

TRENDS OVER TIME: KEY INDICATORS OF PRIORITY EVIDENCE-PRACTICE GAPS IN CHILD HEALTH 2007 – 2013

Phase 2 Report: Engaging Stakeholders in Identifying Priority Evidence- Practice Gaps and Strategies for Improvement in Primary Health Care (ESP Project)

Report prepared by Ross Bailie, Veronica Matthews, Anna Sheahan and other members of the ABCD Project Team, and with input from practitioners, CQI facilitators, managers, policy officers and researchers. The contributions to this report of a wide range of individuals and organisations are gratefully acknowledged.

The ABCD National Research Partnership is led by Menzies School of Health Research and funded by the National Health and Medical Research Council (ID No.545267) and the Lowitja Institute. The Partnership includes Aboriginal Community Controlled Health Organisation peak bodies and members services, government health departments, academic institutions, and primary health care services in five states and territories: the Northern Territory, Queensland, South Australia, Western Australia and New South Wales. Ethical approval has been granted by the Human Research Ethics Committees in all jurisdictions where there are participating health services.

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SECTION 1 - SUMMARY

Background

The ABCD National Research Partnership and One21seventy are founded on the premise that a holistic or comprehensive approach to primary health care (PHC) is fundamental to an effective health system. The data available through the ABCD National Research Partnership represents the most comprehensive set of data on clinical performance in PHC in Australia.

The ABCD / One21seventy clinical audit tools are based on widely accepted best practice guidelines, and reflect best practice across the scope of child health.¹ The Systems Assessment Tool reflects the core system components required to support delivery of best practice care. These tools have to date been used by more than 200 Aboriginal and Torres Strait Islander primary health care centres across the country. For an explanation of how the data are collected see Appendix 1.

One hundred and seventy of these PHC centres have agreed that their data can be used in addressing the aims of the ABCD National Research Partnership, including improving understanding of barriers and enablers to high quality care, and informing development of strategies for improvement. This report has been developed using data from these centres.

The establishment of this growing dataset has been made possible by the active contributions of health centre staff, CQI facilitators, managers, policy makers, researchers and clinical leaders. Their ongoing contributions are vital to making most effective use of data for improving the quality of care for Aboriginal and Torres Strait Islander people across Australia.

The ESP project

The 'ESP Project' is an abbreviated name for a project that aims to engage key stakeholders in the interpretation and use of aggregated CQI data to identify:

- **evidence-practice gaps** (gaps between guideline recommended services and actual practice);
- **priority areas for improvement;**
- **barriers and enablers** to high quality care;
- **system-wide strategies** for improvement.

This project is a major initiative of the ABCD National Research Partnership, and is consistent with the purpose of supporting development of the health system to provide high quality comprehensive primary healthcare on a wide scale. The rationale for our focus on system wide evidence-practice gaps is that where there are aspects of care that are not being done well across a range of PHC services, this is likely to be due to deficiencies in the broader PHC system and indicates that system-level action is required to improve performance in these areas.

¹ For more information on the ABCD Partnership Project: <<http://www.menzies.edu.au/abcd>>
For more information about One21seventy: <<http://www.one21seventy.org.au/>>

The focus on priority evidence-practice gaps should not be seen to detract from the importance of providing holistic and comprehensive primary healthcare. Indeed, the aim of the project is to strengthen the capacity of the broader system to provide high quality comprehensive healthcare on a wide scale.

An overview of the ESP Project is presented in Appendix 2.

Child Health – Phase 1 ESP Report

The **first phase** of the ESP Project focussed on identifying priority evidence-practice gaps which resulted in identification of issues related to:

- improving systems for systematic recording of all immunisations in child health records and delivery of immunisations at scheduled at birth and at 2 years and older;
- a number of key aspects of clinical examination and follow-up, including weight, ear examinations, haemoglobin and developmental milestones;
- advice on common risks to health, including nutrition, passive smoking, infection prevention, injury prevention and domestic/social and environmental conditions;
- enquiry and advice on use of alcohol, tobacco and other drugs; and
- aspects of health centre systems required to support high quality care.

Child Health – Phase 2 ESP Report

This second phase of the ESP Project focuses on **identifying the barriers and enablers** to addressing the priority evidence–practice gaps that were identified in the first phase. In assessing the trends in indicators relevant to the priority evidence practice gaps, it is helpful to focus on the trends in general over time, and variation between health centres – in particular whether the variation is getting less, and importantly, whether there is an improvement for health centres at the lower end of the range over time. A summary of the initial interpretation of trends is presented below and in Table 1. Detailed information about the trend data and results can be found in Section 2.

Trends over the years 2007 to 2013 show:

- some evidence of improvement for most indicators, including overall child health, immunisation charts in records, MMR at 4 years, clinical examinations (weight, ear, developmental milestones), follow-up (growth faltering, chronic ear infection and developmental delay), and advice and brief interventions.

Variation between all participating health centres for each year shows:

- reduced variation in immunisation charts in records and MMR at 4 yrs;
- some but not consistent evidence of reduced variation between health centres in ear examinations, follow-up and advice and brief interventions
- however, no clear reduction in variation for most indicators, with evidence that a large proportion of children attending some health centres continue to not have a record of delivery of key aspects of care according to best practice guidelines.

Trends by audit cycle show:

- consistent evidence of improvement over successive audit cycles for most indicators, including overall delivery of child health care, MMR at 4 years, clinical examinations (recording of weight, ear checks, and developmental milestones), follow-up of children with growth faltering, records of advice and brief interventions, and improvement in health centre systems;

- some but not consistent evidence of improving trends for follow-up of children with chronic ear infection and with developmental delay;
- no clear evidence of improvement over successive audit cycles for immunisation charts in children's records, for checking haemoglobin or for follow-up of children with anaemia.

Variation over successive audit cycles shows:

- a reduction in variation for most indicators, including overall child health, most clinical examinations, and for health centre systems assessment scores;
- no clear evidence of reduction in variation for recording of Hep B immunisation at birth, for haemoglobin checking or for follow-up of children with anaemia.

In this second phase of the ESP Project we encourage clinical leaders and managers to review the trend data presented in the next section and consider the key questions below that are relevant to the identification of barriers and enablers to closing evidence-practice gaps.

1. *What are the reasons for the general improvement in most indicators related to the priority evidence practice gaps over the years 2007 to 2013?*
2. *What are the reasons for the continued low levels of recording in **some** health centres of delivery of key aspects of care according to best practice guidelines (including indicators of overall child health care, Hep B immunisation at birth, examinations (including weight, ear examinations, haemoglobin checks, developmental milestones), follow-up of children with growth faltering, chronic ear infections, anaemia, and developmental delay)?*
3. *To what extent has continued participation in CQI contributed to the apparent improvement in recording of most of the indicators relevant to the priority evidence-practice gaps in health centres that have completed three or more audit cycles?*
4. *What are the reasons for the apparent lack of improvement in **some** health centres that have completed three or more audit cycles in the following indicators: immunisation charts in children's records; haemoglobin check; and follow-up of children with anaemia, chronic ear infection and developmental delay?*

Feedback from stakeholders

We are seeking your feedback via an online survey on the factors that underlie these trends in order to enhance understanding of the barriers and enablers to addressing the identified priority evidence-practice gaps.

Click here for the survey: <https://www.surveymonkey.com/s/childhealthreport>

The survey questions are based on international and Australian research regarding attributes of PHC staff, health centre or broader system environment that support best practice and attributes that present barriers to closing evidence-practice gaps. We will use the findings from the survey to produce a final Phase 2 report on the barriers and enablers to addressing the priority child health evidence-practice gaps. **The online survey will be open until COB Friday 21st February, 2014.**

Table 1: Summary of trends in areas of priority evidence-practice gaps

| | Areas of priority evidence-practice gaps | | | | | | | | | | | | | |
|---|--|------------------|-------------|----------|-----------------------|-----|--------------|----------------------------|------------------|-----------------------|---------|----------------------|--------------------------------|-----------------------|
| | Overall child health | Immunisations | | | Clinical examinations | | | | Follow-up | | | | Advice and brief interventions | Health centre systems |
| | | Chart in records | Hep B birth | MMR 4yrs | Weight | Ear | Haemo-globin | Develop-mental mile-stones | Growth faltering | Chronic ear infection | Anaemia | Develop-mental delay | | |
| Trends by year | ↑ | ↑ | ~ | ↑ | ?↑ | ↑ | ~ | ?↑ | ?↑ | ↑ | ~ | ?↑ | ↑ | ~ |
| Reduced variation over years – all health centres | ✗ | ✓ | ✗ | ✓ | ✗ | ?✓ | ✗ | ✗ | ✗ | ?✓ | ✗ | ?✓ | ?✓ | ✗ |
| Trends by audit cycle | ↑ | ~ | ↓ | ↑ | ↑ | ↑ | ~ | ↑ | ↑ | ?↑ | ~ | ?↑ | ↑ | ↑ |
| Reduced variation by audit cycle – health centres completed 3+ cycles | ✓ | ✓ | ✗ | ?✓ | ?✓ | ✓ | ✗ | ✓ | ✓ | ?✓ | ✗ | ?✓ | ?✓ | ✓ |

Symbols: ↑ increasing trend over time; ?↑ some but not consistent evidence of increasing trend over time; ~ no evidence of increasing trend over time

✓ reduced variation over successive years or successive audit cycles; ?✓ some but not consistent evidence of reduced variation over time; ✗ no evidence of reduction in variation over time

SECTION 2 – TRENDS OVER TIME FOR KEY INDICATORS OF PRIORITY EVIDENCE-PRACTICE GAPS

This report presents audit data on trends in key indicators relevant to the priority evidence-practice gaps in a way that should assist stakeholders in identifying barriers and enablers to addressing the evidence-practice gaps.

It is important to note that this report is focussed on the priority evidence practice gaps – it does not present trend data on all indicators and therefore does not address aspects of care that are being done relatively well, or that have shown the most marked improvement over time.

The report is **not** designed to assess the impact of participation in CQI across the scope of best practice, although we raise questions about the potential influence of CQI activities on trends. The impact of CQI will be assessed through the ABCD National Research Partnership in a separate analysis that covers trends across various aspects of care. This analysis needs to account for a variety of influences on trends over time, and different numbers and characteristics of services that conducted audits in different years. The analysis of diabetes care that we have conducted to date shows that health centres that have participated in three or more CQI cycles are more than twice as likely to be in the top 25% of centres in terms of delivery of care according to best practice guidelines. Through the ABCD National Research partnership we will be conducting similar analyses for child health and other aspects of primary health care.

1. Presentation of data in this report

Audit data on indicators relevant to the identified evidence-practice gaps in child health services are presented over time in two ways - by year and by audit cycle.

The presentation of data **by year** includes the data for all health centres participating in the ABCD National Research Partnership, and provides an indication of influences on clinical performance that may be occurring at different times in the general health system environment. This might include changes in CQI processes, changes in the number and types of participating health centres and various other influences on the CQI data that are generated through the use of One21seventy tools.

The presentation of data **by audit cycle** includes the data for health centres that have conducted child health audits in at least three audit cycles. The presentation of data by audit cycle provides an indication of the impact of duration of participation in CQI on delivery of care according to best practice guidelines. Note that 'Audit Cycle 1' represents baseline audit data, 'Audit Cycle 2' represents the first follow-up audit and so on. We have limited the presentation of data to a maximum of five audit cycles because there were limited numbers of services that had conducted more than five child health audit cycles.

Participating health centres and characteristics of children

The data presented in the report are from health centres that conducted child health audits between 2007 and 2013. In total 132 health centres participating in the ABCD Partnership had relevant data over this period, with the largest number of health centres being in the NT and Qld. The number of health centres with data for each year increased from 21 in 2007 to over 80 in 2011 and 2012, and declined to 68 in 2013 (Table 2). There were 71 health centres that had conducted at least three audit cycles, with a small number that had conducted six or seven cycles (Table 3). Overall 80% of health centres were in remote locations and 75% were government managed (Table 4).

The data presented are limited to aspects of care relevant to children less than 6 years of age, as the child health audit tool was only extended to older children in 2011. As expected from the age stratified sampling process there were even numbers of boys and girls, with 90% of audited records being for Aboriginal or Torres Strait Islander children. For most years, 95% or more of audited records showed a record of at least one attendance within the 12 months preceding the audit date, with the most common reason for last attendance being for acute care (Table 4).

Table 2: Child health audit and systems assessment completed between 2007-2013
(number of child health records audited, number of health centres and number of SATs)

| | | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | Total |
|-------|----------|------|------|------|------|-------|-------|-------|--------|
| FWNSW | #Audits | 162 | 163 | 159 | 147 | 174 | 184 | 178 | 1,167 |
| | #Centres | 6 | 6 | 6 | 4 | 4 | 4 | 4 | 6 |
| | #SATs | 6 | 6 | 6 | 0 | 0 | 0 | 0 | 18 |
| NT | #Audits | 313 | 412 | 314 | 193 | 722 | 885 | 778 | 3,617 |
| | #Centres | 12 | 14 | 13 | 7 | 30 | 32 | 28 | 59 |
| | #SATs | 7 | 12 | 7 | 7 | 20 | 18 | 18 | 89 |
| QLD | #Audits | | 103 | 325 | 577 | 1,512 | 1,187 | 958 | 4,662 |
| | #Centres | | 4 | 13 | 23 | 45 | 41 | 34 | 52 |
| | #SATs | | 4 | 8 | 17 | 40 | 39 | 26 | 134 |
| SA | #Audits | | | | | 77 | 165 | | 242 |
| | #Centres | | | | | 2 | 4 | | 5 |
| | #SATs | | | | | 3 | 0 | 0 | 3 |
| WA | #Audits | 90 | 239 | 178 | 60 | 60 | 30 | 60 | 717 |
| | #Centres | 3 | 8 | 6 | 2 | 2 | 1 | 2 | 10 |
| | #SATs | 1 | 8 | 6 | 2 | 2 | 1 | 1 | 21 |
| Total | #Audits | 565 | 917 | 976 | 977 | 2,545 | 2,451 | 1,974 | 10,405 |
| | #Centres | 21 | 32 | 38 | 36 | 83 | 82 | 68 | 132 |
| | #SATs | 14 | 30 | 27 | 26 | 65 | 58 | 45 | 265 |

Table 3: Child health audit completed between 2007 and 2013 by audit cycle
(number of child health records audited and number of health centres)

| | | Cycle | | | | | | | Total |
|-------|----------|-------|-------|-------|-------|-----|-----|-----|--------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Total |
| FWNSW | #Audits | 162 | 163 | 159 | 147 | 174 | 184 | 178 | 1,167 |
| | #Centres | 6 | 6 | 6 | 4 | 4 | 4 | 4 | 6 |
| NT | #Audits | 1,585 | 1,087 | 586 | 222 | 109 | 28 | | 3,617 |
| | #Centres | 59 | 41 | 24 | 8 | 5 | 2 | | 59 |
| QLD | #Audits | 1,562 | 1,184 | 1,086 | 659 | 171 | | | 4,662 |
| | #Centres | 52 | 42 | 38 | 24 | 6 | | | 52 |
| SA | #Audits | 148 | 94 | | | | | | 242 |
| | #Centres | 5 | 1 | | | | | | 5 |
| WA | #Audits | 299 | 178 | 90 | 60 | 60 | 30 | | 717 |
| | #Centres | 10 | 6 | 3 | 2 | 2 | 1 | | 10 |
| Total | #Audits | 3,756 | 2,706 | 1,921 | 1,088 | 514 | 242 | 178 | 10,405 |
| | #Centres | 132 | 96 | 71 | 38 | 17 | 7 | 4 | 132 |

