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# Infectious Disease Prevention Strategies in Shelters

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NCCID Winter Institute 2023 “A Place to Stay: Shelters as Public  
Health Settings

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# Objectives

- Discuss common infectious diseases in shelter clients
- Review current prevention strategies
- Discuss social and systemic impediments to implementing prevention strategies in shelters



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## Shelter Clients and Infectious Diseases



Literature often focuses on STI and BBI risks



Case and outbreak studies on invasive infections including invasive Group A Streptococcus, invasive Streptococcal pneumoniae, Haemophilus influenzae

# Shelter Clients and Infectious Diseases

- What infectious diseases are commonly acquired by people who use shelters
- ALL OF THEM
- Take a deeper look at risks, why there is more focus on certain ones, prevention and barriers



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# Risk Factor Approach

C.Y. Liu *et al.* describe an approach that considers risk factors, how those risk factors contribute to the mode of transmission of disease, and the communicable diseases that result

We will use this approach to consider risks and think about preventive strategies already in use, barriers to prevention, possible options to reduce barriers



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# Sample Risk Based Approach

**Table 1.** Major risk factors and communicable diseases identified among people experiencing homelessness

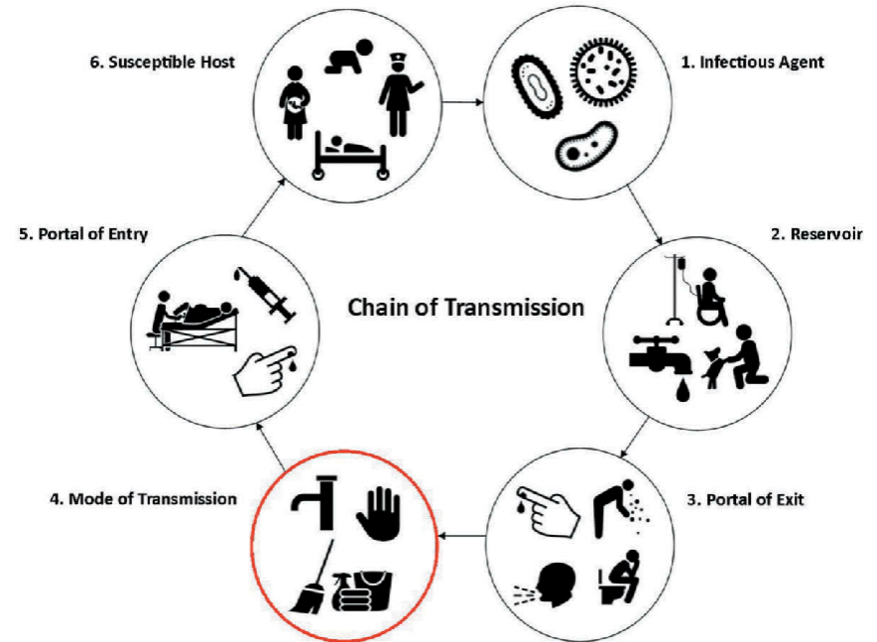
Risk factor	Modes of disease transmission	Communicable disease (examples)
Inadequate access to personal hygiene		
Handwashing and toilet facilities	• Fecal-oral	• Hepatitis A • Shigella • Norovirus
Bathing and skin care	• Direct inoculation	• Skin and soft tissue infections (SSTIs) • Group A streptococcal infections
Laundry	• Ectoparasite infestations • Vector-borne illnesses	• Lice • Scabies • Bed bugs • <i>Bartonella quintana</i> (louse-borne)

Excerpts from  
C.Y. Liu, S.J.Chai and J.P. Watt  
(2020). Communicable disease  
among people experiencing  
homelessness in California.  
*Epidemiology and Infection* **148**,  
e85, 1-10.

Inadequate access to resting places		
Pressure injury from lying on hard surfaces	• Direct contact	• SSTIs
Lower extremity stasis dermatitis from lack of places to lie flat	• Direct contact	• SSTIs
Congregate settings and increased exposures (shelters, tent dwellings)	• Droplet • Airborne • Direct contact • Fomites	• Norovirus • Influenza • Tuberculosis • Hepatitis A
Exposure to disease vectors	• Vector-borne	• Mosquito-borne illnesses, Typhus (flea-borne)
Behavioral risks		
Exchange of sex for money Sex while high Sexual assault	• Sexual contact	• Syphilis • Gonorrhoea • Chlamydia • HIV • Hepatitis B
Comorbid medical conditions		
Substance abuse, including alcohol, intravenous drug use	• Blood-borne • Skin disruption	• HIV • Hepatitis A • Hepatitis B • Hepatitis C • Invasive group A streptococcal infections • Methicillin resistant <i>Staphylococcus aureus</i>

# Chain of Transmission

- All links must be in place for infection to occur
- Difficult to completely break any one link
- A multi-action approach will reduce risk best





# Infectious Agent

- There must be a pathogen (virus, bacteria or fungus or “germ”)
- Recall early 2020- Canadians were at risk of COVID-19 with direct contact with an infected person; it was not found throughout Canada yet



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## Infectious Agents and Shelters: **Reservoirs** for Diseases Relevant to Shelter Clients

- Reservoir directly impacting a shelter can be clients, staff, food, water, substrate (e.g. soil, building materials), insects, wildlife
  - Where are clients from and where have they been, recently or in the past?
  - Who else are clients exposed to outside the shelter?
  - Are clients accessing unsafe food, water sources, environments?



