RN Anna Wall
Regional Immunisation Advisor
Immunisation Advisory Centre
University of Auckland
Christchurch

Saturday, August 12, 2017
8:30 - 9:25  WS #66: Update on Vaccinations
9:35 - 10:30 WS #76: Update on Vaccinations (Repeated)
Update on Vaccinations
2017
Index

• 2017 National Immunisation Schedule
  HPV
  Varicella
  Other
  High risk groups

• Communication Issues
# New Zealand National Immunisation Schedule from 1 July 2017

<table>
<thead>
<tr>
<th>RV</th>
<th>DTaP-IPV-HevB/Hib</th>
<th>PCV</th>
<th>Hib</th>
<th>VV</th>
<th>MMR</th>
<th>DTaP-IPV</th>
<th>Tdap</th>
<th>HPV</th>
<th>Td</th>
<th>Influenza</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every pregnancy</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>Influvac®</td>
</tr>
<tr>
<td>6 weeks</td>
<td>Rotarix®</td>
<td>Infantrix®-hexa</td>
<td>Synflorix®</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Boostrix® between 2 and 3 months pregnancy</td>
</tr>
<tr>
<td>3 months</td>
<td>Rotarix®</td>
<td>Infantrix®-hexa</td>
<td>Synflorix®</td>
<td></td>
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</tr>
<tr>
<td>5 months</td>
<td>Infantrix®-hexa</td>
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<td>Synflorix®</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>15 months</td>
<td>Synflorix®</td>
<td>Hiberix®</td>
<td>Varilrix®</td>
<td>Priorix®</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>4 years</td>
<td>Priorix®</td>
<td>Infantrix®-IPV</td>
<td></td>
<td></td>
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<tr>
<td>11 years</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Boostrix®</td>
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<tr>
<td>12 years</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>Gardasil®</td>
<td>two doses</td>
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<tr>
<td>45 years</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>ADT® Booster</td>
<td></td>
</tr>
<tr>
<td>65 years</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ADT® Booster</td>
<td>Influvac®</td>
</tr>
</tbody>
</table>

**Vaccine Key**
- DTaP-IPV-HevB/Hib: diphtheria, tetanus, acellular pertussis, polio, hepatitis B, Haemophilus influenzae type b
- PCV: pneumococcal conjugate vaccine
- RV: rotavirus
- Hib: Haemophilus influenzae type b
- VV: varicella (chickenpox) vaccine
- MMR: measles, mumps, rubella
- DTaP-IPV: diphtheria, tetanus, acellular pertussis, polio
- Tdap: tetanus, diphtheria, acellular pertussis
- HPV: human papillomavirus
- Td: tetanus, diphtheria

**The Immunisation Advisory Centre**
For more details, visit immune.org.nz

July 2017
## 2017 schedule changes summary

<table>
<thead>
<tr>
<th>Vaccine changes</th>
<th>Vaccine</th>
<th>Eligibility</th>
<th>Introduced</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPV</td>
<td>Gardasil 9®</td>
<td>For young men and young women:</td>
<td>1 January 2017</td>
</tr>
<tr>
<td></td>
<td>(HPV9)</td>
<td>&lt;15 years: two doses</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt;15 - 26 years: three doses</td>
<td></td>
</tr>
<tr>
<td>Varicella</td>
<td>Varilrix®</td>
<td>One dose 15 months</td>
<td>1 July 2017</td>
</tr>
<tr>
<td></td>
<td>(Varicella)</td>
<td>Catch-up at 11 years*</td>
<td></td>
</tr>
<tr>
<td>Rotavirus vaccine</td>
<td>Rotarix®</td>
<td>First dose by 15 weeks</td>
<td>1 July 2017</td>
</tr>
<tr>
<td></td>
<td>(RV1)</td>
<td>Second by 25 weeks</td>
<td></td>
</tr>
</tbody>
</table>

*For previously unvaccinated children with no history of chickenpox infection
2017 further changes – brand only

