Stop that Outbreak! Strategies for Long Term Care

Deb Burdsall

Objectives

• Describe organisms that commonly cause outbreaks in long term care
• Locate Wisconsin and Centers for Disease Prevention and Control guidance for outbreak control
• Apply practical outbreak control strategies for long term care, including a more detailed review of the use of PPE and Transmission-based precautions
Provide a safe, competent, person centered environment

Standard Precautions and Transmission-Based Precautions in a Social Model

Biopsychosocial Model of Care

Epidemic or Outbreak Situation
Outbreaks in Long Term Care

- Pathogen
- Respiratory Viruses
- Norovirus
- Improper Environmental Cleaning
- Disinfecting
- Lack of Control Measures

Outbreak!!!!

Respiratory Outbreaks

IF YOU'RE TRAVELING ON AN 80 MPH SNEEZE AND YOU LEAVE THE NOSE AT ONE O'CLOCK TOWARD A MAN FIFTEEN FEET AWAY, WHAT TIME WILL HIS TEMPERATURE SPIKE AT 103°?

BACTERIA TESTING
Respiratory: Viral Pneumonia in Older Adults

- Comorbidities increase the risk of infection and complications
- Decline in innate immune functioning may impair viral clearance
- Loss of respiratory muscle strength and mucous levels allows viruses to spread more easily to the lower respiratory tract causing inflammation


Influenza Vaccination

- Vaccinate healthcare workers
- Encourage families and visitors
- Older adults (65 years and older)
  - High dose vaccine (HD) provided better protection against laboratory-confirmed influenza illness.¹
  - HD vaccine in older adults and the SD IM vaccine in younger adults elicited comparable antibody responses.²
  - Incidence of hospitalization was significantly lower in HD than SD facilities for all-causes and respiratory conditions and lower but non-significant for pneumonia and influenza.³

What does this type of outbreak look like in the middle of Influenza Season?

All Influenza-like illness residents, families, employees

Lab Confirmed Influenza A

Influenza Positive Tests Reported to CDC by U.S. WHO/NREVSS Collaborating Laboratories, National Summary, 2012-13
Importance of identifying circulating viruses

• Viruses play a larger role than previously thought
• Between 13%-50% of pathogen-diagnosed community-acquired pneumonia is viral in origin
• 8%-27% of cases as mixed bacteria-virus infections
• Targets treatment and avoids unnecessary medication
• Reduces cost with targeted use of oseltamivir
• Stops comments like:
  • “I got a flu shot and I still got the flu”


Respiratory Virus Panel: PCR from Swab, Aspirate or Washing

• Human Metapneumovirus
• Rhinovirus
• Influenza A
• Influenza B
• Enterovirus
• RSV
• Parainfluenza virus
• Adenovirus

Coronavirus B.
• Pertussis
• C. pneumoniae
• M. pneumoniae

**With Viral Identification**

- Influenza A
- Influenza B
- Pos RSV
- Other

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**Adenoviruses**

- Little known about mechanisms of pathogenicity
- 52 serotypes
- Age, health of patient and other unknown host factors are believed to play key roles
- Spread by respiratory secretions, infectious aerosols, feces and fomites – very contagious
- Contaminated environmental surfaces harbor virus for weeks
- Resistant to lipid disinfectants
- Inactivated by heat, formaldehyde, bleach

Coronavirus

- Spread via droplet and fomites
- Human coronaviruses (HCoVs) cause upper and lower respiratory tract infections
- HCoV infection follows a seasonal pattern similar to that of influenza
- The severe acute respiratory syndrome (SARS) pandemic and Middle East respiratory syndrome coronavirus (MERS CoV) demonstrated the ability of this virus to cause life-threatening pneumonia

Source: Mosenifar, Z. et al. (2006), Viral Pneumonia. Image: CDC.

