Western Australian Auditor General’s Report

Improving Immunisation Rates of Children in WA

Report 29: December 2016
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IMPROVING IMMUNISATION RATES OF CHILDREN IN WA

This report has been prepared for submission to Parliament under the provisions of section 25 of the Auditor General Act 2006.

Performance audits are an integral part of the overall audit program. They seek to provide Parliament with assessments of the effectiveness and efficiency of public sector programs and activities, and identify opportunities for improved performance.

This audit assessed the effectiveness of WA Health’s delivery of immunisation services to children and adolescents.

I wish to acknowledge the assistance of WA Health staff during the audit. In particular, the Public Health division of the Department of Health, WA Country Health Service, and Child and Adolescent Community Health within the Child and Adolescent Health Service.

C. Murphy

COLIN MURPHY
AUDITOR GENERAL
21 December 2016
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Auditor General’s overview

There is wide recognition that vaccines have made a significant contribution toward reducing the outbreak and spread of serious life threatening diseases. Related to this is recognition that the risk of unimmunised people contracting contagious diseases falls as the proportion of the population that is immunised, increases.

The Commonwealth has set targets to increase national immunisation rates as part of Australia’s commitment to achieve at least 90% national vaccination coverage by 2020 in line with the World Health Organisation’s *Global Vaccine Action Plan*.

In a state as geographically spread as WA, immunising high numbers of children and adolescents is a formidable challenge. My report assesses how well WA Health delivers immunisation services to children and adolescents.

I was pleased to see WA performing well against national immunisation targets. However, to perform as well as some other states, WA Health needs to connect with those children and adolescents unable or less likely to access mainstream health services.

My report also shows that, somewhat unexpectedly, immunisation rates in regional WA are higher than metropolitan Perth, indicating that there is still work to do.
Executive summary

Introduction

This audit assessed if WA Health (Health) has an effective approach to immunising children. The audit reviewed the delivery of immunisation services by the Public Health division of the Department of Health, Child and Adolescent Health Service (CAHS) and WA Country Health Service (WACHS).

Background

Immunisation is a simple and effective way of protecting and reducing the spread of serious diseases in the community. According to the World Health Organisation it is second only to clean water as an effective public health intervention, and surpasses the contribution that antibiotics have made to reducing disease worldwide. Research shows every dollar spent on immunisation saves $5 of medical costs and $11 of indirect costs like time off work.¹

Immunisation is a shared responsibility between the Commonwealth and state and territory governments. In 2013, the Commonwealth set the national immunisation strategy and schedule which runs until 2018. State and territory governments develop and deliver programs that align with the national strategy.

WA Immunisation Program Schedule (Appendix 1) outlines the immunisations recommended for children from birth to 5 years. These routine immunisations protect children from 14 preventable diseases. Adolescents aged 10 to 15 years are immunised as part of a schools vaccination program against 5 preventable diseases. All immunisations are provided free of charge under the national immunisation program by state and territory governments.

In 2009, the National Partnership Agreement on Essential Vaccines (NPAEV) was established. WA Health is a partner to the NPAEV. The agreement sets high immunisation targets for children, adolescents and adults as the more people that are immunised, the less opportunity a disease has to spread².

Agreed NPAEV targets for children and adolescents, include:

- immunise more than 90% of infants (12-15 month olds), toddlers (24-27 month olds) and school beginners (60-63 month olds). In June 2016, the state had around 215,000 children aged 0-5 years
- maintain and increase coverage rates for vulnerable groups and minimise disparities between Aboriginal and non-Aboriginal Australians
- demonstrate progress towards immunising 90% of adolescent girls (12-13 year olds) against Human Papilloma Virus (HPV). Boys have been immunised since 2013 but the national target set in 2009 still only applies to girls. There were around 30,000 adolescents enrolled in year 8 in WA schools in 2015.

Health is responsible for setting the state’s immunisation program and providing high-level services and guidance such as the purchase and transport of vaccines to immunisation service providers. These include general practitioners (GPs), some local government authorities, WACHS (regional WA) and CAHS (metropolitan Perth).

Health developed the state’s first Western Australian Immunisation Strategy in 2008. The 2013-15 strategy and the 2016-20 strategy followed. The current strategy aims to provide clear direction on how to optimise service delivery across the state. Its objectives include

¹ Western Australia Immunisation Strategy 2013-2015
increasing vaccination coverage for young children, Aboriginal people, adolescents and adults, to improve support for immunisation providers and communication with stakeholders and the community, and to encourage and support applied immunisation research.

The Immunisation Strategy Implementation Steering Committee (Committee) oversees implementation of the strategy. Key stakeholders on the Committee, include CAHS, WACHS, GPs and the Department of Education.

Health and its service providers rely on the Commonwealth’s Australian Immunisation Register (AIR) to record and monitor immunisations. AIR holds immunisation records for all Australians born after 1989. The Commonwealth Department of Human Services maintains AIR.

Health also uses its own school-based immunisation database to record and monitor immunisations given to adolescents through school vaccination programs. It created this database to record adolescent immunisations, as prior to 2016 AIR only captured immunisation records for children 0-7 years.