Table 4: Characteristics of participating health centres and children records audited between 2007 & 2013 (number & %)

| | | 2007 | | 2008 | | 2009 | | 2010 | | 2011 | | 2012 | | 2013 | | Overall | |
|---------------------------------------|----------------------|------|------|------|------|------|------|------|-----|-------|-----|-------|-----|-------|------|---------|-----|
| Primary Health Care Centres | | 21 | | 32 | | 38 | | 36 | | 83 | | 82 | | 68 | | 132 | |
| Location | Urban | 0 | 0% | 3 | 9% | 1 | 3% | 1 | 3% | 2 | 2% | 3 | 4% | 2 | 3% | 8 | 6% |
| | Regional | 6 | 29% | 7 | 22% | 6 | 16% | 2 | 6% | 9 | 11% | 8 | 10% | 7 | 10% | 19 | 14% |
| | Remote | 15 | 71% | 22 | 69% | 31 | 82% | 33 | 92% | 72 | 87% | 71 | 87% | 59 | 87% | 105 | 80% |
| Governance | Government | 6 | 29% | 12 | 38% | 20 | 53% | 26 | 72% | 67 | 81% | 66 | 80% | 57 | 84% | 99 | 75% |
| | Community Controlled | 15 | 71% | 20 | 63% | 18 | 47% | 10 | 28% | 16 | 19% | 16 | 20% | 11 | 16% | 33 | 25% |
| Size of population served | ≤500 | 7 | 33% | 8 | 25% | 10 | 26% | 14 | 39% | 41 | 49% | 39 | 48% | 37 | 54% | 59 | 45% |
| | 501-999 | 5 | 24% | 7 | 22% | 9 | 24% | 7 | 19% | 15 | 18% | 21 | 26% | 10 | 15% | 24 | 18% |
| | ≥1000 | 9 | 43% | 17 | 53% | 19 | 50% | 15 | 42% | 27 | 33% | 22 | 27% | 21 | 31% | 49 | 37% |
| Duration of participation in ABCD CQI | <1 year | 21 | 100% | 14 | 44% | 11 | 29% | 12 | 33% | 46 | 55% | 19 | 23% | 6 | 9% | 36 | 27% |
| | 1-2 years | 0 | 0% | 18 | 56% | 27 | 71% | 19 | 53% | 23 | 28% | 43 | 52% | 35 | 51% | 58 | 44% |
| | ≥3 years | 0 | 0% | 0 | 0% | 0 | 0% | 5 | 14% | 14 | 17% | 20 | 24% | 27 | 40% | 38 | 29% |
| Number of audited records | | 565 | | 917 | | 976 | | 977 | | 2,545 | | 2,451 | | 1,974 | | 10,405 | |
| Age Groups | <1 year | 172 | 30% | 253 | 28% | 287 | 29% | 239 | 24% | 560 | 22% | 511 | 21% | 452 | 23% | 2474 | 24% |
| | 1-<3 years | 207 | 37% | 327 | 36% | 327 | 34% | 353 | 36% | 947 | 37% | 929 | 38% | 751 | 38% | 3841 | 37% |
| | 3-<6 years | 186 | 33% | 337 | 37% | 362 | 37% | 385 | 39% | 1038 | 41% | 1011 | 41% | 771 | 39% | 4090 | 39% |
| Gender | Males | 287 | 51% | 464 | 51% | 479 | 49% | 486 | 50% | 1285 | 50% | 1217 | 50% | 993 | 50% | 5211 | 50% |
| | Females | 278 | 49% | 453 | 49% | 497 | 51% | 491 | 50% | 1260 | 50% | 1234 | 50% | 981 | 50% | 5194 | 50% |
| Indigenous status | Indigenous | 507 | 90% | 840 | 92% | 899 | 92% | 893 | 91% | 2298 | 90% | 2203 | 90% | 1759 | 89% | 9399 | 90% |
| | Non-indigenous | 50 | 9% | 61 | 7% | 53 | 5% | 58 | 6% | 184 | 7% | 194 | 8% | 180 | 9% | 780 | 7% |
| | Not stated | 8 | 1% | 16 | 1.7% | 24 | 2% | 26 | 3% | 63 | 2% | 54 | 2% | 35 | 2% | 226 | 2% |
| Attended within past 12 months | | 535 | 95% | 841 | 92% | 912 | 93% | 940 | 96% | 2462 | 97% | 2363 | 96% | 1932 | 98% | 9985 | 96% |
| Reason for last attendance | Acute care | 265 | 47% | 480 | 52% | 486 | 50% | 449 | 46% | 1372 | 54% | 1142 | 47% | 944 | 48% | 5138 | 49% |
| | Child Health Check | 130 | 23% | 170 | 19% | 181 | 19% | 194 | 20% | 525 | 21% | 569 | 23% | 499 | 25% | 2268 | 22% |
| | Immunisation | 85 | 15% | 123 | 13% | 151 | 15% | 193 | 20% | 411 | 16% | 483 | 20% | 327 | 17% | 1773 | 17% |
| Profession child first seen by | Other | 85 | 15% | 144 | 16% | 158 | 16% | 141 | 14% | 237 | 9% | 257 | 10% | 204 | 10% | 1226 | 12% |
| | AHW | 108 | 19% | 180 | 20% | 184 | 19% | 188 | 19% | 439 | 17% | 480 | 20% | 232 | 12% | 1811 | 17% |
| | Nurse | 290 | 51% | 493 | 54% | 589 | 60% | 535 | 55% | 1663 | 65% | 1625 | 66% | 1362 | 69% | 6557 | 63% |
| | GP | 130 | 23% | 167 | 18% | 97 | 10% | 121 | 12% | 273 | 11% | 210 | 9% | 273 | 14% | 1271 | 12% |
| | Specialist | 6 | 1% | 16 | 2% | 8 | 0.8% | 15 | 2% | 35 | 1% | 35 | 1% | 47 | 2% | 162 | 2% |
| | Allied Health | 2 | 0.4% | 5 | 0.5% | 6 | 0.6% | 13 | 1% | 36 | 1% | 32 | 1% | 28 | 1% | 122 | 1% |
| | Other | 3 | 0.5% | 12 | 1% | 11 | 1% | 17 | 2% | 33 | 1% | 24 | 1% | 24 | 1% | 124 | 1% |
| Not stated | | 26 | 5% | 44 | 5% | 81 | 8% | 88 | 9% | 66 | 3% | 45 | 2% | 8 | 0.4% | 358 | 3% |

Interpretation of box plots

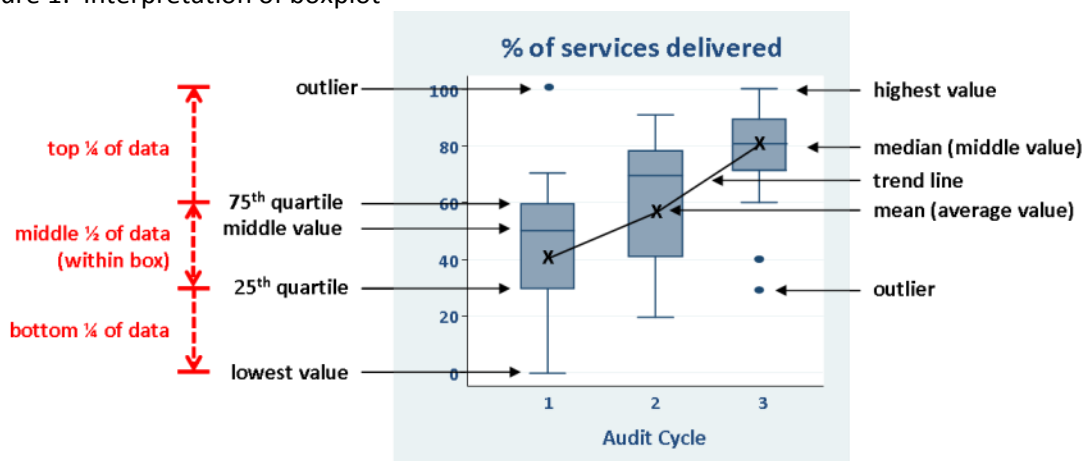
An important focus of the ABCD National Research Partnership is on understanding variation in delivery of care in accordance with best practice guidelines between health centres and variation over time. 'Box and whisker plots' (or box plots) are a useful way of presenting data on variation in a graphical form that should assist with interpretation of the data.

In the analysis of the audit data, the mean (average) percent delivery of items of clinical care relevant to each indicator is calculated for each health centre. The mean percentages for all relevant health centres are displayed in box plots to show the distribution or range in recorded delivery of care.

Box and whisker plots show (Figure 1):

- the values for the health centres with the minimum and maximum mean percentage in recorded delivery of care in accordance with best practice guidelines (ends of whiskers if no outliers);
- outliers – these are values that are far away from most other scores in the data set (or a distance that is greater than 1.5 times the length of the box);
- the range between health centres in recorded delivery of care. This is shown by dividing the dataset into quarters:
 - the box represents the middle 50% of the dataset, and the line within the box represents the median (or middle value);
 - the 'whisker' at the top of the box (and outliers if present) represents the top 25% of health centres
 - the 'whisker' at the bottom of the box (and outliers if present) represents the bottom 25% of health centres;
- the longer the box plot, the greater the range (or variation) between health centres.

Figure 1: Interpretation of boxplot



In assessing the trends in indicators relevant to the priority evidence practice gaps, it is helpful to focus on:

- a) the trend for the mean (average) and median (middle) values for health centres – in particular whether the mean and median are increasing, staying steady or decreasing; and
- b) the trend in the variation between health centres – in particular whether the variation is getting less, and importantly, whether there is an improvement in the values for the health centres at the lower end of the range.

2. Overall Child Health Delivery

Feedback on the report on priority evidence-practice gaps highlighted the importance of continuing attention to holistic care, and ensuring that attention to the priority evidence-practice gaps did not detract from the importance of providing high quality care across the scope of best practice in child health. The figures below show trends in a composite indicator of overall delivery of care* in accordance with best practice guidelines.

There is an overall increase in overall delivery of care between 2007 and 2013 (Figure 2). The dip in 2011 coincides with a large increase in the number of services that conducted child health audits. The variation between health centres was fairly consistent over the years 2007 to 2013.

For health centres that had completed three or more audit cycles, there is an overall increase in delivery of care in line with best practice guidelines in successive audit cycles (Figure 3). There is also a narrowing in the variation across health centres in the 4th and 5th audit cycles, with a notable improvement in the health centres with the lowest levels of overall delivery of care.

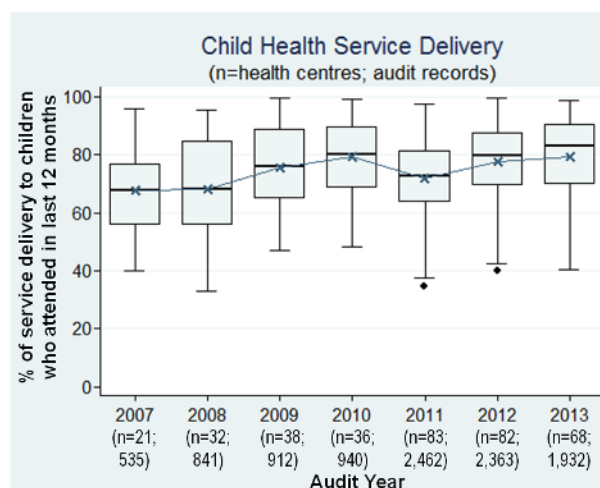


Figure 2: Mean percent child health delivery* to children who attended in previous 12 months, by audit year for all health centres (n=number of health centres; number of children records audited who attended in previous 12 months).

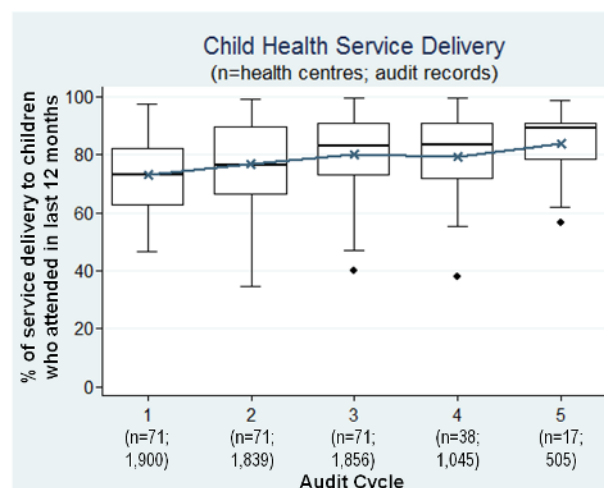


Figure 3: Mean percent child health delivery* to children who attended in previous 12 months, by audit cycle for health centres that have at least three years of audit data (n=number of health centres; number of children records audited who attended in previous 12 months)

Questions regarding barriers and enablers to improvement:

1. What are the reasons for the apparent overall improvement in recorded adherence to best practice guidelines in delivery of care for children attending health centres that are participating in the ABCD National Research Partnership over the years 2007 to 2013?
2. To what extent has continued participation in CQI contributed to the apparent improvement for health centres that have completed three or more audit cycles in recording of delivery of care according to best practice guidelines, with reduction in variation between health centres and particular improvement for health centres at the low end of the range?

* includes ten best practice indicators present in the child health audit tool over time and across jurisdictions (weight, height, head circumference, hip exam, testes check, ear exam, breastfeeding, nutrition advice, SIDS prevention, and developmental check)

3. Immunisations

In summary, there was some indication of improvement in systematic recording of immunisations and in the delivery of immunisations scheduled for delivery at 2 years and older, but no indication of improvement in recording of delivery of immunisations scheduled for delivery at birth.

The priority evidence-practice gaps in relation to immunisation were in systematic recording of all immunisations in child health records, and the delivery of immunisations scheduled for delivery at birth and at 2 years and older. The indicators we have used to show trends in these priority areas for improvement are a) the proportion of all child health records that include a chart to record delivery of immunisations; b) recording of delivery of Hepatitis B immunisation at birth; and c) recording of delivery of MMR immunisation at 4 years.

More than half of the participating health centres had an immunisation chart present in all children's records for almost all years and across all audit cycles (Figures 4 A1 and B1). In some years there was at least one health centre where there were no child health records with immunisation charts.

There appears to have been some reduction in variation over the years for which audit data are available and some improvement in the health centres that had a relatively lower proportion of records with immunisation charts.

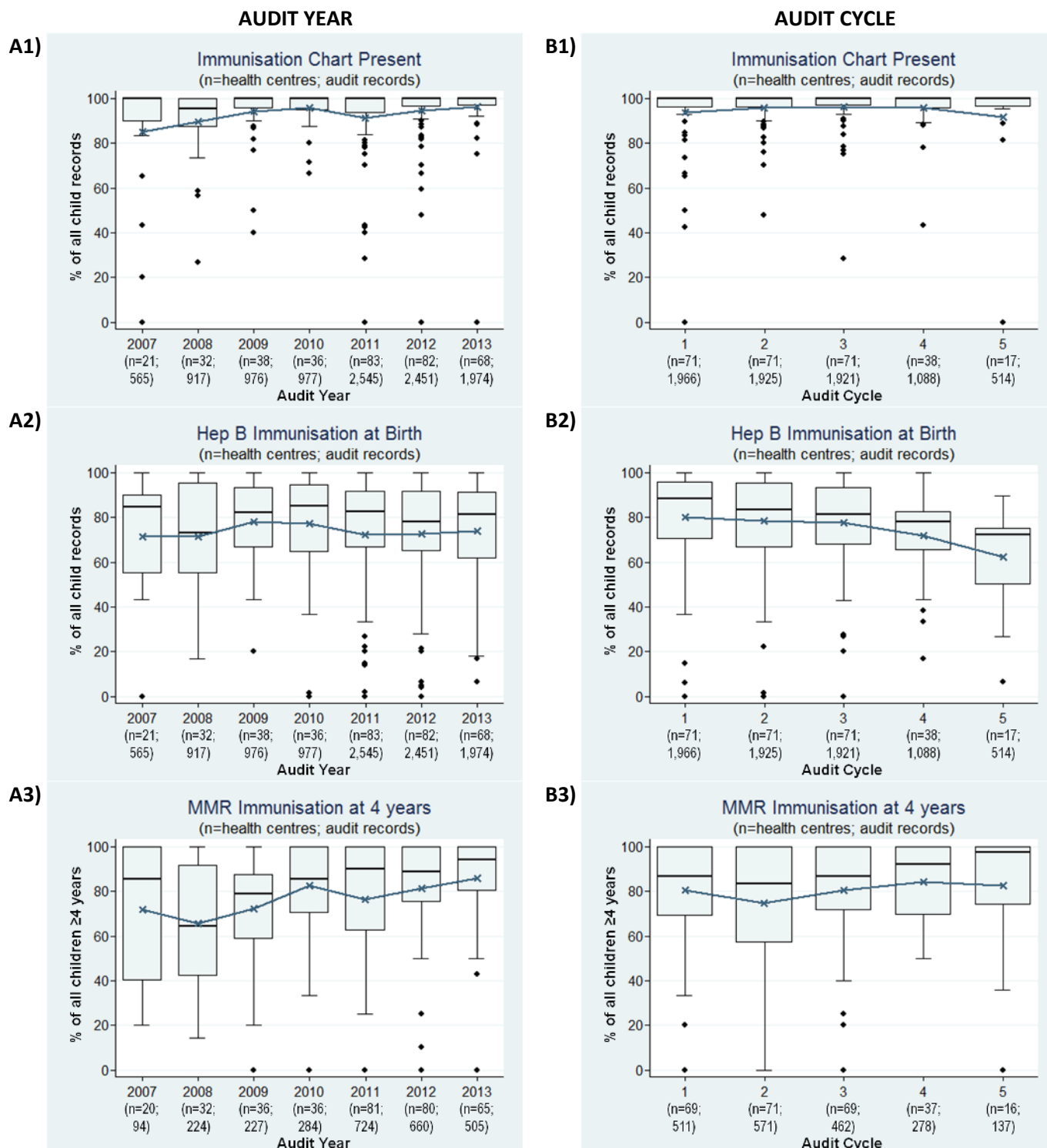
For delivery of Hepatitis B immunisation at birth there was no clear increasing or decreasing trend in the median level or in the variation between health centres over the years 2007 to 2013 (Figure 4 A2). There was a trend of lower recorded levels of delivery for health centres that had conducted four or five audit cycles (Figure 4 B2). There was wide variation in this indicator between health centres for all years and for all audit cycles.

For recording of delivery of MMR immunisation at 4 years there was an improving trend in the median over the years 2007 to 2013 as well as across successive audit cycles (Figure 4 A3 and B3). There was some indication of reduced variation between health centres over the years 2007 to 2013 (Figure 4 A3), but not across successive audit cycles (Figure 4 B3).

