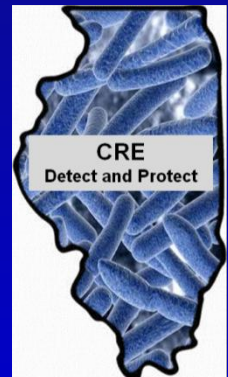


Long Term Care Infection Prevention Starts at the Top

Webinar for Long Term Care Leaders, Quality Directors, and Administrators
Hosted by the Illinois Department of Public Health, Division of Patient Safety and Quality

May 15, 2014



Featured Presenter



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Senior Partner

Metro Infectious Disease Consultants, L.L.C.

The opinions, viewpoints, and content presented in this webinar may not represent the position of the Illinois Department of Public Health

Long Term Care in the ERA of Antibiotic Resistance

Vishnu Chundi M.D.

Metro Infectious Disease Consultants



Intentions

Plans are only good intentions unless they immediately degenerate into hard work. **Peter Drucker**

Hell isn't merely paved with good intentions; it's walled and roofed with them. Yes, and furnished too. **Aldous Huxley**



Metro Infectious Diseases Consultants

70 plus Infectious Disease doctors- Private practice

Provide care in about 100 hospitals in Illinois,
Michigan, and Indiana

Have been involved in LTAC care for more than 15
years

Provide infection control and attempting to provide
antibiotic stewardship to over 30 nursing homes

What is my Role

Consultative practice in Infectious Disease

Not on the payroll of any Hospitals, Pharmaceutical company or other agency.

Over 15 years of experience in Acute care, Long term acute care and 3 years in long term care facilities

Provide infection control guidance to large nursing home groups

Outline

- Issues in LTCF
- Why should we care?
- Drivers for antimicrobial use
- Inter-relations between Acute Care/LTAC/LTCF
- Possible Interventions

BACKGROUND

- US population age>85 is expected to double by 2030
- 1 of every 4 persons who reach age 65 will likely spend part of life in LTCF
- 1.5 million persons in US reside in LTCFs
 - -More than acute care hospitals in the US

INTENSITY OF ILLNESS

2.6-14 Infx/1000 Resident-days

63% Deaths – Infection Related

25-50 % ACH Transfers Secondary to Infx

WHY INFECTION IN LTCF?

SUSCEPTIBLE HOST:

- Underlying illnesses
- Impaired immune response
- Medications affecting resistance to infection
- Impaired mental status
- Incontinence
- Indwelling urinary catheters
- Central or PICC catheters

Screening

- Illinois: Mandatory MRSA screening for all ICU patients
- REALM (Regional Evaluation of a Legislative Mandate) Study, CDC sponsored to evaluate MRSA rates following the legislative mandate
- CRE 2001 1% of K. pneumonia strains reported to CDC were CRE
- 2007 CRE comes to Chicago
- 2008 8% of K. pneumonia strains reported to CDC were CRE

LTAC Cycling- The Golden Triangle

- Transfer of patients between Acute care hospital to LTAC and Nursing home and back to acute care
- Resulting in inter-facility and intra-facility spread of MDRO
- These patients per guidelines receive the broadest spectrum antimicrobial therapy as they are likely to harbor MDRO's



THE CHALLENGE

Invasion – of MDRO'S, sicker patients

Intrusion – Regulatory Concerns

- Infections in the Media

Paradigm Shift– ACH → LTACH → LTCF

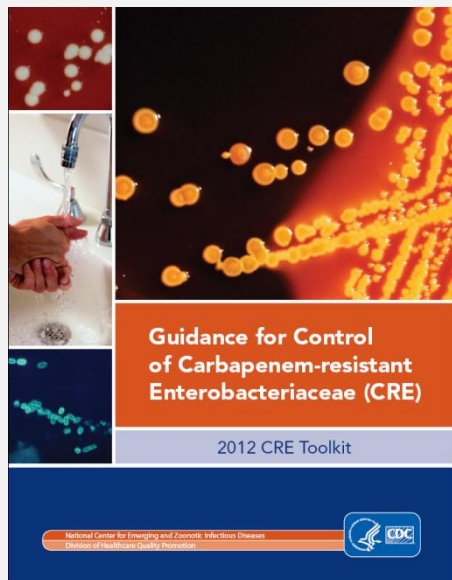
THE EXPECTATIONS

- Provide more care with less Money
- Prevent transfer of MDROs to other patients
- Identify ALL patients colonized by MDROs on admission to LTCF.....without transfer data
- Alert the receiving institution of any potential isolation concern – even if you don't know the patient has an MDRO

CRE Detect & Protect Campaign



Carbapenem
Resistant
Enterobacteriaceae



eXtensively
Drug
Resistant
Organism
Registry



Mandatory reporting began November
1, 2013

https://www.xdro.org/img/MEMO_XDRO%20Registry_090413_Final.pdf

www.xdro.org

XDRO registry

Novel public health infection control tool created as partnership between

- Chicago CDC Prevention Epicenter
- Illinois Department of Public Health
- Medical Research Analytics and Informatics Alliance (MRAIA)

The XDRO registry addresses 2 critical gaps

Gap	XDRO registry
1. Need improved inter-facility communication	Allows for CRE information exchange
2. Need improved detection	Stores CRE surveillance data

XDRO registry: intended participants

All Illinois hospitals (including LTACHs)

All Illinois intermediate and long-term care facilities

All Illinois laboratories



Long Term Care Facilities

Long-term care facilities (LTCFs) may be defined as institutions, such as nursing homes and skilled nursing facilities that provide healthcare to people who are unable to manage independently in the community

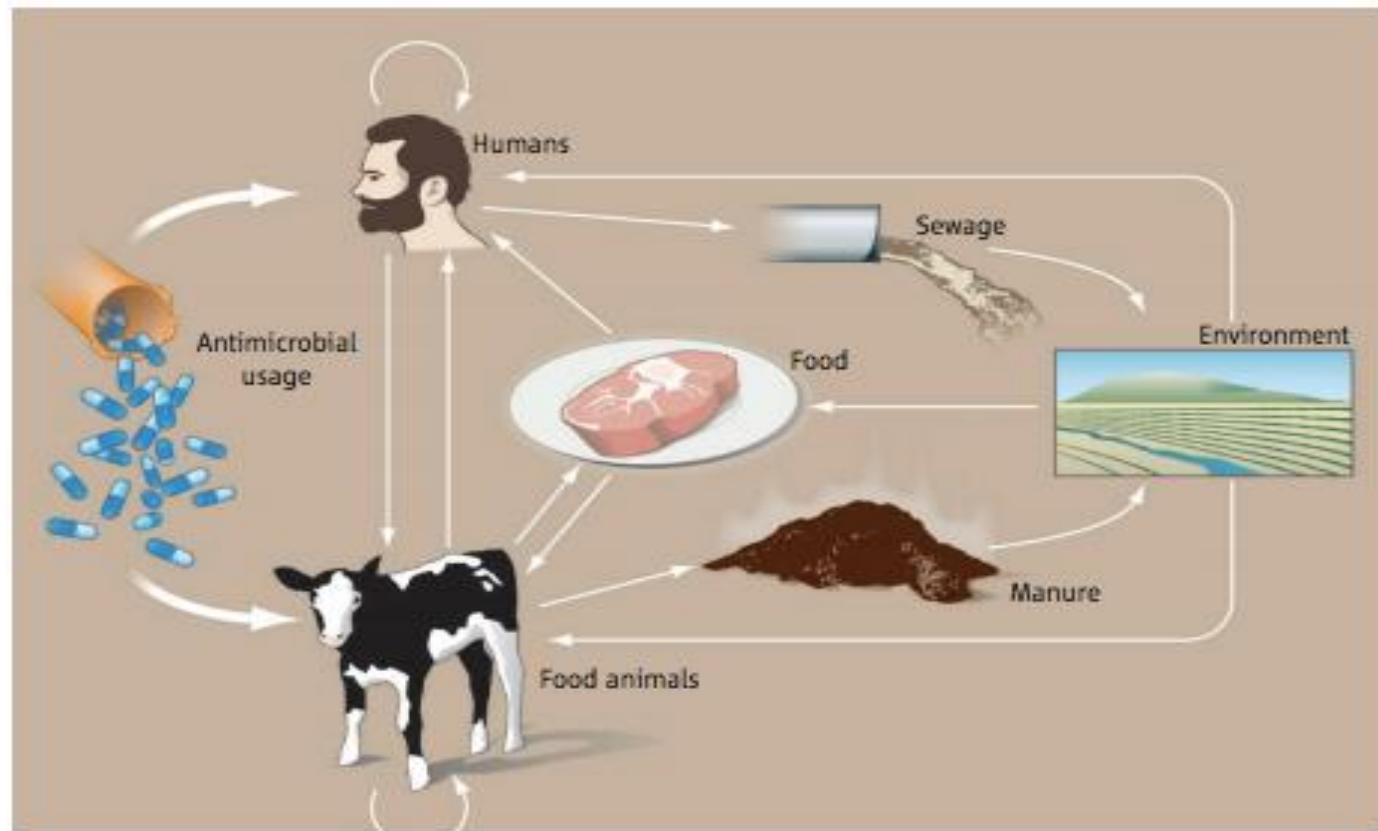
Renewed Respect for Role of the Environment: Who's Been in the Room Before or With You?

