WHO Tailoring Immunization Programmes (TIP) studies in New South Wales, Australia, 2016-2021

A project summary report

April, 2022

NSW GOVERNMENT

Acknowledgment and Copyright page.

This report was prepared by Dr Katarzyna Bolsewicz and Dr Susan Thomas, in collaboration with Professor David Durrheim and Professor Julie Leask.

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Aims of the report

The aims of the report are to:

- summarise and reference key findings and achievements (capacity building, presentations and publications) from five World Health Organization Tailoring Immunization Programmes (TIP) studies conducted between 2016 and 2021 in New South Wales, Australia;
- acknowledge all individuals involved in TIP studies in various capacity;
- suggest potential 'next steps' in terms of evaluating, sharing and adapting the TIP study methodology, study findings and lessons learned

Introduction

Between 2016 and 2021 we completed World Health Organization Tailoring Immunization Programmes (TIP) studies in five regional communities in New South Wales: Maitland[1,2,3], Umina[4,5,6], Tamworth[7,8], Kempsey[9] and Lismore[10,11], to explore the barriers to childhood immunisation in areas of low coverage and known socio-economic need, and to identify strategies to improve coverage. In Tamworth, Kempsey and Lismore there was a high proportion of Aboriginal children who were not fully immunised.

TIP studies were conducted by researchers from the University of Newcastle in collaboration with the University of Sydney, World Health Organization, NSW Ministry of Health and local Public Health Units (PHUs);
and a range of local immunisation stakeholders, including parents/carers of young children, community organisations and health services. The latter included Primary Health Networks (PHNs), PHU immunisation teams, GP clinics, Child and Family Health Nurses, Aboriginal Community Controlled Health Services, Aboriginal Maternal Infant Health Services and Community Health.

A full list of individuals involved in TIP studies is included on page 6.

TIP project cycle across 5 studies:

Four TIP studies (Umina, Tamworth, Kempsey and Lismore) were completed at Phase 2 of the TIP cycle (Research), where we generated evidence upon which to build new, tailored approaches, and we strengthened partnership between immunisation stakeholders.[4-11]

The TIP study in Maitland progressed through the whole TIP cycle, where we designed, implemented and evaluated a tailored strategy informed by the research. In Maitland, in addition to conducting the TIP study, Dr Thomas also conducted a pilot study, followed by a process evaluation that investigated aspects of the research translation, as a new model of immunisation service delivery was developed[2, 3]. Results of this evaluation have led to a deeper understanding of the complexity of health system change and of the capacity building that needs to underpin such a change. Evaluation results are being utilised as the new model of tailored strategies aimed at making it easier for families to immunise their children on time, The Three Step Process (1. Sending personalised reminders, 2. Offering outreach appointments at the Neighborhood Centre, 3. Offering targeted home visits), continues to be implemented. Thus far, implementation of The Three Step Process was followed by a 24% increase in coverage among the one year olds[2, 3].

In collaboration with Dr Penny Reeves and directors of three PHUs, Dr Thomas led the design of a cost analysis to measure the incremental costs of implementing the Three Step process. The pilot study, the Three Step Process, the process evaluation, and the cost study provide templates that can be
used in other Local Health Districts (LHDs) when implementing the TIP approach for improving immunisation in areas of low coverage.

Key findings and recommendations across TIP studies:

We found a number of similarities in terms of contributing factors and recommendations across the studies and described these in an additional paper.[12]

Similarities in contributing factors across five locations included;

- parents were not opposed to immunisation and want their children to be fully vaccinated
- parents experience socio-economic hardship that often meant immunisation wasn't a priority
- a number of service access barriers make it difficult for parents to ensure children are immunised in a timely manner
- lack of cultural safety in government health services and general practice meant some Aboriginal families felt unsafe and unwelcome using them
- immunisation data was not well utilised or shared with relevant health services, meaning many were unaware of the pockets of low coverage in their district

