



Infection Control in Personal Care Homes

Charles Howsare, MD, MPH
Viral Hepatitis Prevention
Coordinator
PA Dept. of Health
chowsare@pa.gov



No Conflicts of Interest



Getting to Know Each Other

- **Who am I?**
- **Who are you?**
- **Why are we here?**

Objectives --- Make an Impact

- **Necessary but not sufficient**
- **Offer a safe living environment for people in vulnerable situations**
- **Offer a safe working environment for workers**
- **Adopt sustainable policies**
- **Risk management just makes good business sense** 4

Worse for those persons in the dawn, twilight and shadows of life

It was once said that the moral test of Government is how that Government treats those who are in the dawn of life, the children; those who are in the twilight of life, the elderly; and those who are in the shadows of life, the sick, the needy and the handicapped.

— Hubert H. Humphrey

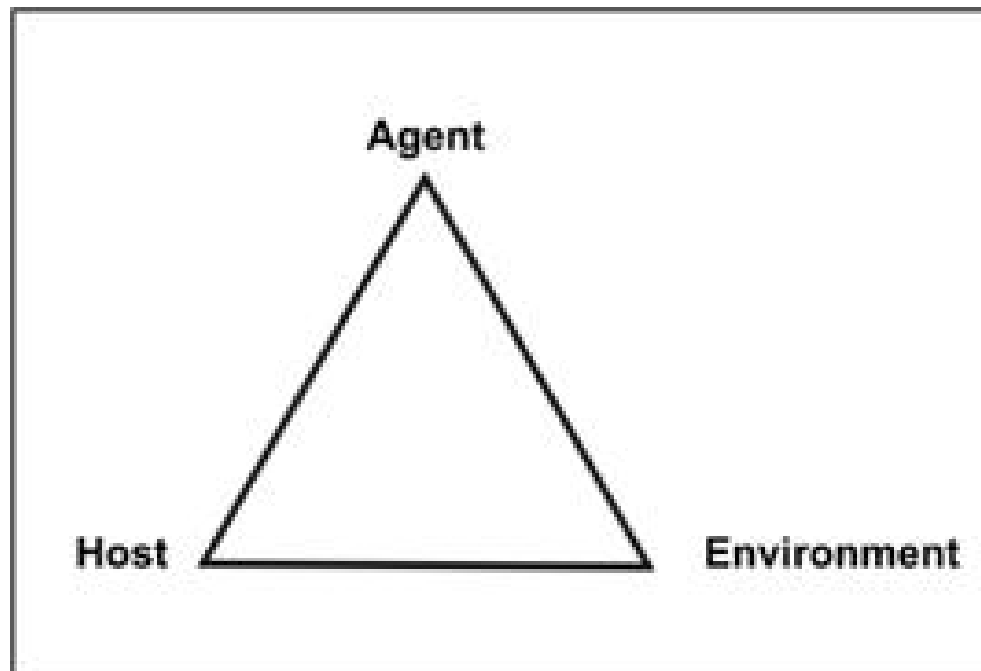
Vulnerable Residents & Employees

- **Group setting**
 - Close proximity
 - Eating in same facility
 - Poor hygiene?
 - Frequently touched surfaces
- **Aging, poor health, mental and physical disabilities**
- **Germ swapping (in/out of hospital, guests)**
- **Rely on you!**