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# Portal of Exit

- Pathogens need “a way out” of reservoir: respiratory droplets, vomit/feces, blood; food or water that is served or offered; insect or animal bites; air flow



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# Mode of Transmission



Even after its “exit” a pathogen it needs a way to move



Hands are a frequent mode of transmission: contaminated surfaces are touched, contaminated hands move pathogen to “face openings”



One of the main foci of routine infection control practices: environmental cleaning and hand hygiene

# Portal of Entry

- Even if all the other links of the chain are in place, still require a portal of entry- a way “in”
  - Puncture (needle, bite, other sharp object)
  - Ingestion
  - Hands
  - Airway, mucous membranes



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Significant link in the chain for clients of shelters

Barriers to accessing primary preventive care including immunization

Barriers to good nutrition, hydration, hygiene, skin integrity

# SUSCEPTIBLE HOST



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# Group Activity: overview

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As a whole group: Are there any Risk Factor categories you would add?

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In each group, brainstorm and list current prevention strategies on table provided

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In separate column, list any prevention strategies you wish you could do

# Risk Factor Categories

Inadequate access to personal hygiene

Inadequate access to resting/sleeping places

Behavioural risk factors

Medical conditions including addictions

Barriers to receiving health care

- Anything else?



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As we discuss current prevention strategies and strategies we wish we could implement, discuss social and systemic barriers

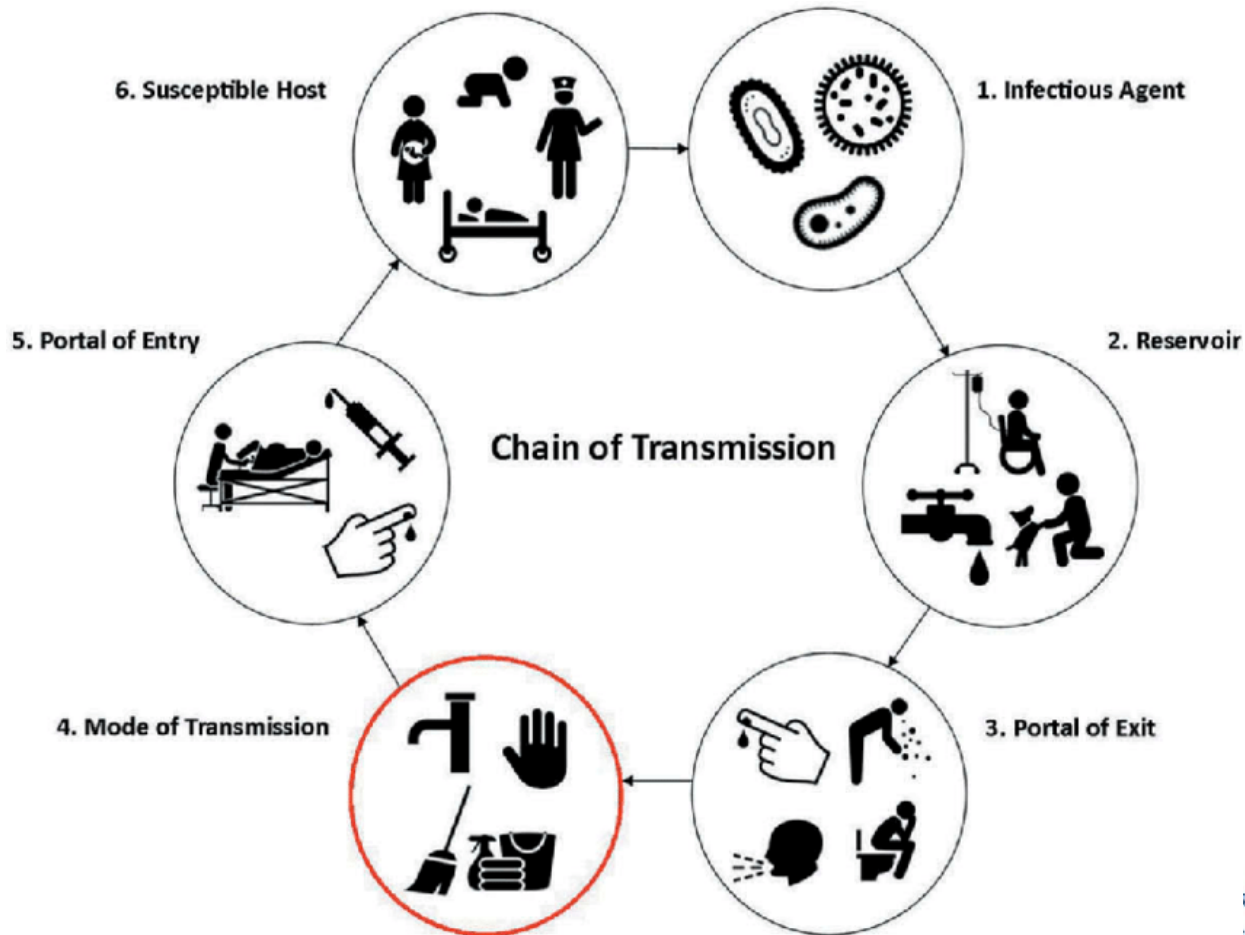
# **BARRIERS**



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# Which Link?



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# Common Barriers: Themes

- What emerged as barriers
- What can we do with this information



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**Thank you!**



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