Effective strategies that were recommended by study participants across five locations included;

- ensure parents have a range of flexible services in convenient locations that are free of charge including; drop in clinics, outreach, home visiting
- ensure services are culturally welcoming and acceptable for Aboriginal people including having Aboriginal Health Workers who understand the cultural factors and practical obstacles faced by many families
- better use reminders by sms, mail or phone so parents can organise appointments in advance
- better use immunisation data to keep service planners and providers informed of trends
- better understanding of the barriers faced by parents as they try to keep their children fully immunised will help in the design of tailored strategies that meet the needs of families, particularly those experiencing hardship or lack of cultural safety.

Due to the overarching influence of social and structural barriers to childhood vaccination observed;

- we decided to examine the data more closely, using literature and a lensed approach underpinned by the Social Determinants of Health framework[12]
- the lensed approach allowed further exploration of the impact of financial stress, poor mental health, drug and alcohol problems, domestic violence, assumed gender roles, lack of culturally acceptable health care for Aboriginal families, geography and changes to immunisation policies on families and how this may have contributed to pockets of low immunisation coverage.
- social and structural inequities were revealed. These often contributed to conflicting priorities that meant children's immunisations fell behind[12].

Capacity building:

Our projects have included a number of workshops to build research capacity in LHDs. These have included workshops to learn about the TIP approach and its methodology, to develop skills in qualitative research (data collection and analysis) and in developing cultural awareness and ensuring research is done in a culturally safe and appropriate way. Of particular value has been the research capacity building amongst Aboriginal Immunisation Heath Workers (AIHWs) in Tamworth, Kempsey and Lismore. AIHWs played a key role in implementing each of those studies and in ensuring that analysis of qualitative data reflected participant views, and that the discussion points and conclusions were relevant to Aboriginal community members and Aboriginal health services as well as to PHUs and NSW Health. These emerging researchers feature prominently as co-authors on papers and presentations[7-11]. This is especially important as the AIHWs are the link to families and community. The research process has further empowered them with a greater understanding of barriers and strategies most likely to be effective.

Dissemination of findings:

A summary of each study findings was presented to study participants, providing an opportunity for feedback prior to finalising. Study summaries were also provided to LHD research departments, Directors of PHUs and NSW Health, and the PHN in Kempsey and Lismore. Research teams produced a range of publications, presentations and posters[1-14]. Dissemination fora included international and Australian journals, Public Health Association of Australia, Aboriginal Health Research Showcase, the University of Newcastle, the Collaboration on Social Science and Immunisation, and the National Centre for Immunisation Research and Surveillance (NCIRS).

To facilitate dissemination of key findings and recommendations from five TIP studies, in consultation with TIP study collaborators and the NCRIS Social Science Team, Dr Bolsewicz designed a user-friendly online resource, 'Tree of community informed strategies to increase childhood vaccination rates' (hereafter 'The Tree')[14.] 'The Tree' aims to:

- visually summarise the research findings and recommendations
- suggest some practical strategies (in tree foliage) which health services may want to use to improve childhood vaccination rates (in communities with known socioeconomic disadvantage and little ideological opposition to vaccination)
- be used by parents and carers in their conversations about vaccinating their children in the community, and to advocate for changes
- 'The Tree' also illustrates the complex relationship between broad determinants of childhood vaccination identified through the local studies (as illustrated by streams, embedded in soil, which then run through the tree and nourish the foliage)

'The Tree' poster and three other visual outputs from the studies: The Three Step Process poster; Reclaiming our ways of doing research in improving immunisation rates amongst Aboriginal children 0-4 yrs: Our People, Our Ways poster, and the Lismore TIP Study Feedback poster are enclosed in the appendix.

Where to next?