<table>
<thead>
<tr>
<th>Schedule changes</th>
<th>Vaccine</th>
<th>Eligibility</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumococcal</td>
<td>Synflorix® PCV10</td>
<td>No change*</td>
<td>1 July 2017</td>
</tr>
<tr>
<td>MMR</td>
<td>Priorix® MMR</td>
<td>No change</td>
<td>1 July 2017</td>
</tr>
<tr>
<td>Hib</td>
<td>Hiberix® Hib</td>
<td>No change</td>
<td>1 July 2017</td>
</tr>
</tbody>
</table>

*Prevenar13 remains for high risk pneumococcal programme
HPV vaccination
For boys and girls
HPV Types Differ in Disease Association

**Mucosal sites of infection**
- >40 Types
- High risk (oncogenic)
  - HPV 16, 18 most common
- Cervical Cancer
- Anogenital Cancers
- Oropharyngeal Cancer
- Cancer Precursors
- Low Grade Cervical Disease

**Cutaneous sites of infection**
- >80 Types
- Low risk (non-oncogenic)
  - HPV 6, 11 most common
- Genital Warts
- Laryngeal Papillomas
- Low Grade Cervical Disease
- “Common” Hand and Foot Warts
Why go to 9 serotypes?
HPV9 vaccine and cervical cancer

HPV4 covers >70% of oncogenic types

HPV9 covers >87% of oncogenic serotypes

Why give it to both sexes?
Cancers caused by high-risk HPV types

<table>
<thead>
<tr>
<th>Location</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cervix</td>
<td>&gt;99%</td>
</tr>
<tr>
<td>Penis</td>
<td>&gt;63%</td>
</tr>
<tr>
<td>Vulva, Vagina</td>
<td>&gt;70%</td>
</tr>
<tr>
<td>Anus</td>
<td>&gt;90%</td>
</tr>
<tr>
<td>Oropharynx</td>
<td>&gt;70%</td>
</tr>
</tbody>
</table>
Figure: Average annual % of cancer cases attributable to HPV, by anatomic site and sex, United States 2008-2010.

But is it safe?

HPV vaccine

- Extensive post-market surveillance HPV4
  - no safety signals raised

- Summary of post-market safety associations
  - Syncope (related to injection reaction)
  - Possible skin infections (probably injection site reactions misclassified)
  - Pregnancy (contraindicated but inadvertent admin)
    - No theoretical risk (not a live vaccine)
    - No differences in outcome pregnant/non pregnant

HPV9 vaccine

- 15,000 subjects in 31 countries
- HPV9 slightly more reactogenic than HPV4
  - injection site reactions: only significant difference was in injection site swelling
  - common systemic events all slightly higher e.g. headache 14.6% (13.7% with HPV4), pyrexia 5% (4.3% with HPV4)
- No serious adverse events
  - anaphylaxis is possible

HPV Vaccines safety

• Large number of investigations for specific outcomes
  • Case reports do not equal causality
  • No association with many conditions including:
    • Autoimmune disease (MS, connective tissue disease, GBS, type1 diabetes, thyroiditis, ITP
  • Extensive investigations for venous thromboembolism – do not support an association
  • No association with poor outcomes when accidentally given in pregnancy
  • MS – one study suggested an increased risk in 30 day period after vaccination, overall the data does not support this finding
  • POTS case reports. EMA review to date, no increase
  • Complex regional pain syndrome, fibromyalgia – not expected to be linked

EMA report
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

I wish to wait till my child is older before giving HPV vaccine
Immunogenicity

The younger the better response
NB but likely to be reduced in immunocompromised hosts

- Two dose are more immunogenic in younger ages, 9 – 15 years old
  - Young women 2 doses non-inferior to 3 doses
  - Particularly when the interval >4 months

- May be reduced response in immunocompromised

- Older organ transplant recipients produce suboptimal responses

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

- Not sexually active
- Not recommended
- Safety concern/Side effects
- Not needed or necessary
- Lack of knowledge

MMWR 2014; 63(29);625-633;
HPV delivery in primary care

• Two doses funded – **The standard schedule**
  • For to 11-14 year olds who decline in school based programme

• Three dose schedule – **catch-up if missed or high risk**
  • Aged 15-26 years old
  • Aged 9 – 26 with confirmed HIV, transplant patients
  • Immunocompromised (not funded under 15 yrs )

