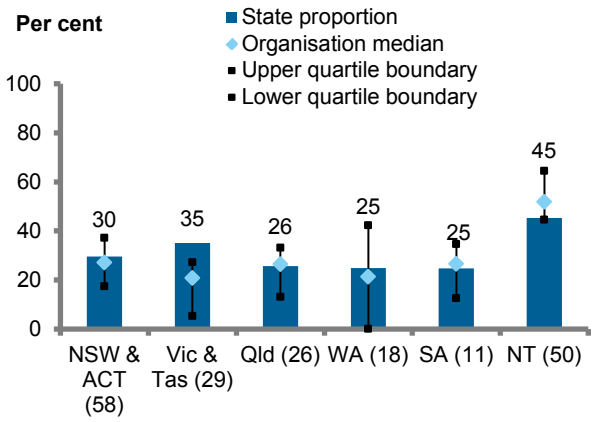


Figure 2.F4: Cervical screening in the previous 2 years, by jurisdiction, with median and quartile boundaries of organisations

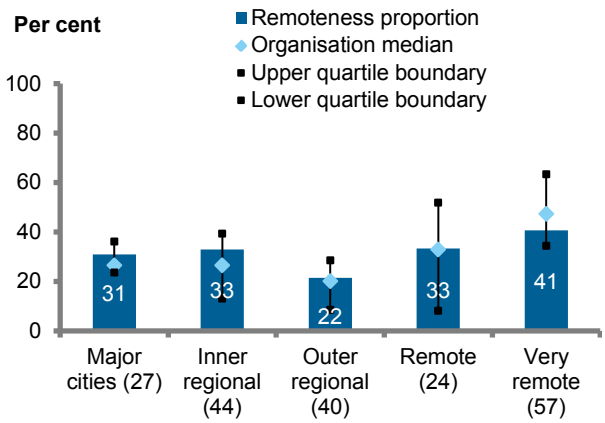


Figure 2.F5: Cervical screening, in the previous 2 years by remoteness, with median and quartile boundaries of organisations

Opportunities for action

- June 2013 was the first time data were collected for this indicator.
- There appears to be large opportunities for action for this indicator for the 25% of organisations that provided cervical screening for 17% or fewer of their clients. In saying this, it is noted that there may be local factors that affect organisations' recording of screening status and performance of screening.
- During 2010–11, 57% of all Australian women were screened as part of the National Cervical Screening Program (AIHW 2013a). This is a reasonable starting point for considering a benchmark that organisations could initially work towards.

Things to consider

- Pathology results
- Shared care arrangements.

G. Immunised against influenza—clients aged 50 and over

Headline results

Nationally, 36% of Aboriginal and Torres Strait Islander regular clients aged 50 and over were immunised against influenza as at June 2013 (Figure 2.G1).

Trend data are not available. In the Northern Territory and *Remote* and *Very remote* areas, a higher proportion of clients were immunised against influenza (figures 2.G1 and 2.G2).

Organisation performance (Figure 2.G3):

- Two (2) organisations had 100% of clients aged 50 and over immunised against influenza.
- Four (4) organisations had no clients immunised against influenza.
- In the top 25% of organisations, over 61% of clients aged 50 and over were immunised against influenza.
- In the bottom 25% of organisations, fewer than 28% of clients were immunised against influenza.

Variation was greatest in the Northern Territory and in *Remote* and *Very remote* areas, which also had the highest proportions of clients aged 50 and over immunised against influenza (figures 2.G4 and 2.G5).

Organisation size indicates that most large organisations had between 20% and 48% of their clients aged 50 and over immunised against influenza. A large number of smaller organisations had over 70% of their clients immunised against influenza (Appendix Figure A5.1).

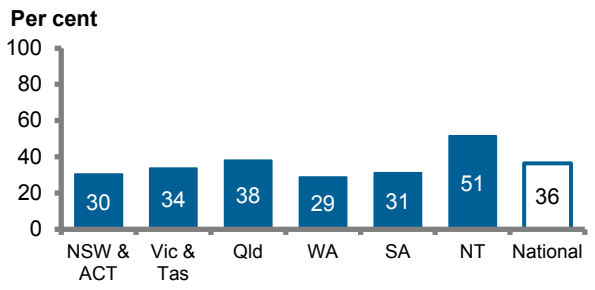


Figure 2.G1: Immunised against influenza (aged 50 and over), by jurisdiction

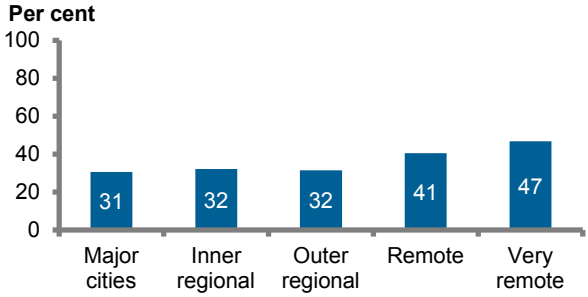


Figure 2.G2: Immunised against influenza (aged 50 and over), by remoteness

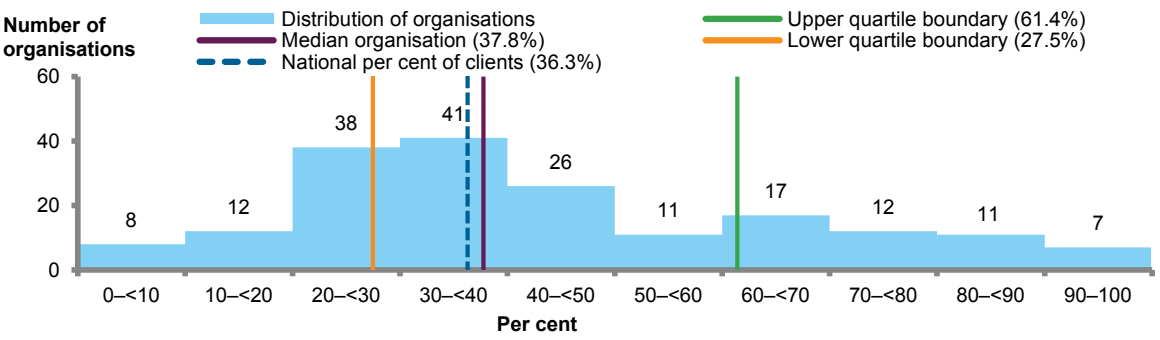


Figure 2.G3: Distribution of percentage of clients aged 50 and over who are immunised against influenza, by organisation

Why is this important?

- Aboriginal and Torres Strait Islander people are more at risk than non-Indigenous Australians of poor outcomes/complications from influenza.
- Influenza vaccination has been demonstrated to reduce deaths.
- Collecting influenza vaccination data indicates the reach of the free vaccination program within the Indigenous community.

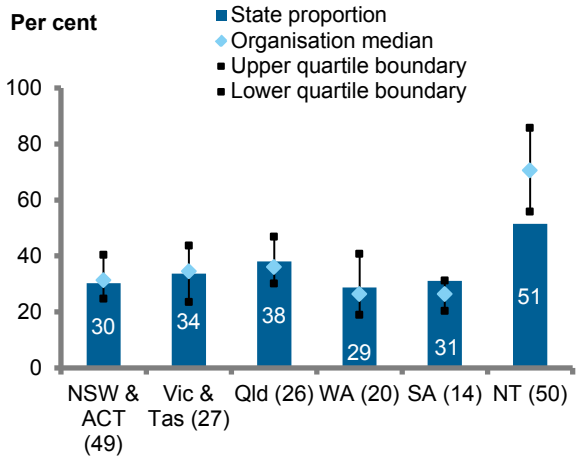


Figure 2.G4: Immunised against influenza (aged 50 and over), by jurisdiction, with median and quartile boundaries of organisations

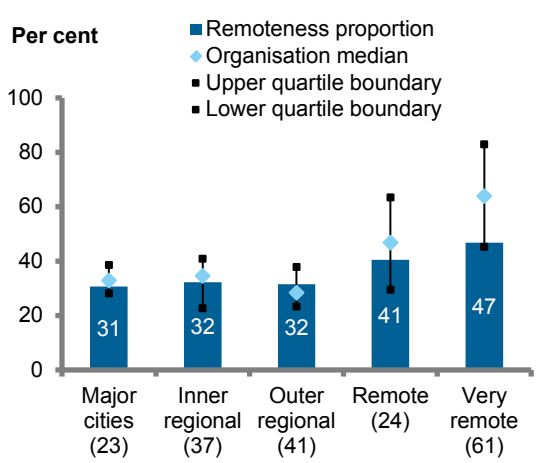


Figure 2.G5: Immunised against influenza (aged 50 and over), by remoteness, with median and quartile boundaries of organisations

Opportunities for action

- June 2013 was the first time data were collected for this indicator. Organisations need to ensure their records of adults immunisation status are accurate. CQI efforts could focus initially on this.
- All organisations should take responsibility for monitoring the immunisation status of their regular clients and vaccinating as per guidelines.
- An evidence-based benchmark is required for this indicator.

Things to consider

- Influenza vaccination.

H. Immunised against influenza—clients with type 2 diabetes

Headline results

Nationally, 37% of the 11,823 Aboriginal and Torres Strait Islander regular clients aged 15–49 with type 2 diabetes were immunised against influenza (Figure 2.H1).

Trend data are not available. The highest proportion of clients immunised was in the Northern Territory and in *Remote* and *Very remote* areas (figures 2.H1 and 2.H2).

Organisation performance (Figure 2.H3):

- Three (3) organisations had 100% of their clients with type 2 diabetes immunised against influenza.
- Nine (9) organisations had no clients immunised against influenza.
- In the top 25% of organisations, at least 57% of clients with type 2 diabetes were immunised against influenza.
- In the bottom 25% of organisations, fewer than 21% of clients were immunised against influenza.

Variation was greatest in Victoria and Tasmania (Figure 2.H4) and in *Remote* and *Very remote* areas (Figure 2.H5).

Organisation size had little impact on the proportion of clients with type 2 diabetes who were immunised against influenza. Most organisations of all sizes had between 11% and 42% of clients immunised against influenza while a number of small organisations had either 0% or 100% coverage (Figure A5.1).

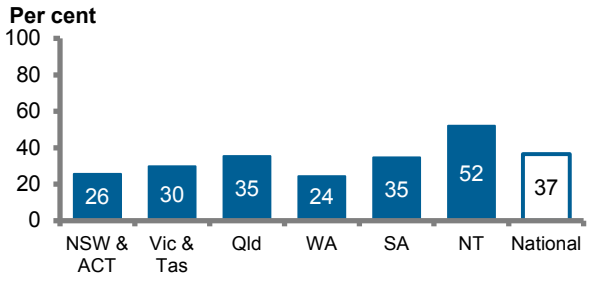


Figure 2.H1: Influenza immunisation for clients with type 2 diabetes, by jurisdiction

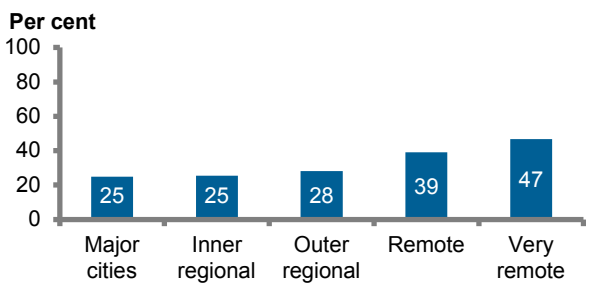


Figure 2.H2: Influenza immunisation for clients with type 2 diabetes, by remoteness

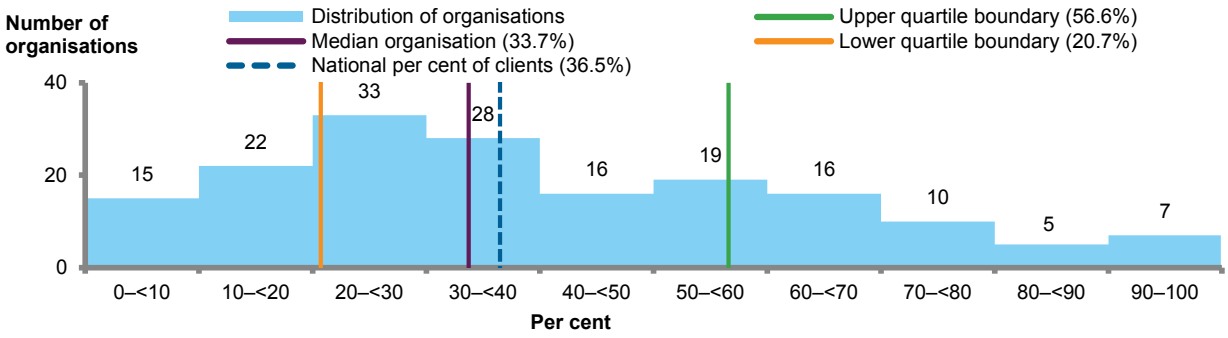


Figure 2.H3: Distribution of percentage of clients with type 2 diabetes who are immunised against influenza, by organisation

Why is this important?

- Providing influenza vaccination to people with type 2 diabetes substantially reduces their risk of hospitalisation and death from influenza and pneumonia.
- Collecting information on vaccination rates can indicate whether health systems at the national, state and territory and local levels are sufficiently addressing this higher risk group.

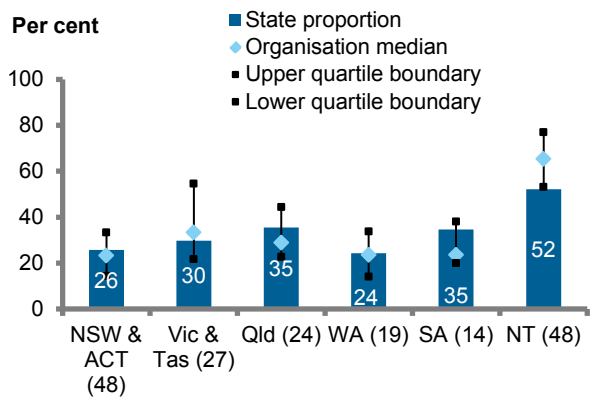


Figure 2.H4: Influenza immunisation for clients with type 2 diabetes, by jurisdiction, with median and quartile boundaries of organisations

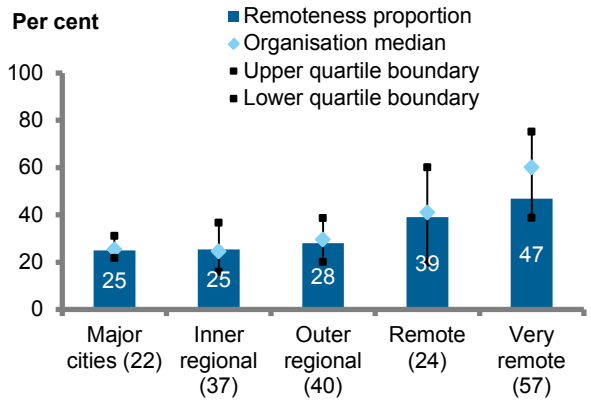


Figure 2.H5: Influenza immunisation for clients with type 2 diabetes, by remoteness, with median and quartile boundaries of organisations

Opportunities for action

- June 2013 was the first time data were collected for this indicator. Organisations need to ensure their records of adults immunisation status are accurate. CQI efforts could focus initially on this.
- All organisations should take responsibility for monitoring the immunisation status of their clients with type 2 diabetes, and for using their recall systems to assist with vaccinating as per guidelines.
- An evidence-based benchmark is required for this indicator.

Things to consider

- Small organisation denominators
- Influenza vaccination.

I. Immunised against influenza—clients with chronic obstructive pulmonary disease

Headline results

Nationally, 34% of Aboriginal and Torres Strait Islander regular clients with COPD aged 15–49 were immunised against influenza as at June 2013 (Figure 2.I1).

Trend data are not available. The Northern Territory had the highest proportion and Western Australia and South Australia the lowest (Figure 2.I1).

Organisation performance (Figure 2.I3):

- Twenty (20) organisations had 100% of clients with COPD immunised against influenza.
- Twenty-eight (28) organisations had no clients with COPD immunised against influenza.
- In the top 25% of organisations, at least 60% of clients with COPD were immunised against influenza.
- In the bottom 25% of organisations, fewer than 13% of clients were immunised against influenza.

Variation was highest in Victoria and Tasmania, South Australia, and the Northern Territory and in *Remote* and *Very remote* areas (figures 2.I4 and 2.I5).

Organisation size shows that most organisations had between 16% and 40% of clients with COPD immunised against influenza. Eight (8) large organisations (greater than 2,000 clients) had between 49% and 70% of their clients immunised, while 9 small organisations (with fewer than or equal to 500 clients) had 100% of clients with COPD immunised against influenza (Appendix Figure A5.1).

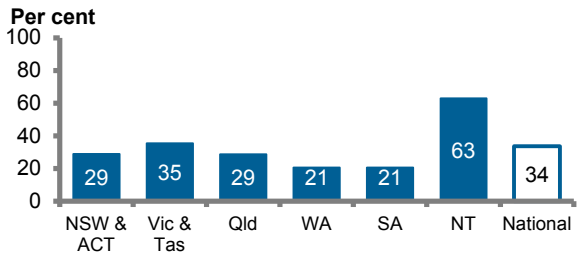


Figure 2.I1: Influenza immunisation for clients with COPD, by jurisdiction

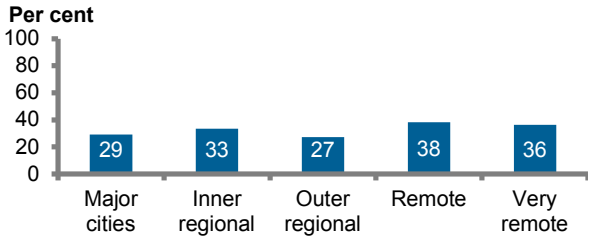


Figure 2.I2: Influenza immunisation for clients with COPD, by remoteness

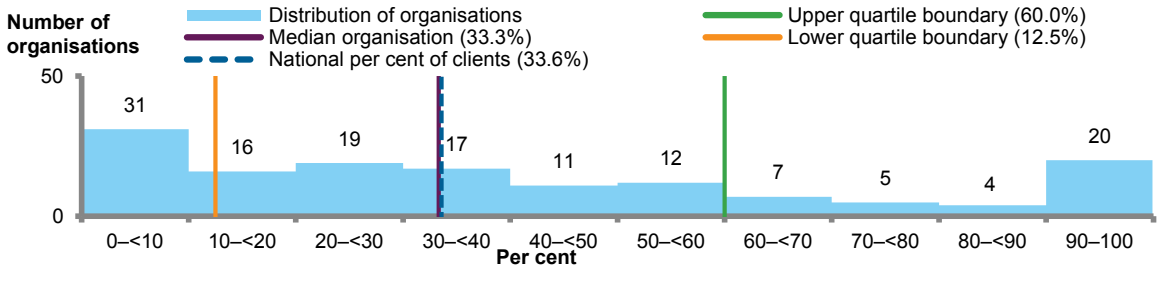


Figure 2.I3: Distribution of percentage of clients with COPD who are immunised against influenza, by organisation

Why is this important?

- Providing influenza vaccination to people with COPD substantially reduces their risk of hospitalisation and death from influenza and pneumonia.
- Collecting information on vaccination rates can indicate whether health systems at the national, state and territory and local levels are sufficiently addressing this higher risk group.

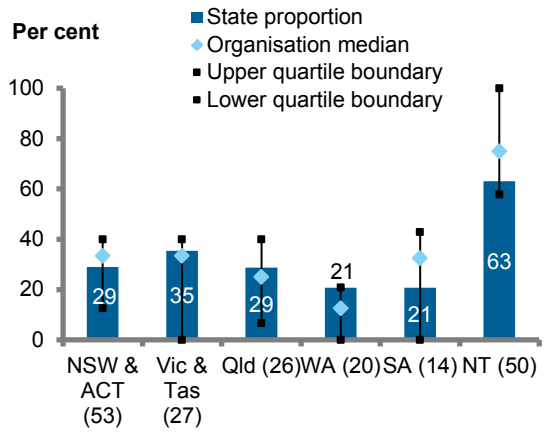


Figure 2.I4: Influenza immunisation for clients with COPD, by jurisdiction, with median and quartile boundaries of organisations

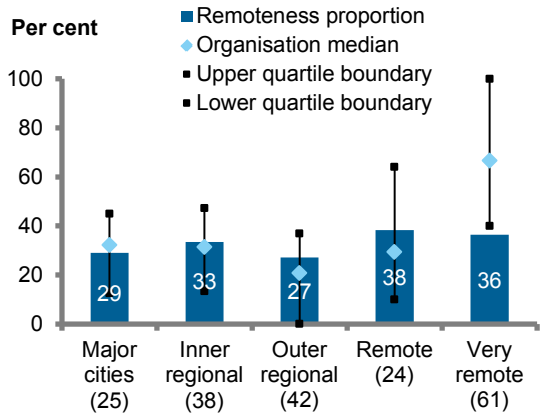


Figure 2.I5: Influenza immunisation for clients with COPD, by remoteness, with median and quartile boundaries of organisations

Opportunities for action

- June 2013 is the first time data were collected for this indicator. Organisations need to ensure their records of adults immunisation status are accurate. CQI efforts could initially focus on this.
- All organisations should take responsibility for monitoring the immunisation status of their clients with COPD, and for using their recall systems to assist with vaccinating as per guidelines.
- An evidence-based benchmark is required for this indicator.

Things to consider

- Small organisation denominators
- Influenza vaccination.

J. General Practitioner Management Plans—clients with type 2 diabetes

Headline results

Nationally, 43% of Aboriginal and Torres Strait Islander regular clients with type 2 diabetes had an MBS General Practitioner Management Plan (GPMP) (item 721) in the past 2 years as at June 2013 (Figure 2.J1).

Trend showed an increase of 4 percentage points between June 2012 and June 2013. South Australia showed a decrease while *Inner regional* and *Very remote* areas had increased proportions with GPMPs (figures 2.J1 and 2.J2).

Organisation performance (Figure 2.J3):

- Six (6) organisations provided GPMPs for 100% of clients with type 2 diabetes.
- Fourteen (14) organisations provided GPMPs for none of their clients with type 2 diabetes.
- In the top 25% of organisations, over 68% of clients with type 2 diabetes had a GPMP.
- In the bottom 25% of organisations, 27% or fewer clients with type 2 diabetes had a GPMP.

Variation was greater in Victoria and Tasmania, and in *Outer regional* areas (figures 2.J4 and 2.J5).

Organisation size indicates that most large organisations provided GPMPs for fewer than 70% of their clients with type 2 diabetes. Five (5) large organisations did so for over 70% of their clients with type 2 diabetes. A number of small organisations provided GPMPs to over 80% of their clients with type 2 diabetes, with some even doing them for 100% of their clients (Appendix Figure A5.1).

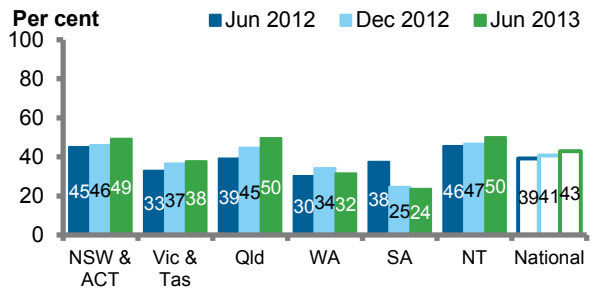


Figure 2.J1: GPMP, by jurisdiction

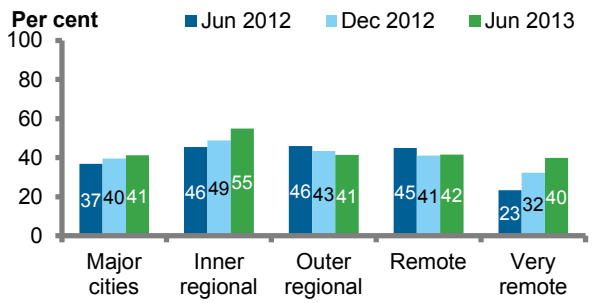


Figure 2.J2: GPMP, by remoteness

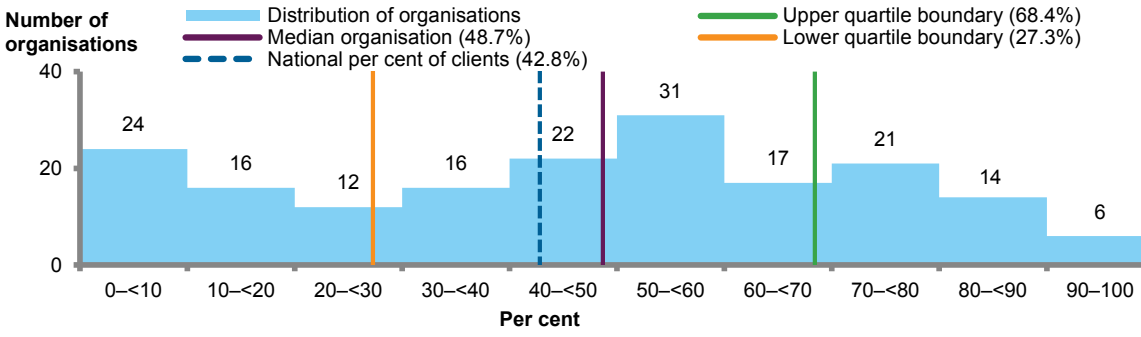


Figure 2.J3: Distribution of percentage of GPMPs, by organisation

Why is this important?

Collecting data on GPMPs:

- encourages a structured approach to caring for patients with chronic and complex diseases (Cant 2010)
- indicates the system's responsiveness to incentives for GPMPs and its reach to patients with chronic diseases.

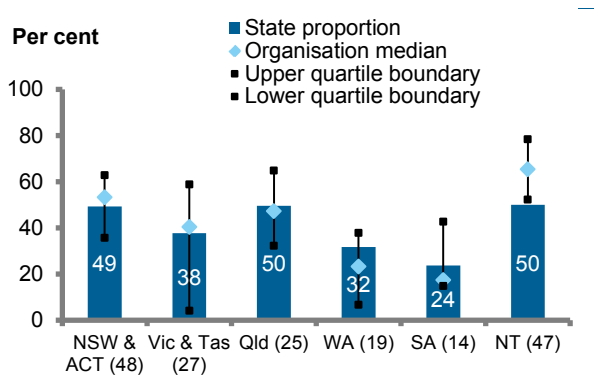


Figure 2.J4: GPMP, by jurisdiction, with median and quartile boundaries of organisations

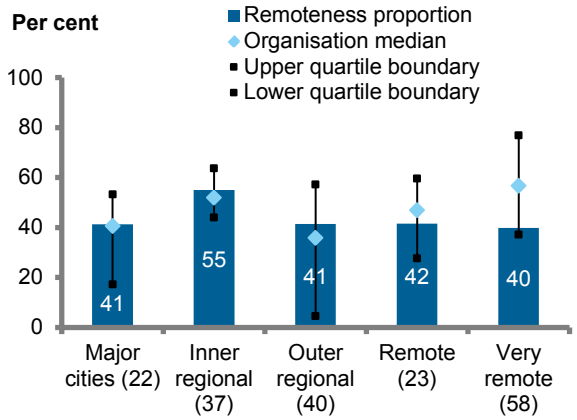


Figure 2.J5: GPMP, by remoteness, with median and quartile boundaries of organisations

Opportunities for action

- Improvements against this indicator nationally and in all but one jurisdiction over the 3 collections show effective action by many organisations.
- There would appear to be many clients missing out on a GPMP—one-quarter of organisations have GPMPs in place for one-quarter or fewer of their clients with type 2 diabetes. An achievable goal appears to be to have around two-thirds (68%) or more of clients with type 2 diabetes on a GPMP. Currently, one-quarter of all organisations achieve this.
- Some organisations may be undertaking care plans for their clients but either might not be eligible to claim MBS items or are not completing them in a way that meets all the requirements for MBS billing. This may be caused by difficulties in establishing and sustaining the required business processes at the clinic level, lack of access to a GP or a preferred model of care. This indicator may need to have a variable benchmark depending on local circumstances. More information is required on the barriers faced by organisations.