In 2015-16, WA spent more than $44 million of state and Commonwealth funds on its immunisation program. This included $38 million spent on vaccines. The proportion of these costs that relate to childhood immunisation is unknown.

Audit conclusion

Overall, Health’s approach to immunisation is effective. Since 2013, there has been a small but consistent upward trend of 1.15% in the number of WA children immunised and at June 2016 was above the 90% national target for children 0-5 years.

Health has an effective and focused approach to improving areas of low immunisation. However, some children are at higher risk of falling through the gaps in service provision. Around 1.5% of children are not immunised because their parents consciously object. Included in the remaining 7%, are children who are not immunised because they are harder to identify and target. Health’s 2016-20 WA Immunisation Strategy appropriately focuses on some at risk children, such as new migrants and those in state care, but not the homeless and those whose births are not registered.

Aboriginal children, particularly infants and toddlers, remain below the 90% national immunisation target. Lack of access to services is not the issue as nearly half the children not immunised live in the metropolitan area. Health has made several concerted efforts to improve rates and these have been successful but ongoing efforts are required to ensure rates do not fall once the programs finish.

Key findings

- Health has achieved the national target to immunise more than 90% of children.\(^3\) Since 2013, there has been a 1.15% increase in rates for children (0-5 years). Health meets the NPAEV requirement and protects a high number of WA children against preventable diseases. However, there are still at risk areas:
  - Aboriginal children, infants and toddlers, are immunised at a lower rate than non-Aboriginal children and are therefore at greater risk of preventable diseases. In June 2016, only 84.6% of Aboriginal infants and 84.5% of Aboriginal toddlers were immunised. This is less than the 90% national target and less than the

\(^3\) Immunisation rates for children in Christmas and Cocos Island are included in WA coverage rates.
national average for Aboriginal infants (90.5%) and toddlers (88.5%). However, a new approach introduced by Health in May 2016 is already showing results.

- Infants and toddlers (0-2 years) are at higher risk of falling through the gaps. Health is missing opportunities to increase the immunisation rates for these children:
  - 24% (1,624 of 6,651) of all children aged 0-2 years do not have any GP details recorded in AIR. Health does not know if these children have been immunised and is limited in its ability to follow up
  - Health stops sending reminder letters to GPs of children overdue for their vaccinations after a child turns 2 years even if the child has not been fully immunised.

- Significant improvement is required to achieve the NPAEV target to fully immunise 90% of adolescent girls with the HPV vaccine:
  - In 2015, 76% of adolescent girls were immunised. Only 74% of boys received the vaccine but they are not included in the target that was set in 2009.
  - In 2015, 80% of non-Aboriginals and 59% of Aboriginals received all 3 doses of the HPV vaccine. This number is skewed by the 5,452 adolescents that received all 3 doses but their consent form did not state if they were Aboriginal or not. This skewed data means Health cannot reliably target low adolescent HPV immunisation rates.

- Since 2016, Health has had suitable strategies to ensure at-risk children like school absentees and dropouts, and children and adolescents in state care or prisons are immunised. Over time, targeting these at risk children should improve the adolescent rates and provide greater levels of protection against HPV.

- The 2016 strategy acknowledges that immunisation rates for new migrant children need to improve. Approaches by Health include helping to translate overseas immunisation records for adding into AIR and offering catch-up vaccines. However, identifying these children in the first instance is not easy and unless identified, these children may miss essential vaccines.

- There are no statewide targeted approaches to immunise children whose births are not registered (mostly Aboriginal), homeless children and children of conscientious objectors. Further, Health does not know how many children and adolescents are in these at risk categories. Without suitable strategies, these children remain at risk.

- WACHS’ targeted planning and delivery of immunisation services has contributed to almost 2% higher immunisation rates in regional WA compared to metropolitan Perth.
  - WACHS’ practices include active monitoring of regional immunisation rates and development of action plans and projects when regions fall below the 90% target.
  - CAHS relies on Public Health and the Committee for advice on how to manage those suburbs in metropolitan Perth with historically low immunisation rates. It is still to fully implement the recommendations from its 2013 *Improving immunisation outcomes 2013-2015* review.

- Under Health’s current service agreement with WACHS and CAHS, annual reporting of immunisation rates for fully immunised infants, Aboriginal infants, and adolescents is required but not for toddlers, school beginners, and other higher risk categories. This means Health cannot fully assess performance and take timely action to improve immunisation rates.
Health has been unable to access important information contained in the AIR to more effectively plan and deliver immunisation services:

- The Commonwealth Department of Human Services has denied Health access to some AIR information. Although Health receives a range of high-level reports, the information is limited to age group and indigenous status. Child information is not included. Having access to date, place of birth and service provider information could allow Health to assess the effectiveness of strategies such as those for new migrants. The Department cited that it could not release the information because of confidentiality provisions in the *Health Insurance Act 1973*.

