



INFECTIOUS DISEASE MANAGEMENT IN LONG TERM CARE

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Richard's 8th Birthday at Chestnut Hill...

Objectives...

- Describe importance and process for achieving **Antibiotic Stewardship**
- Examine opportunities to improve **Urinary Tract Infections, Blood Glucose Monitoring and Clostridium Difficile Management**
- Examine appropriate use of **Contact Precautions, Hand Hygiene and Vaccinations** in Infection Prevention
- Define the roles and responsibilities of **Team members**

Session Summary...

COVID-19 has amplified the vital role of infectious disease control. But even before this pandemic SNFs were being called to improve antibiotic use through more focused antibiotic use and preventing infections through improved urinary tract, blood glucose and clostridium difficile management. A foundations of these efforts is contact precautions, hand hygiene and vaccinations. Of course success requires team work with unique roles and responsibilities. In the end these efforts taken together will improve outcomes for SNF patients at this most critical time.

ANTIBIOTIC STEWARDSHIP



Antibiotic Stewardship in Nursing Homes

4.1 MILLION

Americans are **admitted to or reside in nursing homes** during a year¹



UP TO **70%**
of nursing home residents
received antibiotics during a year^{2,3}



UP TO **75%**
of antibiotics are
prescribed incorrectly^{4,5}



CDC recommends
7 CORE ELEMENTS

for antibiotic stewardship in nursing homes

Leadership Commitment ● Accountability
Drug Expertise ● Action ● Tracking
Reporting ● Education

¹Incorrectly = prescribing the wrong drug, dose, duration or reason

²AHCA Quality Report 2013.

³Lim CJ, Kong DCM, Stuart RL. Reducing inappropriate antibiotic prescribing in the residential care setting: current perspectives. Clin Interv Aging. 2014; 9: 165-177.

⁴Nicoll LE, Bentley D, Garibaldi R, et al. Antimicrobial use in long-term care facilities. Infect Control Hosp Epidemiol 2000; 21:537-45.



Centers for Disease
Control and Prevention
National Center for Emerging and
Zoonotic Infectious Diseases

THE CORE ELEMENTS OF ANTIBIOTIC STEWARDSHIP FOR NURSING HOMES

CDC

1. LEADERSHIP COMMITMENT
2. ACCOUNTABILITY
3. DRUG EXPERTISE
4. ACTION
5. TRACKING
6. REPORTING
7. EDUCATION



Infection and Control Program – IPCP

A system (Infection and Control Program – IPCP) for:

- preventing,
- identifying,
- surveillance,
- investigating, and
- controlling infections and communicable diseases for
 - residents,
 - staff,
 - volunteers,
 - visitors, and
 - other individuals providing services based upon facility and resident assessments as reviewed and updated annually;

would also require incorporation of an antibiotic stewardship program.



Methods to Improve Antimicrobial Use

- Pharmacy substitution or switch
- Multidisciplinary drug utilization evaluation (DUE)
- Provider/unit performance feedback
- Computerized decision support/on-line ordering



F441 Antibiotic Review for Long Term Care Facilities



Because of increases in MDROs, review of the use of antibiotics is a vital aspect of the infection prevention and control program.

An area of increased surveyor focus - an area where you need to assess if you are meeting the surveyor guidance

42 CFR §483.25(l), F329, Unnecessary Drugs

Determine if the facility has reviewed with the prescriber the rationale for placing the resident on an antibiotic to which the organism seems to be resistant or when the resident remains on antibiotic therapy without adequate monitoring or appropriate indications, or for an excessive duration

