Herpes zoster and 2018 Influenza season
webinar will start at 5:30 pm

14\textsuperscript{th} March 2018
Herpes zoster (shingles)

Disease overview and vaccination programme 2018
Topics for herpes zoster (shingles) session

The disease
• Etiology
• Transmission
• Risk factors
• Complications

The vaccine
• Target population
• Contraindications
• Vaccine preparation
• Vaccine administration
• Vaccine spacing
Herpes zoster (shingles)

*Years to decades later*

- VZV reactivated and spreads to skin through peripheral nerves
- Unilateral vesicular rash develops in a dermatomal distribution
- Pain may commence before rash
- **Life time risk of zoster is approximately one in three**
- **By 85 yrs of age: 50% risk**

Image: Herpes Zoster Overview: Natural History and Incidence, Bethany A. Weaver, DO, MPH
Varicella (Chickenpox)

Prodrome of fever, headache, and malaise followed by a pruritic vesicular rash.

Caused by the Varicella-Zoster virus (Human Herpesvirus 3).

Transmitted via respiratory secretions or vesicular fluid.

Herpes Zoster (Shingles)

50 years later...

The Varicella-Zoster virus reactivates from its dormant state in a dorsal root ganglion.

Pain along affected dermatome followed by a vesicular rash.
Herpes zoster clinical features

images: http://jetem.org
Complications of herpes zoster

Postherpetic neuralgia

• 3 in 10 people develop postherpetic neuralgia
• Risk factors include age ≥ 50, severe pain before/after onset of rash, extensive rash with trigeminal or ophthalmic distribution
• Mild to excruciating pain after resolution of rash
• Constant, intermittent, or triggered by trivial stimuli
• Persists weeks, months or occasionally years
• Disrupts sleep, activities of daily living and can lead to social withdrawal & depression
Complications of herpes zoster

**Herpes zoster ophthalmicus - 15% of cases**
- Can occur when ophthalmic division of trigeminal nerve is involved
- Untreated, 50-70% develop acute ocular complications
- Can lead to chronic ocular complications, reduced vision, even blindness

**Neurologic complications**
- Myelitis, encephalitis, ventriculitis, meningoencephalitis, cranial nerve palsies, ischemic stroke syndrome

**Varicella zoster viremia**
- Cutaneous dissemination, pneumonia, hepatitis, disseminated intravascular coagulation

**Dermatologic complications**
- Secondary infections of rash
- Permanent scarring and changes in pigmentation
Varicella transmission from zoster?

Varicella virus can be transmitted from persons with zoster to those with no history of contact or vaccination and cause varicella

- Risk from zoster is much lower than from varicella
- Mainly occurs through direct contact with zoster blisters
- Airborne transmission has been reported in healthcare settings (where immunosuppressed persons are)
- Localised zoster is only contagious after the rash erupts until the lesions crust

Transmission from localized zoster is decreased by covering the lesions
Risk factors for herpes zoster

1. Increasing age

2. Immunosuppression, including:
   - Bone marrow and solid organ transplant
   - Those with hematological malignancies or solid tumours
   - HIV
   - On immunosuppressive therapy

Forbes et al, 2014
Risk factors for herpes zoster cntd.

Other risk factors

• Psychological stress
• Gender – more common in women
• Genetic susceptibility – family history of zoster, ethnic differences
• Trauma
• Early varicella (in utero or infancy): increased risk of pediatric zoster
• Autoimmune disease e.g. rheumatoid arthritis, systemic lupus erythematosus, inflammatory bowel disease, Crohns disease, ulcerative colitis
• Type 2 diabetes, chronic kidney disease, depression, COPD

Forbes et al, 2014
Herpes zoster vaccine

Etiology, targets, contraindications, precautions, vaccine preparation, administration, spacing.
Herpes zoster vaccine

- Live, attenuated varicella zoster virus
- Same strain used in the varicella vaccine, but many times more potent
- Licensed since 1996 (but not funded) in NZ for those who are 50 years and older
- Boosts pre-existing varicella immunity
- Reduces shingles illness in adults > 65 years by average of 55% depending on age group
- Reduces severity of complications such as post herpetic neuralgia (PHN)
- Decreasing efficacy with advancing age
Herpes zoster efficacy and effectiveness

Preventing zoster in clinical trials
- 70% (95% CI: 51-81%) adults 50 – 59 years
- 48% (95% CI: 44-52%) adults 65 – 69 years
- 42% (95% CI:36-47%) adults 80 years plus

Community dwelling 60 yrs plus, over a 2 year period
- Zoster prevention 55% (95% CI 52-58%)
- Herpes zoster ophthalmicus 63% (95% CI: 39 -77%)
- Zoster-related hospitalisation 65% (95% CI: 49 -76)