• Completion of the course is only funded if first dose was given before turning 27 years

• **Resource permitting (?!)** primary care can recall 14 – 26 year olds who have not completed a course of HPV vaccine
  • ?maybe start with a standard recall at 14 years for all unvaccinated
Human papillomavirus vaccines: WHO position paper, May 2017
Weekly epidemiological record (WER), World Health Organization

http://apps.who.int/iris/bitstream/10665/255353/1/WER9219.pdf?ua=1
Varicella Vaccines
Varicella vaccine schedule

• From 1\textsuperscript{st} July 2017 on National Schedule
• Single dose at 15 months alongside Hib, PCV10 and MMR
• Four injections different sites
• Catch-up for 11 year olds \textbf{IF previously unvaccinated with no history of chickenpox infection}
• Funding criteria for special groups remain the same
• \textbf{Purchase of varicella vaccine} remains an option from 9 months for families who request early or two dose programme
Why add a vaccine in for such a mild disease?
Varicella in New Zealand

- About 50,000 cases annually in New Zealand
- Several hundred hospitalised annually
  - Māori and Pacific Islanders 3 – 4 times higher rate than Europeans
- Varicella can cause severe and fatal disease
  - higher rates in immune-suppressed individuals
- 1-2 cases of long term disability or death occur annually
- Up to one case of congenital varicella syndrome is estimated to occur annually, although few are reported

### Varicella complications

<table>
<thead>
<tr>
<th>Skin/soft tissue bone joint infections</th>
<th>Central nervous system complications</th>
<th>Respiratory complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Secondary skin infections</td>
<td>• Acute cerebellar ataxia</td>
<td>• Pneumonia</td>
</tr>
<tr>
<td>• Scarring</td>
<td>• Encephalitis</td>
<td>• Broncholitis</td>
</tr>
<tr>
<td>• Septic arthritis</td>
<td>• Meningitis</td>
<td></td>
</tr>
<tr>
<td>• Osteoarthritis</td>
<td>• Central facial palsy</td>
<td></td>
</tr>
<tr>
<td>• Necrotizing fasciitis</td>
<td>• Reye’s syndrome</td>
<td></td>
</tr>
</tbody>
</table>

Majority of complications occur in otherwise healthy individuals

Effectiveness

Single Dose
- Approx. 80% effective
- Against severe disease 95% plus
- Breakthrough cases less severe

Two dose
- 93% -100% against severe disease

• Breakthrough varicella in vaccinated people
  - Usually mild
  - Severity does not increase with time post vaccination

• Immunocompromised
  - Effectiveness unclear
  - Disease severity reduced
  - Mild immunosuppression still get seroconversion
Impact of varicella vaccination programmes

• Significant reductions in severity of disease, hospitalisations and circulation of varicella in all regions that have introduced varicella

• US (one dose in 1995, two doses in 2007)
  • 90-95% reduction in varicella in 5-19 yr olds
  • No evidence of shift in burden to older age groups
  • 10 fold reduction in varicella hospitalisations
  • 99% decline in mortality for <20yrs
  • Declines in all age groups, including infants too young to be vaccinated

• Similar impacts in Germany (1 dose 2004, 2 dose 2007), Saudi Arabia (2 dose 1998) Canada (1 dose 2000-2007, six provinces dose 2), Italy and Spain region by region,

• Australia: Single dose 2005, second dose as MMRV 2013

Impact of varicella vaccination program in United States

per 100,000 population Northern California. US

Duration of protection

• One dose
  • Not yet defined, but breakthrough disease does not become more severe with time
  • US study VE declined from 88.8% to 81.8% after >10 years
  • Some effect from circulating wild disease causing boosting
    • Therefore reductions in circulating disease may reduce duration of protection

• Two-dose probably long lasting
  • NB second dose also acts as a booster
  • No breakthrough after 14 years post two doses
  • Many countries introduce a few years after starting one dose
  • Universal 2 dose in US since 2006

SAGE. Systematic review of available evidence on effectiveness and duration of protection of varicella vaccines.: WHO; 2014
Available from: http://www.who.int/immunization/sage/meetings/2014/april/presentations_background_docs/en/
Herd immunity