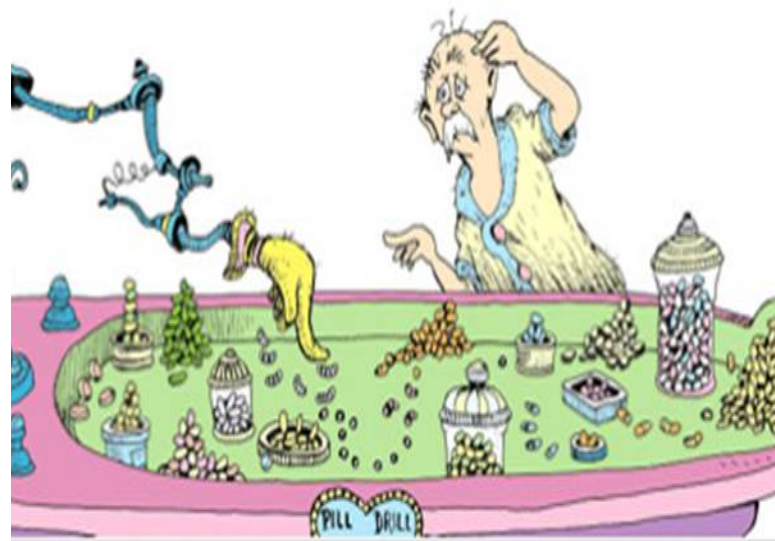


Antibiotic Monitoring and Review

- What most likely exists currently in your program:
 - Comparison of prescribed antibiotics with available susceptibility reports (charge nurse and infection preventionist)
 - Review of antibiotics prescribed to specific residents during regular medication review by consulting pharmacist
- What may be needed:
 - Broader overview of antibiotic use in your facility with reporting to quality assurance/infection control committee

Right drug - Right dosage - Right monitoring - Feedback of data to MDs

*"I take three blues at half past eight
to slow my exhalation rate.
On alternate nights at nine p.m.
I swallow pinkies. Four of them.*



Important Points for MDRO Control

- Know your facility's risk based on ongoing surveillance in order to note trends in transmission or infections
 - Remember an outbreak maybe indicated by a higher incidence than usual in your facility population
- Work together with your microbiology laboratory and share trends with your medical director
- Develop effective policies and protocols and educate staff in implementation





Cost-estimates of antibiotics
in nursing homes range from

\$38 million to
\$137 million
per year.¹



Residents in nursing
homes with higher
antibiotic use have a

24%
increased risk
of antibiotic-related harm.²



In nursing homes with
higher antibiotic use,

**even residents
who do
not receive
antibiotics are
at increased risk**
of indirect antibiotic-related
harm due to the spread
of resistant bacteria
or *C. difficile* germs from
other patients.²



Core Elements for Antibiotic Stewardship in Nursing Homes

Creating a Culture to Improve Antibiotic Use in Nursing Homes

Why is Antibiotic Stewardship Important for Nursing Homes?

- ▶ Antibiotics are some of the most commonly prescribed medications in nursing homes.
 - Over the course of a year, up to 70% of nursing home residents get an antibiotic.
- ▶ Roughly 40% to 75% of antibiotics are prescribed incorrectly.
 - In nursing homes, high rates of antibiotics are prescribed to prevent urinary tract infection (UTI) and respiratory tract infection (RTI). Prescribing antibiotics before there is an infection often contributes to misuse.
 - Often residents are given antibiotics just because they are colonized with (carrying) bacteria that are not making the person sick. Prescribing antibiotics for colonization contributes to antibiotic overuse.
- ▶ When patients are transferred between facilities, for example from a nursing home to a hospital, poor communication between facilities about prescribed antibiotics (e.g., rationale, number of days) plus insufficient infection control practices can result in antibiotic misuse and the spread of antibiotic resistance.
- ▶ Antibiotic-related harms, such as diarrhea from *C. difficile*, can be severe, difficult to treat, and lead to hospitalizations and deaths, especially among people over age 65.
- ▶ Current nursing home regulations (e.g., F-tag 441, F-tag 329, F-tag 428) already include a requirement to review and monitor antibiotic use.

What Can I Do as a Leader to Improve Antibiotic Use?

- ▶ Share formal statements in support of improving antibiotic use with staff, residents and families.
- ▶ Commit resources for monitoring antibiotic use and providing feedback to staff.
- ▶ Identify and empower the medical director, director of nursing, and/or consultant pharmacist to lead stewardship activities.
- ▶ Have clear policies to improve prescribing practices for staff to ensure patients are not started on antibiotics unless needed.
 - Establish minimum criteria for prescribing antibiotics.
 - Develop facility-specific standards for empiric antibiotic use, based on data from the facility; and
 - Review antibiotic appropriateness and resistance patterns on a regular basis.
- ▶ Print and distribute materials to educate staff, residents and families.
- ▶ Provide access to individuals with antibiotic expertise for support staff accountable for implementing antibiotic stewardship activities.
- ▶ Partner with antibiotic stewardship program leaders at hospitals and infectious diseases consultants in the community.