Duration of effectiveness – wanes over 7- 8 years
- Year one: 69% (95% CI: 66-71%)
- Year two: 50% (95% CI: 46-53%)
- Year seven: 17% (95% CI: 1-29%)
- Year eight: 4% (95% CI: -24 – 26%)

Zostavax vaccine safety

• Excellent safety record – used in the US since 2006
• Common or very common responses (1% to 10%):
  • Local pain, redness and swelling around injection site (up to 1 in 3)
  • Itching or rash around injection site
  • Headache

• Very rare, but possible reactions:
  • Vaccine related rash
    • if in contact with anyone who is immunosuppressed cover the rash
  • Nausea, arthralgia, & myalgia
  • Anaphylaxis
Zostavax contraindications

- History of anaphylaxis to vaccine or components of the vaccine particularly gelatin and neomycin
- Those with primary/acquired immunodeficiency states/conditions, including:
  - Leukaemia, lymphoma, AIDS
  - HIV-positive status alone is not an contraindication - symptomatic HIV infection with a CD4+ lymphocyte count <200 cells/mm³, or cellular immune deficiency
- Those receiving immunosuppression therapy
  - High-dose steroids, biological response modifiers, chemotherapy,
  - Persons ≥65 y.o. anticipating immunodeficiency due to initiation of treatments or progression of illness should be offered HZV
- Active untreated tuberculosis
- Pregnant women (avoid pregnancy for one month)

Zostavax precautions

• Non-anaphylactic reactions to previous dose of zoster virus-containing vaccine
• Those with a moderate to severe illness and a fever
Checking varicella serology?

- **Varicella serology** not required unless:
  - Asymptomatic HIV+ with CD4+ lymphocyte count of ≥200 cells/mm3 or
  - Anticipating future significant immune compromise
A severe case of chickenpuss
Funded Zostavax commences 1st April 2018

- **Single dose for age 65 years** and over
- Two year **catch-up for age 66-80** years inclusive until March 2020
- Whether or not they recall a history of chickenpox disease
- Can be given at the same visit for influenza vaccine
Recommended in the Handbook table 22.1 - but not funded

- Increased risk and may benefit from earlier vaccination than routine schedule:
  - Asymptomatic HIV (CD4+ count ≥200 cells/mm3)
  - End-stage kidney disease (CKD stages 4-5)
  - At least 4 weeks prior to commencing immunosuppression
  - After ceasing immunosuppression
  - At least 2 years post-HSCT
  - Autoimmune disease
  - First generation family history of shingles
  - Depression
  - Diabetes
  - Psychiatric disorders
  - COPD
  - Household contacts of immunocompromised
Ordering and claims

• Funded vaccine ordered through ProPharma
  • Can be ordered from 19th March, 2018
• Non-funded vaccine ordered through HCL
• When another funded vaccine is given at the same visit you can only submit one immunisation benefit claim
Zostavax packaging

10 x blister packs per box

95 mm x 150 mm x 87 mm
Vaccine storage

• Between 2°C to 8°C AT ALL TIMES until reconstitution
• Protect from light
• Administer within 30 minutes of reconstitution, if over 30 minutes vaccine must be discarded
Zostavax reconstitution

Note the shorter syringe and no plunger guard

Priorix, with plunger guard

Zostavax, no plunger guard
Zostavax reconstitution

1. Attach a drawing-up needle to diluent syringe
2. Inject all of the diluent into the vial
3. **Keep needle/syringe in the vial** while mixing
4. Draw back **slowly to keep plunger** in the syringe
5. Change to a giving needle - the final volume is 0.65 mL with powder added

• **Avoid recapping** when changing needle
Zostavax administration

• Administer **immediately after reconstitution**
• If not administered within 30 minutes, discard.
• Inject the **total volume of reconstituted vaccine** (0.65ml)
• Route: **subcutaneous**
• Site: **deltoid** area
• NIR and PMSs have been updated
  • Remember to enter influenza and Zostavax on the NIR
Zostavax vaccine

- Can administer **at the same visit** as other schedule vaccines, including influenza, conjugate pneumococcal, Tdap and Td
- Zostavax and PPV23 can be given at the same time
- Funded vaccine only available through *general practice*
- Available for purchase by adults >50yrs through *general practice and some pharmacies*
Using Zostavax and antivirals/blood products

- **Stop antiviral medication for 24 hours prior** to vaccination (acyclovir, valciclovir)
- **Delay restarting antivirals for 14 days** after vaccination to allow the vaccine virus to replicate and induce an immune response
- **No minimum interval for blood or immunoglobulins** as varicella-zoster antibodies do not have any affect on the Zostavax immune response
Recent shingles (zoster) illness?

