Managing Outbreaks in Post Acute & LTC Facilities

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WI HAI in LTC Coalition Conference
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Conflicts of Interest

• Dr. Nace does not have any current conflicts of interest to report.

• Dr. Nace had past grant funding for an investigator initiated grant (Sanofi Pasteur) evaluating high vs standard dose influenza vaccine in frail LTC residents.
Objectives

- Identify common causes of outbreaks

- Discuss pearls in the management of selected types of outbreaks that occur commonly in the LTC environment

Nursing Facilities Roles

- Residential
- Medical Care
- Spiritual Care
- Socialization
- Rehabilitation
Why LTC Outbreaks Occur

Resident Level Factors

Facility Level Factors

Disease Outbreaks

Frail LTC Residents at High Risk

• Frailty and Age
  • Immuno-senescence
  • Functional impairment
• Comorbid illness
• Medications that impact immune function
  • > 60% of residents on 9 or more meds
• Poor nutritional status
• Indwelling devices
• Close contact
  • ADL Care
  • Social contact
Facility Factors

- Staffing
  - Composition/skills
  - Turnover
- Limited technology and resources
- Limited diagnostic capabilities
- Competing pressures
- Limited clinician presence
- Poor documentation

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Nursing Home Staff Turnover

Median Turnover Rate Among Skilled Nursing Center Employees 2012

<table>
<thead>
<tr>
<th>Category</th>
<th>2012 Median Turnover Rate</th>
<th>Percent Change from 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Employees</td>
<td>43.9%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Direct Care Staff</td>
<td>50.0%</td>
<td>6.0%</td>
</tr>
<tr>
<td>RNs</td>
<td>50.0%</td>
<td>11.1%</td>
</tr>
<tr>
<td>LPNs/LVNs</td>
<td>36.4%</td>
<td>7.5%</td>
</tr>
<tr>
<td>CNAs</td>
<td>51.5%</td>
<td>2.6%</td>
</tr>
</tbody>
</table>

Common Outbreaks

LTC Outbreaks by Affected Sites

- Respiratory: 45%
- GI: 36%
- Skin: 7%
- Eye: 2%


- English literature review, elderly care facilities
- 1966-2008
- 207 articles identified

- Underestimates outbreaks
  - Detection bias
  - Reporting bias
  - Publication bias
Respiratory Outbreaks

Respiratory Outbreak Curve - AP Winter 2015

Orange = Hospitalized   Red = Died

Oseltamivir 3/9
### Hong Kong, 2013-2014

| NF 1 | Residents in Facility | 191 | Mean Age | 82 (58-102) yrs | Vaccine Coverage Rate | 85% | Cases ILI | 48 | Attack Rate | 25% | Attack Rate Vaccinated | 25% | Attack Rate Unvaccinated | 28% | Influenza Related Hospitalizations | 37.5% (18/48) | Influenza Related Deaths | 0 |


### Navarre, Spain 2012

<table>
<thead>
<tr>
<th>NF 1</th>
<th>NF 2</th>
<th>NF 3</th>
<th>Residents</th>
<th>66</th>
<th>22</th>
<th>523</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age</td>
<td>80.3 (42-97)</td>
<td>81.2 (59-97)</td>
<td>86.4 (62-104)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010/2011 Vaccine Coverage Rate</td>
<td>97%</td>
<td>91%</td>
<td>82%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cases ILI</td>
<td>44</td>
<td>4</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attack Rate</td>
<td>67%</td>
<td>18%</td>
<td>2.9%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attack Rate Vaccinated</td>
<td>66%</td>
<td>20%</td>
<td>2.6%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attack Rate Unvaccinated</td>
<td>100%</td>
<td>0%</td>
<td>4.1%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Influenza Related Hospitalizations</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Influenza Related Deaths</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Nursing Home Outbreaks Despite Vaccination

**Wisconsin 1992-1994**

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Influenza Type</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td>Total Residents</td>
<td>690</td>
<td>670</td>
</tr>
<tr>
<td>Age (±10)</td>
<td>76</td>
<td>76</td>
</tr>
<tr>
<td>Male</td>
<td>80%</td>
<td>78%</td>
</tr>
<tr>
<td>Residents Vaccinated (%)</td>
<td>86%</td>
<td>89%</td>
</tr>
<tr>
<td>Nursing Staff Vaccinated (%)</td>
<td>56%</td>
<td>46%</td>
</tr>
<tr>
<td>Cases</td>
<td>104 (15.5%)</td>
<td>68 (9.8%)</td>
</tr>
<tr>
<td>Vaccination Rate Among Cases</td>
<td>85%</td>
<td>90%</td>
</tr>
</tbody>
</table>