Questions regarding barriers and enablers to improvement:

1. *What are the reasons for the lack of immunisation charts in child health records in some health centres?*
2. *Has continued participation in CQI contributed to the apparent improvement in health centres that had a relatively lower proportion of records with immunisation charts?*
3. *What are the reasons for the continuing wide variation in recording in primary health care centre records of immunisations scheduled for delivery at birth?*
4. *Recording in primary health care centre records of delivery of immunisations at birth appears to depend on good transfer of information between birthing facilities and primary health care services, and on clear documentation of these immunisations in primary health care records. Is this important? If so, how can this be improved? Can CQI processes be strengthened to address this issue?*
5. *What are the reasons for the continuing wide variation between health centres in delivery of MMR immunisation at 4 years?*

Figure 4: Mean percent of children with 1) an immunisation chart present, 2) recorded hepatitis B immunisation at birth and 3) MMR (measles, mumps, rubella) immunisation at 4 years of age, by A) audit year for all health centres and B) audit cycle for health centres that have at least 3 years of audit data (n=number of health centres; number of children records audited).



4. Clinical examinations and follow-up of abnormal findings

The priority evidence-practice gaps in relation to **clinical examinations** were the systematic monitoring and recording in child health records of key measures, specifically including weight, haemoglobin and developmental milestones. The priority evidence-practice gaps in relation to **follow-up of abnormal clinical findings and identified risks to health** were to improve recording and follow-up action for growth faltering/failure to thrive, anaemia, chronic ear infections, developmental delay, and risks related to the domestic environment, financial situation, housing and food security.

This section of the report examines the data on the following indicators relevant to these evidence-practice gaps:

- recording of weight and growth faltering
- follow-up of growth faltering
- recording of ear examinations and chronic ear infections
- follow-up of ear infections
- recording of haemoglobin checks and anaemia
- follow-up of anaemia
- recording of developmental milestones and developmental delay
- follow-up of developmental delay

Indicators relevant to the evidence practice gaps in recording and follow-up action for risks related to the domestic environment, financial situation, housing and food security are examined in the section on brief interventions later in this report.

Recording of weight and growth faltering

In summary, there is an improving trend in recording of weight, but no clear reduction in variation between health centres over years and across successive audit cycles. While there is no clear reduction in variation between health centres in recording growth faltering over years, there is a reduction in variation for health centres that completed three or more audit cycles.

More than half of the participating health centres had the child's weight recorded within the previous 12 months in over 90% of children's records for all years and across all audit cycles (Figures 5 A1 and B1). There is no clear evidence of a reduction in variation over years for which audit data are available, with the possible exception of health centres that had conducted at least five audit cycles. In all years there was at least one health centre where the proportion of children with a record of weight was 60% or less (Figures 5 A1 and B1).

Half of the health centres had a record of growth faltering in at most two or three of the children whose records were audited in any year (Table 5 and 6). In 2011, 2012 and 2013, health centres in the bottom quartile did not have a record of growth faltering for any of the children whose records were audited (Figure 5 A2). On the other hand, health centres in the top quartile had a record of growth faltering for at least 25 to 30% of children whose records were audited in each year (Figure 5 A2). There was no clear change in the variation between health centres in recorded level of growth faltering over years (Figure 5 A2). However, there was a reduction in recorded levels of growth faltering over successive audit cycles for health centres that completed at least three cycles. This indicates there has been an improvement in consistency or standardisation in monitoring and recording of growth faltering in these health centres.

Because of the relatively high levels of recording of weights for children in most health centres (Figure 5 A1 and B1), the pattern of recording of growth faltering for all children with a record of attendance within the last 12 months (Figure 5 A2 and B2) was very similar to the pattern of growth faltering for children who had a weight recorded (Figure 6 A and B).

Questions regarding barriers and enablers to improvement:

- 1. What are the reasons for the low levels of recording in some health centres of key measures of child health, such as weight?*
- 2. What are the reasons for the wide variation between health centres in the recording of growth faltering? It is unlikely that the wide variation between health centres in the recording of growth faltering is entirely due to differences in the incidence of growth faltering in the different communities served by these health centres.*
- 3. It appears there is a greater likelihood in some health centres for weights to be recorded for children who actually had growth faltering, and in other health centres for growth faltering to not be recorded for children who actually had growth faltering. What are the reasons for this?*
- 4. To what extent has continued participation in CQI contributed to the apparent reduction in variation in recording of growth faltering between health centres that have completed three or more audit cycles? Is continued participation in CQI processes contributing to improved consistency or standardisation in recording of growth faltering? What factors may be contributing to this improvement?*

Figure 5: Mean percent of children with a record of attendance within the previous 12 months who 1) had weight recorded and 2) had evidence of growth faltering, by A) audit year for all health centres and B) by audit cycle for health centres that have at least 3 years of audit data (n=number of health centres; number of children with a record of attendance in previous 12 months).

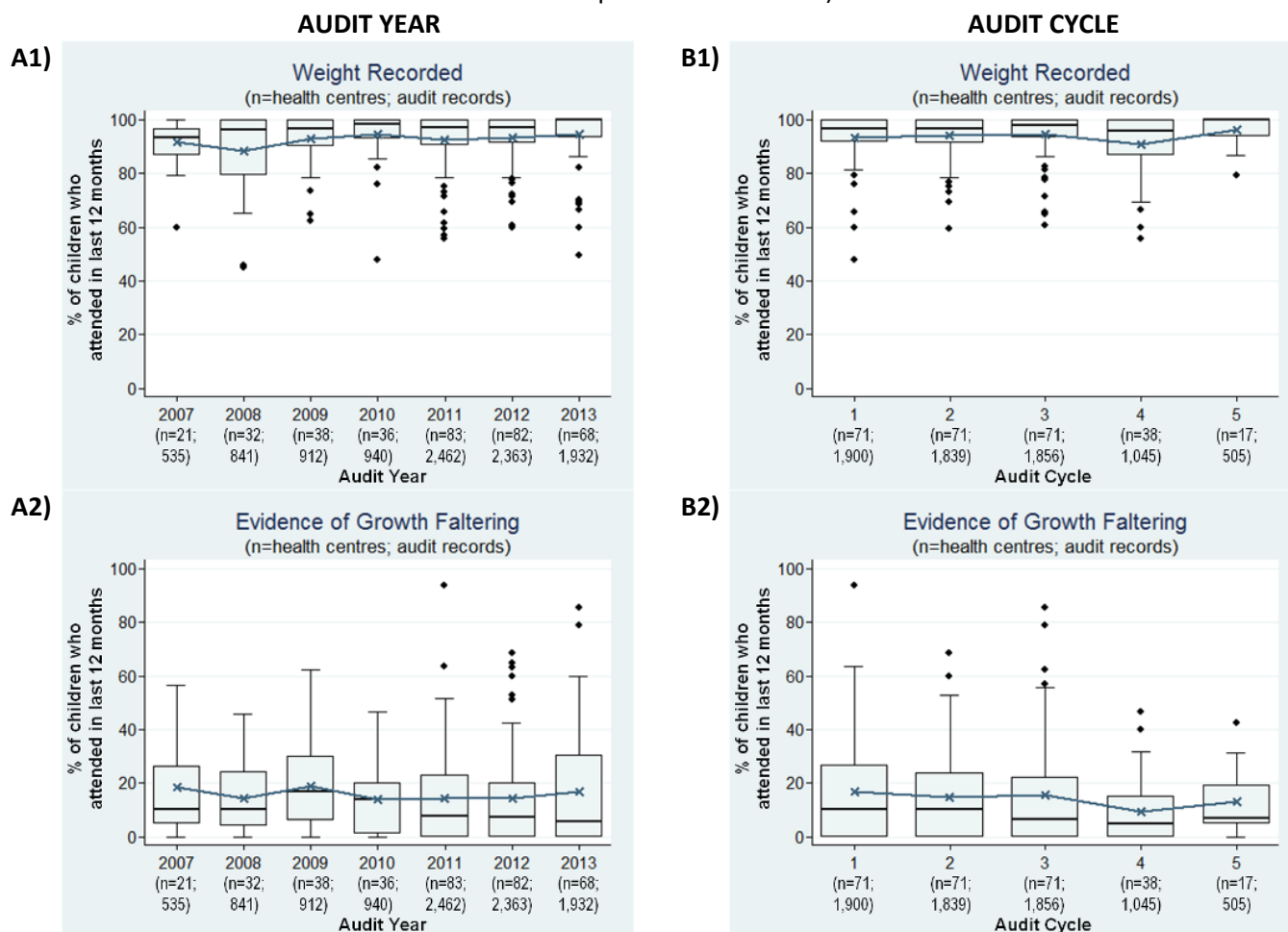


Figure 6: Mean percent of children with weight recorded who had documented evidence of growth faltering, by A) audit year for all health centres and B) audit cycle for health centres that have at least 3 years of audit data (n=number of health centres; number of children records audited who had weight recorded).

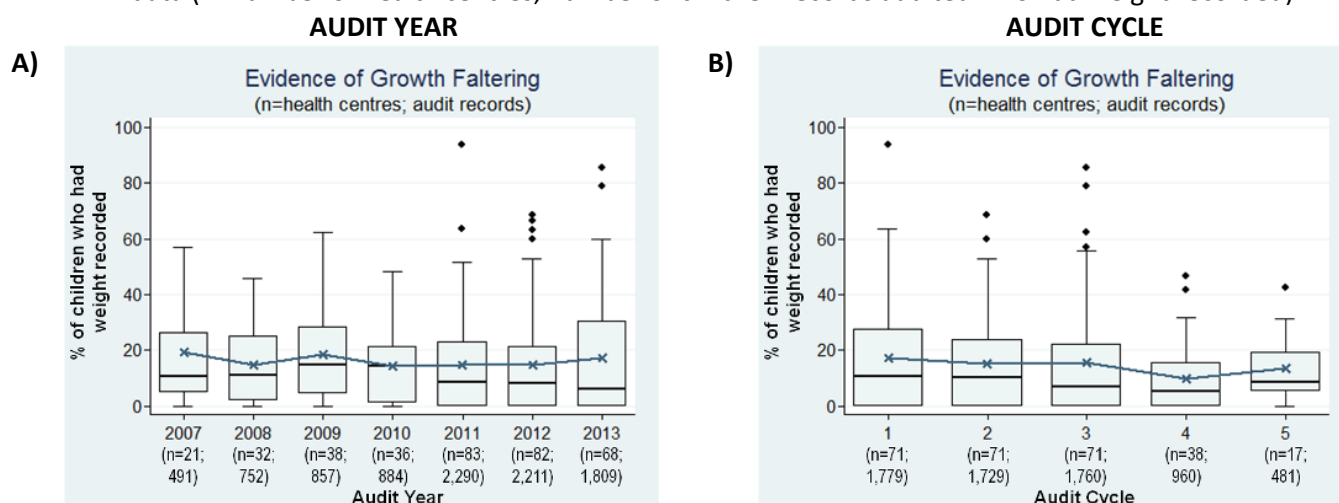


Table 5: Mean, median and range for the number of children's records a) audited; b) with a weight recorded within the previous year; and c) with documented evidence of growth faltering, by audit year for all participating health centres.

| | Year | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|-------------------------------------|---------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Number of Health Centres | | 21 | 32 | 38 | 36 | 83 | 82 | 68 |
| Number of audit records | Mean | 26.9 | 28.7 | 25.7 | 27.1 | 30.7 | 29.9 | 29.0 |
| | <i>Median</i> | 30 | 30 | 29.5 | 28 | 30 | 26 | 22.5 |
| | (Range) | (15-30) | (12-53) | (8-30) | (7-60) | (6-90) | (6-94) | (5-98) |
| Weight Recorded | Mean | 23.4 | 23.5 | 22.6 | 24.6 | 27.6 | 27.0 | 26.6 |
| | <i>Median</i> | 25 | 22.5 | 23.5 | 25.5 | 24 | 24 | 20 |
| | (Range) | (12-30) | (9-52) | (7-30) | (7-57) | (5-88) | (5-84) | (5-89) |
| Evidence of Growth Faltering | Mean | 4.8 | 4.1 | 4.3 | 3.6 | 3.8 | 3.9 | 4.3 |
| | <i>Median</i> | 3 | 3 | 3 | 3 | 2 | 2 | 2 |
| | (Range) | (0-16) | (0-16) | (0-10) | (0-14) | (0-20) | (0-25) | (0-19) |

Table 6: Mean, median and range of the number of children's records a) audited; b) with a weight recorded within the previous year; and c) with documented evidence of growth faltering, by audit cycle for health centres that have at least three years of audit data.

| | Audit Cycle | 1 | 2 | 3 | 4 | 5 |
|-------------------------------------|---------------|-------------|-------------|-------------|-------------|-------------|
| Number of Health Centres | | 71 | 71 | 71 | 38 | 17 |
| Number of audit records | Mean | 27.7 | 27.1 | 27.1 | 28.6 | 30.2 |
| | <i>Median</i> | 29 | 27 | 27 | 26 | 30 |
| | (Range) | (8-90) | (8-72) | (6-98) | (5-61) | (10-63) |
| Weight Recorded | Mean | 25.1 | 24.4 | 24.8 | 25.3 | 28.3 |
| | <i>Median</i> | 25 | 23 | 23 | 24 | 27 |
| | (Range) | (7-88) | (6-57) | (5-85) | (5-54) | (10-59) |
| Evidence of Growth Faltering | Mean | 4.2 | 3.7 | 3.7 | 2.7 | 3.2 |
| | <i>Median</i> | 2 | 3 | 1 | 1 | 2 |
| | (Range) | (0-16) | (0-14) | (0-20) | (0-14) | (0-11) |

Follow-up of Growth Faltering

In summary, there was continuing wide variation between health centres in the recording of follow-up actions for children with a record of growth faltering. For health centres that completed three or more audit cycles, there appears to be some improvement and a reduction in variation in recording follow-up actions.

The total number of children with a record of growth faltering across all participating health centres for each year ranged between 101 and 321 (Figure 7 A1). For all children with a record of growth faltering, the audit process looked for evidence in the child health records of four follow-up actions relevant to growth faltering. These actions were: clinical assessment; follow-up weight check; nutrition advice; and an action plan.

The evidence on follow-up action is based largely on the records from a relatively small proportion of health centres that were identifying relatively larger numbers of children with growth faltering – with 19 or more children in at least one centre in each of the years 2011, 2012 and 2013 (Table 5 and 6).

The most commonly recorded follow-up action was a follow-up weight check, with clinical assessment and nutrition advice being less commonly recorded and an action plan least commonly recorded (Figure 7 A1-4). At least 50% of health centres from 2008 had a follow-up weight for all children with a record of growth faltering (Figure 7 A2), while 50% or more of the health centres had an action plan recorded for only about 50 or 60% of children with a record of growth faltering (Figure 7 A4).

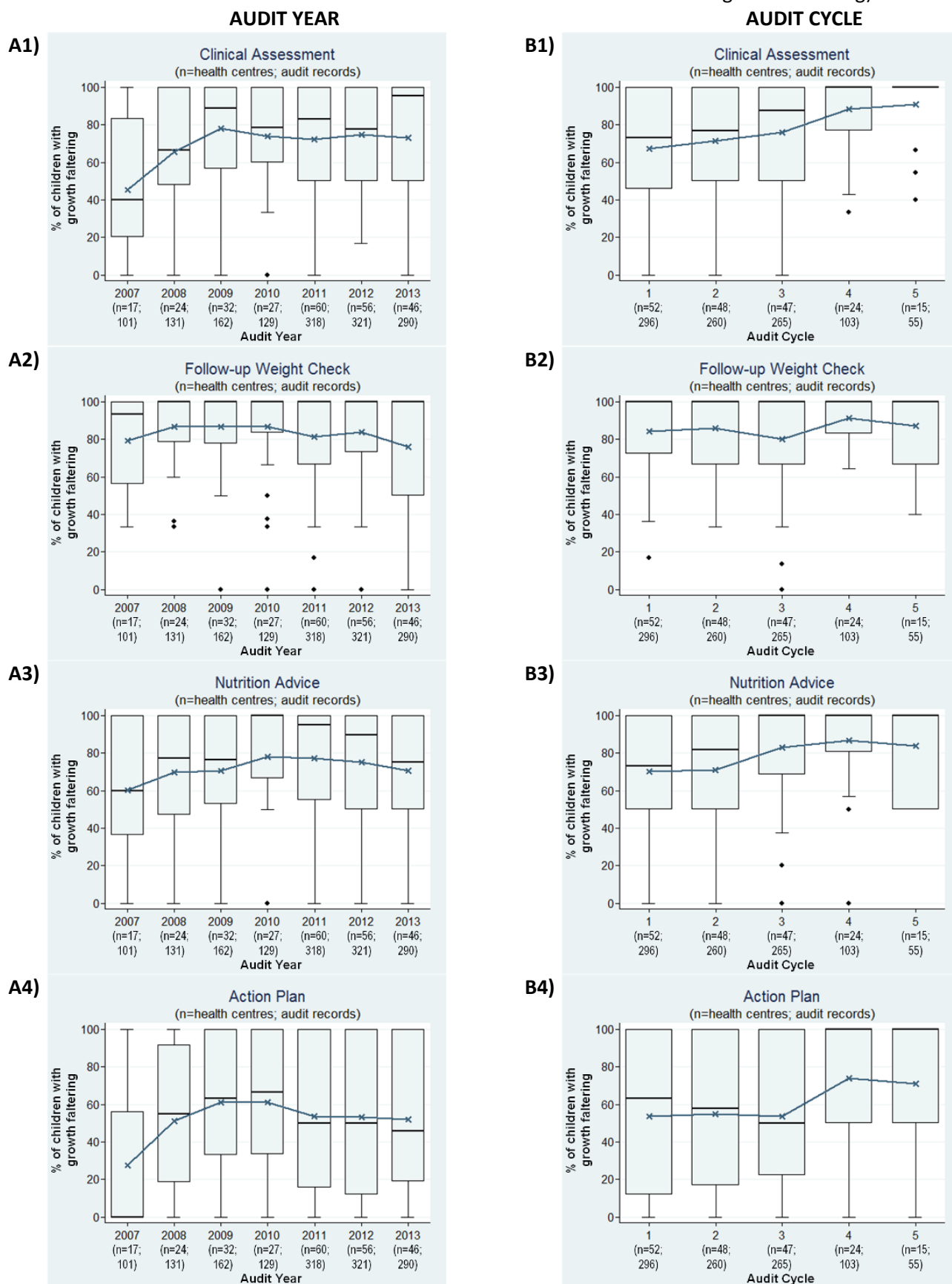
There appears to have been an improvement in the mean and the median level of recording follow-up actions among participating health centres between 2007 and 2010, but no clear improvement between 2010 and 2013 (Figure 7 A1-4). The variation between health centres in recording each of these follow-up actions was between zero and 100% for almost all years, with no clear trend in the reduction of variation between health centres over years (Figure 7 A1-4).