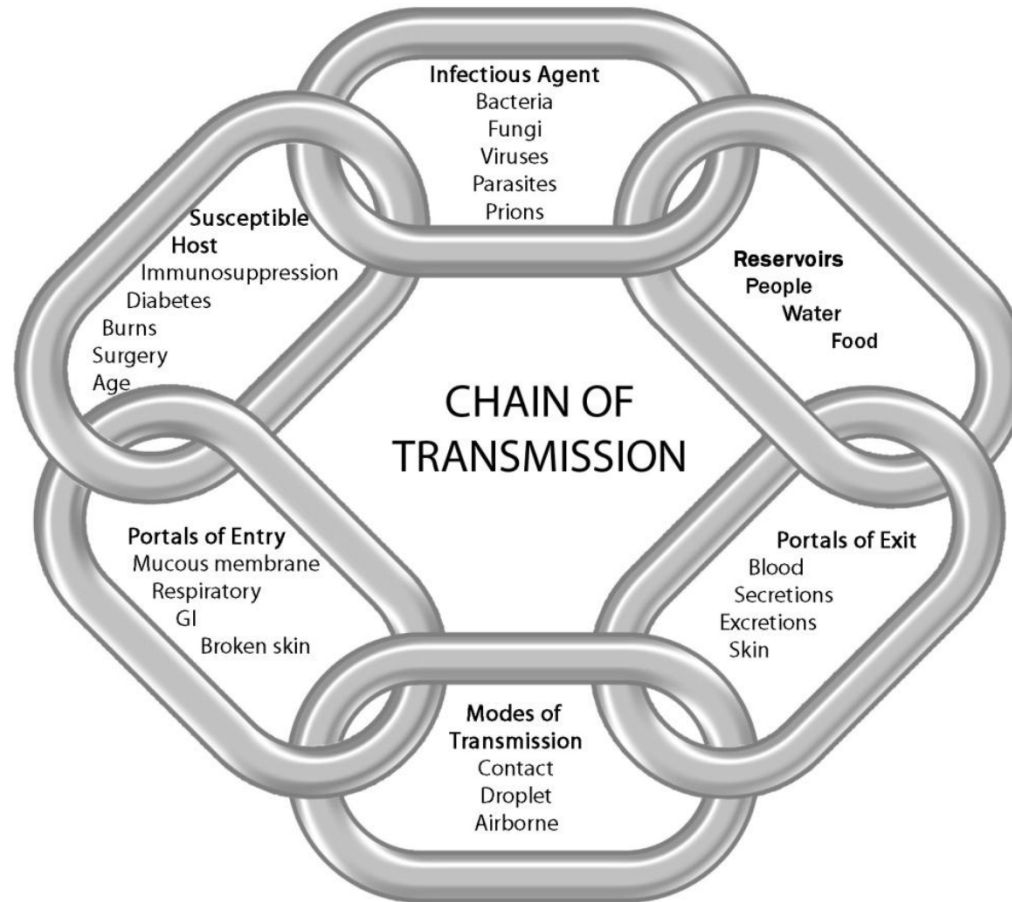
Infectious Diseases

- **Direct contact**
 - Blood and body fluids, contaminated hands
- **Indirect contact**
 - Needle sticks, glucometer sharing, contaminated surfaces
- **Airborne transmission**
 - Sneezing
- **Vector-borne transmission**
 - Fleas, ticks, mosquitos, flies, lice, etc
- **Foodborne transmission**
 - Contaminated food, spoiled food

