Associate Professor Nikki Turner

Academic General Practitioner

University of Auckland

University of Otago (Wellington Campus)

Saturday, June 10, 2017

9:00 - 9:30 Update on Vaccinations

Update on Vaccinations

Nikki Turner
A/Prof Dept GP and Prim HC
Director, Immunisation Advisory Centre
The University of Auckland
June 2017

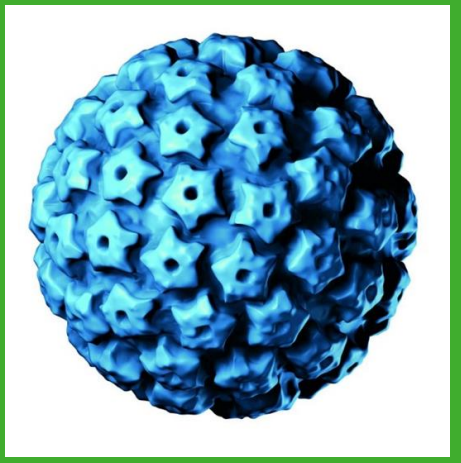
IMMUNISATION ADVISORY CENTRE
THE UNIVERSITY OF AUCKLAND
Te Whare Wānanga o Tāmaki Makaurau

Index

- 2017 National Immunisation Schedule
  - HPV
  - Varicella
  - Other
- Cold Chain
- Vaccine hesitancy and trust
- Private Market Vaccines

HPV vaccination

For boys and girls



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Cancers caused by high-risk HPV types

Cervix	• >99%
Penis	• >60%
Vulva, Vagina	• >70%
Anus	• >90%
Oropharynx	• >70%

http://www.cdc.gov/hpv/parents/cancer.html

HPV9 vaccine and cervical cancer

HPV4 covers >70% of oncogenic types

HPV9 covers >87% of oncogenic serotypes

Richard Roden, Wu T (2006) How will HPV vaccines affect cervical cancer? Nature Reviews Cancer 6, 753-763 doi:10.1038/nrc1973

But is it safe?

Gee, J., Weinbaum, C., Sukumaran, L., & Markowitz, L. E. (2016). Quadrivalent HPV vaccine safety review and safety monitoring plans for nine-valent HPV vaccine in the United States. *Human vaccines & immunotherapeutics*, *12*(6), 1406-1417.

Post licensure studies - most compare outcomes in vaccinated with unvaccinated

Table 1. Post-licensure published quadrivalent human papillomavirus vaccine (4vHPV) safety studies.

System or review (country)	Year of Publication	Number of doses evaluated		Description	Methods	Findings
VAERS (US)[a]	2009	N/A	600,000 doses	Summary of 12,424 VAERS reports following 4vHPV between 2006–2008	Spontaneous reporting; data mining for disproportional reporting	Disproportional reporting of syncope and VTE
Vaccine Safety Datalink (US)[b]	2011	600,558	General safety	Large database used for active surveillance and research; safety assessment of 9 pre-specified health outcomes among females vaccine recipients aged 9–26 years	Cohort design with weekly sequential analyses of electronic medical data	No statistically significant increase in risk for the outcomes monitored; non-significant elevated risk detected for VTE
Institute of Medicine review (US)[c]	2011	N/A	346,972 doses	Review of available 4vHPV safety data	Review of published studies, case reports, and surveillance systems	No evidence to support association among 12 outcomes; anaphylaxis causally associated with 4vHPV; syncope associated
Post-marketing commitment to FDA (US)[d]	2012	346,972	General safety, VTE, neurologic, death	General follo adm two orga		weeks ther
Post-marketing commitment to FDA (US)[e]	2012	346,972	Autoimmune	Assessm auto follo 4vH care		als for
VAERS (US)[f]	2013	N/A	696,420 doses	Review follo 200		ing cerns
Register-based cohort study (Denmark and Sweden)[g]	2013	696,420	Autoimmune, Neurologic, VTE	Assessm auto conc follo fem		ween
VAERS (US)[h]	2014	N/A	General safety	Review follo 2006–2014		ing cerns
Pharmacoepidemiologic General Research Extension (France)[i]	2014	N/A	500,345 doses	Assessment of 6 different autoimmune outcomes following 4vHPV among 211 cases and 875 controls aged 14–26 years	Case-control study with recruitment of cases and controls through registries	No increased risk for combined endpoint of six autoimmune disorders
Register-based cohort study (Denmark)[j]	2014	500,345	VTE	Assessment of VTE following 4vHPV among women aged 10–44 years	Self-controlled case series using national patient registers	No increased risk for VTE

Outcomes include autoimmune, neurological, blood clots, CNS, CRPS, other specified conditions....

1,924,581

1,426,399

1,240,000

System or review (country)	Year of Publication	Number of doses evaluated	addressed	Description	Methods	Findings
Register-based cohort stud (Denmark and Sweden)[f]		,581	Autoir	t of multiple sclerosis er demyelinating s of the central s system among aged 10–44 years	Cohort design using data linked to national registers	No association with the development of multiple sclerosis and other demyelinating diseases
Vaccine Safety Datalink (US)[l]	2015	1, 240, 000	VTE	Assessment of VTE among adolescents and young adults aged 9–26 years	Self-controlled case series; cases confirmed by medical record review	No increase risk for VTE
Sentinel System (US)[m]	2015	1,423,399	VTE	Assessment of VTE among females aged 9–26 years	Self-controlled risk interval design; cases confirmed by medical record review	No increased risk for VTE
VAERS (US)[n]	2015	N/A	Neurologic	Review of 21 CRPS-related VAERS reports following 4vHPV between 2006 and 2015	Spontaneous reporting; clinical review of CRPS cases	Lack of evidence to suggest an association; data suggest CRPS following HPV vaccine is rare
Post-marketing commitment to FDA (US)[o]	2015	N/A	Pregnancy	Review of 4,919 reports of pregnancy following 4vHPV between 2006–2012	Voluntary reporting to pregnancy registry	Data were reassuring with no elevated reporting of adverse pregnancy outcomes
VAERS (US)[p]	2015	N/A	Pregnancy	Review of 147 VAERS pregnancy reports following 4vHPV between 2006 and 2013	Spontaneous reporting; data mining for disproportional reporting	No unexpected patterns fetal adverse events after 4vHPV
Vaccine Safety Datalink (US)[q]	2016	1,355,535	Death	Evaluation of deaths among individuals aged 9–26 years	Case-centered method; medical record review	Rate of death was lower than the national expected rate of death in this population