For health centres that had participated in three or more audit cycles, there was an increase in the third to fifth cycle in the median and the mean levels of recorded follow-up clinical assessments, nutrition advice, and action plans, as well as a reduction in variation and improvement in health centres at the low end of the range (Figure 7 B1-4).

Questions regarding barriers and enablers to improvement:

- 1. What are the reasons for the low levels of recording of key follow-up actions for children with growth faltering in many health centres?*
- 2. What are the reasons for the continuing wide variation between health centres in recording of key follow-up actions for children with growth faltering?*
- 3. What are the reasons for the relatively low recording of a) action plans, b) nutrition advice, and c) clinical assessments for children with growth faltering?*
- 4. To what extent has continued participation in CQI contributed to the apparent improvement in recording of follow-up actions in health centres that have completed three or more audit cycles?*

Figure 7: Mean percent of children with growth faltering who had documented evidence of 1) clinical assessment 2) follow-up weight check, 3) nutrition advice and 4) an action plan, by A) audit year for all health centres and B) audit cycle for health centres that have at least 3 years of audit data (n=number of health centres; number of children records audited who had documented evidence of growth faltering).



Recording of ear examinations and chronic ear infections

In summary, there was an improving trend in recording ear examinations, as well as a reduction in variation between health centres over years and across successive audit cycles. There is also some reduction in variation between health centres in recording chronic ear infections over years, and a more clear reduction in variation over successive cycles for health centres that completed three or more audit cycles.

More than half of the participating health centres had a record of an ear examination present in around 80% or more of children's records for all years and across all audit cycles (Figures 8 A1 and B1). There was an increasing trend in the median level of recorded ear examinations over years, with about half the health centres having an ear exam record in about 90% of children's records for 2012 and 2013 (Figure 8 A1). There was wide variation between health centres in recording ear examinations, with health centres at the lower end of the range recording ear examinations in less than 50% of children in each year (Figure 8 A1), and limited indication of a reduction in variation over years.

For health centres that had completed at least three audit cycles there was also an increasing trend in the median level of recording ear examinations over audit cycles, as well as a reduction in variation with improvement in levels for health centres at the lower end of the range (Figure 8 B1).

There was a decline in the levels of recording evidence of chronic ear infections from 2008 for all children who attended over the last 12 months (Figure 8 A2). There was also a decline in the levels and a reduction in variation over audit cycles (Figure 8 B2). The trends in recording evidence of chronic ear infections as a proportion of children who actually had an ear examination (Figures 9 A and B) are similar to the trends for all children who attended over the last 12 months (Figure 8A2 and B2), although the levels are slightly higher.

The decline in recording of chronic ear infections is consistent with the increase in ear examinations, where it appears that an increasing proportion of ear examinations are being done as general checks rather than for children with signs or symptoms of chronic ear infection. However, there continued to be a number of health centres where at least 40% of children who have attended, or who have had an ear examination, have evidence of chronic ear infection (Figures 8 A2 and 9 A). Two possible explanations for this are a) continuing exceptionally high prevalence of chronic ear infection among children in these communities, and b) a tendency for ear examinations to be done largely in response to signs or symptoms of chronic ear infection rather than as a general check for ear health in asymptomatic children.

Questions regarding barriers and enablers to improvement:

- 1. What are the reasons for the low levels of recording in some health centres of key aspects of child health clinical assessments, such as ear examinations?*
- 2. What are the reasons for the wide variation between health centres in the recording of evidence of chronic ear infection? It is unlikely that the wide variation between health centres in the recording of ear examinations is entirely due to differences in the prevalence of chronic ear infection in the different communities served by these health centres.*
- 3. It appears that in some health centres a large proportion of ear examinations are done for children who have signs or symptoms of ear infection rather than as routine checks for ear health. What are the reasons for this?*
- 4. To what extent has continued participation in CQI contributed to the apparent reduction in variation in recording of evidence of chronic ear infections between health centres? Is continued participation in CQI processes contributing to improved consistency or standardisation in recording of chronic ear infections? What factors may be contributing to this improvement?*

Figure 8: Mean percent of children attending within the previous 12 months who 1) had an ear exam and 2) had evidence of chronic ear infection, by A) audit year for all health centres and B) audit cycle for health centres that have at least 3 years of audit data (n=number of health centres; number of children records audited who attended in previous 12 months).

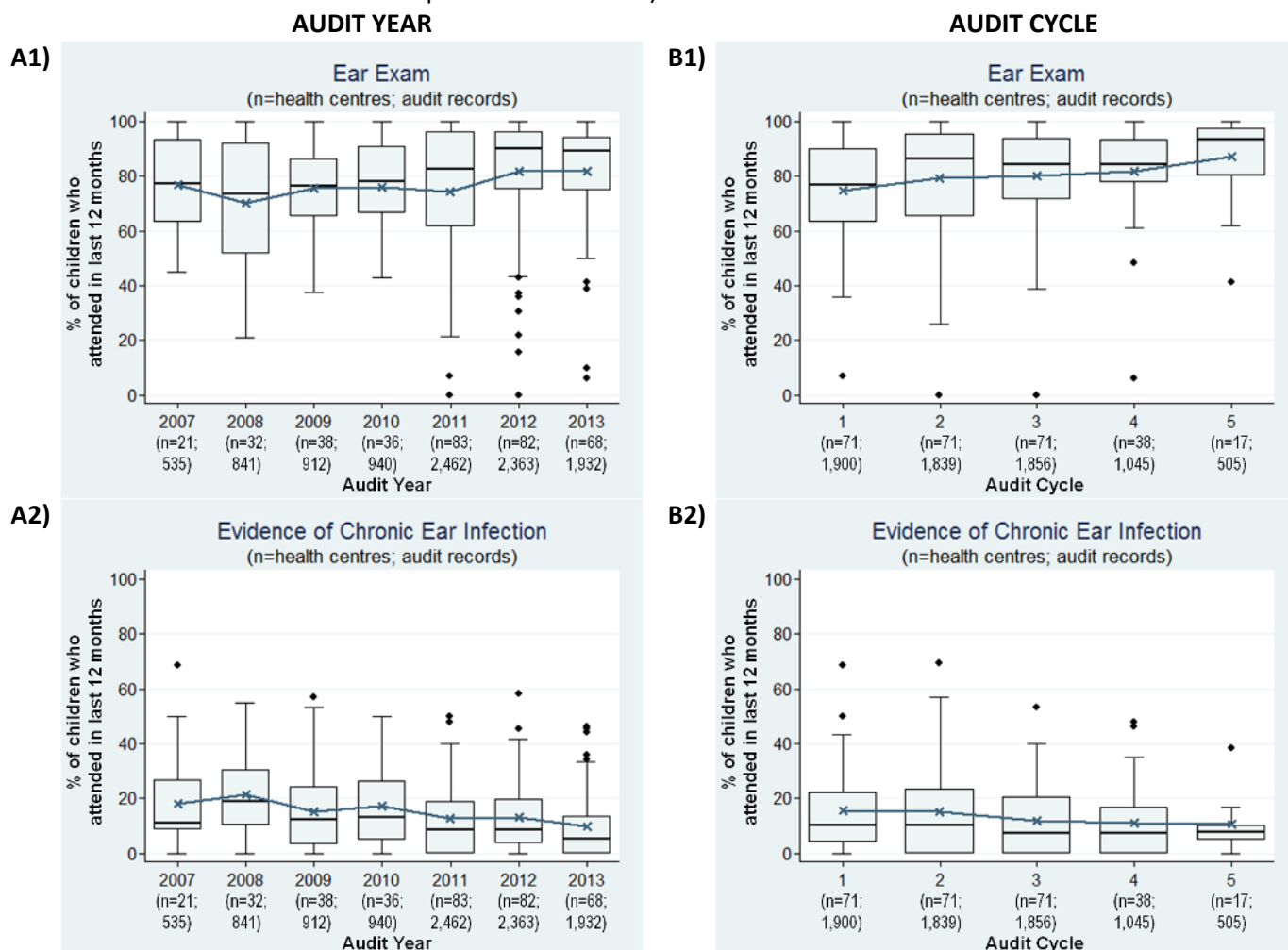


Figure 9: Mean percent of children with an ear examination who had documented evidence of chronic ear infection, by A) audit year and B) audit cycle for health centres that have at least 3 years of audit data (n=number of health centres; number of children records audited who had an ear examination).

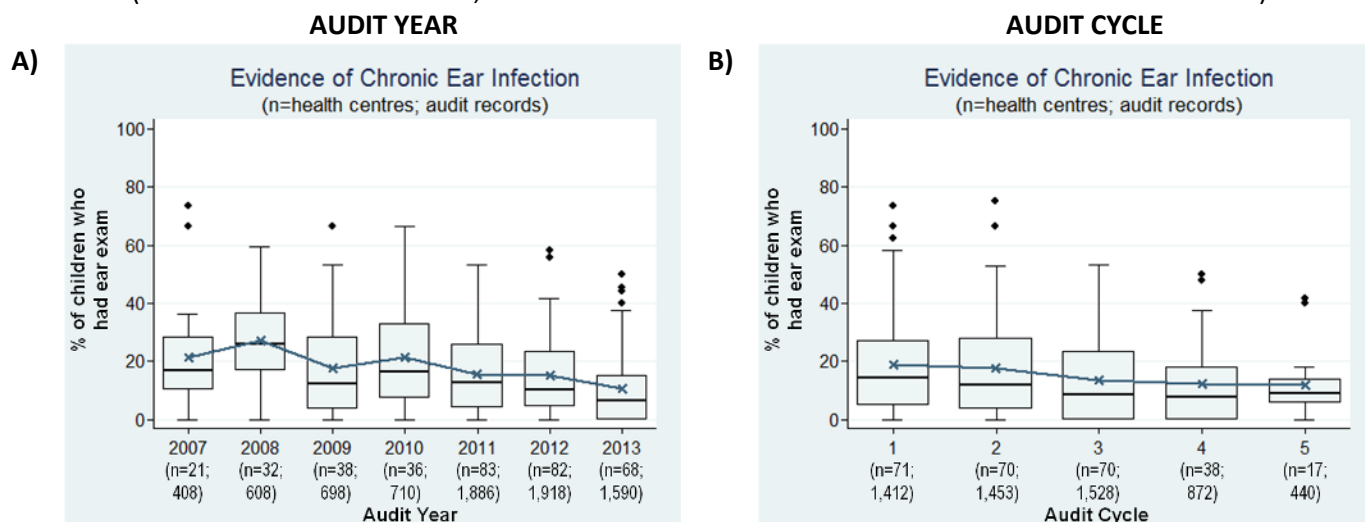


Table 7: Mean, median and range of the number of children records audited, with an ear examination and documented evidence of chronic ear infection, by audit year across all health centres.

| Audit Year | | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|-----------------------------------|---------|---------|---------|--------|--------|--------|--------|--------|
| Number of Health Centres | | 21 | 32 | 38 | 36 | 83 | 82 | 68 |
| Number of audit records | Mean | 26.9 | 28.7 | 25.7 | 27.1 | 30.7 | 29.9 | 29.0 |
| | Median | 30 | 30 | 29.5 | 28 | 30 | 26 | 22.5 |
| | (Range) | (15-30) | (12-53) | (8-30) | (7-60) | (6-90) | (6-94) | (5-98) |
| Ear Exam Documented | Mean | 19.4 | 19.0 | 18.4 | 19.7 | 22.7 | 23.4 | 23.4 |
| | Median | 19 | 17 | 18 | 18.5 | 21 | 22 | 16.5 |
| | (Range) | (11-28) | (5-47) | (6-30) | (3-41) | (0-89) | (0-82) | (1-88) |
| Evidence of Chronic Ear Infection | Mean | 4.3 | 5.9 | 3.3 | 3.8 | 3.7 | 3.5 | 2.8 |
| | Median | 3 | 4.5 | 2 | 3 | 2 | 2 | 1 |
| | (Range) | (0-14) | (0-28) | (0-16) | (0-11) | (0-18) | (0-18) | (0-16) |

Table 8: Mean, median and range of the number of children records audited, with an ear exam and documented evidence of chronic ear infection, by audit cycle across health centres that have at least 3 years of audit data.

| Audit Cycle | | 1 | 2 | 3 | 4 | 5 |
|-----------------------------------|---------|--------|--------|--------|--------|---------|
| Number of Health Centres | | 71 | 71 | 71 | 38 | 17 |
| Number of audit records | Mean | 27.7 | 27.1 | 27.1 | 28.6 | 30.2 |
| | Median | 29 | 27 | 27 | 26 | 30 |
| | (Range) | (8-90) | (8-72) | (6-98) | (5-61) | (10-63) |
| Ear Exam Documented | Mean | 19.9 | 20.5 | 21.5 | 22.9 | 25.9 |
| | Median | 20 | 20 | 18 | 22 | 25 |
| | (Range) | (4-89) | (0-48) | (0-88) | (1-51) | (7-63) |
| Evidence of Chronic Ear Infection | Mean | 3.6 | 3.6 | 3.2 | 3.4 | 2.9 |
| | Median | 2 | 2 | 2 | 2 | 2 |
| | (Range) | (0-14) | (0-15) | (0-16) | (0-18) | (0-10) |

In summary, over years, there was continuing wide variation between health centres in the recording of follow-up actions for children with recorded evidence of ear infection, although there is some evidence of improvement overall. There appears to be improvement associated with completion of three or more audit cycles in recording of two out of four key follow-up actions (antibiotic prescription and follow-up ear examination) as well as a reduction in variation between health centres in recording of these two follow-up actions.

The total number of children with a record of evidence of chronic ear infection across all participating health centres for each year ranged between 90 and 309 (Figure 10 A1). For all children with a record of evidence of ear infection, the audit process looked for evidence in the child health records of four follow-up actions relevant to chronic ear infection. These actions were: antibiotic prescription; follow-up ear examination; ear care advice; and an action plan.

The evidence on follow-up action is based largely on the records from a relatively small proportion of health centres that were identifying relatively larger numbers of children with chronic ear infection – with 16 or more children in at least one centre in each of the years 2011, 2012 and 2013 (Table 7 and 8).

The most commonly recorded follow-up actions were antibiotic prescriptions and follow-up ear examinations, with ear care advice being less commonly recorded and an action plan least commonly recorded (Figure 10 A1-4). At least 50% of health centres had a record of antibiotic prescription and follow-up ear exam for all children with recorded chronic ear infection (Figure 10 A1-2), while 50% or more of the health centres had an action plan recorded for between 50% and 70% of children with a recorded chronic ear infection in each year from 2008 (Figure 10 A4).