Various opportunities exist to build on findings, recommendations, lessons from, and methodologies used in TIP studies in NSW. These may be of interest to Australian state and local governments, researchers and policymakers, as well as to the global research community. Below we outline a few such opportunities:

- using a logic model and gathering evidence to evaluate whether and how TIP has contributed to higher childhood vaccination uptake
- drawing on lessons from TIP studies to address current COVID-19 vaccination challenges with plateauing coverage for boosters and 5 to 11 year olds vaccinations
- using TIP in other vaccination challenges and ensuring the capacity is there to assist governments
- helping build capacity in behavioural insights and TIP in the Asia Pacific region so a country wishing to do a TIP has the expertise on hand to guide them
- tools to help enable communities to use TIP in more rapid forms of assessment action
- integrating with ongoing work at WHO headquarters on 'TIP light'

Over a period of 2016-2021, many organisations and individuals were involved in TIP studies in NSW, Australia in different capacity. Below we acknowledge and thank all organisations and individuals involved.

1) **Study authors who contributed to peer-reviewed publications:**
   a) Public Health Units
      i. Maitland TIP study and process evaluation: Prof David Durrheim, Director, Health Protection, Population Health, Hunter New England Local Health District (HNELHD); Ms Katrina Clark, National Indigenous Immunisation Coordinator at the National Centre for Immunisation Research and Surveillance (NCIRS); Dr Peter Massey, CNC, Program Manager Health Protection, HNELHD; Mr Patrick Cashman, CNC, Immunisation Coordinator, HNELHD; Mr Fakhrul Islam, Data Analyst, HNELHD, Dr Kathryn Taylor, Public Health Physician, HNELHD
      ii. Umina TIP study: Prof David Durrheim; Dr Peter Lewis, former Director, Public Health Unit, CCLHD; Ms Donna Moore, CNC, Immunisation Coordinator, CCLHD; Ms Colleen Gately, CNC former Immunisation Coordinator CCLHD; Mr Andrew Dixon, Statistician, CCHLD; Mr Paul Cook, Statistician, CCLHD
      iii. Tamworth TIP study: Prof David Durrheim; Mr Patrick Cashman; Mr Fakhrul Islam; Ms Amy Creighton, Aboriginal Program Manager Health Protection, HNELHD; Ms Natalie Allan, Aboriginal Immunisation Health Worker, HNELHD; Ms Paula Taylor, Aboriginal Immunisation Health Worker, HNELHD; Ms Carla McGrady, Aboriginal Health Worker for Communicable Diseases, HNELHD
      iv. Kempsey TIP study: Ms Jackie Thomas, Aboriginal Immunisation Health Worker, Mid-North Coast Local Health District (MNCLHD); Ms Melanie Fernando, Aboriginal Immunisation Health Worker,Port Macquarie Community Health, MNCLHD; Mr Paul Corben, former Director, Public Health Unit, MNCLHD
      v. Lismore TIP study: Ms Carolyn Lloyd, CNC, Immunisation Coordinator, North Coast Public Health Unit (NCPHU); Ms Virginia Padden, Aboriginal Immunisation Health Worker, NCPHU; Mr Paul Corben
      vi. Structural and social inequity publication: Prof David Durrheim; Ms Katrina Clark; Dr Sonya Ennis, Manager, Immunisation Unit, Health Protection, NSW Health
   b) Child and Family Health

      Maitland TIP study: Ms Hellen Higgins, CNC
   c) Community Health

      Maitland TIP study: Ms Loretta Baker, RN
   d) The University of Newcastle (UON)
      i. Dr Susan Thomas, Research Fellow, UON: Maitland, Umina, Tamworth, Kempsey and Lismore TIP studies; Structural and social inequity publication

ii. Dr Katarzyna Bolsewicz, Research Fellow, Research Fellow with the UON and NCIRS: Umina, Tamworth and Kempsey TIP studies; Structural and social inequity publication
iii. Dr Jacqueline Tudball, former Research Fellow, UON: Kempsey and Lismore TIP studies

e) The University of Sydney (USYD)
   i. Professor Julie Leask, Susan Wakil School of Nursing, USYD, and Visiting Fellow, NCIRS: Maitland TIP study and process evaluation; and Structural and social inequity publication

f) World Health Organization
   i. Maitland TIP study and process evaluation: Mr Robb Butler, Executive Director of the Regional Director's Office; Ms Lisa Menning, Technical Officer; Ms Katrine Bach Habersaat, Technical Officer, Vaccine-preventable Diseases and Immunization, WHO Regional Office for Europe