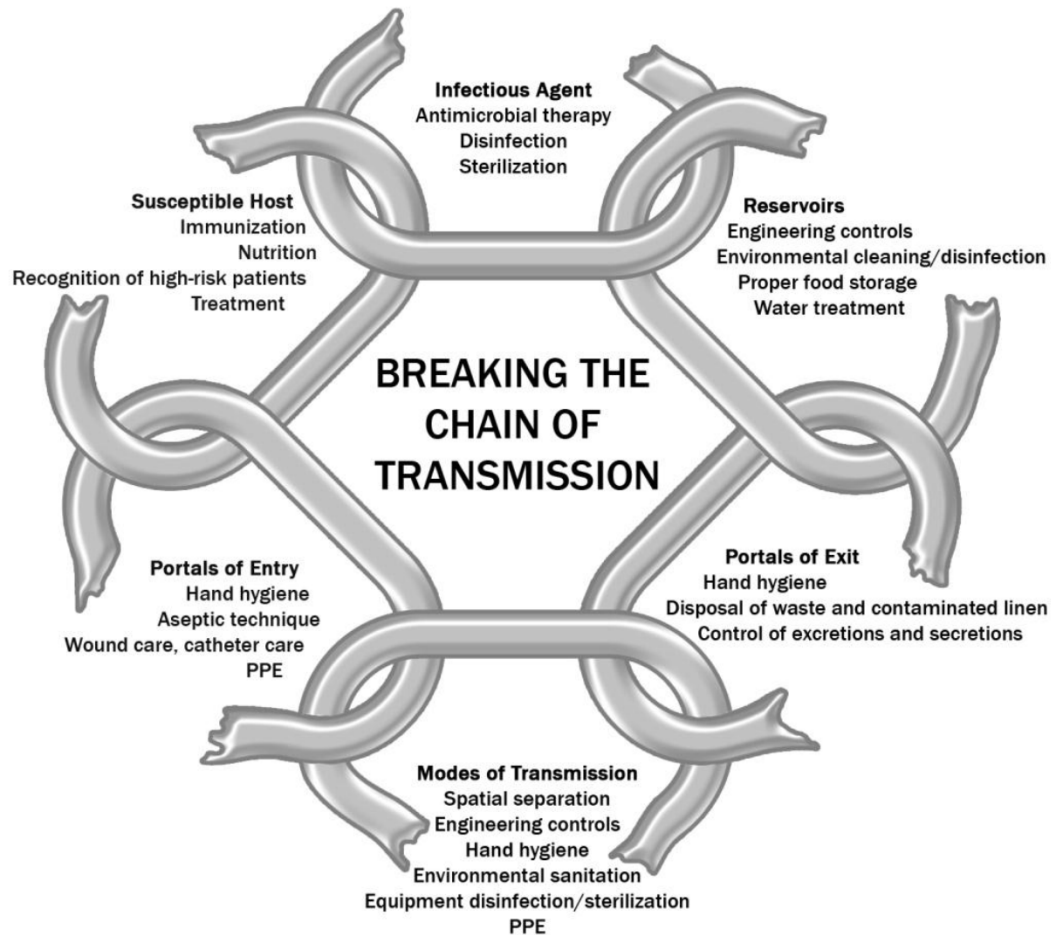
Person, Place & Bug



Chain of Transmission



Breaking Chain of Transmission



Routes of Transmission

- **Respiratory/inhalation**
- **Skin/dermal**
 - Rash or broken skin
- **Oral**
- **Mucous Membrane**

Transmission Examples

- **Spray and Droplet**



- **Dermal**



What is an Outbreak?

- **More than expected**
 - Cluster of similar symptoms
 - Person, place and time
 - Certain group of residents?
 - One floor?
- **Sometimes a single case to start**
 - Influenza in a group/institutional setting
- **Often asymptomatic or symptoms delayed**

Houston, we have a problem.

- **Index of suspicion**
 - If it sounds like a pig, and smells like a pig....likely a pig
 - Risk and probability
- **Listen to your employees and listen to your residents....really listen**
- **High risk circumstances**
 - In house blood testing
 - Sick residents
 - Residents returning from the hospital
- **Reporting an outbreak**

What is Infection Control?

- ***OSHA is not infection control and infection control is not OSHA***
- **Infection Control is a dynamic, active process of:**
 - Policy Formulation and Implementation
 - Education and Training
 - Surveillance
 - Monitoring and Audit

▶ Hierarchy of Safety and Health Controls

- **Training and administrative controls**
 - IC plan, training, job sheets, quality assurance
 - Right med, right patient, right time, right dose

- **Engineering controls**
 - Med room setup
 - Where are your sinks, sharps containers, hazardous waste

▶ Hierarchy of Safety and Health Controls

- **Work practice controls**
 - Hand hygiene practices
 - Food handling practices
 - Environmental cleaning
- **Personal protective equipment**
 - Gloves
 - Gowns
 - Masks
- **Examples**

Environmental Cleaning

- **Decontamination**
- **Low-level disinfectant**
- **EPA-registered**
- **Contact time**

What is Hand Hygiene?

- **Handwashing**

- Washing hands with plain soap and water
- Washing hands with water and soap or other detergents containing an antiseptic agent

- **Alcohol-based handrub**

- Rubbing hands with an alcohol-containing preparation

Why don't people wash hands?

- **Handwashing agents cause irritation and dryness**
- **Sinks are inconveniently located/lack of sinks**
- **Lack of soap and paper towels**
- **Too busy/insufficient time**
- **Understaffing/overcrowding**
- **Patient needs take priority**
- **Low risk of acquiring infection from patients**

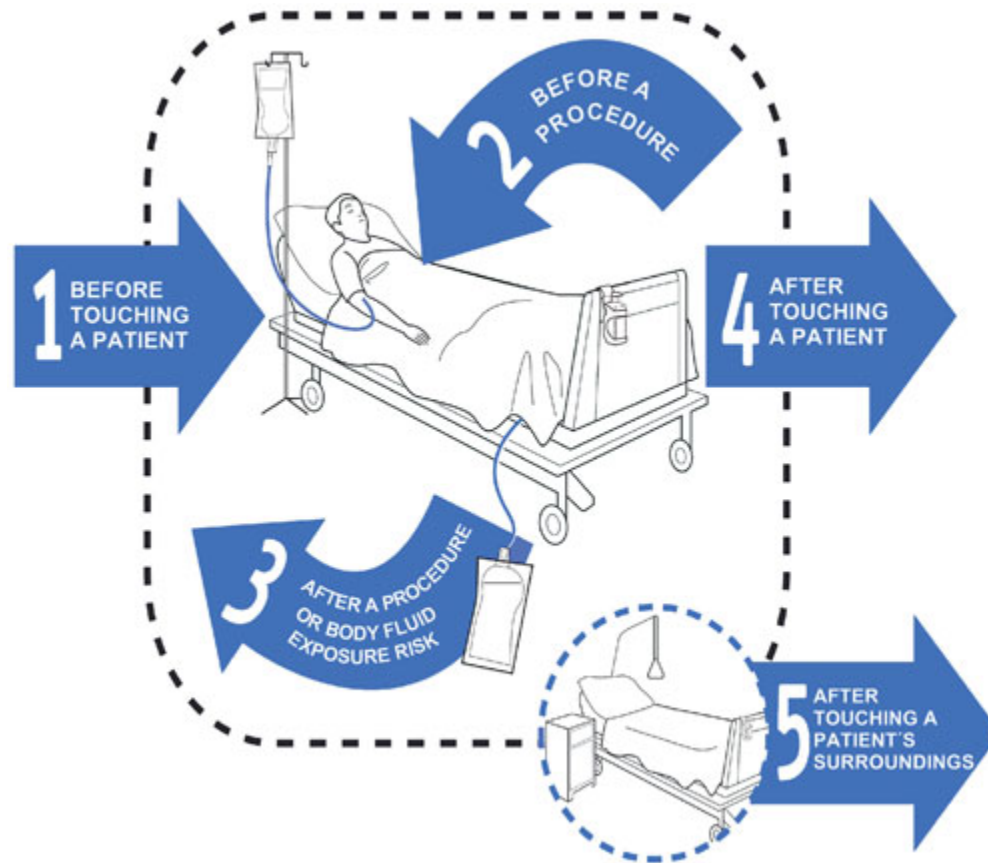
When should I do hand hygiene?

