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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

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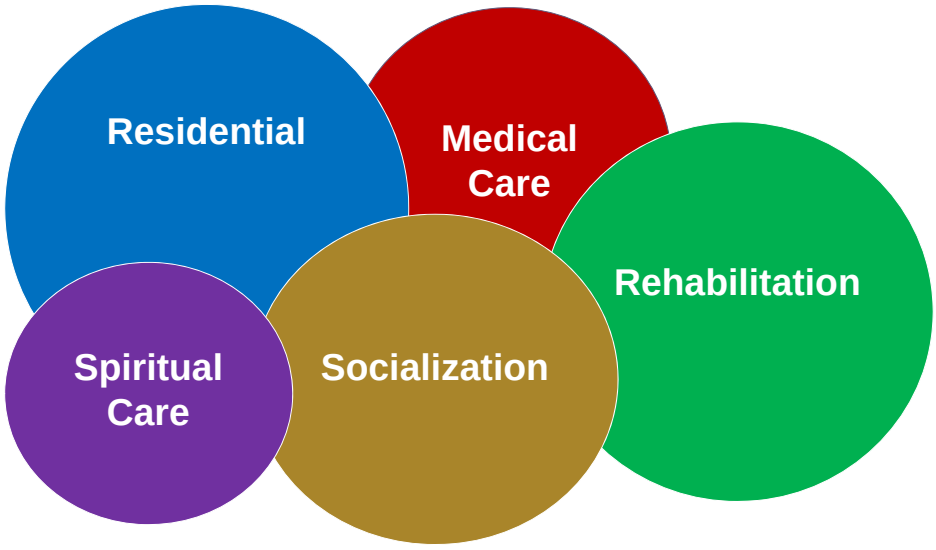
Nursing Facilities Roles



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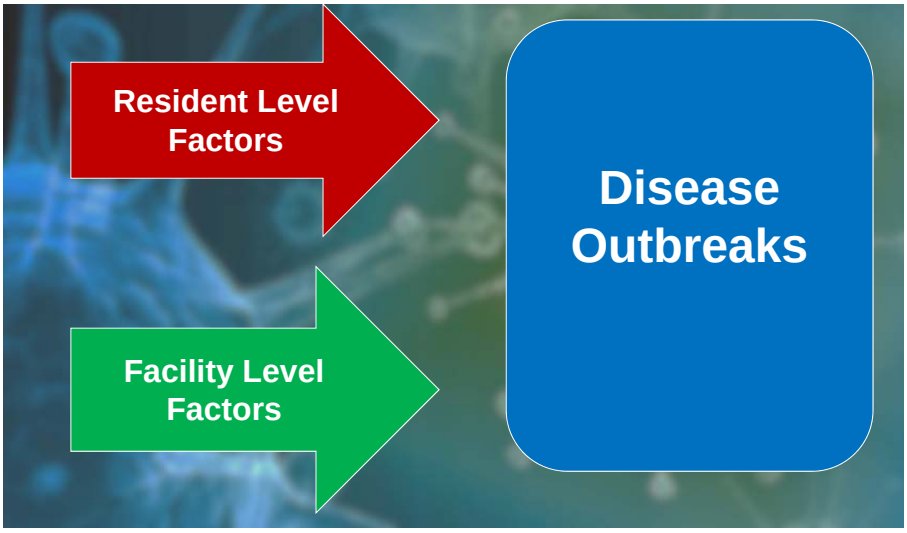
Why LTC Outbreaks Occur



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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

	2012 Median Turnover Rate	Percent Change from 2011
All Employees	43.9%	5.7%
Direct Care Staff	50.0%	6.0%
RNs	50.0%	11.1%
LPNs/LVNs	36.4%	7.5%
CNAs	51.5%	2.6%

http://www.ahcancal.org/research_data/staffing/Documents/2012_Staffing_Report.pdf