Where universal programmes have been implemented significant declines in cases and hospitalisations have been seen, including those not vaccinated – infants and immunocompromised

Varilrix®

- **Live** attenuated Oka strain of varicella-zoster virus
- Each 0.5ml reconstituted contains
  - $\geq 10^{3.3}$ plague-forming units (PFU) attenuated varicella virus, human albumin, lactose, neomycin, polyalcohols
- From 9 months of age
- Minimal interval between doses: 4 weeks
- Can be given at the same time as other vaccines (DTaP-containing vaccines, hepatitis B, Hib, MMR, Hepatitis A, pneumococcal conjugate vaccines)
Contraindications

• General vaccination contraindications
  • Anaphylaxis to vaccine or components/ Acutely unwell – moderate to severe

• Specific contraindications
  • Immunocompromised
  • Pregnancy - registry now closed (928 reports of inadvertent admin)
    - No congenital varicella syndrome or increased birth defects
  • Known anaphylaxis to neomycin
  • Active untreated Tuberculosis (can be given if on treatment)

• Breastfeeding - NO concerns, NOT a contraindication
Vaccine safety

- Adverse events following immunisation generally mild and self limiting
  - Fever 5-12 days post vaccination
  - 1-3% localised rash
  - 3-5% generalised varicella-like rash 5-26 days post vaccination
  - No increased risk of febrile seizures
  - No increased risk of cerebella ataxia, encephalitis or ischaemic stroke

- Transmission of vaccine virus to others
  - Possible but extremely rare
  - Cover post-vaccination rash and isolate from immune-suppressed

WHO (2014) Safety of varicella and MMRV vaccines: A systematic review
Why not use MMR-V so requires less injections
MMRV
(licensed but not currently available)
What about MMR-V?

- N.B. MMR-V is not currently available in New Zealand
- Giving MMR-V combined vaccine at 15 months is associated with more than double (2.4 fold) increased risk of febrile convulsions
- This rate equates to one extra case of febrile convulsions per 2,500 vaccinations compared to when giving separately on the first occasion or when given combined as a second dose
- Therefore separated vaccines were chosen to reduce the risk of febrile convolution

Multiple injections!!

CAN WE DO THIS?

YES WE CAN!
Four in a row
For best protection

1. Hib (Hiberix)
   Vastus lateralis
   IM

2. Varicella (Varilrix)
   Deltoid
   SC

3. Pneumococcal (Synflorix)
   Vastus lateralis
   IM

4. MMR (Priorix)
   Deltoid
   SC

Get all four at 15 months
Find out more at immune.org.nz
The Immunisation Advisory Centre
Supported by commercial grants from GSK.
Risk of congenital varicella syndrome (CRS)

- Varicella infection during pregnancy
- Risk greatest in first 20 weeks
- May result in skin scarring, limb irregularities, ocular anomalies, and neurological malformations
- Disease in very late pregnancy (5 days before to 2 days after delivery) may result in severe neonatal varicella infection

Recommended not funded

All adolescents/adults with no previous history of varicella or vaccination

Particularly consider
- born in tropical countries (lower childhood incidence)
- High risk environments eg
  - us (healthcare workers)
    - early childcare,
    - Institutional care
    - Hostels,
    - Military
    - Correctional institutes
Post exposure prophylaxis

A single dose is highly effective when administered within 3-5 days of exposure (79 – 100%)

Break through cases tend to be more mild

But what about the effect on shingles
Herpes zoster

1. Zoster does occur post vaccination but lower rates
   - 48/100 000 in vaccinated versus 230/10 000 in unvaccinated
   - US study vaccinated children had 79% lower incidence of zoster

2. Could rates of zoster rise with a highly vaccinated population? - probably NO

   If zoster is prevented by exogenous boosting (ie exposure to circulating varicella) then theoretically stopping varicella circulating could increase the incidence of zoster in older groups
   - BUT - No definite increase has been demonstrated in countries that have introduced varicella vaccination. No definitive increase has been seen overall in the US or Australia
   - Probably key role of endogenous boosting

Rotavirus Vaccine
Brand change
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
Rotavirus vaccine benefits

• After three doses:
  • Hospital visits reduced by approximately 95%
  • GP visits reduced by approximately 86%

