WORKPLACE IMMUNIZATION:
IT’S YOUR BEST SHOT!

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What We Will Discuss

• Immunization as a whole
• Top 3 vaccines for the workplace
• Impact of aging workforce on your company
• How companies can create a culture of wellness
• How healthcare prevention contributes to employee engagement and productivity
10 Great Public Health Achievements 1900 - 1999

1. Vaccination
2. Motor vehicle safety
3. Safer workplaces
4. Control of infectious diseases
5. Decline in deaths from coronary heart disease and stroke
6. Safer and healthier foods
7. Healthier mothers and babies
8. Family planning
9. Fluoridation of drinking water
10. Recognition of tobacco use as a health hazard

Top 3 workplace vaccines

1. Influenza (flu)
2. Shingles
3. Pneumonia
Immunization - A Global Success Story

- Immunization program is hailed as one of the greatest achievements in medicine
- Improved the lives of every Canadian
- Saved more Canadian lives over the last 50 years, than any other health intervention
- The success of childhood immunization programs have led to record or near-record low levels of vaccine preventable diseases


### Cost per Life Year Saved for Vaccines And Other Public Health Initiatives

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Cost per life year saved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandatory Seat Belt law</td>
<td>$69</td>
</tr>
<tr>
<td>Smoking Cessation Counselling</td>
<td>$1,000-10,000</td>
</tr>
<tr>
<td>Bicycle helmet law</td>
<td>$39,000</td>
</tr>
<tr>
<td>Smoke Detectors</td>
<td>$210,000</td>
</tr>
<tr>
<td>Crossing control arm for school buses</td>
<td>$410,000</td>
</tr>
<tr>
<td><strong>Vaccines</strong></td>
<td></td>
</tr>
<tr>
<td>MMR for children</td>
<td>&lt;0 ($16 saved per $ spent)</td>
</tr>
<tr>
<td>DPT for children</td>
<td>&lt;0 ($6 saved per $ spent)</td>
</tr>
<tr>
<td>Influenza for adults ≥ 65 years</td>
<td>&lt;0 ($45 saved per $ spent)</td>
</tr>
<tr>
<td>Pneumococcal Polysaccharide for adults ≥ 65 years</td>
<td>&lt;0 ($8 saves per $ spent)</td>
</tr>
</tbody>
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Failing to Reach Adult Immunization Targets

- Despite the reduction in many vaccine preventable disease states (VPD) the burden of mortality of many of these disease states remains high
  - 30,000-50,000 North Americans still die each year from VPD (mostly from influenza and invasive pneumococcal disease)
- Adult immunization rates are significantly less than optimal
  - Only 38.2% influenza and 16.7% pneumococcus in Canadian adults 18-64 with chronic medical conditions are immunized
  - Influenza immunization in the US among high-risk patients were 36.8% to 69.7%
  - Rate of immunization of other vaccines were rarely above 50% in high risk patients
  - As risk factors increase so does the probability of immunization

Barriers to Adult Immunization Uptake

- Difficulty of integrating disease prevention strategies in clinical practice
- Provider office structure
- Time pressures on physicians
- Provider attitudes toward immunization
- Cost of adult vaccines
- Patient and society expectations

Ubiquity of (mis)information

- Impact of the media and internet
  - Lack of reference frame
  - Vaccine adverse event reporting system: good or bad depending on understanding “another death vs. one death in 10 million doses”
  - Anti-vaccine web sites increasing
  - Media: often reports adverse vaccine information but not impact on vaccine preventable disease
  - Lack of public education

Gary Marshal, MD
Louisville, Kentucky
The Media has a Pervasive Impact on Public Perceptions of Risk

Research has shown that strong beliefs about risk, once formed, change very slowly and are extraordinarily persistent in the face of contrary evidence

Vincent Convello,
Centre for Risk Communication,
Columbia University
## Human nature – Risk Perception

<table>
<thead>
<tr>
<th>What we fear</th>
<th>What we should fear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shark attacks (28)</td>
<td>Dog Bites (4.5 million)</td>
</tr>
<tr>
<td>Murder (14,180)</td>
<td>Suicide (33,289)</td>
</tr>
<tr>
<td>Death due to peanut allergy (50)</td>
<td>Death by poisoning (27,531)</td>
</tr>
<tr>
<td>Death by plane crash (321)</td>
<td>Death by car crash (34,017)</td>
</tr>
</tbody>
</table>

Gary Marshal, MD
Louisville, Kentucky
WHY SHOULD COMPANIES CARE?

- Research shows that companies are more interested in the benefits of creating a culture of corporate wellness rather than the hard dollar costs.
- These benefits may not only be measurable as reducing drug and disability costs, but also employers rate them higher on the scale than cost:
  - Issues around productivity
  - Employee Satisfaction
  - Loyalty, Employee Engagement, Recruitment
  - Corporate Reputation
  - Attracting talent
Influenza Background

- 10-20% of the population are infected each year
- Highest infection rates in children
- Highest mortality in > 65 years and patients with underlying conditions
- Recommended focus:
  - High risk of complications: nursing home, ≥ 65 years, children 6-59 months, pregnant, Aboriginal patients, pregnant patients, morbid obesity (BMI ≥ 40), those with many chronic medical conditions
  - Spreading: HCPs, household contacts of < 6 months, care to children ≤ 59 months
  - Essential community services
- NACI recommends influenza vaccine for all Canadians, because significant illness and societal costs also occur in people not considered to be at high risk of complications.