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Common Outbreaks

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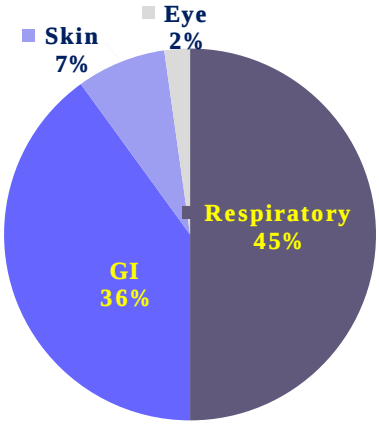
LTC Outbreaks by Affected Sites



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

Utsumi M, et al. Age Aging 2010;39:299-305.

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Respiratory Outbreaks

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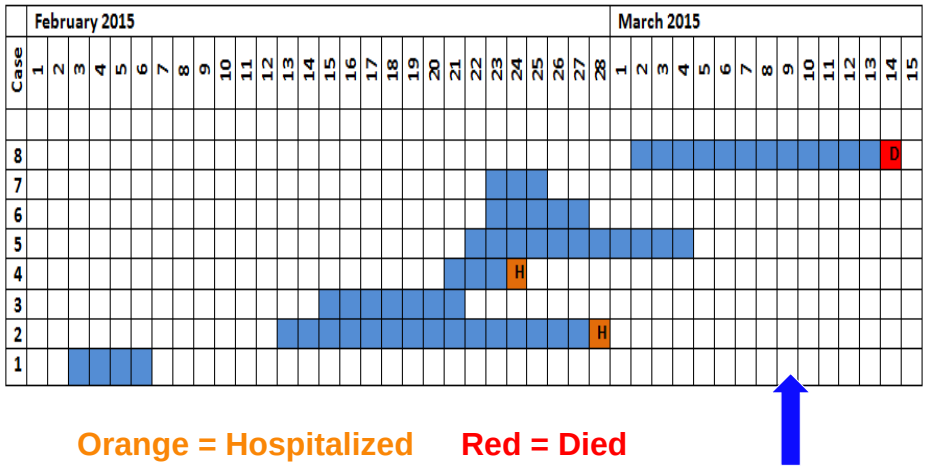
Respiratory Outbreak Curve - AP Winter 2015



Orange = Hospitalized Red = Died

Oseltamivir 3/9

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Nursing Home Outbreaks Despite Vaccination

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

Chan FHW, Chan TC, Hung IF, et al. J Am Med Dir Assoc 2014;15:296-302.

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Nursing Home Outbreaks Despite Vaccination

Navarre, Spain 2012

	NF 1	NF 2	NF 3
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	67%	18%	2.9%
Attack Rate Vaccinated	66%	20%	2.6%
Attack Rate Unvaccinated	100%	0%	4.1%
Influenza Related Hospitalizations	2	1	0
Influenza Related Deaths	1	1	0

Castilla J, Cia F, Zubicoa J, et al. Influenza outbreaks in nursing homes with high vaccination coverage in Navarre, Spain, 2011/12. Euro Surveill. 2012;17(14):pii=20141.

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Nursing Home Outbreaks Despite Vaccination

Wisconsin 1992-1994

Variable	1992-1993	1993-1994
Influenza Type	B	A
Total Residents	690	670
Age	76 (±10)	76 (±10)
Male	80%	78%
Residents Vaccinated (%)	86%	89%
Nursing Staff Vaccinated (%)	56%	46%
Cases	104 (15.5%)	68 (9.8%)
Vaccination Rate Among Cases	**85%**	**90%**

Drinka P, et al. Outbreaks of influenza A and B in a highly immunized nursing home population. J Fam Pract 1997;45:509-514.