¹ Strausbaugh LJ, Joseph CL. Burden of Infections in Long-Term Care. *Infect Control Hosp Epidemiol* 2000;21:674-679.

² Daneman, N et al. Variability in Antibiotic Use Across Nursing Homes and the Risk of Antibiotic-Related Adverse Outcomes for Individual Residents. *JAMA Intern Med*. 2015; E1-E9.



An initiative of the ABIM Foundation

8/2015, AMERICAN ACADEMY OF DERMATOLOGY:

**DON'T ROUTINELY USE ANTIBIOTICS TO TREAT
BILATERAL SWELLING AND REDNESS OF THE
LOWER LEG UNLESS THERE IS CLEAR EVIDENCE
OF INFECTION**

URINARY TRACT INFECTIONS

Don't request a urine analysis or order for an antibiotic unless there is clear indication of a bacterial infection.

- Chronic asymptomatic bacteriuria is frequent in the LTC setting, with prevalence as high as 50%.
- A positive urine culture in the absence of localized urinary tract infection (UTI) symptoms (i.e., dysuria, frequency, urgency) is of limited value in identifying whether a patient's symptoms are caused by a UTI.
- Colonization (a positive bacterial culture without signs or symptoms of a localized UTI) is a common problem in LTC facilities that contributes to the over-use of antibiotic therapy in this setting, leading to an increased risk of diarrhea, resistant organisms and infection due to *Clostridium difficile*.
- An additional concern is that the finding of asymptomatic bacteriuria may lead to an erroneous assumption that a UTI is the cause of an acute change of status, hence failing to detect or delaying the more timely detection of the patient's more serious underlying problem.
- A patient with advanced dementia may be unable to report urinary symptoms. In this situation, it is reasonable to obtain a urine culture if there are signs of systemic infection such as fever (increase in temperature of equal to or greater than 2°F [1.1°C] from baseline) leukocytosis, or a left shift or chills in the absence of additional symptoms (e.g., new cough) to suggest an alternative source of infection.
- Remember it often starts with nursing staff calling with a resident's change in condition and requesting a urine analysis despite their not being any signs of a urinary infection. Thoughtful recommendations in this area can go a long way in assuring appropriate antibiotic use.

UTI Surveillance Form

Virginia Urinary Tract Infection (UTI) Event Form for Eastern Region Nursing Home Collaborative Version 2

Person completing form: Name: _____ Title/Role: _____			
Event type: <i>(determine after form completed)</i>		UTI met definition: Y / N	
If UTI met definition, was it catheter-associated: Y / N		and/or facility-associated: Y / N	
I. Resident info:	*Name, Last: _____ First: _____ MI: _____		
*Date of birth: ____/____/____	Age: ____	Gender: F / M	Location (ex. unit/ward): _____
Original admit date: ____/____/____			
Most recent admit date: ____/____/____	Last admit from: _____		Acute care: Y / N
Date of UTI event: ____/____/____	<i>(if UTI signs/symptoms develop within 3 days of admission, not facility HAI)</i>		
Primary clinician: Name, Last: _____ First: _____ Title/Role: _____			
Current antibiotic(s): _____		Reason(s): _____	
Current nutritional supplements (ex. cranberry): _____		Reason(s): _____	
Allergies: _____	History of infection: _____		
Pre-disposing factors: _____			

- Demographics
- Relevant dates (admission, event)
- Pre-disposing factors
- Catheter use
- Signs and symptoms
- Lab testing
- Pathogens identified & sensitivities
- Treatment

BLOOD GLUCOSE MONITORING

Blood Glucose Monitoring Best Practices

- Fingerstick devices should **never** be used for more than **one person**
 - Select single-use devices that permanently retract upon puncture
- Dedicate blood glucose meters to a single resident, **one person**, if possible
 - If shared, the device should be cleaned and disinfected after every use, per manufacturer's instructions
- Insulin pens and other medication cartridges and syringes are for single-use only and should **never** be used for more than **one person**



CLOSTRIDIUM DIFFICILE MANAGEMENT

DEADLY DIARRRHEA:

C. DIFFICILE CAUSES IMMENSE SUFFERING, DEATH

IMPACT



Caused close to half a million illnesses in one year.