- Huang SS (2006); Drees M (2008); Zhou Q (2008); Moore C (2008); Hamel M (2010)
 - All documented increased risk of acquisition of VRE, MRSA, &/or CDI when admitted to room where prior occupant had one of these or if in multi-occupancy room
 - So what's the answer?



"The patient in the next bed is highly infectious. Thank God for these curtains."

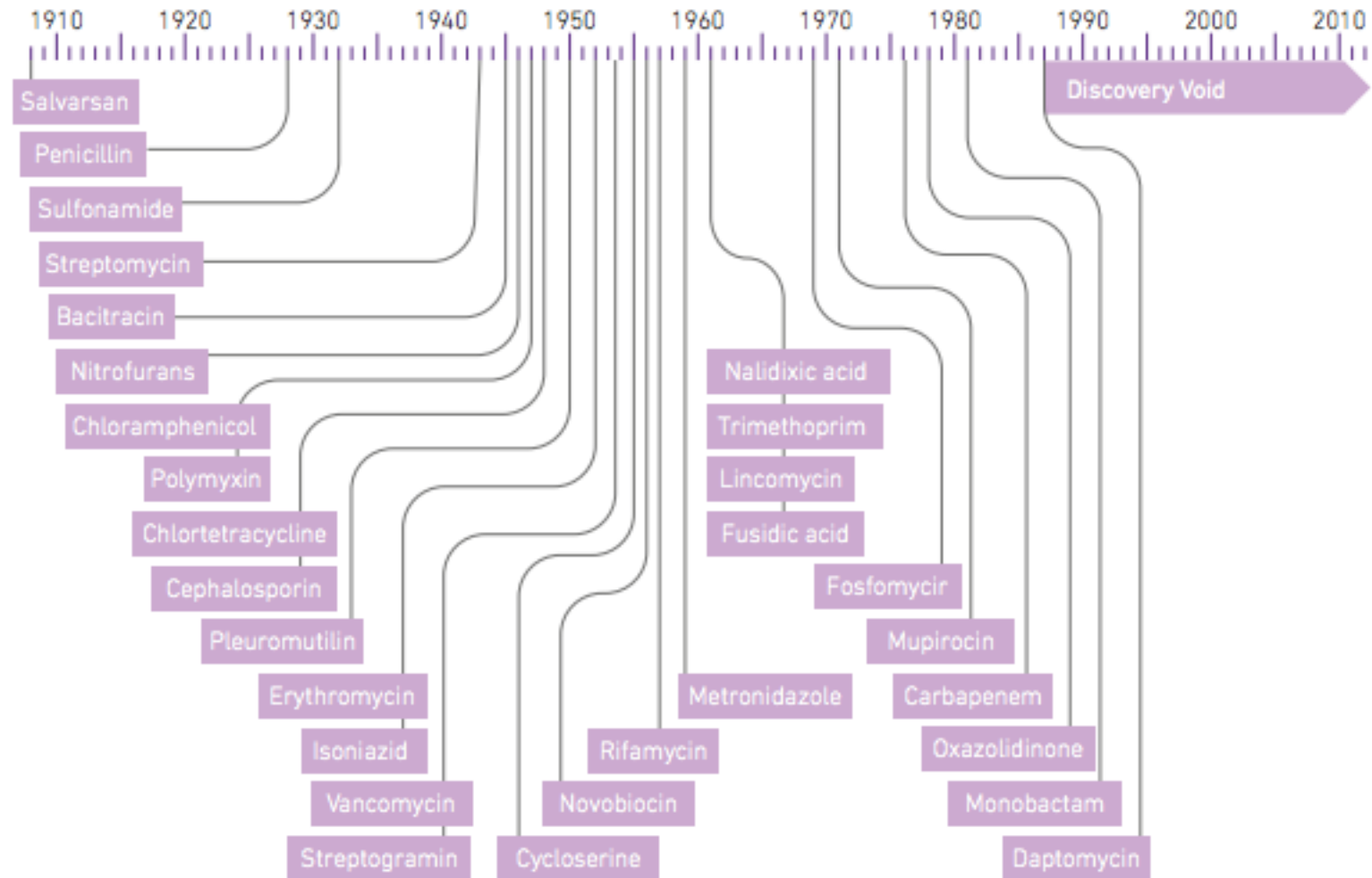
Pathways to Resistance



Pathways to antimicrobial resistance. Antimicrobial resistance may spread through multiple direct and indirect pathways to humans and food animals (arrows). The relative strength of these pathways will differ greatly not only for different bacteria and different kinds of resistance but also in different locations and environments. Mather *et al.*'s study contributes to the development of a quantitative understanding of this complex process.

Figure 1 Dates of discovery of distinct classes of antibacterial drugs

Illustration of the "discovery void." Dates indicated are those of reported initial discovery or patent.



Adapted from Silver 2011 (1) with permission of the American Society of Microbiology Journals Department.

Use and Misuse



On the drip. In China, antibiotics are commonly taken intravenously for colds and other maladies that are often treated less aggressively in the west.