Human Metapneumovirus (hMPV)

- 10% of respiratory tract infections
- Distributed worldwide
- Seasonal distribution
- Incidence comparable to influenza
- Most children exposed to virus by age 5
- Young children, older adults and immunocompromised individuals are at risk of severe illness and hospitalization

Parainfluenza Virus Pneumonia

- Parainfluenza virus (PIV) is second in importance only to RSV as a cause of lower respiratory tract disease in children
  - Pneumonia and bronchiolitis in <6 months
- Usually second to influenza in elderly
  - The signs and symptoms include fever, cough, coryza, dyspnea with rales, and wheezing


Respiratory Syncytial Virus (RSV)

- Second most common viral cause of pneumonia in adults
- Highly contagious, spreading via droplet and contact exposure
- Reinfection in older children and young adults is common but mild
- Likelihood of more severe disease and pneumonia increases with advancing age

Source: Mosenifar, Z. et al., Viral Pneumonia. Image: CDC
Rhinovirus (“Just a cold”)

- Accounts for up to 30% of cases of all virus-related pneumonia
- Rhinovirus infection is linked to asthma hospitalizations in both adults and children
- Rhinoviruses can cause up to 32% of all lower respiratory tract infections with an identified pathogen in the elderly (> 60 y)
- Identified more frequently than coronaviruses (17%) or influenza viruses (7%)


CDC Isolation Precautions

- Adenovirus: **Contact and Droplet** Precautions
- Influenza A and B: **Droplet** Precautions
- Human Metapneumovirus (hMPV): **Contact** Precautions
- Respiratory Syncytial Virus (RSV): **Contact** Precautions
- Enteroviral infections (i.e., Group A and B Coxsackie viruses and Echo viruses) (excludes polio virus): **Standard** Precautions
  - BUT “Use **Contact** Precautions for diapered or incontinent children/persons for duration of illness and to control institutional outbreaks”

Source: CDC, 2007
Multiple viruses in the same cohort

- A person could be sick with influenza A
- Then come down with influenza B
- Then RSV
- Then adenovirus
- Or be sick with more than one virus at a time

Gastroenteritis: Norovirus

- Most common cause of acute gastroenteritis
- Outbreaks are common in institutional settings, accounting for over 50% of reported outbreaks
- Single-stranded RNA viruses (Caliciviridae)
- Fever, nausea, vomiting, cramping, malaise, diarrhea
- Hypovolemia, electrolyte imbalance, hypokalemia, renal insufficiency
- Infected persons may shed virus for up to 2 weeks
- Minimal acquired immunity from norovirus illness
- All age groups affected, older adults more likely to have severe outcomes and longer durations of illness

Source: CDC, https://www.cdc.gov/hicpac/norovirus/008_norovirus-background.html
Outbreak Case Definitions

Respiratory: Acute respiratory illness (ARI) (SINGLE CASE)

• Any two of the following:
  • Fever (2 degrees above person’s baseline temperature)
  • Cough (new or worsening, productive or non-productive)
  • Rhinorrhea or nasal congestion
  • Sore throat
  • New onset myalgia

Viral Gastroenteritis (TWO CASES)

• New onset vomiting and/or diarrhea
• Nausea with or without vomiting
• Abdominal cramping, fatigue, body aches, low grade fever
• Associated by time (within 1-2 days) and place

Source: [https://www.dhs.wisconsin.gov/hai/10-33attach.pdf](https://www.dhs.wisconsin.gov/hai/10-33attach.pdf)

Norovirus gastroenteritis (both criteria 1 and 2 must be present)

1. At least 1 of the following GI sub criteria
   a. Diarrhea: 3 or more liquid or watery stools above what is normal for the resident within a 24 hour period
   b. Vomiting: 2 or more episodes within a 24 hour period
2. A stool specimen for which norovirus is positively detected by PCR, electron microscopy, enzyme immunoassay

WHY?