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Nursing Home Outbreaks Despite Vaccination

Rochester, MN 1996

Variable	Residents	HCW
Number	62	67
% Vaccinated	95%	72%
Age	87 (±4)	-
Attack Rate	44% (n=27)	24% (n=16)
Vaccination Rate Among Cases	**96% (n=26)**	**52% (n=9)**

Kuhle CL, et al. An influenza outbreak in an immunized nursing home population: Inadequate host response or vaccine failure? Annals Long-Term Care 1998:6(3):72.

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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 pneumoniae**
  - **Legionella species**

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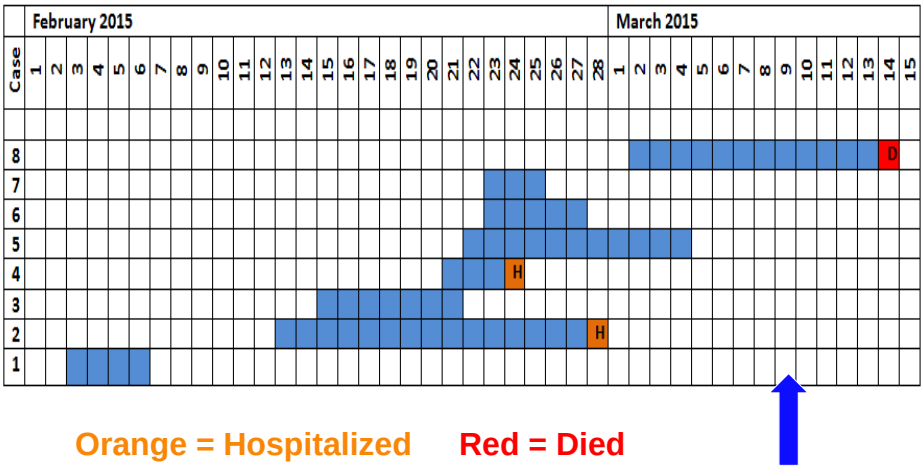
Respiratory Outbreak Curve - AP Winter 2015



Orange = Hospitalized **Red = Died**

Oseltamivir 3/9

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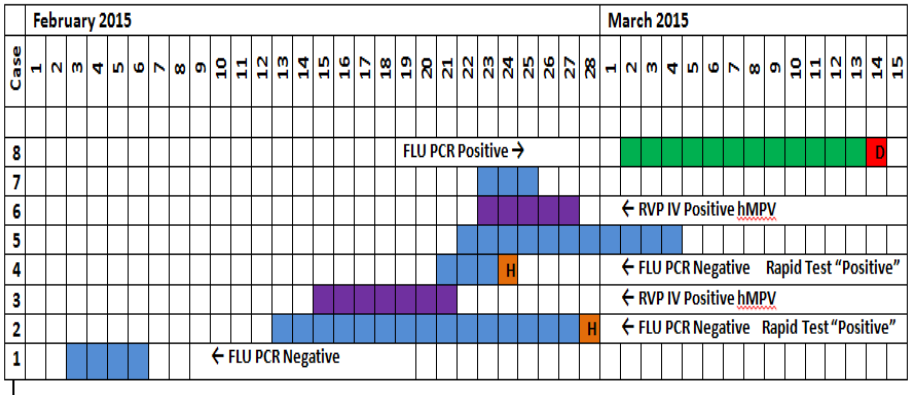
Respiratory Outbreak Curve - AP Winter 2015

By Pathogen



Orange = Hospitalized Red = Died

Purple = hMPV Green = Flu Blue = Unknown

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Regional Prevalence of 8 Respiratory Viral Pathogens in LTCF

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

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

Falsey AR, et al. J Am Geriatr Soc 2008;56:1281-1285.

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Human Metapneumovirus

West Virginia / Idaho, 2011-2012

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

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

Sample Observation Order Set

Figure 1

Example of an Observation Order Set

- ☐ Obtain vital signs (BP, Pulse, Resp Rate, Temp, Pulse Ox) every ____ hours for ____ days.
- ☐ Record fluid intake each shift for _____ days.
- ☐ Notify physician if fluid intake is less than _____ cc daily.
- ☐ Offer resident _____ ounces of water / juice every _____ hours.
- ☐ Notify physician, NP, or PA if condition worsens, or if no improvement in _____ hours.
- ☐ Obtain the following blood work _____.
- ☐ Consult pharmacist to review medication regimen.
- ☐ Contact the physician, NP, PA with an update on the resident's condition on _____.