Things to consider

- MBS items
- Small organisation denominators.

K. Team Care Arrangements—clients with type 2 diabetes

Headline results

Nationally, 39% of Aboriginal and Torres Strait Islander regular clients with type 2 diabetes had an MBS TCA (item 723) in the past 2 years as at June 2013 (Figure 2.K1).

Trend showed an increase of about 5 percentage points between June 2012 and June 2013. Improvements were also seen in most jurisdictions, and the only region not to show an improvement is *Outer regional* (figures 2.K1 and 2.K2).

Organisation performance (Figure 2.K3):

- Four (4) organisations provided TCAs for 100% of their clients with type 2 diabetes.
- Sixteen (16) organisations provided TCAs to none of their clients with type 2 diabetes.
- In the top 25% of organisations, at least 66% of clients had a TCA.
- In the bottom 25% of organisations, 20% or fewer clients had a TCA.

Variation was lowest in South Australia, Western Australia and in *Inner regional* areas (figures 2.K4 and 2.K5).

Organisation size had no particular association with the proportion of clients with type 2 diabetes receiving TCAs. However, only 8 small organisations provided TCAs to 90–100% of their clients (Appendix Figure A5.1).

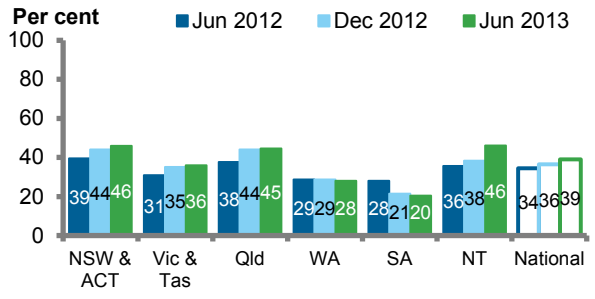


Figure 2.K1: TCA, by jurisdiction

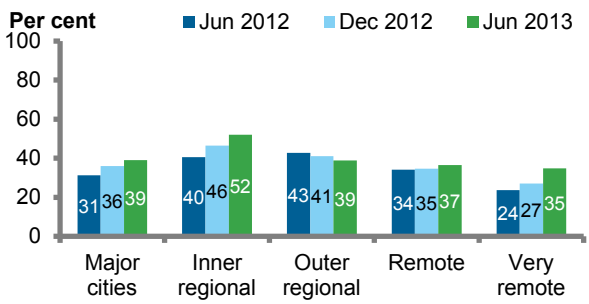


Figure 2.K2: TCA, by remoteness

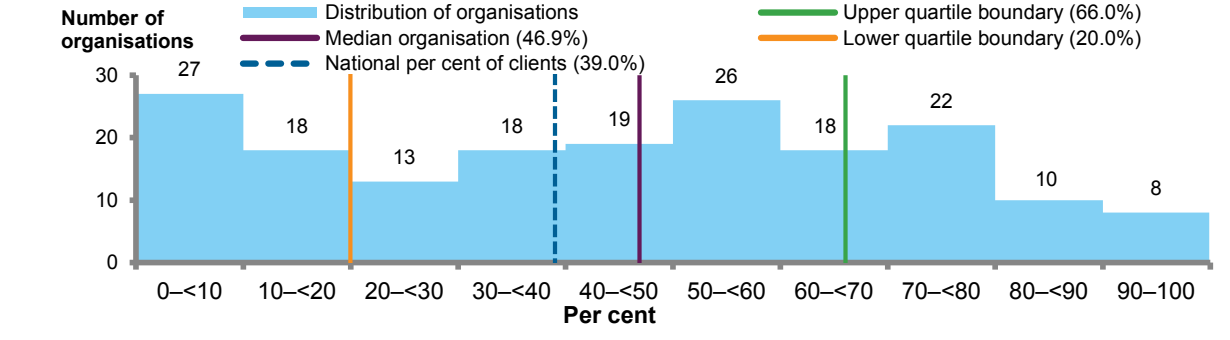


Figure 2.K3: Distribution of percentage of TCAs, by organisation

Why is this important?

- TCAs facilitate increased patient adherence to diabetes guidelines and can lead to improved patient health outcomes (Zwar et. al. 2007, 2008).
- Collecting data on TCAs indicates the system's responsiveness to incentives for TCAs and its reach to patients with chronic disease.

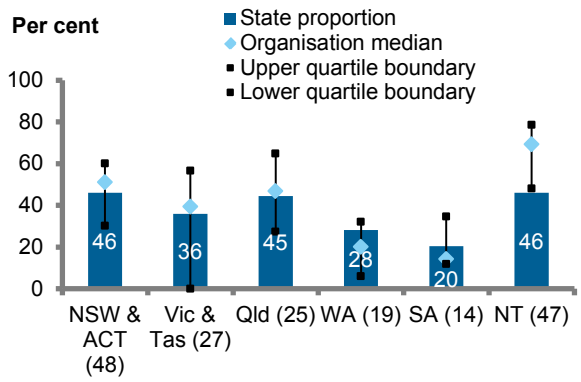


Figure 2.K4: TCA, by jurisdiction, with median and quartile boundaries of organisations

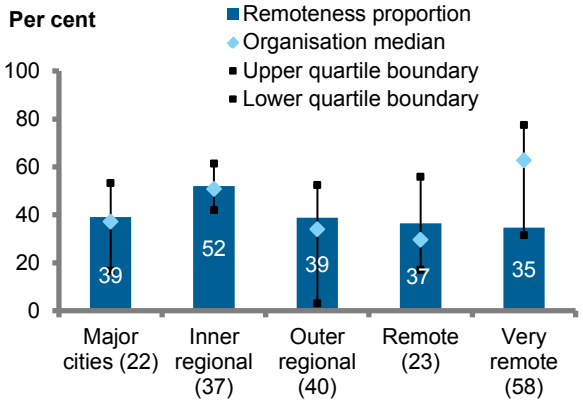


Figure 2.K5: TCA, by remoteness, with median and quartile boundaries of organisations

Opportunities for action

- Improvement at the national level and across most jurisdictions over the 3 data collections from June 2012 indicates good work by many organisations against this indicator.
- The 25% of organisations that have TCAs in place for 20% or fewer of their clients have an opportunity to review current practices and priorities and the potential benefits for doing more.
- Some organisations may be undertaking TCAs for their clients with type 2 diabetes but either might not be eligible to claim MBS items or are not completing them in a way that meets all the requirements for MBS billing. This may be due to the preferred models of care or to difficulties in establishing and sustaining the necessary business processes.
- A benchmark for this indicator is desirable and it may be influenced by the relative need for these arrangements across the population.

Things to consider

- MBS items
- Access to allied health providers
- Small organisation denominators.

L. HbA1c result recorded—clients with type 2 diabetes

Headline results

Nationally, 48% of Aboriginal and Torres Strait Islander regular clients with type 2 diabetes had their glycosylated haemoglobin (HbA1c) result recorded in the past 6 months as at June 2013, and 64% had done so in the past 12 months (Figure 2.L1).

Trend showed a decrease of 2 percentage points between June 2012 and June 2013 in the recording of HbA1c in the past 6 months. The largest decrease was in South Australia, and *Major cities* showed the only increase (figures 2.L1 and 2.L2).

Organisation performance (Figure 2.L3):

- Three (3) organisations recorded a 100% result.
- Seven (7) organisations did not record an HbA1c result for any of their clients.
- The top 25% of organisations recorded an HbA1c result for 70% or more of their clients.
- The bottom 25% of organisations recorded an HbA1c result for fewer than 40% of their clients.

Variation among organisations with an HbA1c result recorded in the past 6 months was smallest in South Australia, and in *Major cities* and *Remote* areas (figures 2.L4 and 2.L5).

Organisation size indicates that smaller organisations (with fewer than 500 clients) were better at recording HbA1c information for more than 80% of clients with type 2 diabetes. A number of these organisations recorded information for 100% of their clients (Appendix Figure A5.1).

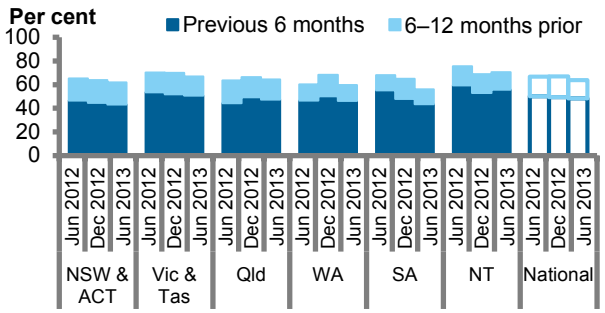


Figure 2.L1: HbA1c result recorded, by jurisdiction

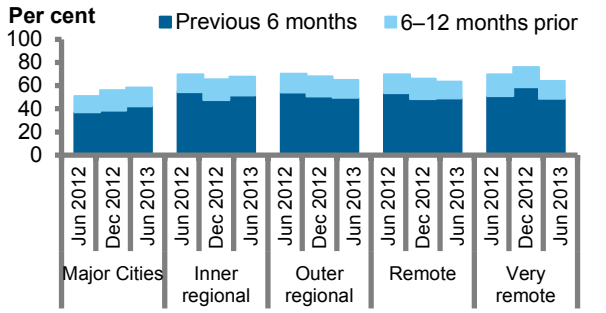


Figure 2.L2: HbA1c result recorded, by remoteness

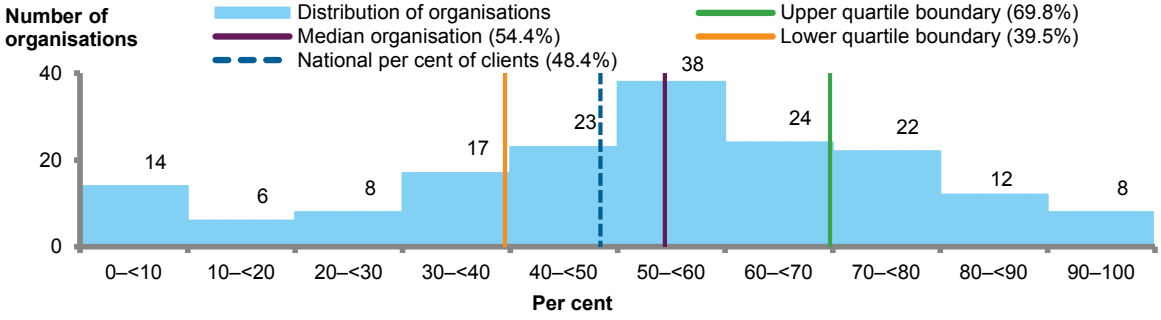


Figure 2.L3: Distribution of percentage of HbA1c recordings in the past 6 months, by organisation

Why is this important?

Recording the HbA1c level:

- reflects the average glycaemia over the last 2–3 months and is the best indication of long term diabetes control (Jones et al. 2011), which can help prevent complications (Harris et al. 2012)
- helps monitor adherence to best practice clinical guidelines, which recommend HbA1c testing every 6 months, and can lead to improved health outcomes (Diabetes Australia & RACGP 2011).

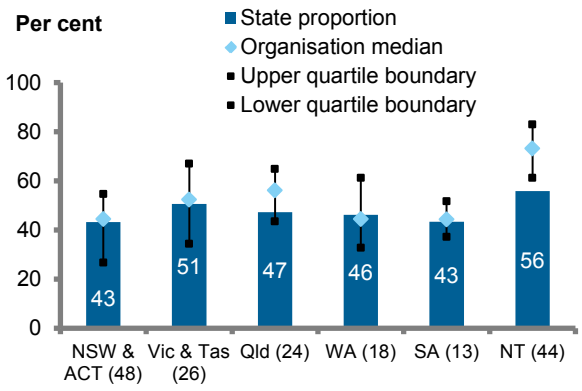


Figure 2.L4: HbA1c result recorded in the past 6 months, by jurisdiction, with median and quartile boundaries of organisations

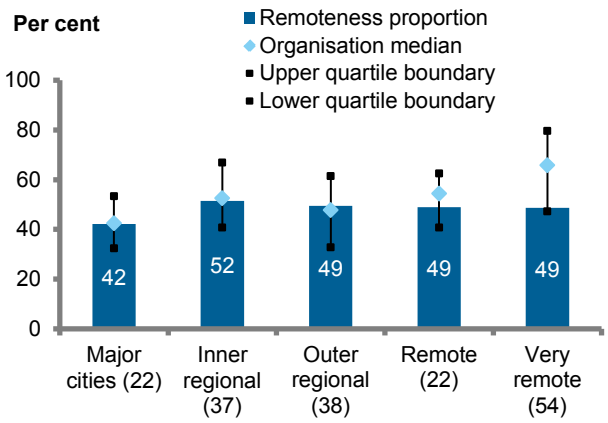


Figure 2.L5: HbA1c result recorded in the past 6 months, by remoteness, with median and quartile boundaries of organisations

Opportunities for action

- This indicator shows no clear trend at the national level or across most jurisdictions.
- A quarter of organisations are recording HbA1c result for over 70% of their regular clients every 6 months. This would appear to be achievable by organisations regardless of their size or location.
- There are large opportunities for improvement for the 25% of organisations recording HbA1c result for 40% or fewer of their clients.

Things to consider

- Small organisation denominators
- Pathology results.

M. HbA1c result—clients with type 2 diabetes

Headline results

Nationally, 34% of Aboriginal and Torres Strait Islander regular clients had an HbA1c result of less than or equal to (≤) 7% in the past 6 months as at June 2013 (Figure 2.M1).

Trend showed an increase of about 2 percentage points between June 2012 and June 2013. There was little or no change by jurisdiction or remoteness area (figures 2.M1 and 2.M2).

Organisation performance (Figure 2.M3):

- Four (4) organisations had 100% of clients with type 2 diabetes achieving better long-term diabetes control.
- One (1) organisation had none of its clients achieving optimal diabetes control.
- In the top 25% of organisations, at least 43% of clients had an HbA1c result ≤7%.
- In the bottom 25% of organisations, fewer than 27% of clients had an HbA1c result ≤7%.

Age and sex distribution indicates that those aged 15–44 have less well controlled diabetes (Figure 2.M4).

Variation between organisations in the proportion of clients with an HbA1c result ≤7% was smaller than for the proportion with a result recorded. This could be because organisations have less influence over the result than the recording of it. This may also explain why organisational characteristics seemed to affect the outcome less than the recording of results.

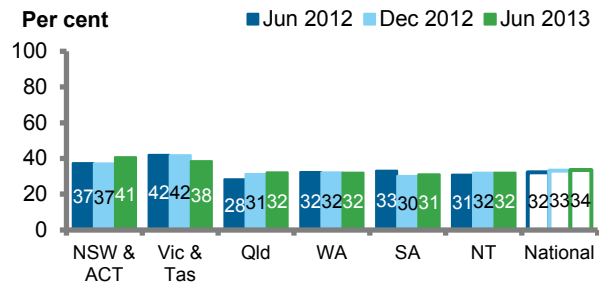


Figure 2.M1: HbA1c ≤7%, by jurisdiction

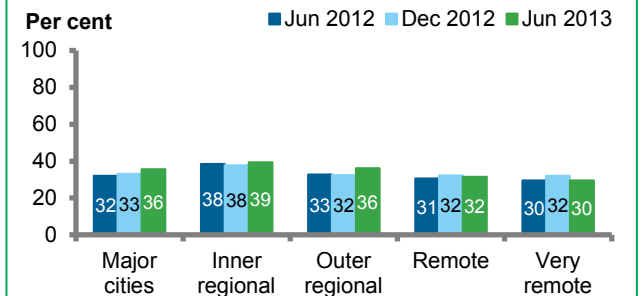


Figure 2.M2: HbA1c ≤7%, by remoteness

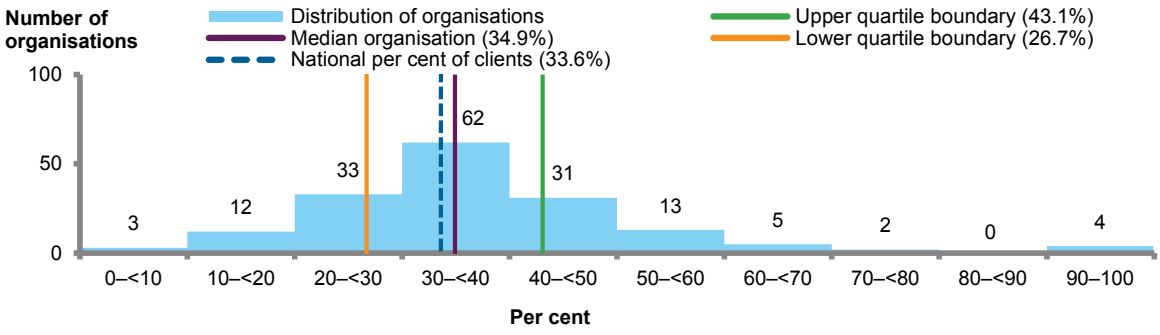


Figure 2.M3: Distribution of percentage of HbA1c ≤7%, by organisation

Why is this important?

For most patients with type 2 diabetes, an HbA1c result ≤7%:

- is the recommended target (Diabetes Australia & RACGP 2011) and reduces diabetes related complications, disability and premature mortality (Del Prato 2005)
- provides national information about how well type 2 diabetes is being managed.

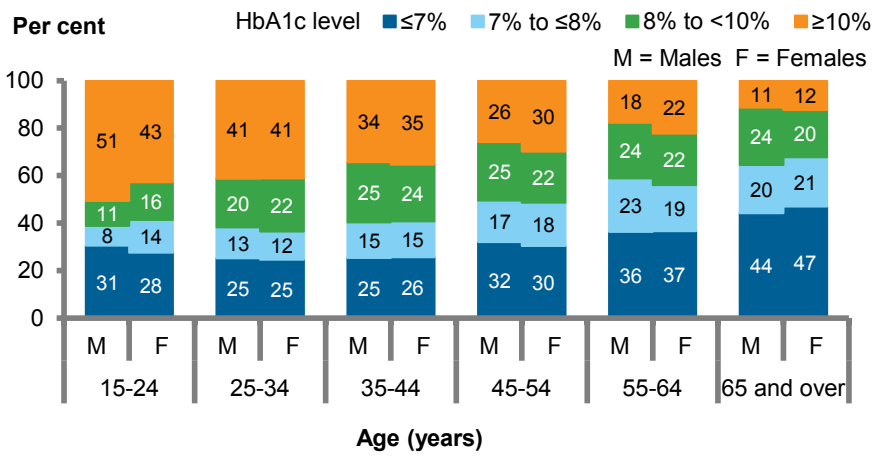


Figure 2.M4: HbA1c result, by age and sex

Opportunities for action

- A slight improvement nationally in this outcome indicator is an important achievement. HbA1c results are influenced by primary health care, as well as by a range of social determinants and lifestyle factors.
- Organisations with a high percentage of regular clients with type 2 diabetes with HbA1c results >7% (or a worsening trend) should review whether their current practices are effectively targeting and managing clients with type 2 diabetes.
- There is opportunity for organisations to focus activities to assist their clients with type 2 diabetes to manage their HbA1c levels, in particular the young age groups (Figure 2.M4).

Things to consider

- Small organisation denominators
- Pathology results.

N. Kidney function test—clients with type 2 diabetes

Headline results

Nationally, 63% of Aboriginal and Torres Strait Islander regular clients with type 2 diabetes aged 15 and over had either an estimated glomerular filtration rate (eGFR) or albumin/creatinine ratio (ACR) recorded or both an eGFR and an ACR recorded in the past 12 months as at June 2013 (Figure 2.N1).

Trend data are not available. Proportions were similar across jurisdictions and remoteness areas (figures 2.N1 and 2.N2).

Organisation performance (Figure 2.N3):

- Six (6) organisations recorded kidney function tests for 100% of clients with type 2 diabetes.
- Six (6) organisations with clients with type 2 diabetes recorded kidney function tests for 0% of clients.
- In the top 25% of organisations, at least 77% of clients had a kidney function test.
- In the bottom 25% of organisations, 54% of clients or fewer had a kidney function test.

Variation was greatest in Victoria and Tasmania, and in *Outer regional* areas (figures 2.N4 and 2.N5).

Organisation size had no impact on the recording of kidney function test for clients with type 2 diabetes. Most organisations recorded kidney function test for 45% to 85% of their clients (Appendix Figure A5.1).

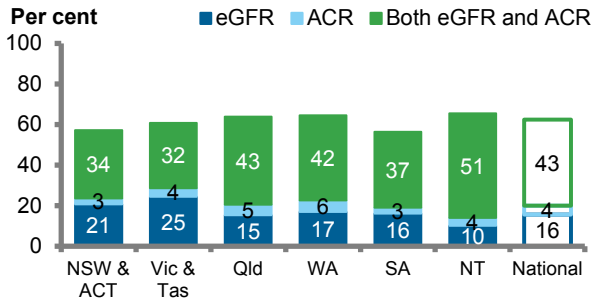


Figure 2.N1: Kidney function test recorded for clients with type 2 diabetes, by jurisdiction

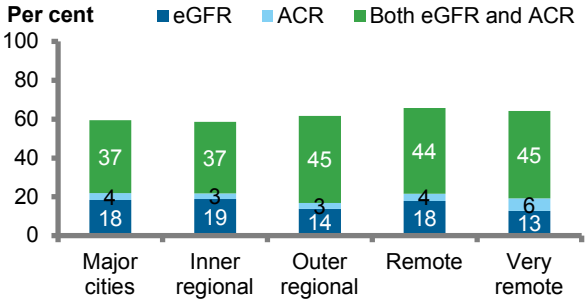


Figure 2.N2: Kidney function test recorded for clients with type 2 diabetes, by remoteness

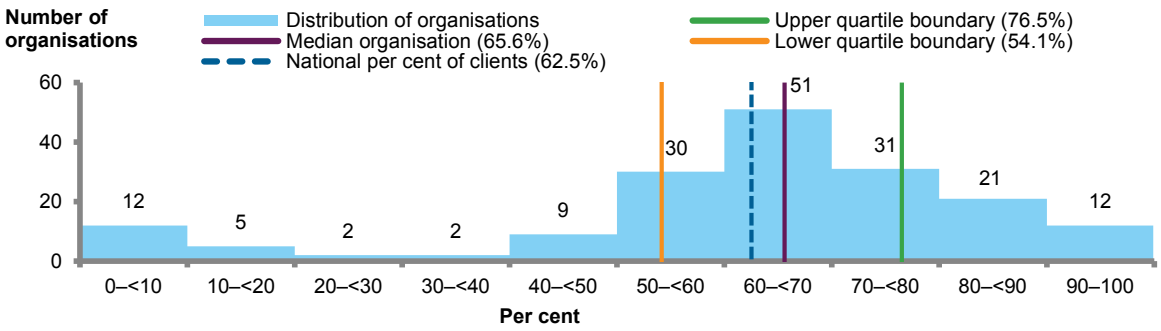


Figure 2.N3: Distribution of percentage of kidney function tests for clients with type 2 diabetes, by organisation

Why is this important?

Rates of end-stage kidney disease are substantially higher in the Indigenous population than in the non-Indigenous population. Early detection can help to prevent progression to end stage kidney disease. Testing kidney function through an ACR or eGFR in clients with type 2 diabetes:

- is recommended to reduce complications and improve individual health (Diabetes Australia & RACGP 2011; Kidney Health Australia 2012)
- provides additional insight into the incidence and burden of kidney disease.

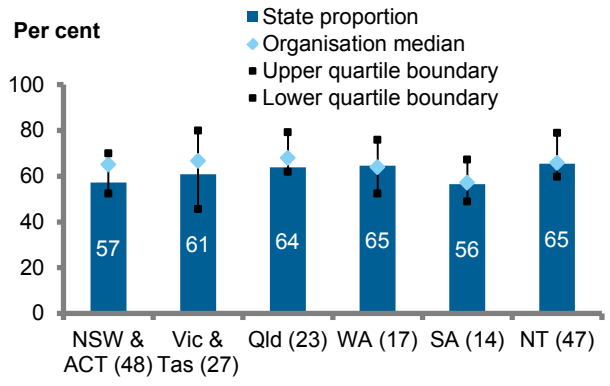


Figure 2.N4: Kidney function test recorded for clients with type 2 diabetes, by jurisdiction, with median and quartile boundaries of organisations

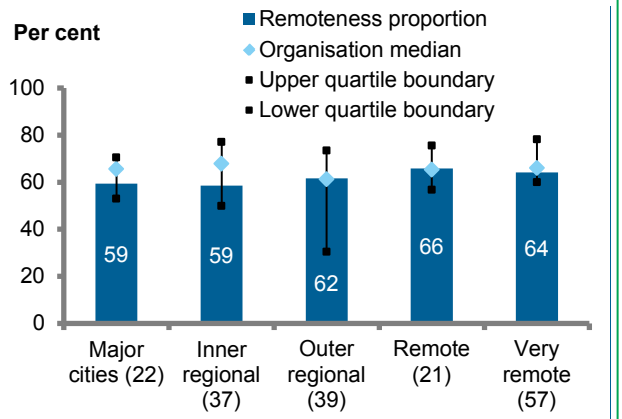


Figure 2.N5: Kidney function test recorded for clients with type 2 diabetes, by remoteness, with median and quartile boundaries of organisations

Opportunities for action

- June 2013 was the first time data were collected for this indicator. The data suggest that organisations can provide kidney function tests for at least 77% of their clients with type 2 diabetes. At present, a quarter of organisations achieve this.
- Improvement against this indicator should be a high priority for the 25% of organisations in which 54% or fewer of their regular clients with type 2 diabetes had a kidney function test.
- All clients with type 2 diabetes should have a kidney function test to routinely screen for indications of renal disease.

Things to consider

- Small organisation denominators
- Pathology results.

O. Kidney function test—clients with cardiovascular disease

Headline results

Nationally, 55% of Aboriginal and Torres Strait Islander regular clients with CVD aged 15 and over had an eGFR recorded in the past 12 months as at June 2013 (Figure 2.O1).

Trend data are not available. The Northern Territory and *Remote* areas had the highest proportions (figures 2.O1 and 2.O2).