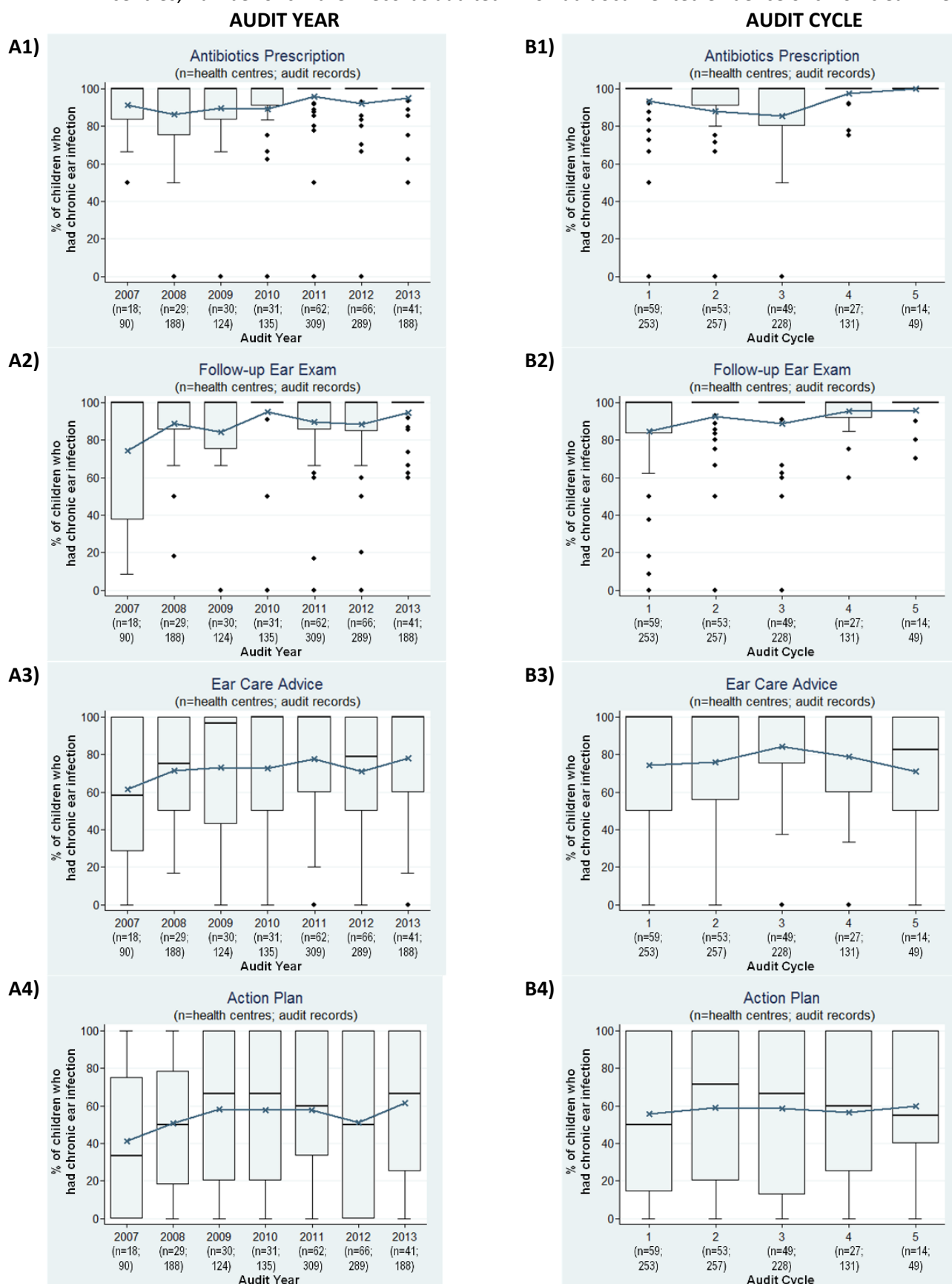
There appears to have been an improvement in the mean level of recording of antibiotic prescription and follow-up ear examination for children with evidence of chronic ear infection between 2007 and 2013, as well as a reduction in variation between health centres in recording of these two follow-up actions. There appears to have been an improvement in the mean level of recording of ear care advice and action planning for children between 2007 and 2010, but no clear improvement between 2010 and 2013 (Figure 10 A1-4). The variation between health centres in recording of follow-up ear care advice and action plans was between zero and 100% for almost all years, with no clear trend in the reduction of variation between health centres for these two follow-up actions over all years (Figure 10 A1-4).

For health centres that had participated in three or more audit cycles there was an increase in mean levels of antibiotic prescription and follow-up ear examination, as well as a reduction in variation and improvement in health centres at the low end of the range in the third to the fifth cycle (Figure 10 B1-4). There was no improvement or reduction in variation between health centres for ear care advice or action plans in association with completion of more audit cycles.

Questions regarding barriers and enablers to improvement:

1. *What are the reasons for the low levels of recording of key follow-up actions for children with chronic ear infection in many health centres?*
2. *What are the reasons for the continuing wide variation between health centres in recording of key follow-up actions for children with chronic ear infection?*
3. *What are the reasons for the relatively low recording of a) action plans, and b) ear care advice, for children with chronic ear infection in some health centres?*
4. *To what extent has continued participation in CQI contributed to the apparent improvement in recording of antibiotics prescription and ear examination as follow-up actions for children with chronic ear infection in health centres that have completed three or more audit cycles?*

Figure10: Mean percent of children with chronic ear infection who had documented evidence of 1) antibiotics prescription; 2) follow-up ear exam; 3) ear care advice and 4) an action plan, by A) audit year for all health centres and B) audit cycle for health centres that have at least 3 years of audit data (n=number of health centres; number of children records audited who had documented evidence of chronic ear infection).



Haemoglobin checks and evidence of anaemia

In summary, there is no clear indication that there has been a change in the patterns of routine checking for anaemia, or in recording evidence of anaemia, across years or audit cycles.

More than half of the participating health centres had a record of a haemoglobin check in about 60% of children's records from 2008 with no clear increasing or decreasing trend over years (Figure 11 A1). The Figure also shows that between 2011 and 2013, health centres in the top quartile had a haemoglobin check recorded in over 80% of children's records.

There was a slight declining trend in the median and mean level of recording of a haemoglobin check over successive audit cycles for health centres that had completed at least three audit cycles (Figure 11 B1). There was no clear reduction in variation in recording of haemoglobin checks over years or across audit cycles (Figure 11 A1 and B1).

The median and mean level of recording of evidence of anaemia as a proportion of all children who attended in the previous 12 months was steady across years and audit cycles (Figures 11 A2 and B2). There was also no clear change in variation between health centres over years or across audit cycles (Figures 11 A2 and B2).

Apart from slightly higher levels, the trends in recording evidence of anaemia as a proportion of children who actually had a haemoglobin check (Figures 12 A and B) are similar to the trends for all children who attended over the last 12 months (Figures 11 A2 and B2). However, there is some indication of a declining trend over years, and the small increase in the mean and median level in the fifth audit cycle is more obvious. The changes in the fifth audit cycle, including the decrease in the range between the 25th and 75th centile, are likely to be at least partly due to differences in the characteristics of the relatively small number of centres (12) that had a record of children with a haemoglobin check, compared with health centres (17) that did not necessarily have any children with a record of a haemoglobin check.

Questions regarding barriers and enablers to improvement:

1. *What are the reasons for the low levels of recording in some health centres of key aspects of child health clinical assessments, such as checking children's haemoglobin levels?*
2. *What are the reasons for the wide variation between health centres in the recording of evidence of anaemia? It is unlikely that the wide variation between health centres in the recording of anaemia is entirely due to differences in the prevalence of anaemia in the different communities served by these health centres.*
3. *It appears that in some health centres a large proportion of haemoglobin checks are done for children who have signs or symptoms of anaemia rather than as a part of a more general clinical examination. What are the reasons for this?*

Figure 11: Mean percent of children attending within the previous 12 months who 1) had a haemoglobin check and 2) had evidence of anaemia, by A) audit year for all health centres and B) audit cycle for health centres that have at least 3 years of audit data (n=number of health centres; number of children records audited who attended in previous 12 months).

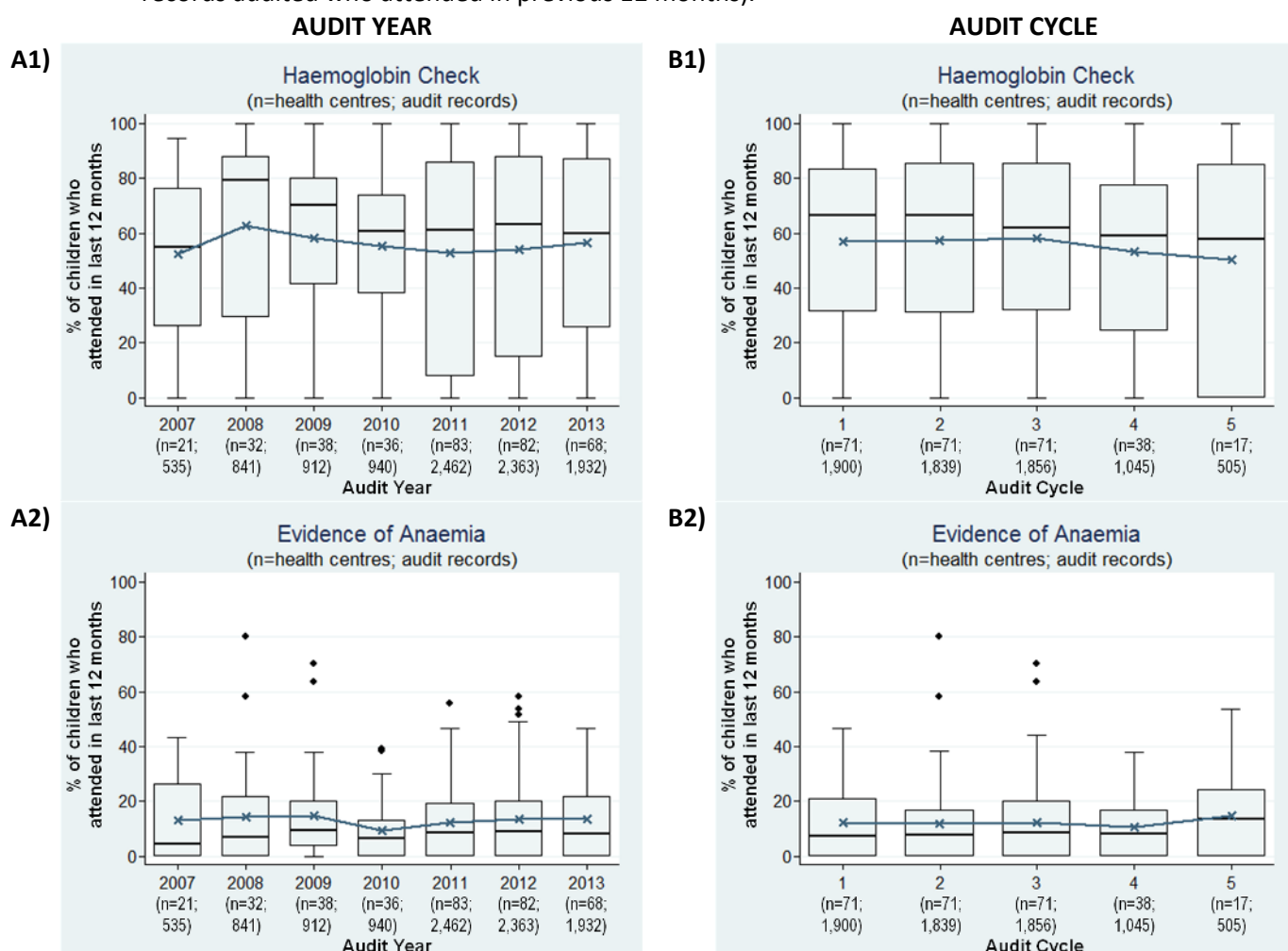


Figure 12: Mean percent of children with a haemoglobin check who had documented evidence of anaemia, by A) audit year for all health centres and B) audit cycle for health centres that have at least 3 years of audit data (n=number of health centres; number of children records audited who had a haemoglobin check).

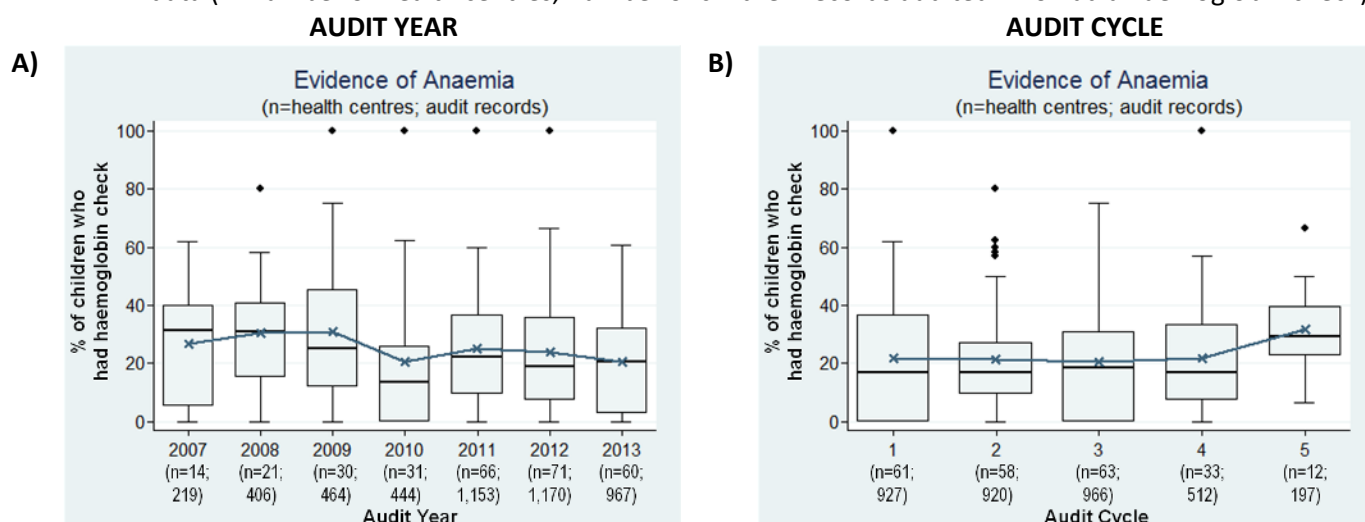


Table 9: Mean, median and range of the number of children records audited, with a haemoglobin check and documented evidence of anaemia, by audit year across all health centres.

| Audit Year | | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|------------------------------|---------|---------|---------|--------|--------|--------|--------|--------|
| Number of Health Centres | | 21 | 32 | 38 | 36 | 83 | 82 | 68 |
| Number of audit records | Mean | 26.9 | 28.7 | 25.7 | 27.1 | 30.7 | 29.9 | 29.0 |
| | Median | 30 | 30 | 29.5 | 28 | 30 | 26 | 22.5 |
| | (Range) | (15-30) | (12-53) | (8-30) | (7-60) | (6-90) | (6-94) | (5-98) |
| Haemoglobin check documented | Mean | 10.4 | 12.7 | 12.2 | 12.3 | 13.9 | 14.3 | 14.2 |
| | Median | 12 | 13.5 | 13.5 | 13.5 | 13 | 14.5 | 12 |
| | (Range) | (0-27) | (0-47) | (0-28) | (0-27) | (0-43) | (0-55) | (0-70) |
| Evidence of Anaemia | Mean | 3.0 | 3.8 | 3.4 | 2.4 | 3.3 | 3.9 | 3.6 |
| | Median | 1 | 2 | 2 | 1 | 2 | 2 | 2 |
| | (Range) | (0-13) | (0-17) | (0-21) | (0-10) | (0-16) | (0-24) | (0-24) |

Table 10: Mean, median and range of the number of children records audited, with a haemoglobin check and documented evidence of anaemia, by audit cycle across health centres that have at least 3 years of audit data.

| Audit Cycle | | 1 | 2 | 3 | 4 | 5 |
|------------------------------|---------|--------|--------|--------|--------|---------|
| Number of Health Centres | | 71 | 71 | 71 | 38 | 17 |
| Number of audit records | Mean | 27.7 | 27.1 | 27.1 | 28.6 | 30.2 |
| | Median | 29 | 27 | 27 | 26 | 30 |
| | (Range) | (8-90) | (8-72) | (6-98) | (5-61) | (10-63) |
| Haemoglobin check documented | Mean | 13.1 | 13.0 | 13.6 | 13.5 | 11.6 |
| | Median | 14 | 14 | 13 | 14 | 15 |
| | (Range) | (0-30) | (0-44) | (0-44) | (0-43) | (0-24) |
| Evidence of Anaemia | Mean | 2.8 | 2.8 | 3.1 | 3.1 | 3.9 |
| | Median | 2 | 2 | 3 | 2 | 2 |
| | (Range) | (0-14) | (0-16) | (0-21) | (0-14) | (0-14) |

Follow-up of anaemia

In summary, there is continuing wide variation between health centres in the recording of follow-up actions for children with a record of evidence of anaemia. There is little indication in the available data of improvement associated with completion of three or more audit cycles, or of a reduction in variation between health centres in recording of follow-up actions.

The total number of children with a record of evidence of anaemia across all participating health centres for each year ranged between 63 and 320 (Figure 13 A1). For all children with a record of evidence of anaemia, the audit process looked for evidence in the child health records of four follow-up actions relevant to anaemia. These actions were: deworming treatment; follow-up haemoglobin; iron prescription; and nutrition advice.

The evidence on follow-up action is based largely on the records from a relatively small proportion of health centres that were identifying relatively larger numbers of children with anaemia – with 16 or more children in at least one centre in each of the years 2011, 2012 and 2013 (Table 9 and 10).

The most commonly recorded follow-up actions in 2012 and 2013 was nutrition advice, with half the health centres having a record of nutrition advice for between 70% and 80% of children who had anaemia (Figure 13 A4). Nutrition advice was not checked for in One21seventy audits before 2011, so data on nutrition advice is not available for earlier years. Over years, approximately half of the health centres had a record of iron prescription for about 50% of children with anaemia, with similar figures for deworming treatment and follow-up haemoglobin (Figure 13 A1-3).