Worldwide Concerns

REVIEW ARTICLE

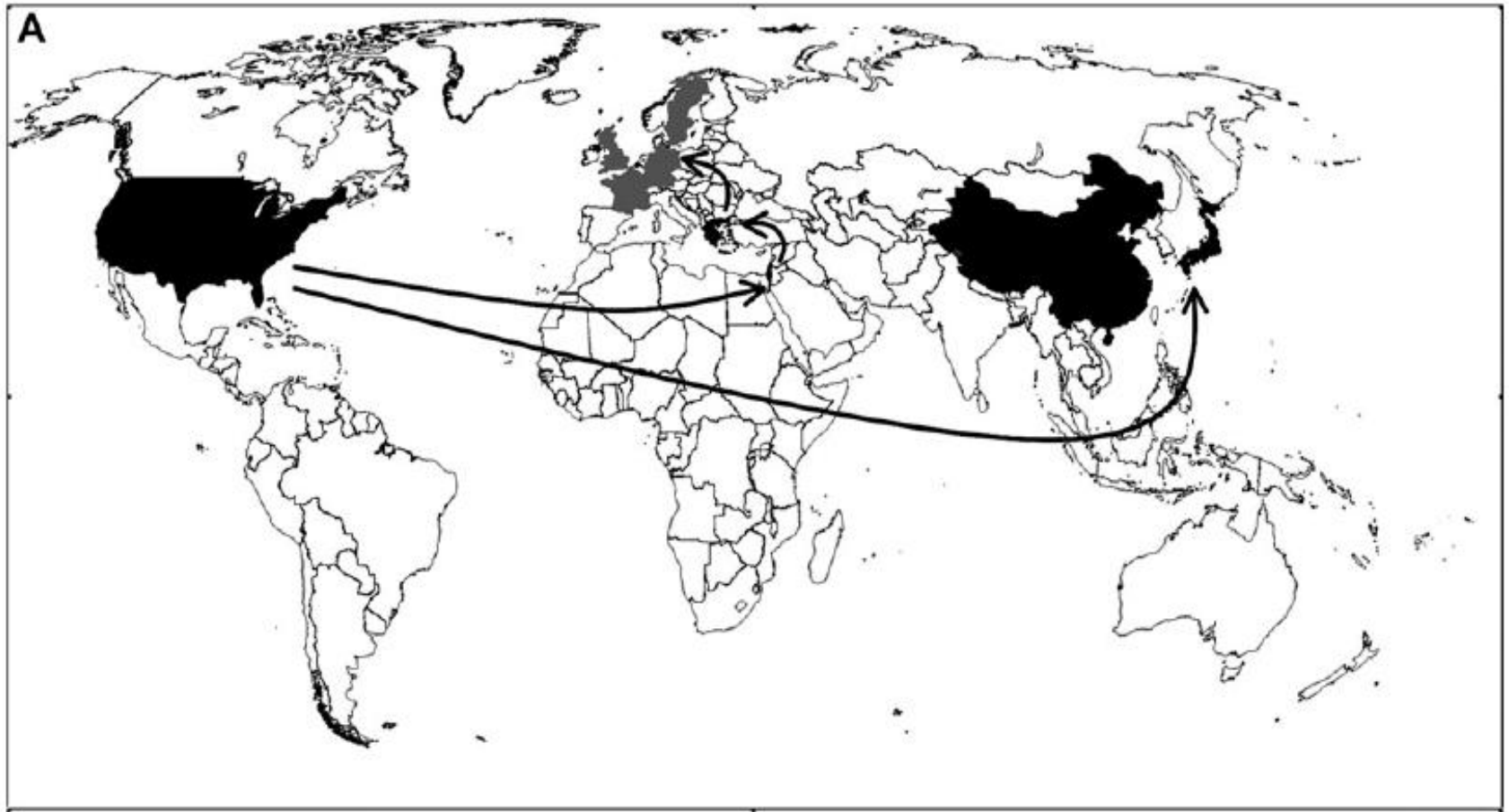
Country-to-Country Transfer of Patients and the Risk of Multi-Resistant Bacterial Infection

Benjamin A. Rogers,¹ Zohreh Aminzadeh,^{1,2} Yoshiro Hayashi,^{1,3} and David L. Paterson¹

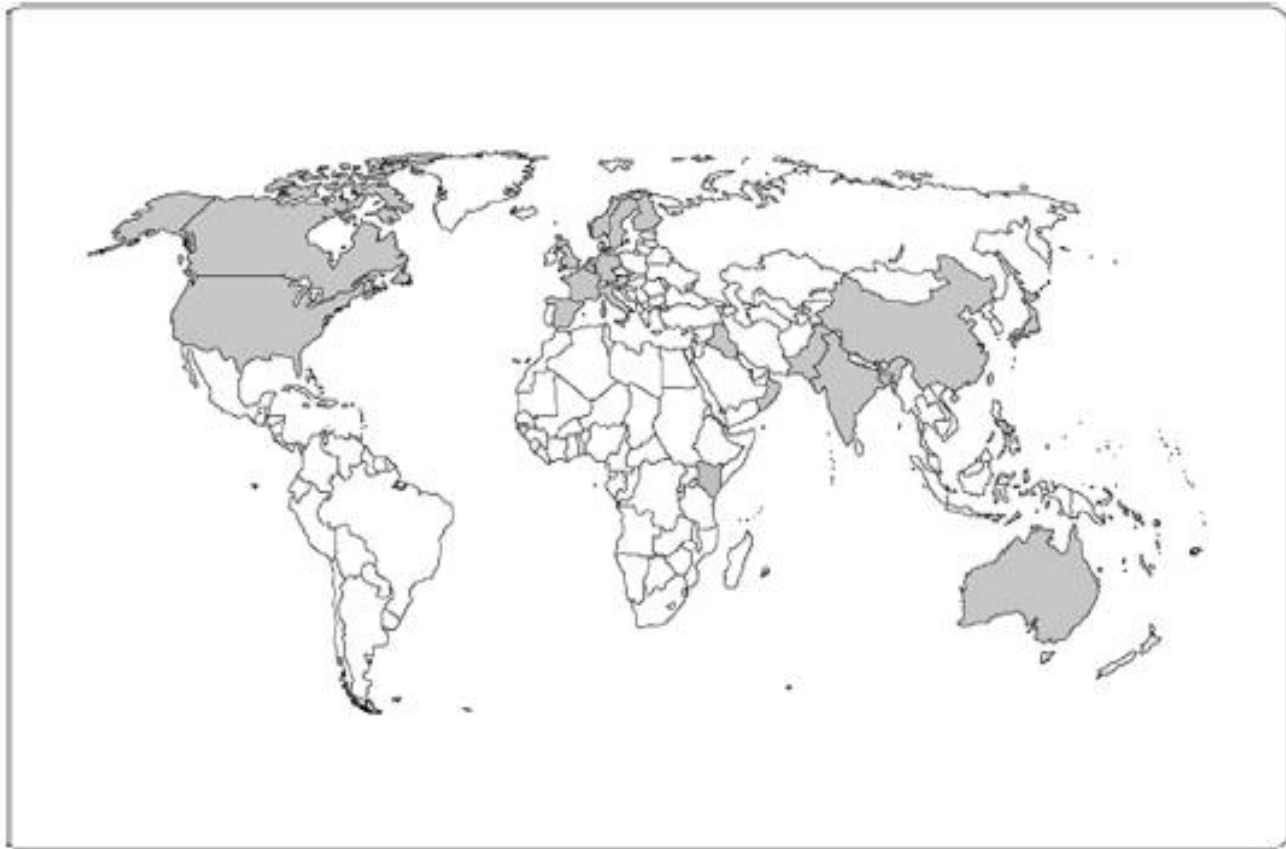
¹University of Queensland Centre for Clinical Research, The University of Queensland, Herston, Brisbane, Australia; ²Infectious Diseases Research Centre, Shaheed Beheshti University M. C., Tehran, Iran; ³Department of Intensive Care Medicine, the Royal Brisbane & Women's Hospital, Herston, Brisbane, Australia

Management of patients with a history of healthcare contact in multiple countries is now a reality for many clinicians. Leisure tourism, the burgeoning industry of medical tourism, military conflict, natural disasters, and changing patterns of human migration may all contribute to this emerging epidemiological trend. Such individuals may be both vectors and victims of healthcare-associated infection with multiresistant bacteria. Current literature describes intercountry transfer of multiresistant *Acinetobacter* spp and *Klebsiella pneumoniae* (including *Klebsiella pneumoniae* carbapenemase- and New Delhi metallo- β -lactamase-producing strains), methicillin-resistant *Staphylococcus aureus*, vancomycin-resistant enterococci, and hypervirulent *Clostridium difficile*. Introduction of such organisms to new locations has led to their dissemination within hospitals. Healthcare institutions should have sound infection prevention strategies to mitigate the risk of dissemination of multiresistant organisms from patients who have been admitted to hospitals in other countries. Clinicians may also need to individualize empiric prescribing patterns to reflect the risk of multiresistant organisms in these patients.

CRE Spread



NDM-1 Feb 2011



NDM-1 Spread



THE PERFECT INFECTIOUS STORM

MDROs

CROWDING

I'm in
isolation

CATHETERS

COST
CONSTRAINTS

Who Owns Nursing Homes?