• After two doses:
  • Hospital visits reduced by approximately 39%
  • GP visits reduced by approximately 28%
Hospitalisation data children <5 years 2010-15

Number of rotavirus hospital discharges

% of all gastroenteritis hospital discharges

Year

Institute of Environmental Science and Research Ltd – unpublished data
Pneumococcal conjugate Vaccine
Brand change
Pneumococcal vaccine change

- PCV10 (Synflorix) is funded from 1st July 2017
- Overall the data shows that both PCV10 and PCV13 (Prevenar 13) vaccines are suit disease reduction in New Zealand children
- PCV10 has demonstrated cross protection for serotypes not included
- PCV13 and 23PPV (Pneumovax 23) will continue to be funded for high risk groups only
Current Conjugate Pneumococcal Vaccines

**PCV10 (Synflorix®)**
- 1, 4, 5, 6B, 7F, 9V, 14, 18C, 19F, 23F
- Conjugate
  - Protein D from non-typeable H. influenza
  - Tetanus toxoid
  - Diphtheria toxoid (CRM$_{197}$)
- Theoretical advantage in Protein D conjugate may offer better protection against OM
  - Not proven
- International evidence shows some cross-protection to 19A

**PCV13 (Prevenar13®)**
- Same 10 serotypes
- Also includes 2, 3, 19A
- Conjugate:
  - Diphtheria toxoid (CRM$_{197}$)
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 immunodeficiency

Other groups being considered.....
Vaccines for Special Groups
Vaccine for Special Groups

The following vaccines are funded for special groups:

• Hepatitis A
• Human papillomavirus
• Pertussis (Tdap)
• Varicella
• Meningococcal
• Hepatitis B
• Pneumococcal

Pharmac website, page on ‘online pharmaceutical schedule’, clarifies the funded eligibilities.
<table>
<thead>
<tr>
<th>Funded Special Risk Groups</th>
<th>Vaccine</th>
<th>For whom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Targeted varicella vaccine for high risk groups</td>
<td>Varilrix®</td>
<td>• Targeted programme for high risk groups and close contacts</td>
</tr>
<tr>
<td>Meningococcal conjugate vaccines</td>
<td>Menactra® for 2 years of age and older. Neisvac-C® for under 2 years of age.</td>
<td>• Pre- and post-splenectomy, functional asplenia • Post solid organ or bone marrow transplant • Post immunosuppression • HIV, complement deficiencies • Close contacts of meningococcal cases</td>
</tr>
<tr>
<td>Hepatitis A vaccine</td>
<td>Havrix® and Havrix Junior®</td>
<td>• Transplant patients • Children with chronic liver disease • Close contacts of hepatitis A cases • On recommendation of a local MOH</td>
</tr>
<tr>
<td>Higher dose Hepatitis B vaccine (40mcg)</td>
<td>HBvaxPRO® 40mcg</td>
<td>• Dialysis patients • Liver or kidney transplant patients</td>
</tr>
<tr>
<td>HPV vaccine</td>
<td>Gardasil9®</td>
<td>• HIV • Transplant patients • Post chemotherapy</td>
</tr>
</tbody>
</table>
### Where do you find this information?

**Funded vaccines for special groups from 1st January 2017**

**Funded vaccines**

- **Asthma** — Functional or Pre- or Post-Splenectomy Immunisation Programme
- **Chemotherapy** — following
  - Hb, HPV, influenza, meningococcal, pneumococcal, and Tdap vaccines
  - Also consider immunosuppression for longer than 28 days
- **Cyclaclear implant** — Hb, influenza, and pneumococcal vaccines
- **Error of metabolism at risk of major metabolic decompensation** — Hb and varicella vaccines
- **Hematopoietic stem cell transplantation (HSCT)** — following
  - Hb, HPV, influenza, meningococcal, pneumococcal, Tdap, and varicella vaccines
  - Also consider immunosuppression for longer than 28 days
- **Hepatitis A** — contact with
  - Hepatitis A vaccine
- **Hepatitis B** — 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 beare immunosuppressed
  - Varicella vaccine
  - Prior to elective immunosuppression for longer than 28 days
  - Varicella vaccine
  - Following immunosuppression for longer than 28 days
    - Hepatitis B, Hb, 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, Hb, 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 vaccines
- **Pregnancy**
  - Influenza and Tdap vaccines in every pregnancy
  - Rubella — women of childbearing age who are
    - MMR vaccine