Organisation performance (Figure 2.O3):

- Twenty-one (21) organisations recorded kidney function test for 100% of clients.
- Twelve (12) organisations did not provide a kidney function test for any of their clients.
- In the top 25% of organisations, at least 82% of clients had a kidney function test.
- In the bottom 25% of organisations, 50% of clients or less had a kidney function test.

Variation was greatest in South Australia and in *Outer regional* and *Very remote* areas (figures 2.O4 and 2.O5).

Organisation size: Organisations of all sizes recorded kidney function test for 48% to 85% of their clients with CVD. Of the 30 organisations that recorded kidney function test for over 90% of their clients with CVD, 24 were smaller services (with fewer than or equal to 500 clients) (Appendix Figure A5.1).

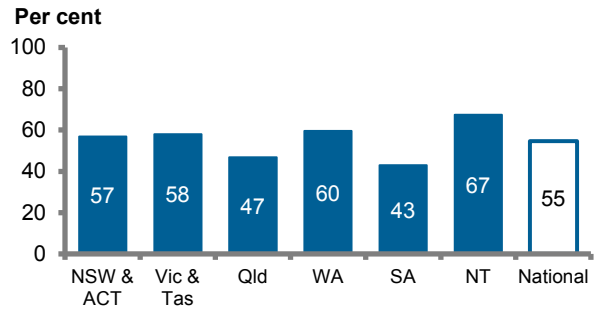


Figure 2.O1: Kidney function test recorded for clients with CVD, by jurisdiction

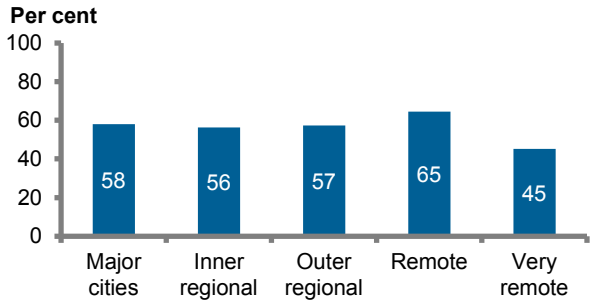


Figure 2.O2: Kidney function test recorded for clients with CVD, by remoteness

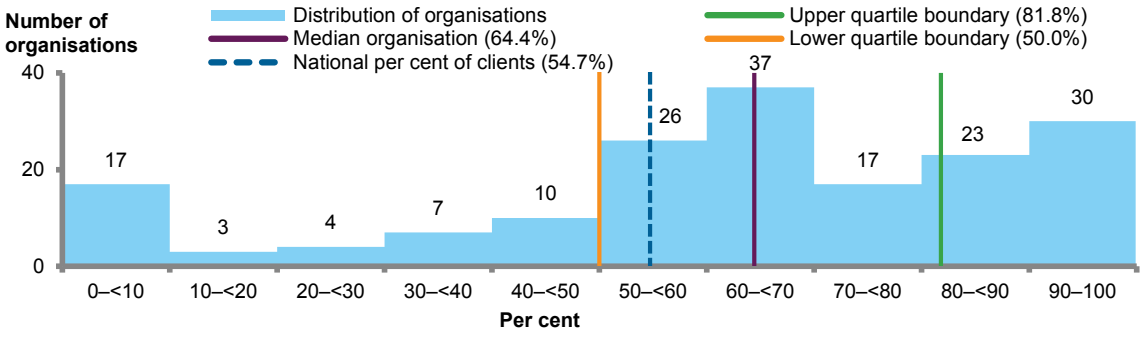


Figure 2.O3: Distribution of percentage of kidney function tests for clients with CVD, by organisation

Why is this important?

Testing kidney function through an eGFR in clients with CVD:

- is recommended to reduce complications and improve individual health (Kidney Health Australia 2012)
- provides additional insight into the incidence and burden of kidney disease.

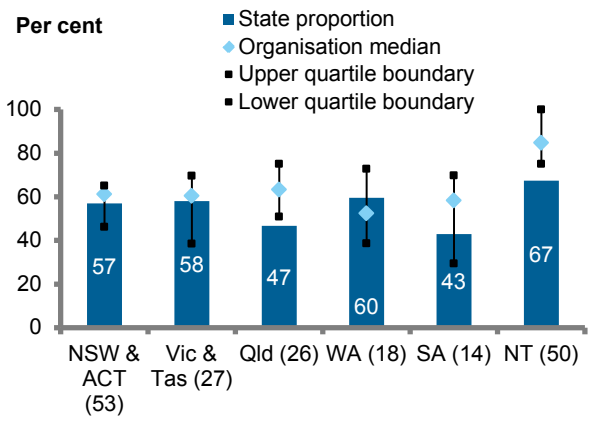


Figure 2.O4: Kidney function test recorded for clients with CVD, by jurisdiction, with median and quartile boundaries of organisations

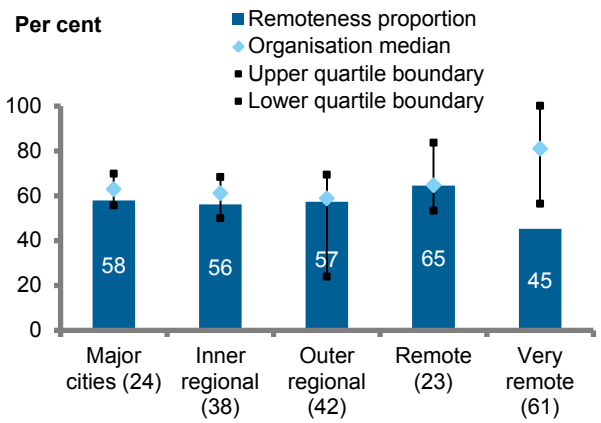


Figure 2.O5: Kidney function test recorded for clients with CVD, by remoteness, with median and quartile boundaries of organisations

Opportunities for action

- June 2013 was the first time data were collected for this indicator. The data suggest that organisations can provide kidney function tests for at least 82% of their clients with CVD. At present, one-quarter of organisations achieve this.
- Improvement against this indicator should be a high priority for the 25% of organisations in which less than half of their regular clients with CVD had a kidney function test.
- All clients with CVD should have a kidney function test to routinely screen for indicators of renal disease.

Things to consider

- Small organisation denominators
- Pathology results.

P. Blood pressure recorded—clients with type 2 diabetes

Headline results

Nationally, 63% of Aboriginal and Torres Strait Islander regular clients with type 2 diabetes had a blood pressure result recorded in the past 6 months as at June 2013 (Figure 2.P1).

Trend showed a decrease of 4 percentage points between June 2012 and June 2013. Western Australia and *Very remote* areas showed the largest decrease (figures 2.P1 and 2.P2).

Organisation performance (Figure 2.P3):

- Sixteen (16) organisations had recorded blood pressure for 100% of clients with type 2 diabetes.
- One (1) organisation did not record blood pressure for any of its clients with type 2 diabetes.
- The top 25% of organisations recorded a blood pressure result for over 86% of their clients.
- The bottom 25% of organisations recorded a blood pressure result for 59% or fewer of their clients.

Variation was less in South Australia and *Outer regional* areas (figures 2.P4 and 2.P5).

Organisation size indicates that a large group of organisations of all sizes recorded blood pressure of 59% to 78% of clients with type 2 diabetes. Sixteen (16) small organisations (with fewer than or equal to 500 clients) recorded blood pressure for 100% of clients (Appendix Figure A5.1).

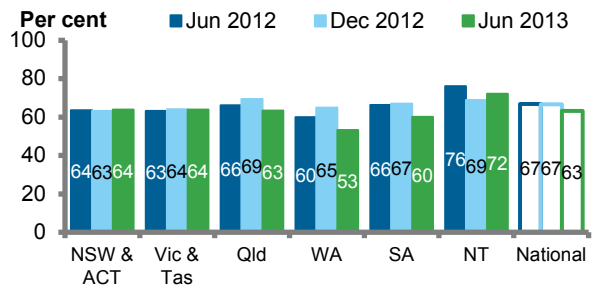


Figure 2.P1: Blood pressure recorded, by jurisdiction

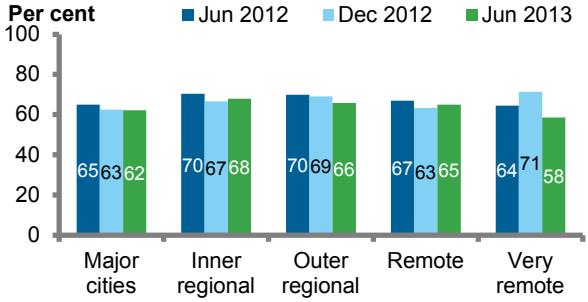


Figure 2.P2: Blood pressure recorded, by remoteness

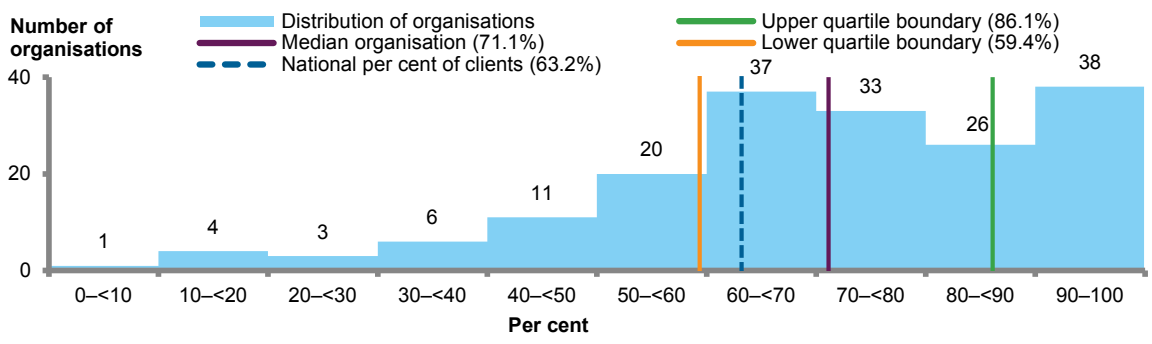


Figure 2.P3: Distribution of percentage of blood pressure recording for clients with type 2 diabetes, by organisation

Why is this important?

- Blood pressure can often be medically controlled.
- Recording blood pressure encourages clinical action. Blood pressure measurement is recommended at least every 6 months (NHMRC 2004).
- Recording blood pressure supports accurate measurement of blood pressure in the client population.

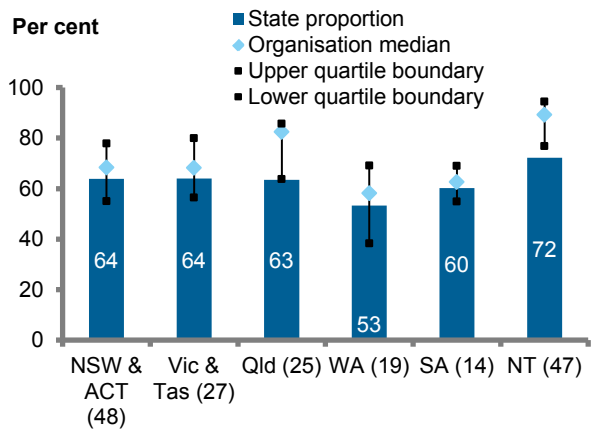


Figure 2.P4: Blood pressure recorded, by jurisdiction, with median and quartile boundaries of organisations

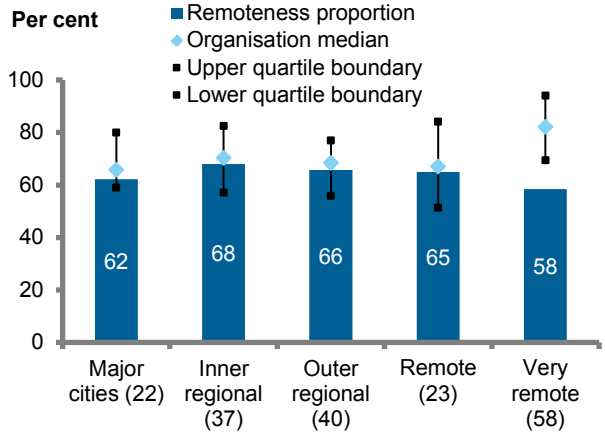


Figure 2.P5: Blood pressure recorded, by remoteness, with median and quartile boundaries of organisations

Opportunities for action

- This indicator showed no clear trend at the national level and a decline in some jurisdictions. Despite this, 25% of organisations are achieving 86% of clients with type 2 diabetes with a blood pressure test recorded, and 16 organisations achieved 100%.
- The goal of recording blood pressure for 86% or more of clients with type 2 diabetes could be adopted by the one-quarter of organisations recording blood pressure for 59% or fewer of their clients.
- Organisations with poor results may want to review whether their data are being captured, but not in a way for the nKPI extraction process.

Things to consider

- Small organisation denominators.

Q. Blood pressure result—clients with type 2 diabetes

Headline results

Nationally, 43% of Aboriginal and Torres Strait Islander regular clients with type 2 diabetes had a blood pressure result of less than or equal to (≤)130/80mmHg as at June 2013 (Figure 2.Q1).

Trend showed a 3 percentage points increase in clients with a blood pressure result of ≤130/80mmHg between June 2012 and June 2013. Northern Territory and *Very remote* areas showed the largest increases (figures 2.Q1 and 2.Q2).

Organisation performance (Figure 2.Q3):

- Six (6) organisations had a blood pressure result of ≤130/80mmHg for 100% of their clients.
- Three (3) organisations had no clients whose blood pressure result was ≤130/80mmHg.
- In the top 25% of organisations, at least 55% of clients had a blood pressure result of ≤130/80mmHg.
- In the bottom 25% of organisations, fewer than 33% of clients had a blood pressure result of ≤130/80mmHg.

Age and sex distribution indicate that, in general, the difference between the proportion of males and females with type 2 diabetes whose blood pressure level was ≤130/80mmHg was small (Figure 2.Q4).

Variation in how well organisations recorded blood pressure results could lead to bias in the national result if a number of organisations with a low proportion recorded clients with high blood pressure preferentially. This bias, however, was not large. Most organisations recorded information for over 55% of their clients and most organisations had less than 55% of clients whose blood pressure result was ≤130/80mmHg.

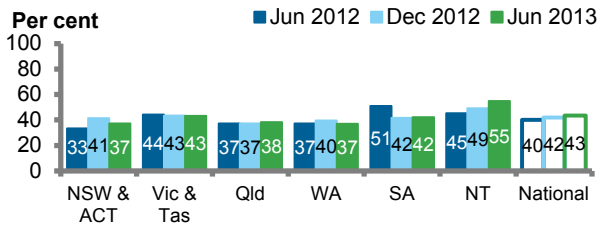


Figure 2.Q1: Blood pressure result of ≤130/80mmHg, by jurisdiction

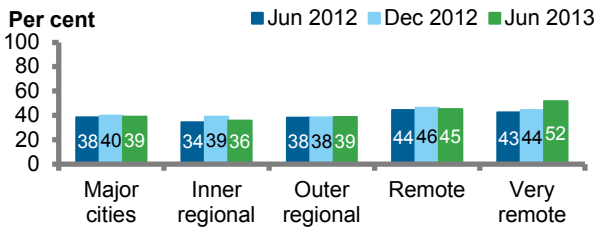


Figure 2.Q2: Blood pressure result of ≤130/80mmHg, by remoteness

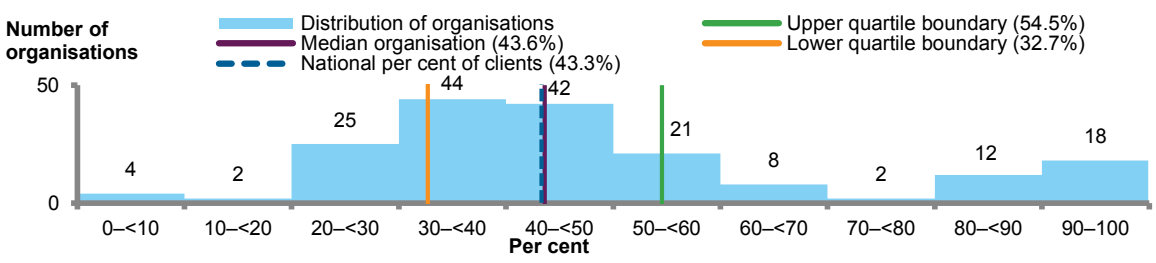


Figure 2.Q3: Distribution of percentage of blood pressure recordings ≤130/80mmHg, by organisation

Why is this important?

For people with diabetes:

- The target blood pressure level is lower (≤ 130/80mmHg) because their blood vessels are more susceptible to hypertensive damage (Diabetes Australia & RACGP 2011).
- Blood pressure can often be medically controlled.
- High blood pressure increases the risk of adverse events such as heart attack and stroke.

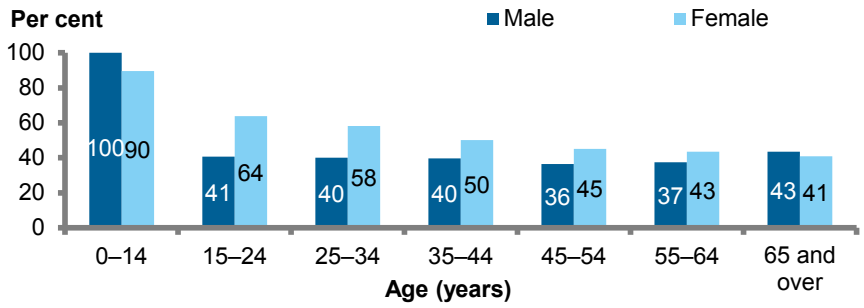


Figure 2.Q4: Blood pressure result of ≤130/80mmHg, by age and sex

Opportunities for action

- High blood pressure is influenced by a range of social determinants and lifestyle factors as well as by effective primary health care.
- A high number or proportion of clients with type 2 diabetes with high blood pressure does not necessarily indicate poor organisational performance. It does, however, indicate opportunities for a greater focus on a population health approach and evidence-based care.
- Organisations with a high percentage of clients with type 2 diabetes with high blood pressure should review whether sufficient attention is being paid to effective management of clients with type 2 diabetes.

Things to consider

- Small organisation denominators.

R. Smoking status recorded

Headline results

Nationally, 68% of Aboriginal and Torres Strait Islander regular clients aged 15 and over had their smoking status recorded as at June 2013 (Figure 2.R1).

Trend showed an increase of about 8 percentage points between June 2012 and December 2012, and a decrease of about 4 percentage points to June 2013. Northern Territory and *Remote* and *Very remote* areas increased to December 2012 then decreased to June 2013 (figures 2.R1 and 2.R2). Nearly half of the organisations in the Northern Territory did not have smoking status recorded for any clients (Figure 2.R4) because of a recent change in the way that smoking status was recorded. This may have contributed to the decrease in national proportion between December 2012 and June 2013.

Organisation performance (Figure 2.R3):

- Eight (8) organisations recorded smoking status for 100% of their clients.
- Thirty-one (31) organisations did not record smoking status for any of their clients.
- The top 25% of organisations recorded smoking status for 88% or more of their clients.
- The bottom 25% of organisations recorded smoking status for fewer than 40% of their clients

Variation was greatest in the Northern Territory and in *Very remote* areas (figures 2.R4 and 2.R5).

Organisation size indicated that most larger organisations recorded smoking status for over 65% of their clients. However, 16 smaller organisations recorded smoking status for over 90% of their clients (Appendix Figure A5.1).

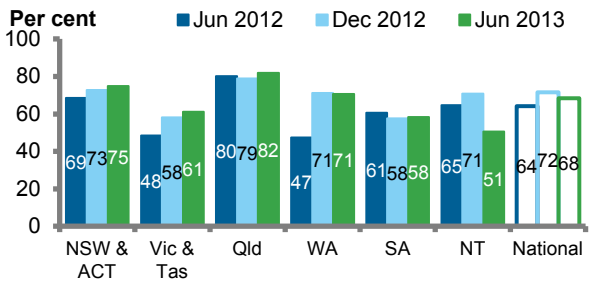


Figure 2.R1: Smoking status recorded, by jurisdiction

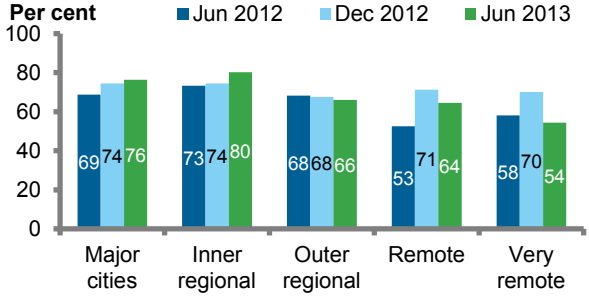


Figure 2.R2: Smoking status recorded, by remoteness

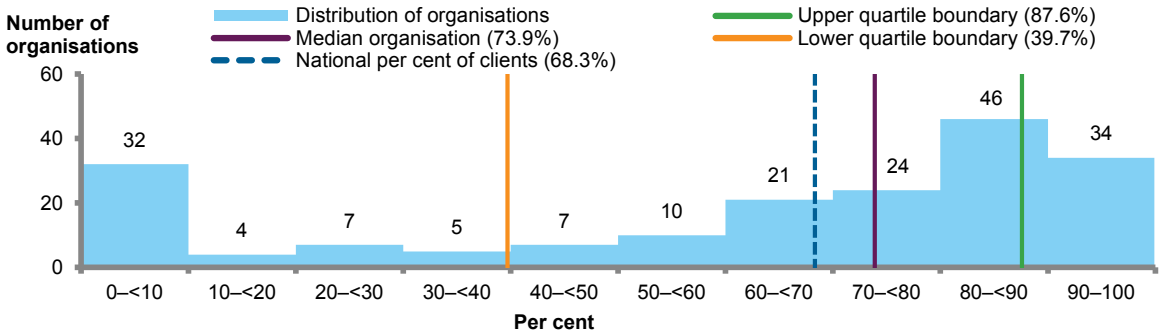


Figure 2.R3: Distribution of percentage of smoking status recordings, by organisation

Why is this important?

Recording smoking status:

- encourages action on smoking during clinical encounters, noting that Aboriginal and Torres Strait Islander people indicate their doctor is a credible support for smoking cessation services
- supports accurate measurement of smoking prevalence in the client population.

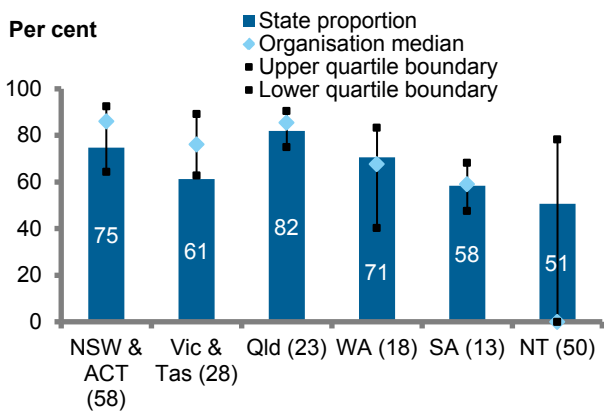


Figure 2.R4: Smoking status recorded, by jurisdiction, with median and quartile boundaries of organisations

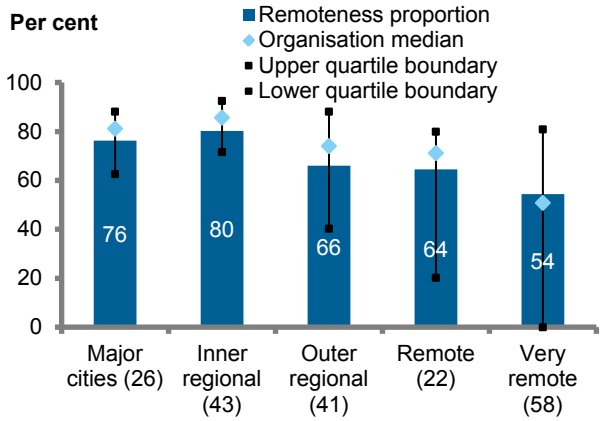


Figure 2.R5: Smoking status recorded, by remoteness, with median and quartile boundaries of organisations

Opportunities for action

- This indicator shows no clear trend at the national level and there are some declines in some jurisdictions. Despite this, one-quarter of organisations are achieving 88% or more clients with smoking status recorded. This would appear to be achievable by organisations regardless of size or location.
- There are particular opportunities for action on this indicator for 25% of organisations recording smoking status for less than 40% of their clients. The high rates of smoking among regular clients across all organisations make this a high priority.

Things to consider

- Time-stamped records
- Smoking categories.

S. Smoking status result

Headline results

Nationally, 32% of Aboriginal and Torres Strait Islander regular clients had never smoked while 54% currently smoked as at June 2013 (Figure 2.S1).

Trend data are not available. The proportion of clients who currently smoked was fairly similar across jurisdictions and remoteness categories (Figure 2.S2).

Comparison with national data shows as follows (Figure 2.S3):

- The proportion of current smokers was higher in the nKPI data than in the AATSIHS. This could be because regular clients are more likely to be unwell and seeking medical attention and therefore more likely to be a smoker. Data reported to primary health-care organisations are different from data reported as part of a self-reported survey as they are part of two different data collections.
- In both data collections, the proportion of current smokers is higher between ages 25 and 54.
- Young people aged 15–24 are more likely in both collections to have never smoked than people in other age groups.
- Those aged 55 and over are more likely to have become ex-smokers. Both data collections show a shift towards quitting with increasing age.

Age and sex distribution showed that around 50% of males and females aged 15–24 currently smoked. Proportions smoking were higher still in the 25–54 age groups (Figure 2.S4).

Variation in recording smoking status of clients by organisations could lead to a bias in the apparent proportion of smokers if a number of organisations with a low proportion recorded one particular smoking status preferentially. This bias was not detected in the data.

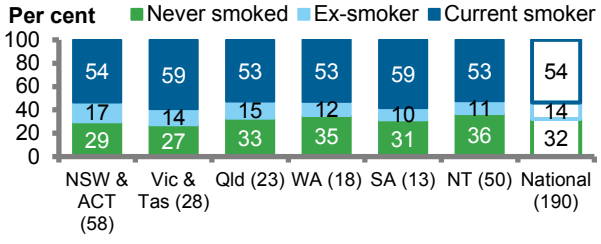


Figure 2.S1: Smoking status (never smoked, ex-smoker, current smoker), by jurisdiction

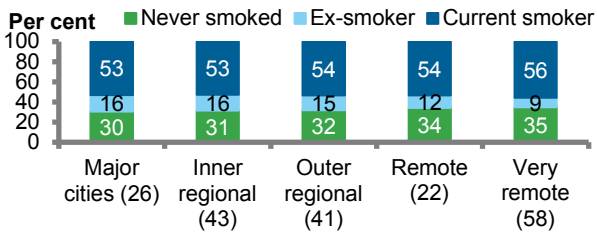


Figure 2.S2: Smoking status (never smoked, ex-smoker, current smoker), by remoteness

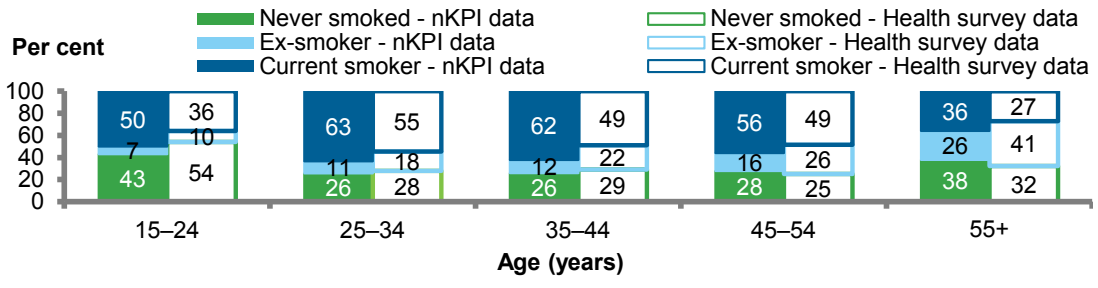


Figure 2.S3: Smoking status by age: comparison of nKPI and AATSIHS data

Why is this important?