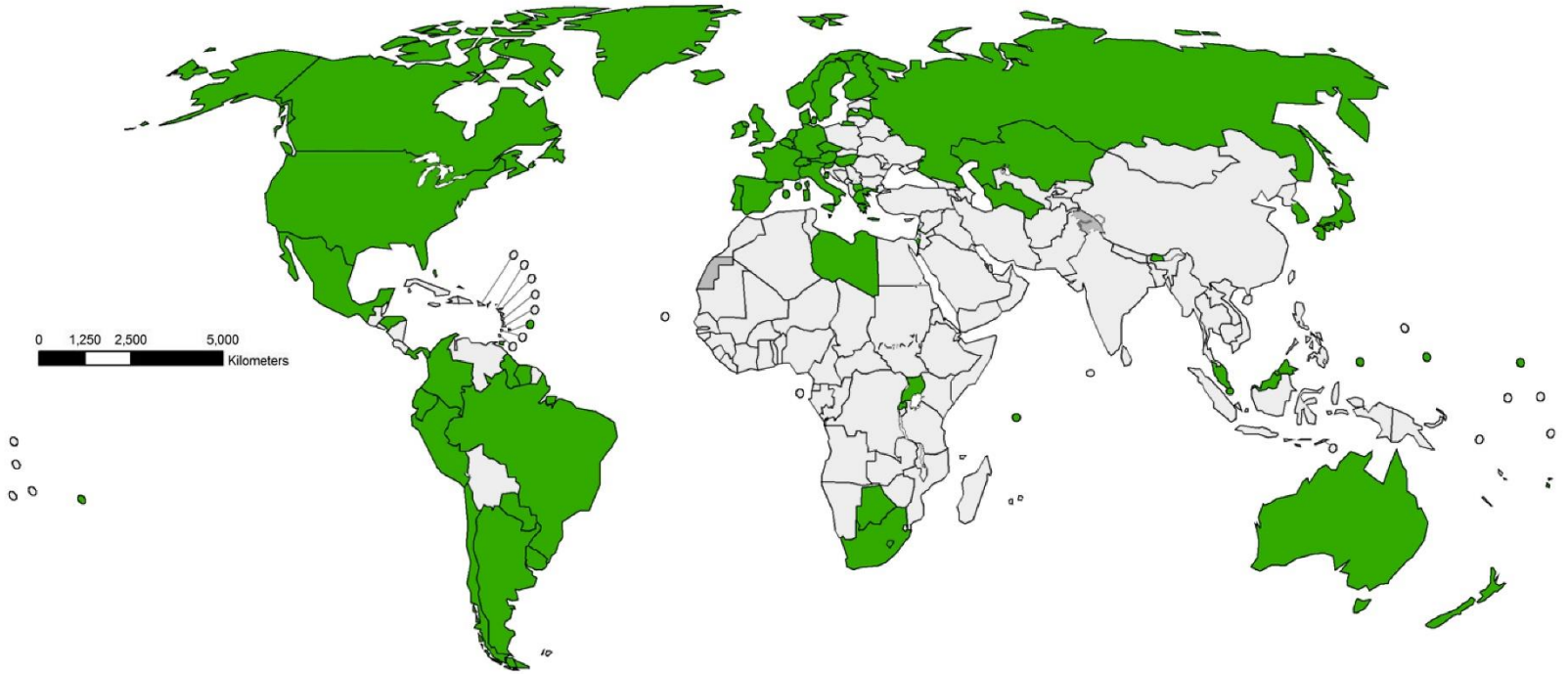
Abbreviations

CRPS- Chronic Regional Pain Syndrome, FDA- Food and Drug Administration, HIV- Human immunodeficiency virus, 4vHPV- Quadrivalent Human Papillomavirus vaccine, VAERS- Vaccine Adverse Event Reporting System, VTE- Venous thromboembolism

Sources

[a]Slade, B.A., et al., Post-licensure safety surveillance for quadrivalent human papillomavirus recombinant vaccine. JAMA, 2009. 302(7): p. 750–757.
[b]Gee, J., et al., Monitoring the safety of quadrivalent human papillomavirus vaccine: findings from the Vaccine Safety Datalink. Vaccine, 2011. 29(46): p. 8279–8284.
[c]Institute of Medicine. Adverse Effects of Vaccines: Evidence and Causality. 2011.
[d]Klein, N.P., et al., Safety of quadrivalent human papillomavirus vaccine administered routinely to females. Arch Pediatr Adolesc Med, 2012. 166(12): p. 1140–8.
[e]Chao, C., et al., Surveillance of autoimmune conditions following routine use of quadrivalent human papillomavirus vaccine. J Intern Med, 2012. 271(2): p. 193–203.
[f]Stokley S, et al., Human Papillomavirus Vaccination Coverage Among Adolescent Girls, 2007–2012, and Postlicensure Vaccine Safety Monitoring, 2006–2013 — United States. MMWR Recomm Rep, 2013. 62(29); p. 591–595
[g]Arnheim-Dahlstrom, L., et al., Autoimmune, neurological, and venous thromboembolic adverse events after immunisation of adolescent girls with quadrivalent human papillomavirus vaccine in Denmark and Sweden: cohort study. BMJ, 2013. 347: p. f5906.
[h]Stokley S, et al., Human papillomavirus vaccination coverage among adolescent girls, 2007–2012, and post-licensure vaccine safety monitoring, 2006–2013 — United States. MMWR Recomm Rep. 2014. 63(29); p. 620–4.
[i]Grimaldi-Bensouda, L., et al., Autoimmune disorders and quadrivalent human papisslomavirus vaccination of young female subjects. J Intern Med, 2014. 275(4): p. 398–408.
[j]Scheller, N.M., et al., Quadrivalent human papillomavirus vaccine and the risk of venous thromboembolism. JAMA, 2014. 312(2): p. 187–8.
[k]Scheller, N.M., et al., Quadrivalent HPV vaccination and risk of multiple sclerosis and other demyelinating diseases of the central nervous system. JAMA, 2015. 313(1): p. 54–61.
[l]Naleway, A.L., et al., Absence of venous thromboembolism risk following quadrivalent human papillomavirus vaccination, Vaccine Safety Datalink, 2008–2011. Vaccine, 2016; 34(1): p. 167–71.
[m]Yih, W.K., et al., Evaluation of the risk of venous thromboembolism after quadrivalent human papillomavirus vaccination among US females. Vaccine, 2016; 34(1): p. 172–8.
[n]Weinbaum C, et al.. HPV Vaccination and Complex Regional Pain Syndrome: Lack of Evidence. EBioMed, 2015. 2(9): p. 1014–1015.
[o]Goss, M.A., et al., Final report on exposure during pregnancy from a pregnancy registry for quadrivalent human papillomavirus vaccine. Vaccine, 2015. 33(29): p. 3422–8.
[p]Moro, P.L., et al., Safety of quadrivalent human papillomavirus vaccine (Gardasil) in pregnancy: adverse events among non-manufacturer reports in the Vaccine Adverse Event Reporting System, 2006–2013. Vaccine, 2015. 33(4): p. 519–22.
[q]McCarthy, N.L., et al. Lack of association between vaccination and death in individuals 9–26 years of age. Pediatrics, 2016; 137(3): p. 1–8.