SAFETY And Support
Wisconsin State Statute 252 Reporting Category I

• An outbreak of any communicable disease within a LTCF
• Report immediately by telephone to the local health department
• Also within 24 hours
• Electronically through the Wisconsin Electronic Disease Surveillance System (WEDSS)
• Or by mail or fax using an Acute and Communicable Disease Case Report

Source, Nov 14, 2016: https://www.dhs.wisconsin.gov/disease/diseasereporting.htm

CMS Long Term Care Participation Revisions 2016 “Mega Rule”

• Revises participation requirements for Medicare and Medicaid programs
• Changes reflect evidence-based practice
• CMS working to achieve broad-based improvements
  • Quality of health care
  • Patient safety
CMS Infection Prevention and Control Program (IPCP) Reform of Requirements

Phase I

November 28, 2016

- Basis and Scope
- Definitions
- Basic IPCP

Phase II

November 28, 2017

- IPCP linked to Facility Assessment
- Antibiotic stewardship

Phase III

November 28, 2019

- Infection preventionist (IP)
- IP participation on QAA committee (QAPI)

Phase II Requirements

November 28, 2017

- Infection Prevention and Control Program linked to the Facility Assessment
- Antibiotic Stewardship Program

Facility-wide Assessment

• “Determine what resources are necessary to care for its residents competently during both day-to-day operations and emergencies”

• “The facility must review and update that assessment:
  • As necessary
  • At least annually
  • Whenever there is, or facility plans for, any change that would require a substantial modification to any part of this assessment”


Facility Assessment Must Address:
Residents, Patients, and Clients

• The facility’s resident population, including, but not limited to:
  • Number of residents
  • Facility’s resident capacity

• The care required by the resident population:
  • Types of diseases, conditions, physical and cognitive disabilities
  • Overall acuity
  • Other pertinent facts that are present within that population

• Any ethnic, cultural or religious factors that may potentially affect the care provided:
  • Activities
  • Food
  • Nutrition
Education

• Goal: staff comply with infection control practices
• Initial and ongoing infection control education
• Updated education and training
  • when policies and procedures are revised
  • when there is a special circumstance (e.g. outbreak)
  • requires modification or replacement of current practices


Training and Competency

• Task and discipline specific infection control training

• Follow-up competency evaluations identify staff compliance

How?

Professor Didier Pittet’s and WHO’s Multimodal Approach to Interventions

1 Build it (system change)
- What equipment is required to implement the intervention?
- Does the physical environment influence health worker behaviour?
- Are certain types of health workers needed to implement the intervention?

2 Teach it (training & educating)
- Who needs to be trained, what training modality should be used and how frequently to ensure the intervention will be implemented safely in line with evidence-based policies?
- How can you make best use of local champions and health workers’ enthusiasm?
- Practical example: what implementing injection safety interventions, timely training of those responsible for administering self-injections as well as disposal methods, and of careers and communities are important considerations.

3 Check it (monitoring and feedback)
- How can you be sure the interventions being practiced correctly and safely including at the bedside, e.g. are these methods of cleaning or tracking practiced?
- How and when will feedback be given to the target audience, patients and managers?
- Practical example: when implementing surgical site infection interventions, the use of key tools such as surveillance data collection forms and the WHO checklist (adapted to local conditions) are important considerations.

4 Sell it (advocacy & marketing)
- How are you promoting an intervention so that e.g. there are cues to action at the point of care and messages are sent to health workers and patients?
- Do you have capacity/funding to develop promotional messages and materials?
- Practical example: when implementing interventions to reduce catheter-associated bloodstream infection, the use of visual cues to action, promotional reinforcing messages, and planning for periodic campaigns are important considerations.

5 Live it (make it happen)
- Is there demonstrable support for the intervention at every level of the health system, e.g. do health facility managers provide funding for equipment and other resources, are the results of audits valued and acted upon, are senior managers willing to be champions for IPC improvement?
- Practical example: when implementing hand hygiene interventions, the way that a health facility approaches this as part of safety and quality improvement and the values placed on hand hygiene improvement as part of clinical workflow, are important considerations.

https://s3global.wordpress.com/author/kshealthcareltd/ Image: Twitter @DidierPittet
Goal: Stop Outbreaks Before They Start