Smoking status can be influenced by:

- provision of advice and access to cessation treatment within the primary health-care setting (Levy et al. 2004; Rothemich et al. 2008)
- factors other than primary health care, including clean air laws, cigarette prices, advertising bans and product labelling (Levy et al. 2004), making ongoing monitoring of national smoking trends especially important.

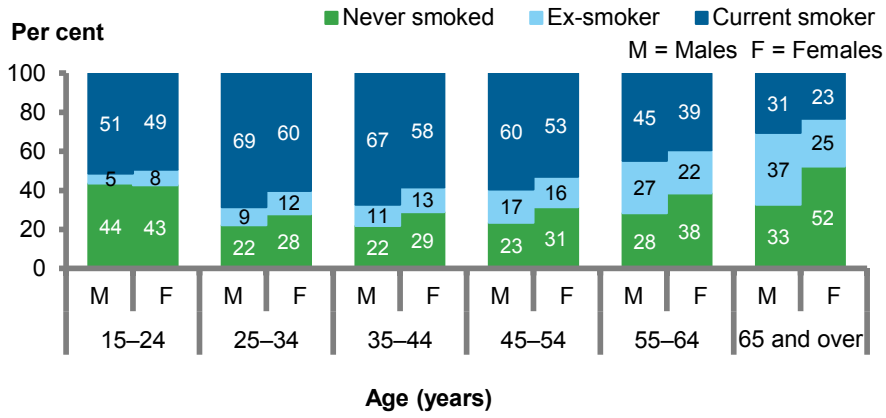


Figure 2.S4: Smoking status, by age and sex

Opportunities for action

- June 2013 was the first time data were collected for this indicator.
- Smoking status is influenced by a range of social determinants outside the control of organisations. A high number or proportion of clients who are current smokers does not indicate poor organisational performance.
- Organisations could review whether sufficient attention is being paid to recording smoking status and using evidence-based brief interventions and smoking cessation treatments.
- More research is required to build the evidence base on effective programs to reduce smoking rates in Indigenous communities.
- Smoking prevention efforts that are focused on younger age groups are important to reduce smoking initiation.

Things to consider

- Time-stamped records
- Smoking categories.

T. Alcohol consumption status recorded

Headline results

Nationally, 47% of Aboriginal and Torres Strait Islander regular clients aged 15 and over had their alcohol consumption status recorded in the past 24 months as at June 2013 (Figure 2.T1).

Trend showed an increase of 9 percentage points between June 2012 and June 2013. Western Australia and *Very remote* areas had the highest increase (figures 2.T1 and 2.T2).

Organisation performance (Figure 2.T3):

- Four (4) organisations recorded alcohol consumption status for all clients.
- Seven (7) organisations did not record alcohol consumption status for any of their regular clients.
- The top 25% of organisations recorded alcohol consumption status for 68% or more of their clients.
- The bottom 25% of organisations recorded alcohol consumption status for fewer than 29% of their clients.

Variation was least in the Northern Territory and in *Very remote* areas (figures 2.T4 and 2.T5).

Organisation size had no clear impact on the recording of alcohol consumption status (Appendix Figure A5.1).

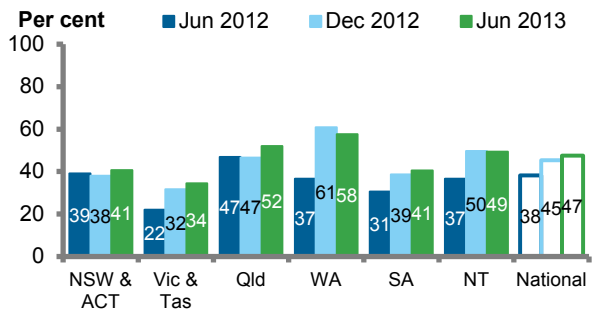


Figure 2.T1: Alcohol consumption status recorded, by jurisdiction

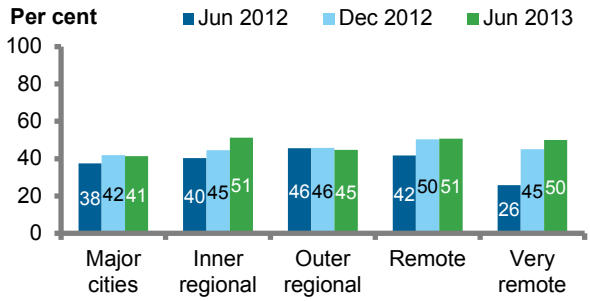


Figure 2.T2: Alcohol consumption status recorded, by remoteness

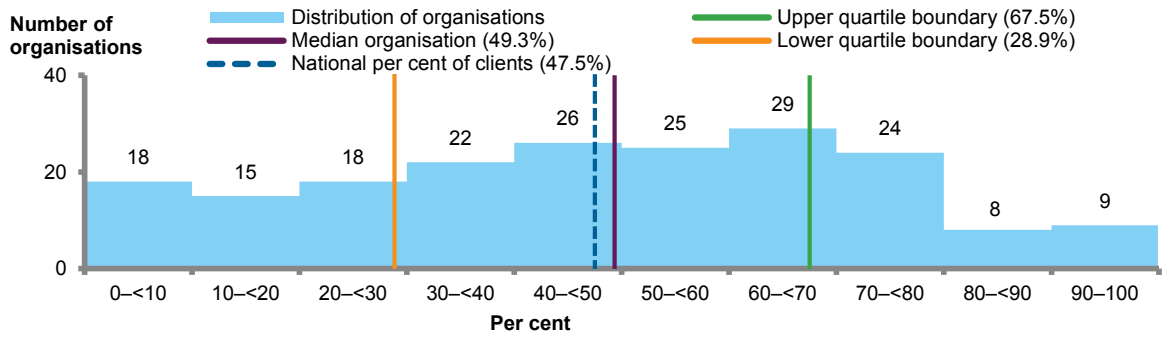


Figure 2.T3: Distribution of percentage of alcohol consumption status recordings, by organisation

Why is this important?

Recording alcohol consumption:

- can be an effective starting point for clinical intervention (Clifford & Shakeshaft 2011)
- informs understanding of national drinking patterns.

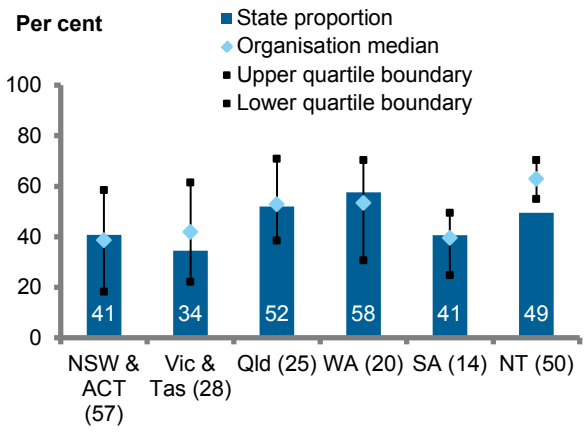


Figure 2.T4: Alcohol consumption status recorded, by jurisdiction, with median and quartile boundaries of organisations

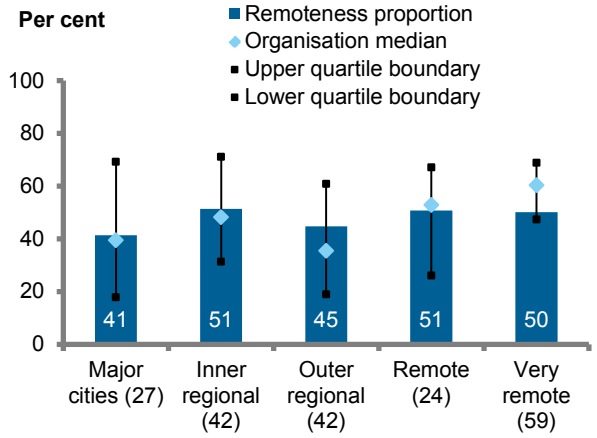


Figure 2.T5: Alcohol consumption status recorded, by remoteness, with median and quartile boundaries of organisations

Opportunities for action

- Improvement against this indicator nationally and across all jurisdictions since June 2012 indicates good work by many organisations.
- There is especially room for improvement for the bottom 25% of organisations recording alcohol status for 29% or fewer of their regular clients.
- All organisations could work towards achieving at least 68% recording of alcohol status; the data suggest that 100% is achievable.
- Better recording of alcohol consumption may create increased opportunities for evidence based brief interventions.

Things to consider

- Recording of alcohol consumption.

U. Overweight and obese

Headline results

Nationally, 26% of Aboriginal and Torres Strait Islander regular clients aged 25 and over who had their BMI measured were overweight (BMI of 25 to less than 30) and 40% were obese (BMI of 30 or more) as at June 2013 (Figure 2.U1). Input from the sector indicated the usefulness of providing information on the proportion of clients with their BMI recorded. To obtain information on the number of clients in the relevant age groups, data from the alcohol consumption indicator were used to maximise the number of organisations with valid data. Numerator and denominator data were joined by service. Based on data from organisations that provided information for both this indicator and for the number of clients whose alcohol consumption was recorded, 66% of Aboriginal and Torres Strait Islander regular clients aged 25 and over had their BMI recorded in the past 2 years.

Trend was relatively stable with 66% overweight or obese in June 2012 and June 2013, and 67% in December 2012 (Figure 2.U1). A small rise in the proportion of overweight or obese was seen for New South Wales/Australian Capital Territory and in *Remote* and *Very remote* areas (figures 2.U1 and 2.U2).

Comparison with national data shows that the proportion overweight or obese was higher in all age groups in the AATSIHS than in the nKPI data collection (Figure 2.U3). The AATSIHS had a considerably smaller sample size for this indicator than the nKPI collection.

Age and sex distribution shows more females than males were overweight or obese (Figure 2.U4).

Organisation size and distribution of clients who are overweight or obese show that most organisations had 65–80% of clients who were overweight or obese. A large number of smaller organisations (with 1,000 or fewer clients) had less than 65% of clients who were overweight or obese. In 4 smaller organisations, all clients were reported to be either overweight or obese.

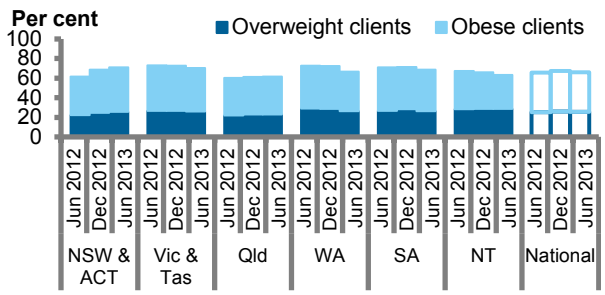


Figure 2.U1: Overweight or obese, by jurisdiction

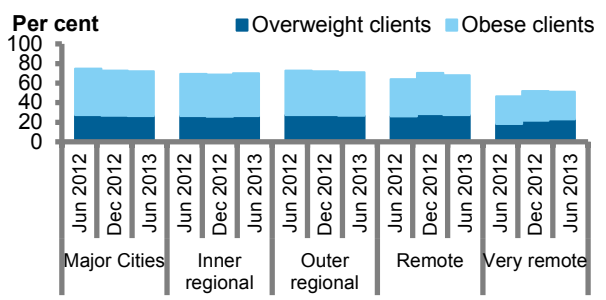


Figure 2.U2: Overweight or obese, by remoteness

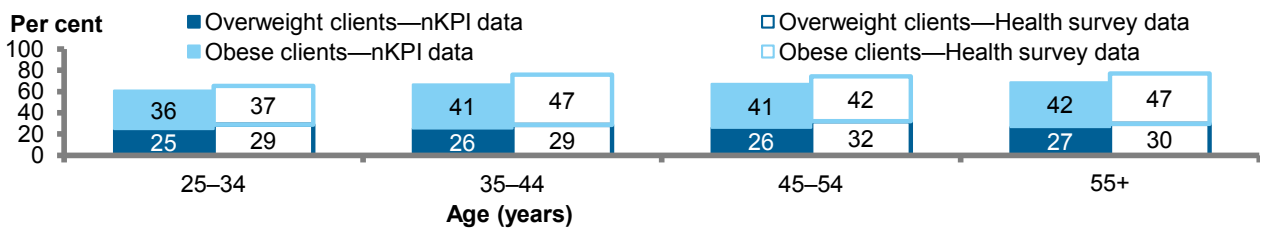


Figure 2.U3: Overweight or obese by age: comparison of nKPI and AATSIHS data

Why is this important?

Periodic measurement of BMI is useful for:

- assessing the risk of comorbidities and premature mortality risk in patients with chronic disease (Prospective Studies Collaboration 2009) and determining the effectiveness of behaviours such as diet and exercise on weight control (Nawaz & Katz 2001)
- increasing knowledge of excess weight patterns and the prevalence of chronic diseases nationally.

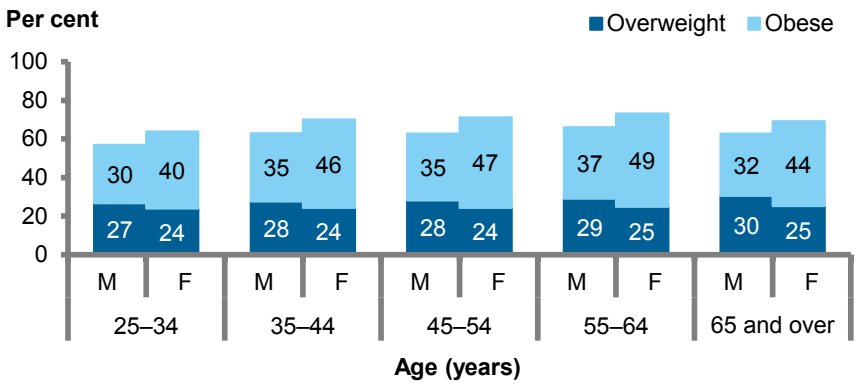


Figure 2.U4: Overweight or obese, by age and sex

Opportunities for action

- BMI is influenced by a range of social determinants and lifestyle factors outside the control of organisations. A high number or proportion of clients who are overweight or obese does not indicate poor organisational performance.
- Organisations could review whether sufficient attention is being paid to preventative programs that address nutrition and physical activity.
- Activities targeted at younger age groups may be of particular benefit to prevent the development of chronic disease in later life. Recent research suggests a stronger association between coronary heart disease and obesity in younger age groups than older groups.

Things to consider

- Differential BMI testing.

V. Child immunisation

This indicator is presented differently to the others because of issues with data validity that need to be highlighted before further analysis of the nKPI childhood immunisation data can be considered.

The Australian Childhood Immunisation Register (ACIR) 2011 records indicate that about 90% of Aboriginal and Torres Strait Islander children are fully immunised nationally. This is broadly similar to the immunisation rate for non-Indigenous children (AHMAC 2012) and is a public health success story. However, comparison with nKPI 2013 data indicates that primary health-care records are capturing far fewer cases of fully immunised children (approximately 20 percentage points fewer). This suggests there are data quality issues with the childhood immunisation data collected from primary health-care organisations. Anecdotal evidence indicates that some organisations may not rely on their internal Patient Information Record Systems to track immunisation status, instead possibly relying on the ACIR. Also, in some instances, the primary health-care providers participating in the nKPI collection may not be the only or major immunisation provider. This would reduce the priority that some organisations may give to maintaining immunisation status information within their Patient Information Record System.

While nKPI data appear to under-capture immunisations, they do show the same pattern of variation of fully immunised children at different ages as the ACIR data, with a similar magnitude of variation (Figure 2.V1). This suggests that there may be a systematic recording or extraction issue that affects age groups equally. The nKPI data show large variation in the recording of fully immunised children between jurisdictions, which is not found in the ACIR data (see Figure 2.V2 and Appendix 2 which shows the quartile range for each age group at the national level). In two jurisdictions, the proportion of immunised children was roughly similar in both the nKPI collection and the ACIR collection. This suggests that if there is a systematic issue with the nKPI childhood immunisation data, it is more prevalent in some jurisdictions than others. Furthermore, jurisdictions with lower rates of immunisation tend to have a wider spread of recorded immunisation rates across organisations in the nKPI collection (Figure 2.V2). This suggests that the systematic issue may be limited to particular organisations.

Investigation into how different organisations record childhood immunisations and how this relates to variation in roles and responsibilities for immunisation provision between different providers may be useful for informing future data collections.

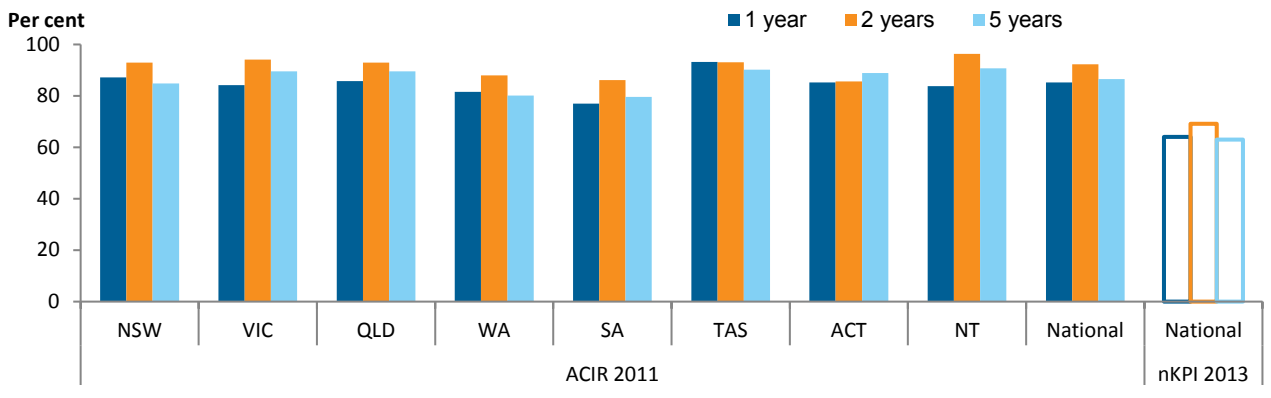


Figure 2.V1: ACIR 2011 Indigenous childhood immunisation rates compared with nKPI 2013 records

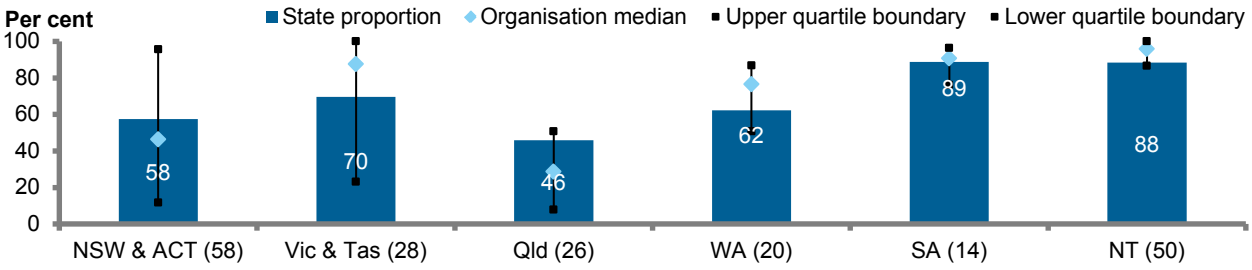


Figure 2.V2: Recording of fully immunised clients aged 60 to <72 months, by jurisdiction, with median and quartile boundaries of organisations (nKPI June 2013 data)

Chapter 3

Factors that made a difference

Box 2: Key messages

Organisations that participated in **CQI programs** are likely to outperform other organisations.

The data show improved performance by organisations across 8 of the 11 indicators for which time trend data are available. A number of possible contributing factors are related to CQI processes. These include CQI processes initiated before the nKPIs began to be collected, such as Healthy for Life and CQI activities in the Northern Territory and Queensland. These activities may have improved documentation and quality of care, which may have assisted organisations with their CQI journeys. The nKPIs can themselves be used by individual organisations to inform their CQI activities; ongoing action by organisations in response to their reports from the AIHW may also have contributed.

The **jurisdiction and remoteness of an organisation** were associated with performance. Northern Territory organisations performed better than other jurisdictions for a majority of indicators, and there were some indicators for which organisations in *Inner regional* and *Very remote* areas performed better than those in other areas. However, location may be a proxy measure of other factors working separately or in combination, such as organisation's history and its relationship to the community, the characteristics of the community, the service delivery model and staffing profile and experience, and the level of resourcing. Many organisations in the Northern Territory, Queensland and in *Very remote* areas have a similar history of CQI programs.

Number of staff and clients associated with performance. Organisations performed better across indicators if they:

- had fewer clients per GP—organisations with fewer than 800 clients per GP were more likely to be among the higher performers for 8 measures
- had fewer overall clients—organisations with fewer than 250 clients were in the higher performing group for 4 measures, while organisations with 251–500 clients were in the higher performing group for 3 measures
- had a higher proportion of trained health staff to total staff—organisations in which more than 75% of total staff were health staff were in the higher performing group for 9 measures.

Introduction

Research suggests that many factors can influence the performance of health service organisations and some of these factors are interconnected. This makes it difficult to unravel which factors are the most important. A statistical analysis (logistic regression) was carried out to see which factors were most strongly associated with organisation performance. It should be noted that not all factors that can influence the performance of an organisation are considered in the analyses due to unavailability of such information. For instance, the location of an organisation by jurisdiction or remoteness area was found to be associated with performance; however, location may be a proxy measure of other factors working separately or in combination, such as the organisation's history and its relationship to the community, the characteristics of the community, the service delivery model and staffing profile and experience, and the level of resourcing.

Logistic regression requires a dependent variable with just two possible values. Any client will either have a particular process performed or not (or have a particular health outcome or not). Therefore the most naturally applicable dependent variables to analyse from the nKPI data are the results for individual clients. The independent variables used are the properties of the health organisations that those clients attended. In this way, the results of the logistic regression provide a profile of organisational characteristics that are most associated with positive or negative results for clients.

Results in this chapter are for a group as a whole but may not apply to all organisations in that group. For instance, while organisations in Queensland as a whole performed well against many indicators, individual organisations in Queensland may not have performed well. Many of the figures in Chapter 2 illustrate the variance within jurisdictions or by remoteness.

Details of the logistic regression by indicator are presented in Appendix 7.

Box 3: Methodology used in this chapter

Assessing overall performance

Each measure (Appendix Table A7.1 lists the included measures) had two main sets of logistic regression performed on it: one using the highest performing category for each predictor as reference categories, and another using the lowest performing category. Two supplementary sets of logistic regression were also performed, which were largely identical except they grouped jurisdictions into those with a history of CQI (Northern Territory and Queensland) and those without.

The regression analysis predicted whether a client attending an organisation with a particular characteristic would have greater or lower odds of having particular information recorded, procedures performed, or better health outcomes than clients of organisations with different characteristics. A separate analysis was carried out for 21 of the 24 nKPI measures, as the child immunisation measures were excluded due to likely data quality issues. Each analysis incorporated the same set of independent variables (see Appendix 8).

In summary, each indicator was analysed separately, and the odds-ratios between independent variables categories were computed by holding other independent variables constant. This type of analysis removes the impact of the other independent variables, allowing each to be considered in isolation. For instance, many of the organisations in the Northern Territory are *Remote* or *Very remote*, but logistic regression takes this into account by holding factors such as remoteness constant when comparing the Northern Territory with other jurisdictions.

In the graphs presented below, the size of the green region represents the number of organisational performance measures (dependent variables) for which the characteristic (independent variable category) was associated with 'higher performance' (see below for definitions of 'higher' and 'lower' performance). Similarly, the size of the orange region represents the number of measures for which the characteristic was associated with 'lower performance'. The 'not significant' group represents the number of measures for which the characteristic was not associated with 'higher' or 'lower' performance.

Definition of higher and lower performance

When one category of an independent variable has significantly (at least 95% confidence level) higher odds of a positive outcome for a measure than all other categories (for example, if clients of organisations in Queensland have significantly higher odds of having their smoking status recorded than clients of organisations in all other jurisdictions), that category is defined as a 'higher performer' for the measure being modelled (in this example, the recording of smoking status). 'Lower performers' are defined similarly. If a category does not match either of these definitions for a particular indicator, this is labelled as 'not significant'. The 'not significant' cases include all cases of middle-ranking odds, and any cases of highest or lowest odds that did not reach the 95% confidence limit.

Meaning of odds ratios

The odds ratio between two categories of a predictor variable represents the proportional change in odds of a certain result that would occur when moving between the categories, if all other factors are held constant. For example, if the odds ratio between *Inner regional* and *Major cities* is 1.7, this means that the particular outcome (such as smoking status being recorded for a client) has 1.7 times the odds for clients of *Inner regional* services than for clients of services in *Major cities*, if all other factors (such as jurisdiction and service size) are held constant. The model cannot account for factors for which there are no data, so it is possible that differences in odds between the categories of independent variable categories are due to unknown confounding factors, because the model cannot hold these factors constant.

Importance of CQI—three lines of evidence

Improved performance against the nKPIs over time—the CQI component

Individual organisations may have used the nKPIs to inform their CQI activities. Organisations improved their performance over the 3 reporting periods in 8 of the 11 measures of organisational performance, with increases of up to 9 percentage points. Performance decreased for 2 measures. The improved performance may be associated with CQI activity undertaken by organisations in response to nKPI reports or other CQI activity.

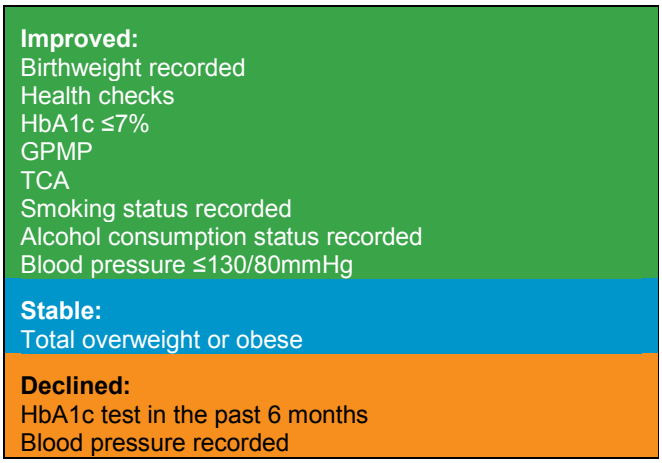


Figure 3.1: Change in indicator result between June 2012 and June 2013

Jurisdictions with a history of CQI

Jurisdictions with health organisations that had a history of using CQI processes (that is, the Northern Territory and Queensland) performed better than organisations in jurisdictions that did not (that is, other jurisdictions combined). Northern Territory and Queensland combined outperformed other jurisdictions combined on 18 out of 21 measures. The other jurisdictions combined performed better on only 1 measure.