Countries with HPV vaccine in the national immunization programme to date



* Includes partial introduction

Data source: WHO/IVB Database, as of 16 December 2016
Map production Immunization Vaccines and Biologicals (IVB),
World Health Organization

WHO

Does it work?

Effectiveness of HPV4 vaccine

- Over 130 published studies to June 2016
  - Maximal reduction of around 90% for HPV infection, genital warts and cervical abnormalities (57 studies)
- Profound reduction in genital warts (e.g. Australia and Denmark)
  - Mediocre coverage also leads to significant reductions
  - Elimination of genital warts may be possible

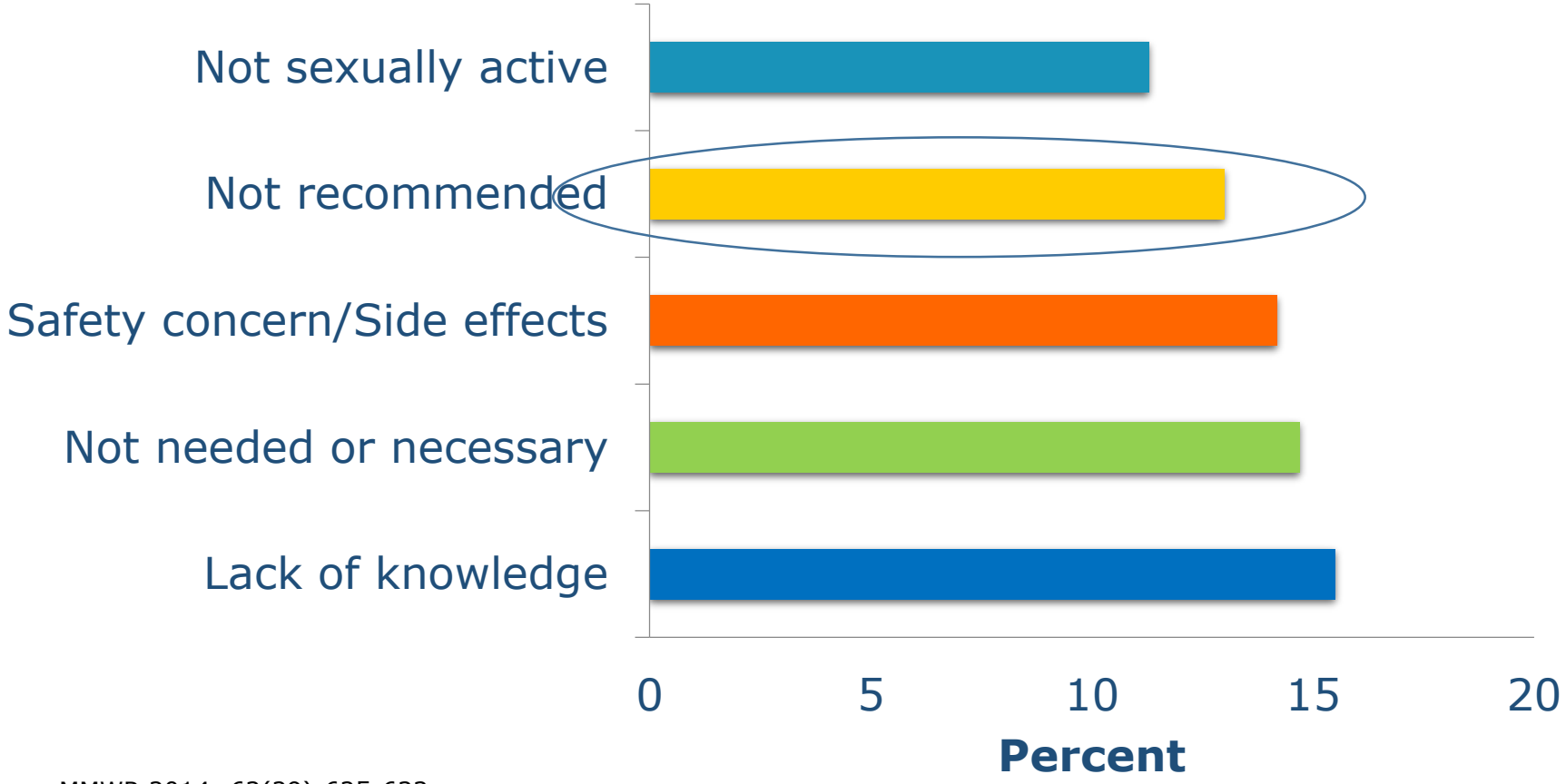
Garland SM, Kjaer SK, Muñoz N, et al. Impact and Effectiveness of the Quadrivalent Human Papillomavirus Vaccine: A Systematic Review of Ten Years of Real-World Experience. Clin Infect Dis 2016:ciw354.

Immunogenicity

The younger the better response

http://www.who.int/immunization/sage/meetings/2014/april/1_HPV_Evidence_based_recommendationsWHO_with_Appendices2_3.pdf

Reasons parents won't initiate HPV vaccination for children



MMWR 2014; 63(29);625-633;

Varicella Vaccines

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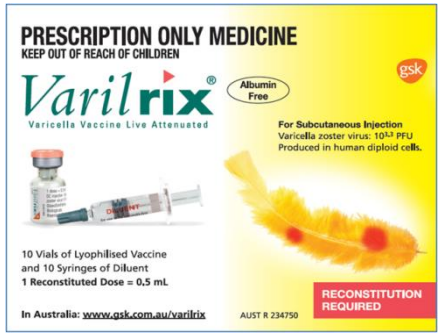
NEW schedule



From 1st July 2017 on National Schedule

- Single dose at 15 months alongside Hib, PCV10 and MMR
- Four injections different sites

- Funded Catch-up dose for 11 year olds previously unvaccinated with no history of chickenpox infection
- Funding criteria for special groups remain the same

Why add a vaccine in for such a mild disease?