- System Change (Build it)
  - Proper equipment and supplies at point of care
  - Interdisciplinary cleaning/disinfecting
  - Outbreak plan in place BEFORE outbreak
  - Partnerships with public health and other healthcare
- Training and Education (Teach it)
  - Empower front line personnel to take action
  - Educate all humans
- Monitor and performance feedback (Check it)
  - Hand hygiene, Personal Protective Equipment (PPE) availability and use
  - Environmental cleaning/disinfecting

Goal: Stop Outbreaks Before They Start, continued

• Reminders in the workplace (Sell it)
  • Transparency
  • Stop movement of germs into the long-term community
  • Prevent spread of illness from room to room, or one area to another

• Culture of Safety (Live it)
  • Transparency
  • Interdisciplinary Team Work
  • C-suite to front line


Build the System

• Knowledge
• Communication, within facility, interfacility, and with Public Health
• Transmission-based Precautions
• Transparency
• Checklists
• Procedures
• Guidance
• Available instructions for front line staff
• Clear lines of communication
Building an Environmental Cleaning and Disinfecting Program

Simplify

What is simpler than training personnel to use products at point of care that actually work when you need them?

Train systems and processes that are effective

Example: Use bleach/detergent cleaning for all Transmission Precaution rooms and during outbreaks or clusters of illness
Barriers

• Product Selection
• Communication between departments
• Training and supervision
• Who cleans what??
• When are things cleaned??

Ideal Cleaner Disinfectant

• Single step (clean and disinfect in one step)
• Stable
• Low toxicity/danger for humans and pets
• EPA approved
• Rapid kill of wide range of microorganisms with minimal contact time
• Does not damage surfaces

Environmental Protection Agency Registration

See MSDS# MS0200097

EPA Reg. No.: 70627-60
EPA Est. No.: 74559-CAN-1[VX]; 0312-WI-3 [NW]
Lot code letters indicate establishment number.

EPA Pesticide Product Label System

Cleaning Materials

• Reusable cleaning cloths or mops
  • Decontaminate regularly
  • Absorb some disinfectants
• Microfiber product systems
  • Positive charge attracts negatively charged dust
  • Changed between rooms
  • Superior cleaning
  • Can be used with disinfectants
• Appropriate temperatures and chemicals for laundering
• Single use pre-mixed with disposable wipes – easier, but more expensive

Alcohol and Norovirus

• Isopropyl and ethyl alcohol most commonly used in healthcare
• Not effective against spores or norovirus
• Optimum bactericidal concentration 60-90% in water (Rutala, 2009)
• Evaporates rapidly
• Hand sanitizers are standard and may be used in addition to handwashing

Source: CDC [https://www.cdc.gov/norovirus/preventing-infection.html]
Quaternary Ammonium Products and Norovirus

- Good cleaning agents
- Can be deactivated in certain circumstances at certain concentrations (cotton cleaning rags, microfiber, hard water)
- Need to be mixed properly
- Widely used in healthcare and food services
- Not effective against bacterial spores (such as *C. difficile* spores), non-enveloped viruses (e.g. Norovirus)
- May encourage sporulation (Gerding, Muto, Owens, 2008)

Chlorine Bleach and Norovirus

- Bacteriocidal, virucidal, fungicidal, mycobacterial, sporocidal (Rutala, 2009)
- *Clostridium difficile* infections increased use in healthcare
- Liquid bleach requires mixing and does not clean
- Bleach/detergent wipes – clean and disinfect
- Contact time varies by product
- Damages some surfaces
Advanced Hydrogen Peroxide

• Low toxicity
• Rapid kill (shorter contact times)
• Effective against norovirus
• Easier on surfaces
• Not adequate log reductions of *C-difficile* spores at concentrations to meet US EPA requirements as a sporicidal

Other Surface Disinfectants

• Silver ions/citric acid
• Peracetic Acid
• Ultraviolet light
• Hydrogen peroxide fogging
Simplify Precautions within CDC Guidance

Contact Precautions

Contact Precautions: See Nurse

Patients: please make sure you have clean hands, clean clothes and equipment, contained drainage and covered wounds.