**Pharmac**

- Prior to solid organ transplantation
  - Hb, meningococcal, pneumococcal, Tdap, and varicella
- Following solid organ transplantation
  - Hepatitis A, hepatitis B, HPV, influenza, meningococcal, pneumococcal, and varicella vaccines
  - Tuberculosis — infants and children aged under 5 years at risk of tuberculosis (TB) exposure
  - BCG vaccine

**Vaccine key**

- BCG: tuberculous
- Hb: Haemophilus influenzae type b
- HPV: human papillomavirus
- MMR: measles, mumps, rubella
- Tdap: tetanus, diphtheria, acellular pertussis
- varicella: chickenpox.
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.

<table>
<thead>
<tr>
<th>Vaccine Key</th>
<th>Vaccine Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCG</td>
<td>tuberculosis</td>
</tr>
<tr>
<td>Hib</td>
<td>Haemophilus influenza type b</td>
</tr>
<tr>
<td>HPV</td>
<td>human papillomavirus</td>
</tr>
<tr>
<td>MMR</td>
<td>measles, mumps, rubella</td>
</tr>
<tr>
<td>Tdap</td>
<td>tetanus, diphtheria, acellular pertussis</td>
</tr>
<tr>
<td>Varicella</td>
<td>chickenpox</td>
</tr>
<tr>
<td>HIV positive</td>
<td>HIV, HPV, influenza, meningococcal, pneumococcal, and varicella vaccines</td>
</tr>
<tr>
<td>Hepatitis C positive individual</td>
<td>Hepatitis B vaccine</td>
</tr>
<tr>
<td>Hepatitis A case - contact with</td>
<td>Hepatitis A vaccine</td>
</tr>
<tr>
<td>Hepatitis B case - contact with Infants born to mothers who are hepatitis B surface antigen (HBsAg) positive</td>
<td>Hepatitis B vaccine and hepatitis B immunoglobulin (HBIG) at birth</td>
</tr>
<tr>
<td>Household and sexual contacts of known acute hepatitis B cases or carriers</td>
<td>Hepatitis B vaccine</td>
</tr>
<tr>
<td>Hepatitis C positive individual</td>
<td>Hepatitis B vaccine</td>
</tr>
<tr>
<td>HIV positive individual</td>
<td>Hepatitis B, HPV, influenza, meningococcal, pneumococcal, and varicella vaccines</td>
</tr>
<tr>
<td>Immune deficiency/immunosuppression</td>
<td>Individuals with an immune deficiency</td>
</tr>
<tr>
<td>Household contacts of children or adults who will be are immunosuppressed</td>
<td>Varicella vaccine</td>
</tr>
<tr>
<td>Prior to elective immunosuppression for longer than 28 days</td>
<td>Varicella vaccine</td>
</tr>
<tr>
<td>Following immunosuppression for longer than 28 days</td>
<td>Hepatitis B, Hib, influenza, meningococcal, and Tdap vaccines</td>
</tr>
<tr>
<td>Influenza Immunisation Programme</td>
<td>Pregnancy</td>
</tr>
<tr>
<td>» Children aged 6 months to under 5 years who have been hospitalised for respiratory illness or have a history of significant respiratory illness,</td>
<td></td>
</tr>
<tr>
<td>» Individuals aged 6 months to under 65 years with an eligible medical condition,</td>
<td></td>
</tr>
<tr>
<td>» Individuals aged 65 years or older</td>
<td></td>
</tr>
<tr>
<td>Kidney disease</td>
<td>Hepatitis B, Hib, influenza, meningococcal, Tdap, and varicella vaccines</td>
</tr>
<tr>
<td>Liver disease</td>
<td>Hepatitis A and varicella vaccines</td>
</tr>
<tr>
<td>Meningococcal disease case - contact with</td>
<td>Meningococcal vaccine</td>
</tr>
<tr>
<td>Needle stick injury - following</td>
<td>Hepatitis B vaccine</td>
</tr>
<tr>
<td>Non-consensual sexual intercourse - following</td>
<td>Hepatitis B vaccine</td>
</tr>
<tr>
<td>Pneumococcal disease - increased risk</td>
<td>Additional pneumococcal vaccine</td>
</tr>
<tr>
<td>Pregnancy</td>
<td>Influenza and Tdap vaccines in every pregnancy</td>
</tr>
<tr>
<td>Rubella - women of childbearing age who are not immune to rubella</td>
<td>MMR vaccine</td>
</tr>
<tr>
<td>Solid organ transplantation</td>
<td>Prior to solid organ transplantation</td>
</tr>
<tr>
<td>» Hib, meningococcal, pneumococcal, Tdap, and varicella vaccines</td>
<td></td>
</tr>
<tr>
<td>Following solid organ transplantation</td>
<td>Hepatitis A, hepatitis B, Hib, HPV, influenza, meningococcal, pneumococcal, and Tdap vaccines</td>
</tr>
<tr>
<td>Tuberculosis - infants and children aged under 5 years at risk of tuberculosis (TB) exposure</td>
<td>BCG vaccine</td>
</tr>
</tbody>
</table>

