Immunization Update: Latest recommendations
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Disclosure
• No real or potential conflict of interest to disclose.
• No off-label, experimental or investigational use of drugs or devices will be presented.

Objectives
• Upon completion of this program, the participant will be able to:
  – Describe clinical scenarios where select immunizations are underutilized.
  – Identify newer immunizations.
  – Expand the NP’s knowledge to help facilitate the expanded use of select immunizations to often overlooked immunization candidates.

Resource Updated Annually in Early February
• 2017 Report

“But why immunize against a disease I have never even seen?”
Community or Herd Immunity

What percentage of the herd needs to be immune?
• To exploit herd immunity
  – Measles, pertussis = ~95% immune
  – Mumps = ~80%
  – Rubella, diphtheria = ~85%
Clinicians should give a strong and effective vaccine recommendation.

"Sophia is due for three vaccines today. These will help protect her from meningitis, HPV cancers, and pertussis. We'll give those shots at the end of the visit."

"Good news! We have flu shots available. I am going to arrange for you and your child to get this today so you both be protected."

How do we explain vaccine failure?

• Primary vaccine failure (~50%)
  • Generally considered most common reason for vaccine failure but further study likely refutes this
  – Person receiving vaccine did not develop sufficient immunity
  – Multiple possible reasons
  • Antipyretic use prior to vaccine
  • Persistent maternal antibodies minimizing impact of vaccine in infant

• Secondary vaccine failure (50%)
  – Person receiving the vaccine initially protected but immunity waned over time
  – Reason dependent largely on specific vaccine and immunocompetency of the patient

Vaccine Effectiveness Formula

• Vaccine effectiveness=(Attack rate in unvaccinated group [ARU] minus attack rate in vaccinated group [ARV])/attack rate in unvaccinated group [ARU]
  = (ARU−ARV)/ARU

Example of Immunization Efficacy

• 1,000 people potentially exposed
  – 950 have received 2 doses MMR
  – 50 are unvaccinated
  • Vaccine coverage=95%
Example of Immunization Efficacy
(continued)

- 30% attack rate in unvaccinated
  - 15 with disease
- 3% attack rate in vaccinated
  - 29 with disease
- Total=44/1000
- Without vaccination=300/1000
  Source: http://www.cdc.gov/mumps/hcp.html

Resources on Vaccine Science

- Quick answers to tough questions: Discussions with parents
- Making the case for vaccines

Immunization (IZ) Principles

- IZ deferred=IZ denied
  - The presence of a minor illness does not necessitate deferring or delaying immunization. **Immunization should be deferred only in the presence of a moderate to severe illness with or without fever.**

Personal IZ Contraindications

<table>
<thead>
<tr>
<th>Patient history of anaphylactic reaction</th>
<th>IZ to avoid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neomycin</td>
<td>IPV, MMR, varicella</td>
</tr>
<tr>
<td>Streptomycin, polymyxin B, neomycin</td>
<td>IPV, vaccinia (smallpox)</td>
</tr>
<tr>
<td>Baker’s yeast</td>
<td>Hepatitis B</td>
</tr>
<tr>
<td>Gelatin, neomycin</td>
<td>Varicella zoster</td>
</tr>
<tr>
<td>Gelatin</td>
<td>MMR</td>
</tr>
</tbody>
</table>

Source: www.cdc.gov/vaccines/recs/vac-admin/contraindications.htm

Underutilized Vaccination in Older Adults

Recently 24.2% of adults age ≥60 years reported receiving herpes zoster vaccination to prevent shingles. By ethnicity:
- European ancestry=27.4%
- African, Latino ancestry=Approximately 10%

Source: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6404a6.htm

Zoster Vaccination

- A single dose of zoster vaccine is recommended for adults age ≥60 years regardless of whether they report a prior episode of herpes zoster.
Zoster Vaccination
(continued)

• “Persons age ≥60 years with chronic medical conditions may be vaccinated unless their condition constitutes a contraindication, such as pregnancy or severe immunodeficiency.”