2) Immunisation partners

a) Parents and carers of young children
b) Aboriginal Community Controlled Health Services
   i. Lismore TIP study: Jullums House
   ii. Tamworth TIP study: Walhallow Aboriginal Corporation Health Program; Tamworth Aboriginal Medical Service
   iii. Umina TIP study: Mingaletta Aboriginal & Torres Strait Islander Corporation
   iv. Kempsey TIP study: Durri Aboriginal Medical Service Corporation
c) Local Health District
   i. Child and Family Health Nurses (CFHN): Maitland, Umina, Tamworth, Kempsey and Lismore TIP studies
   ii. Community Health: Tamworth, Kempsey and TIP studies
   iii. Aboriginal Maternal Infant Health Services (AMIS): Tamworth and Lismore TIP study
d) City Council
   i. Maitland TIP study: Maitland City Council
e) Primary Health Network (PHN)
   i. The Hunter New England and Central Coast PHN (HNECC PHN): Maitland, Umina and Tamworth TIP studies
   ii. PHN North Coast: Kempsey and Lismore TIP studies
f) Immunisation Taskforce
   i. Umina TIP study: Central Coast Immunisation Taskforce
   ii. Kempsey and Lismore TIP study: Mid-North Coast Regional Immunisation Taskforce; Mid-North Coast Aboriginal Immunisation Network Forum

3) Funders

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NSW Health Prevention Research Support Program

4) **Advisory Group**

Dr Sonya Ennis; Dr Susan Thomas; Dr Vicky Sheppeard, Director, Communicable Branch, NSW Health; Professor Julie Leask; Ms Katrine Bach Haabersat; Professor Andrew Searles, Associate Director, Health Research Economics, Hunter Medical Research Institute; Mr Paul Corben; Dr Peter Lewis, Ms Katrina Clark

5) **Community of Practice**

Ms Jodie Stevenson, CNC, Immunisation, HNELHD; Ms Paula Taylor; Ms Hellen Higgins; Ms Chris Fryer, CNC; Ms Jo Morgan, CNC; Mr Patrick Cashman; Dr Susan Thomas; Dr Katarzyna Bolsewicz; Ms Allison Tattersall, Manager, HNECCPHN; Ms Jackie Thomas; Ms Melanie Fernando; Mr John Turrahui, Public Health Officer, Communicable Disease and Surveillance MNCLHD; Ms Carolyn Lloyd; Ms Virginia Padden; Ms Natalie Allan; Ms Donna Moore; Ms Colleen Gately; Mr Fakhrul Islam; Ms Leanne White, Maitland Community Representative

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[2]Thomas, S., Durrheim, D., Islam, F., Higgins, H., & Cashman, P. (2022). Improved childhood immunisation coverage using the World Health Organization's Tailoring Immunization Programmes guide (TIP) in a regional centre in Australia. *Vaccine, 40*(1), 18-20. https://doi.org/10.1016/j.vaccine.2021.11.067

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[4]Bolsewicz, K., Thomas S., Moore D., Gately, C., Dixon, A., Cook, P., & Lewis, P. (2020). Using the Tailoring Immunization Programmes guide to improve child immunisation in Umina, New South Wales: we could still do better. *Aust J Prim Health, 26*(4), 325-331. DOI: 10.1071/PY19247

[5]Bolsewicz, K and Moore, D. (2021). "Improving childhood immunisation rates: experiences from the Central Coast Local Health District". Long oral presentation at the 2021 Public Health Association of Australia Conference, 29 June-1 July 2021.

