

# Integrating Systematic Influenza and Pneumococcal Screening in Acute Care Settings

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# Seasonal Influenza Immunization

- Rates of influenza are steadily increasing (17,535 cases in 2010-2011 to 43,510 cases in 2015-2016) (Gruber, 2015; PHAC, Weekly influenza reports)
- Seasonal influenza immunization is recommended for adults at high-risk of influenza-related complications and for persons 65 and older (PHAC, 2014)
- Recommended national immunization coverage target of 80% by 2010 (PHAC, 2001)
- There is only 37.7% coverage among adults 18-64 years of age with chronic conditions and 64.9% among seniors (PHAC, 2014)
- Inpatient vaccination is a method of improving overall vaccination rates, especially in the population that is 65 and older (Gruber, 2015)

# Pneumococcal Immunization

- Invasive pneumococcal disease (IPD) remains a significant cause of morbidity and mortality among the elderly (Costa et al., 2011)
- In North America there remains an estimated 21 – 43 annual cases of IPD per 100,000 persons 65 years of age and older (PHAC, 2010)
- Vaccination of the elderly against IPD remains a public health priority
- A single life time dose of 23-valent pneumococcal polysaccharide vaccine has been recommended in Canada since the late 1990s (PHAC, 2006)
- Uptake of pneumococcal vaccination remains in the 34 – 42% range (PHAC, 2014)
- Hospital-based screening provides an opportunity for the elderly and high-risk patients to be vaccinated (Kim et al., 2014; PHAC 2014)

# Every Opportunity Project Objective

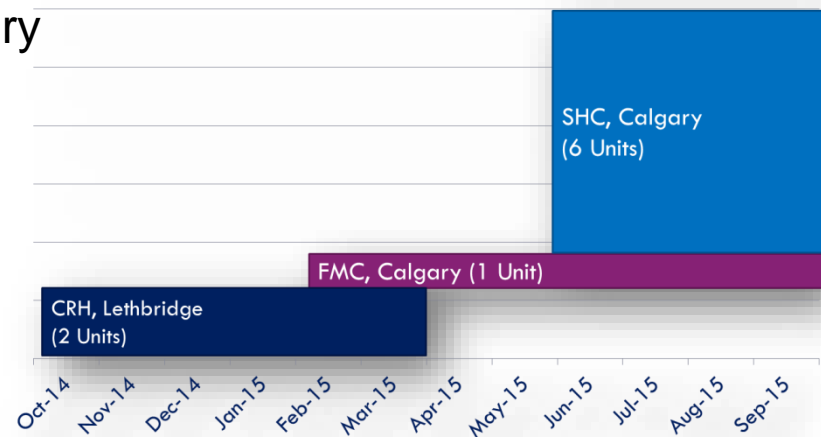
To test the feasibility and acceptability of integrating seasonal influenza and pneumococcal immunization screening and administration into routine acute care practices

Influenza and Pneumococcal Screening and Immunization Pilots

Implemented at three pilot sites

1. Chinook Regional Hospital (CRH), Lethbridge
2. Foothills Medical Centre (FMC), Calgary
3. South Health Campus (SHC), Calgary

October 20, 2014 - September 30, 2015



# Methodology

# Evaluation

Feasibility and acceptability measures are captured through:

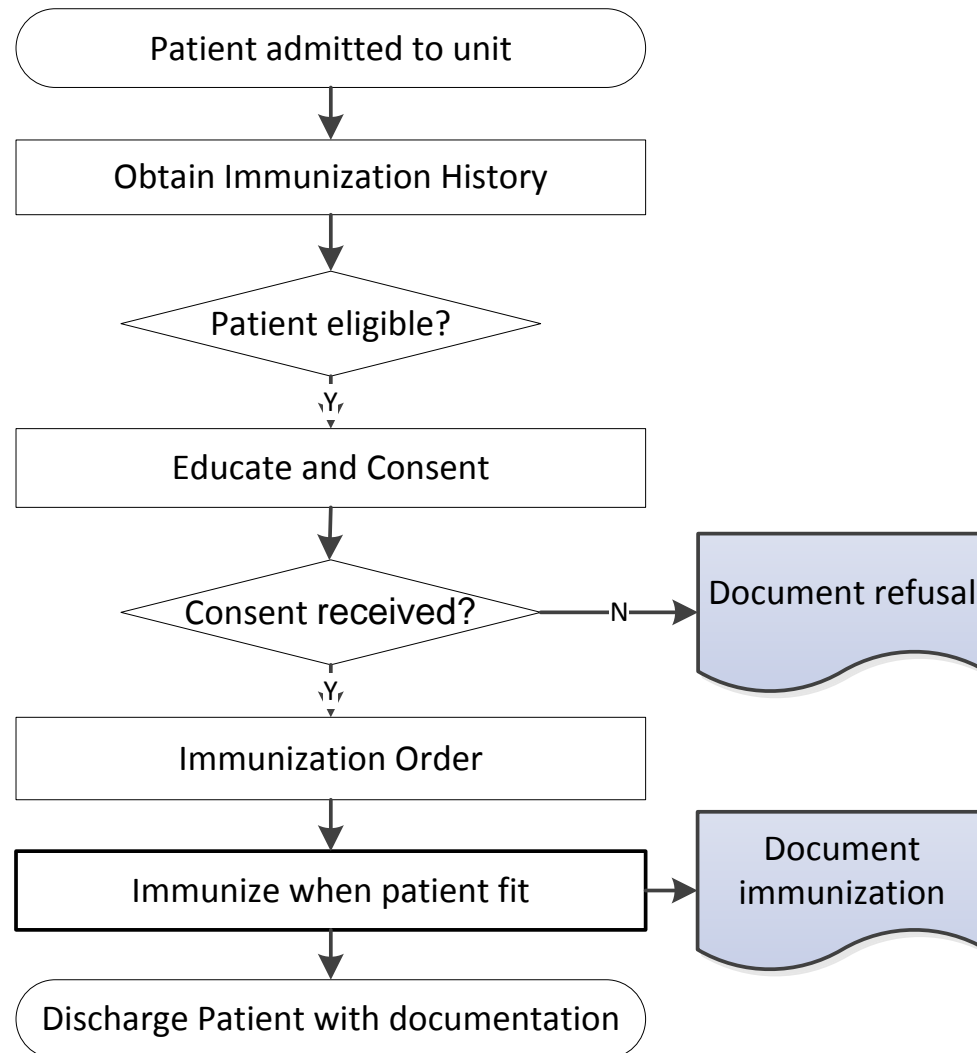
## Quantitative measures

- Length of stay
- Time between admission, screening, orders signed by physician, and vaccination
- Screening rate
- Eligible count and reason of ineligibility
- Vaccination rate and reason for those eligible, but not vaccinated

## Key informant interviews

- Estimated time spent on intervention
- Successes, challenges, and lessons learned
- Recommendations
- Positive impacts and potential negative impacts of intervention in piloting units

# Pilot: Integrated Care Pathway Model



# Site Specific Integrated Care Pathway Models

Chinook Regional Hospital  
(Units 5A and 5B)  
Lethbridge

Single Care Provider  
Model (Immunization  
Nurse)

Influenza and  
Pneumococcal  
Vaccines

Foothills Medical Centre  
(Unit 36)  
Calgary

Integrated Model  
(Pharmacists and  
Nurses)

Influenza and  
Pneumococcal  
Vaccines

South Health Campus  
(Six Inpatient Units)  
Calgary

Single Profession Model  
(Pharmacists)

