MDRO Surveillance Programs in United States Nursing Homes (NH)

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US Infection Surveillance Background

- CDC Hospital Infections Program (1966)
  - Study Efficacy Nosocomial Infection Control (SENIC)
    Am J Epi 1980;111:472
  - SSTI, BSI, VAP, UTI
  - Surveillance = reduced nosocomial infection
- National Nosocomial Infection Surveillance (1970-2004)
  - ICUs, SSIs, High-risk Nurseries
- National Heathcare Safety Network (present)
  - charge to include non-hospital settings
  - no inclusion of NH until 2008

NH Surveillance Systems
What is Needed?

- Have support of leadership
- Establish objectives/goals
- Determine events to be measured
- Standardize case definitions
- Access patient data
- Standardize data collection methods
- Train personnel
- Develop mechanisms to report results

US Surveillance in LTCF Overview

- Veterans Affairs (VA) NH Surveys
- VA MRSA Initiative
- CRE Guidance (VA & CDC)
- Health Human Services (HHS) Healthcare-Associated Infection (HAI) Action Plan (Phase 3)

VA NH Task Force
Infection Surveillance

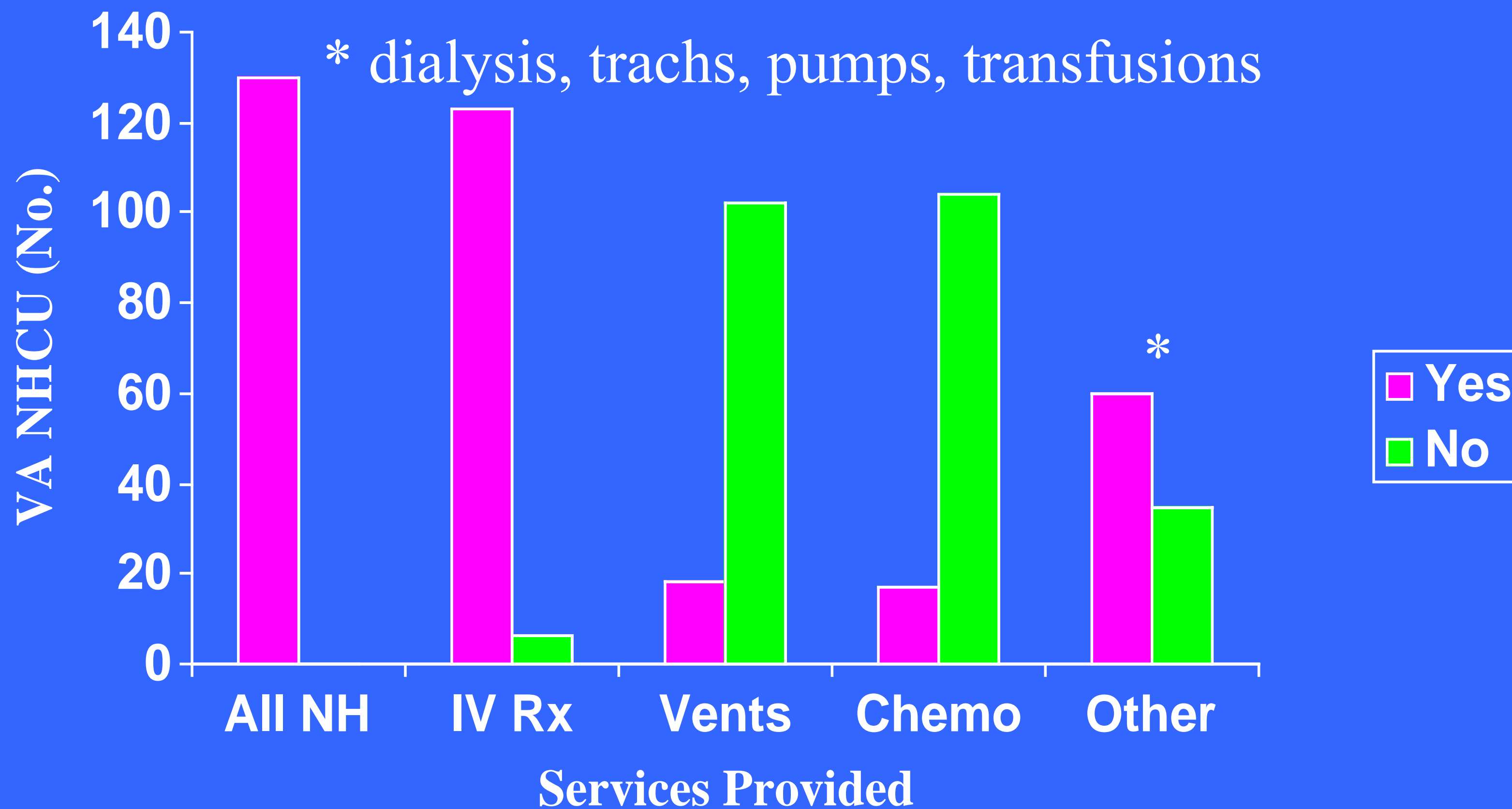
- Largest single US healthcare provider
  - NH 130-133
  - Beds 15,006
  - Residents 10,939 - 11,475
- VA NHIS Task Force formed (2002)
- Initial Charge

  "to assess the impact of NHAIs upon NH residents"
- Report - Under Secretary for Health

VA NH-Acquired Infections Point Prevalence Surveys

- 2003
  - assess infection control capacity
  - develop web-based survey method
- 2005
  - to evaluate effectiveness infection control program
  - training standardized CDC-based definitions
  - national NHAI point prevalence survey
- 2007
  - to determine NHAI rates by care-setting & treatment codes
- 2009
  - focus on device-related NHAI
  - impact MRSA initiative on overall NHAI
- 2012
  - Identification infection specific bacteria

VA NHIS 2003 Survey
What Services Are Provided?