- The AIR information that Health receives on children who are overdue for immunisations is split into 4 separate reports. Health uses this information to send out reminder letters to GPs but first must merge and cleanse the data – a time consuming process.

- Service providers raised concerns about data validation and upload issues in AIR resulting in under-reporting of immunisation rates. For example in August 2016 and September 2016, CAHS found 44% of the 107 records it reconciled with its own system were out-of-date as the children had been immunised.
Recommendations

1. By June 2017, Health should:
   a. For all children, particularly Aboriginal infants and toddlers, focus its resources and strategies on improving rates by:
      • extending its reminder letters to GPs from 0-2 years to include children over 2 years that are still overdue for vaccinations
      • continuing to work with service providers to ensure timely and complete information is uploaded to AIR. In particular, to include GP details and new migrant immunisation records.
   b. For adolescent HPV immunisations, focus its resources and strategies on improving rates by:
      • revising the adolescent consent form to include service provider details
      • continuing to develop strategies to improve the uptake of all 3 doses of the vaccine
      • working with service providers to ensure parental consent forms are completed in full including whether a child is Aboriginal or not.
   c. Strengthen agreements with service providers to include regular reporting against performance indicators for children, adolescents and at risk categories.

2. By June 2017, CAHS should:
   a. consider and implement relevant outstanding recommendations from its 2013 review Improving immunisation outcomes 2013-2015.

3. By December 2017, Health should:
   a. develop ways to improve immunisation rates for homeless children, children whose births have not been registered and children of conscientious objectors
   b. pursue its request for access to additional AIR information from the Department of Human Services
   c. consider ways to access children’s place of birth information to identity and target new migrants in need of catch-up vaccines.
Agency responses

**Child and Adolescent Health Service (CAHS)**

The Child and Adolescent Health Service accepts the findings of the Office of Auditor General Performance Audit on Improving immunisation rates of children in WA.

One of CAHS key service delivery goals is to improve immunisation rates for Western Australian children. CAHS is committed to improving immunisation rates for all children in the metropolitan area in partnership with Communicable Disease Control Directorate (CDCD) and other key stakeholders.

CAHS acknowledges that General Practitioners (GPs) are the majority provider of childhood vaccinations, therefore GPs contribute significantly to overall immunisation coverage, particularly in metropolitan Perth, where GPs deliver approximately three quarters of all childhood immunisations. As the statewide coordinator of the National Immunisation Program, CDCD is well placed to work with GPs to maintain and improve immunisation performance, including reminder letters to GPs for children who are overdue.

Engagement with the community is critical in improving immunisation rates. CAHS will continue to target ‘hard to reach’ families and plays an important role in the provision of services to vulnerable clients, including new migrants. CAHS will continue to work with CDCD to improve immunisation rates for other vulnerable population groups.

In 2013 CAHS undertook a review of its Immunisation Services. The Report of the Review into Child and Adolescent Community Health Immunisation Services: 2013-2015 contains 47 recommendations on improving childhood immunisation rates, of which 29 have been fully implemented, with the remaining relevant recommendations in progress.

**Department of Health – Public Health division**

‘The Department accepts the findings of the report “Improving Immunisation Rates of Children in WA”. However, we do not accept the recommendations:

- to revise the adolescent consent form. The consent forms for 2017 have already been printed. In 2018, Health plan to disband the School Based Immunisation Program (SBIP) database, and instead ask immunisation providers to report directly to the Australian Immunisation Register (AIR).

- for children whose births have not been registered. The recommendation is not considered a justified area of focus as these children are not precluded from accessing immunisation services.

- for children of conscientious objectors. Health cannot identify these children which limits our ability to target this group. The National Centre for Immunisation Research and Surveillance is a specialist research group that is developing resources for engaging with conscientious objectors.’

**WA Country Health Service (WACHS)**

WACHS supports the key finding: WACHS’ targeted planning and delivery of immunisation services has contributed to almost 3% higher immunisation rate in regional WA compared to Metropolitan Perth; further active monitoring, development of action plans and projects will continue when regions fall below the 90% target.
WACHS is supportive of the Department of Health (DoH) extending reminder letters to GPs to include all children over 2 years overdue for vaccinations. WACHS regions send reminders to families for children when immunisations are due and overdue regardless of age, letters from the DoH to GPs for all ages would complement this process.

WACHS agrees to continue to work with service providers to ensure timely and complete information is uploaded to the Commonwealth’s Australian Immunisation Register (AIR). WACHS is working with GPs and the WA Primary Health Alliance representatives to ensure that AIR data is improved. WACHS will further work with service providers to ensure information uploaded to the AIR includes GP details and new migrant immunisation records.

WACHS notes there would be benefit in strengthening DoH and Health Service Provider Agreements to include regular reporting against a greater number of Immunisation Indicators. WACHS will continue to work with DoH to develop immunisation indicators and reporting processes.

WACHS notes the finding for DoH to revise the consent form to include service providers. This will support the initiatives to improve adolescent HPV immunisation rates WACHS commenced in 2015. WACHS will continue to work to improve the uptake of all 3 doses of the vaccine and associated data capture; this includes working with parents to ensure consent forms are fully completed.