The Immunisation Advisory Centre

CHICKENPOX

Disease and Vaccine information

immune.org.nz

Why not use MMR-V so requires less injections

Multiple injections!!

Get all four at 15 months

Find out more at immune.org.nz

The Immunisation Advisory Centre

Supported by an unrestricted grant from GSK.

Rotavirus Vaccine
Brand change

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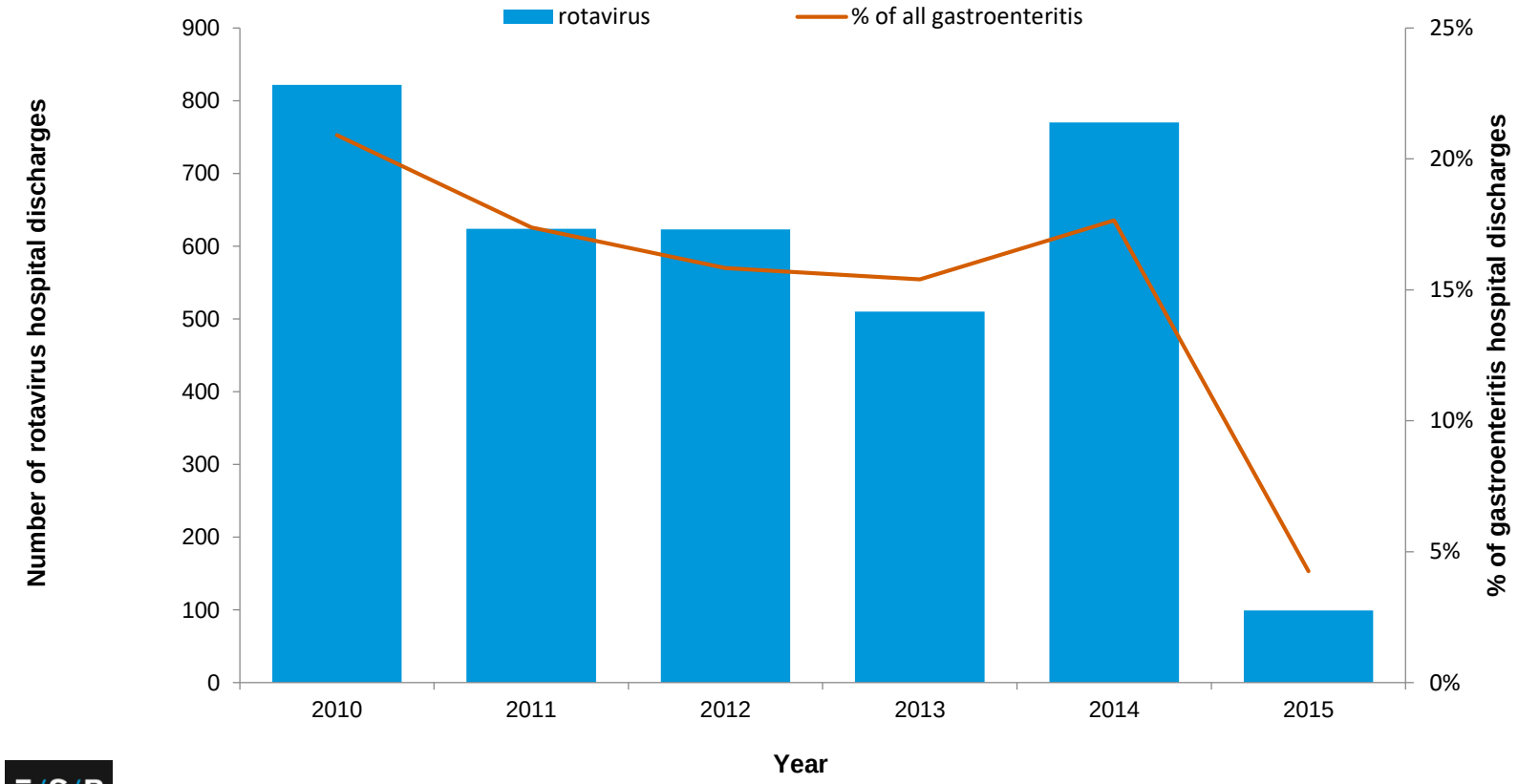
Hospitalisation data children <5 years 2010-15



Institute of Environmental Science and Research Ltd – unpublished data

Delivery

- First dose 6 weeks, second dose 3 months
  - First dose MUST be complete by 15 weeks
  - Second dose MUST be complete by 25 weeks of age
- Administer first
  - Sucrose content reduces pain for injectable vaccines
- Handwashing
- Interchangeability
  - No data, but expected to be fine
  - If started with Rotateq®, can complete with Rotarix®
    - Must be within the 25 weeks

Pneumococcal conjugate Vaccine

Brand change

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2017 schedule changes summary

Vaccine changes	Vaccine	Eligibility	Introduced
HPV	Gardasil 9® (HPV9)	For young men and young women: <15 years: two doses >15 - 26 years: three doses	1 January 2017
Varicella	Varilrix® (Varicella)	One dose 15 months Catch-up at 11 years*	1 July 2017
Rotavirus vaccine	Rotarix® (RV1)	First dose by 14 weeks Second by 24 weeks	1 July 2017

* For previously unvaccinated children with no history of chickenpox infection

2017 further changes – brand only

Schedule changes	Vaccine	Eligibility	
Pneumococcal	Synflorix® PCV10	No change*	1 July 2017
MMR	Priorix® MMR	No change	1 July 2017
Hib	Hiberix® Hib	No change	1 July 2017

* Prevenar13 remains for high risk pneumococcal programme

High risk groups for pneumococcal disease

Use PCV13 followed by PPV23

FUNDED

HIV, chemotherapy pre or post splenectomy, functional asplenia, pre or post transplant or haemopoietic stem cell transplant, renal dialysis, complement deficiency, cochlear implants, primary immundeficiency

Other groups being considered…..