  Source: http://www.cdc.gov/vaccines/vpd-vac/shingles/hcp-vaccination.htm

Zoster Vaccination
Contraindications

• Advanced HIV/AIDS
• Current use of immuno-altering therapies
  – Radiation or cancer chemotherapy, others
• Current select cancers
  – Not simply history of malignancy
  – Leukemia, lymphoma

Zoster Vaccination
Contraindications
(continued)

• Women who are or might be pregnant
  – Should wait ≥4 weeks to become pregnant after getting vaccine despite age limitation mentioned on the vaccine licensing

Zoster Vaccination
Ages 50–59 Years

• Licensed, not routinely recommended
  – One concern is possible waning immunity.
• Consider use in age 50–59 years
  – Potential poor tolerance to zoster or post-herpetic neuralgia symptoms, such as person with preexisting chronic pain or other comorbidities
  – Extenuating employment-related factors

What about for person who will undergo immunosuppressive therapy or develop an immunodeficiency condition?

• If age ≥60 years and no history of zoster vaccine, should receive
  – 1 dose of the vaccine as soon as possible, while their immunity is intact
  – Administer zoster vaccine at least 14 days before immunosuppressive therapy begins, with some advocating for 1 month delay.

Different Vaccines, Different Doses

• Varicella (Varivax®) vaccine
  – 1,400 PFUs of varicella vaccine virus
• MMRV (ProQuad®) vaccine
  – 9,800 PFUs of varicella vaccine virus
• Zoster (Zostavax®) vaccine
  – 19,400 PFUs of varicella vaccine virus
Varicella (Chickenpox)

- Endemic prior to 20 years ago when vaccine began with routine use
- U.S.-born before 1980 is considered adequate for immunity except pregnant woman, healthcare provider

What percentage of adults raised in USA and born prior to 1995...

- Will have no memory of having had varicella in childhood but will be serologically immune to the virus?
  A. 20–30%
  B. 40–50%
  C. 60–70%
  D. 80–90%

Q and A=
Rank Order for Recent Flu Season...

- Professions with highest to lowest rate of immunization against influenza
  ____Nurse practitioners
  ____RNs
  ____Medical physicians
  ____Pharmacists
  - Source: https://www.cdc.gov/flu/healthcareworkers.htm

Influenza Immunization Rates in Healthcare Providers (HCP)

- 2007–08 flu season
  - 48%
- Most recent flu season
  - 77%

For Given Influenza Season

- Set for northern hemisphere by World Health Organization
  - Annual event, typically around mid-late February
  - Based on anticipated strains
  - Trivalent vaccines=Protection against 2 influenza type A, 1 influenza type B strains
  - Quadrivalent vaccines=Protection against 2 influenza A, 2 influenza B strains

Universal Influenza Immunization

- Annual vaccination against influenza is recommended for all persons age ≥6 months.
  - Recommendation for a number of years
  - While many vaccine forms available, better to get flu protection on board than wait for priority vaccine to be available.
  - Source: http://www.cdc.gov/flu/protect/vaccine/vaccines.htm
Inactivated Influenza Vaccine
AKA The Flu Shot

• Who is eligible?
  • Two forms, trivalent (2 influenza A, 1 influenza B strains), quadrivalent (2 influenza A, 2 influenza B strains)
  • Persons age ≥6 months
  • Pregnant women
  • Immunocompromised
  • Hives-only allergy to eggs

Additional Influenza Vaccine Options

• High-dose IIV
  – For individuals age ≥65 years
  • Approximately 24.2% more effective in preventing flu in adults age ≥65 years relative to a standard-dose vaccine
  • CDC have not expressed a preference for any flu vaccine in this age group.

Additional Influenza Vaccine Options (continued)

• Recombinant influenza vaccine (RIV [Flublok®])
  – Approved for persons age ≥18 years
  – Contains no egg proteins
  – Able to be administered to persons age ≥18 years with egg allergy of any severity

Additional Influenza Vaccine Options (continued)

• Intradermal IIV
  – Option for persons age 18 through 64 years
  – Lower dose when compared to standard flu vaccine with equivalent immunologic response

Additional Influenza Vaccine Options (continued)

• Live attenuated influenza vaccine (LAIV4 [FluMist®], nasal only)
  – Option for healthy individuals but not pregnant women age 2 through 49 years
    • Caution with airway disease at any age, see prescribing information for details.
    • People with a history of egg allergy
  – Keep UTD updates on its availability, recommendations for use.
    • Not recommended currently due to low efficacy in last flu season.