[6]Bolsewicz, K., (2019) "TIP implementation process used in Central Coast Local Health District". Presented at the 2019 NSW Health Immunisation Policy and Practice Workshop, 13 Aug 2019, Sydney Australia.

[7]Thomas, S., Allan, N., Taylor, P., McGrady, P., Bolsewicz, K., Islam, F., . . . Creighton, A. (2021). Combining First Nations Research Methods with a World Health Organization Guide to Understand Low Childhood Immunisation Coverage in Children in Tamworth, Australia. *The International Indigenous Policy Journal, 12*(2). https://doi.org/10.18584/iipj.2021.12.2.10959

[8]Allan, N., McGrady, C., Taylor, P., Thomas, S., Bolsewicz, K. & Creighton, A., Reclaiming our ways of doing research in improving immunisation rates amongst Aboriginal children 0-4 yrs: Our People, Our Ways. Presented at the Aboriginal Health Research Showcase, 27-28 February 2020. **(in the appendix)**

[9]Bolsewicz, K., Thomas, J., Corben, P., Thomas, S., Tudball, J., & Fernando, M. (2021). "Immunisation, I haven't had a problem, but once again the transport, making an appointment, the time that you waste and all of those things are an issue."- understanding childhood under-immunisation in Mid North Coast NSW, Australia. *Aust J Rural Health*. https://doi.org/10.1111/ajr.12771

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[11] Paden, V., Lloyd, C., Thomas, S. Lismore TIP Study Feedback poster. Feb 2022 (unpublished). **(in the appendix)**

[12]Thomas S, Bolsewicz K, Leask J, Clark C, Ennis S, Durrheim, DN. Structural and social inequities contribute to pockets of low childhood immunisation in New South Wales, Australia. International Journal for Equity in Health (2nd review completed, awaiting editor's decision). Vaccine: X.2021. VACX-D-21-00065R2

[13]Bolsewicz, K and Thomas, S. (2020). "Using the WHO's Tailoring Immunization Programmes (TIP) guide in communities in NSW; similarities, local differences and implications for health services". In a Collaboration on Social Science and Immunisation (COSSI) Knowledge Exchange Meeting, 26 October 2020, Sydney, Australia. https://www.ncirs.org.au/COSSI

[14] Bolsewicz, K. (2022). "Tree of community informed strategies to increase childhood vaccination rates". National Centre of Immunisation Research and Surveillance website, published under resources for providers https://www.ncirs.org.au/health-professionals/ncirs-fact-sheets-faqs (new accordion), and the community https://www.ncirs.org.au/public/strategies-increase-vaccination-uptake (new page under 'For the public'). **(in the appendix)**

Appendix

Co-designing a tailored childhood immunisation strategy in Maitland; The Three Step Process

Susan Thomas[1,4], Helen Higgins[2], Chris Fryer[2], Joanne Morgan[2], Margaret Ridgeway[2], Helen Hayes[3], Patrick Cashman[4], Jody Stephenson[4], Paula Taylor[4], Fakhrul Islam[4], Allison Tattersall[5], Sarah Adams[6], Leanne White[7], Jing Jiang[8], David Durrheim[1,4]

1. University of Newcastle, School of Public Health and Community Medicine
2. Hunter New England Local Health District, Child and Family Health Nurses
3. Hunter New England Local Health District, Children and Young People's Service
4. Hunter New England Local Health District, Population Health
5. Hunter New England and Central Coast Primary Health Network
6. Maitland Neighbourhood Centre, Maitland
7. Community Representative
8. Hunter New England Local Health District, Multicultural Health