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Nursing Home Outbreaks Despite Vaccination

**Rochester, MN 1996**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Residents</th>
<th>HCW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>62</td>
<td>67</td>
</tr>
<tr>
<td>% Vaccinated</td>
<td>95%</td>
<td>72%</td>
</tr>
<tr>
<td>Age (±4)</td>
<td>87</td>
<td>-</td>
</tr>
<tr>
<td>Attack Rate</td>
<td>44% (n=27)</td>
<td>24% (n=16)</td>
</tr>
<tr>
<td>Vaccination Rate Among Cases</td>
<td>96% (n=26)</td>
<td>52% (n=9)</td>
</tr>
</tbody>
</table>

All That Coughs Is Not Flu!

- Respiratory Viruses Linked to LTC Outbreaks
  - Influenza A, B
  - RSV
  - Human Metapneumovirus (hMPV)
  - Parainfluenza 1, 2, 3
  - Coronavirus
  - Adenovirus
  - Rhinovirus

- Bacteria
  - Strep pneumonae
  - Legionella species

Respiratory Outbreak Curve - AP
Winter 2015

Orange = Hospitalized    Red = Died
Oseltamivir 3/9
Respiratory Outbreak Curve - AP
Winter 2015
By Pathogen

Region of Geriatric Medicine

Regional Prevalence of 8 Respiratory Viral Pathogens in LTCF

<table>
<thead>
<tr>
<th>Year (Number subjects Tested)</th>
<th>RSV</th>
<th>Flu A</th>
<th>Flu B</th>
<th>hMPV</th>
<th>CoV OC43</th>
<th>CoV 229E</th>
<th>Para -3</th>
<th>Para -2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (99)</td>
<td>10</td>
<td>12</td>
<td>4</td>
<td>11</td>
<td>7</td>
<td>9</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>2 (149)</td>
<td>9</td>
<td>11</td>
<td>4</td>
<td>22</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>3 (134)</td>
<td>6</td>
<td>1</td>
<td>11</td>
<td>16</td>
<td>13</td>
<td>27</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Total (382)</td>
<td>25</td>
<td>24</td>
<td>19</td>
<td>49</td>
<td>23</td>
<td>40</td>
<td>15</td>
<td>9</td>
</tr>
<tr>
<td>Percentage of Tested</td>
<td>6.5</td>
<td>6.3</td>
<td>5.0</td>
<td>12.8</td>
<td>6.0</td>
<td>10.5</td>
<td>3.9</td>
<td>2.4</td>
</tr>
</tbody>
</table>

- 33 LTCF Boston
- 3 year study of Vitamin E supplementation
- Paired viral sera

### Human Metapneumovirus

**West Virginia / Idaho, 2011-2012**

<table>
<thead>
<tr>
<th>W VA</th>
<th>WV</th>
<th>ID</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Residents</td>
<td>83</td>
<td>80</td>
<td>163</td>
</tr>
<tr>
<td>ILI Cases</td>
<td>28</td>
<td>29</td>
<td>57</td>
</tr>
<tr>
<td>Attack Rate</td>
<td>34%</td>
<td>36%</td>
<td>35%</td>
</tr>
<tr>
<td>Mean Age</td>
<td>84 (54-99)</td>
<td>84 (51-97)</td>
<td>-</td>
</tr>
<tr>
<td>Hospitalized</td>
<td>4 (14%)</td>
<td>5 (17%)</td>
<td>9 (16%)</td>
</tr>
<tr>
<td>Died</td>
<td>4 (14%)</td>
<td>2 (7%)</td>
<td>6 (11%)</td>
</tr>
<tr>
<td>Staff Symptomatic</td>
<td>32%</td>
<td>9%</td>
<td>-</td>
</tr>
<tr>
<td>LRTI</td>
<td>26 (93%)</td>
<td>19 (66%)</td>
<td>79%</td>
</tr>
<tr>
<td>Xray Confirmed PNA</td>
<td>69%</td>
<td>37%</td>
<td>56%</td>
</tr>
<tr>
<td>Median Duration Illness (D)</td>
<td>21 (3-43)</td>
<td>4.5 (1-14)</td>
<td>-</td>
</tr>
</tbody>
</table>

CDC. MMWR. 62(46)909-913.