Funded high risk programme – - try the IMAC website resource

http://www.immune.org.nz/sites/default/files/resources/ProgrammeScheduleChanges20170113V01Final_0.pdf

Funded vaccines for special groups from 1st January 2017

Please refer to individual vaccines for detailed eligibility criteria and to the electronic *Immunisation Handbook 2014 (3rd edition)* for vaccine administration schedules

Asplenia - Functional or Pre- or Post-Splenectomy Immunisation Programme
- Hib, influenza, meningococcal, pneumococcal, and Tdap vaccines

Chemotherapy - following
- Hib, HPV, influenza, pneumococcal, Tdap, and varicella vaccines

Also consider immunosuppression for longer than 28 days
- Hepatitis B and meningococcal vaccines

Cochlear implant
- Hib, influenza, and pneumococcal vaccines

Error of metabolism at risk of major metabolic decompensation
- Influenza and varicella vaccines

Haematopoietic stem cell transplantation (HSCT) - following
- Hib, HPV, influenza, meningococcal, pneumococcal, Tdap, and varicella vaccines

Also consider immunosuppression for longer than 28 days
- Hepatitis B vaccine

Hepatitis A case - contact with
- Hepatitis A vaccine

Hepatitis B case - contact with Infants born to mothers who are hepatitis B surface antigen (HBsAg) positive
- Hepatitis B vaccine and hepatitis B immunoglobulin (HBIG) at birth

Household and sexual contacts of known acute hepatitis B cases or carriers
- Hepatitis B vaccine

Hepatitis C positive individual
- Hepatitis B vaccine

HIV positive individual
- Hepatitis B, HPV, influenza, meningococcal, pneumococcal, and varicella vaccines

Immune deficiency/immunosuppression

Individuals with an immune deficiency
- Influenza, meningococcal, and pneumococcal vaccines

Household contacts of children or adults who will be/are immunosuppressed
- Varicella vaccine

Prior to elective immunosuppression for longer than 28 days
- Varicella vaccine

Following immunosuppression for longer than 28 days
- Hepatitis B, Hib, influenza, meningococcal, and Tdap vaccines

Influenza Immunisation Programme
- » Pregnancy,
- » Children aged 6 months to under 5 years who have been hospitalised for respiratory illness or have a history of significant respiratory illness,
- » Individuals aged 6 months to under 65 years with an eligible medical condition,
- » Individuals aged 65 years or older.
- Influenza vaccine

Kidney disease
- Hepatitis B, Hib, influenza, pneumococcal, Tdap, and varicella vaccines

Liver disease
- Hepatitis A and varicella vaccines

Meningococcal disease case - contact with
- Meningococcal vaccine

Needle stick injury - following
- Hepatitis B vaccine

Non-consensual sexual intercourse - following
- Hepatitis B vaccine

Pneumococcal disease - increased risk
- Additional pneumococcal vaccine

Pregnancy
- Influenza and Tdap vaccines in every pregnancy

Rubella - women of childbearing age who are not immune to rubella
- MMR vaccine

Solid organ transplantation

Prior to solid organ transplantation
- Hib, meningococcal, pneumococcal, Tdap, and varicella vaccines

Following solid organ transplantation
- Hepatitis A, hepatitis B, Hib, HPV, influenza, meningococcal, pneumococcal, and Tdap vaccines

Tuberculosis - infants and children aged under 5 years at risk of tuberculosis (TB) exposure
- BCG vaccine

VACCINE KEY

BCG: tuberculosis
Hib: *Haemophilus influenzae* type b
HPV: human papillomavirus
MMR: measles, mumps, rubella
Tdap: tetanus, diphtheria, acellular pertussis
Varicella: chickenpox

The Immunisation Advisory Centre

For more details, visit **immune.org.nz**

Funded vaccines for special groups from 1st January 2017

The Immunisation Advisory Centre

Please refer to individual vaccines for detailed eligibility criteria and to the electronic *Immunisation Handbook 2014 (3rd edition)* for vaccine administration schedules

Asplenia — Functional or Pre- or Post-Splenectomy Immunisation Programme
- Hib, influenza, meningococcal, pneumococcal, and Tdap vaccines

Chemotherapy — following
- Hib, HPV, influenza, pneumococcal, Tdap, and varicella vaccines

Also consider immunosuppression for longer than 28 days
- Hepatitis B and meningococcal vaccines

Cochlear implant
- Hib, influenza, and pneumococcal vaccines

Error of metabolism at risk of major metabolic decompensation
- Influenza and varicella vaccines

Haematopoietic stem cell transplantation (HSCT) — following
- Hib, HPV, influenza, meningococcal, pneumococcal, Tdap, and varicella vaccines

Also consider immunosuppression for longer than 28 days
- Hepatitis B vaccine

Hepatitis A case — contact with
- Hepatitis A vaccine

Hepatitis B case — contact with

Infants born to mothers who are hepatitis B surface antigen (HBsAg) positive
- Hepatitis B vaccine and hepatitis B immunoglobulin (HBIG) at birth

Household and sexual contacts of known acute hepatitis B cases or carriers
- Hepatitis B vaccine

Hepatitis C positive individual
- Hepatitis B vaccine

HIV positive individual
- Hepatitis B, HPV, influenza, meningococcal, pneumococcal, and varicella vaccines

Immune deficiency/immunosuppression

Individuals with an immune deficiency
- Influenza, meningococcal, and pneumococcal vaccines

Household contacts of children or adults who will be/are immunosuppressed
- Varicella vaccine

Influenza Immunisation Programme
- » Pregnancy,
- » Children aged 6 months to under 5 years who have been hospitalised for respiratory illness or have a history of significant respiratory illness,
- » Individuals aged 6 months to under 65 years with an eligible medical condition,
- » Individuals aged 65 years or older.
- Influenza vaccine

Kidney disease
- Hepatitis B, Hib, influenza, pneumococcal, Tdap, and varicella vaccines

Liver disease
- Hepatitis A and varicell

Meningococcal disease ca
- Meningococcal vaccine

Needle stick injury — foll
- Hepatitis B vaccine

Non-consensual sexual in
- Hepatitis B vaccine

Pneumococcal disease —
- Additional pneumococcal vaccines

Pregnancy
- Influenza and Tdap vaccines in every pregnancy

Rubella — women of childbearing age who are not immune to rubella
- MMR vaccine

Solid organ transplantation

Prior to solid organ transplantation
- Hib, meningococcal, pneumococcal, Tdap, and varicella vaccines

Following solid organ transplantation
- Hepatitis A, hepatitis B, Hib, HPV, influenza, meningococcal, pneumococcal, and Tdap vaccines

Influenza vaccine
- Pregnant women in every pregnancy during vaccination season
- Children aged 6 months to under 5 years who have been hospitalised for respiratory illness or have a history of significant respiratory illness
- Individuals aged 65 years and older
- Individuals aged 6 months to under 65 years with certain medical conditions, as per the Influenza Kit, including individuals pre- or post-splenectomy; or with Down syndrome, cochlear implant, error of metabolism at risk of major metabolic decompensation