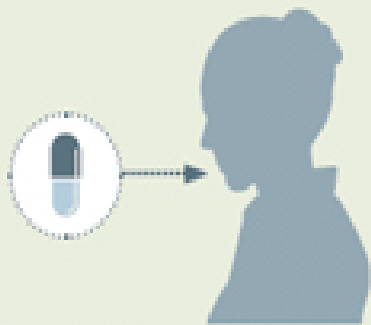


Comes back at least once in about 1 in 5 patients who get *C. difficile*.



1 in 11 people 65 and older died within a month of *C. difficile* infection diagnosis.

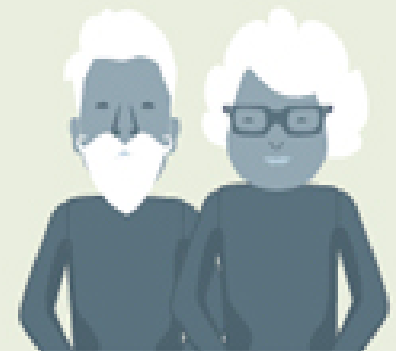
RISK



People on antibiotics are 7-10 times more likely to get *C. difficile* while on the drugs and during the month after.



Being in healthcare settings, especially hospitals or nursing homes.



More than 80% of *C. difficile* deaths occurred in people 65 and older.



Background: Epidemiology

Risk Factors

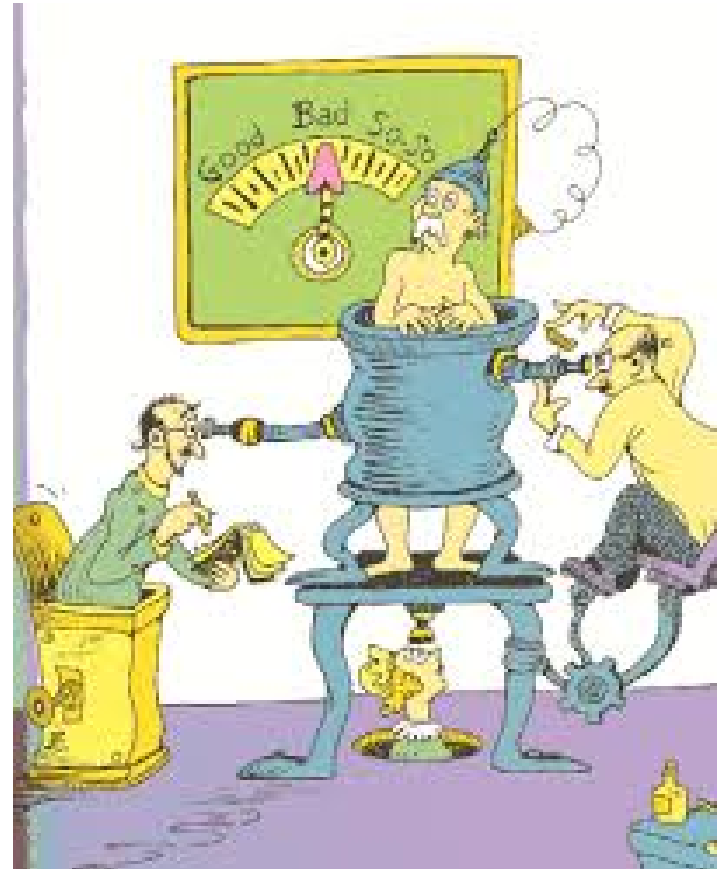
- Antimicrobial exposure
- Acquisition of *C. difficile*
- Advanced age
- Underlying illness
- Immunosuppression
- Tube feeds
- ? Gastric acid suppression

Main modifiable risk factors



Testing for *Clostridium difficile*

- Toxin testing
 - Quick – same day
- Stool culture
 - Takes 48-96 hours
- Testing for *C. difficile* should be done on unformed (liquid) stool only unless ileus is suspected



From the Horse's Mouth: CDC's Web Site

After treatment, repeat *C. difficile* testing is not recommended if the patient's symptoms have resolved, as patients may remain colonized.