- **When hands are visibly dirty, contaminated, or soiled, wash with non-antimicrobial or antimicrobial soap and water.**
- **If hands are not visibly soiled, use an alcohol-based handrub for routinely decontaminating hands.**

Selection of Hand Hygiene Agents: Factors to Consider

- **Efficacy of antiseptic agent**
- **Acceptance of product by healthcare personnel**
- **Characteristics of product**
- **Skin irritation and dryness**
- **Accessibility of product**
- **Dispenser systems (example trade offs)**

5 Moments of Hand Hygiene



Alcohol Hand Rubs are Faster

- Hand washing with soap and water: 56 minutes
- Based on seven (60 second) handwashing episodes per hour
- Alcohol-based handrub: 18 minutes
- Based on seven (20 second) handrub episodes per hour

Summary: Alcohol-Based Handrubs

- **Require less time**
- **More effective for standard hand washing than soap**
- **More accessible than sinks**
- **Reduce bacterial counts on hands**
- **Improve skin condition**

Efficacy of Hand Hygiene Preparations in Killing Bacteria



Personal Protective Equipment

- **“specialized clothing or equipment worn by an employee for protection against infectious materials” (OSHA)**
- **Break the chain of transmission**
 - To employees
 - To other residents
 - Ever seen a food handler that never changes gloves?
- **What type of personal protective equipment do you have in your facilities?**

Gloves --- not all the same

- **Purpose – patient care, environmental services, other**
- **Glove material – vinyl, latex, nitrile, other**
- **Sterile or non-sterile**
- **One or two pair**
- **Single use or reusable**

▶ Role of Gloves and Hand Hygiene

- **If it's wet and not yours, don't touch it.**

Glove Use Requires Training & Assessment

- **Work from “clean to dirty”**
- **Limit opportunities for “touch contamination” - protect yourself, others, and the environment**
- **Don’t touch your face or adjust PPE with contaminated gloves**
- **Don’t touch environmental surfaces except as necessary during patient care**
- **Change gloves**

Glove Use Requires Training & Assessment

- **During use if torn and when heavily soiled (even during use on the same patient)**
- **After use on each patient**
- **Discard in appropriate receptacle**
- **Never wash or reuse disposable gloves**

What is Infection Control?

- **Infection Control is a dynamic, active process of:**
 - Policy Formulation and Implementation
 - Education and Training
 - Surveillance
 - Monitoring and Audit
- **Infection Control quality assurance is crucial**
 - Just because you have a program.....doesn't mean it works to reduce risk and avoid transmission.

BREAK

What is Infection Control?

- **Infection Control is a dynamic, active process of:**
 - Policy Formulation and Implementation
 - Education and Training
 - Surveillance
 - Monitoring and Audit
- **Infection Control quality assurance is crucial**
 - Just because you have a program.....doesn't mean it works to reduce risk and avoid transmission.

Mississippi Nursing Home

Outbreak recognized after two fatal cases of acute HBV infection among residents of nursing home A

- Among 38 residents who routinely received finger sticks for glucose monitoring, 14 had acute HBV infection, compared with one of 106 residents who did not receive finger sticks
- Nursing home A was:
 - equipped with one glucometer and one spring-loaded, pen-like finger stick device.
 - the spring-loaded barrel and glucometer were not routinely cleaned between patients
 - several staff members reported observing other workers reuse a needle or lancet or fail to change gloves between patients.