Review of Cold Chain 2016

- 2013 – 2014 there were 7 cold chain failures resulting in re-immunisation of 327 people
- In 2016 this number increased to over 1000 re- vaccinations!
- These were mostly due to human error!
  - Affects families and communities
  - Time consuming
  - Expensive
  - Undermines public confidence in National Immunisation Schedule

Essential cold chain references

Only summary cold chain info in new handbook

N.B. Updated to standards for 2017 = key reference

MINISTRY OF HEALTH
MANATŪ HAUORA

newzealand.govt.nz

Cold chain management policy template for immunisation providers and clinics

Available from the MOH and IMAC websites

2017 Cold Chain Standards

Recommendations include:

- **Weekly** data logger download as a second step
- Maximum stock for **four weeks**
- Report all cold chain **breaches over 12°Celsius for 30 mins or longer & all recurring breaches**
- Providers required to **refrigerator replacement** by 10 years
- **Non compliant providers** risk access to vaccine supply
- New National **Cold Chain Audit** system

Useful, evidence-based vaccines not currently on NZ schedule

Families and individuals wish to be offered

How do we systematically do this?

My suggested priority list :

Pneumococcal PCV13 + PPV 23: High risk

Varicella: Non immune adolescents/adults

Meningococcal: Infants/toddlers and young adults

Shingles: Older adults

Influenza: Family contacts of at risk

Pertussis: Occupational, Cocoon protection

More ways to help protect your family

PURCHASED VACCINES

The National Immunisation Schedule provides free immunisations against some diseases. There are other vaccines you can buy that are worth considering.

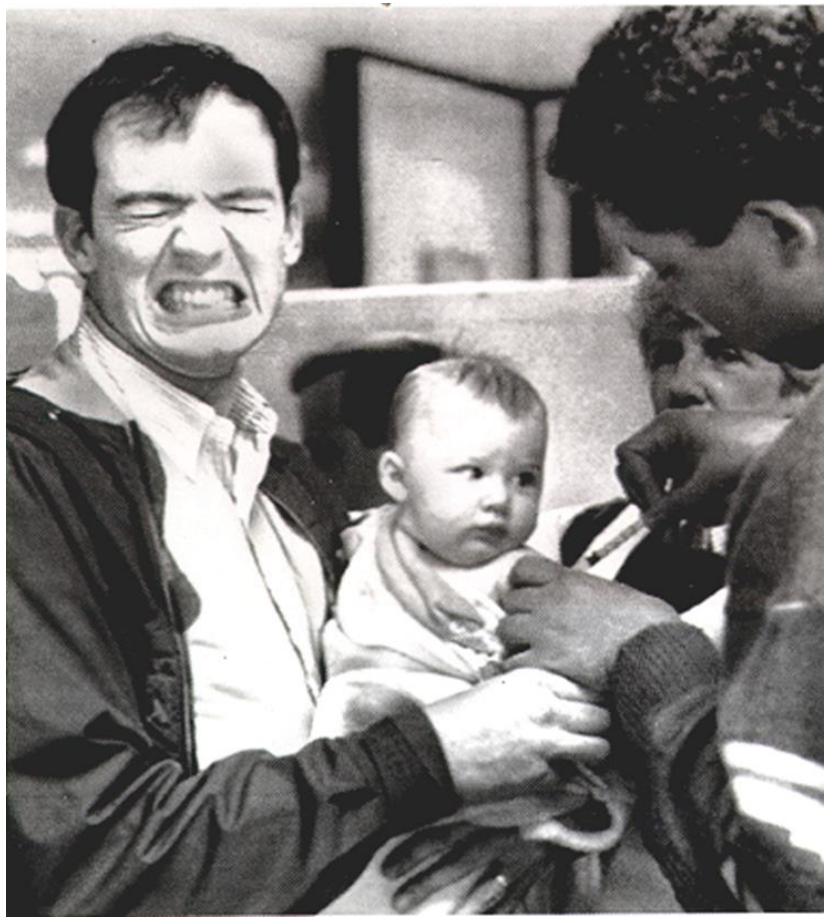
CHILDREN	PROTECTS AGAINST	VACCINE BRAND NAME
Babies from 6 weeks to one year	Meningococcal C meningitis	NeisVac-C®
Older babies, toddlers and children	Meningococcal C meningitis	NeisVac-C®
	Meningococcal A,C,Y and W135 meningitis	Menactra® or Nimenrix®
	Chickenpox (varicella)	Varilrix® or Varivax®
ADOLESCENTS		
Adolescents and young adults	Meningococcal C meningitis	NeisVac-C®
	Meningococcal A,C,Y and W135 meningitis	Menactra® or Nimenrix®
Non-immune adolescents	Chickenpox (varicella)	Varilrix® or Varivax®
ADULTS		
People aged 27 or older	Human papillomavirus (HPV) cervical and other cancers and genital warts	Gardasil®9
People aged 50 or older	Shingles (herpes zoster)	Zostavax®
People aged 65 or older	Pneumococcal pneumonia	Prevenar®13
		Pneumovax®23
Adults with chronic respiratory disease	Pneumococcal pneumonia	Prevenar®13
		Pneumovax®23
	Whooping cough (pertussis)	Boostrix®
Non-immune adults	Chickenpox (varicella)	Varilrix® or Varivax®
PEOPLE IN CLOSE CONTACT WITH NEWBORN BABIES		
Healthcare professionals and family members of infants	Whooping cough (pertussis)	Boostrix® or Adacel®
	Influenza	Influvac®, Vaxigrip®, Fluvax® or FluQuadri™
Non-immune close contacts	Chickenpox (varicella)	Varilrix® or Varivax®
ADULTS AT GREATER RISK OF SOME DISEASES		
Men who have sex with men	Human papillomavirus (HPV) cancers and genital warts	Gardasil®9
	Hepatitis A	Havrix® or Avaxim®
	Hepatitis B	Engerix-B®
	Hepatitis A + B	Twinrix®
Intravenous drug users	Hepatitis A	Havrix® or Avaxim®
	Hepatitis B	Engerix-B®
	Hepatitis A + B	Twinrix®
OCCUPATIONAL Healthcare, childcare, carers, sewerage, sex workers, laboratory staff		
At risk of exposure to faecal material	Hepatitis A	Havrix® or Avaxim®
At risk of exposure to blood or body fluids	Hepatitis B	Engerix®-B
Healthcare professionals	Influenza	Influvac®, Vaxigrip®, Fluvax® or FluQuadri™
Non-immune childcare professionals	Chickenpox (varicella)	Varilrix® or Varivax®