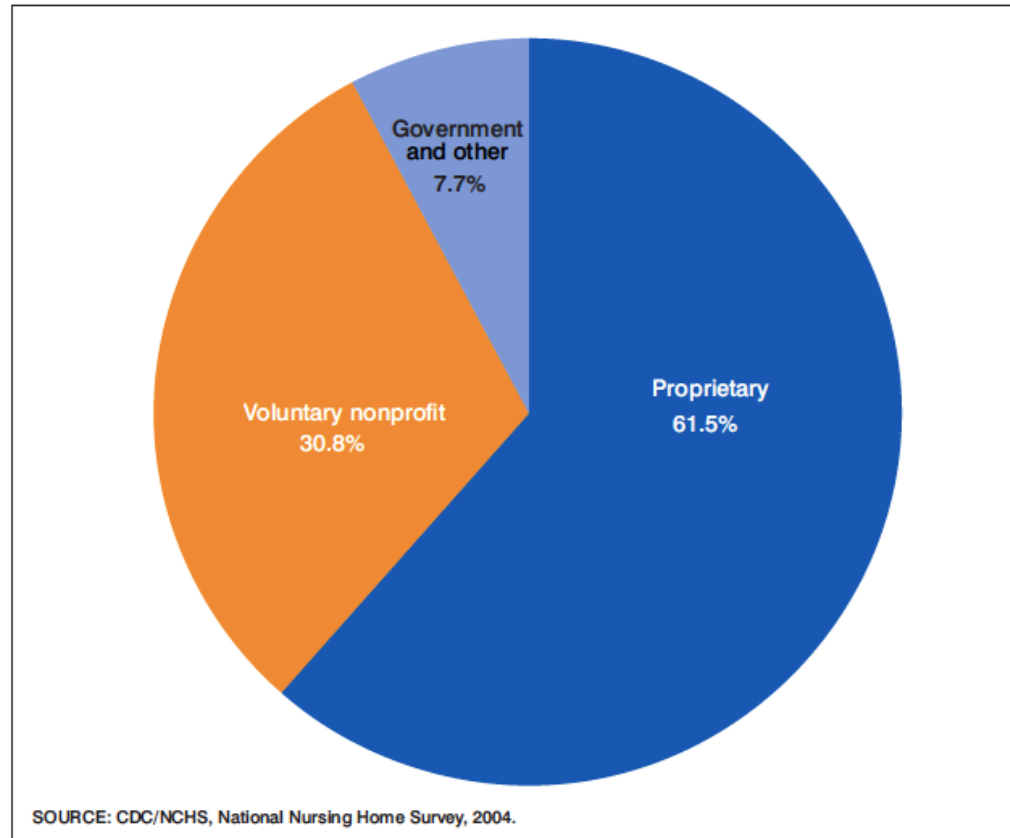


Figure 1. Percent distribution of nursing homes, according to type of ownership: United States, 2004

Who Pays?

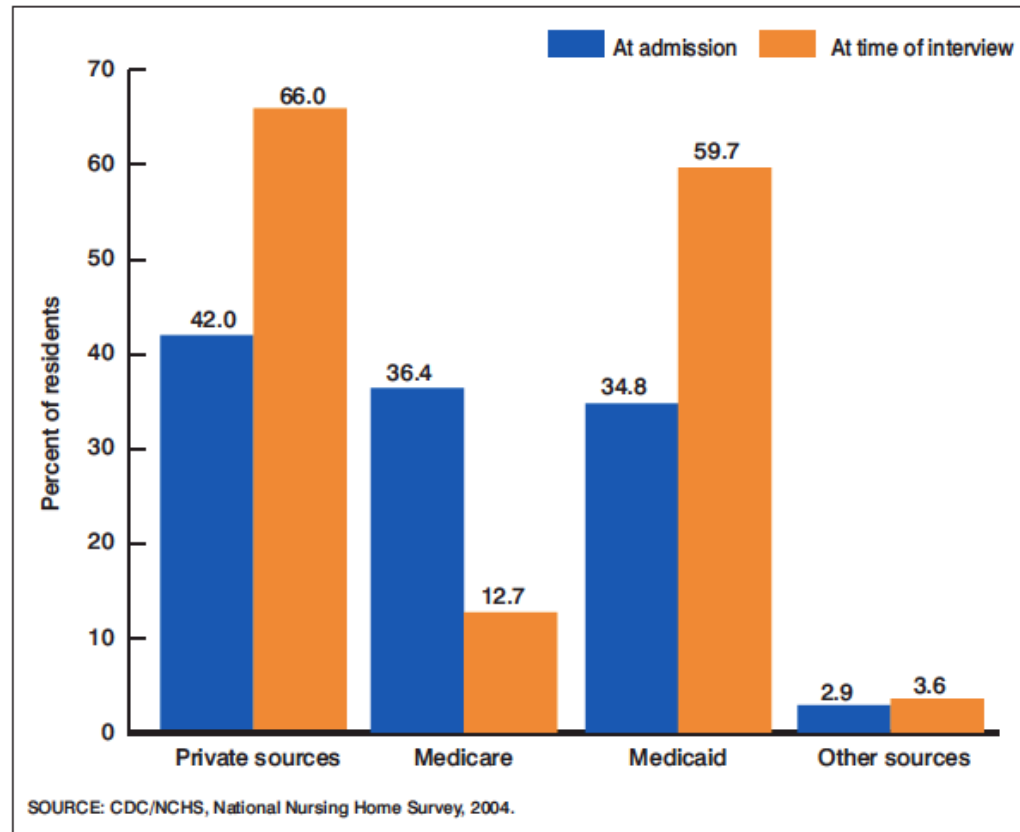


Figure 3. Percentage of nursing home residents, by sources of payment at admission and at time of interview: United States, 2004

How Independent are the residents?

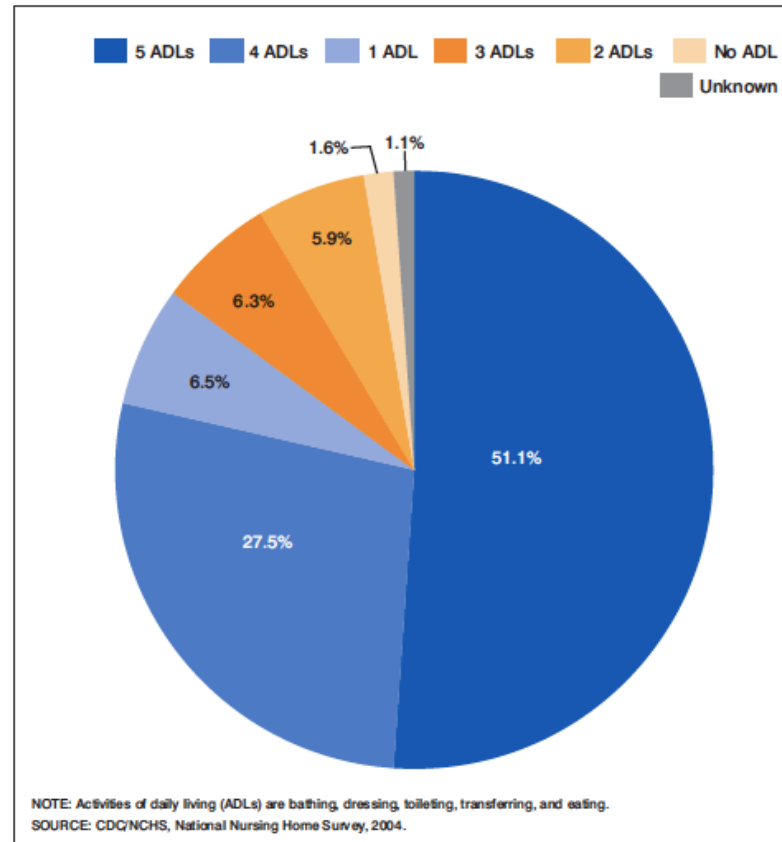
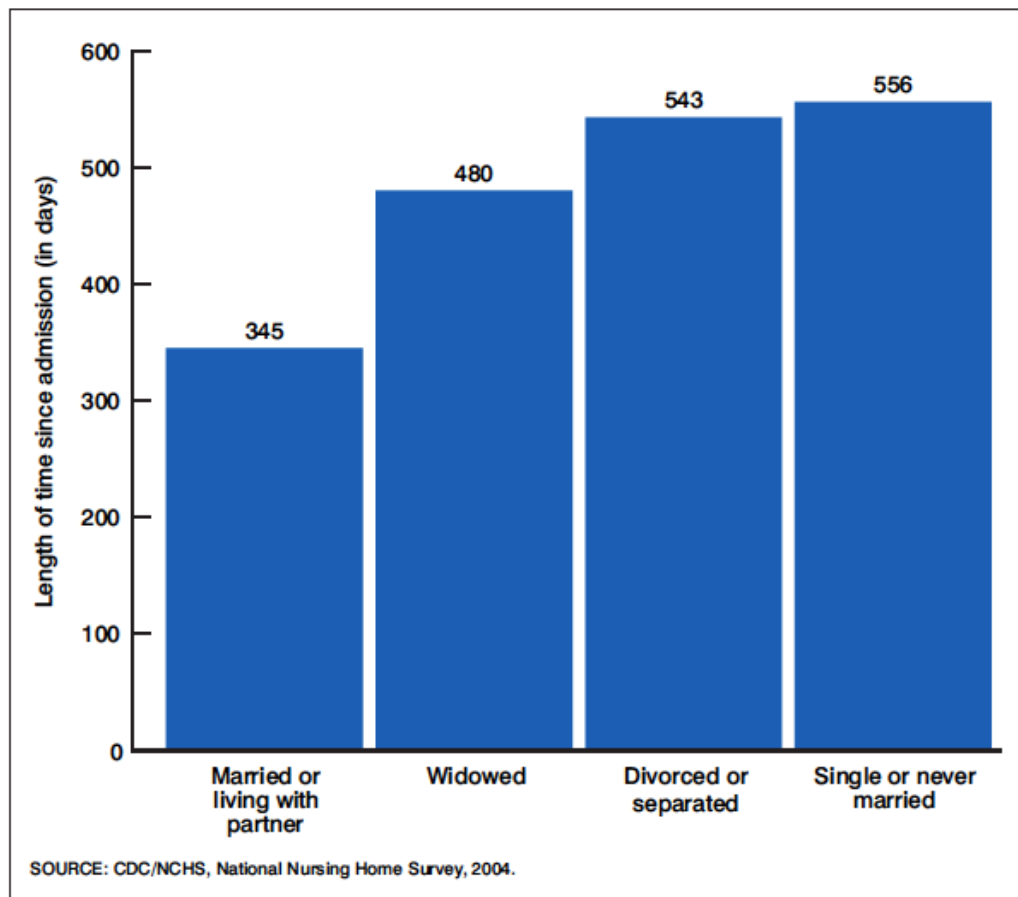