WACHS notes DoH will strengthen agreements with service providers to include regular reporting against performance indicators for children, adolescents and ‘at risk’ categories. WACHS will continue to work with DoH to develop immunisation indicators and reporting processes.
Audit focus and scope

The audit objective was to determine if WA Health has an effective approach to immunising children and adolescents.

We based our audit on:

- does WA Health deliver its immunisation services effectively?

The audit focused on areas of low immunisation and immunisation rates below the national average (even though reaching the 90% target). In particular:

- Aboriginal infants (Aboriginal children aged 12 months)
- all toddlers (2 year old children)
- adolescents (children in high school)
- new migrants
- other at risk categories.

In undertaking this audit we:

- assessed implementation of the Western Australia Immunisation Strategy 2013-2015 and 2016-2020 to see what progress had been made in improving areas of low immunisation
- focused our activities on the Public Health division of the Department of Health. We also audited WA Country Health Service (WACHS) and Child and Adolescent Community Health (CACH) within Child and Adolescent Health Service (CAHS)
- reviewed policies, guidelines, strategies, internal and external reporting on immunisation, meeting minutes from the WA Immunisation Strategy Implementation Steering Committee and other documents
- analysed AIR reports and Health’s school-based immunisation database from 2013 to 2016
- interviewed Public Health staff and metropolitan service providers from CAHS and regional service providers from WACHS
- spoke to a representative from the Royal College of General Practitioners (RACGP) to inform our understanding of the role of GPs in providing child and adolescent immunisations
- completed an application review of Health’s school-based immunisation database to test its integrity and completeness.

We contacted the Commonwealth Department of Human Services (DHS) to request access to information captured in AIR to assist with our audit and the development of our audit findings.

We conducted this narrow scope performance audit under section 18 of the Auditor General Act 2006 and in accordance with Australian Auditing and Assurance Standards. Narrow scope performance audits have a tight focus and generally target agency compliance with legislation, public sector policies and accepted good governance. The approximate cost of tabling this report is $240,000.
Audit findings

The national target has been met but ongoing efforts are needed

Overall, Health achieves the 90% national immunisation target for children aged 0-5 years. Health is protecting most WA children from preventable diseases but the rates in metropolitan Perth are lower than in the regions (Figure 1). In addition, rates for Aboriginal infants and toddlers are below the 90% target, and less than the national average (Appendix 2).

About 80% of non-Aboriginal and 59% of Aboriginal adolescent girls and boys are immunised against HPV. The risk of contracting this life-threatening disease significantly reduces when immunised.

Health targets areas of low immunisation

Health’s 2013-15 Immunisation Strategy included suitable strategies to target groups where immunisation was below national averages. These groups included Aboriginal infants, all toddlers, and adolescents. Since 2013, WA’s immunisation rates increased by 1.15%.

Since October 2014, Health has been sending reminder letters to GPs of children aged 0-2 years who are overdue for immunisations. Health identifies these children from overdue lists provided to it by the Commonwealth Department of Human Services’ AIR system.

In July 2016, there were 6,651 children overdue for 1 or more immunisations. Our audit showed 35% (2,335) of these children were immunised within 3 months of the GP receiving a reminder letter. CAHS, WACHS and RACGP all agreed that the strategy was useful in catching up missed immunisations.

Despite the initiative, we found that rates for toddlers improved by only 0.1% during the 3 years of the 2013-15 Strategy. We identified 2 possible causes:

- Not all toddlers overdue for immunisations appear on the list because after a child turns 2 years they drop off the list even if they have not been immunised. We found 6.7% (448 of 6,651) of toddlers that had not received vaccinations did not appear on the list.
- 24% (1,624 of 6,651) of children on the July 2016 overdue list did not have GP details recorded in AIR and Health was therefore unable to send reminder letters.

In addition to Health’s reminder letters to GPs, parents of children overdue for vaccinations also receive reminder letters from the Commonwealth Department of Human Services. Reminder letters act as a useful reminder to GPs and parents, and increase the likelihood that these children will be immunised.
Figure 1: Percentage of children 24-27 months old fully immunised in WA at 30 June 2016
Regional WA has higher immunisation rates for children than Perth

Immunisation rates for infants, toddlers and school beginners is higher in the regions than in metropolitan Perth. The biggest gap between the regional and Perth rates is for school beginners (3%) followed by toddlers (2.5%) (Figure 2).

![Figure 2: Regional WA vs Perth immunisation rates for infants, toddlers and school beginners (30 June 2016)](source: AIR)

We reviewed WACHS and CAHS’s immunisation approaches and found a number of differences that contribute to the higher rate of regional immunisations. These include:

- WACHS proactively manages regions with low rates. When a region falls below 90%, it develops action plans and projects to improve rates.

  For example, in June 2014, Aboriginal infants and school beginners rates in the Wheatbelt region were lower than non-Aboriginals by 2.6% and 6.6% respectively. In response WACHS developed the ‘help me stay strong – get me immunised’ project, creating promotional material such as posters, stickers, and leaflets distributed at child health clinics and as part of an antenatal program.