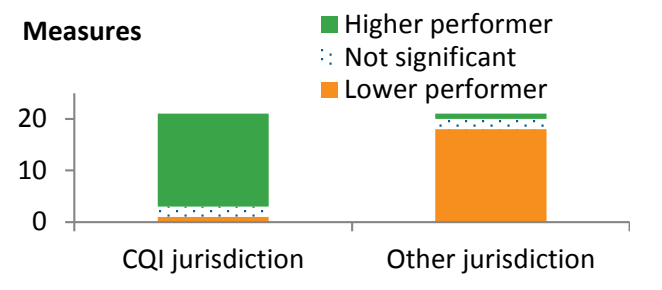


Figure 3.2: Performance against measures, by jurisdictions with health services with a previous history of CQI (Northern Territory and Queensland) and other jurisdictions combined

Participation in the Healthy for Life CQI program

Healthy for Life is a CQI program funded by the Australian Government which was announced in 2005–06, with the participation of about 100 organisations. Previously, organisations reported to the AIHW on 10 essential indicators (see Appendix 1). In return, the AIHW provided organisations with tailored reports to be used to improve processes and outcomes. The clients in the organisations that participated in Healthy for Life outperformed their counterparts in 8 nKPI measures, and were outperformed by non Healthy for Life organisations in only 3 measures.

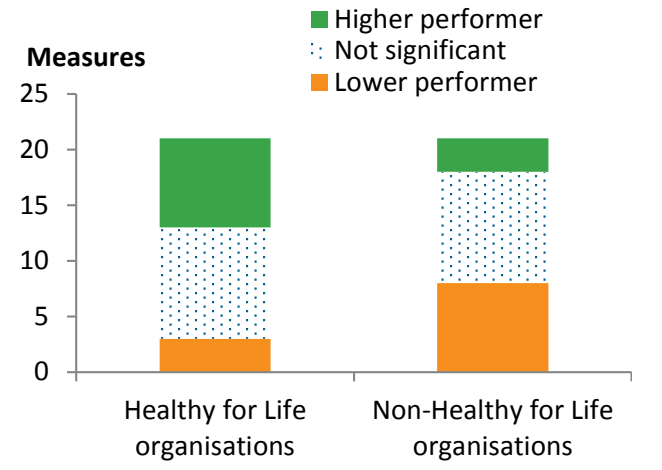


Figure 3.3: Performance against measures, by previous participation in the Healthy for Life program

Differences between jurisdictions and by remoteness

Organisations in the Northern Territory and Queensland

Substantial variation in performance against particular measures occurred within all jurisdictions (see, for example, Figure 2.G4). Organisations in the Northern Territory were in the higher performing group for 11 measures, compared with 4 for Queensland. Organisations in Queensland were also in the lower performing group for 1 measure. Organisations in Western Australia were in the lower performing group more than others. There are a number of possible reasons for the Northern Territory's performance, including enhanced coordination within the health system and a history of engagement with electronic medical record systems.

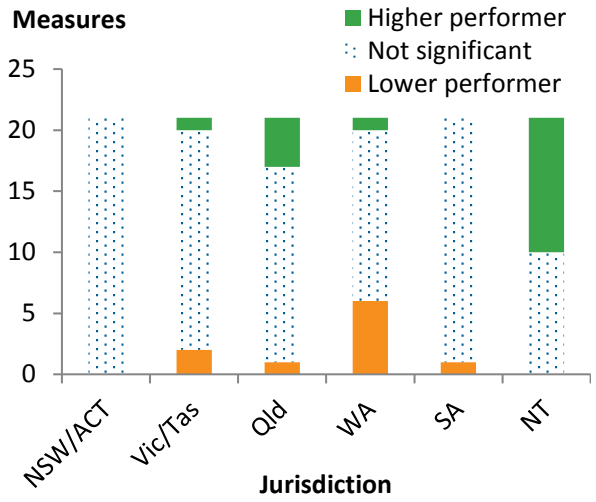


Figure 3.4: Performance against measures, by jurisdiction

Organisations in *Inner regional* and *Very remote* areas

Organisations in *Inner regional* and *Very remote* areas performed better than those in other locations on a range of measures. *Inner regional* areas performed best against 7 measures. This analysis removes the impact of the other independent variables, allowing each to be considered in isolation. While many of the organisations in the Northern Territory are *Remote* or *Very remote*, the logistic regression takes this into account by holding factors such as remoteness constant when comparing the Northern Territory with other jurisdictions.

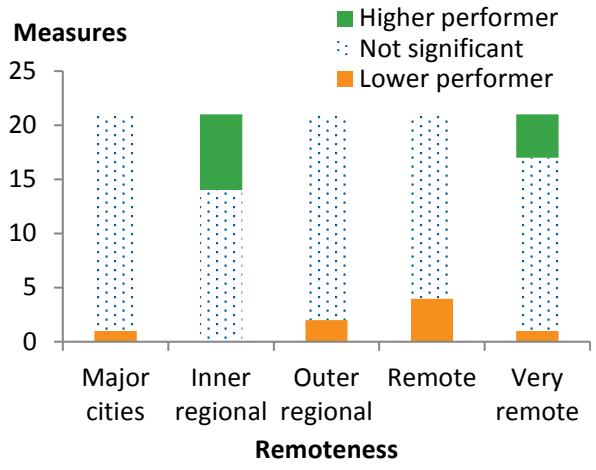


Figure 3.5: Performance against measures, by remoteness

Staffing

While the model used holds geography constant, interpretation of this section is enhanced by the knowledge that there are different staffing challenges for organisations in different areas. Additionally, staffing models may vary regionally. Nurses, for instance, may be more widely employed in *Remote* and *Very remote* organisations than in those in *Major cities*. The division of labour within organisations may similarly vary between organisations. For instance, nurses may perform a different set of tasks in an organisation without a GP than in an organisation with a relatively high number of GPs. The role of Aboriginal Health Workers (AHWs) could involve more or less transportation of clients, depending on the organisation's location and the availability of transport to its clients.

Clients per GP

Organisations that had the least number of clients per GP performed best. Organisations with fewer than 800 clients per GP were more likely to be among the higher performers for 8 measures. All staffing figures in this chapter are full-time equivalents (FTEs).

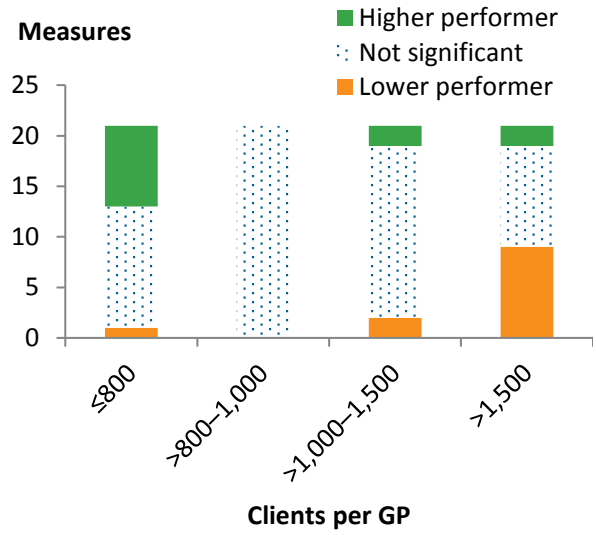


Figure 3.6: Performance against measures, by ratio of clients to GPs

Episodes of care per health staff

Organisations with more episodes of care per health staff performed better than those with lower ratios.

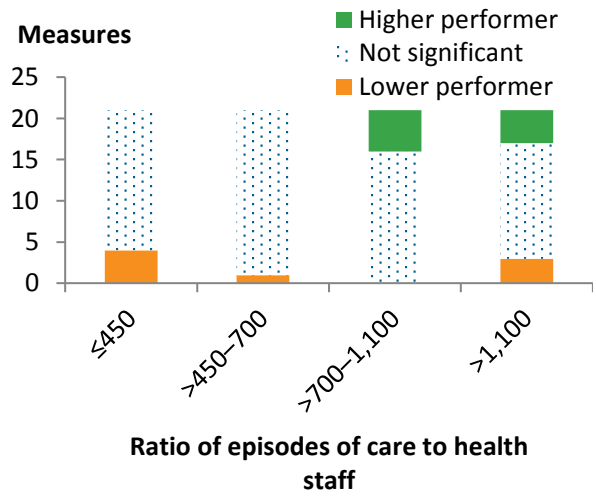


Figure 3.7: Performance against measures, by ratio of episodes of care to health staff FTE

Proportion of staff who were health staff

Organisations in which health staff made up more than 75% of all staff were in the higher performing group for 9 measures.

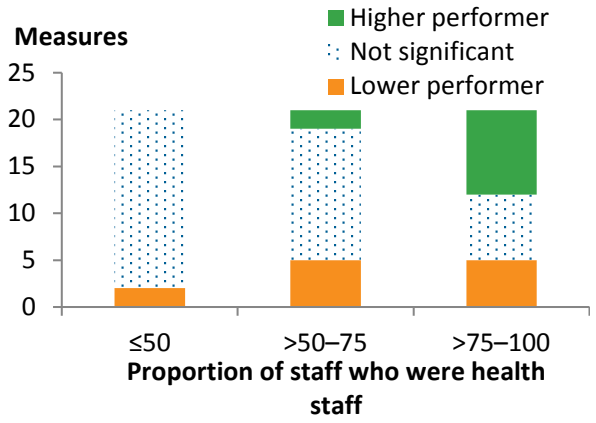


Figure 3.8: Performance against measures, by proportion of staff who were health staff

Clients to vacant positions

Clients attending services with higher numbers of clients per vacant FTE positions (more than 500 clients per 1 FTE) were more likely to be in the higher performing group. Organisations with 200 clients or fewer for each vacant FTE position (an indicator that these services have a large number of vacant positions) were in the lower performing group for 13 measures.

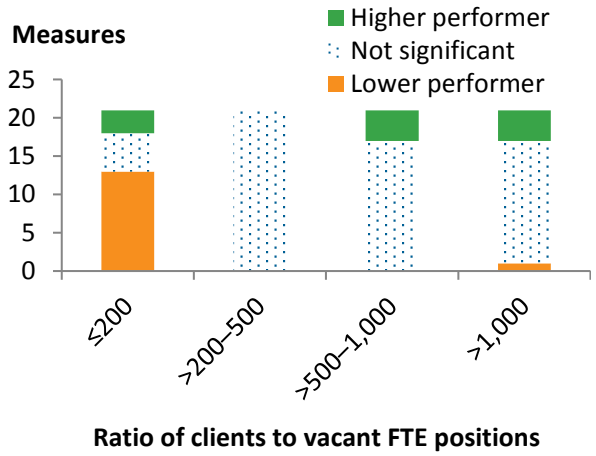


Figure 3.9: Performance against measures, by ratio of client to vacant FTE positions

Other factors

Organisation size

Organisations with fewer clients performed better than larger ones. Organisations with large numbers of clients tend to be in the lower performing group. This observation appears to conflict with the assumption that organisations with more clients can do things more efficiently. Smaller services may be more able to establish and maintain personal connections, which are important in Aboriginal and Torres Strait Islander cultures. Culturally appropriate service may facilitate enhanced compliance with medical advice (Hawthorne 2001; Tu et al. 2006). However, as discussed in Chapter 2, organisations of all sizes can perform well against the indicators. Organisation size is not a barrier to higher performance. Information on organisation size is included in Appendix 5.

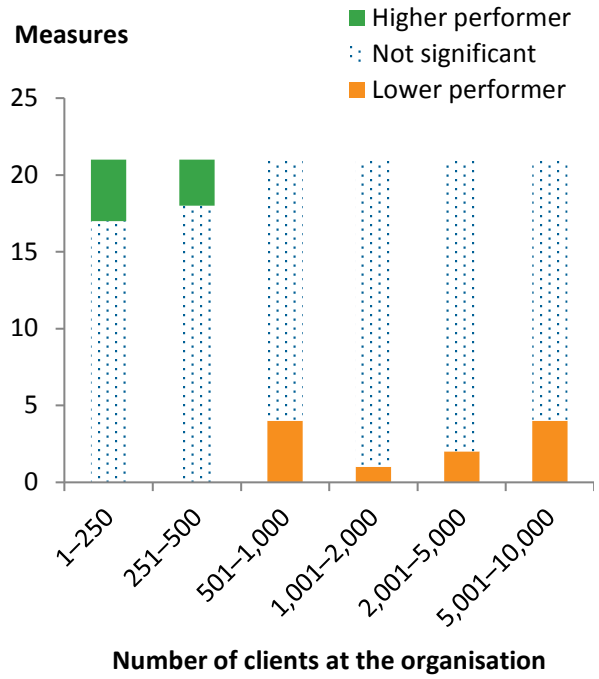


Figure 3.10: Performance against measures, by number of clients at the organisation

Factors associated with inconsistent conclusions

Clients per nurse

The ratio of clients to nurses in an organisation does not have a clear association with performance across indicators. Organisations with more than 1,000 clients per nurse were more likely to be in the higher performing group. However, organisations with more than 500 to 1,000 clients per nurse were least likely to be in the higher performing group. Similarly, while organisations with more than 1,000 nurses per client were less likely to be in the lower performing group, there was no discernable trend in lower performance based on the ratio of clients to nurses.

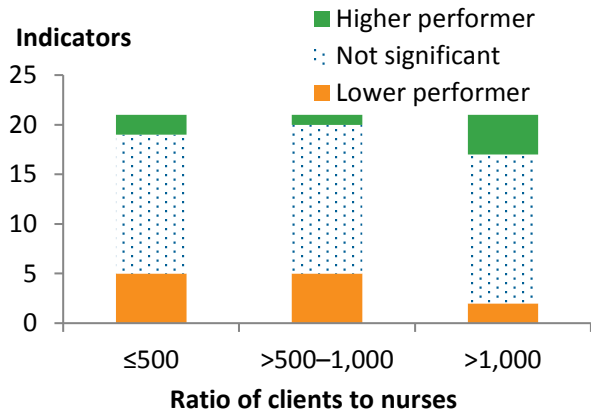


Figure 3.11: Performance against measures, by ratio of clients to nurses

Clients per staff member

The ratio of clients to total staff (administrative and health) in an organisation had no clear association with performance across indicators. The likelihood of being in the higher or lower performing groups seems to be enhanced by either a high or low ratio of clients to staff. Organisations with more than 50 to 75 clients per staff members were least likely to be in the higher or lower performing groups.

Figure 3.12: Performance against measures, by ratio of clients to staff members

Vacant staff positions

Organisations with a lower proportion of vacant positions might be expected to outperform those with a high proportion of vacant positions. Contrary to expectations, the nKPI data show that organisations with greater than 10% vacant positions are more likely to be among the higher performing group. Organisations with more than 5% to 10% of clients vacant were most likely to be in the lower performing group. Vacant positions include newly created positions, which may indicate increased funding. Active recruitment of staff may be a proxy measure of strong management.

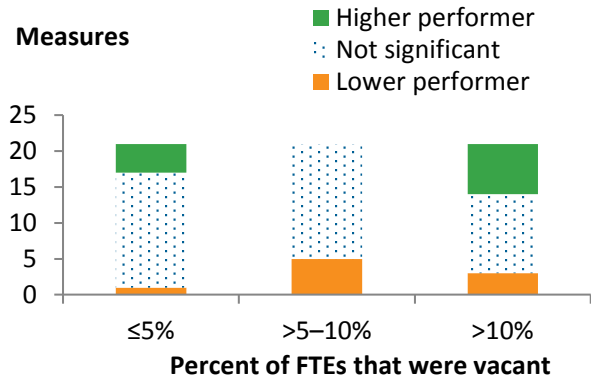


Figure 3.13: Performance against measures, by proportion of vacant positions

Clients per AHW

The ratio of clients to AHWs in itself does not show a consistent relationship with performance across indicators. The previous lack of a consistent definition of an 'Aboriginal and Torres Strait Islander Health Worker' may also impede interpretation, as varied roles may mask effects. The recent introduction of Aboriginal and Torres Strait Islander Health Practitioner roles may increase clarity in future.

Figure 3.14: Performance against measures, by ratio of clients to AHWs

Chapter 4

Individual organisation performance against process of care indicators

Overall performance

In analysing the performance of the organisations against process of care indicators, the following elements need to be considered:

- the extent of variation within each indicator across organisations contributing nKPI data; this shows the opportunities for improvement at a systemic level on each indicator
- the extent of variation between indicators; this shows where the relative strengths and weaknesses are and informs priorities for action.

The figures presented below show the distribution of organisations according to their performance against each process of care indicator. Process of care indicators reflect the efforts by organisations to capture information about their clients, such as recording whether they have received a service appropriate for their care. If all services are performing at 100%, one would expect to see a line parallel to the x-axis. The downward sloping lines indicate the deviation of services away from an optimal point. However, it should be noted that a benchmark of 100% could not always be achievable by all organisations. For example, nationally, only 57% of Australian women aged 20–69 had cervical screening (AIHW 2013a) and therefore it will be unrealistic to expect that Indigenous primary health-care organisations screen 100% of Indigenous women.

Data

The AIHW was provided with data from 206 primary health-care organisations on a range of process of care and outcome indicators. This analysis focuses on the 14 process of care indicators of services that organisations should have provided to their regular clients. Note than only 13 process of care indicators (16 measures) are discussed as the child immunisation indicator and its three measures were excluded due to data quality issues. These indicators reflect best practice in health care. These include antenatal visits, recording of birthweight, health assessments, cervical screening, immunisation for children and adults, recording of smoking and alcohol status, GPMPs, TCAs, recording of kidney function tests, and HbA1c results for clients with type 2 diabetes.

The 13 process of care indicators covered services to clients of a particular age group, sex, or an event within the life cycle. There are sub-components to some of these 13 indicators, which results in 16 measures being presented in this analysis. While the AIHW received data from 206 services, not all of these data were valid. Some were excluded because they were internally inconsistent, or organisations indicated that the data were incorrect. Table 4.1 shows the 13 process of care indicators (16 process of care measures) and the total number of organisations that provided valid data for each of these measures. Some organisations indicated that they did not have regular clients for a particular indicator or they were not providing comprehensive primary health care. These organisations have also been excluded from the analysis described below. Table 4.1 also shows the final number of organisations that were included in the analysis after the exclusions.

Table 4.1: Number of organisations contributing valid data and number of clients, by each process of care measure, June 2013

Process of care measure	Number with valid data[a]	Included in the analyses[b]	Number of clients
Birthweight recorded	169	160	6,655
First antenatal visit before 13 weeks	187	141	3,678
Clients aged 50+ immunised against influenza	186	183	40,716
Immunised against influenza			
Clients with type 2 diabetes immunised against influenza	180	171	11,823
Clients with COPD immunised against influenza	190	142	1,513
MBS GPMP	180	179	27,549
MBS TCA	180	179	27,549
Kidney function test recorded			
Kidney function test recorded for clients with type 2 diabetes	176	175	26,512
Kidney function test recorded for clients with CVD	188	174	12,255
Clients with type 2 diabetes with blood pressure test recorded	180	179	27,549
HbA1c test recorded	173	172	26,743
Cervical screening (2, 3 and 5 years)	192	179	73,723
MBS health assessments			
Aged 0–4	188	185	30,172
Aged 25+	185	185	121,003
Smoking status recorded	190	190	158,499
Alcohol consumption recorded	194	194	163,330

(a) Organisations with valid data after excluding those due to inconsistent data or organisation comments.

(b) Excludes organisations providing data with '0' denominator for indicators as they had no clients to provide services to be counted in those indicators.

Figure 4.1 shows the national proportion for each process of care measure. Data from any organisation that provided valid data for a measure was included in the computation of the proportion for that measure. It shows that nation-wide performance varies considerably across process of care indicators, with a performance ratio of approximately 2.6 between the highest and lowest measures (68.3% to 26%).

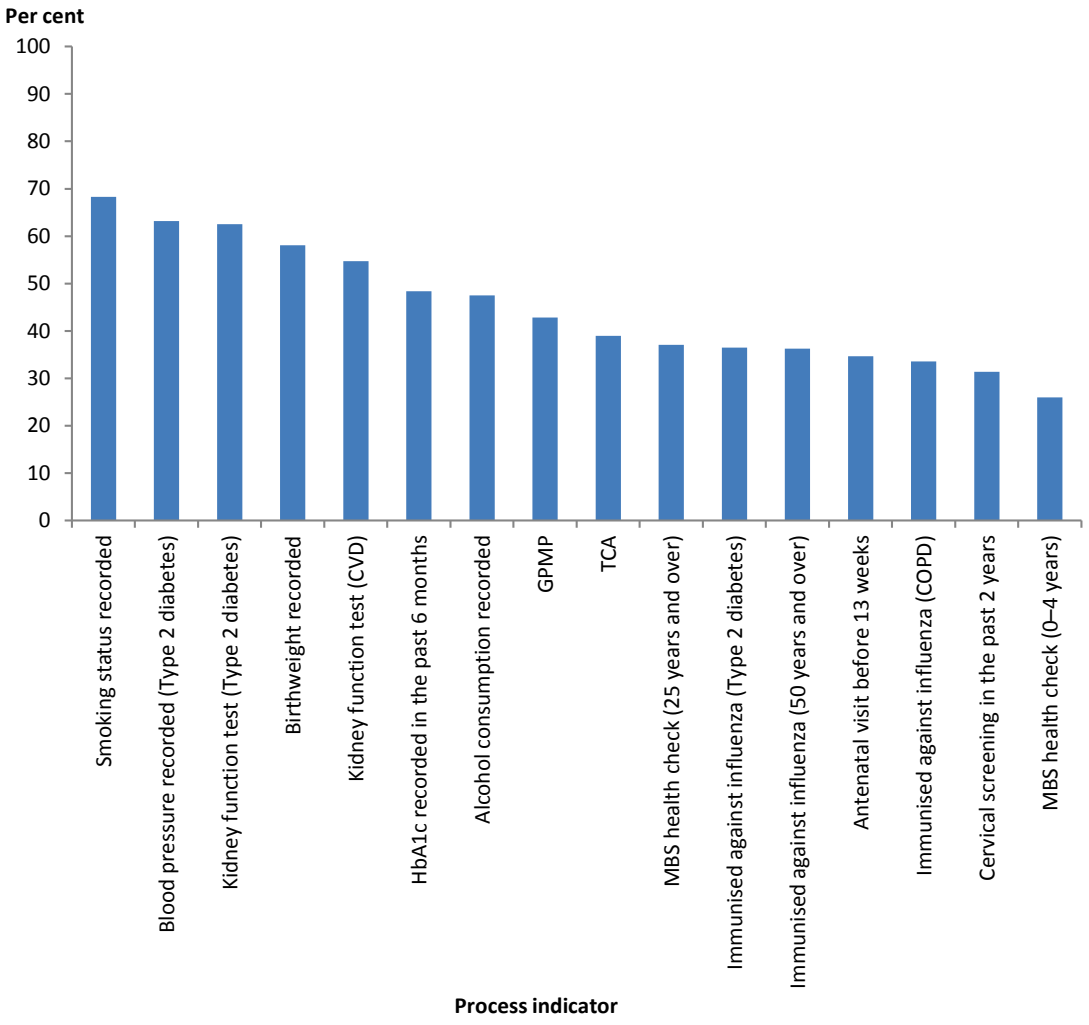


Figure 4.1: National proportion for each process of care measure

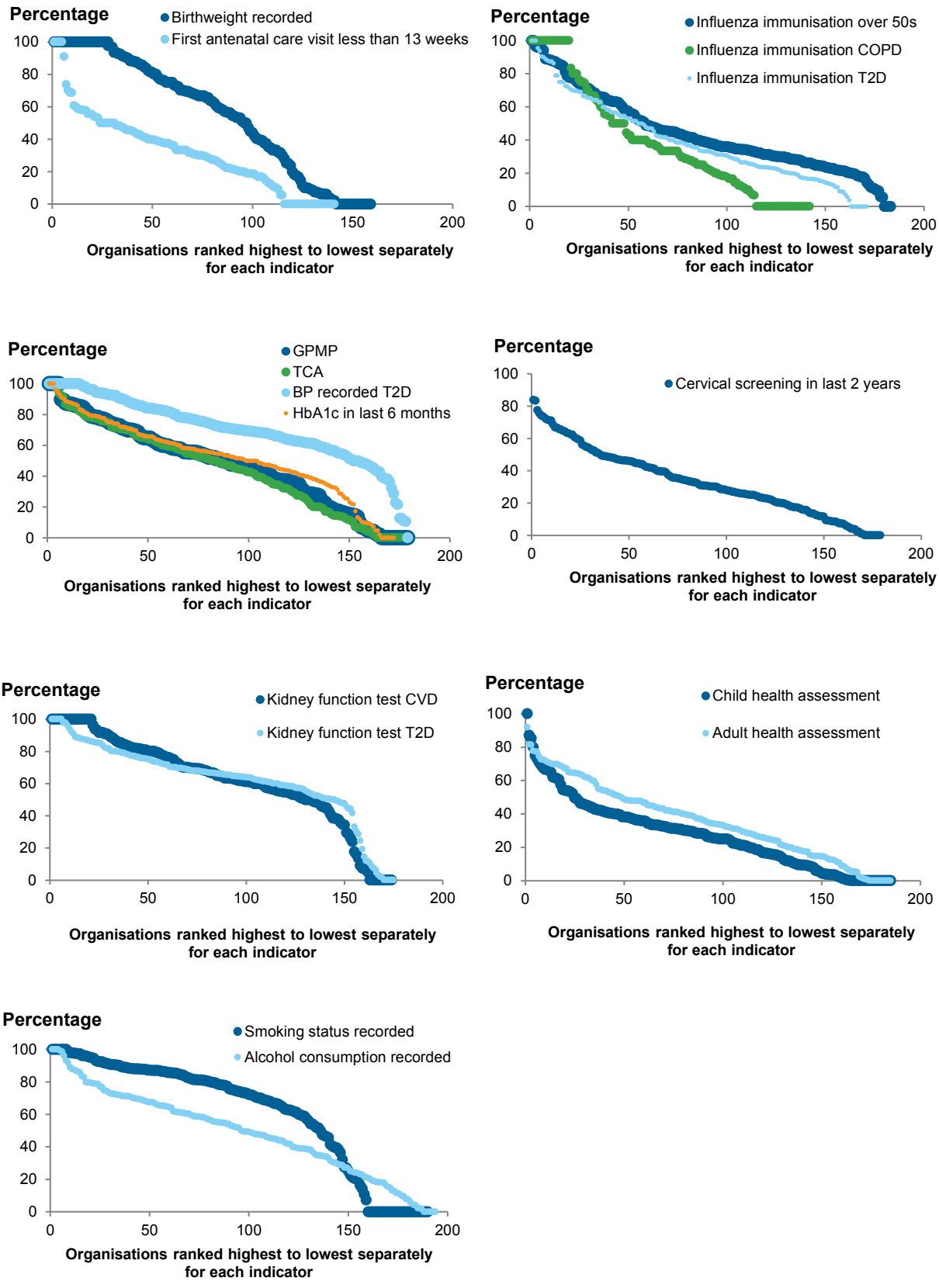
Computation details (Figure 4.1):

The national proportion for each measure is computed as the sum of numerators divided by the sum of denominators, inclusive of all organisations that provided valid, non-zero data for that measure. For example, 160 organisations provided valid, non-zero data for the birthweight recorded indicator, so the sum of the 160 numerators was divided by the sum of the 160 denominators.