Figure 4. Percentage of nursing home residents, by number of activities of daily living dependencies: United States, 2004

Length of stay- Only the lonely



You have to be brave to get old

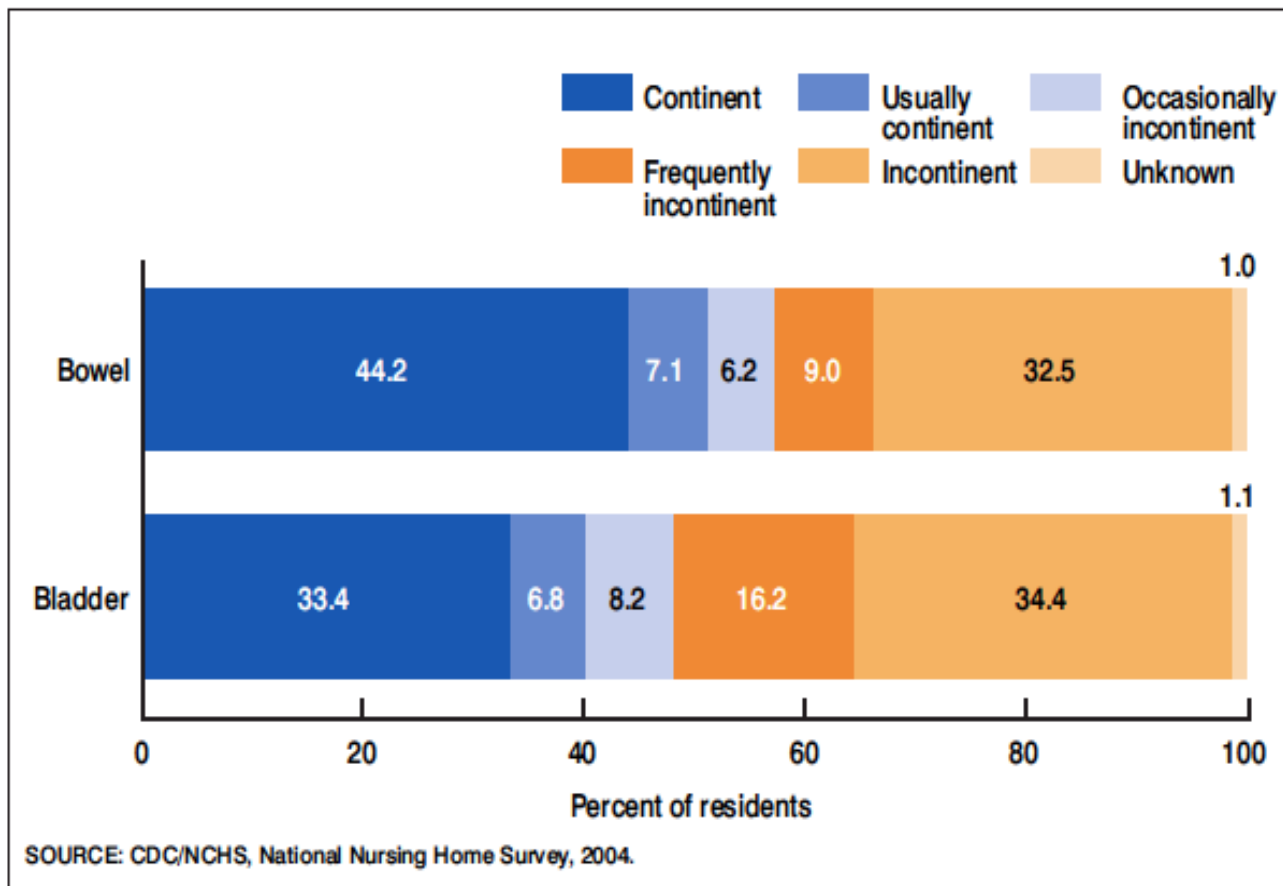


Figure 6. Percent distribution of nursing home residents, according to continence levels in bowel and bladder: United States, 2004