Introduction

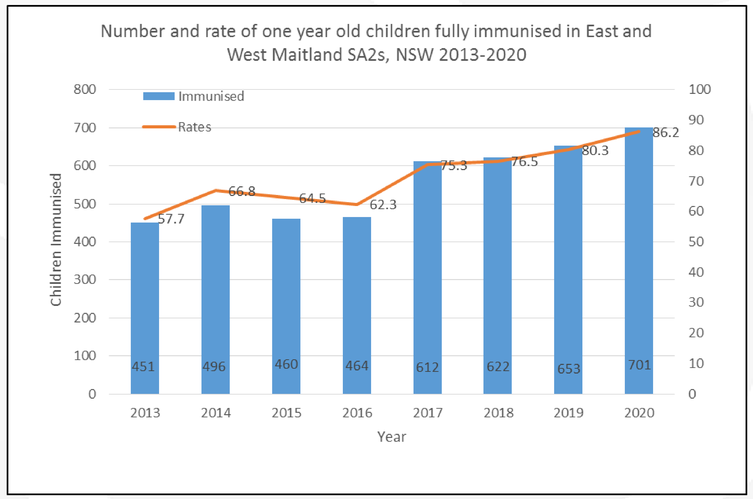
In 2016, in Maitland NSW, only 62.3% of one year olds were fully immunised. Research found parents weren't opposed to immunisation but experienced socio-economic hardship, competing priorities and service access barriers. A flexible approach using reminders, outreach and home visiting was suggested as an improvement strategy (1) .

Method

In 2017 a working party was formed comprised of immunisation stakeholders and community representatives to translate study findings and co-design a tailored strategy. The Three Step Process was developed and implemented.

Results

In 2020 86.2% of one year olds were fully immunised, an increase of 23.9% since 2016. Implementation is ongoing.



The Three Step Process; reminders, outreach and home visiting

each step can be adapted to local context

Step One: Reminders

Role of Population Health team;

1. Use Australian Immunisation Register data each month to identify children at least 30 days overdue for at least one vaccine. Remove duplicates and correct data entry errors.
2. Enter children into purpose made database.
3. If child has a GP, contact and discuss reminders and catch-up plan
4. If no GP, send friendly reminder in handwritten, colourful envelope with an invitation card to attend a local GP agreeing to bulk bill families in the target group
5. Monitor children to ensure they catch up within 2 months
6. Refer children who did not catch up or respond to reminders to Child and Family Health Nurses in Step Two and update database.
7. Participate in case management planning and handover of list of children

Role of the Primary Health Network;

1. Liaise with local GPs to inform them of the access barriers
2. Develop an 'invitation card' to be posted with reminder letter that can be taken to GPs who agree to bulk bill families in the target group

2 months

Step Two: Outreach

Role of Child and Family Health Nurses;

1. Identify children who remain under immunised 2 months after reminders were initiated.
2. Contact family and offer an outreach appointment at a nurse led clinic (Maitland Neighbourhood Centre).
3. Arrange appointment and immunise the child, initiating a catch-up plan as required.
4. Offer age appropriate assessments and relevant referrals to support the child and family
5. Monitor all children to ensure they catch up.
6. Refer those who did not catch up or are not on a catch up plan to Step Three and update database.

2 months

Step Three: Home Visiting

Role of Child and Family Health Nurses;

1. Identify children who remain under immunised 2 months after offer of outreach appointment.
2. Contact family and offer a home visit to immunise the child and initiate a catch up plan.
3. Arrange home visit.
4. Offer additional age appropriate assessments, relevant referrals to support the child and family.
5. Monitor children to ensure they catch up.
6. Families that were not contactable or refused services through the Three Steps can be removed from the process.
7. Document and update database

Aboriginal Immunisation Healthcare Worker and Multicultural Project Officer assist in contacting families and arranging services

Conclusion

Co-designed, tailored strategies are required to improve immunisation rates in areas with low coverage. Implementing change in immunisation service delivery takes time and requires clarity of new roles/responsibilities (2). Further capacity building amongst staff may be required. Strong partnerships are central throughout the process. Secondary outcomes include improved access to primary health care. Nurse home visiting built trust and encouraged holistic care, strengthening the health and well being of children and families.