Treatment Options



- Discontinue antibiotics if possible
- Fluid and electrolyte replacement
- Do not use antimotility agents (e.g. opiates)
- Metronidazole (Flagyl) 250 mg QID or 500 mg TID for 10-14 days
- Vancomycin 125 mg QID for 7-10 days - used if resident does not respond to or cannot take Flagyl; may be used first if severe disease
- New drug: Dificid (Fidaxomicin) – 200 mg bid for 10 days
- Experimental fecal transplant (enemas)

Infection Prevention Strategies

- Hand hygiene
- Contact precautions
- Identification of case
- Environmental disinfection
- Appropriate use of antibiotics



CONTACT PRECAUTIONS

Contact Precautions

- Designed to reduce the risk of transmission of microorganisms by direct or indirect contact
- Direct contact
 - skin-to-skin contact
 - physical transfer (turning patients/residents, bathing patients, other patient/resident care activities)
- Indirect contact
 - Contaminated objects
 - Equipment
 - Linens
 - High touch surfaces



Signage for Precautions



HAND HYGIENE

So Why All the Fuss About Hand Hygiene?

Most common mode of transmission of pathogens is via hands!

- Infections acquired in healthcare
- Spread of antimicrobial resistance





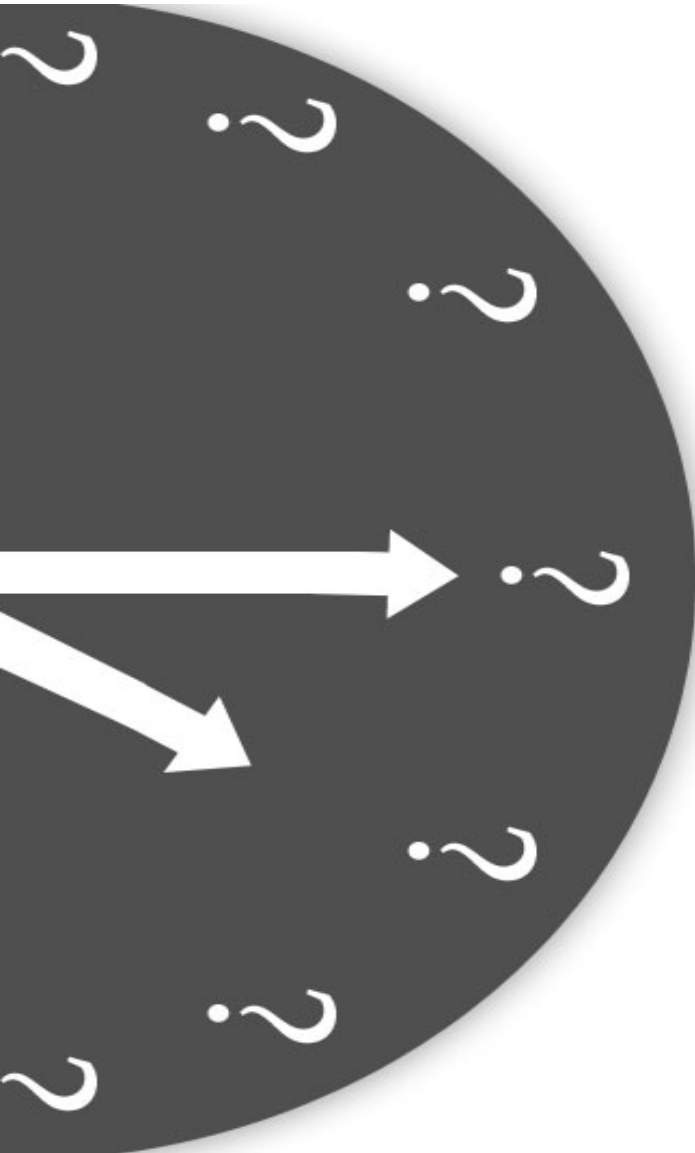
Self-Reported Factors for Poor Adherence with Hand Hygiene