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### Pearls for Managing Respiratory Outbreaks in LTC

- **Staff Knowledge Gaps**
  - Outbreaks vs “colds going around” or “just pneumonia”
    - *Always ask if others ill with similar symptoms*
  - Defining respiratory outbreak
    - CDC ILI = 2 or more respiratory cases in 72 hours
    - 1 lab confirmed case of influenza*

*Depending on the type of test used, i.e. rapid vs PCR

http://www.cdc.gov/URDO/outbreak.html
“In certain situations a single case of unexplained respiratory disease may need to be evaluated as a possible outbreak because of the potential need for immediate public health intervention (e.g., suspect pulmonary anthrax, plague, SARS, MERS, hantavirus pulmonary syndrome).”

This definition includes influenza in nursing facilities.

http://www.cdc.gov/URDO/outbreak.html
State Operations Manual

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**Pearls for Managing Respiratory Outbreaks in LTC**

- **Staff Knowledge Gaps**
  - Set monitoring & observation expectations
  - Standardized monitoring & response orders
    - Vitals
    - Fluid intake
    - Parameters to call
Pearls for Managing Respiratory Outbreaks in LTC

• Turnover
  – Don’t assume that staff know what to do
  – **You will need to repeat yourself**
  – Baseline and regular conference calls
  – Assign a **point person** or champion
  – Take notes
  – Facility specific **Outbreak Checklist**
Pearls for Managing Respiratory Outbreaks in LTC

• Information Transfer
  – Facilities should call acute care ICP
    • Inform about test results known and pending

• Technology
  – Paper tracking may be easier than electronic
  – Pre-printed tracking sheets
Antiviral Use in Influenza

- Indicated for treatment of cases (5 days)
- Indicated for prophylaxis to prevent secondary cases and reduce complications (10 days)
- Dose adjustment for renal function
- Medical Director should take responsibility to implement / prescribe
  - Multiple prescribers = chaos

https://www.cdc.gov/flu/professionals/antivirals/summary-clinicians.htm

Prevalence of CKD in NF

- Cr Clearance estimated using MDRD*
- 82 NF
- 794 residents

<table>
<thead>
<tr>
<th></th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any CKD</td>
<td>49.5%</td>
</tr>
<tr>
<td>Stage 3a</td>
<td>23.5%</td>
</tr>
<tr>
<td>Stage 3b</td>
<td>19.4%</td>
</tr>
<tr>
<td>Stage 4/5</td>
<td>6.5%</td>
</tr>
</tbody>
</table>

*MDRD significantly over-estimates renal function in older adults. Crockoft-Gault is the standard for older adults.
Pearls for Managing Respiratory Outbreaks in LTC

- Limited physician / advanced-practice practitioners
  - Outbreak response is a public health emergency
  - Medical Director function includes role for ensuring access to emergent care (F 501)
  - Medical Director *may and should* institute orders when addressing outbreaks

  - [http://www.amda.com/managementtools/Medical%20Director%20rolesresponsibilitie.pdf](http://www.amda.com/managementtools/Medical%20Director%20rolesresponsibilitie.pdf)

Antiviral (AV) Use

- Timing critical
  - Plan antiviral supplies ≥ 6 months in advance
  - Active surveillance to *recognize cases quickly*
  - Systems in place to *get AV administered same day*
Influenza Tools

- Standard antiviral order sheet
  - Signed /scanned
  - Dosing guidelines
- Cr Clearance Calculator
  - Initiate October
  - Update frequently

Pearls for Managing Respiratory Outbreaks in LTC

**Discourage antibiotics for viral illness**

- Viral infections often cause pneumonia and LRTI
  - Unless unstable or superinfection is suspected.
  - Understand the typical course of superinfection
  - Inappropriate abx continued in 35% of admissions with flu*

Sequential A & B NF Outbreaks (Different Units) April 2016

Sample Outbreak Summary Record

LTC Influenza Outbreak Summary

Facility — Asbury Heights
Date Outbreak Detected — Wed 4/20/2016
Type of Outbreak — Combined B/A

Date Index Cases
- Thu 4/14/2016 — Influenza B (Redwood Unit)
- Thu 4/21/2016 — Influenza A (Evergreen Unit)