Co morbid Illness in Nursing Homes

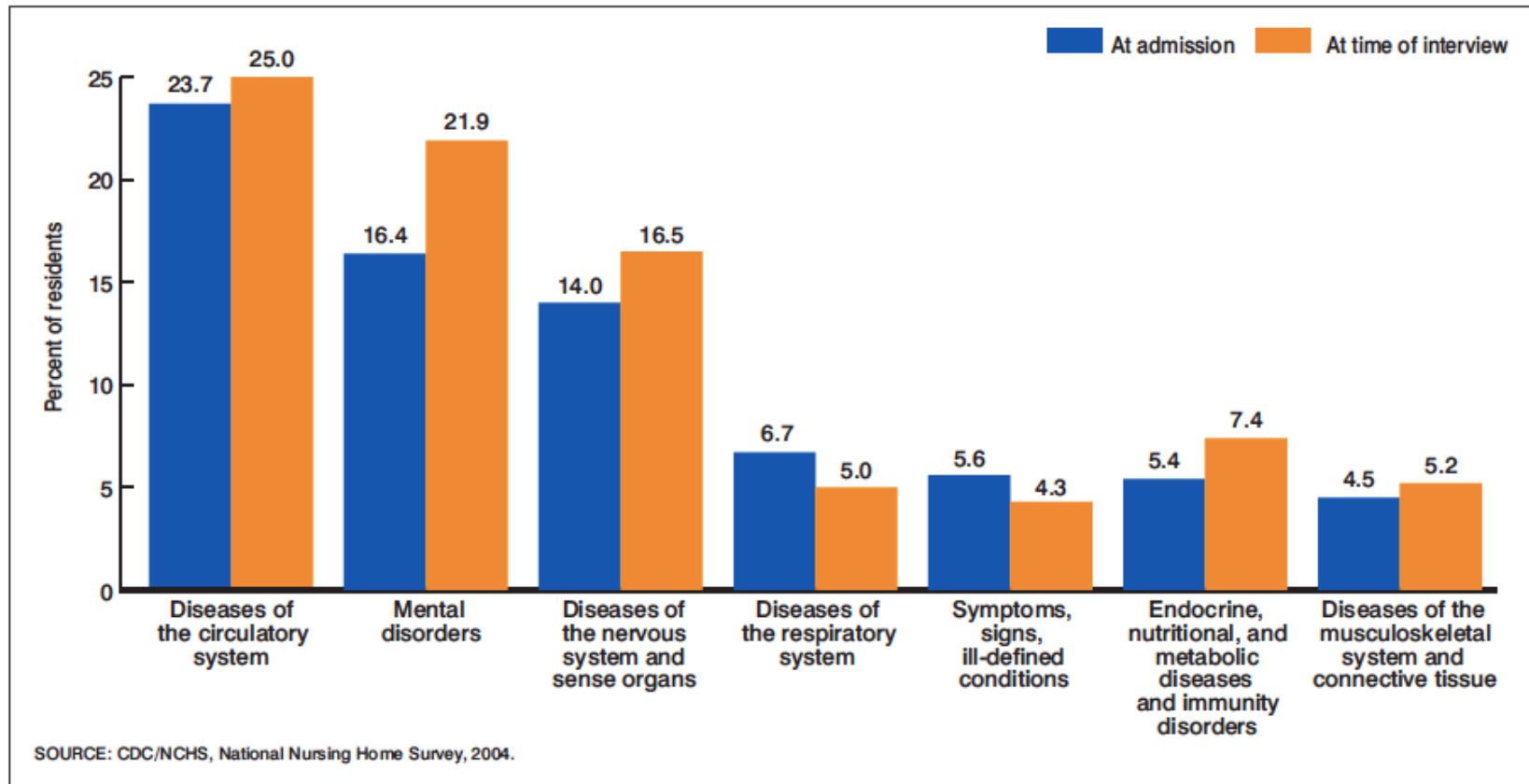


Figure 7. Percentage of nursing home residents, by selected primary diagnoses at admission and at time of interview: United States, 2004

Percentage of Hospital visits

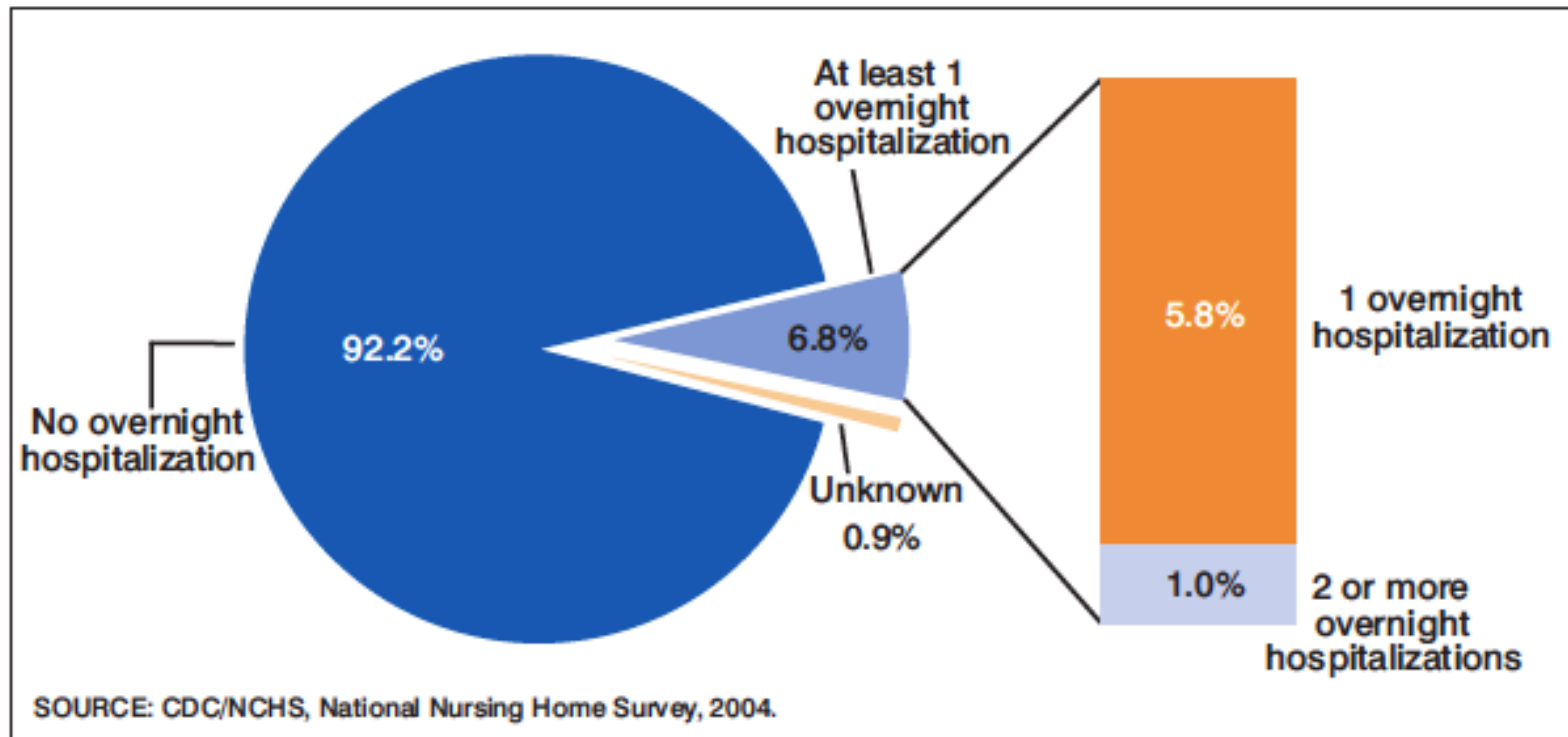


Figure 8. Percent distribution of nursing home residents, according to number of hospital admissions with an overnight stay in the 90 days before the facility interview: United States, 2004