The Immunisation Advisory Centre
For more details, visit immune.org.nz
<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asplenia</td>
<td>Functional or Pre- or Post-Splenectomy Immunisation Programme</td>
</tr>
<tr>
<td>Chemotherapy</td>
<td>Following</td>
</tr>
<tr>
<td>Haematopoietic stem cell transplantation (HSCT)</td>
<td>Following</td>
</tr>
<tr>
<td>Cochlear implant</td>
<td></td>
</tr>
<tr>
<td>Error of metabolism at risk of major metabolic decompensation</td>
<td></td>
</tr>
<tr>
<td>Haematopoietic stem cell transplantation (HSCT)</td>
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Vaccine key - BCG: tuberculosis; Hib: Haemophilus influenzae type b; HPV: human papillomavirus; MMR: measles, mumps, rubella; Tdap: tetanus, diphtheria, acellular pertussis; varicella: chickenpox.
Funded high risk programme – try the IMAC website resource

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

Vaccinations

Pneumococcal (PCV13) vaccine

- Hospital pharmacy | Xpharm

In 0.5 mL syringe

| Prevenar 13     | 2380447 | $0.00 | per 1 |
| Prevenar 13     | 2461085 | $0.00 | per 10|

Any of the following:

1. A primary course of four doses for previously unvaccinated individuals up to the age of 59 months inclusive, or
2. Up to three doses as appropriate to complete the primary course of immunisation for individuals under the age of 59 months who have received one to three doses of PCV13, or
3. One dose is funded for high risk children (with the age of 17 months and up to the age of 18) who have previously received four doses of PCV10, or
4. Up to an additional four doses (as appropriate) are funded for (i) immunosuppressed patients with HIV for patients post haematopoietic stem cell transplantations, or chemotherapy, or post splenectomy, functional asplenia, pre- or post solid organ transplant, renal dialysis, complement deficiency (acquired or inherited); coexisting implants, or primary immunodeficiency, or...
Vaccine hesitancy
- conversations and confidence
Why are we improving

• Greater commitment at all levels – national target
• Better feedback loops – DHBs and PHOs
• Provider engagement and confidence
  • More focus, higher priority
  • Less missed opportunities
• Systems
  • Early ENROLMENT with a Multidisciplinary approach
  • Precalls/recalls/audits
  • PMS/NIR
  • Providers to OIS
• Confident health sector spills over to confident public
  • Less anti-science in the media
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
The vaccine acceptance spectrum

Vaccine hesitant parents may need more time

Unconvinced
3-5%

Cautious 15%

Believers & relaxed
80%

Source:
Leask et al 2012
Benin et al 2009
Tailor communications- no ‘one size fits all’

Vaccination decisions are complex

Figure 1: Typology matrix

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
IMAC video resources

Four in a row – best practice for multiple vaccines

CHICKENPOX Disease and Vaccine
0800 IMMUNE
(466863)
www.immune.org.nz