Pneumococcal Vaccine  
Only



# Results

# Pilot unit composition

Hospital	Chinook Regional Hospital		Foothills Medical Centre	South Health Campus (Pneumococcal Only)					
Units	Geriatric Assessment and Rehab Unit	Acute Geriatric Unit	W21C/Unit 36 (Teaching Unit)	Addictions & Mental Health	Neuroscience	Medical/ Cardiology	Medical/ Surgical	Surgical/ Ortho	Rapid Access
# of staff involved	1 full-time nurse		25 FT/ 55 PT nurses and 5 FT pharmacists	36 full-time pharmacists					
Research Assistant / Coordinators	1		1	2					
Average length of Stay (days)	35.20		7.38	15.98	11.71	6.07	14.67	7.10	3.58
Average age	79.70		58.72	38.28	68.98	64.58	69.99	67.86	61.61
Percent screened	100%		Flu: 41%	47%	58%	43%	44%	8%	34%
			Pneumo: 61%						
Percent eligible patients vaccinated	Flu: 35%		Flu: 2%	50%	13%	32%	15%	17%	12%
	Pneumo: 16%		Pneumo: 19%						
Days between screening and vaccination	Flu: 6.11		Pneumo: 0.83	5.5	1.25	0.95	0.50	0	1.00
	Pneumo: 13.72								

# Factors Associated with Influenza Vaccination

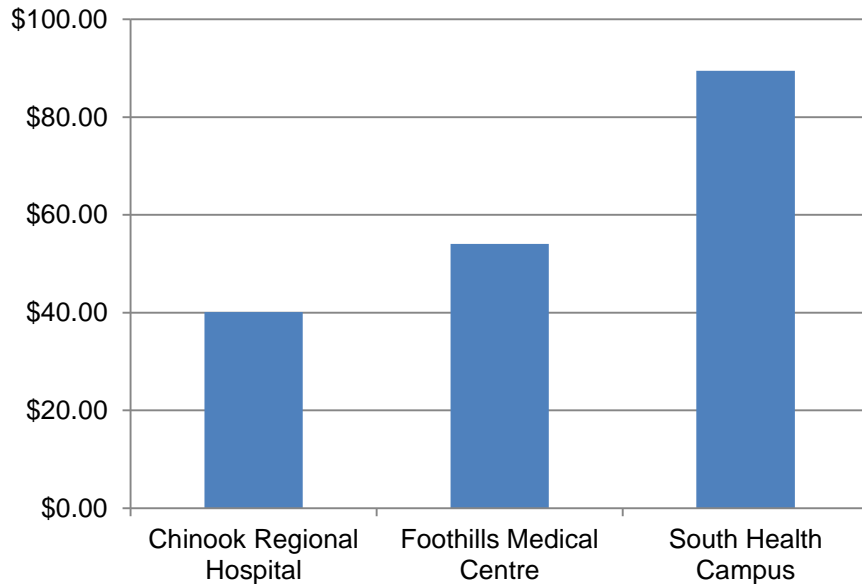
Factors	Odds ratio	95% CI	
<b>Chinook Regional Hospital</b>	<b>9.62</b>	<b>76.92</b>	<b>1.2</b>
LOS $\geq$ 14 days	0.8	1.74	0.37
Male	1.37	2.66	0.71
Age $\geq$ 65	1.52	3.89	0.59