Time From Index B (Redwood) Case Symptoms to Outbreak Declaration — 6 days, 2 PM
Time From Index A (Evergreen) Case Symptoms to Outbreak Declaration — 6 days, 2 PM
Time From Outbreak Declaration to Prophylactic Amantadine Start B — 5.5 hours (3:30 AM to 8 PM)
Time From Outbreak Declaration to Prophylactic Amantadine Start A — 6 hours (9 PM to 3 AM)

Tamilla Started Redwood — 4/20/16 PM
Tamilla Started Evergreen — 4/21 8 AM

Last New Case on Redwood — 4/21
Last New Case on Evergreen — 4/22 (11:15 AM)

Total Proven Cases on Redwood — 4 (All B)
Total Proven Cases on Evergreen — 4 (All A)
Total Presumed Cases on Redwood — 10
Total Presumed Cases on Evergreen — 5
Ruled Out Cases on Redwood — 6
Ruled Out Cases on Evergreen — 5

Case Fatalities — 0
Case Hospitalizations — 0
Case ED Visits — 0
Mrs. K – The New Admission

- 80 year old female with DJD, osteoporosis, depression, severe constipation, recent pneumonia and a hip fracture.
- She is admitted to your facility for rehab related to deconditioning from the hip fracture and pneumonia.
Mrs. K

- Has been on moxifloxacin for pneumonia for 7 days, prior treatment with TMP/SMX for UTI.
- This morning, she has nausea and 2 bouts of diarrhea. Her last prior BM was 4 days ago and was formed. She has no appetite. Her last oxycodone dose was 2 hours ago.
- Vitals
  - Pulse = 94
  - BP = 118/70
  - Temp = 37 C

Mrs. K

- Exam shows active bowel sounds, soft, mild distention, but no tenderness or rebound, no masses. There are no surgical scars. She has mild pain with ROM of right hip (surgical hip). There is no drainage from the wound.
- Clear liquids ordered
- 8 hours later, she has another bout of diarrhea with an associated emesis.
Mrs. K

- The nurse informs you that Mrs. K’s roommate, who is being treated for a UTI, also has diarrhea.

- Two dietary staff members were sent home earlier in the day with GI symptoms.

Which organism is the most likely cause of Mrs. K’s illness?

A. Rotavirus
B. Clostridium difficile
C. Norovirus
D. Salmonella
E. Cryptosporidium
Norovirus

- Single-stranded, non-enveloped RNA virus
- 5 genotypes
  - 3 causes human disease
    GI, GII, GIV
- NV genome undergoes frequent change
  - Influences virulence
  - Persistence in human populations

Photo Courtesy: Charles D. Humphrey, CDC

- Kumazaki M, Usuku S BMC ID 2016;16:643

Norovirus Outbreaks

- Leading cause of foodborne outbreaks
- Most common cause of AGE (53%-93%)
- Reportable through NORS

AGE = Acute Gastroenteritis


MMWR June 6, 2014 / 63(22):491-495
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6322a3.htm?s_cid:mm6322a3_w#Fig1
Non-Foodborne Norovirus Outbreaks by Setting 2009-2012

<table>
<thead>
<tr>
<th>Setting</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restaurant</td>
<td>1</td>
</tr>
<tr>
<td>Catering or Banquet Facility</td>
<td>0.3</td>
</tr>
<tr>
<td>Private Residence</td>
<td>0.1</td>
</tr>
<tr>
<td>School</td>
<td>6</td>
</tr>
<tr>
<td>LTC Facility</td>
<td>80</td>
</tr>
<tr>
<td>Hospital</td>
<td>4</td>
</tr>
<tr>
<td>Day Care</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
</tr>
</tbody>
</table>

MMWR June 6, 2014 / 63(22):491-495
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6322a3.htm?s_cid=mm6322a3_w
#Fig1

Prevalence of NV Increasing

• Gastroenteritis hospitalizations increased between 1996-2007 (Lopman BA, et al. CID 2011;52:466-474.)
  • Adults and elderly
  • Estimated average of >70,000 hospitalizations annually in US

• Probably related to emergence of new GII.4 strains
  • MMWR 2007;56(33):842-846.
So, It’s Just Diarrhea, Right?

- Norovirus causally linked to increased hospitalization rates and mortality
- Increased rates occur in first two weeks of the outbreak (week 0 and 1)
- Increased rates persist
  - Despite adjustment for seasonality (by week and month)
  - Similar pattern across 3 states studied

Incidence of Norovirus Outbreaks per month


How Do I Detect An Outbreak?