Immunizations During Pregnancy

• Myth: Few vaccines are safe to give to a woman who is planning a pregnancy, pregnant, or nursing.
• Reality: Most vaccines are safe to use and indicated to protect the mom and/or child.
Immunizations and Pregnancy
Are the following vaccines, if indicated, safe?
- Flu shot?
- Hepatitis B?
- Tdap?
- Hepatitis A
- Varicella

Of the following, who should receive a Tdap (tetanus, diphtheria, acellular pertussis vaccine [Adacel®, Boostrix®])?
- A woman who is 28-weeks pregnant and received a Tdap approximately 18 months ago with her first pregnancy.
- The spouse of a woman who received a Tdap 18 months ago.
- The 70-year-old prospective grandfather who will be one of the newborn’s caregivers and received a Td 5 years ago.

*S. pneumoniae:*
Gram-positive diplococci
- Causative organism for invasive pneumococcal disease (IPD)
  - Pneumonia
  - Meningitis
  - Septicemia
- Causative organism for less serious diseases
  - ABRS
  - AOM

*S. pneumoniae*
Mechanism of Contagion
- Transmitted
  - Direct person-to-person contact via respiratory droplets
  - Autoinoculation in persons carrying the bacteria in upper respiratory tract

True or false?
- Since the introduction of pneumococcal immunization for children, the incidence of invasive pneumococcal disease in children age <5 years has decreased by approximately 75%.
- Among adults age ≥65 years, the incidence of invasive pneumococcal disease has been reduced by about 1/3.

True or false?
- According to the CDC, up to 70% of healthy adults are carrying *S. pneumoniae* bacteria at any given time.
Pneumococcal Vaccines

- Two forms
  - 13-valent pneumococcal conjugate vaccine (PCV13, [Prevnar®])
    - Approved for use age ≥6 weeks
  - 23-valent pneumococcal polysaccharide vaccine (PPSV23, [Pneumovax®])
    - Approved for use age ≥2 years

23-valent Pneumococcal Polysaccharide Vaccine (PPSV23, Pneumovax®)

Candidate, Yes or no?

- A 22-year-old who smokes 1 PPD
- A 40-year-old with asthma
- A 19-year-old who underwent a splenectomy post MVA 2 years ago and has received 1 dose of PCV13
- A 70-year-old with HTN, dyslipidemia who received PPSV 5 years ago

13-valent Pneumococcal Conjugate Vaccine (PCV13, [Prevnar®])

Candidate, Yes or no?

- A well 66-year-old who received PPSV23 1 year ago
- A 25-year-old with a recent head injury and chronic CSF leak
- A 30-year-old with a newly-inserted cochlear implant

Pneumococcal Vaccine

- Primary changes to schedule include
  - Interval change for 13-valent pneumococcal conjugate vaccine (PCV13) followed by 23-valent pneumococcal polysaccharide vaccine (PPSV23) from "6 to 12 months" to "at least 1 year" for immunocompetent adults age ≥65 years

Pneumococcal Vaccine Recommendations in Immunocompetent Well Older Adults Age ≥65 Years

- Who have not received any pneumococcal vaccine
  - Administer PCV13 followed by PPSV23 at least 1 year after PCV13.
- Have received PPSV23 but not PCV13
  - Administer PCV13 at least 1 year after PPSV23.

Additional Pneumococcal Vaccine Advice

- Received 1 or more doses of PPSV23 at age <65 years
  - Administer PCV13 at least 1 year after the most recent dose of PPSV23.
  - Administer another PPSV23 dose at age ≥65 years but at least 5 years after the last PPSV23 dose.
**Neisseria meningitidis**

- Gram-negative diplococcus
- Largely droplet, saliva transmitted
  - Normal nonpathogenic flora in nasopharynx of up to 5–15% of adults

**Neisseria meningitidis**

(continued)

- Major risk
  - Children age <5 years, adolescents

**Meningococcal Disease**

An Overview

- Burden of the disease per year in USA
  - Approximately 1000 cases nationwide
    - Most cases sporadic (97%), 3% associated with outbreaks
    - 10–14% mortality
    - 11–19% survive with significant sequelae including hearing loss, limb amputation, cognitive disability, other

http://www.voicesofmeningitis.com

**Meningococcal Vaccines Currently in Widespread Use**

- Providing protection against serogroups A, C, Y, and W-135
  - Responsible for approximately 2/3 of invasive N. meningitidis disease in the USA
  - MPSV4, Menomune®
    - Meningococcal polysaccharide vaccine
  - MCV4-CRM, Menactra®, Menveo®
    - Meningococcal conjugate vaccine