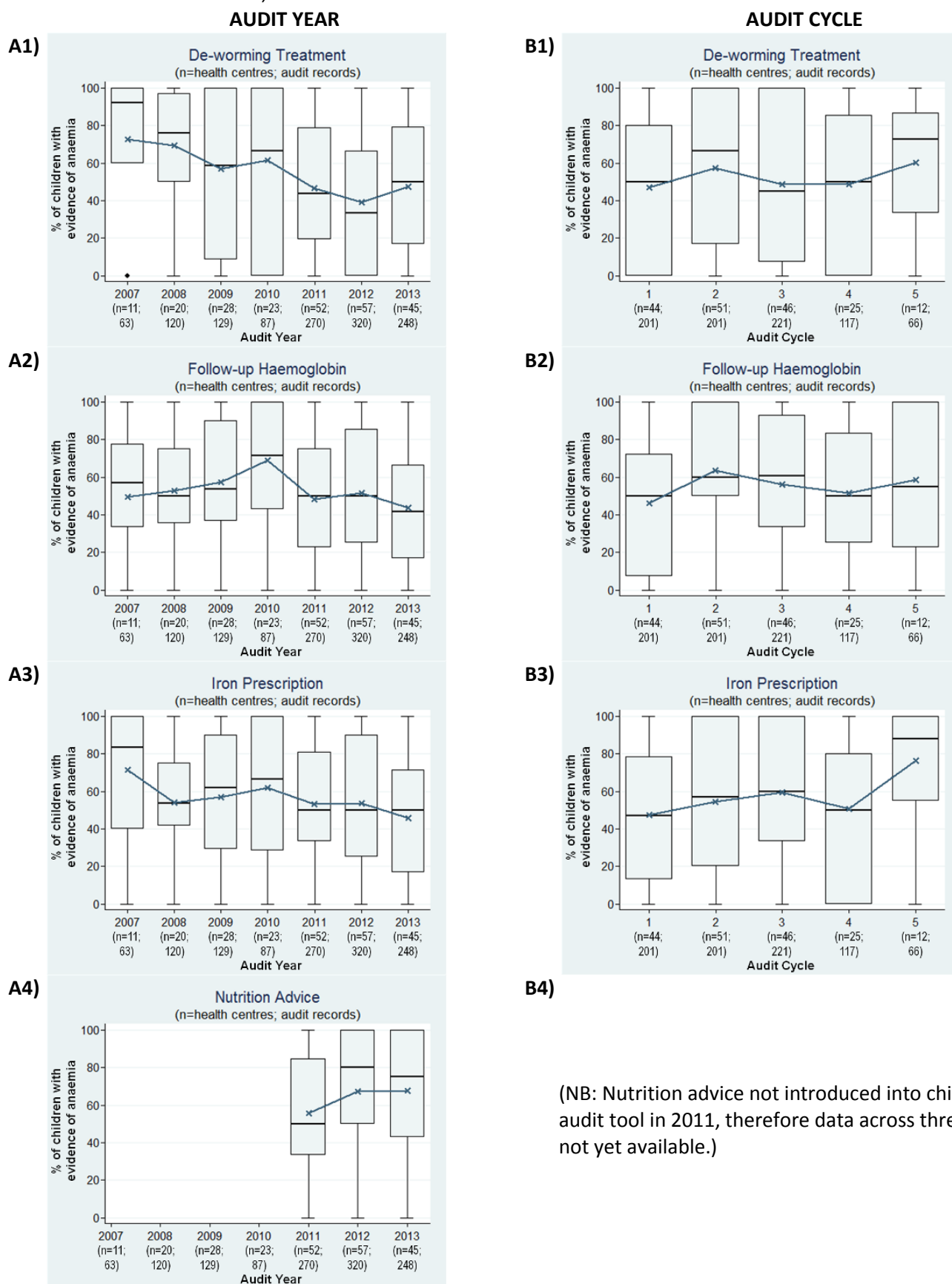
There was wide variation between health centres in recording of all four follow-up actions across all years, with no indication of a decrease in variation over the years (Figure 13 A1-4).

For health centres that had participated in three or more audit cycles, there was no clear indication of improvement or reduction in variation over successive audit cycles (Figure 13 B1-3), except possibly in recording of deworming and iron prescription in the relatively small number of health centres that had completed five audit cycles.

Questions regarding barriers and enablers to improvement:

1. *What are the reasons for the low levels of recording of key follow-up actions for children with anaemia in many health centres?*
2. *What are the reasons for the continuing wide variation between health centres in recording of key follow-up actions for children with anaemia?*
3. *What are the reasons for the apparent limited effect to date of participation in CQI on recording of follow-up actions for children with anaemia?*

Figure 13: Mean percent of children with anaemia who had documented evidence of 1) de-worming treatment; 2) a follow-up haemoglobin check; 3) iron prescription; and 4) nutrition advice by A) audit year for all health centres and B) audit cycle for health centres that have at least 3 years of audit data (n=number of health centres; number of children records audited who had documented evidence of anaemia).



Developmental milestones and evidence of developmental delay

In summary, there is continuing wide variation between health centres in recording assessment of developmental milestones among participating health centres over 2007 to 2013, with some evidence of an improvement between 2007 and 2010. For health centres that had completed at least three audit cycles, there was improvement in recording of assessments and in variation between health centres over successive cycles. There is some evidence of increased consistency or standardisation of recording evidence of developmental delay over successive audit cycles.

The indicator used in this report to monitor the gap between current practice and best practice is the recording of assessment of developmental milestones in the previous 12 months for children under the age of four years.

There was improvement in the median and the mean levels of recording of developmental milestones for children under the age of four in participating health centres between 2007 and 2010 (Figure 14A). Between 2009 and 2013, half of the participating health centres had developmental milestones assessment recorded in 70% to 80% of children's records under the age of four (Figure 14A). For these years, health centres in the top quartile had a record of developmental milestones assessment in over 80% of records, whereas a small number of health centres had a record in less than 20% of children's records. There is wide variation between health centres in recording of developmental milestones across all years, with limited indication of a reduction in variation over years.

For health centres that had completed at least three audit cycles, there was an increasing trend in the median and mean level of recording of developmental milestones over successive audit cycles (Figure 14B). There was also a reduction in variation between health centres in recording of developmental milestones over successive audit cycles, with an increase among health centres at the lower end of the range (Figure 14B).

For recording evidence of developmental delay as a proportion of all children who attended in the previous 12 months, the median and mean level appears to have declined over 2007 to 2013, with at least half of the participating health centres not having a record of developmental delay among any of the children whose records were audited in 2012 and 2013 (Figure 15A). For health centres that completed at least three audit cycles, the median and mean level of recording evidence of developmental delay has been fairly steady over successive audit cycles (Figure 15B).

There appears to have been a reduction in variation in recording evidence of developmental delay between health centres over years and across audit cycles, with a reduction in the proportion of children identified with developmental delay particularly for health centres at the higher end of the range (Figures 15A and B). This reduction in variation over time may be an indication of increased standardisation of assessment of developmental delay over years, as the variation in earlier years is unlikely to be due to real variation between communities in the prevalence of developmental delay.

Questions regarding barriers and enablers to improvement:

1. *What are the reasons for the continued wide variation between health centres, and low levels of recording of assessment of developmental milestones in some health centres?*
2. *To what extent has continued participation in CQI contributed to the apparent improvement in recording of assessment of developmental milestones in health centres that have completed three or more audit cycles?*
3. *To what extent has continued participation in CQI contributed to the apparent increased consistency in recording of developmental delay in health centres that have completed three or more audit cycles?*

Figure 14: Mean percent of children <4 years of age attending within the previous 12 months who had a developmental milestones check, by A) audit year for all health centres and B) audit cycle for health centres that have at least 3 years of audit data (n=number of health centres; number of children records audited who attended in previous 12 months).

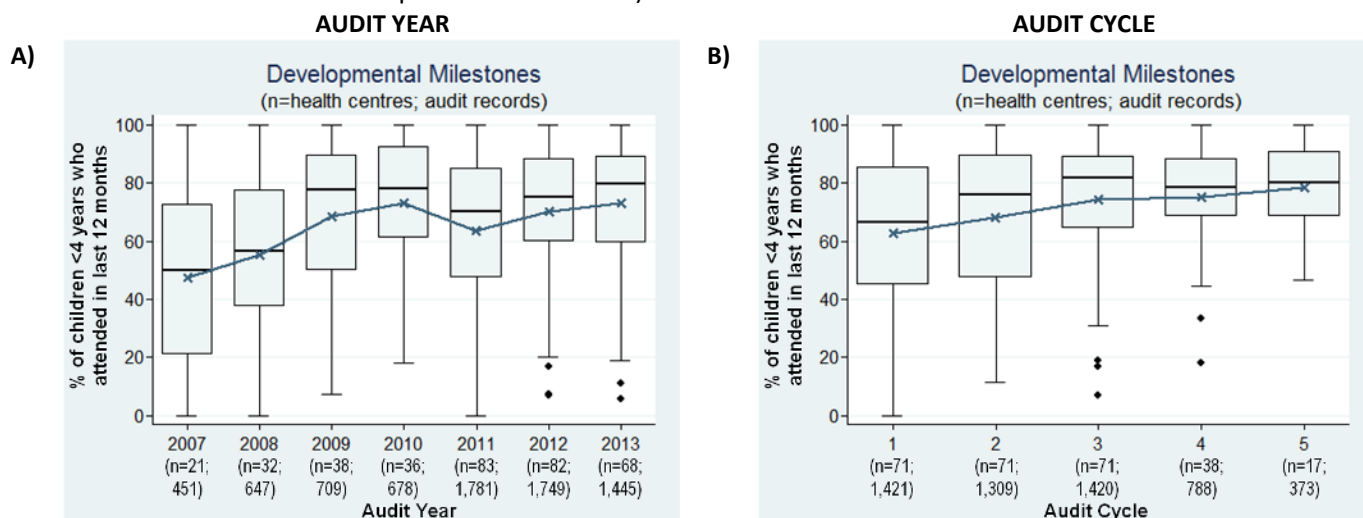


Figure 15: Mean percent of children attending within the previous 12 months who had evidence of developmental delay, by A) audit year for all health centres and B) audit cycle for health centres that have at least 3 years of audit data (n=number of health centres; number of children records audited who attended in previous 12 months).

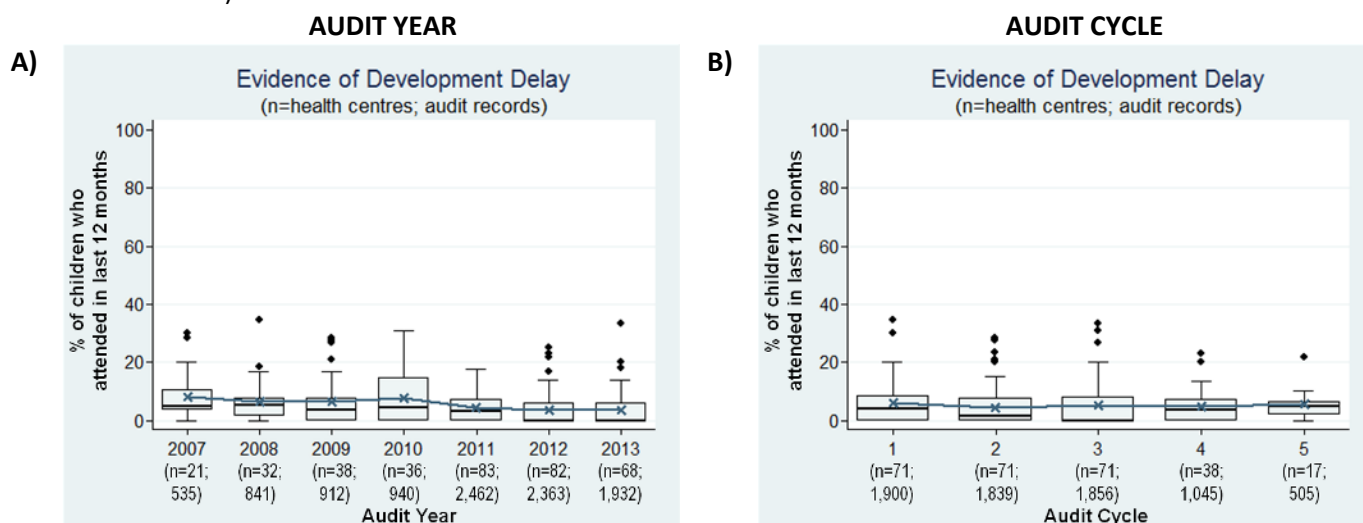


Table 11: Mean, median and range of the number of children records audited, with documented evidence of developmental delay, by audit year across all health centres.

| Audit Year | | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|--|---------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Number of Health Centres | | 21 | 32 | 38 | 36 | 83 | 82 | 68 |
| Number of audit records | Mean | 26.9 | 28.7 | 25.7 | 27.1 | 30.7 | 29.9 | 29.0 |
| | <i>Median</i> | 30 | 30 | 29.5 | 28 | 30 | 26 | 22.5 |
| | (Range) | (15-30) | (12-53) | (8-30) | (7-60) | (6-90) | (6-94) | (5-98) |
| Evidence of Developmental Delay | Mean | 2.1 | 1.7 | 1.6 | 2.1 | 1.4 | 1.1 | 1.0 |
| | <i>Median</i> | 1 | 1 | 1 | 1 | 1 | 0 | 0 |
| | (Range) | (0-9) | (0-9) | (0-8) | (0-8) | (0-10) | (0-6) | (0-13) |

Table 12: Mean, median and range of the number of children records audited, with documented evidence of developmental delay, by audit cycle across health centres that have at least 3 years of audit data.

| Audit Cycle | | 1 | 2 | 3 | 4 | 5 |
|--|---------------|-------------|-------------|-------------|-------------|-------------|
| Number of Health Centres | | 71 | 71 | 71 | 38 | 17 |
| Number of audit records | Mean | 27.7 | 27.1 | 27.1 | 28.6 | 30.2 |
| | <i>Median</i> | 29 | 27 | 27 | 26 | 30 |
| | (Range) | (8-90) | (8-72) | (6-98) | (5-61) | (10-63) |
| Evidence of Developmental Delay | Mean | 1.7 | 1.3 | 1.5 | 1.3 | 1.5 |
| | <i>Median</i> | 1 | 1 | 0 | 1 | 1 |
| | (Range) | (0-10) | (0-8) | (0-13) | (0-6) | (0-5) |

Follow-up of developmental delay

In summary, there is continuing wide variation between health centres in the recording of follow-up actions for children with a record of evidence of developmental delay over years, with some indication of improvement in recent years and for health centres that had completed three or more audit cycles.

The total number of children with a record of evidence of developmental delay across all participating health centres for each year ranged between 44 and 118 (Figure 16 A1). For all children with a record of evidence of developmental delay, the audit process looked for evidence in the child health records of two follow-up actions: referral and follow-up assessment.

The evidence on follow-up action is based largely on the records from a relatively small proportion of health centres that were identifying relatively larger numbers of children with evidence of developmental delay – with between 6 and 13 children in at least one centre in each of the years 2011, 2012 and 2013 (Tables 11 and 12).

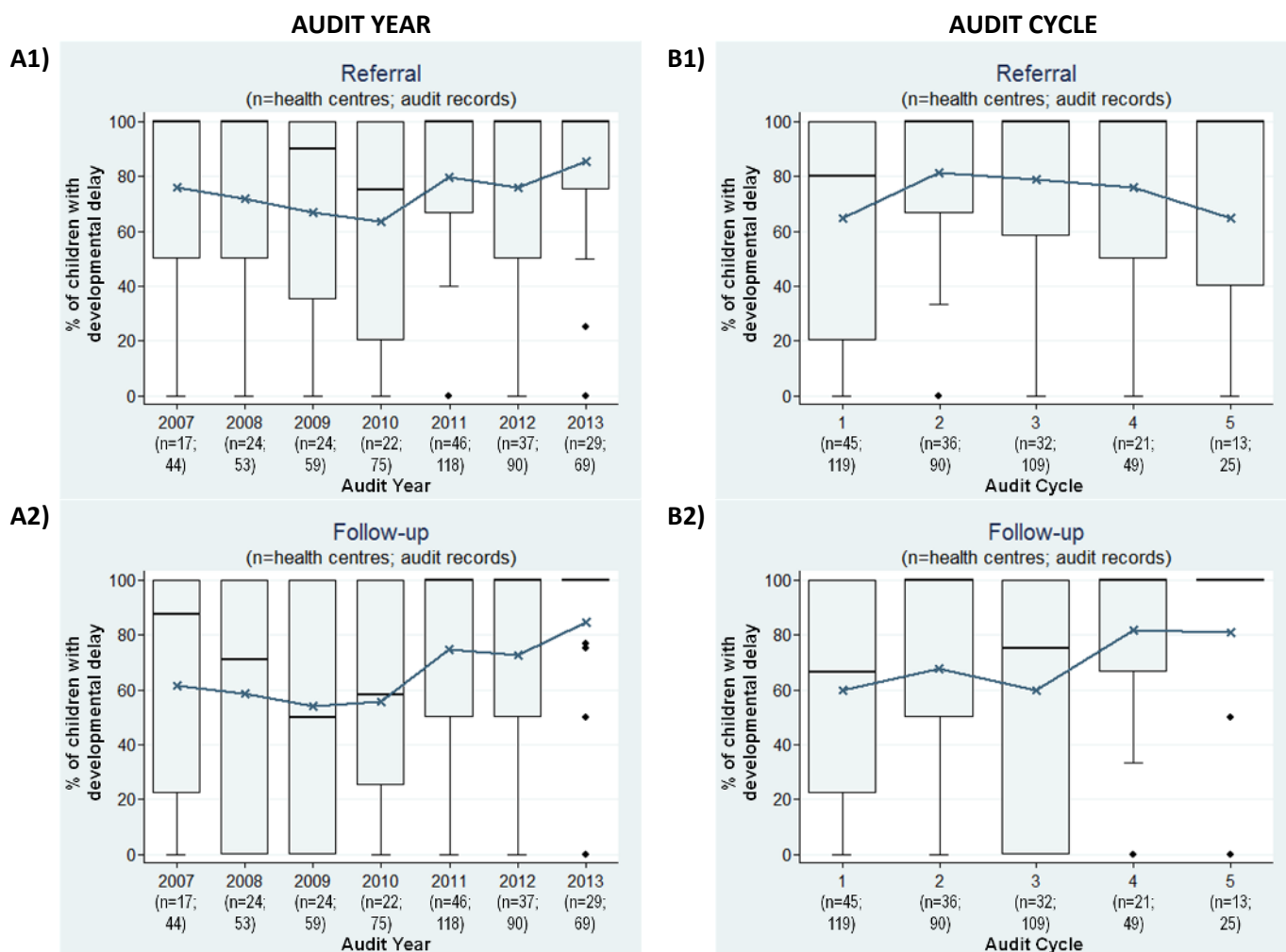
There was some indication of a decrease in variation between health centres in recording of referral and follow-up assessment between 2011 and 2013, although there continued to be some health centres with very low levels of recording of these follow-up actions (Figure 16 A1-2). From 2011 to 2013, at least half of the health centres had a record of referral and at least half had a record of follow-up assessment for all children with evidence of developmental delay (Figure 16 A1-2).