Influenza: Its effects on the workplace

• On average, **10 to 25% of Canadians** fall victim to the flu every year, resulting in lost time and lost productivity.
• **4,000 Canadians** die of influenza every year
• Yet only **38% of adults** between 18 and 64 get a flu shot
• Flu shots in healthy working adults results in **43% fewer sick days**
Influenza

- Worsens underlying medical conditions

- When vaccinated, healthy adults experience fewer sick days and less time off

- Cost of influenza in 18-to-64-year-olds:
  - $4.5 billion in direct medical cost
  - $6.2 billion in lost productivity
Why is immunization so low?

- People don’t generally perceive themselves at risk
- Huge misconceptions about vaccines:
  - The flu shot will give you the flu (not a live virus)
  - The flu shot will prevent you from getting the flu (if they get a mild case, they think the vaccine didn’t work)
- Flu shot doesn’t always prevent an individual from getting the flu
- If they do get the flu, cases will be milder, won’t need hospitalization or emergency care
Shingles

What is Shingles?

• Commonly associated with individuals in the 50+ age group, likely to be still in the workforce, likely to be key employees
• Painful blistering skin rash
• Caused by the Varicella Zoster virus (VZV), the same virus that causes chicken pox
• The virus remains inactive in certain nerves in the body from childhood.
• With stress and aging immune system, the virus becomes stimulated and is reactivated
• Virus erupts on skin surface as painful rash
• 20% of those with rash will suffer chronic nerve pain
• Pain can be severe and debilitating for months to years
HZ Rash: A Key to Diagnosis

- Unilateral vesicular rash
- Does not usually cross the midline
- Usually follows a single dermatome
- Lesions are rarely below the elbows or knees
Incidence of Shingles

- Canada (Manitoba) - Brisson
- Hope-Simpson
- UK (RCGP) - Brisson
- Netherlands Melker
- Olmstead
- US (Medstat) - Insinga

Johnson et al. IJID 2007 11 (suppl 2), S43-S48
Canadian Shingles epidemiology

- 129,882 cases of shingle episodes/year in Canada
  - 60% cases in adults ≥ 50 years old

- 13% of shingle episodes will result in post-herpetic neuralgia (PHN)
  - 17,108 PHN cases annually
    - PHN definition: Pain 90+ days after rash onset
    - 70% in adults 60+ years old

Brisson M et al. Human Vaccine 2008
Estimated Annual Direct Medical Costs of HZ in Canada: $68 Million*

General practitioner consultations account for approximately half of the healthcare costs associated with HZ in Canada.

*Direct costs only (i.e., from the perspective of the Ministry of Health)

Short communication

Employment related productivity loss associated with herpes zoster and postherpetic neuralgia: A 6-month prospective study

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\textsuperscript{b} Laval University, QC, Canada
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\textsuperscript{e} Geriatric Research, Education and Clinical Center (GRECC), Durham VA Medical Center, Durham, NC, USA
\textsuperscript{f} University of Bristol and Bristol Royal Infirmary, Bristol, UK
\textsuperscript{g} University of California, San Diego and San Diego VA Medical Center, La Jolla, CA, USA
\textsuperscript{h} University of British Columbia and BC Center for Disease control, Vancouver, Canada
\textsuperscript{i} Merck Frosst Canada Ltd., Scientific Affairs, Montréal, Canada
Study on productivity loss: Shingles

In this study, 84 participants (34%) were employed prior to shingles diagnosis, 88 participants were employed during study follow-up (77% completed all 20 questionnaires):

• Results:
  • 92% were treated with antivirals
  • 64% reported missing time off work
    • Average of 43 hours per participant (27 hours per employed participant)
  • 76% reported decrease effectiveness at work (i.e., presenteeism)
  • Overall, 87% of employed participants reported productivity loss as a result of absenteeism and/or presenteeism resulting in 72 hours lost per participant declaring productivity loss (61 hours/employed participant)
Importance of vaccinating older age group

- Natural waning of our immune system with aging: **immunosenescence**
- Severe damage to nervous system after shingles
- Post-herpetic neuralgia: difficult to treat
- Post-herpetic neuralgia: difficult to prevent by treating shingles
- Shingles and post-herpetic neuralgia are likely to increase, partially due to changes in childhood vaccination
- Cost of antiviral medication, pain medications are significant and often used x years
- Cost of time off for caregiver as disease can affect ability to manage ADLs
Shingles vaccine recommendations