  Within a year, the rates for Aboriginal children exceeded non-Aboriginal. The project contributed to increasing the rates but ceased after achieving the outcomes. By June 2016, the rate for Aboriginal infants was again less than for non-Aboriginal infants by 8.8%. Ongoing awareness and focus is essential if Health is to ensure that Aboriginal children are not disadvantaged.

  By contrast, metropolitan Perth has suburbs with historically low immunisation rates. CAHS relies on Public Health and the Immunisation Strategy Implementation Steering Committee for advice on how to implement the strategy and manage these low rate areas. For a number of years CAHS has been implementing strategies to better engage families in these areas and provide additional clinics. However, rates are still as low as 74% in Mundaring and 75% in Cottesloe/Peppermint Grove.

- WACHS has trained hospital nurses to administer immunisations to increase the number of opportunistic immunisations when children present at hospitals. In contrast,
CAHS, which does not run Perth hospitals, has limited opportunity to administer immunisations in hospitals. To take advantage of opportunities the Perth Children’s Hospital has agreed to CAHS running an immunisation clinic in the hospital starting from 2017.

- Other differences are summarised in Table 1.

<table>
<thead>
<tr>
<th>Practice / approach</th>
<th>WACHS</th>
<th>CAHS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Home visits</strong></td>
<td>Actively reach out to the community for those at high risk or vulnerable providing home visits for health checks and immunisations.</td>
<td>Has a policy on home visits, which refers to vaccinations. Developing an initiative for home visits to deliver overdue vaccines. Started to deliver home immunisations to families with multiple births in 2016.</td>
</tr>
<tr>
<td><strong>Staff required for immunisation</strong></td>
<td>Required – 1 registered nurse WACHS’ practice is to have another person present who is competent in basic life support.</td>
<td>Always uses 2 registered nurses at each location both delivering immunisations to a child.</td>
</tr>
<tr>
<td><strong>Maximising chances of opportunistic immunisation</strong></td>
<td>Immunisation training and updates to staff and other service providers like Aboriginal health workers, Aboriginal medical services and ward nurses. Works closely with immunisation providers (e.g. GPs) to ensure above 90% rates, provides training, hosts and participates in forums.</td>
<td>Signed a partnership agreement with local government areas to deliver immunisations. Planning to introduce an immunisation clinic in the Perth Children Hospital (July 2017).</td>
</tr>
<tr>
<td><strong>Access to AIR data</strong></td>
<td>Assists GPs in checking immunisation status of children. AIR data can be accessed through the regional Immunisation Coordinator or Child Health Staff.</td>
<td>Support families and service providers with updating AIR.</td>
</tr>
<tr>
<td><strong>Initiatives to improve low rates</strong></td>
<td>Develops action plans and initiatives. Initiatives are risk assessed before approval and outcomes are reviewed.</td>
<td>Planning to map GP providers by postcodes to identify areas that need additional resourcing.</td>
</tr>
</tbody>
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Table 1: WACHS and CAHS – different approaches

In 2013, CAHS’s internal review Improving immunisation outcomes 2013-2015 made 47 recommendations that aligned with the 2013-15 strategy objective.

CAHS has been slow to implement these recommendations. They advised that at December 2016, it had fully implemented 29, another 11 were in progress and the other 7 had not been started or would not be implemented.

CAHS advised it has actioned the most important recommendations. For example, it fully implemented the recommendations for improving Aboriginal immunisation rates:

- co-location of immunisation clinics with Aboriginal health teams in the suburbs of Kwinana, Mandurah, Lockridge, Mirrabooka and Maddington
- recently established immunisation clinics at 5 child and parent centres in suburbs with high proportions of Aboriginal families.

We considered 2 of the 7 recommendations that had not been implemented or started were key to improving CAHS’ performance. However Health advised at the time of reporting that the first recommendation had been implemented and the second partially implemented:
Recommendation: ‘That a CACH immunisation policy manual, linking all relevant national, WA Health, CAHS and CACH policy documents, is developed and endorsed as a matter of priority.’

The review identified this as a significant gap and a priority item to improve staff knowledge of immunisation policy and processes.

Recommendation: ‘That the current key performance indicators (KPIs) for CACH immunisation services, which relate to WA immunisation coverage rates, are replaced by CACH immunisation coverage rates.’

We found the current KPI does not allow CAHS to assess its own performance as it includes immunisations delivered by GPs over which it has no control. CAHS provides less than 20% of metropolitan immunisations.

**Aboriginal infants and toddlers**

WA lags behind the rest of Australia in its immunisation rates for Aboriginal infants and toddlers. At June 2016, the rates were around 84.5% (Figure 3). We looked at Health strategies to improve these rates and found they were successful. Immunisation rates improved for 7 of its 10 public health units in June 2016 compared to June 2015.