For health centres that had participated in three or more audit cycles, at least half of the health centres had a record of referral for all children with evidence of developmental delay (Figure 16 B1), however, there was no evidence of a decrease in variation between health centres across successive cycles. At least half of the health centres had a record of follow-up assessment for all children with evidence of developmental delay in most audit cycles (Figure 16 B2). While there continued to be a small number of health centres with relatively low recording of follow-up assessment, there is some evidence of a decrease in variation between health centres in the fourth and fifth audit cycles (Figure 16 B2). However, the data for these cycles are less robust as the number of health centres and the number of children records is relatively small.

Questions regarding barriers and enablers to improvement:

- 1. What are the reasons for the low levels of recording of key follow-up actions for children with evidence of developmental delay in some health centres?*
- 2. To what extent has continued participation in CQI contributed to the apparent improvement in recording of follow-up assessment of children with developmental delay in health centres that have completed three or more audit cycles?*
- 3. What are the reasons for the apparent lack of improvement in recording of referral of children with evidence of developmental delay in health centres that have completed three or more audit cycles?*

Figure 16: Mean percent of children with developmental delay who had documented evidence of 1) referral, and 2) follow-up assessment by A) audit year for all health centres and B) audit cycle for health centres that have at least 3 years of audit data (n=number of health centres; number of children records audited who had documented evidence of developmental delay).



5. Advice and brief Interventions

In summary, there has been improvement over years and successive audit cycles in recording discussion of nutrition, physical and mental stimulation, passive smoking, infection prevention and housing condition. There has been a decrease over successive cycles in variation between health centres in recording discussion of nutrition, with notable improvement in health centres at the lower end of the range. There has been continuing wide variation between health centres for other indicators across years and audit cycles.

The priority evidence-practice gaps in relation to ***advice and brief interventions on common risks to health*** were delivery and recording of advice on child nutrition (including breastfeeding), passive smoking, infection prevention and hygiene, injury prevention, domestic/social and environmental conditions (including food security, financial resources, housing conditions, social and family support), and child development (including physical and mental stimulation, physical activity, social and emotional wellbeing, education progress).

This section of the report examines the data on the following indicators relevant to these evidence-practice gaps: record of discussion on nutrition, physical and mental stimulation, passive smoking, infection prevention, and housing condition.

Most of these indicators show a general trend of improvement in the mean and median for all participating health centres over years (Figures 17 A1-5), with a dip in 2011 that coincides with the time that a large number of health centres commenced using the One21seventy tools. There is continued wide variation between health centres across all years, with at least one health centre recording discussion of these issues in all children records audited and at least one health centre having no record of discussion for any children for almost all indicators. There is no evidence of a decrease in variation between health centres across years.

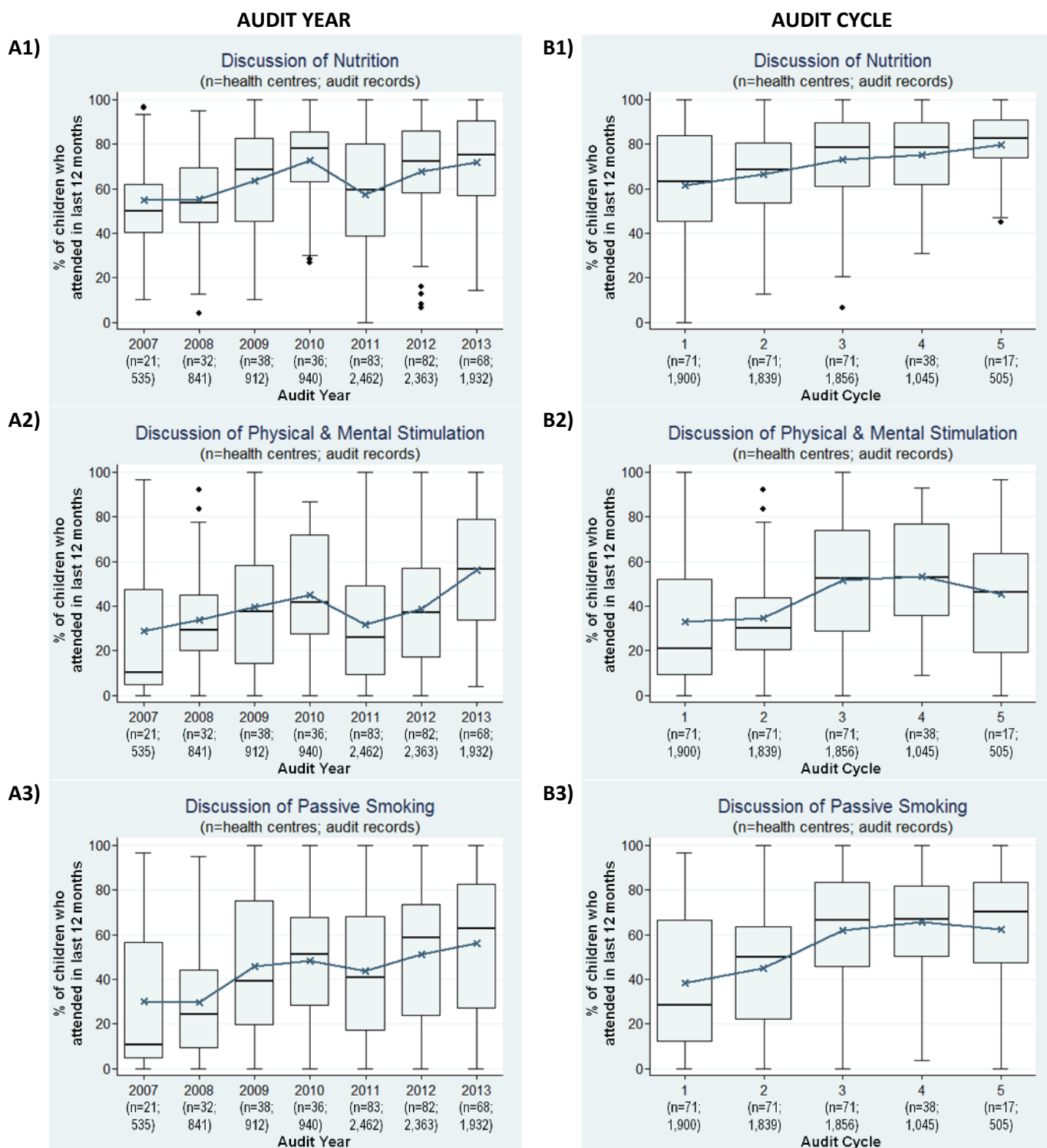
Discussion of nutrition was recorded more commonly than discussion of other issues across all years, and discussion of housing conditions was recorded least commonly (Figures 17 A1-5).

For health centres that participated in three or more audit cycles, there is an improvement in the mean and the median level of recording of discussion of all issues over successive cycles, with the exception of physical and mental stimulation, where there was a decline in the fifth cycle. For discussion of nutrition, there was a decrease in variation between health centres, and an improvement in health centres at the lower end of the range over successive cycles. For other issues, there was no clear indication of reduced variation over successive cycles.

Questions regarding barriers and enablers to improvement:

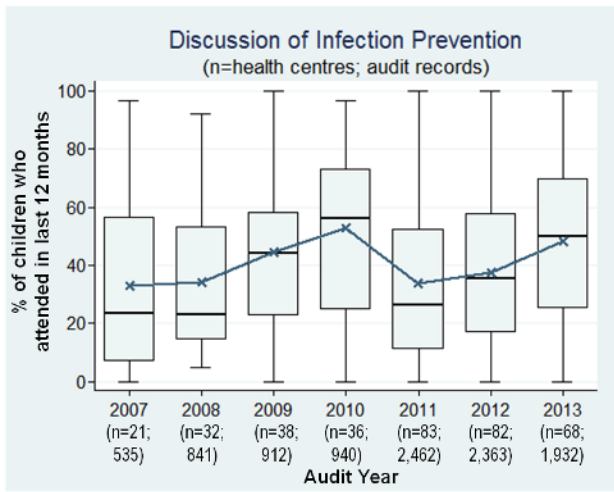
1. *What are the reasons for the general improvement in recording of these key risks to health over the years 2007 to 2013?*
2. *What are the reasons for the continued low levels of recording of these key risks to health in some health centres?*
3. *To what extent has continued participation in CQI contributed to the apparent improvement in recording of these key risks to health in health centres that have completed three or more audit cycles?*
4. *What are the reasons for the apparent lack of improvement in recording of these key risks to health in some health centres that have completed three or more audit cycles?*
5. *What are the reasons for the relatively higher level of recording of discussion of nutrition compared to other key risks to health?*
6. *What are the reasons for the reduction in variation between health centres in discussion of nutrition over successive audit cycles in health centres that have completed three or more audit cycles?*

Figure 17: Percentage of children attending within the past 12 months who had a record of discussion on 1) nutrition, 2) physical and mental stimulation, 3) passive smoking, 4) infection prevention, and 5) housing condition by A) audit year for all health centres and B) audit cycle for health centres that have at least 3 years of audit data (n=number of health centres; number of children records audited who attended in previous 12 months).

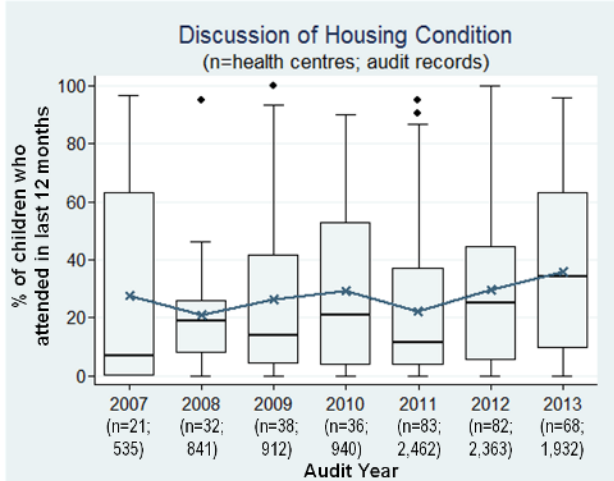


AUDIT YEAR

A4)

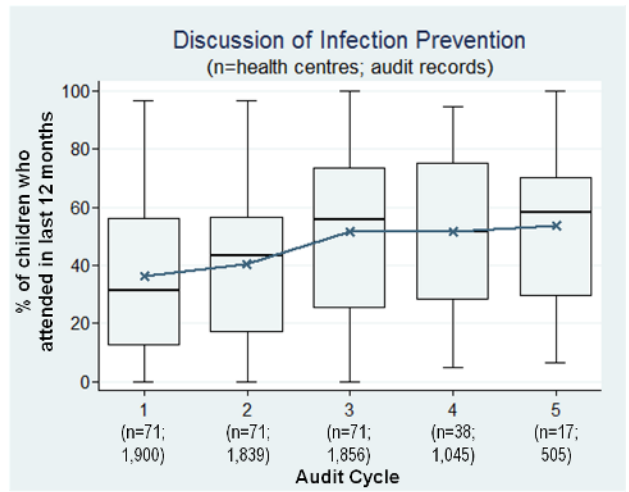


A5)

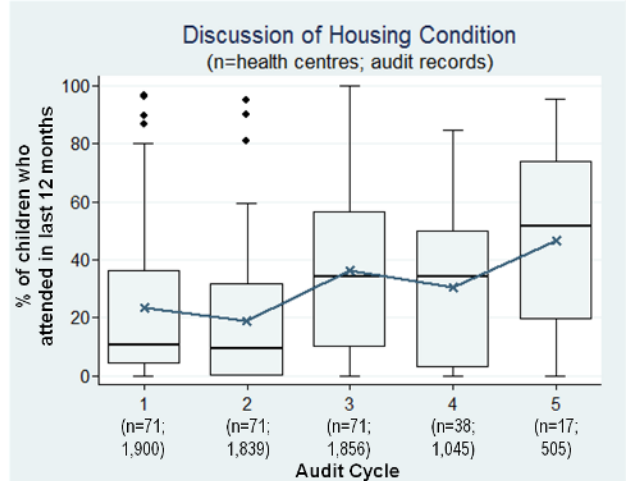


AUDIT CYCLE

B4)



B5)



6. Health Centre Systems

In summary, there has been continued wide variation between all health centres over years in scores for the overall systems assessment, links with community and regional health planning. For health centres that participated in three or more audit cycles, the scores for overall systems assessment, links with community and regional health planning show improvement and decreasing variation between health centres over successive cycles, with an increase in scores for health centres at the lower end of the range.

The priority evidence-practice gaps in relation to **health centre systems** related to low scores across the range of system components, with a particular need for attention to supporting health centres that have scores in the lowest 20% of health centres. With regard to strengthening of specific system components, systems for effective links between health centres and communities, and systems to support regional health planning, were identified as priority areas for improvement.

This section of the report examines the data on the following indicators relevant to these evidence-practice gaps: overall systems assessment scores, and the scores for links with the community and for regional health planning.

The overall systems assessment score shows a slight general trend of improvement in the mean and median for all participating health centres over 2007 to 2012 with a small drop in 2013 (Figure 181 A). For health centres that had participated in three or more audit cycles, there is improvement in the mean and the median scores over successive cycles (Figure 18 B).

There is evidence of increasing variation between health centres across years (Figure 18 A). For health centres that participated in three or more audit cycles, there is evidence of decreasing variation between health centres over successive cycles, with an increase in scores for health centres at the lower end of the range. The increase in variation in overall scores for all health centres is possibly due to participation in recent years of new health centres with less developed systems, and improvement in systems in health centres that have been using One21seventy tools for a number of audit cycles.

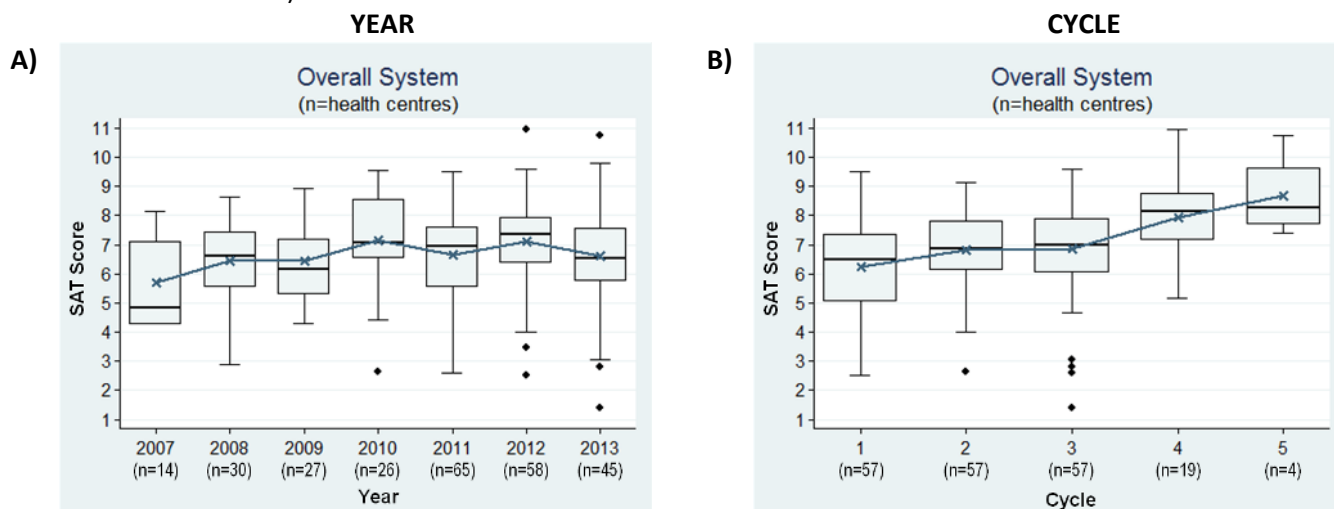
For links with the community, the median and mean scores for all participating health centres are between five and seven across the years 2008 to 2013 (Figure 19 A). Similar to the overall systems score for health centres that participated in three or more audit cycles, there is an improvement in the mean and the median scores for links with community over successive cycles (Figure 19 B). There is also less variation in scores between health centres in the fourth and fifth audit cycles (Figure 19 B).