Figure 4.2 shows the detailed distribution of performance across organisations for each process of care measure. Performance can range from 0–100%, and for some measures a cluster of organisations occurs at these extremes. The overall shape of the distribution differs considerably across measures. The large disparity between the proportion of babies with birthweight recorded and proportion of mothers whose first antenatal visit was before 13 weeks gestation may indicate room for improvement.

Valid data from all organisations that provided data are included, as outlined in Table 4.1. The number of organisations included in each indicator therefore varies.

These figures show the number of organisations that are able to report on providing these services to 100% of their clients. In addition, the shape of the curve shows the extent to which organisations are currently reporting on a particular indicator. Better performance is indicated by points closest to 100% and the reverse is shown when points are closest to 0%.



Note: COPD = chronic obstructive pulmonary disease; T2D = type 2 diabetes; GPMP = General Practitioner Management Plan; TCA = Team Care Arrangement; BP = blood pressure.

Figure 4.2: Distribution of performance across organisations for process measures

Chapter 5

Conclusion

There are three key messages emerging from this first comprehensive analysis of the nKPI data for primary health-care services to Aboriginal and Torres Strait Islander people provided through services dedicated to that population.

The first is that there has been significant improvement for most organisations across 8 of the 11 indicators for which there are 3 data collection periods. There are a number of possible contributing factors to this improved performance. A major factor is that organisations have put effective time and effort into improving the quality of their service delivery and data collection. This effort should provide clear benefits for clients. In the longer term, the evidence suggests that this improvement should translate into enhanced health outcomes for Aboriginal and Torres Strait Islander people. There is evidence in the data to show that long-term and system-wide commitment to CQI strategies improves health. This is demonstrated by the strong performance by organisations in the Northern Territory and Queensland, which have put concerted efforts into CQI programs over a number of years. There is also a lasting impact of the Healthy for Life Program, which had a strong CQI focus.

The second key message from the analysis identifies areas for improvement. The data indicate Aboriginal and Torres Strait Islander people could be receiving better care. For example, more people with type 2 diabetes should have their blood pressure and blood sugar checked every 6 months, more people should be receiving health assessments, and more people with type 2 diabetes should be on care plans. This is not meant to single out Indigenous-specific primary health care for special criticism, as mainstream primary health care is also found to be deficient in the delivery of evidence-based care (Runciman et al. 2012). Many organisations contributing to the nKPIs are demonstrably achieving excellent results on these and other indicators, which should equate to good health care as a result. Organisations that are finding it more difficult to achieve results may not be able to improve all their indicators at once. What is important, however, is that they use the facilities provided through the nKPI system to start the journey towards the kind of results that many organisations right across Australia are able to achieve. This may mean service and/or data quality improvements.

Performance against process of care indicators currently shows wide variation across organisations. Analysis shows that organisation size or location may be associated with performance, but that some organisations of all sizes and in all jurisdictions and remoteness categories are able to perform well against the process of care indicators. There will be a range of other factors at the local level that influence the capacity of organisations to respond to these challenges. The gap in performance shows that CQI activities could potentially have a large impact on improving process of care indicators. While improvements in outcome indicator results (smoking status, BMI) are also highly desirable, it is recognised that organisational influence is more limited due to other factors outside the control of the health services that contribute to these.

Finally, there are a number of key issues that require further investigation and/or development to inform the continuing evolution of the nKPI system. These include:

- The possible development of benchmarks for the nKPI indicators. In this report, the performance of organisations has been divided into 'quartiles' so that the levels achieved by the top 25% and the bottom 25% are identified. These have been used as a form of benchmark for showing what can be achieved at the top and for showing where performance is clearly below a desirable level. This is not a substitute for a rigorous approach to setting benchmarks. The top 25% may have plenty of room for improvement and it is not necessarily the case that achievement of 100% on all indicators is required. It is possible that different benchmarks may be appropriate for different types of organisations in different circumstances. This is work that needs to be done.
- Investigation of data gathering and reporting processes for immunisation and kidney disease testing for client with type 2 diabetes indicators may be required.
- The nKPI system also requires the complementary development of CQI processes to help organisations use the facilities and resources created through the nKPI system to provide quality primary health care services. There is much activity occurring across the country in various forms and approaches to CQI. Building synergies between these activities and the nKPI system will greatly improve outcomes.

The Department of Health has provided all the content for this chapter.

Appendix 1

List of nKPIs as at June 2013

A set of 24 nKPIs were developed following the National Indigenous Reform Agreement at the request of the Council of Australian Governments, which subsequently received in principal approval by the Australian Health Ministers' Advisory Council. The National Indigenous Reform Agreement stipulates that the approval of data elements will be sought through the National Health Information Agreement governance process.

The draft set of indicators was supported by the National Advisory Group on Aboriginal and Torres Strait Islander Health Information and Data and was endorsed by the National Health Information Standards and Statistics Committee.

A Technical Working Group, chaired by the Department of Health, provided expert advice on developing the data specification for the KPIs and their subsequent implementation. It is also a forum for reviewing information that has been brought together on KPIs already used in primary health care in states and territories and for validating and providing assurance that the proposed national data set is clinically appropriate. The Group includes representatives of the National Aboriginal Community Controlled Health Organisation and its state and territory affiliates, state governments, the AIHW and other technical experts. Membership was selected in order to ensure that the Group had the expertise required to:

- robustly develop evidence-based indicators
- confirm the clinical relevance and operability of the indicators in primary health-care settings
- facilitate alignment with data collected through clinical information systems, and reported through the web-based reporting system developed for this purpose by the Australian Government.

In order to ensure alignment with other reporting, data definitions and specifications in use for other national and state collections, including those already in the AIHW's Metadata Online Registry (METeOR), were used wherever possible.

A full list of KPIs is available on METeOR <http://meteor.aihw.gov.au/content/ index.phtml/itemId/457994>. Table A1 shows the indicators included in this report. Each indicator is presented with its identification number as assigned in METeOR, together with an expanded description of what it is meant to measure.

Table A1: nKPIs and their description

Indicator	Description
PI 01: Birthweight recorded	Proportion of Aboriginal and/or Torres Strait Islander babies born within the previous 12 months whose birthweight has been recorded at the primary health-care service.
PI 02: Birthweight low, normal, or high	Proportion of Aboriginal and/or Torres Strait Islander babies born within the previous 12 months whose birthweight 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).
PI 03: Health assessment (MBS item 715)	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 0–4, and who have received an MBS health assessment for Aboriginal and Torres Strait Islander people within the previous 12 months AND proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 25 and over, and who have received an MBS health assessment for Aboriginal and Torres Strait Islander People within the previous 24 months.
PI 04: 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'.
PI 05: HbA1c test 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 an HbA1c measurement result recorded at the primary health-care service within the previous 6 months AND proportion of regular clients who are Aboriginal and/or Torres Strait Islander, have type 2 diabetes and who have had an HbA1c measurement result recorded at the primary health-care service within the previous 12 months.
PI 06: HbA1c result (clients with type 2 diabetes)	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, have type 2 diabetes and whose HbA1c measurement result was categorised as one of the following: As recorded in the previous 6 months, AND as recorded in the previous 12 months: • less than or equal to 7% • greater than 7% but less than or equal to 8% • greater than 8% but less than 10% • greater than or equal to 10%.
PI 07: GPMP (MBS item 721)	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, have a chronic disease and who have received a GPMP within the previous 24 months.
PI 08: TCA (MBS item 723)	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, have a chronic disease and who have received a TCA within the previous 24 months.
PI 09: Smoking status recorded	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 15 and over and whose smoking status has been recorded at the primary health-care service.

Table A1 (continued): nKPIs and their description

Indicator	Description
PI 10: Smoking status result	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 15 and over and whose smoking status has been recorded as one of the following: • current smoker • ex-smoker • never smoked.
PI 12: BMI (overweight or obese)	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 25 and over and who have had their BMI classified as overweight or obese within the previous 24 months.
PI 13: 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 • no result.
PI 14: Influenza immunisation (50 years and over)	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 50 and over and who are immunised against influenza.
PI 15: Influenza immunisation (clients with type 2 diabetes or COPD)	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 15–49, are recorded as having type 2 diabetes or COPD and are immunised against influenza.
PI 16: Alcohol consumption recorded	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 15 and over and who have had their alcohol consumption status recorded at the primary health-care service within the previous 24 months.
PI 18: Kidney function test recorded (clients with type 2 diabetes or CVD)	Proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 15 and over who are recorded as having type 2 diabetes and have had an eGFR recorded AND/OR an ACR or other micro albumin test result recorded within the previous 12 months AND proportion of regular clients who are Aboriginal and/or Torres Strait Islander, aged 15 and over who are recorded as having CVD and have had an eGFR recorded within the previous 12 months.
PI 22: Cervical screening recorded	Proportion of female regular clients who are Aboriginal and/or Torres Strait Islander, aged 20–69, who have not had a hysterectomy, and who have had a cervical screening within the previous 2 years, 3 years and 5 years.
PI 23: 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.
PI 24: 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 130/80mmHg.

Appendix 2

Summary of indicators

The following is a summary of organisations' performance across nKPIs with comparisons, where possible, with national data for Aboriginal and Torres Strait Islander people. The bottom quartile indicates a point below which clients in 25% of organisations were, and the top quartile indicates a point above which clients from 25% of organisations were.

Care must be taken in comparing data sets. Many are not directly comparable with the nKPI data because of different indicator definitions, collection periods and populations. Population-wide data sets such as the ACIR are fundamentally different from clinical data from a limited number of primary care organisations. For instance, regular clients may be less healthy than other clients of an organisation (see Appendix 3). The nKPIs are not suitable as estimates of population-level disease or activity prevalence, but, over time, they may contribute to these. There are several indicators where the nKPI mean differs appreciably from other national data: child immunisation, HbA1c test recorded, proportion of clients with type 2 diabetes who had an MBS GPMP or TCA, current smokers, timing of the first antenatal visit, and clients aged 50 and over who were immunised against influenza.

Child immunisation rates are much higher in the ACIR data set than they are in the nKPI collection. Likely reasons for this difference are discussed in Chapter 2. Data quality for this indicator needs to improve in the nKPIs before the two collections can be compared.

HbA1c test recorded was higher in the Healthy for Life data collection in June 2011 than in the nKPIs. However, there was some variability in the Healthy for Life data over time, which ranged from 40% in the period ending December 2008 to 56% in the period ending June 2010. The nKPI data is close to the centre of this range. Once the variability of the Healthy for Life data is taken into account, there is little difference between the nKPI and Healthy for Life result for this indicator.

The proportion of clients with type 2 diabetes who had an MBS GPMP or an MBS TCA increased over the course of the Healthy for Life program, based on the subset of organisations that provided valid data in all of the examined periods. If this trend continued, the proportion in Healthy for Life would have been higher in 2013 than it was in 2011. Similarly, the proportion increased between June 2012 and June 2013 in the nKPIs. It is unsurprising that the proportions of clients in the nKPI data set from 2013 are higher than the proportions from 2011 for Healthy for Life.

There were more current smokers recorded among the nKPI organisations' regular clients than among Aboriginal and Torres Strait Islander people who took part in the AATSIHS. Regular clients have attended the organisations three times in the past 2 years, and may be less healthy than the general population. Smoking causes negative health effects, so it is possible that smokers are more likely to be regular clients at nKPI organisations. People participating in a survey may be reluctant to admit to smoking, as in the self-reported AATSIHS. People may be more willing to divulge this information to their regular primary care provider.

The proportion of women whose first antenatal care visit is before 13 weeks of pregnancy is higher in NPDC data than in data for the nKPIs. The nKPIs include Aboriginal and Torres Strait Islander babies, while NPDC data look only at babies with mothers who are Aboriginal and/or Torres Strait Islander. The difference in proportion may also indicate room for improvement in the quality of nKPI data.

The proportion of clients aged 50 and over who were immunised against influenza in the preceding year was higher in the National Aboriginal and Torres Strait Islander Health Survey (NATSIHS) than in the nKPI data. NATSIHS data are self report data, and may be subject to errors of memory about timing of vaccination. Many regular clients have been vaccinated against influenza outside of their primary care organisation. Organisations participating in the nKPI data may not have total visibility of immunisations that occur elsewhere or may not yet be consistently recording this information.

Table A2.1: National key performance indicator results, June 2013

Indicator	Subcomponent	Mean (%)	Bottom quartile (%)	Top quartile (%)	Comparable national data (%)	Comparable national data collection
First antenatal visit	Within 13 weeks	34.7	15.6	46.9	45.9	NPDC
Birthweight recorded	. .	58.1	21.9	88.4	†	
Birthweight result	Low Normal High	12.4 85.0 2.6	1.4 78.6 0.0	17.8 93.2 2.6	12.6 85.9 1.4	NPDC
MBS health assessments	0–4 years	26.0	9.4	39.8	22.5	Medicare Australia
	25 years and over	37.1	18.0	50.7	21.8	Medicare Australia
Cervical screening	Last 2 years Last 3 years Last 5 years	31.4 37.4 42.8	17.4 22.3 24.3	46.8 57.3 66.2	† † †	
Clients aged 50+ immunised against influenza	. .	36.3	27.5	61.4	60	NATSIHS 2004–05
Clients with chronic diseases, immunised against influenza	Type 2 diabetes COPD	36.5 33.6	20.7 12.5	56.6 60.0	† †	
MBS GPMP	. .	42.8	27.3	68.4	32.0	Healthy for Life
MBS TCA	. .	39.0	20.0	66.0	27.2	Healthy for Life
HbA1c test recorded	6 months 12 months	48.4 63.8	39.5 58.2	69.8 84.3	53.9 †	Healthy for Life
HbA1c result	≤7% 6 months ≤7% 12 months	33.6 34.3	26.7 29.1	43.1 44.3	30.6 †	Healthy for Life
Kidney function test recorded for clients with chronic diseases	Type 2 diabetes CVD	62.5 54.7	54.1 50.0	76.5 81.8	† †	

Table A2.1 (continued): National key performance indicator results, June 2013

Indicator	Subcomponent	Mean (%)	Bottom quartile (%)	Top quartile (%)	Comparable national data (%)	Comparable national data collection
Clients with type 2 diabetes with blood pressure test recorded	. .	63.2	59.4	86.1	65.4	Healthy for Life
Clients with type 2 diabetes with blood pressure ≤130/80mmHg	. .	43.3	32.7	54.5	42.0	Healthy for Life
Smoking status recorded	. .	68.3	39.7	87.6	†	
Smoking status result	Current	53.8	49.3	60.7	43.0[(a)]	AATSIHS 2012–13
	Never	32.2	25.5	36.4	36.5	AATSIHS 2012–13
Alcohol consumption recorded	. .	47.5	28.9	67.5	†	
BMI result	Overweight or obese	66.0	65.7	77.5	65.6	AATSIHS 2012–13
Child immunisation[(b)]	12 to <24 24 to <36 60 to <72	64.1 69.2 63.0	54.5 52.7 38.0	100.0 100.0 100.0	85.2 92.3 86.5	ACIR ACIR ACIR

† The nKPIs are the only source of national data for Indigenous Australians for these indicators.

(a) Comparable national data refer to the proportion smoking (daily and occasionally).

(b) The nKPI collection currently underestimates the proportion of Indigenous children who have been immunised because it relies on organisations' internal records.

Notes

1. Data are for services that provided valid data. The total number of services that participated in the nKPI was 206.
2. ACIR data are as at 31 December 2011 (AHMAC 2012); Healthy for Life data are as at 30 June 2011 (AIHW 2013b); Medicare Australia data are for January 2012 to December 2012 (Medicare Australia 2013); AATSIHS data are for 2012–13 (ABS 2013); NATSIHS 2004–05 (ABS 2006); NPDC data are for 2011 (unpublished).

Sources: ACIR; AIHW's Healthy for Life data collection; AIHW's nKPI data collection; AIHW's NPDC; Medicare Australia; AATSIHS.

Appendix 3

Data quality

The quality and completeness of the data submitted by organisations are important determinations of the quality of the national analyses. Data may be incomplete for a number of reasons:

- internal inconsistency (numerator is greater than denominator, numbers not matching between linked indicators, subgroup totals not adding up to the total, and so on)
- organisations commenting when submitting data that their data are incomplete or incorrect and could not be corrected
- organisations indicating that they did not provide a particular service so no data are available (that is, health assessments were not part of an organisation's regular service)
- an organisation sharing an information recording system with another organisation and hence unable to separate its clients from all clients of the combined organisations
- auspiced organisations that collect data from a number of organisations often sharing a single patient information recall system and a single governance body. The data for individual organisations are combined and include duplicate clients.

This means that data for some indicators must be excluded for organisations if unresolved data quality issues remain. This results in different numbers of organisations with valid data for different indicators. For example, if 200 organisations submitted data for all reporting periods and all organisations provided valid data for PI01, PI01 will have 200 organisations contributing data. Some of the same 200 organisations may not have valid data for PI03 and this will result in fewer organisations contributing data to that indicator (see Table A3.1 for the number of organisations contributing valid data for each indicator for the June 2013 collection period).

In addition, when analysing and presenting data at the national level:

- there are some paired indicators where the numerator for one is the denominator for the other (for example, PI01 and PI02, PI05 and PI06, PI09 and PI10, and PI23 and PI24); if data for one indicator in a pair are excluded due to data quality issues, data from the other indicator in the pair are also excluded
- some jurisdictions have an insufficient number of organisations to perform meaningful analysis. Therefore, Tasmanian data are combined with Victorian data, and data from the Australian Capital Territory are combined with data from New South Wales
- it should be noted that some organisations (like the Queensland Aboriginal and Islander Health Council) use nKPI data to issue their own reports. These data may be reported differently because of different data 'cleaning' processes
- More information on data quality can be found on the AIHW's METeOR website <http://meteor.aihw.gov.au/content/index.phtml/itemId/563434>.

Table A3.1: Number of organisations contributing valid data and number of clients by indicator, June 2013

Measure	Number of organisations with valid data[a]	Number of organisations included in the analyses[b]	Number of clients
PI 01: Birthweight recorded	169	160	6,655
PI 02: Birthweight result	169	142	3,865
PI 03: MBS health assessments			
Aged 0–4	188	185	30,172
Aged 25+	185	185	121,003
PI 04: Child immunisation			
At age 1	196	186	7,341
At age 2	196	187	7,084
At age 5	196	183	6,213
PI 05: HbA1c test recorded	173	172	26,743
PI 06: HbA1c result			
6 months	173	165	12,931
12 months	173	168	17,055
PI 07: MBS GPMP	180	179	27,549
PI 08: MBS TCA	180	179	27,549
PI 09: Smoking status recorded	190	190	158,499
PI 10: Smoking status result	190	159	108,289
PI 12: BMI result	180	179	81,968
PI 13: First antenatal visit before 13 weeks	187	141	3,678
PI 14: Clients aged 50+ immunised against influenza	186	183	40,716
PI 15: Immunised against influenza for clients with type 2 diabetes or COPD			
Clients with type 2 diabetes immunised against influenza	180	171	11,823
Clients with COPD immunised against influenza	190	142	1,513
PI 16: Alcohol consumption recorded	194	194	163,330
PI 18: Kidney function test recorded for clients with type 2 diabetes or CVD			
Kidney function test recorded for clients with type 2 diabetes	176	175	26,512
Kidney function test recorded for clients with CVD	188	174	12,255
PI 22: Cervical screening (2, 3 and 5 years)	192	179	73,723
PI 23: Clients with type 2 diabetes with blood pressure test recorded	180	179	27,549
PI 24: Clients with type 2 diabetes with blood pressure ≤130/80mmHg	180	178	17,422

(a) Organisations with valid data after excluding those due to inconsistent data or organisation comments.

(b) Excludes organisations providing data with '0' denominator for indicators as they had no clients to provide services to be counted in those indicators.

Interpreting changes over time

There are a number of factors that should be kept in mind when interpreting changes over time. These are discussed below.

New organisations

The organisations that reported data for each indicator changed in each reporting period. In June 2012, 90 organisations participating in Healthy for Life reported data. These organisations had previously reported against a number of similar indicators as part of the Healthy for Life program. The number of organisations that reported increased to 173 in December 2012, and to 206 in June 2013. The inclusion of additional organisations could lead to changes in national performance over time even if there is no change in the performance of other organisations. This effect can be amplified for state, territory and remoteness averages. Twenty-six (26) Northern Territory Government organisations began reporting in June 2013, while only 2 reported in the preceding period. This addition should be kept in mind when interpreting time trend data, especially for the Northern Territory and *Very remote* areas, since most of the Northern Territory Government organisations are in *Very remote* areas.

Role of improved data recording

As part of reporting nKPIs, it is expected that, over time, many organisations will improve their recording of client data, such as blood pressure results and data reporting processes.

A number of issues have been identified as possible impediments to data quality, such as the incomplete recording of client information, including Indigenous status, unfamiliarity with electronic information systems and extraction tools, possible flaws with these tools, inconsistent data entry, and lack of compatibility between electronic systems (Bailie et al. 2013). Organisations are likely to have experienced many of these issues as part of the nKPI reporting process.

As organisations become more familiar with the nKPI system, they will be able to identify and improve their systems and processes. For example, some organisations may systematise the way that they record client data to facilitate or ensure electronic extraction when reporting the nKPIs; others may need only to improve recording of client data. Some of these issues can be addressed in the first round of reporting while others may take more time.

In many cases, such improvement does not represent improved service delivery or client care, though systematising data storage may lead to more efficient or effective care in some instances.

Regular clients

All of the indicators except the two on birthweight are based on regular clients at the organisation. The definition of a regular client is anyone who has visited an organisation 3 or more times in the past 2 years, regardless of whether the visit was billed to Medicare. A single definition of a regular client has been agreed for reporting against the nKPIs to ensure national consistency. This definition is consistent with that of the Royal Australian College of General Practitioners of someone with an active medical record.

There are a number of scenarios in which a client would or would not be considered a regular client. These may include those scenarios described below:

- Some clients may attend an organisation 3 times in 2 years but have another primary health-care organisation as their primary source of care. This will lead to double counting of that person. It will also provide an invalid measure of the extent to which that person is receiving appropriate care from the provider they visit 3 or more times, but which is not their main provider.
- Some clients may be the normal clients of an organisation, but not attend 3 times in a 2 year period for a number of reasons, including that the clients could be in good health or do not regularly attend primary health-care organisations when they are unwell. It is possible that the nKPI data may be biased towards less healthy clients, as unwell people are more likely to attend primary health-care organisations.

- Clients may access different health-care organisations within the same general location. Clients seeking health care do so strategically and may not use the same organisation consistently. They may use various organisations for different purposes, favouring one when they want increased privacy and another because it bulk bills (Bailie et al. 2013). This behaviour may be more common in regions with more health-care options, and less frequent in *Very remote* areas where local health-care options are more limited. This could result in variations in the make-up of regular clients between regions.
- Some clients may be transient and stay in the community only temporarily.

The nKPI regular client definition may differ from what some organisations consider to be their normal clients. Analysis by some organisations has found that the nKPI definition leads to a higher count of regular clients compared with their local definition. This is known to be the case in the Northern Territory where organisations also report against the Northern Territory Aboriginal Health Key Performance Indicators (NTAHKPI) which uses a place or residence qualifier in their definition of regular client.

Double counting of clients

One important effect of clients using multiple primary health-care organisations is that they may be counted as a regular client at more than one organisation. The extent to which double counting occurs in the nKPI collection as a whole is unknown. Transient people with high level of care needs may be more likely to be counted as a regular client at more than one organisation. Those who use multiple health-care organisations in the same general location may also be more likely to be double counted in the nKPI data collection. It is possible that double counting is more common in *Remote* and *Very remote* areas. This is because the number of primary health-care providers is larger in more urban areas, and fewer of these report on the nKPIs.

People who are less healthy may also be more likely to attend multiple health organisations 3 times in 2 years, and thus are more likely to be double counted. This would negatively affect the apparent performance of organisations in areas where there was a lot of double counting.

Data collection and transmission

Data for most organisations are transmitted electronically from the organisation's Patient Information Record System to the Clinical Audit Tool. From there, data are transferred to the OCHREStreams web portal, from which the AIHW downloads data. Theoretically, this transmission could diminish data integrity, and there have been reports of problems with data extraction (Bailie et al. 2013). However, organisations review their data on OCHREStreams before submission, and receive reports on their data from the AIHW after the AIHW has accepted data. As with any performance indicator system, the apparent performance of an organisation depends not only on performing the underlying activity, but also on accurately collecting and recording that information. On the whole, the nKPI data indicate that further investigation into data gathering and reporting processes is warranted, especially for some indicators.