- 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





Specific Indications for Hand Hygiene



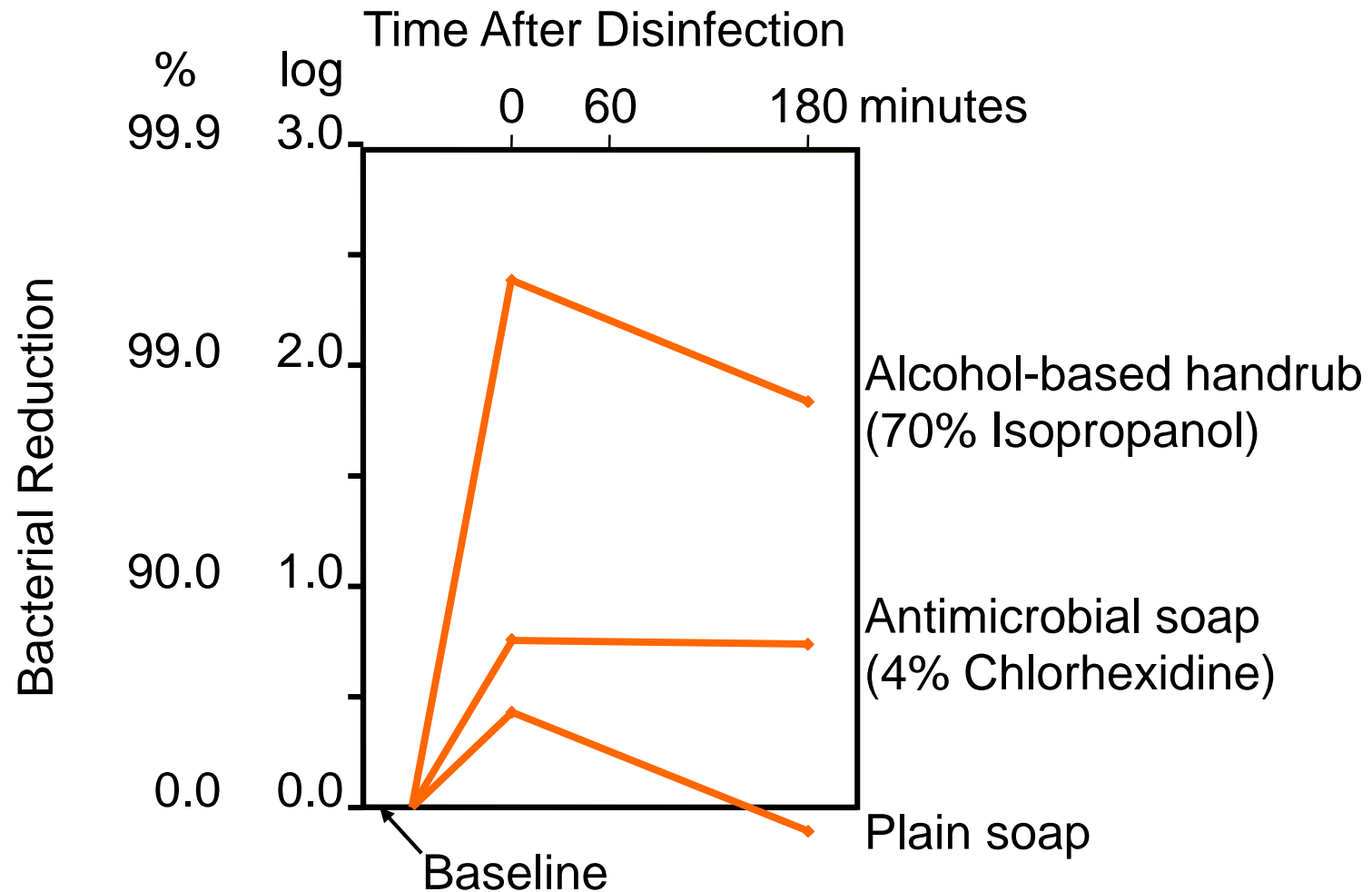
- Before:
 - Patient contact
 - Inserting urinary catheters, peripheral vascular catheters,
- After:
 - Contact with a patient's skin
 - Contact with body fluids or excretions, non-intact skin, wound dressings
 - Removing gloves

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



Ability of Hand Hygiene Agents to Reduce Bacteria on Hands



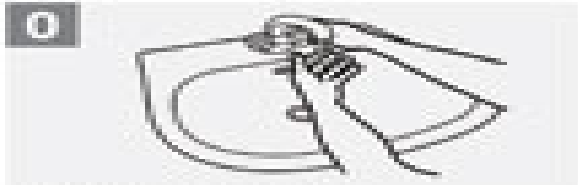
Adapted from: *Hosp Epidemiol Infect Control*, 2nd Edition, 1999.