Los Angeles Assisted Living Center

Four residents with diabetes in assisted living center B developed acute HBV infection during November 2003--January 2004

-Of 22 diabetic residents tested (three declined), eight (36%) had acute HBV infection

-Of the nine patients who had daily exposure to finger stick procedures performed by nursing staff, eight had acute HBV infection, compared with none among the seven residents who performed their own finger sticks

-Although receipt of insulin was also significantly associated with infection, two residents with acute HBV infection had not received insulin.

North Carolina Nursing Home

An acute case of HBV infection in a resident of nursing home C was reported to the North Carolina Department of Health June--July 2003

-Serologic testing was performed on 192 residents; 11 (6%) had acute HBV infection

-Of 45 residents who received finger sticks for glucose monitoring, eight (18%) had acute HBV infection, compared with three (3%) of 117 residents without this exposure

North Carolina Nursing Home

An acute case of HBV infection in a resident of nursing home C was reported to the North Carolina Department of Health June--July 2003

-Interviews with staff and direct observation:

- Only single-use lancets were used
- A single glucometer was used for all patients receiving finger sticks
- Glucometers were not routinely cleaned between patients.
- On some days, a single health-care worker performed approximately 20 finger stick procedures during a single work shift.
- Anonymous survey: some health-care workers did not always change gloves between patients when performing finger stick procedures.

Infection Prevention during Blood Glucose Monitoring and Insulin Administration

- **Reusable Devices: CDC recommends that devices never be used for more than one person.**

A simple rule for safe care:

1)Finger stick devices, 2)glucometers, and 3)needles (insulin or otherwise) should never be used for more than one person.

Blood Glucose Monitoring

- **Finger stick Devices**
 - Restrict use of finger stick devices to individual persons. They **should never** be used for more than one person.
 - Dispose of used lancets **at the point of use** in an approved sharps container
- **Blood glucose meters should be assigned to an individual person and not be shared.**
- **Unused supplies and medications should be maintained in clean areas separate from used supplies and equipment (e.g., glucose meters).**

Insulin Administration

- Insulin pens should be assigned to individual persons and labeled appropriately. They should never be used for more than one person.
- Multiple-dose vials of insulin should be dedicated to a single person whenever possible.
 - Medication vials should always be entered with a new needle and new syringe
 - Dispose of used injection equipment **at point of use** in an approved sharps container. Never reuse needles or syringes.
- Wear gloves, change gloves between patient contacts, and perform hand hygiene immediately after removal of gloves

Training and Oversight

- Review regularly, individual schedules for persons requiring assistance, with blood glucose monitoring and/or insulin administration.
- *Provide a full hepatitis B vaccination series to all previously unvaccinated staff persons whose activities involve contact with blood or body fluids.*
- Establish responsibility for oversight of infection control activities. Provide staff members who assume responsibilities for finger sticks and injections with infection control training.
- Assess adherence to infection control recommendations for blood glucose monitoring and insulin administration by periodically observing staff who perform or assist with these procedures and tracking use of supplies.
- Report to public health authorities any suspected instances of a newly acquired blood borne infection, such as hepatitis B, in a patient, facility resident, or staff member.

Bloodborne Pathogens

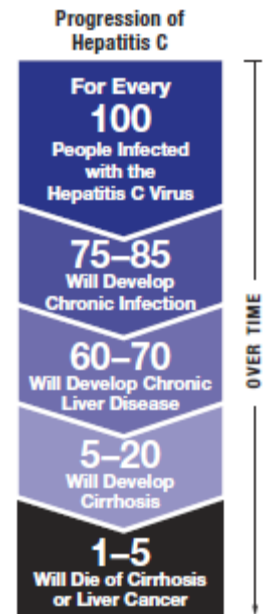
- **HIV**
 - Not common in assisted living environments
- **HEPATITIS B**
 - Worst culprit in assisted living environments
 - Very infective (100x more than HIV), easily transmitted
 - Most residents are not immunized, many care workers aren't immunized
- **HEPATITIS C**
 - Common in older people
 - 10x more infective than HIV, but not as infectious as HBV
 - No immunization

Hepatitis B (HBV)

- **Viral infection, attacks liver, can cause acute and chronic disease**
- **1.2 million in US with chronic HBV, many don't know they are infected**
- **Transmitted through contact with blood or other body fluids of infection persons**
- **50-100 times more infections than HIV (semen, vaginal fluids, blood)**
- **NOT breastmilk or saliva**
- **Important occupational hazard**
- **Safe and effective vaccine**

Hepatitis C (HCV)