Appendix 4

Guide to the figures

Table A4.1: Explanatory guide to figures in Chapter 2 and Appendix 5

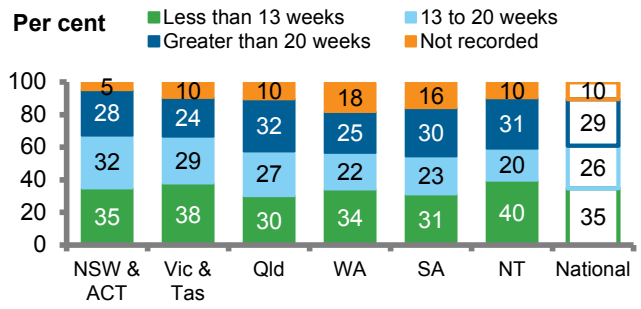
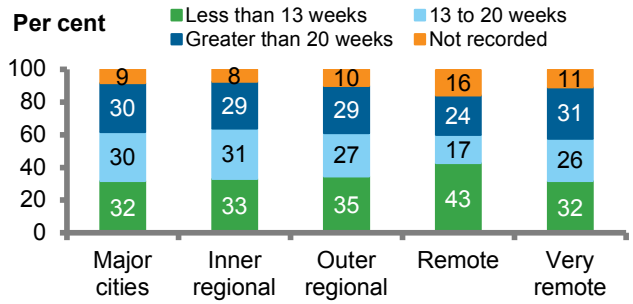
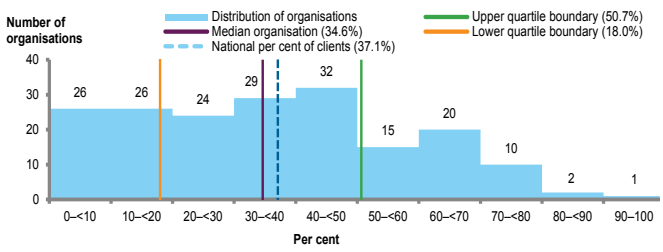
Reference figures with example	Description
Figures 2.A1, 2.B1, 2.C1, 2.D1, 2.E1, 2.F1, 2.G1, 2.H1, 2.I1, 2.J1, 2.K1, 2.L1, 2.M1, 2.N1, 2.O1, 2.P1, 2.Q1, 2.R1, 2.S1, 2.T1, 2.U1 	These bar charts present either: (i) the percentage of clients who had a health-care process recorded or (ii) health outcomes. Data are presented by jurisdictions in which the organisations are located and at the national level. Data are provided for 3 reporting periods if time series data are available. Data are combined for New South Wales/ Australian Capital Territory and for Victoria/ Tasmania to avoid individual services in smaller jurisdictions being identified. For indicators for which data were collected for different reference periods, or different categories of outcomes, the details are shown as stacked bars. These figures are useful in understanding the performance of services or the outcomes for clients attending health organisations in different jurisdictions.
Figures 2.A2, 2.B2, 2.C2, 2.D2, 2.E2, 2.F2, 2.G2, 2.H2, 2.I2, 2.J2, 2.K2, 2.L2, 2.M2, 2.N2, 2.O2, 2.P2, 2.Q2, 2.R2, 2.S2, 2.T2, 2.U2 	These bar charts present either: (i) the percentage of clients who had a health-care process recorded or (ii) health outcomes. Data are presented by Australian Statistical Geography Standard remoteness categories in which organisations are located. Data are provided for 3 reporting periods if time series data are available. For indicators for which data were collected for different reference periods, or different categories of outcomes, the details are shown as stacked bars. These figures are useful in understanding the performance of services or the outcomes for clients attending health organisations in different remoteness areas.
Figures 2.A3, 2.B3, 2.C3, 2.D3, 2.E3, 2.F3, 2.G3, 2.H3, 2.I3, 2.J3, 2.K3, 2.L3, 2.M3, 2.N3, 2.O3, 2.P3, 2.Q3, 2.R3, 2.S3, 2.T3 	These bar charts show the distribution of organisations by their achievement against a particular indicator—for example, the number of services by the percentage of babies whose birthweight has been recorded, or the number of services by the percentage of clients who had never smoked. This distribution enables the reader to understand how widely the organisation performance or outcomes for clients differ across organisations. It enables the reader to see how many organisations have recorded information for <10% clients or 100% of clients. This is aided by the presentation of median and interquartile values as these also show how different organisations are performing. For example, the lower quartile boundary shows the point below which 25% of the organisations are performing, the median shows where 50% of the organisations are performing and the upper quartile boundary shows the value above which 25% of the services are performing. The national percentage is also shown, and is based on the average of all clients, rather than all organisations (like the median and interquartile values). The chart also shows how far above or below the national percentage each organisation is performing.

Table A4.1 (continued): Explanatory guide to figures in Chapter 2 and Appendix 5

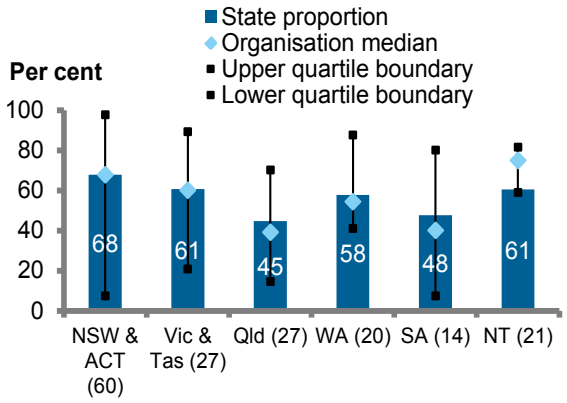
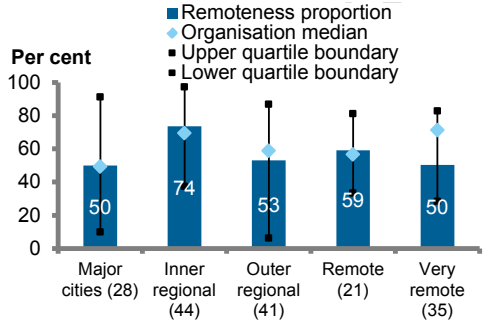
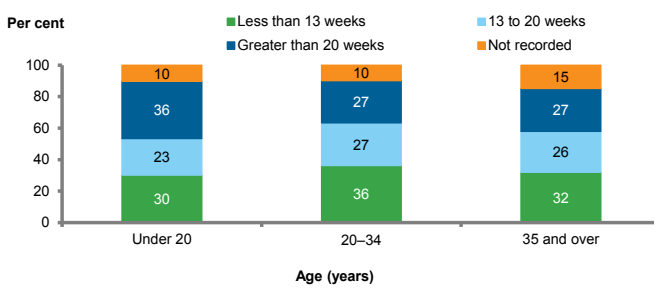
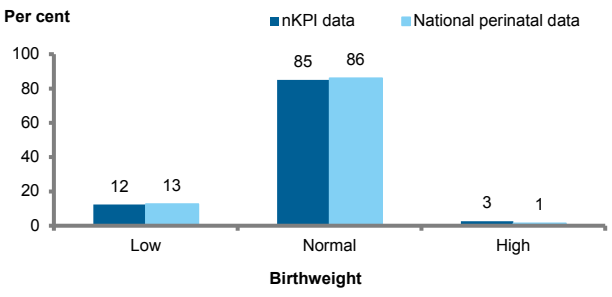
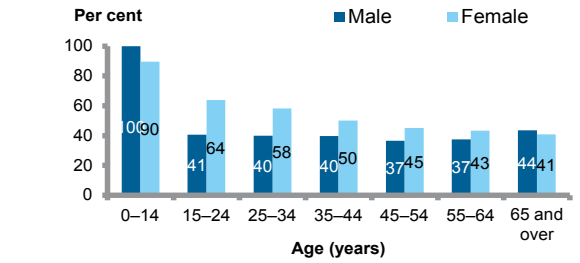
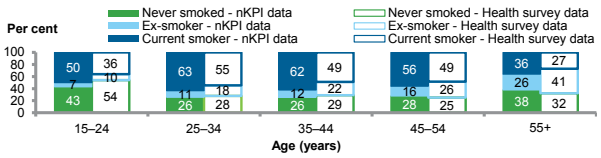
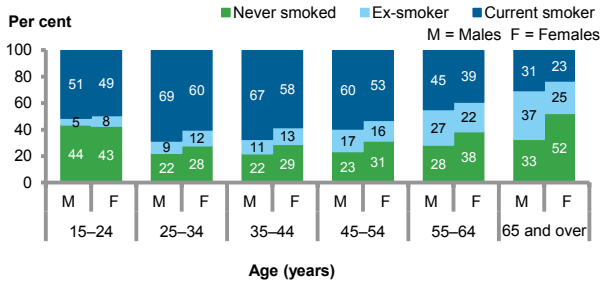
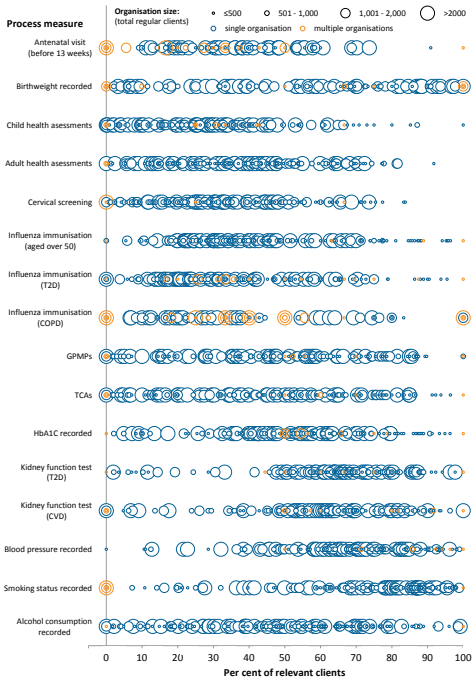
Reference figures with example	Description
Figures 2.B4, 2.D4, 2.E4, 2.F4, 2.G4, 2.H4, 2.I4, 2.J4, 2.K4, 2.L4, 2.N4, 2.O4, 2.P4, 2.R4, 2.T4, 2.V2 	Two types of information are presented in these charts: one for clients and the second for organisations located within a jurisdiction. The percentage of clients for whom information has been collected by all organisations within a jurisdiction is represented by a bar. The interquartile range for a jurisdiction is included within each bar to indicate the variation of performance of organisations within a jurisdiction. Median values for organisations within a jurisdiction show the point above and below which 50% of the organisations are performing. The overall percentage for the jurisdiction (for example, as in Figure 2.B1) is also shown as a column, for comparison. In some instances, the median value for a jurisdiction is '0'. This occurs when at least 50% of the organisations in that jurisdiction have not recorded information for any of their clients. This is the case with Northern Territory in Figure 2.R4 for example. There are also instances when the interquartile limits for a jurisdiction sits above the overall average for all clients in a jurisdiction—for example, in Figure 2.B4. In these cases, most organisations that have recorded information for a smaller percentage of clients tend to be those with a large number of clients, resulting in a smaller overall percentage for all clients in a jurisdiction. Note that issues around data validity remain for 2.V2.
Figures 2.B5, 2.D5, 2.E5, 2.F5, 2.G5, 2.H5, 2.I5, 2.J5, 2.K5, 2.L5, 2.N5, 2.O5, 2.P5, 2.R5, 2.T5 	Two types of information are presented in these charts: for clients, and for organisations located within a remoteness area category. The percentage of clients for whom information has been collected by all organisations within a remoteness area is represented by a bar. The interquartile range for a remoteness area is included within each bar to indicate the variation of performance of organisations within a remoteness area. Median values for organisations within a remoteness area show the point where 50% of the organisations are performing. Median values for organisations within a jurisdiction show the point where 50% of the organisations are performing. The overall percentage for the remoteness area (for example, as in Figure 2.B2) is also shown as a column, for comparison.
Figure 2.A4 	This stacked bar chart shows the pattern of attendance at antenatal care by pregnant women at different ages.
Figure 2.C4 	This bar chart compares the birthweight result (low, normal or high) for Indigenous babies between the nKPI and the NPDC.

Table A4.1 (continued): Explanatory guide to figures in Chapter 2 and Appendix 5

Reference figures with example	Description
Figure 2.Q4 	This chart shows age and sex distribution of Indigenous clients attending the health organisations who have type 2 diabetes with a recorded blood pressure of less than or equal to 130/80 mmHg.
Figures 2.S3, 2.U3 	This stacked bar graph shows the distribution at the national level of Indigenous clients who are current smokers, ex-smokers or have never smoked and the percentage who are overweight/obese by age, from organisations providing nKPI data compared with similar information obtained from the AATSIHS data.
Figures 2.S4, 2.U4 	This chart shows age and sex distribution of Indigenous clients attending health organisations by their smoking status or by their BMI (overweight or obese). Being a smoker or being overweight or obese increases the risk of many chronic diseases.
Figure 2.V1 	This chart shows ACIR child immunisation rates, by jurisdiction and with a national total. National nKPI data are outlined and presented to the far right due to issues with data validity.
Figure A5.1 	In this graph, the horizontal line shows the percentage of clients whose information has been recorded or for whom an activity has been undertaken by an organisation. The size of the circle represents the number of clients (that is, the size) of the organisation. This graph helps to indicate whether there is a relationship between organisation size and whether the organisation recorded information.

Appendix 5

Performance by organisation size

Figure A5.1 shows the distribution of organisation performance across the process of care indicators, by organisation 'size', as measured by an organisation's total number of regular clients. The size of the organisation is represented by differently sized circles, ranging from those organisations with 500 or fewer regular clients (with the smallest circles) to those with greater than 2000 clients (with the largest circles). There are roughly equal numbers of organisations in each of the four size categories, though there is variation between measures, especially in the number of the organisations with 500 or fewer regular clients that provided valid data. These data are for the results of the June 2013 collection, and are not the result of the logistic regression described in Chapter 3.

There does not appear to be a general relationship between organisation size and performance. Organisations of different sizes had among the highest percentages and among the lowest percentages for almost every indicator (Figure A5.1).

There are, however, a few exceptions where no large organisations (with more than 2,000 clients) recorded percentages above a level that several smaller organisations (with fewer than 500 clients) did. For example:

- Immunised against influenza—clients aged 50 and over. For this indicator, Figure A5.1 shows that all large organisations recorded between 14% and 70% of their clients aged 50 and over immunised against influenza, and several smaller organisations recorded over 70% of clients immunised against influenza
- HbA1c result recorded—clients with type 2 diabetes. For this indicator, Figure A5.1 indicates that several smaller organisations recorded HbA1c information for more than 80% of their clients with type 2 diabetes. A number of these organisations recorded information for 100% of their clients. No organisations with more than 1,000 clients exceeded an 80% recording level.

In conjunction with the information in Chapter 2, Figure A5.1 shows that very few organisations of any size achieved more than 80% on 3 indicators: antenatal visit before 13 weeks, child or adult health assessments, and cervical screening within the previous 2 years. Local circumstances and extenuating factors may impact on an organisation's performance against all of these process of care indicators, as highlighted in Chapter 2—'Things to consider when interpreting the data'.

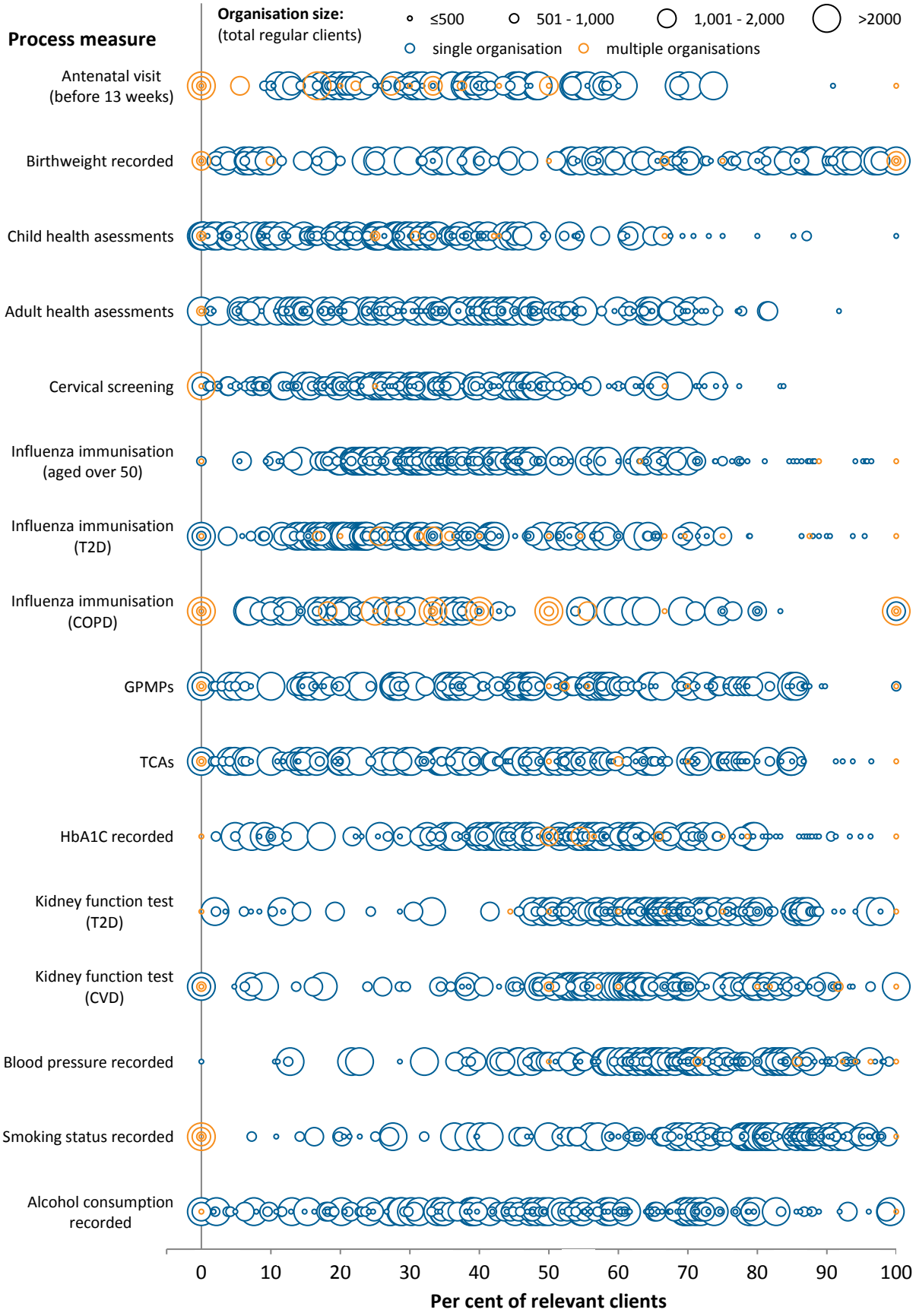


Figure A5.1: Organisation percentages for each process measure, with circle size representing the size of the organisation

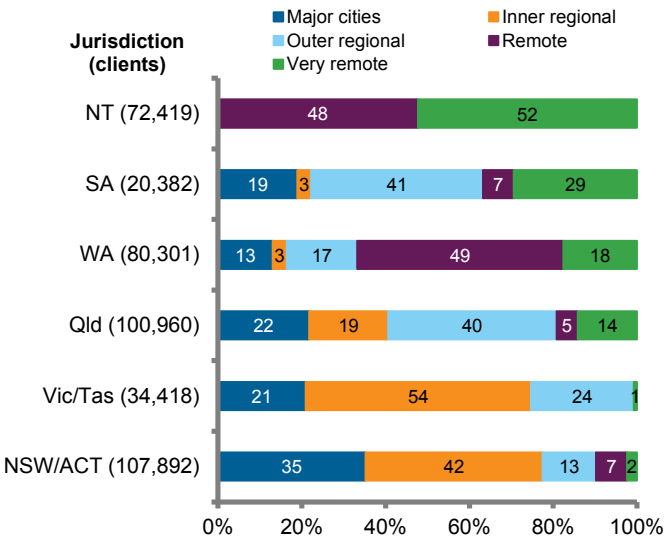
Appendix 6

Organisations in both nKPI and OSR collections

The nKPI data do not include information on the characteristics of the organisations. This information is obtained from the OSR collection, which is also funded by the Australian Government. Organisational characteristics examined in Chapter 3 are for the organisations submitting data for both OSR and nKPI collections. Of the 206 organisations that submitted nKPI data at June 2013, 187 participated in the OSR collection.

- As for the overall distribution of organisations that report for nKPIs, most of the 187 organisations that were also OSR organisations were located in New South Wales/Australian Capital Territory followed by the Northern Territory. The majority of OSR organisations were in *Very remote* followed by *Inner regional* and *Outer regional* areas.

- The number of organisations in Queensland was about half that in NSW/ACT; however, the number of clients in each is similar.
- All NT organisations that participated in both nKPI and OSR collections were in *Remote* and *Very remote* areas.
- Over half the clients in Vic/Tas were in *Inner regional* organisations.
- The largest share of the client population in NSW/ACT was in *Inner regional* organisations.
- *Outer regional* organisations had the largest share of clients in Queensland.



Note: Remoteness categories are based on the OSR data

Figure A6.1: Clients by jurisdiction and remoteness

Analysis of organisations that were in both nKPI and OSR collections shows that at 30 June 2012:

- 78% were accredited (clinical, organisational or other)
- over 2 million episodes of care were provided to more than 400,000 clients
- they employed over 5,000 FTEs and were supported by 363 visiting staff
- there were 305 vacant positions that needed to be filled.

Table A6.1: Selected organisational characteristics, 2011–12

Organisational characteristics	Number
Accreditation status	
Yes	146
No	41
Episodes of care provided	2,418,799
Clients	416,372
Staff paid by the organisations	5,085
Visiting staff	363
Health staff, including visiting	3,272
Vacant positions	305
Total organisations in nKPI and OSR	**187**

Appendix 7

Regression analyses of factors influencing recording/outcomes

Table A7.1: Organisational attributes corresponding to greater recording of information/processes and preferred health outcomes († denotes p >0.05)

Indicator	Jurisdiction (NSW/ACT, NT, Qld, SA, Vic/Tas, WA)	Jurisdiction (Qld/NT vs other)	Remoteness (MC, IR, OR, R, VR)	Accredited (Yes or No)	Healthy for Life (Yes or No)	Size (no. of clients)	Episodes of care to health staff
PI 01: Birthweight recorded	Vic/Tas†	Other†	IR	Yes†	Yes	>0 to ≤250†	>700 to 1,100
PI 02: Birthweight result (Low birthweight)	Qld†	Qld/NT	R†	No†	No†	>250 to ≤500†	>700 to 1,100†
PI 03: MBS health assessments (aged 0–4)	Qld	Qld/NT	R†	No†	Yes†	>5,000 to ≤10,000†	≤450†
MBS health assessments (aged 25+)	Qld	Qld/NT	IR	Yes	Yes	>250 to ≤500†	>700 to 1,100†
PI 05: HbA1c test recorded	NT	Qld/NT	IR	No	Yes	>0 to ≤250	>700 to 1,100
PI 06: HbA1c result	NT†	Other	OR†	No	No†	>1,000 to ≤2,000†	>450 to 700†
PI 07: MBS GPMP	NT	Qld/NT	IR	Yes	Yes†	>250 to ≤500	>450 to 700†
PI 08: MBS TCA	NT	Qld/NT	IR	No†	No	>250 to ≤500	>700 to 1,100
PI 09: Smoking status recorded	Qld	Qld/NT	IR	Yes	Yes	>0 to ≤250	>1,100
PI 10: Smoking status result (ex-smoker/ never smoked)	NT	Qld/NT	MC†	Yes	No†	>250 to ≤500†	>700 to 1,100
PI 12: BMI result	NT	Qld/NT	VR	No	Yes	>1,000 to ≤2,000†	>1,100
PI 13: First antenatal visit	Vic/Tas	Other†	R†	No†	Yes†	>2,000 to ≤5,000†	≤450†
PI 14: Clients aged 50+ immunised against influenza	NT	Qld/NT	VR	No	Yes†	>0 to ≤250	>1,100

(continued)

Table A7.1 (continued): Organisational attributes corresponding to greater recording of information/processes and preferred health outcomes († denotes p >0.05)

Indicator	Jurisdiction (NSW/ACT, NT, Qld, SA, Vic/Tas, WA)	Jurisdiction (Qld/NT vs other)	Remoteness (MC, IR, OR, R, VR)	Accredited (Yes or No)	Healthy for Life (Yes or No)	Size (no. of clients)	Episodes of care to health staff
PI 15: Clients with chronic diseases, immunised against influenza (T2D)	NT	Qld/NT	VR	Yes†	Yes	>0 to ≤250	>700 to 1,100†
Clients with chronic diseases, immunised against influenza (COPD)	NT	Qld/NT	VR†	Yes†	Yes†	>0 to ≤250†	>700 to 1,100†
PI 16: Alcohol consumption recorded	WA	Qld/NT	IR	Yes	No	>250 to ≤500	>1,100†
PI 18: Kidney function test recorded for clients with chronic diseases (T2D)	Qld	Qld/NT	VR	No	Yes	>0 to ≤250	>1,100
Kidney function test recorded for clients with chronic diseases (COPD)	NT†	Qld/NT	MC†	No	Yes	>0 to ≤250	>1,100
PI 22: Cervical screening	NT	Qld/NT	VR†	No	Yes†	>5,000 to ≤10,000†	>700 to 1,100
PI 23: Type 2 diabetes clients with blood pressure test recorded	NT	Qld/NT	IR†	Yes	Yes†	>250 to ≤500†	>700 to 1,100†
PI 24: Type 2 diabetes clients with blood pressure ≤130/80mmHg	NT	Qld/NT	OR†	No	No	>250 to ≤500†	>450 to 700†

Table A7.2: Workforce related attributes corresponding to greater recording of information/processes and preferred health outcomes († denotes p >0.05)

Indicator	% of vacant positions	Clients per vacant staff	Clients per all staff	Clients per GP	Clients per nurse	Clients per AHW	Percentage of health staff
PI 01: Birthweight recorded	≤5%†	≤200†	≤50†	>1,000–1,500	>1,000	>500–1,000	>75–100
PI 02: Birthweight result (low birthweight)	>5%–10%†	>500–1,000†	>75–100†	>1,000–1,500†	>500–1,000†	>500–1,000†	>75–100†
PI 03: MBS health assessments (aged 0–4)	≤5%	>200–500†	>75–100	≤800	>500–1,000	>500–1,000	>75–100
MBS health assessments (aged 25+)	>10%†	>500–1,000	>75–100	≤800	≤500	>500–1,000	≤50†
PI 05: HbA1c test recorded	>10%†	>500–1,000	>75–100	≤800	>1,000†	>1,000	>75–100
PI 06: HbA1c result	>5%–10%†	>200–500†	>100†	>800–1,000†	>500–1,000†	>1,000	≤50†
PI 07: MBS GPMP	>10%	>1,000	>75–100	≤800†	>1,000†	>500–1,000	>75–100†
PI 08: MBS TCA	>10%	>1,000	>75–100	>800–1,000†	>1,000†	>500–1,000†	≤50†
PI 09: Smoking status recorded	>10%	>1,000	≤50	≤800	≤500	>1,000	>50–75
PI 10: Smoking status result (ex-smoker/ never smoked)	≤5%†	≤200†	>75–100	>1,000–1,500†	≤500†	≤500†	>50–75†
PI 12: BMI result	≤5%	≤200	>75–100	>1,500	>1,000†	>500–1,000	≤50†
PI 13: First antenatal visit	>10%†	>500–1,000†	≤50†	≤800†	>500–1,000†	>1,000†	>75–100
PI 14: Clients aged 50+ immunised against influenza	≤5%†	>500–1,000†	>50–75†	≤800†	≤500†	≤500†	>75–100
PI 15: Clients with chronic diseases, immunised against influenza (T2D)	≤5%†	>500–1,000†	>75–100†	>1,000–1,500†	≤500†	>500–1,000†	>75–100
Clients with chronic diseases, immunised against influenza (COPD)	≤5%†	>500–1,000†	>50–75†	≤800†	≤500†	>500–1,000†	≤50†
PI 16: Alcohol consumption recorded	>10%	>500–1,000	≤50	≤800	>1,000	>1,000†	>50–75

(continued)

Table A7.2 (continued): Workforce related attributes corresponding to greater recording of information/processes and preferred health outcomes († denotes p >0.05)

Indicator	% of vacant positions	Clients per vacant staff	Clients per all staff	Clients per GP	Clients per nurse	Clients per AHW	Percentage of health staff
PI 18: Kidney function test recorded for clients with chronic diseases (T2D)	>10%	>500–1,000†	>50–75†	≤800	≤500†	>1,000†	>50–75†
Kidney function test recorded for clients with chronic diseases (COPD)	>10%†	>500–1,000†	>50–75†	≤800	≤500†	>1,000†	>75–100
PI 22: Cervical screening	>10%	>1,000	≤50	≤800	>1,000	>500–1,000†	>75–100
PI 23: Type 2 diabetes clients with blood pressure test recorded	>10%	>500–1,000	>100†	>1,000–1,500	>500–1,000†	≤500	>75–100
PI 24: Type 2 diabetes clients with blood pressure ≤130/80mmHg	≤5%	≤200	>100	>1,500	>1,000	≤500	>75–100