Source: E. Nelson, Lutheran Life Communities
Contact/Droplet Precautions

Source: E. Nelson, Lutheran Life Communities

Teach It
Training and Supervision

- Support end users with training and supportive supervision
- Give front line personnel permission to report illness!
- Appropriate cleaner/disinfectants at point of care (on lifts, BP/thermometers)
- Formal process for ensuring supplies are maintained
- Simplify procedures

How to Handwash

Source: WHO
How to Handrub Alcohol Based Hand Sanitizer

Source: WHO

Norovirus is not Influenza

- Norovirus is a stomach virus
- There is no vaccine for norovirus
- Pay attention to residents, patients and staff who complain they are nauseated or who have loose stools or vomiting
- Send employees, visitors or clients home
- Keep residents or patients in their rooms
- Immediately place residents or patients with these symptoms on Droplet/Contact Precautions
- Clean all surfaces every 1-2 hours with advanced hydrogen peroxide or bleach/detergent wipes
- Wash hands with soap and water
Droplet/Contact Precautions

- Respiratory illnesses
- Nausea, vomiting, diarrhea
- Outbreaks
- Residents/Patients should stay in their rooms
- Residents/Patients leave rooms for essential purposes only with a surgical mask and clean hands, clothes and equipment, contained drainage, covered wounds

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<table>
<thead>
<tr>
<th>Wipes</th>
<th>YES- USE HERE!!!</th>
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<tbody>
<tr>
<td>Advanced hydrogen peroxide</td>
<td>WASHING MACHINES AND DRYERS</td>
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<tr>
<td>1 MINUTE CONTACT FOR BACTERIA AND VIRUSES</td>
<td>CARTS AND TABLES</td>
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<td>(List/Label/package color)</td>
<td>EQUIPMENT</td>
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<td>(Insert photo here)</td>
<td>COMPUTER TOUCH SCREENS AND TERMINALS</td>
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<td></td>
<td>DIARRHEA, NAUSEA, VOMITING</td>
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<td></td>
<td>SAFE FOR SURFACES EXCEPT FOR MARBLE</td>
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<tr>
<td>Bleach detergent wipes</td>
<td>WASHING MACHINES</td>
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<td>1 MINUTE CONTACT TIME FOR BACTERIA AND VIRUSES</td>
<td>BLOOD TESTING EQUIPMENT</td>
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<td>(Insert photo here)</td>
<td>ROOMS WHERE INDIVIDUAL HAS HAD</td>
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<td>Use carefully will damage surfaces</td>
<td>DIARRHEA, NAUSEA, VOMITING</td>
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<td>Use gloves</td>
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<td>Alcohol-based hand sanitizer wipes</td>
<td>HANDS OF RESIDENTS</td>
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<td>PERSONAL CLEANSING CLOTHS</td>
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<td>THESE WIPES DO NOT KILL GERMS</td>
<td>WIPE 15-30 SECONDS</td>
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<td>EVERY DAY CLEAN UP</td>
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<td>PERSONAL CARE</td>
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<td>INCONTINENCE CARE</td>
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</tbody>
</table>
Glove Use
Formula for Success!
Don’t pick up germs and spread them around on Dirty Gloves and Dirty Hands!!

Changing tasks?
Changing rooms?
Changing residents?
Clean your hands and change your gloves!!
Glove Demonstration

Selecting Gowns: Demonstration
OSHA Definition of PPE

• “Personal protective equipment will be considered appropriate only if it does not permit blood or other potentially infectious materials to pass through to or reach the employee’s work clothes, street clothes, undergarments, skin, eyes, mouth, or other mucous membranes under normal conditions of use and for the duration of time which the protective equipment will be used.”