ED Visits

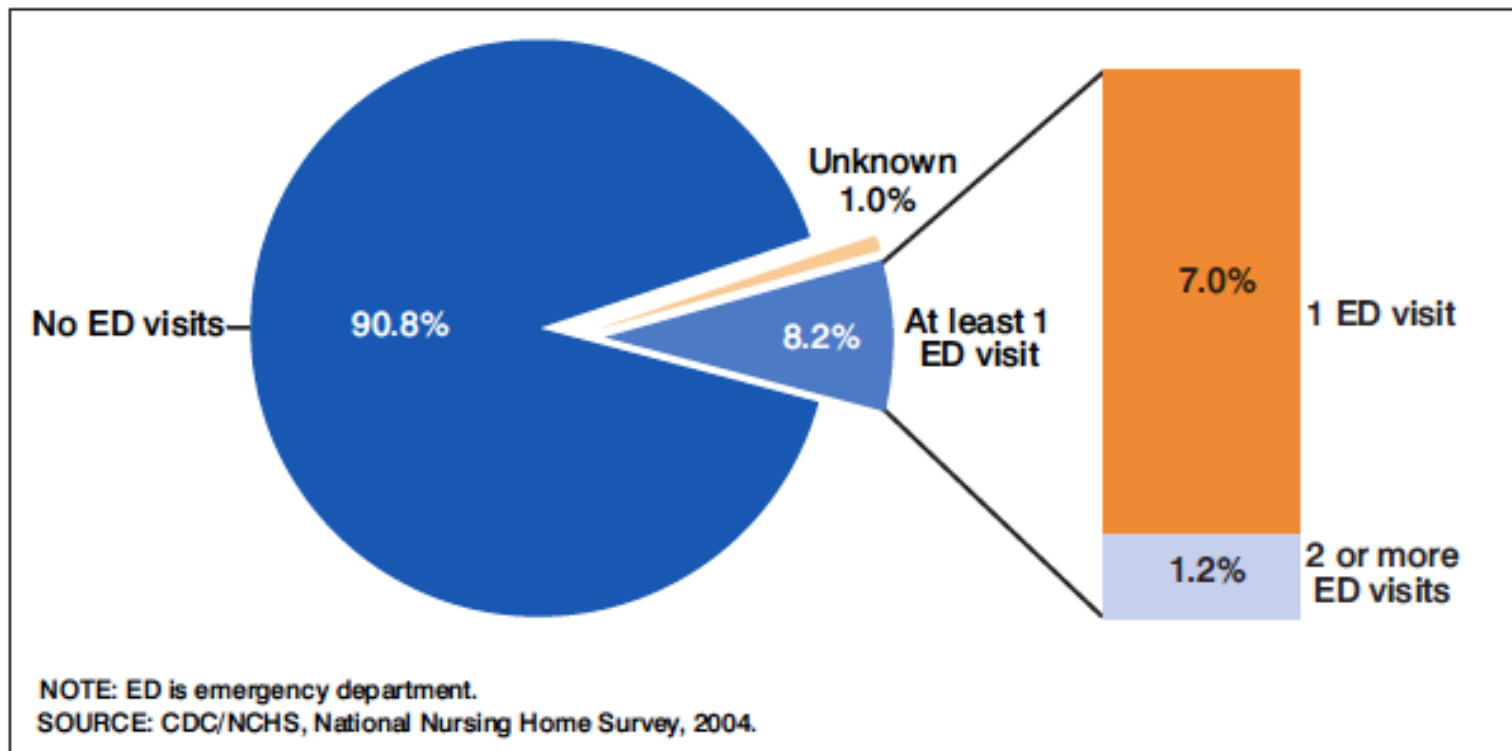


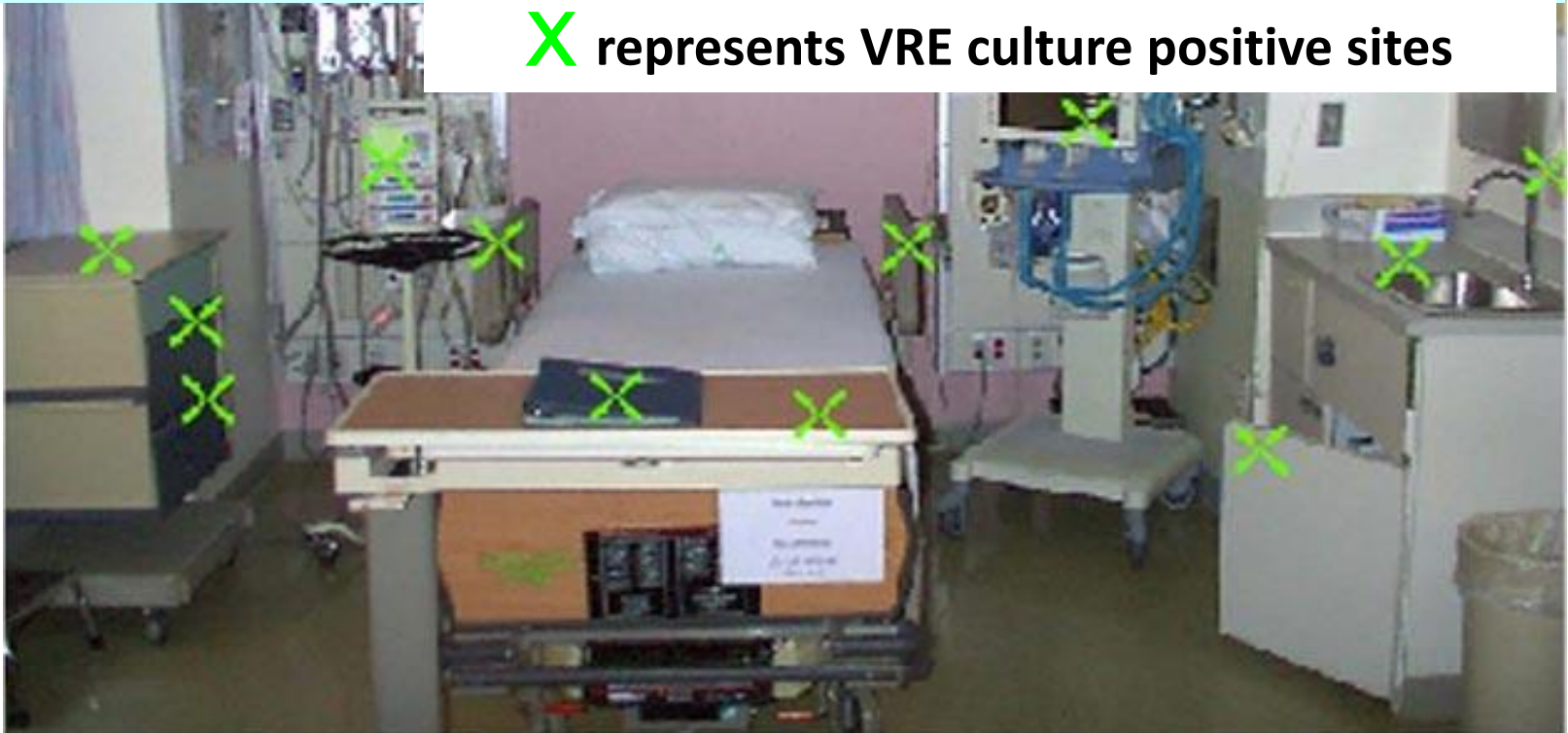
Figure 9. Percent distribution of nursing home residents, according to number of hospital emergency department visits in the 90 days before the facility interview: United States, 2004

Survival of Pathogens On Environmental Surfaces

Pathogen	Survival
C. difficile	>5 months
Staphylococci	7 months
VRE	4 months
Acinetobacter	5 months
Norovirus	3 weeks
Adenovirus	3 months
Rotavirus	3 months
SARS, HIV etc.	Days to weeks

The Inanimate Environment Can Facilitate Transmission

X represents VRE culture positive sites



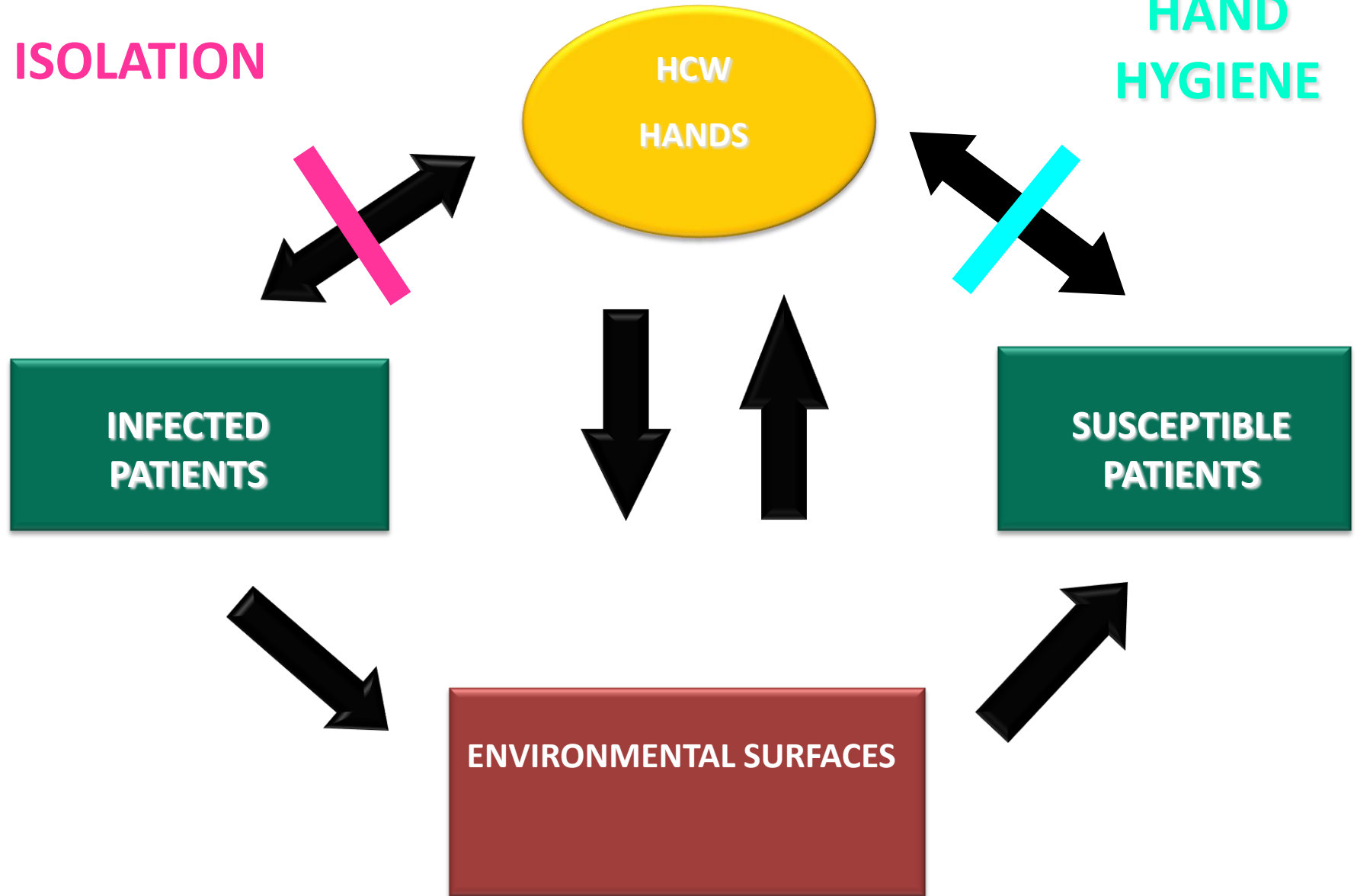
~ Contaminated surfaces increase cross-transmission ~