Table A7.3: Organisational attributes corresponding to lesser recording of information/processes and non-preferred health outcomes († denotes p >0.05)

Indicator	Jurisdiction (NSW/ACT, NT, Qld, SA, Vic/Tas, WA)	Jurisdiction (Qld/NT vs other)	Remoteness (MC, IR, OR, R, VR)	Accredited (Yes or No)	Healthy for Life (Yes or No)	Size (no. of clients)	Episodes of care to health staff
PI 01: Birthweight recorded	SA	Qld/NT†	MC†	No†	No	>500 to ≤1,000	≤450†
PI 02: Birthweight result (low birthweight)	WA†	Other	VR†	Yes†	Yes†	>5,000 to ≤10,000†	>450–700†
PI 03: MBS health assessments (aged 0–4)	SA†	Other	MC†	Yes†	No†	>0 to ≤250†	>45-–700†
MBS health assessments (aged 25+)	Vic/Tas†	Other	OR	No	No	>2,000 to ≤5,000	>1,100
PI 05: HbA1c test recorded	NSW/ACT†	Other	R†	Yes	No	>5,000 to ≤10,000	>1,100†
PI 06: HbA1c result	Qld	Qld/NT	VR†	Yes	Yes†	>2,000 to ≤5,000†	>700–1,100†
PI 07: MBS GPMP	WA	Other	R	No	No†	>500 to ≤1,000	>1,100†
PI 08: MBS TCA	WA	Other	R	Yes†	Yes	>500 to ≤1,000	>1,100†
PI 09: Smoking status recorded	Vic/Tas	Other	OR	No	No	>1,000 to ≤2,000	>700–1,100†
PI 10: Smoking status result (ex-smoker/ never smoked)	Vic/Tas†	Other	VR	No	Yes†	>0 to ≤250†	>1,100
PI 12: BMI result	SA†	Other	IR†	Yes	No	>0 to ≤250†	≤450
PI 13: First antenatal visit	Qld†	Qld/NT†	MC	Yes†	No†	>500 to ≤1,000†	>1,100†
PI 14: Clients aged 50+ immunised against influenza	WA	Other	MC†	Yes	No†	>5,000 to ≤10,000†	≤450†
PI 15: Clients with chronic diseases, immunised against influenza (T2D)	WA	Other	R†	No†	No	>5,000 to ≤10,000†	≤450
Clients with chronic diseases, immunised against influenza (COPD)	WA	Other	R†	No†	No†	>5,000 to ≤10,000	≤450†
PI 16: Alcohol consumption recorded	Vic/Tas	Other	R	No	Yes	>2,000 to ≤5,000	≤450

(continued)

Table A7.3 (continued): Organisational attributes corresponding to lesser recording of information/processes and non-preferred health outcomes († denotes p >0.05)

Indicator	Jurisdiction (NSW/ACT, NT, Qld, SA, Vic/Tas, WA)	Jurisdiction (Qld/NT vs other)	Remoteness (MC, IR, OR, R, VR)	Accredited (Yes or No)	Healthy for Life (Yes or No)	Size (no. of clients)	Episodes of care to health staff
PI 18: Kidney function test recorded for clients with chronic diseases (T2D)	NT†	Other	IR†	Yes	No	>5,000 to ≤10,000	≤450†
Kidney function test recorded for clients with chronic diseases (COPD)	WA†	Other	IR†	Yes	No	>5,000 to ≤10,000†	>450–700
PI 22: Cervical screening	WA†	Other	OR†	Yes	No†	>500 to ≤1,000	≤450
PI 23: Type 2 diabetes clients with blood pressure test recorded	WA	Other	R	No	No†	>5,000 to ≤10,000	>1,100
PI 24: Type 2 diabetes clients with blood pressure ≤130/80mmHg	WA†	Other	VR†	Yes	Yes	>0 to ≤250†	>1,100†

Table A7.4: Workforce related attributes corresponding to lesser recording of information/processes and non-preferred health outcomes († denotes p >0.05)

Indicator	% of vacant positions	Clients per vacant staff	Clients per all staff	Clients per GP	Clients per nurse	Clients per AHW	Percentage of health staff
PI 01: Birthweight recorded	>10%	>200–500†	>100	>1,500†	≤500	>1,000†	≤50
PI 02: Birthweight result (low birthweight)	>10%†	≤200†	>50–75†	≤800†	≤500†	≤500†	≤50†
PI 03: MBS health assessments (aged 0–4)	>5%–10%†	>1,000†	≤50	>1,500	≤500†	≤500	≤50†
MBS health assessments (aged 25+)	>5%–10%	≤200	≤50†	>1,500	>500–1,000	≤500†	>75–100
PI 05: HbA1c test recorded	>5%–10%	≤200	≤50†	>1,500	≤500†	≤500†	>50–75
PI 06: HbA1c result	>10%†	>1,000†	>50–75†	>1,000–1,500	≤500	≤500†	>75–100†
PI 07: MBS GPMP	>5%–10%†	≤200	≤50	>1,500	>500–1,000	>1,000	>50–75
PI 08: MBS TCA	≤5%†	≤200	≤50	>1,500†	>500–1,000	>1,000	>50–75
PI 09: Smoking status recorded	≤5%	≤200	>75–100†	>1,500	>1,000	≤500	>75–100
PI 10: Smoking status result (ex-smoker/ never smoked)	>10%†	>1,000†	≤50†	≤800	>500–1,000	>500–1,000	≤50†
PI 12: BMI result	>10%	>200–500†	>100	>1,000–1,500	>500–1,000	>1,000	>75–100
PI 13: First antenatal visit	≤5%†	≤200†	>75–100†	>1,500	≤500†	≤500†	≤50†
PI 14: Clients aged 50+ immunised against influenza	>5%–10%†	≤200	≤50†	>800–1,000†	>500–1,000†	>1,000†	>50–75
PI 15: Clients with chronic diseases, immunised against influenza (T2D)	>5%–10%	≤200	>50–75†	>800–1,000†	>500–1,000†	>1,000†	≤50
Clients with chronic diseases, immunised against influenza (COPD)	>5%–10%†	≤200	≤50†	>800–1,000†	>500–1,000†	≤500†	>75–100†
PI 16: Alcohol consumption recorded	>5%–10%	≤200	>100	>1,500	≤500	≤500	>75–100

(continued)

Table A7.4 (continued): Workforce related attributes corresponding to lesser recording of information/processes and non-preferred health outcomes († denotes p >0.05)

Indicator	% of vacant positions	Clients per vacant staff	Clients per all staff	Clients per GP	Clients per nurse	Clients per AHW	Percentage of health staff
PI 18: Kidney function test recorded for clients with chronic diseases (T2D)	≤5%†	≤200	>75–100†	>1,500†	>1,000	>500–1,000†	>75–100
Kidney function test recorded for clients with chronic diseases (COPD)	>5%–10%	≤200	≤50†	>1,500	>1,000†	≤500	≤50†
PI 22: Cervical screening	≤5%†	≤200	>100	>1,500	≤500	≤500†	>50–75†
PI 23: Type 2 diabetes clients with blood pressure test recorded	>5%–10%†	≤200	≤50†	>1,500†	>1000†	>1,000	>50–75
PI 24: Type 2 diabetes clients with blood pressure ≤130/80mmHg	>10%	>1,000	>50–75†	≤800†	≤500	>1,000	>50–75†

Appendix 8

Logistic regression model

Logistic regression measures the relationship between a categorical dependent variable (usually a binary condition, 'yes' or 'no') and one or more independent variables. Logistic regression was used to determine which organisational characteristics were important in predicting whether the organisation's regular clients had information recorded, procedures performed, or better health outcomes. Modelling occurred for each performance measure. Final models included all of the independent variables listed in Table A8.1. Initial models also included those listed in Table A8.2; however, these were excluded from the final models, as they were thought either to be proxies for other included variables or to have limited meaning and did not reveal coherent results. To facilitate comparison of the effects of factors between variables, the same reduced list of independent variables was used with every indicator. There could be other factors that may affect the results, which were not available to the AIHW and so could not be included in the model. Also, it is not possible to infer causation from the results of the regression model; this can be done only on the basis of other knowledge—for example, the participation in CQI programs by Queensland and Northern Territory organisations.

Table A8.1: List of independent variables included in the regression model

Variables list[(a)]	Groups used
1. Jurisdiction	• Qld/NT combined vs NSW/ACT, Vic/Tas, WA, SA combined • NSW/ACT, Vic/Tas, Qld, WA, SA, NT
2. Remoteness categories	*Major cities* *Inner regional* *Outer regional* *Remote* *Very remote*
3. Service size categories	>0 to ≤250 clients >250 to ≤500 clients >500 to ≤ 1,000 clients >1,000 to ≤ 2,000 clients >2,000 to ≤5,000 clients >5,000 to ≤ 10,000 clients
4. Accreditation	Accredited Not accredited
5. Reported previously on Healthy for Life	Yes No
6. Vacant positions	≤5% >5%–10% >10%
7. Clients per all staff FTE	≤50 >50–75 >75–100 >100
8. Clients per vacant FTE	<=200 >200–500 >500–1,000 >1,000
9. Clients per GP FTE	≤800 >800–1,000 >1,000–1,500 >1,500

(continued)

Table A8.1 (continued): List of independent variables included in the regression model

Variables list[(a)]	Groups used
10. Clients per nurse FTE	≤500 >500–1,000 >1,000
11. Clients per AHW FTE	≤500 >500–1,000 >1,000
12. Percentage of Health staff	≤50 >50–75 >75–100
13. Episodes of care to Health staff FTE	≤450 >450–700 >700–1,100 >1,100

(a) Variables 4 and 6–13 are based on OSR 2011–12 data

Table A8.2: List of independent variables excluded from final regression model

Variables list[(a)]	Groups used
1. Number of primary health-related activities	≤50
	51–60
	61–70
	>70
2. Health staff FTE to administrative staff FTE ratio	≤1
	>1–2
	>2
3. Episodes of care	≤3,000
	>3,000–10,000
	>10,000–30,000
	>30,000

(a) Variables 1–3 are based on OSR 2011–12 data.

Jurisdictions

Results for the effects of non-jurisdiction variables are based on models with jurisdictions entered individually. However, to test for the effect of jurisdictions with a history of CQI, two groups of jurisdictions were created. Additional models with each of the final variables were run with these two groups of jurisdictions instead of individual jurisdictions.

Measure differences

The measures for which a variable was a top or bottom performer are grouped together in the graphs to assist in summarising the data. There are important differences between the indicators, however. For instance, most are a measure of processes within health organisations. A smaller number of indicators reflect health outcomes of regular clients (birthweight result, HbA1c result, smoking status result, overweight and obese, and blood pressure test result). These outcome indicators are subject to a number of influences outside a health organisation's control. The degree of similarity between measures varies considerably, with some being very similar.

Unit of analysis

The regression modelling calculated the relative odds that a client attending a service with a particular characteristic would have a particular result. All modelling described in this section of this report is calculated using clients as the unit of analysis.

Use of grouped data

A variety of models were developed to explore the relationships between independent variables and performance on the measures. The AIHW explored the possibility of using continuous variables rather than grouped variables for many of these models. However, using grouped variables reduced 'noise' in the data. It also allowed patterns to be discovered when the relationship between the variable and the outcome was not monotonic.

Double counting of clients

Some clients are considered to be regular clients at multiple organisations that provided nKPI data. Depending on how these clients are distributed and how representative they are of all clients, this could impact on regression results. For process of care indicators, this may reduce an organisation's performance if that organisation knows these clients are receiving care elsewhere and does not provide similar care for them. As discussed in Appendix 3, these clients are likely to tend to be less healthy than other clients. This means that organisations with more clients who have been double counted may perform less well than other organisations. If, as suggested in Appendix 3, clients who are double counted were more common in *Remote* and *Very remote* areas, these areas might not perform as well in the regression than if there were no double counting. Similarly, the Northern Territory might perform less well than if there were no double counting because all its organisations are in *Remote* or *Very remote* regions. In total, the effect of double counting of clients on the regression results was unlikely to have been large because clients attending services in the Northern Territory and Very remote areas were likely to be among the higher performers in the regression.

Odds ratios

Odds ratios are a commonly presented result from logistic regression. They are calculated for each variable in the logistic regression model. The odds ratio is a relative measure that compares the odds of services/people in a particular group (for example, *Major cities*) experiencing an event (for example, recording of smoking status) with the odds of services/people in another group (for example, *Remote*) experiencing the same event. The odds of an event occurring are defined as:

$$\text{Odds} = \frac{\text{Probability of event occurring}}{\text{Probability of event not occurring}} = \frac{p}{1 - p}$$

The odds ratio is then defined as:

$$\text{Odds ratio} = \frac{\text{Odds for people in group 2}}{\text{Odds for people in group 1}}$$

with group 1 being the reference group.

An odds ratio of 1 means that the odds of the event occurring is equal in both groups. An odds ratio greater than 1 means that the odds of the event occurring is higher for people in group 2 than in group 1. Conversely, an odds ratio of less than 1 means that odds of the event occurring is less for people in group 2 than in group 1. More specifically, an odds ratio of 1.3 means that the odds for people in group 2 are 30% higher than the odds for people in group 1. An odds ratio of 0.6 means that the odds for people in group 2 are 40% lower than the odds for people in group 1.

In logistic regression, odds ratios are calculated for each variable relative to the reference group while controlling for all other variables. For example, the odds ratio of clients attending services in *Inner Regional* areas having their smoking status recorded compared with clients attending services in *Major cities* is 1.70. This means that people attending services in *Inner regional* areas have 70% greater odds of having their smoking status recorded than those attending services in *Major cities*.

Appendix 9

Measures included in each chapter

Table A9.1: Measures included in each chapter

Measure	Chapter				
	1	2	3	4	5
PI 01: Birthweight recorded	NA	Yes	Yes	Yes	NA
PI 02: Birthweight result	NA	Yes	Yes	No	NA
PI 03: MBS health assessments					
Aged 0–4	NA	Yes	Yes	Yes	NA
Aged 25+	NA	Yes	Yes	Yes	NA
PI 04: Child immunisation					
At age 1	NA	Yes	No	No	NA
At age 2	NA	Yes	No	No	NA
At age 5	NA	Yes	No	No	NA
PI 05: HbA1c test recorded	NA	Yes	Yes	Yes	NA
PI 06: HbA1c result					
6 months	NA	Yes	Yes	No	NA
12 months	NA	Yes	Yes	No	NA
PI 07: MBS GPMP	NA	Yes	Yes	Yes	NA
PI 08: MBS TCA	NA	Yes	Yes	Yes	NA
PI 09: Smoking status recorded	NA	Yes	Yes	Yes	NA
PI 10: Smoking status result	NA	Yes	Yes	No	NA
PI 12: BMI result	NA	Yes	Yes	No	NA
PI 13: First antenatal visit before 13 weeks	NA	Yes	Yes	Yes	NA
PI 14: Clients aged 50+ immunised against influenza	NA	Yes	Yes	Yes	NA
PI 15: Immunised against influenza					
Clients with type 2 diabetes immunised against influenza	NA	Yes	Yes	Yes	NA
Clients with COPD immunised against influenza	NA	Yes	Yes	Yes	NA
PI 16: Alcohol consumption recorded	NA	Yes	Yes	Yes	NA
PI 18: Kidney function test recorded					
Kidney function test recorded for clients with type 2 diabetes	NA	Yes	Yes	Yes	NA
Kidney function test recorded for clients with CVD	NA	Yes	Yes	Yes	NA
PI 22: Cervical screening (2, 3 and 5 years)	NA	Yes	Yes	Yes	NA
PI 23: Clients with type 2 diabetes with blood pressure test recorded	NA	Yes	Yes	Yes	NA
PI 24: Clients with type 2 diabetes with blood pressure ≤130/80mmHg	NA	Yes	Yes	No	NA

Glossary

Aboriginal: a person of Aboriginal descent who identifies as an Aboriginal and is accepted as such by the community in which he or she lives.

albumin/creatinine ratio (ACR): a measure of renal function that assesses albumin in the urine.

auspiced service: an independent or semi-independent body that has been funded by an Australian Government funded organisation to provide health services.

birth: birth of a viable foetus, which is defined as a birth occurring after 20 weeks of pregnancy or the foetus weighing greater than 400 grams at birth (live, still, singleton, multiple).

birthweight: birthweight is defined as low (birthweight of less than 2,500 grams), normal (birthweight of 2,500–4,499 grams) or high (birthweight of 4,500 grams and over).

body mass index (BMI): a measure of an adult's weight (body mass) relative to height used to assess the extent of weigh deficit or excess where height and weight have been measured. BMI is the weight in kilograms divided by the square of the height in metres.

cardiovascular disease (CVD): any disease of the circulatory system, namely the heart (cardio) or blood vessels (vascular).

cervical screening: a procedure involving a Pap test, which is used to detect cancer and pre cancerous abnormalities of the cervix.

chronic obstructive pulmonary disease (COPD): serious, progressive and disabling long term lung disease where damage to the lungs, usually because of both emphysema and chronic bronchitis, obstructs oxygen intake and causes increasing shortness of breath.

continuous quality improvement (CQI): a tool for improving the quality of services provided by organisations involving a systematic approach to collecting and reviewing data or information in order to identify areas for improvement.

estimated glomerular filtration rate (eGFR): a measure of how well the kidneys filter wastes from the blood. The eGFR is the best measure of kidney function.

episode of health care: client contact between an individual and a service by one or more staff to provide health care.

first antenatal visit: the contact at which the initial antenatal check-ups are done; for example, to confirm pregnancy, establish history, conduct blood tests.

full-time equivalent (FTE): an equivalent ratio that represents the number of hours a staff member works; for example, a service having two nurses, one working full time and one working half-days, would indicate 1.5 FTE for both nursing positions combined.

fully immunised: describes children who have received all immunisations according to the ACIR. Children aged 12 months to less than 24 months are required to have received all immunisations that are due at 6 months of age—3 doses of DTPa, 3 doses of Polio, 2 or 3 doses of Hib and 2 or 3 doses of Hep B. Children aged 24 months to less than 36 months are required to have received all immunisations that are due at 12 months of age—3 doses of DTPa, 3 doses of Polio, 3 or 4 doses of Hib, 3 doses of Hep B and 1 dose of MMR. Children aged 60 months to less than 72 months are required to have received all immunisations that are due at 4 years of age—4 doses of DTPa, 4 doses of Polio and 2 doses of MMR.

General Practitioner Management Plan (GPMP): chronic disease management plan carried out according to the MBS Schedule (Item 721).

haemoglobin A1c (HbA1c or glycated haemoglobin): a measurement that acts as an indicator of time-averaged blood glucose levels (over the previous 2–3 months). It is used as the best marker of long-term diabetes control (Jones et al. 2011).

indicator measure: see definition for measure.

Indigenous baby: a baby with at least one parent who identifies as Indigenous (born both to mothers who are Indigenous and mothers who are non-Indigenous).

influenza: an acute contagious viral respiratory infection marked by fever, muscle aches, headache, cough and sore throat.

MBS health assessment: health assessment for those aged 0–4 and 25 and over carried out according to the MBS Schedule (Item 715).

measure: an nKPI or a part of an nKPI which was analysed and described separately from the other parts of the nKPI. Each of the measures is listed in Appendix 7, Table A7.1.

monotonic: describes an increasing, decreasing or flat trend in the data, but not one that both increases in one place and decreases in another. That is, if there is an increase for part of the data, there is not a decrease elsewhere; or, if there is a decrease for part of the data, there is not also an increase elsewhere.

national Key Performance Indicators (nKPIs): a set of indicators that monitor the major health issues pertaining to the regular client population of Indigenous-specific primary health-care services.

OCHREStreams is a web portal that aims to reduce the burden of reporting for organisations that provide primary healthcare and other services to Aboriginal and Torres Strait Islander Australians (health services).

regular client: a client who has visited a particular primary health-care provider 3 or more times in the last 2 years.

remoteness: a measure in the Australian Statistical Geography Standard used to classify areas across Australia based on their distance from different services. The main categories are *Major cities*, *Inner regional*, *Outer regional*, *Remote* and *Very remote*.

smoking status: current smoker—includes those who smoke daily, weekly or less often than weekly. ex-smoker—a person who does not smoke at all now, but has smoked at least 100 cigarettes, or a similar amount of other tobacco product, in his/her lifetime. never smoked—a person who does not smoke now and has smoked fewer than 100 cigarettes or a similar amount of other tobacco product in his/her lifetime.

Team Care Arrangement (TCA): chronic disease management plan carried out according to the MBS Schedule (Item 723).

time-stamped records: records that are associated with a particular time and/or date of the record being made or the activity being recorded.

type 2 diabetes: the most common form of diabetes, occurring mostly in people aged 40 or over, and marked by reduced or less effective insulin.

vaccination: the process of administering a vaccine to a person to produce immunity against infection.

References

ABS (Australian Bureau of Statistics) 2006. National Aboriginal and Torres Strait Islander Health Survey, 2004–05. ABS cat. no. 4715.0. Canberra: ABS.

ABS 2013. Australian Aboriginal and Torres Strait Islander Health Survey: first results, Australia, 2012–13. ABS cat. no. 4727.0.55.001. Canberra: ABS.

AHMAC (Australian Health Ministers' Advisory Council) 2012. Aboriginal and Torres Strait Islander Health Performance Framework 2012 Report. Canberra: AHMAC.

AIHW (Australian Institute of Health and Welfare) 2011. Headline indicators for children's health, development and wellbeing 2011. Cat. no. PHE 144. Canberra: AIHW.

AIHW 2013a. Cervical screening in Australia 2010-2011. Cancer series 76. Cat. no. CAN 72. Canberra: AIHW.

AIHW 2013b. Healthy for Life: results for July 2007–June 2011. Cat. no. IHW 84. Canberra: AIHW.

AIHW National Perinatal Data Collection. Unpublished data extracted in January 2014.

Bailie R, Griffin J, Kelaher M, McNeair T, Percival N, Laycock A & Schierhout G 2013. Sentinel Sites Evaluation: final report. Report prepared by Menzies School of Health Research for the Australian Government Department of Health. Canberra: Department of Health.

Bailie, RS, Si D, O'Donoghue L & Dowden M 2007. Indigenous health: effective and sustainable health services through continuous quality improvement. Medical Journal of Australia, 186(10):525.

Cant RP 2010. Today's profession: views and practices of private practice dietitians re Medicare Chronic Disease Management program. Nutrition & Dietetics 67:77–83.

Clifford A & Shakeshaft A 2011. Evidence based alcohol screening and brief intervention in Aboriginal Community Controlled Health Services: experiences of health care providers. Drug and alcohol review 30(1):55–62.

Del Prato S 2005. Unlocking the opportunity of tight glycaemic control. Diabetes, Obesity and Metabolism 7(s1):S1–S4.

Diabetes Australia & RACGP (Royal Australian College of General Practitioners) 2011. Diabetes management in general practice. 17th edn 2011–12. Canberra: Diabetes Australia.

Department of Health 2014. National Cervical Screening Program. Policy for screening women vaccinated against HPV. Viewed 28 March 2014, <http://www.cancerscreening.gov.au/internet/screening/publishing.nsf/Content/hpv-vaccinated-policy>.

Hadfield RM, Samantha JL, Judy MS, Jane BF, Camille HRG, Jonathan MM & Christine LR 2009. Are babies getting bigger? An analysis of birthweight trends in New South Wales, 1990–2005. Medical Journal of Australia 190(6):312–15.

Hawthorne, K 2001. Effect of culturally appropriate health education on glycaemic control and knowledge of diabetes in British Pakistani women with type 2 diabetes mellitus. Health education research 16(3):373–81.

Jones GRD, Barker G, Goodall I, Schneider HG, Shepherd MDS & Twigg SM 2011. Change of HbA1c reporting to the new SI units. Medical Journal of Australia 195(1):45–6.

Kidney Health Australia 2012. Chronic Kidney Disease (CKD) Management in General Practice. 2nd edn. Melbourne: Kidney Health Australia.

Levy DT, Chaloupka F & Gitchell J 2004. The effects of tobacco control policies on smoking rates: a tobacco control scorecard. Journal of Public Health Management and Practice 10(4):338–53.

Luke C, Nguyen AM, Heard A, Kenny B, Shorne L & Roder D 2007. Benchmarking epidemiological characteristics of cervical cancer in advance of change in screening practice and commencement of vaccination. Australian and New Zealand Journal of Public Health 31:149–54.

McCormick MC, Brooks-Gunn J, Workman-Daniels K, Turner J & Peckham GJ 1992. The health and developmental status of very low birth-weight children at school age. Journal of the American Medical Association 267(16): 2204–8.

Medicare Australia 2013. Medicare item reports. Canberra: Medicare Australia. Viewed 4 October 2013, <https://www.medicareaustralia.gov.au/statistics/mbs_item.shtml>.

Menzies RI & Singleton RJ 2009. Vaccine preventable diseases and vaccination policy for Indigenous populations. Pediatric Clinics of North America 56(6):1263–83.

Nawaz H & Katz DL 2001. American College of Preventive Medicine practice policy statement: weight management counselling of overweight adults. American Journal of Preventive Medicine 21(1):73–8.

NHMRC (National Health and Medical Research Council) 2004. National evidence based guidelines for the management of Type II Diabetes Mellitus. Part 4: blood pressure control in Type 2 Diabetes. Sydney: NHMRC.

Prospective Studies Collaboration 2009. Body-mass index and cause-specific mortality in 900 000 adults: collaborative analyses of 57 prospective studies. Lancet 373:1083–96.

Rothemich SF, Woolf SH, Johnston RE, Burgett AE, Flores SK, Marsland DW & Ahluwailia JS 2008. Effect on cessation counselling of documenting smoking status as a routine vital sign: an ACORN study. Annals of Family Medicine 6(1):60–8.

Runciman WB, Hunt TD, Hannaford NA et al 2012. CareTrack: assessing the appropriateness of health care delivery in Australia. Medical Journal of Australia 197(2):100–5.

Tu S, Taylor V, Yasui Y, Chun A, Yip M, Acorda E, Li L & Bastani R 2006. Promoting culturally appropriate colorectal cancer screening through a health educator. Cancer 107(5): 959–66.

Wain GV 2007. Cervical cancer prevention: the saga goes on, but so much has changed! Medical Journal of Australia 185(9):476–7.

Zwar N, Hasan I, Hermiz O, Vagholkar S, Comino E & Harris M 2008. Multidisciplinary care plans and diabetes—benefits for patients with poor glycaemic control. Australian family physician 37(11):960–2.

Zwar NA, Hermiz O, Comino EJ, Shortus T, Burns J & Harris M 2007. Do multidisciplinary care plans result in better care for patients with type 2 diabetes? Australian family physician 36(1–2): 85.

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The first national report on the national Key Performance Indicators (nKPIs) data collection captures data from over 200 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. It presents data for 19 'process of care' and 'health outcomes' indicators which focus on the prevention and management of chronic disease and maternal and child health. The report shows improvements against most of the 'process of care' indicators. It also shows organisations that perform better are spread across different geographic and service delivery environments.