In the 12 months from June 2015 to June 2016, low rates for Aboriginal infants in the Mid-West, South-West, North Metro and South Metro regions improved by an average of 8.5%. The Pilbara region did not. They cited staff shortages as the reason. The improvements may in part be due to a new initiative introduced in May 2016 to send reminder letters to GPs of Aboriginal infants and toddlers overdue for immunisations. Rates improved by 3% between the March and June 2016 quarters.

![Figure 3: Percentage of Aboriginal infants and toddlers fully immunised for state, territory and Australia](image-url)
Adolescents

Health has not made much progress towards fully immunising 90% of adolescent girls with the HPV vaccine. While the target only relates to girls, boys are also immunised. In 2015, slightly more girls (76%) than boys (74%) were immunised.

On average, immunisation has been around 75% over the last 3 years. The low rate is partly because the number of adolescents immunised drops with each dose. As a result, over 7,500 adolescents are not fully immunised.

Adolescents receive 3 doses of the HPV vaccine when they are in year 8 as part of a school-based immunisation program. Full immunisation occurs after receiving all 3 doses.

The RACGP advised us that adolescents may prefer to be immunised by their GP to avoid the long immunisation queues at schools. GPs then have to send a form to Health for input into the database that records adolescent immunisations. This increases the chance that the number of immunised adolescents will be under-reported.

In 2015, 21% less Aboriginals than non-Aboriginals received all 3 doses (Figure 4). However, this is likely skewed by the 5,452 adolescents that received all 3 doses but their consent form did not identify them as either Aboriginal or non-Aboriginal. Health needs complete information to target low rates of adolescent HPV immunisations.

![Figure 4: Year 8 students enrolled in 2015 vaccinated with doses 1 to 3 of HPV vaccine](image)

Figure 4 also shows that 34% of Aboriginal adolescents that receive dose 1 do not receive dose 3 and are therefore not fully immunised. The difference for non-Aboriginal adolescents was only 11%.

Since 2013, Health has been developing strategies to improve the uptake rates for the HPV vaccine. These include promoting adolescent vaccinations to parents and assisting GPs to provide vaccinations outside the school setting. Another strategy was to revise and improve the parental consent form required for a child to be immunised at school. We found:

- the parental consent form used since 2015 is easier to fill in with less duplication than the 2013 form
in 2015 the rate of consent increased by only 0.64% compared to the prior year. How much of this increase can be attributed to the improved consent form and other strategies is unknown.

However, we note that neither the old nor new consent form include a field for recording details of the adolescent’s current GP. Without this information, Health is missing opportunities to follow up those adolescents that are not immunised during the school-based program.

In 2015, WACHS introduced other initiatives to improve adolescent HPV immunisation rates. In particular, they established a working group to improve uptake of dose 3, and began analysing quarterly HPV reports to identify areas and causes of low coverage. It is too early to know if these initiatives will improve the number of adolescents fully immunised.

Also in 2016, Health funded research to identify factors contributing to the low uptake of the adolescent HPV vaccine. Health expects a report in late 2017.

Sections of the community are at risk of missing out

Some children are at higher risk of not receiving immunisations. The 2016-20 strategy includes approaches to address at risk children such as school absentees and dropouts, children and adolescents in state care or prisons, and new migrants.

However, Health is yet to develop ways to immunise children whose births are not registered (mostly Aboriginal) and homeless children, and to protect children whose parents are conscientious objectors. These children remain at risk of becoming ill from vaccine preventable diseases.

New migrants

The 2016-2020 strategy includes approaches to improve rates for new migrants. Implementation has begun. For example, Health provides guidance to service providers in translating immunisation records and updating AIR.

In 2013, Health contacted the parents of 240 children who did not have immunisation records in AIR. It found 43% (103) were from overseas. All were immunised in their home country but their records were not translated and entered in AIR. This meant the number of children on the AIR overdue lists was overstated. Health needs to check this information before allocating resources to target children not immunised. All records received by Health were updated into AIR.

Further, new migrants may need catch-up vaccinations to meet the requirements of the Australian Immunisation Schedule but AIR does not separately identify these children. This means Health cannot easily identify and target these children to have them immunised and update their records.

A requirement for pre-migration catch-up immunisations was discussed at a national level in September 2016. This would be a more effective and efficient way to target these children and manage preventable diseases at the visa stage.

Unregistered births

The number of Aboriginal children who are not immunised is under-reported because not all births are registered. Health does not have a suitable strategy for these children. Not registering a child’s birth does not stop it being immunised, but implies that it may not be immunised.
A 2015 study\(^4\) found 4,628 children (18% of 26,404) born to Aboriginal mothers did not link to a birth registration. Most of these children were born in rural (3,010) and tertiary (1,150) hospitals.

The study found that ‘unregistered births were more common with mothers who were teenagers when they had their first child, lived in more socioeconomically deprived and remote areas, gave birth in a rural hospital, smoked during pregnancy, had an alcohol-related diagnosis around the time of the birth, did not have private hospital insurance and whose mother’s own birth was not registered’.

WACHS and CAHS know that some births go unregistered. They try to assist parents to register births before mother and child leave the hospital or at scheduled child health checks. Registering births add to the completeness of information in AIR and provides reliable data on which to target immunisation services.