Check It
Degree of inappropriate HCP glove use during toileting and perineal care events

- HCP overused gloves

- 83% of the patient care events had one or more cases of inappropriate glove use

- HCP failed to change gloves 66% of the time when a glove change was indicated

- Over 44% of the HCP gloved touch points were defined as contaminated

Burdasal et al., 2017 [AJIC, In Press], Examining Inappropriate Glove Use by Certified Nursing Assistants in a Long Term Care Facility.
Monitoring Cleaning Practices

• Multiple studies have shown that EVS personnel wipe only 50% of surfaces targeted for cleaning
• Environmental rounds
• Visual inspection
Monitoring and Cleaning Practices Continued

• Environmental monitoring systems for quality improvement
  • Use checklists as audit tool
  • Include staff in auditing practices and give them feedback
  • Environmental marking (fluorescent marking of hard surfaces)

Diffusion of Responsibility for Cleaning

“Housekeeping’s Job”

Equipment and Environment Not Cleaned

“Nursing’s Job”
Sell it

Your 5 moments for hand hygiene at the point of care

1. Wash your hands
2. Don gloves
3. Use alcohol-based hand rub
4. If soap and water are used, wash hands with soap and water and dry thoroughly
5. Remove gloves

My 5 Moments for Hand Hygiene
Focus on caring for a patient with a peripheral venous catheter

1. Wash your hands
2. Don gloves
3. Use alcohol-based hand rub
4. If soap and water are used, wash hands with soap and water and dry thoroughly
5. Remove gloves

Key additional considerations for peripheral intravenous catheters:

1. Indication: Ensure that the peripheral venous catheter is indicated. Remove the catheter when no longer necessary/indicated.
2. Technique: Place the catheter tip in a suitable vein, taking care to avoid damage to the catheter. Ensure the catheter is securely fixed and placed so that it remains in the vein for the intended duration.
3. Care: Change the catheter dressing at least once every 48 hours. If the catheter becomes dislodged or if there is signs of inflammation or infection, remove it and replace with a new one.
4. Monitoring: Monitor the patient for signs of infection or complications related to the catheter. If any signs of infection are noted, remove the catheter and notify the appropriate healthcare provider.
5. Documentation: Document the insertion, care, and removal of the peripheral intravenous catheter in the patient's medical record.
THANK YOU!!! WHAT A GOOD JOB!
You stopped an outbreak!!!

Sick?
• PLEASE
• STAY
• HOME!
• Don’t force or allow your employees to work sick: This is called *Presenteeism*
• Don’t force those under your supervision to participate in group activities if they are not feeling well

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How to Wear a Mask

- **Hand Hygiene**
- Wear mask yellow side out
- Place mask over nose, mouth and chin
- Fit flexible nose piece over nose bridge
- Secure on head with ties or elastic
- Adjust to fit. Try pulling at the bottom for comfort
- The front of the mask is considered contaminated and should not be touched after it is fitted
- **Change when coming out of isolation room**
- **Change if soiled or touched**
- Remove by handling only the ties or elastic bands starting with the bottom then top tie or band
- Lift the mask from the face and discard it into the trash.

Perform Hand Hygiene

Source: CDC.gov PPE use. Images © Mommarazzi Images.
Sample Posting

Feeling Sick?
Please, do not share your germs.
Wait to you are well to visit.
We appreciate your consideration.

Source: E. Nelson, Lutheran Life Communities
Influenza B and RSV Mixed Respiratory
March 2013
7 Influenza B, 1 RSV, and 12 unknown
20 cases + 198 x 15 = 20 / 2970 person days
x 1000 = Rate of 6.73 ILI per 1000 person days

Started Bundled Approach

Influenza B  Pos RSV  Other

FOR COMPARISON 2011
Norovirus Confirmed Gastrointestinal Outbreak
101 Cases – Residents / 453 = 22% Attack Rate
Acute Gastroenteritis Dementia Unit January 2013
8 cases on 1 unit = 42 residents
Attack Rate: Residents and Staff 6.6%
Attack Rate: Residents only 16%
9 Cases: 3 Confirmed Norovirus

Live it
QAPI Tools

• Tools for each of the 5 QAPI Elements
• University of Minnesota and Stratis Health
• CMS created “process” tools
• Use to implement and apply some of the basic principles of QAPI
• A Process Tool Framework has been created to crosswalk each CMS Process Tool to the QAPI Five Elements

https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/QAPI/qapitools.html

Lessons Learned

• Prompt identification of symptoms and use of Transmission-based Precautions is critical
• Not everyone with confirmed respiratory illness OR norovirus met the case definition. Don’t ignore subtle symptoms if there is an association with a case
• QI project determined outbreaks responded quickly when everyone was identifying, isolating, and cleaning/disinfecting with the proper products in this care community
Hospitals, Long Term Care, Home Care, Home Health, and Public Health must communicate and work together

THANK YOU!