Duckro AN, et al. Transfer of vancomycin-resistant enterococci via health care worker hands. Arch Intern Med 2005;165:302-7.

The Infection Problem

ISOLATION

**HAND
HYGIENE**



Patients and Docs

- Some in need of antibiotic interventions
- Some ignore isolation signs
- Some can't distinguish colonization from infection
- Some are biologic terrorists whose weapons are patients colonized with resistant organisms





DRIVERS OF ANTIMICROBIAL USE IN LTCF

THE CHALLENGE

1.5-3.8 million (2000 est.) nosocomial infections occur in LTCF's yearly

Average of 1 infection per resident per year

Acuity of illness of LTCF residents has increased – similar to acute care hospitals

Transitions in Care

Transfer from one facility to another

Not necessary to leave the physical hospital (Sub acute care; Rehabilitation; Outpatient)

Long Term Acute Care (Kindred, RML, etc)

Significant administrative rules that dictate admission criteria

Staffing ratio differences

Rehabilitation issues

Transfer within Facility

Rehabilitation and Sub acute care

Sub Acute care has approximately daily reimbursement of \$400.00 a day. Nursing home care is \$ 205.00 for semi private room

Rehabilitation also has significant restrictions on testing and antimicrobial use

Encourages empiricism

Infection control issue – common areas

Long Term Care Facilities

Nursing Homes

In U.S. 2011- 15,702 nursing homes with 1.7 million residents. Occupancy rate of 86%

In Illinois- 781 nursing homes with 100,346 residents
<http://www.cdc.gov/nchs/data/hus/hus12.pdf#109>

In Illinois MIDC provides ID consultative services for 36 nursing homes focusing on infection control.

Most consultations are for patients with multiple comorbidities who would have stayed at an LTAC or acute care hospital in past.

Long Term Care Issues

Cohorting of patients- Beds and space

Infection control associated costs

Nursing homes are the residents homes- Rights, dignity

Antibiotic costs- Byzantine rules based on insurance
carriage

Reimburse physician for 1 visit month- even with sicker
patients

Hand Off/ Fumble

Fumbling/ Bumbling
Issues at Transfer

Poor Hand Offs

Complex patients

Overly complex charts
with frequent
contradiction

Electronic Medical Record

Inconsistent use of Dose/
Duration/ Start with
stop dates



Cultures

Frequent misuse of culture data or lack of data

Colonization and Infection-

IDSA diabetic foot guidelines- We recommend sending a specimen for culture that is from deep tissue, obtained by biopsy or curettage after the wound has been cleansed and debrided. We suggest avoiding swab specimens, especially of inadequately debrided wounds, as they provide less accurate results (strong, moderate).

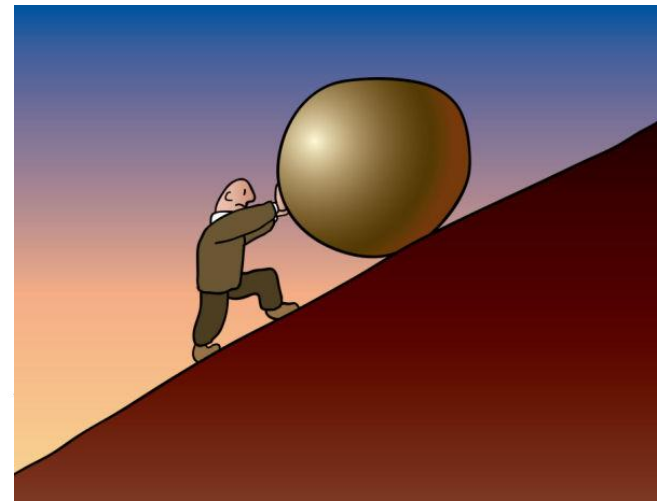
Studies

PubMed – Antimicrobial stewardship in term care – 17 citations of which 10 are relevant

Jump RL et al. V.A LTCF 160 beds Cleveland report a decrease in antimicrobial usage by 30% and a statistically significant decrease in C. difficile rates in post intervention period. On site ID consultation

Sisyphean Task

- Convincing MD's that Antimicrobials are Misused
- Educating MD's about Antimicrobial Resistance
- Questioning MD's about Indications for Antimicrobial Use
- Getting MD's to conform to Documentation Standards
- Instruct MD's on distinguishing Colonization from Infection
- Not place emphasis on cost savings



ANTIBIOTIC STEWARDSHIP

Some studies report that 25-75% of antibiotics were prescribed inappropriately.

Education on judicious antibiotic use, avoiding culture of colonized body fluids & surfaces, and development of antibiotic guidelines have improved LTCF antibiotic usage in several studies.

ANTIBIOTIC STEWARDSHIP

Antibiotic resistant pathogens i.e. MDRO are strongly associated with antibiotic use.

Antibiotics are used in approximately 7 – 10% of residents in LTCF. During a 1-year period, the chance of receiving at least 1 course of antibiotics is >50%.

A common problem is the failure to distinguish INFECTION from COLONIZATION. Antibiotics may be overprescribed for colonization. Frequently, antibiotics are prescribed over the phone in this setting. Example: treating a positive urine or sputum culture over the phone, without clinical correlation.



Our Experience

To date we have been actively engaged with over 30 long term care facilities in combination of antibiotic stewardship, infection control and consultative practice.

Review of all medications prescribed

Results

Medication reconciliation-

Stop all non essential meds- For example Proton pump inhibitors, Drug interactions. Frequently resulted in decrease of diarrhea

Antibiotic use- Defined length and need for antibiotics

Transfer out of facilities- Decreased significantly

Decrease in antibiotic use

Appropriate infection control measures

Hurdles to Overcome

- Misconceptions RE: AB safety/Liability
- Antibiotics used to justify transfer
- Unnecessarily Prolonged Duration of Antibiotics
- Budgetary Constraints for Infection Control Measures
- Restraints on the care of futile cases



XDRO Registry

Participate to better define extent of issues

This will allow for rational development of rules to
better utilize limited resources

Hopefully allow for improved care of patients with
reduction in infections and cost

Thank You



Thank you for attending!

Please fill out webinar evaluation:

<https://www.surveymonkey.com/s/cre-ltcf-admin>

Webinar recordings and slides will be available at:

<https://www.xdro.org/cre-campaign/index.html>

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