How to Handwash?

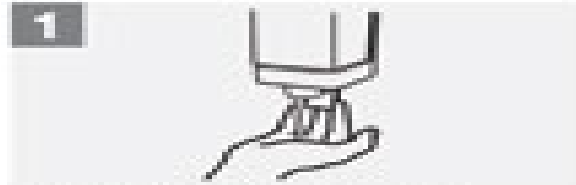
WASH HANDS WHEN VISIBLY SOILED! OTHERWISE, USE HANDRUB

 Duration of the handwash (steps 2-7): 15-20 seconds

 Duration of the entire procedure: 40-60 seconds



Wet hands with water;



Apply enough soap to cover all hand surfaces;



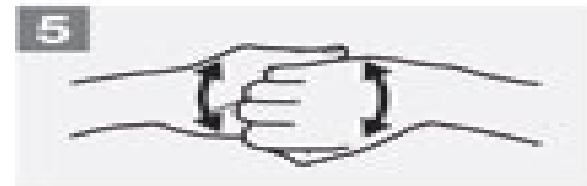
Rub hands palm to palm;



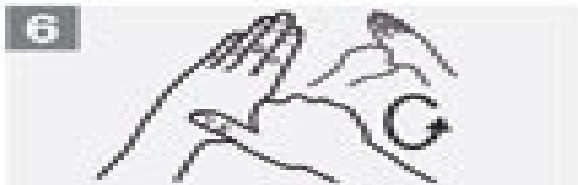
Right palm over left dorsum with interlaced fingers and vice versa;



Palm to palm with fingers interlaced;



Backs of fingers to opposing palms with fingers interlocked;



Rotational rubbing of left thumb clasped in right palm and vice versa;



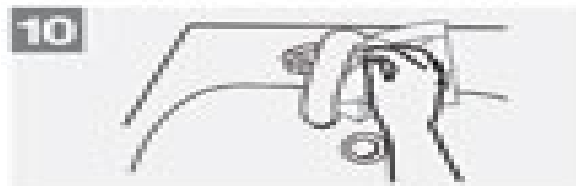
Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;



Rinse hands with water;



Dry hands thoroughly with a single use towel;



Use towel to turn off faucet;



Your hands are now safe.

How to Handrub?

RUB HANDS FOR HAND HYGIENE! WASH HANDS WHEN VISIBLY SOILED

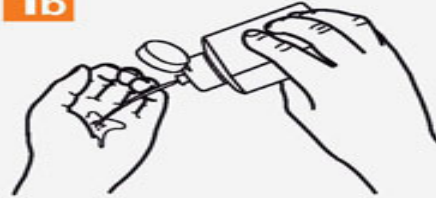
 **Duration of the entire procedure: 20-30 seconds**

1a



Apply a palmful of the product in a cupped hand, covering all surfaces;

1b



2



Rub hands palm to palm;

3



Right palm over left dorsum with interlaced fingers and vice versa;

4



Palm to palm with fingers interlaced;

5



Backs of fingers to opposing palms with fingers interlocked;

6



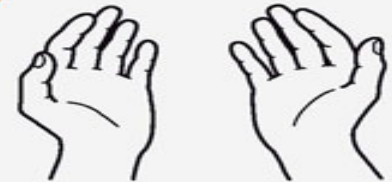
Rotational rubbing of left thumb clasped in right palm and vice versa;

7



Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;

8



Once dry, your hands are safe.

Alcohol-Based Handrubs:

What benefits do they provide?