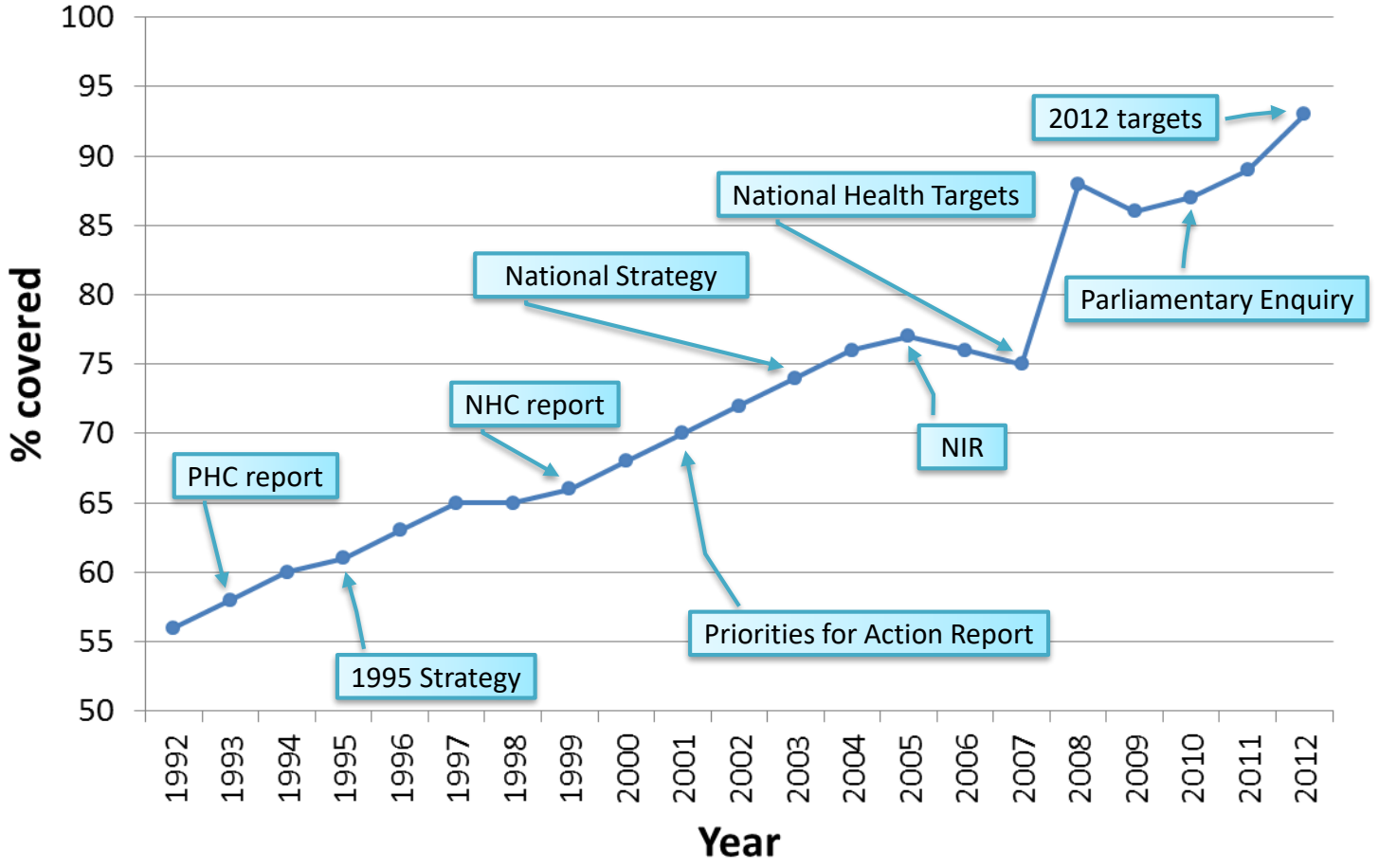
For more information:

0800 IMMUNE (0800 466 863) or visit immune.org.nz

The Immunisation Advisory Centre

Vaccine hesitancy
- conversations and confidence





Percentage fully immunised by two years of age

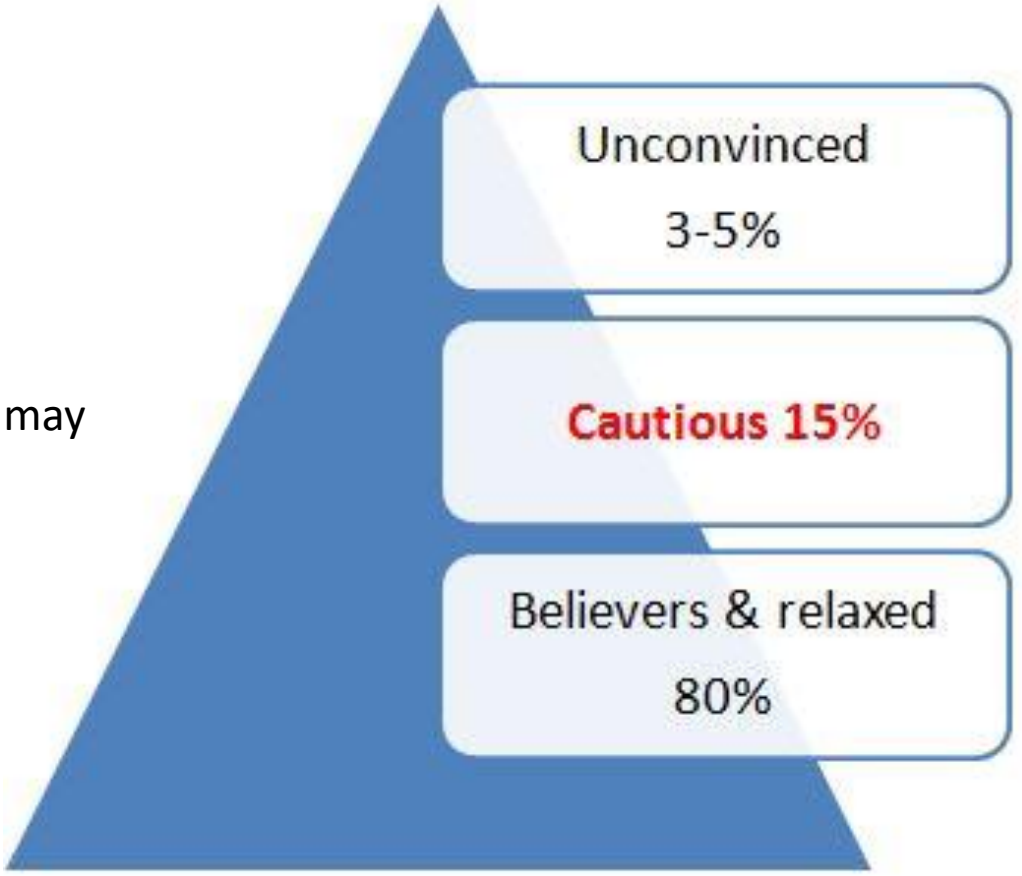
Turner N, unpublished; using combined data from national surveys and the NIR