Nace DA, Drinka PJ, Crnich CJ. J Am Med Dir Assoc 2014.

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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***

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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

Facility _____

RESIDENT _____
EMPLOYEE _____

TYPE OF OUTBREAK:
Respiratory_____
C-diff_____
other GI
influenza
Scabies_____
other

^ = disease onset
X = died
C = culture sent
C+ = culture positive
A = Abx tx started
V = antiviral started
H = hospitalized
"---" = ongoing symptoms
R = Case resolved

Month = _____

Year = _____

Days of the Month

NAME/ID	ROOM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

Note Results of Any Pathogen Testing:

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

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Prevalence of CKD in NF

- McClellan WF, et al. J Am Med Dir Assoc 2010;11:33-41
- Cr Clearance estimated using MDRD*
- 82 NF
- 794 residents

	Percent
Any CKD	49.5%
Stage 3a	23.5%
Stage 3b	19.4%
Stage 4/5	6.5%

**MDRD significantly over-estimates renal function in older adults. Crockoft-Gault is the standard for older adults.*

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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
- https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/som107ap_pp_guidelines_ltcf.pdf

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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**

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Influenza Tools

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

Essential for timely response

INFLUENZA ANTIVIRAL MEDICATION ORDER SHEET

RESIDENT: _____

DATE: _____

ORDERS

Antiviral therapy is to be administered for the following indication:

□ Prophylaxis □ Treatment

Antiviral therapy to be administered based on the dosing guidelines below

□ Oseltamivir (Tamiflu)_____ mg PO / GT *(frequency / duration)* _____

□ Zanamivir (Relenza) _____mg_____PUFFS *(frequency / duration)* _____

Physician Signature _____ **Date** _____

DOSAGE GUIDELINES

OSELTAMIVIR (TAMIFLU) DOSAGE GUIDELINES - *(Preferred First Line Agent - When Used for Treatment')*

[STANDARD DOSE 75 MG TWICE A DAY]

CCCr < 30 75 mg daily for treatment

CCCr < 10 No Data Available

OSELTAMIVIR (TAMIFLU) DOSAGE GUIDELINES - *(Preferred First Line - When Used for Prophylaxis')*

[STANDARD DOSE 75 MG ONCE A DAY]

CCCr < 30 75 mg every other day for prevention

CCCr < 10 No Data Available

ZANAMIVIR (RELENZA) DOSAGE GUIDELINES – (Second Line Agent - *When Used For Treatment')*

[STANDARD DOSE FOR NURSING HOME RESIDENTS = 10 MG (2 puffs) INHALED TWICE A DAY]

Avoid in Patients with Significant Airways Disease *No Change in Dose in Patients with Renal Failure*

ZANAMIVIR (RELENZA) DOSAGE GUIDELINES – (Second Line Agent - *When Used For Prophylaxis')*

[STANDARD DOSE FOR NURSING HOME RESIDENTS = 10 MG (2 puffs) INHALED ONCE A DAY]

Avoid in Patients with Significant Airways Disease *No Change in Dose in Patients with Renal Failure*

1) CDC. Prevention and Control of Influenza: Recommendations of the Advisory Committee on Immunization Practices (ACIP), 2007. MMWR. 56(RR06);1-54 July 13, 2007 (http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5606a1.htm - ACCESSED FEBRUARY 11, 2008.)

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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*

Image Courtesy of Pew Charitable Trusts

*Ghazi IM, et al. Infect Control Hosp Epidemiol 2016;37(5):583-589.