**Since Currently Recommended Use of MCV4 Vaccines**

- Estimated annual number of cases of serogroups C and Y meningococcal disease
  - Decreased 74% among persons age 11 through 14 years
  - Decreased 27% among persons age 15 through 18 years
Current MCV4 Vaccine Use

- Routinely in preteens and teens
  - Additional select populations, see later in program
- Routine vaccination against meningococcal disease is not recommended for children age 2 months through 10 years.

Meningococcal Group B Vaccines (Bexsero®, Trumenba®)
Filling in the Meningococcal Coverage Gap

Meningococcal Group B Vaccine (Bexsero®, Trumenba®)
(continued)

- Indication
  - Prevention of invasive disease caused by Neisseria meningitidis serogroup B
  - Coverage for 4 serogroup B strains representative of prevalent strains in USA
  - Accounts for about 1/3 of all invasive N. meningitidis disease diagnosed annually in USA
  - Approved for use in individuals age 10 through 25 years

- Trumenba®
  - 3-dose series (0, 2, 6 months)

- Bexsero® (Novartis)
  - 2-dose series (0, 1–6 months)

- Licensed in >30 countries for persons age ≥ 2 months
  - Give entire series with same vaccine

Source:
http://web.princeton.edu/sites/emergency/meningitis.html

- “Nine cases of serogroup B meningococcal disease have been associated with Princeton University. The US Centers for Disease Control and Prevention (CDC) and the New Jersey Department of Health are not recommending cancelling or curtailing events or activities on campus.”

Meningococcal Group B Vaccine (continued)

- When indicated
  - Adults aged 16 through 23 years (preferred age range is 16 through 18 years) who are healthy and not at increased risk for serogroup B meningococcal disease may receive either a 2-dose series of MenB-4C at least 1 month apart or a 2-dose series of MenB-FHbp at 0 and 6 months for short-term protection against most strains of serogroup B meningococcal disease.
“Serogroup B meningococcal (MenB) vaccine series should be administered to persons age ≥10 years who are at increased risk for serogroup B meningococcal disease.”

HIV infection is not an indication for routine vaccination with MenACWY (MCV4) or MenB.

Adults and children age >2 years who are planning on traveling to Mecca, Saudi Arabia, for annual Hajj should be offered MCV4.


Additional Candidates for Immunization Against Meningococcal Disease with MCV4

• Anticipated travel to a country in the “meningitis belt” of sub-Saharan Africa or other location of epidemic meningococcal disease, particularly if contact with the local population will be prolonged.

• Splenic dysfunction or splenectomy
• Persistent complement component deficiency
• Military recruits
• In presence of community outbreak

For full advisory on meningococcal vaccine, please see http://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/mening.html

For advisory on meningococcal chemoprophylaxis, please see http://www.cdc.gov/vaccines/pubs/surv-manual/chpt08-mening.html
Defining the Terms
Special Immunization Recommendations in Asplenia, Hyposplenia

• Anatomically asplenic
  – Spleen has been surgically removed
  • More common in contemporary practice, an effort is made to preserve at least part of the spleen to provide partial splenic protection.

• Functionally asplenic
  – Spleen not functional due to autoinfarction, most often seen with sickle cell anemia, others

Hyposplenia
– A significant degree in splenic function compromise

Asplenia/Hyposplenia Consequences
• Immunodeficiency form
  – Increased sepsis risk from polysaccharide-encapsulated bacteria including Streptococcus pneumoniae, Haemophilus influenzae, and Neisseria meningitidis as much as 350-fold
  – Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2995208/

• Potentially resulting in overwhelming post-splenectomy infection (OPSI) with projected mortality as high as 70%
  – Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2995208/

Special Immunization Recommendations in Asplenia, Hyposplenia

• Haemophilus influenzae type b (Hib) vaccination
  • Routinely given in early childhood to minimize risk of invasive H. influenzae type b disease
  – One dose of Hib vaccine should be administered to persons who have anatomical or functional asplenia or sickle cell disease.
Special Immunization Recommendations in Asplenia, Hyposplenia (continued)

- *Haemophilus influenzae* type b (Hib) vaccination (cont.)
  - If undergoing elective splenectomy and have not previously received Hib vaccine, Hib vaccination 14 or more days before splenectomy suggested

- PPSV23 (Pneumovax®) should be administered at least 1 year after PCV13 (Prevnar®), except among adults with immunocompromising conditions, anatomical or functional asplenia, cerebrospinal fluid leak, or cochlear implant, for whom the interval should be at least 8 weeks; the interval between PPSV23 doses should be at least 5 years.