- Liver disease caused by the hepatitis C virus
- 3.2 million people in the US with chronic HCV, less than 45% know their positive status
- Range in severity from a mild illness lasting a few weeks to a serious, lifelong condition that can lead to cirrhosis of the liver or liver cancer
- Transmitted through contact with the blood of an infected person
- Hepatitis C can be cured using antiviral medicines
- Currently no vaccine for hepatitis C; however, research in this area is ongoing
- 2-4% of HCW have Hepatitis C, most don't know it



Vaccinations for Care Workers

- **MMR – Measles, Mumps, Rubella**
- **Hepatitis B**
 - Employer required to offer immunization per OSHA regulation
 - If employee refuses, a declination letter must be placed in employee file
- **Influenza --- Healthy People 2020 goal of 90%**
- **Varicella**

▶ Bugs that Cause Diarrhea and Vomiting

- Campylobacter
- Salmonella
- **Rotavirus**
- Shigella
- Cryptosporidium
- **Clostridium**
- E. Coli

Foodborne Illness

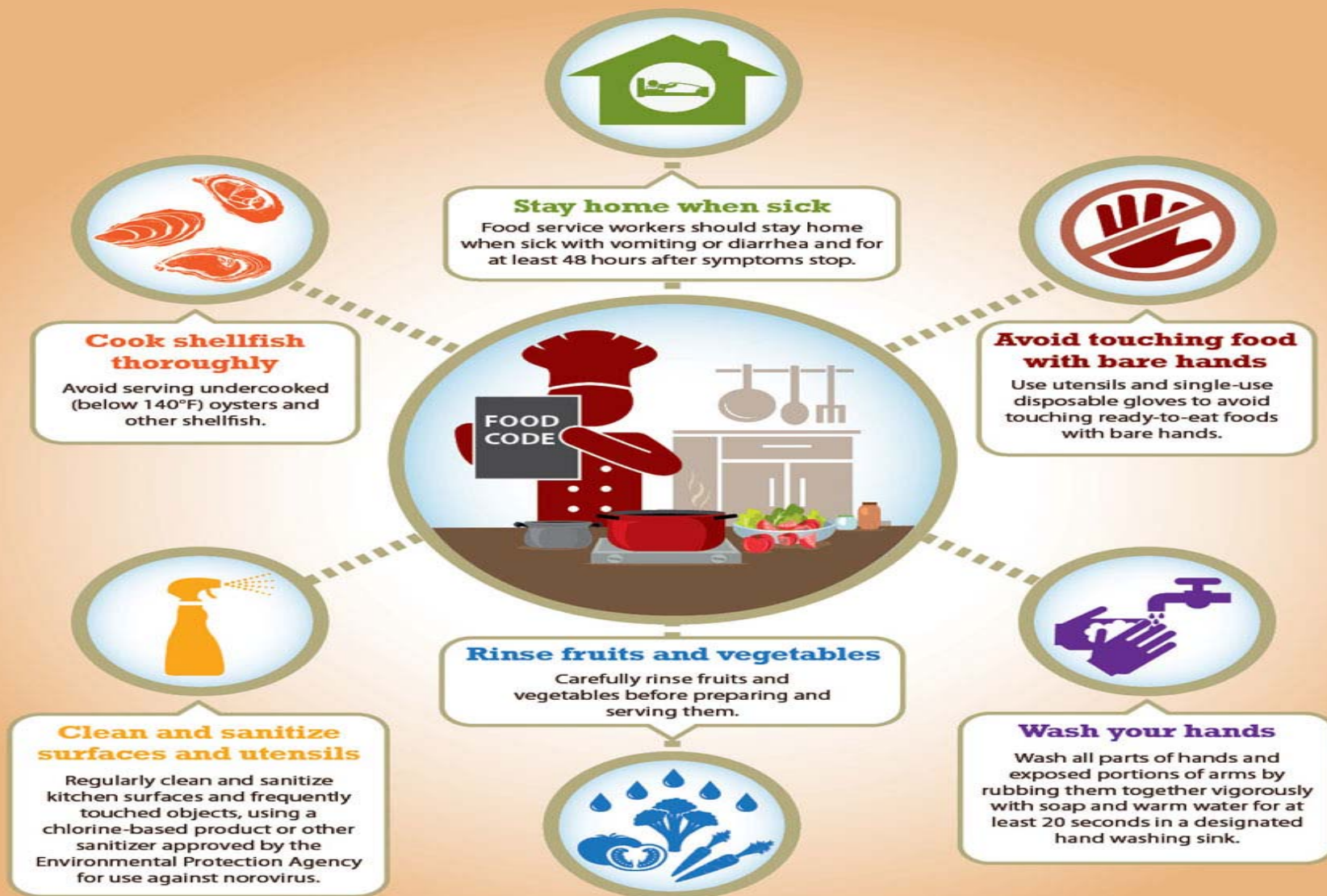
- **Food handlers, cross-contamination**
- **Time and temperature**
- **Storage of food**
- **Residents bringing food in from outside?**
- **Bathrooms --- fecal/oral route**