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





Time Spent Cleansing Hands: one nurse per 8 hour shift

- 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



~ Alcohol-based handrubs reduce time
needed for hand disinfection ~



Education/Motivation Programs

- Monitor healthcare workers (HCWs) adherence with recommended hand hygiene practices and give feedback
- Implement a multidisciplinary program to improve adherence to recommended practices
- Encourage patients and their families to remind HCWs to practice hand hygiene





Administrative Measures to Improve Hand Hygiene

- Make improved hand hygiene an institutional priority
- Place alcohol-based handrubs at entrance to patient room, or at bedside
- Provide HCWs with pocket-sized containers



VACCINATIONS

Vaccinations and the Elderly

- In the elderly population, pneumonia and influenza are the fifth leading cause of death in the United States
- Residents who live in a long-term care facility may be at greater risk for serious infections due to age, decreased immunity, and/or underlying health conditions.
- Living in close quarters and having frequent contact with other residents may increase transmission risk.



Successful Vaccination Strategies

- Stress benefits of vaccination
- Allay fears and misconceptions
 - Vaccines are safe!
 - Cannot “catch” the disease from the vaccine
 - Minimal side effects
 - Benefits outweigh the risks
- Find creative ways to increase staff influenza vaccination rates
 - Mobile flu carts
 - Accommodate all shifts and weekdays/weekends
 - Offer incentives for participation



TEAM



In nursing homes,
approximately

20% of healthcare
providers

account for about

80% of antibiotics
prescribed.¹



Roughly

40–75%

of antibiotics are
prescribed incorrectly.

Nearly

50%

of antibiotics prescribed
in nursing homes
may be given
longer than necessary.²



Current nursing
home regulations
(e.g., F-tag 441,
F-tag 329, F-tag 428)

**already include
requirements**

to review and monitor
antibiotic use.



Core Elements for Antibiotic Stewardship in Nursing Homes

Leading Antibiotic Stewardship in Nursing Homes

Who are the Antibiotic Stewardship Leaders in Nursing Homes?

- **Medical Director**
- **Director of Nursing**
- **Consultant Pharmacist**

What are their Roles?



Medical Directors can:

- Set standards for antibiotic prescribing practices for all healthcare providers prescribing antibiotics.
- Oversee adherence to antibiotic prescribing practices.
- Review antibiotic use data and ensure best practices (e.g., the right drug at the right dose for the right amount of time) are followed.



Directors of Nursing can:

- Establish standards for nursing staff to assess, monitor and communicate changes in a resident's condition that could impact the need for antibiotics.
- Use their influence as nurse leaders to help ensure antibiotics are prescribed only when appropriate.
- Educate front line nursing staff about the importance of antibiotic stewardship and explain policies in place to improve antibiotic use.



Consultant Pharmacists can:

- Provide education to staff about the different types of antibiotics and their uses.
- Review antibiotic prescriptions as part of the drug regimen review for new medications and ensure they are ordered appropriately.
- Establish laboratory testing protocols to monitor for adverse events and drug interactions related to use of antibiotics and other high risk medications.
- Review microbiology culture results and provide feedback to prescribers on initial antibiotic selection to let them know if it is the right drug to treat the infection or if the bacteria may be resistant to the antibiotic.

¹ Daneman, N et al. Prolonged Antibiotic Treatment in Long-term Care. JAMA Intern Med. 2013; E1-E10.

Infection and Prevention Control Officer (IPCO)

Designation of an Infection and Prevention Control Officer (IPCO) for whom the IPCP is their **major responsibility** and who would serve as a member of the facility's **quality assessment and assurance (QA) committee**



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- Define the roles and responsibilities of **Team members**



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CDI Toolkit – CDC

- [Clostridium difficile \(CDI\) Infections Toolkit \(pdf\)](http://www.cdc.gov/hai/organisms/cdiff/cdiff_infect.html) http://www.cdc.gov/hai/organisms/cdiff/cdiff_infect.html
- [CDI Toolkit](#)
 - available in PowerPoint format on the CDC website
- [Clostridium Difficile Infection \(CDI\) Baseline Prevention Practices Assessment Tool For States Establishing HAI Prevention Collaboratives Using ARRA Funds Using Recovery Act Funds](http://www.cdc.gov/HAI/recoveryact/stateResources/toolkits.html)
- <http://www.cdc.gov/HAI/recoveryact/stateResources/toolkits.html>