Special Immunization Recommendations in Asplenia, Hyposplenia (continued)

- Adults with anatomical or functional asplenia or persistent complement component deficiencies
  - Administer 2 doses of MenACWY vaccine (Menactra®, Menomune®) at least 2 months apart and revaccinate every 5 years
  - Also administer a series of MenB vaccine (Bexsero®, Trumenba®)

Pediatric Immunizations True or false?

- (T/F) MMR should not be given to a 12-month-old whose mother is pregnant.
- (T/F) A 6-month-old who is taking amoxicillin for AOM should have immunizations delayed until the antimicrobial course is completed.

Pediatric Immunizations True or false?

- (T/F) In order to avoid post vaccine discomfort, younger children should be given a weight- and age-appropriate dose of an antipyretic such as acetaminophen or ibuprofen prior to receiving immunizations.

Antipyretics After, but Not Before, Vaccine, and Then Only if Needed (continued)

- Proposed mechanism
  - Effect on cell-mediated response by selectively inhibiting cyclo-oxygenase-2
Localized Reactions to Injected Immunizations=Anticipate Response

Measles, Mumps, and Rubella (MMR) Vaccine

- Routine recommendations
  - 2-dose series of MMR vaccine
    - Age 12 through 15 months for first dose
    - Age 4 through 6 years for second dose
      - Second dose can be administered before age 4 years, provided at least 4 weeks have elapsed since the first dose.

MMR Vaccine

True or false?

- The rationale for administering a 2nd MMR vaccine is to provide additional protection against measles.

MMR Immunization

True or false?

- Children age 6–11 months who are traveling outside the United States should receive 1 dose of MMR.
- Children age ≥12 months traveling internationally should receive 2 doses of MMR vaccine, separated by ≥28 days.

What year did....

- Universal childhood HBV recommendation begin in the USA?
  A. 1986
  B. 1989
  C. 1992
  D. 1999

What year did...

- Universal childhood HAV recommendation begin in the USA?
  A. 1986
  B. 1990
  C. 1994
  D. 1998

Source:  
http://www.historyofvaccines.org/content/articles/hepatitis-and-hepatitis-b
Who is a hepatitis A, hepatitis B vaccine candidate?

- Adults at higher risk?
- Any adult who asks for protection against HBV or HAV?

Priority Adult Candidates for HAV, HBV Vaccines
(partial list)

- If not serological evidence of immunity or prior immunization
- Chronic liver disease
  - HCV, fatty liver disease, others
- Injection or non-injection drug use

Priority Adult Candidates for Viral Hepatitis Vaccines
(partial list)

- HBV
  - Age 19-59 with DM
  - Preparing for or on hemodialysis
  - With or at risk for STI
- HAV
  - Receive clotting factor concentrates
  - MSW
  - Travel in countries with endemic HAV infection
  - Close personal contact with international adoptee

Natural Course of HPV Infection

Infection
- First Lesion
- Immune Response
- About 9 mo.
- Incubation (1-8 Mo.)
- Active Growth (3-6 Mo.)
- Host Containment (3-6 Mo.)
- Late Stage
- Sustained clinical remission
- Persistent or recurrent disease

Malignant HPV-associated Disease

Highest risk=HPV 16, 18
Significant risk=HPV types 31, 33, 52, 56

- CIN and invasive cervical cancer
- Anogenital cancer

HPV-associated Cancers per CDC
www.cdc.gov/hpv/parents/cancer.html

- Cervical cancer
  - Nearly 100%
- Vulvar cancer
  - Approx. 70%
- Vaginal cancer
  - Approx. 75%
- Penile cancer
  - Approx. 63%
- Anal cancer
  - Approx. 91%
- Oropharyngeal cancer
  - Approx. 75%
Select HPV-related Disease
Problematic but Without Malignancy Risk

- Common warts
  - Types 2, 7
- Plantar warts
  - Types 1, 2, 4
- Flat cutaneous warts
  - Types 3, 10
- Genital warts
  - Types 6, 11

Genital Warts

- (T/F) The use of HPV vaccine (Gardasil 4 or 9®) has been associated with an increase of early-onset sexual activity in preadolescents and adolescents who receive the immunization.