Norovirus

- You can get norovirus from an infected person, contaminated food or water, or by touching contaminated surfaces
- **Why is this important?**
 - Noroviruses can be found in vomit or stool even before people feel sick. The virus can stay in stool for 2 weeks or more people feel better. It is important to continue washing.
 - Alcohol-based hand sanitizers can be used in addition to hand washing. But, they should not be used as a substitute for washing with soap and water.
- After vomitus or diarrhea soiling, immediately clean and disinfect contaminated surfaces. Use a chlorine bleach solution with a concentration of 5–25 tablespoons of household bleach per gallon of water or other disinfectant registered as effective against norovirus by the Environmental Protection Agency (EPA)

Ways to prevent norovirus outbreaks from food contamination

Kitchen managers should be trained and certified in food safety and ensure that **all food service workers follow food safety practices** outlined in the **FDA model Food Code and CDC guidelines**.



Clostridium difficile

- C. diff-a spore-forming, Gram-positive anaerobic bacillus. It accounts for 15-25% of all episodes of antibiotic associated diarrhea.
- **Why is this important?**
 - Alcohol does not kill *Clostridium difficile* spores, use of soap and water is more efficacious than alcohol-based hand rubs
 - Preventing contamination of the hands via glove use remains the cornerstone for preventing *Clostridium difficile* transmission via the hands of healthcare workers.
 - If your institution experiences an outbreak, consider using only soap and water for hand hygiene when caring for patients with *Clostridium difficile* infection.

C. Diff Environmental

- Consider using an Environmental Protection Agency (EPA)-registered disinfectant with a sporicidal claim for environmental surface disinfection after cleaning in accordance with label instructions.
- Generic sources of hypochlorite (e.g., household chlorine bleach) also may be appropriately diluted and used. (Note: Standard EPA-registered hospital disinfectants are not effective against *Clostridium difficile* spores .)
- Hypochlorite-based disinfectants may be most effective in preventing *Clostridium difficile* transmission in units with high endemic rates of *Clostridium difficile* infection.

NO MORE EXCUSES

THERE ARE MANY PLACES TO GET YOUR FLU VACCINE.

Anyone can get the flu, and it can be serious. Every year, protect yourself and those around you by getting a flu vaccine.



Respiratory Diseases

- **Influenza**
- **Common cold**
- **Pneumonia**
- **Tuberculosis**
- **Legionella**



“By protecting myself
I am protecting her.”

The flu benefit is a covered service for Medicare
and for children enrolled in Medicaid and CHIP.

If you're 65 years or older,
getting a flu shot is the
best way to protect
yourself and those around
you from flu.

<http://www.flu.gov>
1-800-CDC-INFO



Impact of influenza? It depends...

- **Varies from year-to-year**
 - Worse when H3N2 is the circulating strain?
 - Annual attack rate: 5%–20%
 - United States
 - 226,000 hospitalizations per year
 - 23,000 (3,000-49,000) deaths per year (90% over age of 65)
 - World
 - 3 to 5 million cases of severe illness, and leads to
 - 250,000 – 500,000 deaths



**I won't spread flu
to my patients
or my family.**

Even healthy people
can get the flu, and
it can be serious.

Everyone 6 months
and older should
get a flu vaccine.
This means you.

This season, protect
yourself—and those
around you—by
getting a flu vaccine.

For more information, visit: <http://www.flu.gov>



U.S. Department of
Health and Human Services
Center for Disease
Control and Prevention

Business case

- **Nosocomial flu has a high human and economic cost**
 - Case fatality rate of 6–8% in hospitalized patients¹
 - Lawsuits, furloughed staff and antiviral medications
 - \$7,545 per patient with nosocomial influenza in 1993 study²
 - An LTCF outbreak estimated to cost facility \$200,000, several deaths

¹Salgado CD, Giannetta ET, Hayden FG, Farr BM. Preventing nosocomial influenza by improving the vaccine acceptance rate of clinicians. *Infection control*

²Serwint JR, Miller RM. Why diagnose influenza infections in hospitalized pediatric patients? *The Pediatric infectious disease journal*. 1993 Mar;12(3):200–4.

FIGHT FLU

If you are part of a first response team, you already know how important your job is.

Did you know you're recommended to get vaccinated against the flu?