• **Kaplan Criteria**
  1. Mean (or median) illness duration of 12 to 60 hours,
  2. Mean (or median) incubation period of 24 to 48 hours,
  3. More than 50% of people with vomiting
  4. No bacterial agent found.
**Performance of Kaplan Criteria**

- **Good Specificity**
  - When all 4 criteria are present - high likelihood that the outbreak is attributable to norovirus.

- **Low sensitivity**
  - about 30% of norovirus outbreaks do not meet these criteria.

**Can I Confirm Norovirus?**

- **RT PCR**
  - Has become the gold standard
  - Availability increasing over the past 5 years
  - Performed on a stool specimen
    - Actual stool and not rectal swab
    - Can be performed on formed stool*
  - Use to **confirm etiology** of outbreak
Factors Facilitating NV Spread

- Low infectious dose
  - < 10 - 100 viral particles
- Environmental stability
- Strain diversity and lack of lasting immunity
- Prolonged viral shedding
  - Up to 22 days immuno-competent
  - Up to 2 years for transplant patients


How is Norovirus Spread?

Person to Person
Foodborne
Aerosolized Particles
Excretions
Contaminated Surfaces

Picture Courtesy Charles D Humphrey, CDC
Components of NV Outbreak Control in LTC Settings

- Patient cohorting and contact isolation
- Hand hygiene
- Enhanced use of personal protective equipment
- Environmental cleaning
  - Patient transfer and ward closure
  - Indirect patient care: food handlers
  - Visitors
- Infrastructure and Policy
  - Staff leave / facility policies
- Communication and Notification
- Education
- Case Detection
  - Active case finding
  - Diagnostics

Healthcare Personnel (HCP)

- Employees often work while ill
  - 94% employees worked while ill and 8% vomiting at work. *(MMWR)*
  - HCP can be index cases *(Rodriguez)*

- **60% of staff norovirus** +
  - Majority asymptomatic

  Remain home at least 48 hours after symptoms resolve

Sodium hypochlorite

Quaternary ammoniums

EPA List G http://www.epa.gov/pesticides/antimicrobials/list_g_norovirus.pdf

Other Key Outbreak Management Resources

CDC Updated Norovirus Outbreak Management and Disease Prevention Guidelines, 2011
(http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6003a1.htm?s_cid=rr6003a1_e)
Incident Cases Norovirus Residents CrP
Nov 2010 - Jan 2011
N = 137

Extended outbreaks raise question of adherence with IC precautions

Aerosol Risk with Toileting

- Aerosol generation including droplets likely
- Cleaning of toilet and immediate environment necessary.

Masking important during cleanup
Think Twice About Portable Outhouses
(Bedside Commodes)

- Hard to Clean Surfaces
- Aerosol Generation
- Transporting, Transferring Matter & Sanitizing Container
- Floor Contamination

Must clean & disinfect after each use!* *https://www.cdc.gov/hicpac/Disinfection_Sterilization/3_4surfacesDisinfection.html

Less Common Causes of GI Outbreaks in LTC

- Clostridium difficile
  - Burden of disease higher in LTC
  - Endemic / Less epidemic (outbreak) activity
- Salmonella species
- Escherichia coli
Clostridium Difficile

- Endemic pathogen
- Rates lower than hospitals, but likely greater burden of disease
- Likely infrequent cause of outbreaks


PA PSA Data – Nursing Homes

http://patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2010/mar18_7(suppl1)/Pages/10.aspx#bm13
Hepatitis B

• Many LTC Outbreaks associated with ambulatory blood glucose monitoring devices

• 2011 ACIP Hepatitis B Immunization of Adults with Diabetes
  – Recommended 19-59 years
  – Consider ≥ 60 years

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6050a4.htm

U.S. Hepatitis B Outbreaks 2008-2014

• 23 total outbreaks
• 175 cases
• 10,700 notified for screening
• 17 (74%) occurred in LTC facilities

http://www.cdc.gov/hepatitis/Outbreaks/HealthcareHepOutbreakTable.htm
Memorandum Summary

Infection Control Standards for Nursing Homes at §483.65 – Determining Compliance: The following practices are deficiencies in infection control:

- Reusing fingerstick devices (e.g., pen-like devices) for more than one resident;
- Using a blood glucose meter (or other point-of-care device) for more than one resident without cleaning and disinfecting it after use.

If a surveyor observes a facility doing either of the above, the surveyor should follow the interpretive guidelines, investigative protocol, and severity determination information at F441 to determine the severity of the deficiency.