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

Evergreen Unit	Influenza A													April 2016				
Case	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
9															-			
8															-			
7										AV	-					-		
6										⇩								
5										⇩								
4										-								
3										-								
2																		
1																		

Redwood Unit	Influenza B													April 2016				
Case	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
									AV									
									⇩									
10									-									
9									-									
8									-									
7									-									
6					+C				-									
5					⇩													
4					⇩													
3 (roommate)					⇩													
2				RSV														
1																		

Color Key
RSV
Unlikely
Negative
Presumed
Proven

Missed Opportunity

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

- Thur 4/14/2016 – Influenza B (Redwood Unit)
- Thur 4/21/2016 – Influenza A (Evergreen Unit)

Time From Index B (Redwood) Case Symptoms to Outbreak Declaration – 6 days
Time From Index A (Evergreen) Case Symptoms to Outbreak Declaration – 0 days [2 PM]
Time From Outbreak Declaration to Prophylactic Antiviral Start B – 9.5 hours [10:30 AM to 8 PM]
Time From Outbreak Declaration to Prophylactic Antiviral Start A – 6 hours [2PM to 8 PM]

Tamiflu Started Redwood = 4/20 8 PM
Tamiflu Started Evergreen = 4/21 8 PM

Last New Case on Redwood = 4/21
Last New Case on Evergreen = 4/22 (11-7 shift)

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 = 9
Ruled Out Cases on Redwood = 6
Ruled Out Cases on Evergreen = 5

Case Fatalities – 0
Case Hospitalizations – 0
Case ED Visits – 0

GI Outbreaks

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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

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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.

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

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

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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

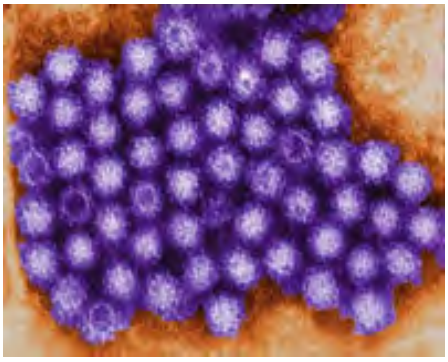

Photo Courtesy: Charles D. Humphrey, CDC

- Marshall J, et cal. Int J Environ Res Public Health 2011;8:1141-1149
- Kumazaki M, Usuku S BMC ID 2016;16:643

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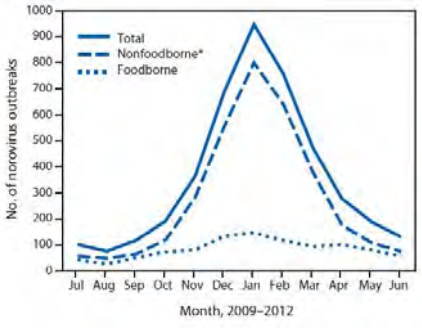
Norovirus Outbreaks

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

AGE = Acute Gastroenteritis



*Clark B, McKendrick M. Curr Opin Infect Dis 2004;17:461-469.
*Frankhauser RL et al. J Infect Dis 2002;186:1-7.
*Widdowson MA, et al. Public Health Reports 2011;126:251-8.
*Green KY, et al. J Infect Dis 2002;185:136-46.

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

	%
Restaurant	1
Catering or Banquet Facility	0.3
Private Residence	0.1
School	6
LTC Facility	**80**
Hospital	4
Day Care	2
Other	5

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

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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

Trivedi TK, et al. JAMA 2012;308(16):1668-1675.