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This project was supported by the Prevention Research Support Program funded by the New South Wales Ministry of Health.

Reclaiming our ways of doing research in improving immunisation rates amongst Aboriginal children 0-4 yrs

Natalie Allan [1], Carla McGrady [1], Paula Taylor [2], Susan Thomas [3], Katarzyna Bolsewicz [3], Amy Creighton [1]

1.Hunter New England Local Health District, Population Health, Tamworth, NSW
2.Hunter New England Local Health District, Population Health, Wallsend, NSW
3.University of Newcastle, School of Medicine and Public Health, Callaghan, NSW

Contact natalie.allan@health.nsw.gov.au

Introduction/Aims

A team of Aboriginal and non-Aboriginal researchers have used the World Health Organization's Tailoring Immunization Programmes (TIP) guide to address the high number and rate of Aboriginal children aged 0-4 years not fully immunised in Tamworth, NSW (240, 30% in 2018).
The team is conducting research into the barriers and enablers to vaccination in the community to devise targeted solutions to improve immunisation rates among Aboriginal children.
This project is governed and led using Aboriginal ways of knowing, being, and doing.

Methods/Approach

Participatory Action Research methods have been used: reclaiming cultural ways of doing business and creating culturally safe, respectful, and meaningful engagement. A cultural lens will be applied throughout all phases of the research.
To support culturally safe research, the Aboriginal researchers led three workshops for all research team members. The workshops provided a space for two-way learning. The researchers shared knowledge, experience and skills incorporating community, contextual and cultural knowledge in designing and conducting qualitative research.
Aboriginal researchers identified, invited and facilitated interviews and group discussions with Aboriginal parents, carers and service providers. Non-Aboriginal researchers facilitated interviews with non-Aboriginal service providers. The interview structure was based on Aboriginal ways of talking, listening, and yarning. Data were analysed manually by all members of the research team, using a group process.

Our people Our ways

Results

The research process will result in meaningful stories being shared. The Aboriginal researchers will take the findings back to community, to ensure that the findings are reflective of lived experiences. After obtaining feedback, the researchers will examine ways of using these results to inform community-led solutions to improve immunisation rates.

Conclusion

This project demonstrates research practices governed and led by Aboriginal researchers.
This research will inform culturally safe initiatives to improve immunisation rates for Aboriginal children.

The artwork depicts the locations and connections of families involved in the research.
We thank the Tamworth Aboriginal community for their valued input into this research.
Artwork: C.McGrady

Acknowledgements Funding: This is a NSW Regional Health Partners project. This project was supported by the Australian Government's Medical Research Future Fund (MRFF) as part of the Rapid Applied Research Translation program and by the Prevention Research Support Program funded by the New South Wales Ministry of Health.

A little while ago we asked you about your views on Immunisation and the challenges around getting children immunised in Lismore and Goonellabah...

This is a summary of what we have learnt so far....

Families need to feel safe and comfortable when accessing services

Some families really need support to access immunisation services

Immunisation information needs to be easy for parents to use and access

Parents like recalls and reminders to help keep their Jarjums up to date

Its hard to keep kids up to date when there are barriers to accessing health services

Parents views on immunising influence their decision to immunise thier kids

Take a leaf and add an idea if you like...

Lismore TIP Study

Tailoring Immunisation Program

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NSW Regional HEALTH PARTNERS
CENTRE FOR INNOVATION IN REGIONAL HEALTH

World Health Organization
REGIONAL OFFICE FOR Europe

THE UNIVERSITY OF NEWCASTLE AUSTRALIA

Tree of community informed strategies to increase childhood vaccination rates

Second page provides a description of the tree and links to studies that informed the tree (referenced on page one) from regional and rural NSW. We thank all communities, parents and carers, public health units and health service stakeholders for sharing their views.