• Deborah Briggs and the Wisconsin HAI team
• Professor Didier Pittet, Claire Kilpatrick, Julie Storr
• Dr. Loreen Herwaldt and University of Iowa Hospitals and Clinics Epidemiology and Infection Prevention
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• Judith Conway
• The University of Iowa College of Nursing
Thank You! Questions?

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Useful Websites

• Centers for Disease Control and Prevention
  • [www.cdc.gov](http://www.cdc.gov)
• APIC
  • [www.apic.org](http://www.apic.org)
• SHEA: Society for Healthcare Epidemiology of America
  • [www.shea-online.org](http://www.shea-online.org)
• Links to guidelines and standards
• AMDA: American Medical Directors Association
  • [www.amda.com](http://www.amda.com)
Useful Websites

Centers for Medicare and Medicaid Services

• CMS Resource Guide for Quality Improvement Tools

• CMS QAPI Self Assessment

• QAPI 5 Elements Toolkit

Centers for Disease Control and Prevention

• Nursing Homes and Assisted Living
  https://www.cdc.gov/longtermcare/

• The Core Elements of Antibiotic Stewardship for Nursing Homes
  https://www.cdc.gov/longtermcare/prevention/antibiotic stewardship.html

• National Healthcare Safety Network (NHSN)
  https://www.cdc.gov/nhsn/LTC/index.html

WI HAI Coalition homepage:
https://www.dhs.wisconsin.gov/regulations/nh/hai-introduction.htm

CRE Toolkit:
https://www.dhs.wisconsin.gov/disease/cre.htm
https://www.dhs.wisconsin.gov/publications/p0/p00532.pdf

Viral Gastroenteritis guidelines (WI):
https://www.dhs.wisconsin.gov/hai/10-33attach.pdf

Acute Respiratory Illness guidelines (WI updated annually):

MDROs:

Gunderson Health System IP training program:
http://www.gundersenhealth.org/for-clinicians-professionals/infection-prevention-control-training-program/
References

- List A: EPA’s Registered Antimicrobial Products as Sterilizers (PDF) (5 pp, 127k, About PDF)
- List B: EPA Registered Tuberculocid Products Effective Against Mycobacterium tuberculosis (PDF) (12 pp, 218k, About PDF)
- List C: EPA’s Registered Antimicrobial Products Effective Against Human HIV-1 Virus (PDF) (66 pp, 483k, About PDF)
- List D: EPA’s Registered Antimicrobial Products Effective Against Human HIV-1 and Hepatitis B Virus (PDF) (30 pp, 128k, About PDF)
- List E: EPA’s Registered Antimicrobial Products Effective Against Mycobacterium tuberculosis Human HIV-1 and Hepatitis B Virus (PDF) (8 pp, 53k, About PDF)
- List F: EPA’s Registered Antimicrobial Products Effective Against Hepatitis C Virus (PDF) (22 pp, 94k, About PDF)
- List G: EPA’s Registered Antimicrobial Products Effective Against Norovirus (PDF) (7 pp, 51k, About PDF)
- List H: EPA’s Registered Antimicrobial Products Effective Against Methicillin Resistant Staphylococcus aureus (MRSA) and Vancomycin Resistant Enterococci (VRE) (PDF) (40 pp, 566k, About PDF)
- List I: EPA’s Registered Antimicrobial Products for Medical Waste Treatment (PDF) (5 pp, 70k, About PDF)
- List K: EPA’s Registered Antimicrobial Products Effective Against Clostridium difficile Spores (PDF) (2 pp, 56k, About PDF)

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