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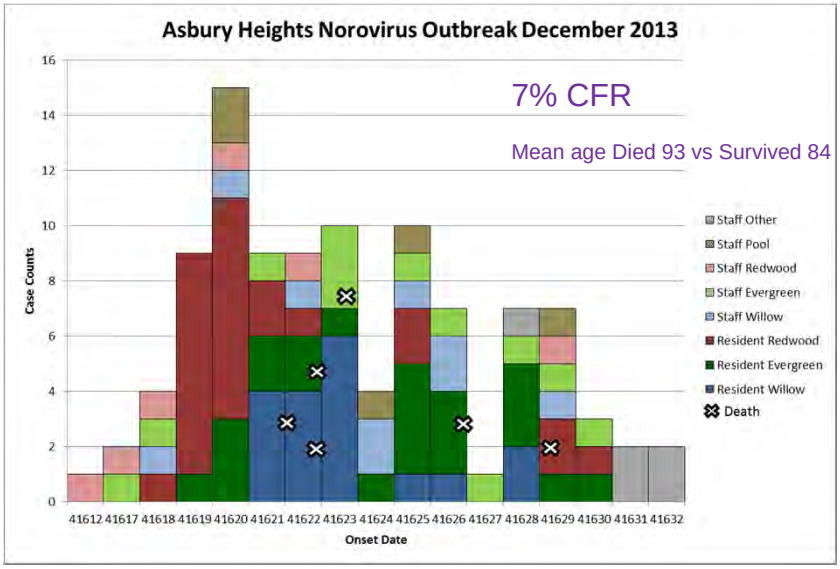
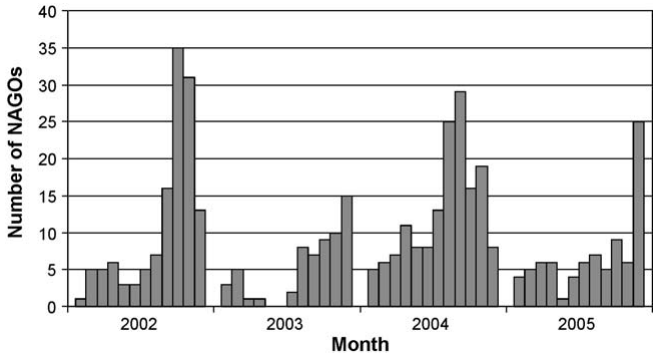


G1.3 CDC Confirmed Outbreak – Nace Unpublished Data

Incidence of Norovirus Outbreaks per month



Bruggink LD, Marshall JA. Int J Infectious Diseases 2009;13:e125-6.

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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.

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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

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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*

Patel MM, et cal. J clin Virol 2009;44:1-8.

Lopman BA, et al. Emerg Infect Dis 2003;9:71-7.

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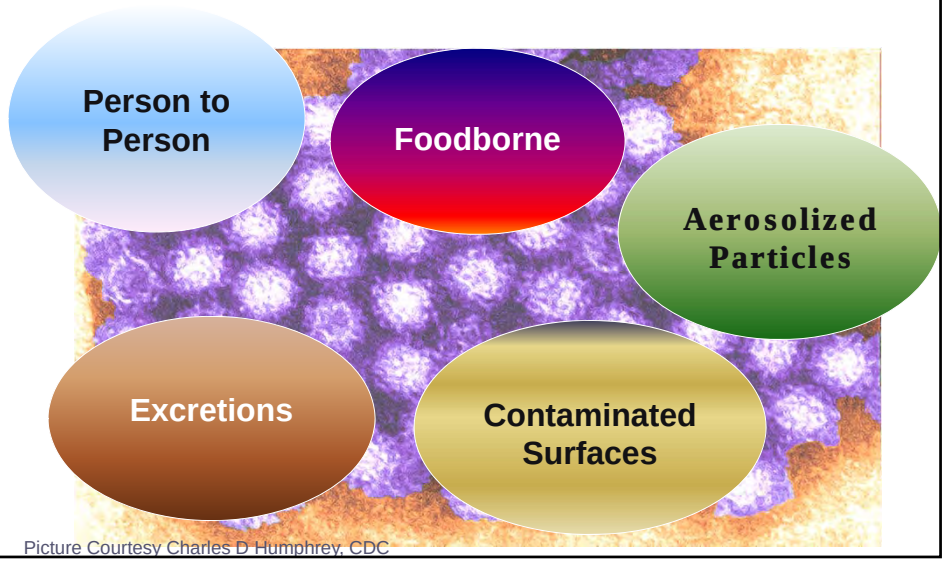
How is Norovirus Spread?