Scope & Severity: CMS is revising the example in Appendix PP to make a distinction between (a) reuse of fingerstick devices for more than one resident (immediate jeopardy) and (b) use of a blood glucose meter for more than one resident without proper cleaning and disinfection, so that scope and severity can be correctly assessed.


FDA Warning

Use of All Point of Care Devices

Recommendations and FDA Action

The FDA and the CDC recommend that healthcare professionals and patients take the following immediate precautions:

- Never use fingerstick devices for more than one person.
- Use auto-disabling, single-use fingerstick devices for assisted monitoring of blood glucose. These devices are designed to be used only once, after which the blade is retracted, capped or otherwise made unusable. These are sometimes called "safety" lancets.
- Whenever possible, use POC blood testing devices, such as blood glucose meters and PT/INR anticoagulation meters, for one patient only. If dedicating POC blood testing devices to a single patient is not possible, the devices should be properly cleaned and disinfected after every use as described in the device labeling.
- Change gloves between patients, even when using patient-dedicated POC blood testing devices and single-use, auto-disabling fingerstick devices.

http://www.fda.gov/MedicalDevices/Safety/AlertsandNotices/ucm224025.htm
Skin Related Outbreaks

- Scabies
- MRSA
- Bed Bugs

Photo Courtesy of Piotr Naskrecki
Scabies

• 3 distinct outbreaks over one year in 446 bed multilevel campus
  – July 2001
  – March 2002
  – July 2002
• 39 cases total
  – 37 residents
  – 2 staff


<table>
<thead>
<tr>
<th>Outbreak</th>
<th>Residents</th>
<th>Staff</th>
<th>Treatment</th>
<th>Prophylaxis</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 2001</td>
<td>26 (DALF)</td>
<td>2</td>
<td>Permethrin x 2</td>
<td>No</td>
</tr>
<tr>
<td>March 2002</td>
<td>4 (3 DALF, 1NF)</td>
<td>0</td>
<td>Ivermectin &amp; Permethrin x 2</td>
<td>Ivermectin to Residents / Staff DALF Only</td>
</tr>
<tr>
<td>July 2002</td>
<td>7</td>
<td>0</td>
<td>Ivermectin &amp; Permethrin x 2</td>
<td>Ivermectin to Residents / Staff Both Units</td>
</tr>
</tbody>
</table>

DALF = Dementia ALF  NF = Nursing Facility

Cost of medications for all outbreaks = $5272

Scabies in LTC

- Diagnosis often missed or delayed –
  - Atypical presentation
  - Cognitively impaired residents
  - Wide differential diagnosis
  - Lack of practical tools for diagnosis
  - Lack of easily accessible tools for diagnosis
  - Lack of specific diagnostic criteria
  - Is there / What is role of dermatology ???

Hewitt KA, et al. Epidemiol Infect 2015;143:1542-1551

Scabies in LTC

- Time to Diagnosis
  - Index case – 5 months in one study
  - Most secondary cases diagnosed in less time

- Once diagnosed, treatment follows quickly
  - Within few days in most cases

Hewitt KA, et al. Epidemiol Infect 2015;143:1542-1551
Scabies in LTC

• Surveillance after Case Detection
  – Skin checks on all residents - immediately
  – Staff should check their own skin & close family members
  – Identify all who had contact with cases
  – Scrapings or biopsy
    • Consult with local dermatologist if possible – may not be feasible

http://www.cdc.gov/parasites/scabies/health_professionals/crusted.html

Scabies in LTC

• Assume infestation
• Contact precautions
• Treatment –
  – Permethrin 5% topical
    • 2 treatments one week apart
  – Ivermectin oral
    • Can be single dose or repeated in one week
    • 200 mcg/kg – empty stomach with water
• Treat index patients simultaneously with all contacts (regardless of symptoms)

http://www.cdc.gov/parasites/scabies/health_professionals/meds.html
Scabies in LTC

- Environmental
  - Track rooms
  - Collect and bag clothing bedding in plastic bags.
  - Transport immediately for washing
    - 122°F for 10 minutes
  - Clean and vacuum room regularly
  - Bag non-washables – ≥ 72 hours

http://www.cdc.gov/parasites/scabies/health_professionals/meds.html

Summary

- Disease outbreaks in LTC are common owing to both resident and facility level factors
- A number of factors conspire to complicate outbreak response efforts in the LTC setting
- The most common outbreaks in LTC involve the respiratory and GI tract and to a lesser extent the skin