- Recommended if 60+ without contraindications
  - May be used if age 50+ without contraindications
- No boosters required in healthy persons previously vaccinated with shingles vaccine
- Avoid antiviral therapy against VZV in the peri-immunization period if possible
- Use caution with immunosuppression
- Getting the shingles vaccine with the flu shot and/or the pneumonia shot is safe and effective

Shingles vaccine recommendations

- Singles vaccine will reduce the number of cases by more than 50%

- Like the flu shot, if an individual who has received the vaccine contracts shingles, it tends to be minor and will be much less likely to cause nerve pain
Pneumonia

- Pneumonia is a serious infection of the lungs
- Usually cause by bacteria or virus
- Less than half of at-risk adults are protected
**Streptococcus pneumoniae: Disease overview**

- **S. pneumoniae** is the leading cause of bacteraemia, meningitis, upper respiratory tract infection and otitis media worldwide

- Most common cause of community acquired pneumonia (CAP) in adults accounting for 30–70% of cases requiring hospitalisation

- >90 distinct polysaccharide capsular types have been identified

- Dominant serotypes associated with invasive pneumococcal disease (IPD) worldwide are 14, 4, 1, 6A, 6B, 3, 8, 7F, 23F, 18C, 19F & 9V

Lynch JP 3rd, Zhanel GG. *Semin Respir Crit Care Med.* 2009;30(2):189-21
S. pneumoniae causes significant mortality among adults aged ≥ 65 years

- In the US, patients aged ≥65 years accounted for 7/100,000 deaths from IPD

- In Ontario, S. pneumoniae causes 30% of pneumonia deaths in individuals aged ≥ 65 years


Factors that may increase risk for PD

- Immunodeficiency, pulmonary disease (including asthma), cardiovascular disease, diabetes, renal insufficiency, and other concomitant conditions
- Chronic alcoholism or cigarette smoking
- Residence in a nursing home or other long-term care facility
- Underlying complex changes in the aging immune system (immunosenescence)

In Adults aged ≥ 65 years, CAP is costly

- CAP patients (n=60; mean age 70 years)
- Total societal cost (medical cost plus private cost) within 30 days of hospital admission was $8,970 per patient
  - Average hospital stay was 11 days
  - Medical costs included emergency room visit, hospital stay, and physician fees
  - Private costs (which are not commonly covered or sometimes not covered by health plans) included lost wages, travel and communications costs, child care expense, ambulance fees, prescriptions, and supplies

Pneumonia

• Less than half the at-risk adults are protected

• Everyone over the age of 65 is at risk

• **On average, cost to employers are 5x higher for workers who had pneumonia than for the overall population of workers**

• While pneumonia can be treated in most cases, recent strains are resistant to common antibiotics and require more expensive drugs and longer hospitalization
Pneumococcal vaccine

• 80% effective against invasive pneumococcal disease (IPD) in healthy young adults

• 50–80% among the elderly and in specific patients groups

• Is recommended for all persons 65+ years old

Canadian Adult National Immunization Coverage Survey 2006
How Companies Come Out Ahead

• Employers must acknowledge the changing demographic in the workplace
• Provide preventive health and awareness programs
  • Lunch & Learn seminars
  • Vaccination clinics
  • Newsletters
  • Websites
  • Posters
  • Wellness Campaign: healthy eating, exercise and immunization
  • Routine Conversations around any health initiative
• Promote immunization in-house
Advantages

• According to the Public Health Agency of Canada, workplace immunization programs are a **cost-effective way** to protect against the flu.

• Flu clinics deliver predictable and measurable ROI.

• In an organization of 100 people, a flu shot program with **40% participation** can pay for itself if influenza is avoided in **just one employee**.

• Cost per employee is low and decrease in absenteeism is high
Promote it from the top—VERY IMPORTANT!

Having **C-Level executives** (CEO, COO, CFO) promote and participate shows not only that health is important to company’s culture, but that team building and group activities are too.

- 17% of companies whose C-level executives spearheaded a wellness program achieved **participation rates in excess of 75%**
- Emails must be sent **by the C-level team** and not merely sent on their behalf
- Managers should also reinforce the C-level communication by promoting the program to their employees **in person** to reinforce wellness as part of your corporate culture
MAKE IT EXCITING

• How you introduce it just as important as the initiative itself—
a lackluster intro will give lackluster results.
• Assuming that the initiatives are based on wants and needs, employees should already be interested in participating.
• Create a buzz to enhance interest and word-of-mouth support.
• Communications should have an exciting and informal tone.
• Be creative.
In Summary: For Business

- Vaccination is a tangible, finite effort with the best interests of all concerned

- Vaccination in the workplace reduces absenteeism, presenteeism

- Efficacious and cost-effective vaccines are underutilized

- For older & chronically ill adults, recommended vaccines reduce mortality and morbidity by about 50%
For Canada: We are a TEAM

- It’s only with collaboration and a team approach that the goals Adult Immunization can be achieved.
- We need all the players on the team to be engaged, active and committed
Final Question:

The issue is not:

“What is the cost of a vaccination program?”

But rather:

“What is the cost of NOT vaccinating my workforce?”
THANK YOU

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www.immunize.ca