Picture Courtesy Charles D Humphrey, CDC

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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

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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**

- *MMWR 2009;8(25):694-8.*
- *Rodriguez EM, et al. Infect Control Hosp Epidemiol 1996;17:587-592.*
- *Sabria A, et al. J Clin Virol 2016;82:119-125.*

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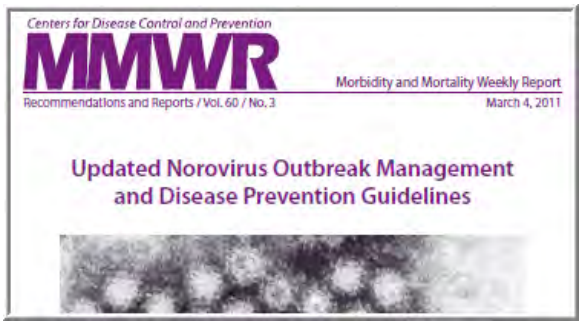
Other Key Outbreak Management Resources

CDC Updated Norovirus Outbreak Management and Disease Prevention Guidelines , 2011

(http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6003a1.htm?s_cid=rr6003a1_e)



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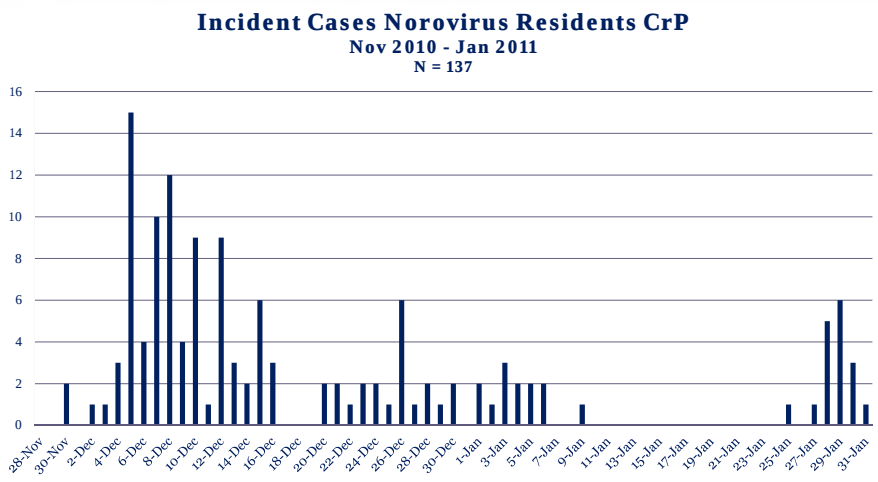

Extended outbreaks raise question of adherence with IC precautions March 2012

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Aerosol Risk with Toileting

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

Masking important during cleanup

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Think Twice About Portable Outhouses

(Bedside Commodes)

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

Must clean & disinfect after <u>each</u> use!*

*https://www.cdc.gov/hicpac/Disinfection_Sterilization/3_4surfaceDisinfection.html

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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

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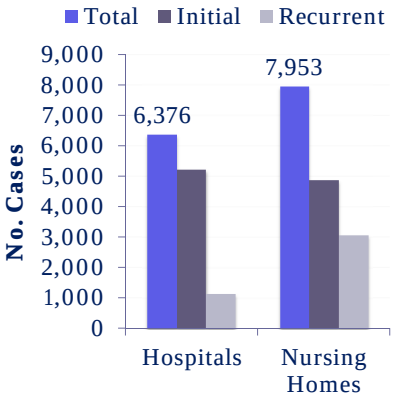
Clostridium Difficile

