Managing Outbreaks in Post Acute & LTC Facilities

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WI HAI in LTC Coalition Conference
May 18, 2017

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
- Rehabilitation
- Socialization
- Spiritual Care

Why LTC Outbreaks Occur

Resident Level Factors

- Frail LTC Residents at High Risk
  - Frailty and Age
  - Immuno-senescence
  - Functional impairment
  - Comorbid illness
  - Medications that impact immune function
    - > 80% of residents on 9 or more meds
  - Poor nutritional status
  - Indwelling devices
  - Close contact
    - ADL Care
    - Social contact

Facility Level Factors

Disease Outbreaks
Facility Factors

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

Nursing Home Staff Turnover

<table>
<thead>
<tr>
<th>Median Turnover Rate Among Skilled Nursing Center Employees 2012</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

- English literature review, elderly care facilities
- 1966-2008
- 207 articles identified
- Underestimates outbreaks
  - Detection bias
  - Reporting bias
  - Publication bias


Respiratory Outbreak Curve - AP Winter 2015

- Orange = Hospitalized
- Red = Died

Oseltamivir 3/9
### Nursing Home Outbreaks Despite Vaccination

**Hong Kong, 2013-2014**

<table>
<thead>
<tr>
<th>Variable</th>
<th>NF 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residents in Facility</td>
<td>991</td>
</tr>
<tr>
<td>Mean Age</td>
<td>82 (58-102) yrs</td>
</tr>
<tr>
<td>Vaccine Coverage Rate</td>
<td>85%</td>
</tr>
<tr>
<td>Cases ILI</td>
<td>48</td>
</tr>
<tr>
<td>Attack Rate</td>
<td>25%</td>
</tr>
<tr>
<td>Attack Rate Vaccinated</td>
<td>25%</td>
</tr>
<tr>
<td>Attack Rate Unvaccinated</td>
<td>28%</td>
</tr>
<tr>
<td>Influenza Related Hospitalizations</td>
<td>37.5% (18/48)</td>
</tr>
<tr>
<td>Influenza Related Deaths</td>
<td>0</td>
</tr>
</tbody>
</table>

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.


### Nursing Home Outbreaks Despite Vaccination

**Navarre, Spain 2012**

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

Residents: 66, 22, 523, Mean Age: 80.3 (42-97), 81.2 (59-97), 86.4 (62-104), 2010/2011 Vaccine Coverage Rate: 97%, 91%, 82%, Cases ILI: 44, 4, 15, Attack Rate: 66%, 20%, 2.6%, Attack Rate Vaccinated: 66%, 20%, 2.6%, Attack Rate Unvaccinated: 100%, 100%, 4.1%, Influenza Related Hospitalizations: 2, 1, 0, Influenza Related Deaths: 1, 1, 0.


### Nursing Home Outbreaks Despite Vaccination

**Wisconsin 1992-1994**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza Type</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Total Residents</td>
<td>690</td>
<td>670</td>
</tr>
<tr>
<td>Age (±10)</td>
<td>76 (±10)</td>
<td>76 (±10)</td>
</tr>
<tr>
<td>Male</td>
<td>86%</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>804 (10-5%)</td>
<td>688 (8.8%)</td>
</tr>
<tr>
<td>Vaccination Rate Among Cases</td>
<td>85%</td>
<td>90%</td>
</tr>
</tbody>
</table>

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>64</td>
<td>87</td>
</tr>
<tr>
<td>% Vaccinated</td>
<td>95%</td>
<td>72%</td>
</tr>
<tr>
<td>Age</td>
<td>87 (±4)</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 pneumiae
  - Legionella species

Respiratory Outbreak Curve - AP
Winter 2015

Orange = Hospitalized  Red = Died
Oseltamivir 3/9
Division of Geriatric Medicine

Respiratory Outbreak Curve - AP
Winter 2015
By Pathogen

Orange = Hospitalized  Red = Died
Purple = hMPV  Green = Flu  Blue = Unknown

Regional Prevalence of 8 Respiratory Viral Pathogens in LTCF

<table>
<thead>
<tr>
<th>Year</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>30%</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 (18%)</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>33%</td>
<td>56%</td>
</tr>
<tr>
<td>Median Duration Illness (D)</td>
<td>21 (3-41)</td>
<td>4.5 (1-14)</td>
<td>-</td>
</tr>
</tbody>
</table>

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


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"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.


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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

- 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 CRD</td>
<td>40.5%</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. Crockoff-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%20Roles%20and%20Responsibilities.pdf](http://www.amda.com/managementtools/Medical%20Director%20Roles%20and%20Responsibilities.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

*Essential for timely response*
Pears 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**

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**Sample Outbreak Summary Record**

---
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 cause human disease
    GI, GII, GIV
• NV genome undergoes frequent change
  – Influences virulence
  – Persistence in human populations

• 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

*Clark B, McKendrick M. Curr Opin Infect Dis 2004;17:461-469

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_wRfg1
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

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

G1.3 CDC Confirmed Outbreak – Nace Unpublished Data

- 7% CFR
- Mean age Died 93 vs Survived 84
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
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
- Education
- Communication and Notification

Case Detection

- Active case finding
- Diagnostics

Interventions

- 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

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

YES

Quarternary 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

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_4surfaceDisinfection.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

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
FDA Warning
Use of All Point of Care Devices

Recommendations and FDA Action

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

- Never use fingerstick devices for more than one person.
- Use self-disposing, single-use fingerstick devices for repeated monitoring of blood glucose. These devices are designed to be used only once, after which the blisters are retracted, capped or otherwise made unusable.
- These are sometimes called "safety lancets.
- Whenever possible, use POCT blood testing devices, such as blood glucose meters and TIMIR lancet units, to perform testing for the patient only. If using single-use POCT blood testing devices to a single patient, the device should be properly disposed of after every use as described in the device labeling.
- Change gloves between patients, even when using patient-dedicated POCT blood testing devices and single-use, auto-disposable fingerstick devices.

http://www.fda.gov/medicalDevices/Safety/AlertsandNotices/ucm224020.htm

Skin Related Outbreaks
Skin

- 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

• 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

• 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 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