For regional health planning, the median and mean scores for all participating health centres show a declining trend over the years 2008 to 2013 (Figure 20 A). Again, for health centres that had participated in three or more audit cycles, there is an improvement in the mean and the median scores for regional health planning over successive cycles (Figure 20 B). There is also less variation in scores between health centres in the fourth and fifth audit cycles (Figure 20 B).

Questions regarding barriers and enablers to improvement:

1. *What are the reasons for the continuing wide variation between health centres in the scores for overall systems assessment, links with community and regional health planning?*
2. *To what extent has continued participation in CQI contributed to the apparent improvement in the scores for overall systems assessment, links with community and regional health planning in health centres that have completed three or more audit cycles?*

Figure 18: Overall system assessment score*, by A) year for all health centres and B) cycle for health centres that have at least 3 years of systems assessment data (n=number of health centres that conducted a systems assessment).



*Overall score is the average of each of the five domain scores that make up the total systems assessment (ie, delivery system design, information systems and decision support, self-management support, links with the community, other health services and other resources and organisational influence and integration).

Figure 19: 'Community Links' domain score, by A) year for all health centres and B) cycle for health centres that have at least 3 years of systems assessment data (n=number of health centres that conducted a systems assessment).

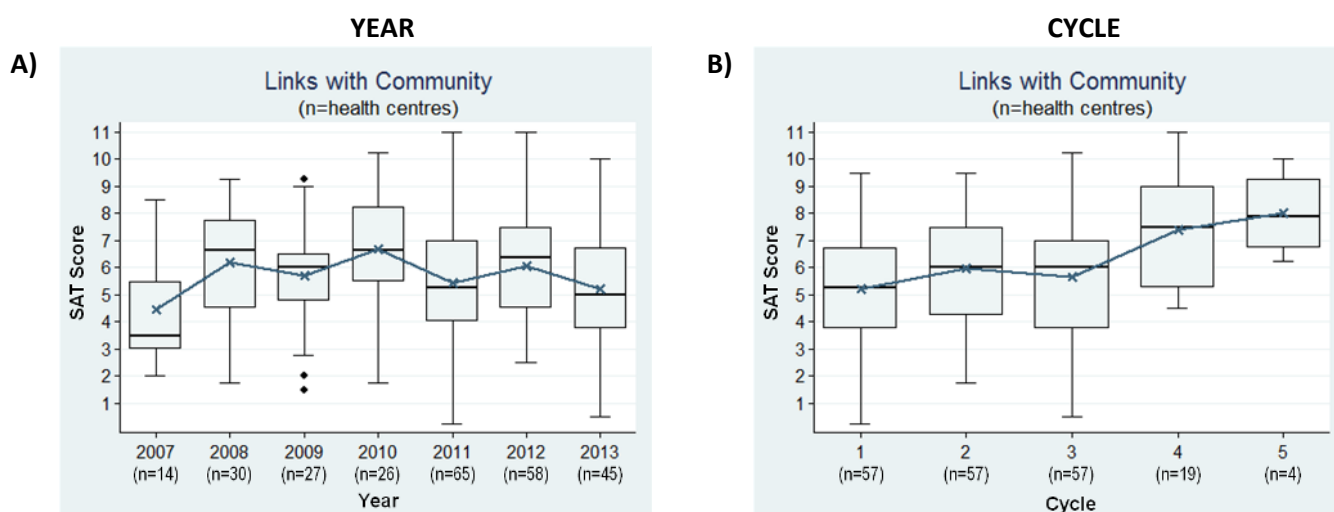
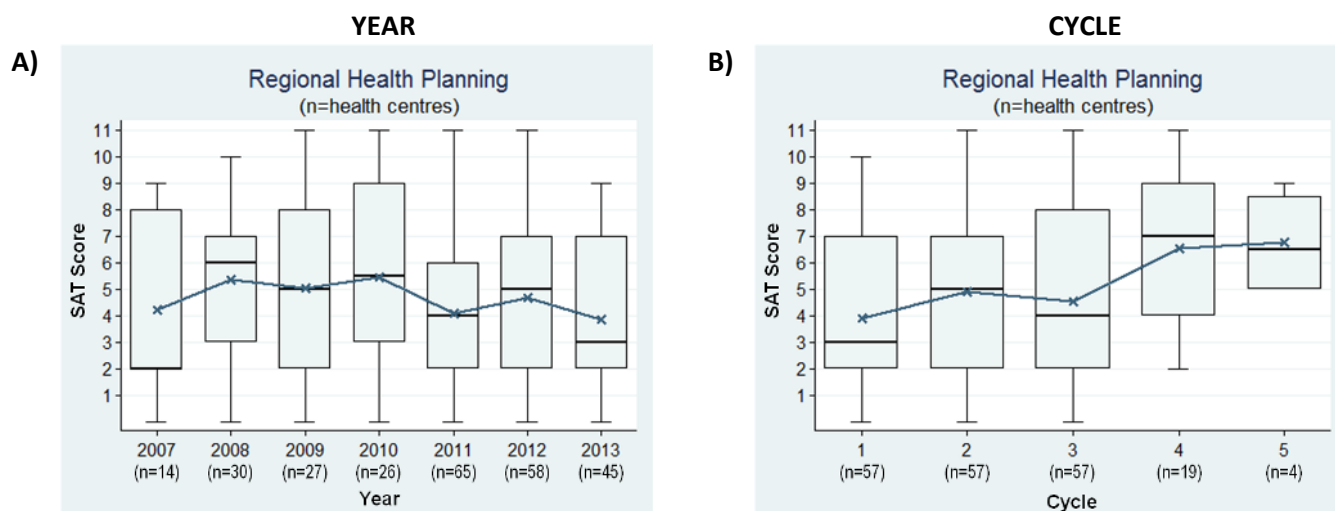


Figure 20: 'Regional Planning' subcomponent score, by A) year for all health centres and B) cycle for health centres that have at least 3 years of systems assessment data (n=number of health centres that conducted a systems assessment).



SECTION 3 – APPENDICES

Appendix 1. Overview of how One21seventy data are collected and reported to health centres

Where do the data in this report come from? The report is based on analysis of audits of clinical records of children who attend services that are *engaged with One21seventy AND participating in the ABCD National Research Partnership*. The child health audit tool was developed by an expert working group, with participation of child health experts and health service staff from a number of States and the Northern Territory. The tool is designed to enable services to assess their actual practice against best practice standards, and is accompanied by a protocol that includes reference to the guidelines and standards that form the basis of the tool (the reference list is included at Appendix 3). The tool was made available to services from 2007 to assist health centres assess service delivery to children aged 3 months to 6 years. A review of the tool in 2011 extended the age range to <15years. The audit data are supported by a summary of system performance as assessed by staff in health centres that completed a systems assessment tool (SAT) related to child health service delivery. Copies of the One21seventy Child Health Audit Tool and how the audits are conducted are available on request.

Who collects the audit and systems assessment data? The clinical audits are generally done by health centre staff who have been trained in the use of One21seventy tools and who are supported by continuous quality improvement (CQI) facilitators and One21seventy staff. In some centres where staff are not available or lack skills or confidence, the audits are done by the CQI facilitators. The Systems Assessment is completed by health centre staff in a process that is facilitated by a CQI facilitator.

How have the data been reported to health centres? The data collected through One21seventy audit and systems assessment tools and entered into the One21seventy web-based information system are analysed and made available to health centres in real time through the web-based information system. Reports of aggregated data for clusters of health centres, by region or by state are also available through the One21seventy web-based information system in order to support regional or state/territory level CQI efforts. The ESP Project is intended to contribute to enhancing the quality of reporting and use of aggregated CQI data for the purpose of service improvement.

Restrictions and limitations on the data presented. The data in this report are not expected to be representative of all health centres nationally or for specific jurisdictions because participation of health centres is either through self-selection or through regional decision making processes. In jurisdictions where a high proportion of health centres are participating, the data may be more generalisable; for jurisdictions where there are relatively few health centres participating the data are less generalisable.

The data reflect what has been documented in electronic and paper based patient records, depending on what record systems are used in each health centre. There has been a trend in recent years to increasing use of electronic records. Many health centres are still using paper-based system, and some are using a mix of paper and electronic systems. The quality of recording of clinical care is variable in both paper and electronic systems, and the audit data may not provide a true reflection of actual care. However, accurate and clear recording of care is an important aspect of quality of care and has important implications for continuity and coordination of care, for medico-legal purposes and for efficient use of resources.

Criteria for inclusion of records in the audit: A child's health record is eligible for audit if the child has been resident in the community for 6 months or more of the past 12 months (or if the child is <12 months, resident in the community for at least half of the time since birth) and has no major health anomaly such as Down Syndrome, cerebral palsy, heart defects or inherited disorders. Where the eligible population is 30 children or less, the audit protocol recommends including all records. Where the eligible population is greater than 30, the protocol provides guidance on the **random** selection of a number of records, with the number depending on the precision of estimates required by health service staff. The samples are **stratified** by age group and gender with equal numbers of males and females in the following categories: 3-<12mths; 12mths-<3yrs; 3-<6yrs; 6-<9yrs; 9-<12yrs; and 12-<15yrs.

Appendix 2: Overview of the ESP Project

The ESP project explores how CQI data can be used across the broader health system to identify and address priority areas for improvement, where gaps between guideline recommended services and actual practice are relatively large, more common or more important.

Project Aims

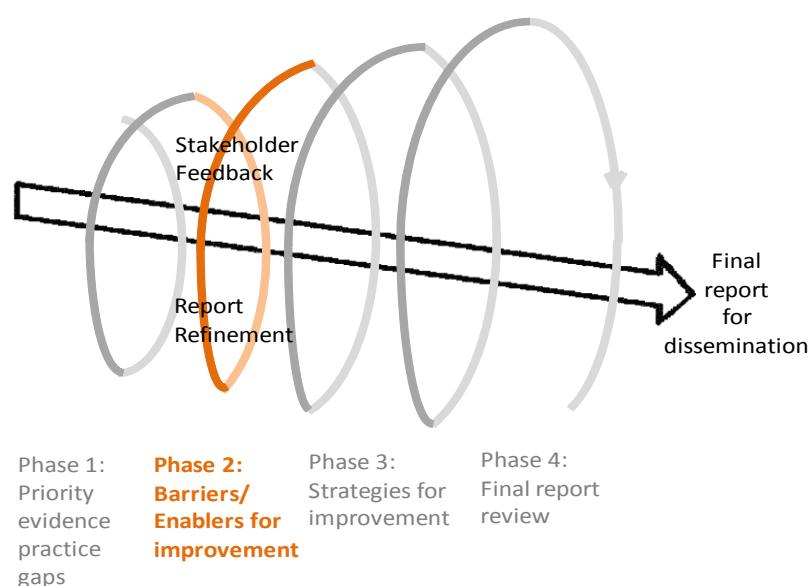
- Identify participant views on the priorities and strategies for improvement in primary health care for Aboriginal and Torres Strait Islander children, in light of the CQI data presented.
- Provide opportunities for discussion and use of CQI data and evidence from research to inform improvement across all levels of the health system.
- Learn more about how CQI data can be presented and made available to leaders, managers and influencers across the health system.

Using CQI data to inform changes across the health system

Large-scale improvement in the delivery of primary health care requires change at multiple levels of the health system, not only at the local health centre level. Where there are aspects of care that are not being done well across a range of health centres, this is likely to be due to inadequacies in the broader PHC system. These broader systems therefore directly impact health care and health outcomes for Aboriginal and Torres Strait Islander children. Improvements to systems need to be based on evidence about what is working well and what service gaps need to be addressed. Quality CQI data can contribute to this evidence.

The ESP Project aims to engage key stakeholders in the interpretation and use of aggregated CQI data; specifically, to engage them in a process for determining priorities for improvement, identifying barriers and enablers to high quality care, and using the information from this process to inform development of system-wide strategies for improvement. The focus on priority evidence-practice gaps should not be seen to detract from the importance of providing holistic and comprehensive primary healthcare. Indeed, the aim of the project is to strengthen the capacity of the broader system to provide high quality comprehensive healthcare on a wide scale.

Diagram of ESP project phases



Phase 1 – Evidence-practice gaps

This phase focuses on the identification of priority areas for improvement (priority evidence-practice gaps) in the delivery of child health care in Aboriginal and Torres Strait Islander primary health care.

Data shared

- aggregated CQI data (2012-2013) about the delivery of child health care presented in national and state/territory child health reports
- preliminary priority areas for improvement, based on national data

Feedback/data collection

Online questionnaire, workshop sessions and email responses.

Outputs

Refined national and state/territory child health reports. Refinements based on feedback and survey data. Refined report returned to participants for review. Feedback will be incorporated in final child health report.

Phase 2 – Barriers and enablers

This phase focuses on trends in indicators relevant to the identified priority evidence-practice gaps, and on influences that may enable or hinder improvement at different points in the health system. In particular, it seeks to identify those factors that may be most important in addressing the identified priority evidence-practice gaps in child health care identified in Phase 1.

Data shared

Report on trends over time for key indicators relevant to priority evidence-practice gaps in child health.

Feedback/data collection

Online questionnaire, including questions about barriers and enablers to improvement based on international, national and Aboriginal and Torres Strait Islander-specific evidence and frameworks.

Outputs

Draft report on barriers and enablers to improvement in care relevant to identified priority evidence-practice gaps, based on responses to the online questionnaire. The draft report will be returned to participants for review in Phase 3.

Phase 3 – Strategies for improvement

This phase focuses on identifying new or existing strategies that could be introduced or strengthened to enable improvement in priority evidence-practice gaps.

Data shared

- draft report on barriers and enablers to improvement in care relevant to the identified priority evidence-practice gaps (report from Phase 2)
- An evidence brief synthesising findings from research about barriers, enablers and strategies for improvement in the delivery of primary health care, with particular attention to research in the Australian Aboriginal and Torres Strait Islander health context.

Feedback/data collection

Online questionnaire. Participants will be encouraged to draw on their own experience, the evidence brief and the data presented throughout the project to identify strategies to address priority evidence-practice gaps.

Outputs

Draft report on strategies to address priority evidence-practice gaps. This report will be based on the Phase 2 report on barriers and enablers and on expert input on strategies for improvement provided through Phase 3.

Phase 4 – Review and final report

A draft report on strategies for improvement will be returned to participants for review. Comments from the review will be used to inform a final report on strategies for improvement in identified priority-evidence practice gaps. This final report will be provided to key stakeholders in all participating jurisdictions. Project findings will be reported in academic journals and in conference presentations and workshops.

Appendix 3: Sources

The Child Health clinical audit protocol draws heavily on the following:

1. CARPA (Central Australian Rural Practitioners Association) (2009). *Standard treatment manual: A clinical manual for primary health care practitioners in remote and rural communities in Central and Northern Australia*, 5th edition, CARPA, available at <http://www.carpa.org.au/fmanual.htm> (from here on referenced as 'CARPA, 5th edn, 2009').
2. MBS (Medical Benefits Scheme) *Health assessment for Aboriginal and Torres Strait Islander people* (MBS Item 715), available at: http://www.health.gov.au/internet/main/publishing.nsf/Content/mha_resource_kit (from here on referenced as 'MBS 715').
3. Queensland Health, Royal Flying Doctor Service (Queensland Section) and Apunipima Cape York Health Council (2010), *Chronic disease guidelines*, 3rd edition, Queensland Health, Royal Flying Doctor Service (Queensland Section) and Apunipima Cape York Health Council, Cairns (from here on referenced as 'CD Guidelines, 3rd edn, 2010').
4. Royal Flying Doctor Service (Queensland Section) (2009), *Primary clinical care manual (PCCM)* 6th edn, available at http://www.health.qld.gov.au/pccm/pccm_updates.asp (from here on referenced as 'PCCM, 6th edn, 2010').

Other references include:

5. AHMC (Australian Health Ministers' Advisory Council), 2011, *National Framework for Universal Child and Family Health Services* [ONLINE] Available at: [http://www.health.gov.au/internet/main/publishing.nsf/Content/119CD12CB66F8514CA257B660002C659/\\$File/NFUCFHS.PDF](http://www.health.gov.au/internet/main/publishing.nsf/Content/119CD12CB66F8514CA257B660002C659/$File/NFUCFHS.PDF) [Accessed 9 August 2013]
 6. Australian Government, 2013, *National Aboriginal and Torres Strait Islander Health Plan 2013-2023*, Commonwealth of Australia [ONLINE] Available at: [http://www.health.gov.au/internet/main/publishing.nsf/Content/2B39FA14C286E3EECA2579E800837B5F/\\$File/health-plan.pdf](http://www.health.gov.au/internet/main/publishing.nsf/Content/2B39FA14C286E3EECA2579E800837B5F/$File/health-plan.pdf) [Accessed 12 August, 2013]
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