• Having shingles *boosts natural immunity*
• Vaccinating soon after shingles is *unlikely to provide any benefit*
• Recommend waiting *about 1 year interval (from the week the rash cleared)* before receiving Zostavax
• In calculating this interval, *DO NOT include persistent pain after* the rash has healed
Repeat zoster vaccination?

• **Not** currently recommended however no safety concerns
• **Funded if previous Zostavax purchased**
• Recommend **1 year gap after previous Zostavax** vaccine
• If starting immunosuppressive treatment, if possible, administer Zostavax **at least one month before**
Resources available

• Updated Chapter 22 of the Immunisation Handbook
• Health professional resource from IMAC on our website to print
• Also comes with the flu kit (printed)
• Zoster vaccine fact sheet will be available on the MoH site
• “Immunisation for Older People” (HE2540) and updated Immunisation Schedule card from HealthEd
Questions?
INFLUENZA

2018 Seasonal Influenza Campaign
Influenza kit booklet for 2018

- New cover design
- Content and references updated
- Resources that are available
- Some reordering of content

Flu kit references are available at www.influenza.org.nz

Messages in campaign are:
- Flu can be anywhere! *(From the standard tv ad)*
- Many people infected with flu don’t have symptoms can still pass it on. *(From flu infographic video)*

See it here: https://vimeo.com/212849223
Two funded influenza vaccines

INFLUVAC® TETRA from Mylan
• Adults and children aged 3 years or older
• Available early April 2018

FLUARIX® TETRA from GlaxoSmithKline
• Children aged under 3 years (6–35 m).
• Supply limited for use only with 6–35 m
• Available mid-April 2018

Both funded vaccines available until 31 December
- particularly important for pregnant women

Key message: get vaccinated before winter.
2018 funded influenza vaccines

Protection against the following 4 strains:

– A/Michigan/45/2015 (H1N1) pdm09-like virus
– A/Singapore/INFIMH-16-0019/2016 (H3N2)-like virus*
– B/Phuket/3073/2013-like virus*
– B/Brisbane/60/2008-like virus

*two new strains
2018 Unfunded influenza vaccines

Both are quadrivalent

• Sanofi – FluQuadri™

• Seqirus – Afluria Quad™
Eligibility for funded vaccine

• Influenza vaccination is FREE for New Zealanders considered to be at higher risk of complications:
  – Pregnant women (any trimester)
  – People aged 65 years or older
  – People aged under 65 years with certain medical conditions
    • Children aged 4 years or under who have been in hospital for respiratory illness or have a history of significant respiratory illness

A full list of eligible medical conditions is on page 6 of the 2018 Flu Kit. For eligibility queries call 0800 IMMUNE (0800 466 863)
Influenza vaccination and children

<table>
<thead>
<tr>
<th>Age</th>
<th>Funded vaccine brand</th>
<th>Dose</th>
<th>No of doses</th>
</tr>
</thead>
<tbody>
<tr>
<td>6–35 months</td>
<td>FLUARIX® TETRA</td>
<td>0.5 mL</td>
<td>1 or 2*</td>
</tr>
<tr>
<td>3–8 years</td>
<td>INFLUVC® TETRA</td>
<td>0.5 mL</td>
<td>1 or 2*</td>
</tr>
<tr>
<td>≥9 years</td>
<td>TETRA</td>
<td>0.5 mL</td>
<td>1</td>
</tr>
</tbody>
</table>

- *A full 0.5mL dose* is administered for children aged 6–35 months
- *Two doses separated by at least four weeks if an influenza vaccine is being used for the first time.

- **Why two doses?**
- Children under 9 years may be immunologically naive and so get a better response from a two dose priming regime
Influenza and PCV 13

• Increased risk of fever when influenza vaccine is given with PREVENAR 13® in children aged 6 months to 5 years,
• Advise parents/guardians whose children are recommended to receive both influenza vaccine and PCV13
• Offer to separate by two days, but not essential
Precautions and contraindications

All vaccinations:
• Anaphylaxis to previous dose or component of the vaccine
• Defer if:
  – Acutely unwell with fever (>38°C)
  – Other systemic illness

Influenza specific
• Receiving some new cancer treatments*
• Confirmed anaphylaxis to Gentamicin
Precautions and contraindications

Egg allergy or anaphylaxis

- INFLUVAC® TETRA and FLUARIX® TETRA can be administered to people with a history of egg anaphylaxis at general practices, pharmacies or at the workplace.
- Studies have shown that influenza vaccines containing less than one microgram of ovalbumin do not trigger anaphylaxis in sensitive individuals.
- The residual ovalbumin in one dose of INFLUVAC® TETRA or FLUARIX® TETRA is significantly below this limit.
New precaution – influenza vaccine may be contraindicated or delayed

- The following cancer treatments increase the risk of developing autoimmune conditions:
  - atezolizumab (Tecentriq®),
  - ipilimumab (Yervoy®),
  - nivolumab (Opdivo®) and pembrolizumab (Keytruda®)

It is not known how likely side effects are for those who receive influenza vaccine while on these treatments, or for up to six months after treatment.