Why are we doing so well

- Commitment at all levels – national target
- Feedback loops – DHBs and PHOs
- Provider engagement and confidence
  - More focus , higher priority
  - Less missed opportunities
- SYSTEMS
  - Early ENROLMENT - and follow up
  - Precalls/recalls/audits
  - PMS/NIR
  - Providers to OIS
- **Confident health sector spills over to confident public**
  - **Less anti-science in the media now**
  - **No overall increase in decline rates, pockets/local communities**

The vaccine acceptance spectrum

Vaccine hesitant parents may need more time

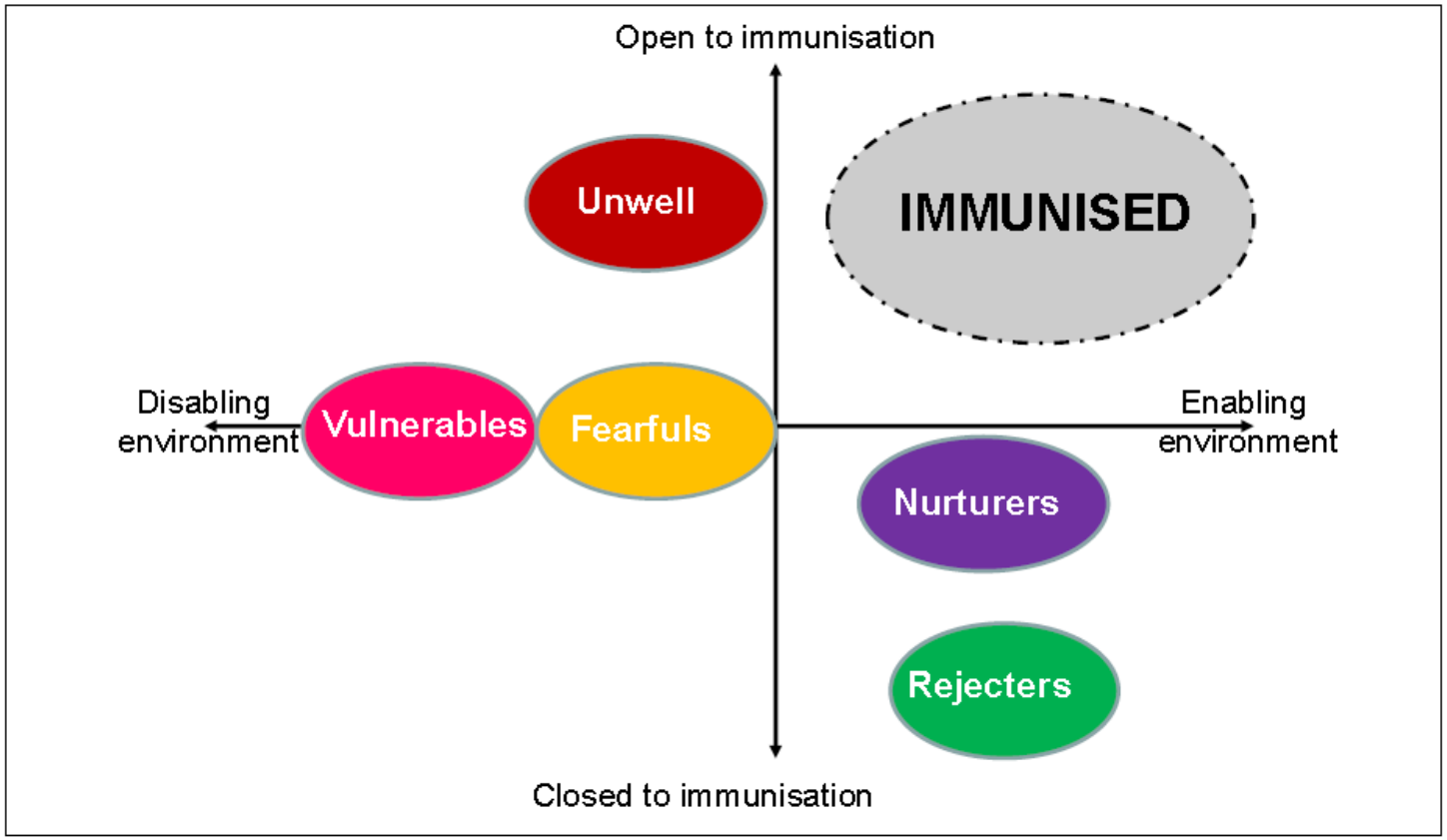


Source:
Leask et al 2012
Benin et al 2009

Tailor communications- no ‘one size fits all’

Vaccination decisions are complex

Figure 1: Typology matrix



Litmus Group (2013*) Immunisation Audience Research- Delayers of Infant Immunisation.* Ministry of Health, New Zealand

Recommend, recommend, & recommend

- **Assume parents** are ready to vaccinate
- Make **unequivocal** recommendations
- Do not sit on the fence

  “I recommend that you vaccinate your baby, child, preteen”

  “I do recommend this vaccine”

  “John is 12 years old so we will give him Boostrix and HPV vaccine today”
- HPV is a very safe vaccine

What is the question?

- My child is sick
- My child is not at high risk
- My child is too young
- Vaccines are unsafe
- I don’t trust the authorities

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THE UNIVERSITY OF AUCKLAND
Te Whare Wānanga o Tāmaki Makaurau

0800 IMMUNE
(466863)

www.immune.org.nz

Varicella complications

Majority of complications occur in otherwise healthy individuals

Skin/soft tissue bone joint infections	Central nervous system complications	Respiratory complications
• Secondary skin infections • Scarring • Septic arthritis • Osteoarthritis • Necrotizing fasciitis	• Acute cerebellar ataxia • Encephalitis • Meningitis • Central facial palsy • Reye's syndrome	• Pneumonia • Broncholitis

Ministry of Health (2016) Immunisation Handbook 2014 2nd Ed. Wellington: Ministry of Health.