# Factors Associated with Pneumococcal Vaccination

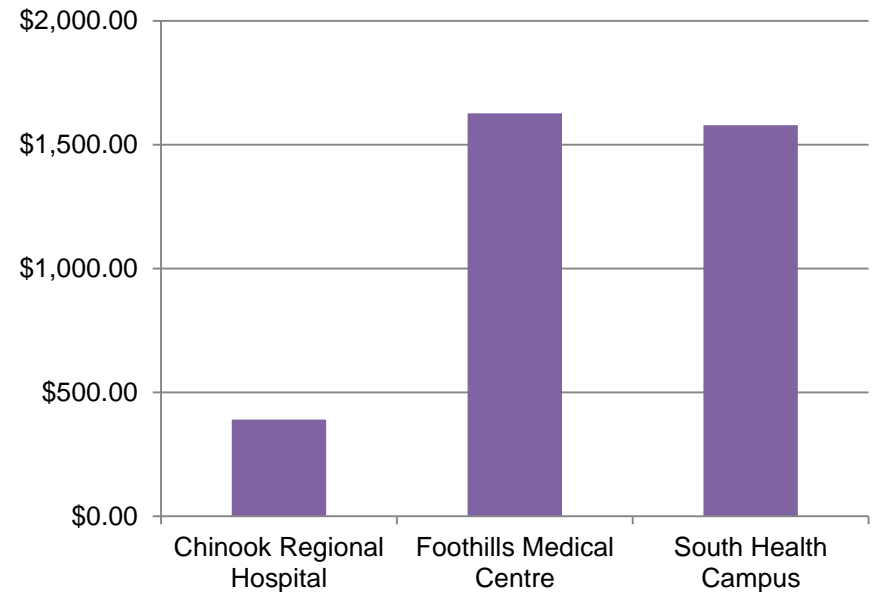
Factors	Odds ratio	95% CI	
Age $\geq$ 65	0.56	0.92	0.35
Male	2.45	4.08	1.47
Season	1.92	3.73	0.99
South Health Campus	1.8	3.12	1.04
Foothills Medical Centre	0.46	0.78	0.27
Chinook Regional Hospital	2.13	5.13	0.89
LOS $\geq$ 14 days	0.66	1.16	0.38

# Implementation Cost

## Cost per patient screened



## Cost per patient vaccinated



### Direct costs attributable to the intervention:

- Resource utilization
- Cost of equipment
- Cost of training

### Low vaccination rate factors:

- Time required from screening to vaccination
- Discharged prior to receiving vaccine
- Unable to provide consent
- Resistance to vaccine
- Not fit for immunization
- Prefer getting the vaccine on their own

# Discussions

# Key Informant Interview Results - Implementation Challenges

- Preventive care are not culturally well integrated into acute care practices and hospitals remain focused on treatments
- Sustainability will remain constrained by competing clinical demands and insufficient advocacy for preventive care practice changes in acute care settings
- Current public health immunization guidelines or fitness to immunize assessment criteria may not be suitable for acute care settings
- It may not be feasible to implement systematic screening and immunization in shorter stay units
- Obtaining consent from patients who do not have capacity to make such decisions is a challenge
- Electronic medical records and healthcare databases needs to be optimized to allow for efficient and effective documentation of screening data

# Key Informant Interview Results - Recommendations

- **Intervention model needs to be flexible and be adapted:** care pathways need allow for integration into site/unit workflow
- **Early engagement and open dialogue:** through early engagement, site culture can be considered during the planning process
- **Need to understand the upfront investment:** human resources for planning, integration, and implementation of an innovative process
- **Leadership and staff buy-in:** engage acute care settings at all levels, including site leadership, managers, and frontline staff.; need to have a dedicated on-site implementation team/ champion
- **Need to increase awareness of relevant knowledge:** public health guidelines need to be reviewed to ensure applicability to acute care settings; training and retraining of relevant immunization knowledge should be provided
- **Need to resolve data collection and sharing issues:** cross talk between various medical records across the province and public health; electronic check list for preventive care interventions
- **Need to consider shared-care options:** unit clerk, nurses, pharmacists, physicians, and other acute care healthcare providers OR screening in acute care and community care provide the vaccination
- **Targeted units:** longer stay units with less acute patients
- **Need to consider sustainability of intervention:** design intervention process that can be integrated into existing work routine



# Key Limitations

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- Integrated care pathways differed from site to site and cannot be directly compared
- Pilot took place during different seasons throughout the year and therefore, results may not be directly comparable
- Implementation challenges differed depending on types of unit and site culture
- Low key informant response rate in FMC pharmacist group

# Acknowledgement

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- Rajneet Atkar (Clinical Policy Development Consultant)
- Christine Couturier (Clinical Design Lead)
- Michelle Nummi (Integration Lead)
- Simran Tiwana (Scientific Lead)
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## Pilot Site Coordinators

- Marilyn Brown
- Rita Faulkner
- Nancy Clayden
- Shemina Kanji
- Laurie Carmichael

## Pilot Sites

- Chinook Regional Hospital
- Foothills Medical Centre
- South Health Campus



*Questions*