DATA and REMINDERS

Parents remember to vaccinate

SERVICES

Primary care services are accessible and appropriate

CONNECTING SERVICES TO COMMUNITIES

Services are responsive to community needs

INFORMATION FOR FAMILIES

Families are more informed about vaccination

– Services are aware of gaps
- Services send timely, personalised reminders
Refs: 1 2 3 5

– Services well-staffed; communities trust staff
– Services use broader model of health (free services, transport, flexibility, convenient locations and extended clinic times, home visits, extra supports for the most vulnerable)
Ref: 1 2 3 4 5

– Services are aware of community needs
- Trusted community champions
Refs: 4 5

– Services use supportive communication with families
- Jargon free, simple vaccination messages are available
Refs: 2 5

AIR data better used

Accessible, appropriate mainstream services

Supported Aboriginal Medical Services

Improved community consultation

Improved provider communication skills

Strong policy and funding

National Immunisation Strategy

Reliable AIR data

Services generate AIR reports

Communication training for providers

STRONG HEALTH WORKFORCE

Work with affected community

Ongoing cultural safety training

Culturally safe leadership

Aboriginal health workforce across all services

Regional and rural workforce

- Opportunities for PD
- Strong leadership
- Flexible work
- Employ local people

- Hire and retention strategies
- More autonomy

NCIRS National Centre for Immunisation Research and Surveillance

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The *tree of community informed strategies to improve childhood vaccination rates*

The t*ree of strategies to improve childhood vaccination rates* presents some practical strategies which health services may want to use to improve childhood vaccination rates in communities with known socio-economic disadvantage and little ideological opposition to vaccination. These strategies were suggested by partners in immunisation (community and parents, public health units, health services) from regional and rural NSW, Australia, who participated in 5 studies between 2017 and 2020, referenced below*. These studies used the World Health Organization Tailoring Immunization Programmes (TIP) approach to understand reasons for childhood under-immunisation and to suggest tailored strategies. In a regional community of Maitland, implementation of tailored strategies (The Three Step Process) was followed by a 24 percentage point increase in coverage among the one year olds (Thomas, Durrheim, Islam, Higgins, & Cashman, 2022).

Strategies included in *the tree* are not meant to be exhaustive; there may be other strategies helpful in addressing childhood under-vaccination.

We invite immunisation stakeholders across Australia to use and adapt *the tree* to their local needs when designing tailored strategies to help more families get their children vaccinated on time.

For more information please contact Dr Kasia Bolsewicz (Katarzyna.Bolsewicz@health.nsw.gov.au), from the University of Newcastle/ National Centre for Immunisation Research (NCIRS), who developed *the tree* with input from collaborators and the NCIRS Social Science Team.

The tree also illustrates the complex relationship between broad determinants of childhood vaccination identified through the local studies. Tree 'foliage' (containing practical strategies) will bear 'fruits' of: parents remembering about vaccinations; services being responsive to community needs, accessible and appropriate; and families being informed about vaccination. However, these 'fruits' depend on conductive structural, social and cultural factors (listed in *the tree* trunk and roots) which are grounded in policy-level investments. Without such investments, it may not be possible to achieve high equitable coverage with childhood vaccination.

** This is a NSW Regional Health Partner project. This project was supported by the Australian Government's Medical Research Future Fund (MRFF) as part of the Rapid Applied Research Translation Program. Studies were conducted by researchers from the University of Newcastle in collaboration with the University of Sydney, World Health Organization, NSW Ministry of Health and local Public Health Units. Characteristics of each study setting are described in footnotes.*

NCIRS National Centre for Immunisation Research and Surveillance

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Footnotes and references:

1 TIP in Maitland (2017): Strategies suggested to help improve childhood vaccination rates among socially and economically disadvantaged mums some of whom may be afraid of accessing services.

More detail in:

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