Therefore, contact the person’s oncologist or 0800 IMMUNE (0800 466 863) for current advice about influenza vaccination BEFORE administering the vaccine.
Latex allergy

• INFLUVAC® TETRA cannot be considered latex-free.
• FLUARIX® TETRA is latex-free

If no latex-free influenza vaccine is available, please call 0800 IMMUNE (0800 466 863) before vaccinating a person who is highly sensitive to latex with a history of severe hypersensitivity response.
Safety of influenza vaccination

Common reactions include

• Pain and redness at site (1 in 3 adults)
• Ache and pains (1 in 10 adults)
• Fever, unwell, tired

**NB: AN INACTIVATED VACCINE CANNOT GIVE YOU INFLUENZA!**

• Most significant serious reaction is anaphylaxis (1.5 per million)
• Fever common in children
Five key messages for 2018

1. Immunisation is the best protection against influenza. Get a ‘flu shot’ before winter annually
2. A mild case of influenza can disrupt your life
3. Many people don’t feel unwell with influenza but can still pass it on to others
4. Get immunised to prevent influenza spread in your community
5. Influenza immunisation is recommended and FREE for those likely to get very sick, go to hospital or die from influenza
Influenza & older people

- People (aged 65 years or older) with influenza are more likely to require hospitalisation and to die than those who are under 65 years – except if they have immunity to the particular strain.
- Influenza vaccination reduces severity of symptoms in older adults who get influenza even if vaccinated
- Influenza vaccination is recommended (not funded) for those who are in close contact with older people
You can transmit influenza without knowing you are infected

The SHIVERS influenza research showed that around 26% of people in NZ had contracted influenza over the 2015 season and 80% of those people were asymptomatic carriers.
Should healthcare workers be vaccinated?  **YES**

- Protect patients at greater risk of developing complications
- Improved patient safety, improved employee safety and decreased healthcare expenditure
- Healthcare workers have a **duty of care** to protect vulnerable patients from the serious threat of influenza illness
- Relying on patients being vaccinated for their personal protection is not enough, many vulnerable people have a poor immune response to the vaccine or may not have been vaccinated this year
DHB staff influenza coverage (2014 - 2017)
Risks for pregnant women and babies

- Physiological changes
  - Decreased lung capacity
  - Increased cardiac output
  - Altered cell-mediated immunity

- An influenza infection can have serious consequences including premature birth, miscarriage/stillbirth, low birth weight and perinatal death
Protect pregnant women and their babies

WHO recommends influenza vaccination for pregnant women at ANY stage of her pregnancy and that they be given the highest priority.
Vaccination during pregnancy

• **Trans-placental transfer of influenza-specific antibodies** with a half-life in the new-born of around 43-53 days

• Influenza vaccine has been used in pregnant women since the 1960s with considerable safety data

• **Influenza vaccination in early pregnancy** is safe no increase in major malformations

• Vaccination is associated with a decrease in overall stillbirth rate
Discuss and recommend to pregnant women and their whānau

• The risk of influenza and complications for the pregnant woman, her growing baby and her vulnerable newborn.
• The vaccine is effective in reducing the influenza risk for the woman and her baby, both during pregnancy and after birth.
• The vaccine has an excellent safety record during pregnancy
• Make a clear recommendation for the woman to receive an influenza vaccination during pregnancy.
Vaccination and breastfeeding

• The influenza vaccine can be given to a breastfeeding woman
• Protecting the mother can help prevent her becoming infected and transmitting influenza to her baby
Resources similar in 2018

Ordering of all print resources is online at www.influenza.org.nz/resources

New A3 poster Flu Q and As
- Sent out to GPs and pharmacies
- DHBs to print their own. File has been provided to DHB comms managers
- Also available as an animation or via vimeo
Ordering and delivery

- Influenza vaccine is supplied by Healthcare Logistics (HCL)
- **Online ordering is preferred** at [www.hcl.co.nz](http://www.hcl.co.nz) (registration required)
- Providers without access to internet the fax order form is at [www.influenza.org.nz/resources](http://www.influenza.org.nz/resources) and in flu kit page 8

  Fax to: 0508 408 358          Enquiries call: 0508 425 358

**Do not organise clinics until you are certain you will have sufficient vaccine available in your refrigerator to meet demand**
Important dates

• Flu vaccine available early April 2018
• Administer funded vaccine by Dec 31st, 2018
• Submit claims **within eight months** from administration
• Return unused vaccine by **31st January 2019** to be eligible for refund