Service providers advised that the high number of unregistered births in tertiary hospitals could happen when regional mothers attend these hospitals at the time of birth to get access to better health facilities. Health does not know why these births are not registered.

**Homeless children**

Health acknowledges that it needs to identify and target immunising homeless children but does not yet have any strategies. These children are vulnerable and at significant risk of contracting vaccine preventable diseases.

However, Health advised that when requested it provides small quantities of vaccines to 2 service providers that immunise homeless children, the Perth and Fremantle Street Doctor.

In 2014-15, 23,021 clients accessed the WA Specialist Homeless Services of which 4,143 (18%) were aged under 10 years. There is no current state plan or strategy to deal with homelessness. The 2010-2013 state plan *Opening Doors to Address Homelessness*, which ended in 2013, did not include any references to immunising homeless children.

**Conscientious objectors**

Health does not have any strategies to encourage immunisation of children whose parents are conscientious objectors. Nor can Health easily identify who these children are. Health does not have strategies to address this information gap.

Prior to January 2016 parents could register in AIR their conscientious objection to having their child immunised. At the end of December 2015, 1.45% of WA children fell into this category. This was a decrease from the 1.93% in December 2014.

However, since January 2016 AIR does not capture the information Health needs to identify children of objectors. The change occurred because of the ‘no jab no pay’ policy, where ‘objectors’ was removed as a valid reason for a vaccination exemption to receive family assistance payments.

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Success of the strategy depends on more timely and accurate information

Performance reporting needs to be strengthened

Health’s current agreements with its service providers do not include reporting against performance indicators for all children, adolescents and other at risk categories.

Currently WACHS and CAHS are required to report annually against the percentage of fully immunised infants, Aboriginal infants, and for adolescents. There are no indicators or reporting for toddlers and school beginners, and at other at risk children. This means Health cannot assess performance and take timely action to improve immunisation rates.

Complete and reliable data is needed to improve rates and target resources

Health uses data and research to understand and improve immunisation rates. Most of this data is in AIR but as previously mentioned, Health’s access to this data has been limited to that provided in standard AIR reports. Comprehensive access to AIR data would enable Health to better analyse and understand the outcomes it has achieved from its strategies.

Health receives a range of reports from AIR. These include high-level reports for fully immunised children for the state, local governments and postcodes. Information is limited to age group and indigenous status. Child information is not included. If Health had date, place of birth and service provider information it could assess effectiveness of strategies such as those for new migrants.

Health also receives reports on children who are overdue for immunisations. These reports provide limited information about a child and only lists the last service provider. Other important information to allow Health to implement targeted strategies is missing such as:

- other service providers the child has seen for immunisations to send follow up reminder letters
- parent phone numbers to send reminder SMS messages.

Information on children overdue for vaccinations is split across 4 separate reports. The information has to be merged and cleansed before Health can conduct in-depth analysis and send reminder letters. This is time consuming and the likelihood of errors is high.

Since 2010, Health has been requesting access to additional information from AIR in order to increase WA’s immunisation rates and improve management of government procured vaccines. The Department of Human Services has declined the requests citing confidentiality provisions in the Health Insurance Act 1973. In 2014, the WA Minister for Health wrote to the Commonwealth Minister for Health highlighting 4 issues and proposed solutions.

The response outlined a proposal to address the issue relating to a lack of reporting on service provider immunisation coverage. The Ministers’ proposal has been implemented which now allows service providers to request a number of AIR reports. Health has not received any further correspondence regarding the other 3 issues.

We also requested access to AIR data, which we intended to use to assess outcomes from Health’s strategies and analyse at risk children such as new migrants. The information was not received in time to review it for the audit.

WACHS, CAHS and the RACGP all raised concerns about AIR. Mostly to do with data validation and upload issues affecting Health’s targeting of its resources.
For example, AIR is not updated if errors occur when service providers upload information on a child’s immunisations. Errors remain until issues are resolved between AIR and the service provider software. This means that a child may show as overdue for a vaccine even though they are immunised.

Our audit found similar issues with AIR data. For example, when CAHS reconciles AIR overdue reports with its own internal database (WinVac) it often finds AIR information to be incomplete and out-of-date. In August and September 2016, CAHS found 44% of the 107 records it reconciled for a child overdue for immunisations were out-of-date as the child had been vaccinated.

We did not audit the AIR database. However, a recent audit\(^5\) by the Australian National Audit Office (ANAO) confirmed what we were told about upload issues. The ANAO audit found issues with synchronisation of AIR data with service provider software. One of the audit recommendations was:

\[
\text{To contribute to … data integrity and improve the efficiency of information processing … establish a pathway for the resolution of persistent and known data synchronisation issues … incorporating a planned process and timetable.}
\]

Our discussions with service providers suggest these issues are still to be resolved.