HPV Vaccines Currently Licensed in U.S.

<table>
<thead>
<tr>
<th></th>
<th>Quadrivalent 4vHPV (Gardasil®)</th>
<th>9-Valent 9vHPV (Gardasil 9®)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPV types included</td>
<td>6, 11, 16, 18</td>
<td>6, 11, 16, 18, 31, 33, 45, 52, 58</td>
</tr>
<tr>
<td>Contraindications</td>
<td>Hyper-sensitivity to yeast</td>
<td>Hyper-sensitivity to yeast</td>
</tr>
<tr>
<td>Dose schedule</td>
<td>2–3 dose series, dependent on age</td>
<td>2–3 dose series, dependent on age</td>
</tr>
</tbody>
</table>

*Only contained in prefilled syringes, not single-dose vials

ACIP Recommendations for HPV Vaccine

- Age
  - Routine vaccination at age 11 or 12 years*
  - Vaccination recommended through age 26 years for females and through age 21 years for males not previously vaccinated
    - Source: MMWR. 2015;64:300-4.
  - Source: MMWR. 2015;64:300-4.
  - *Vaccination series can be started at age 9 years

ACIP Recommendations (continued)

- Age (cont.)
  - Vaccination recommended for men through age 26 years who have sex with men (MSM) or are immunocompromised (including persons HIV-infected).
    - Source: MMWR. 2015;64:300-4.
Updated ACIP Recommendations
Formulations

- 4vHPV and 9vHPV all protect against HPV 16 and 18, types that cause about 66% of cervical cancers and the majority of other HPV-attributable cancers in the United States.
  - Source: MMWR. 2015;64:300-4.

ACIP Recommendations
Formulations (continued)

- 9vHPV targets five additional cancer-causing types, which account for about 15% of cervical cancers.
- 4vHPV and 9vHPV also protect against HPV 6 and 11, types that cause genital warts.
  - Source: MMWR. 2015;64:300-4.

Edward Jenner and the Smallpox Vaccine Resistance Movement

Benjamin Franklin

- “In 1736 I lost one of my sons, a fine boy of four years old, by the smallpox taken in the common way. I long regretted bitterly and still regret that I had not given it to him by inoculation.”

Benjamin Franklin (continued)

- “This I mention for the sake of the parents who omit that operation, on the supposition that they should never forgive themselves if a child died under it; my example showing that the regret may be the same either way, and that, therefore, the safer should be chosen.”

Conclusion
End of the program
Thank you for your time and attention.

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American Academy of Pediatrics
Immunization Resources
Addressing Common Concerns
of Vaccine-hesitant Parents

Available at

Working with Vaccine-hesitant Parents
Canadian Pediatric Society Practice Point

(continued)

• Understand the specific vaccine concerns of the parent
  – Use motivational interviewing, i.e., questions that are client-centered, semi-directive and aimed at changing behavior.
  – Do not assume all parents have the same concerns. Address specific concerns objectively.

Working with Vaccine-hesitant Parents
Canadian Pediatric Society Practice Point

(continued)

• Which is more effective?
  – “If you decide not to be immunized against HPV, you increase your chances of getting HPV and cervical cancer.”
  – “If you decide to get the HPV vaccine, you decrease your chances of getting HPV and cancer and giving HPV to your partners.”

Working with Vaccine-hesitant Parents
Canadian Pediatric Society Practice Point

(continued)

• Stay on message and use clear language to present evidence of vaccine benefits and risks fairly and accurately.
Working with Vaccine-hesitant Parents
Canadian Pediatric Society Practice Point
(continued)

• Inform parents about the rigor of the vaccine safety system.
• Risk of no vaccine or risk of getting disease? What is the equitable comparison?

Working with Vaccine-hesitant Parents
Canadian Pediatric Society Practice Point
(continued)

• Address the issues of pain with immunization.

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