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



Campbell et al. Infect Control Hosp Epidemiol 2009; 30(6): 526-33

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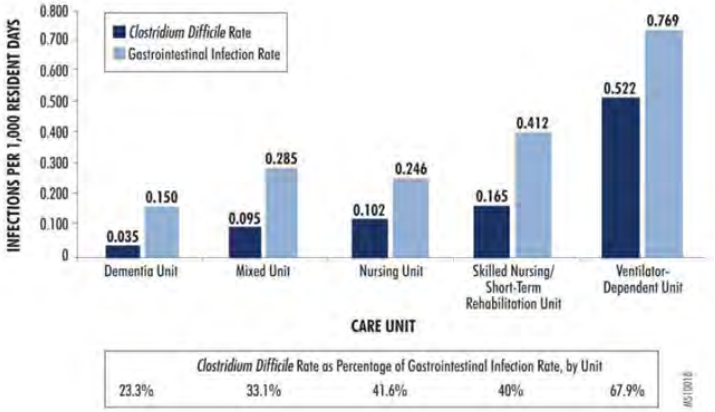
PA PSA Data – Nursing Homes

Pennsylvania Nursing Home Gastrointestinal Infection and Associated *Clostridium Difficile* Rates by Unit, July 1 through September 30, 2009



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

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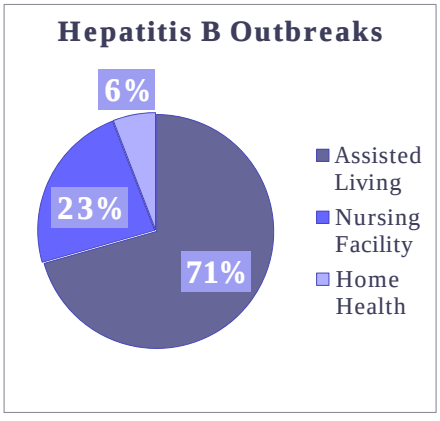
U.S. Hepatitis B Outbreaks 2008-2014

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



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

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DEPARTMENT OF HEALTH & HUMAN SERVICES
Centers for Medicare & Medicaid Services
7500 Security Boulevard, Mail Stop S2-12-25
Baltimore, Maryland 21244-1850

CMS — CENTERS for MEDICARE & MEDICAID SERVICES

Center for Medicaid, CHIP, and Survey & Certification/Survey & Certification Group

Ref: S&C: 10-28-NH

DATE: **August 27, 2010**

TO: State Survey Agency Directors

FROM: Director
Survey and Certification Group

SUBJECT: **Point of Care Devices and Infection Control in Nursing Homes**

Memorandum Summary

Infection Control Standards for Nursing Homes at §483.65 - F441 –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.

https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertificationGenInfo/downloads/SCLetter10_28.pdf

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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 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 no 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

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Skin Related Outbreaks

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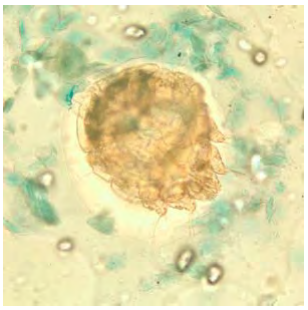
Skin

- 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



Rao GA, Churilla R, Scott S, Nace DA. J Am Geriatr Soc 2003;51(4):S54.

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Outbreak	Residents	Staff	Treatment	Prophylaxis
July 2001	26 (DALF)	2	Permethrin x 2	No
March 2002	4 (3 DALF, 1NF)	0	Ivermectin & Permethrin x 2	Ivermectin to Residents / Staff DALF Only
July 2002	7	0	Ivermectin & Permethrin x 2	Ivermectin to Residents / Staff Both Units

DALF = Dementia ALF NF = Nursing Facility

Cost of medications for all outbreaks = $5272

Rao GA, Churilla R, Scott S, Nace DA. J Am Geriatr Soc 2003;51(4):S54.

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

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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

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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

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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