\(^5\) ‘Administration of the Australian Childhood Immunisation Register’ (ACIR) in 2014-2015.
## Appendix 1: WA immunisation schedule – children and adolescents

<table>
<thead>
<tr>
<th>Immunisation</th>
<th>Birth</th>
<th>6 to 8 weeks, 4 and 6 months</th>
<th>12 months</th>
<th>2 years</th>
<th>4 years</th>
<th>Adolescents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diphtheria</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Tetanus</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Pertussis (whooping cough)</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>✓ ✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poliomyelitis</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haemophilus influenza type b</td>
<td>✓ ✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotavirus</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pneumococcal</td>
<td>✓ ✓</td>
<td>✓*</td>
<td>✓</td>
<td>✓*</td>
<td>✓*</td>
<td></td>
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<tr>
<td>Meningococcal C</td>
<td></td>
<td></td>
<td>✓</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Measles</td>
<td>✓ ✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mumps</td>
<td>✓ ✓</td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Rubella</td>
<td>✓ ✓</td>
<td></td>
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</tr>
<tr>
<td>Hepatitis A</td>
<td>✓* ✓*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Varicella (Chicken Pox)</td>
<td>✓ ✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human papillomavirus (HPV)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

* Only for Aboriginal children or adolescents
Appendix 2: Percentage of children 12-15 months and 60-63 months fully immunised in WA at 30 June 2016
<table>
<thead>
<tr>
<th>Report number</th>
<th>Reports</th>
<th>Date tabled</th>
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</thead>
<tbody>
<tr>
<td>28</td>
<td>Malware in the WA State Government</td>
<td>7 December 2016</td>
</tr>
<tr>
<td>27</td>
<td>Opinions on Ministerial Notifications</td>
<td>7 December 2016</td>
</tr>
<tr>
<td>26</td>
<td>Opinion on Ministerial Notification</td>
<td>23 November 2016</td>
</tr>
<tr>
<td>25</td>
<td>Opinion on Ministerial Notification</td>
<td>9 November 2016</td>
</tr>
<tr>
<td>23</td>
<td>Western Australian Waste Strategy: Rethinking Waste</td>
<td>19 October 2016</td>
</tr>
<tr>
<td>22</td>
<td>Opinion on Ministerial Notification</td>
<td>13 October 2016</td>
</tr>
<tr>
<td>21</td>
<td>Opinion on Ministerial Notification</td>
<td>6 October 2016</td>
</tr>
<tr>
<td>20</td>
<td>Ord-East Kimberley Development</td>
<td>7 September 2016</td>
</tr>
<tr>
<td>19</td>
<td>Information and Communication Technology (ICT) in Education</td>
<td>17 August 2016</td>
</tr>
<tr>
<td>18</td>
<td>Opinions on Ministerial Notifications</td>
<td>11 August 2016</td>
</tr>
<tr>
<td>17</td>
<td>Financial and Performance Information in Annual Reports</td>
<td>21 July 2016</td>
</tr>
<tr>
<td>16</td>
<td>Grant Administration</td>
<td>7 July 2016</td>
</tr>
<tr>
<td>15</td>
<td>Management of Feedback from Public Trustee Represented Persons</td>
<td>30 June 2016</td>
</tr>
<tr>
<td>14</td>
<td>Management of Marine Parks and Reserves</td>
<td>30 June 2016</td>
</tr>
<tr>
<td>13</td>
<td>Maintaining the State Road Network – Follow-on Audit</td>
<td>29 June 2016</td>
</tr>
<tr>
<td>12</td>
<td>Regulation of Builders and Building Surveyors</td>
<td>22 June 2016</td>
</tr>
<tr>
<td>11</td>
<td>Information Systems Audit Report</td>
<td>22 June 2016</td>
</tr>
<tr>
<td>10</td>
<td>Opinions on Ministerial Notification</td>
<td>8 June 2016</td>
</tr>
<tr>
<td>9</td>
<td>Payment of Construction Subcontractors – Perth Children’s Hospital</td>
<td>8 June 2016</td>
</tr>
<tr>
<td>8</td>
<td>Delivering Services Online</td>
<td>25 May 2016</td>
</tr>
<tr>
<td>7</td>
<td>Fitting and Maintaining Safety Devices in Public Housing – Follow-up</td>
<td>11 May 2016</td>
</tr>
<tr>
<td>6</td>
<td>Audit of Payroll and other Expenditure using Data Analytic Procedures</td>
<td>10 May 2016</td>
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<tr>
<td></td>
<td>state training providers – Other audits completed since 1 November 2015;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>and Opinion on Ministerial Notification</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Land Asset Sales Program</td>
<td>6 April 2016</td>
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<tr>
<td>3</td>
<td>Management of Government Concessions</td>
<td>16 March 2016</td>
</tr>
<tr>
<td>2</td>
<td>Consumable Stock Management in Hospitals</td>
<td>24 February 2016</td>
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<tr>
<td>1</td>
<td>Supplementary report</td>
<td>8 June 2016</td>
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<td></td>
<td>Health Department’s Procurement and Management of its Centralised</td>
<td>17 February 2016</td>
</tr>
<tr>
<td></td>
<td>Computing Services Contract</td>
<td></td>
</tr>
</tbody>
</table>
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