Get Protected.
Get Vaccinated.



YOU CAN'T BE MISSED.

Prevent influenza in yourself, in your family and in your patients

- **Single most effective means of preventing influenza**
- **Professional and ethical obligation to get vaccinated**
 - Primum non nocere (First, do no harm)
 - Preparedness issue
 - Reduces: presenteeism, absenteeism and nosocomial transmission



I CAN'T MISS WORK BECAUSE OF THE FLU.

For more information, visit
<http://www.cdc.gov/flu>

Every year, I get my flu vaccine to protect myself, my coworkers, and my family from getting sick from the flu.

Even healthy people can get the flu, and it can be serious. This season, protect yourself and those around you by getting a flu vaccine.

PHOTO: GETTY IMAGES

Recommendations

- ❑ Provide vaccination at no cost to HCP
- ❑ Provide education on risks and benefits of vaccination
- ❑ Provide incentives for vaccination
- ❑ Use mobile vaccination carts
- ❑ Provide vaccination in common areas
- ❑ Provide vaccination during nights and/or weekends
- ❑ Provide vaccination at meetings
- ❑ Provide visible vaccination of any key personnel
- ❑ Provide feedback of vaccination rates to hospital administration
- ❑ Track vaccination rates for some units
- ❑ Track vaccination rates regularly for targeting purposes

Earn Your Strip Campaign

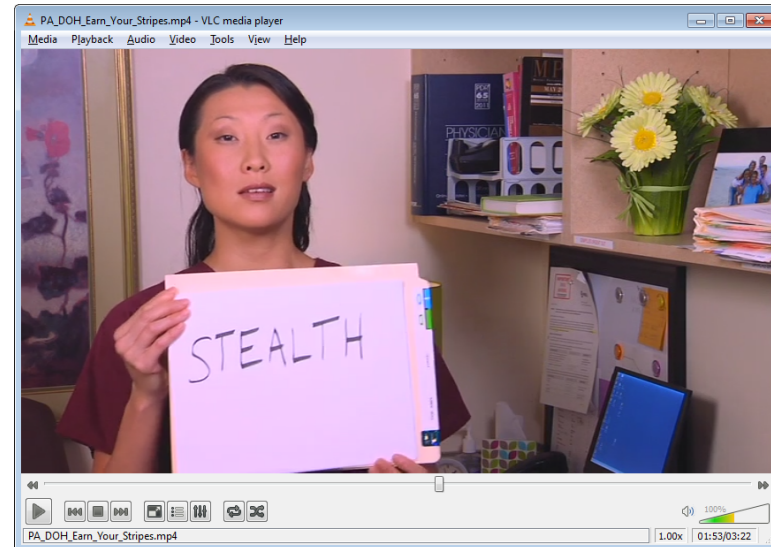
<https://www.flufreepa.com>



★★★★★
EARN YOUR STRIPE!

MYTHS DISPELLED. TRUTHS DISPENSED. LEARN ABOUT THE FLU VACCINE AT

[FLUFreePA.com](https://www.flufreepa.com)



Stealth

Impact

Misinformation

Pneumonia

- **Different causes**
 - Pneumococcal most common in elderly, cardiopulmonary disease, and alcoholics.
- **Vaccination can help protect against some causes**
 - Pneumococcal vaccines (PCV 13 and PPSV23) for persons 65 and older
- **Mortality is as high as 10%**
- **Antimicrobial resistance is increasing**

Common Cold

- **Many workers or visitors expose residents to common respiratory viruses**
- **Debilitated residents much less able to cope with common viral illnesses**
 - Pre-existing respiratory disease
 - Immune system dysfunction
 - Seemingly mild illness take much longer to resolve
- **Droplet transmission easier in close quarters, dense populations, and multi-touched surfaces**

Vulnerable Residents & Employees

- **Group setting**
 - Close proximity
 - Eating in same facility
 - Poor hygiene?
 - Frequently touched surfaces
- **Aging, poor health, mental and physical disabilities**
- **Germ swapping (in/out of hospital, guests)**
- **Rely on you!**

What is Infection Control?

- **Infection Control is a dynamic, active process of:**

- Policy Formulation and Implementation
- Education and Training
- Surveillance
- Monitoring and Audit

- **Infection Control quality assurance is crucial**

- Just because you have a program.....doesn't mean it works to reduce risk and avoid transmission.

Worse for those persons in the dawn, twilight and shadows of life

It was once said that the moral test of Government is how that Government treats those who are in the dawn of life, the children; those who are in the twilight of life, the elderly; and those who are in the shadows of life, the sick, the needy and the handicapped.

— Hubert H. Humphrey