Tsan L et al. AJIC 2006;34:80-83.

VA NHIS 2003 Survey

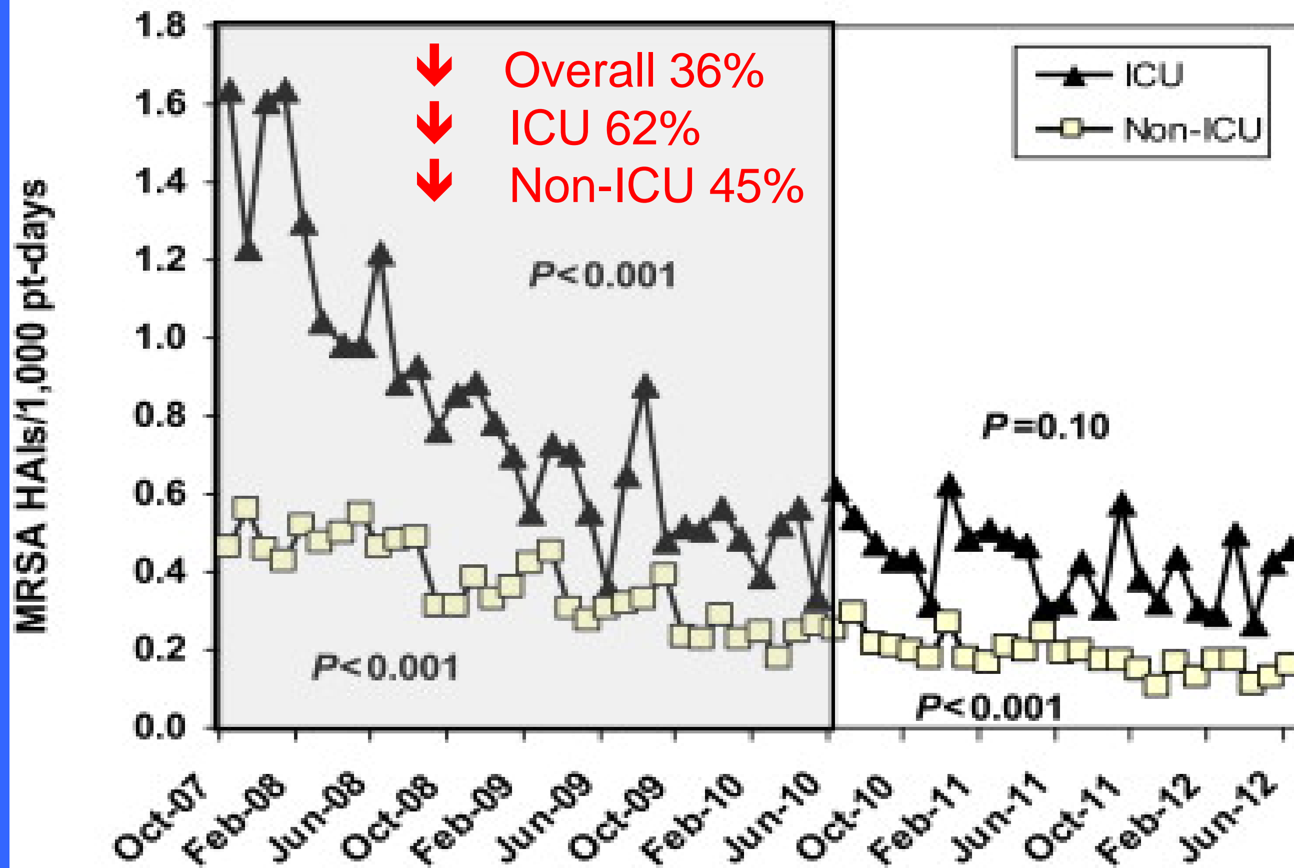
- ICP Training
  - Doctoral/MSN 69%
- Infection Definitions:
  - CDC 68.5%
  - McGeer criteria 26.2%
- Surveillance Methods
  - Whole house 38%
  - Specific Organisms:
    - MRSA 95%
    - VRE 93%
    - DRSP 87%
    - MDR *Pseudomonas* 82%

Tsan L et al. Am J Infect Control 2006;34:80-83.

VA MRSA Initiative 2007-Present

- Mandate by VA Undersecretary
- Based on Pittsburgh ICU experience
- Expanded all VA acute care wards
- Evidence-based bundle
- No input by ID specialists

Evans ME et al. AJIC 2013;41:1093-1095



Nationwide VA ICU and non-ICU MRSA health care-associated infection (HAI) rates.

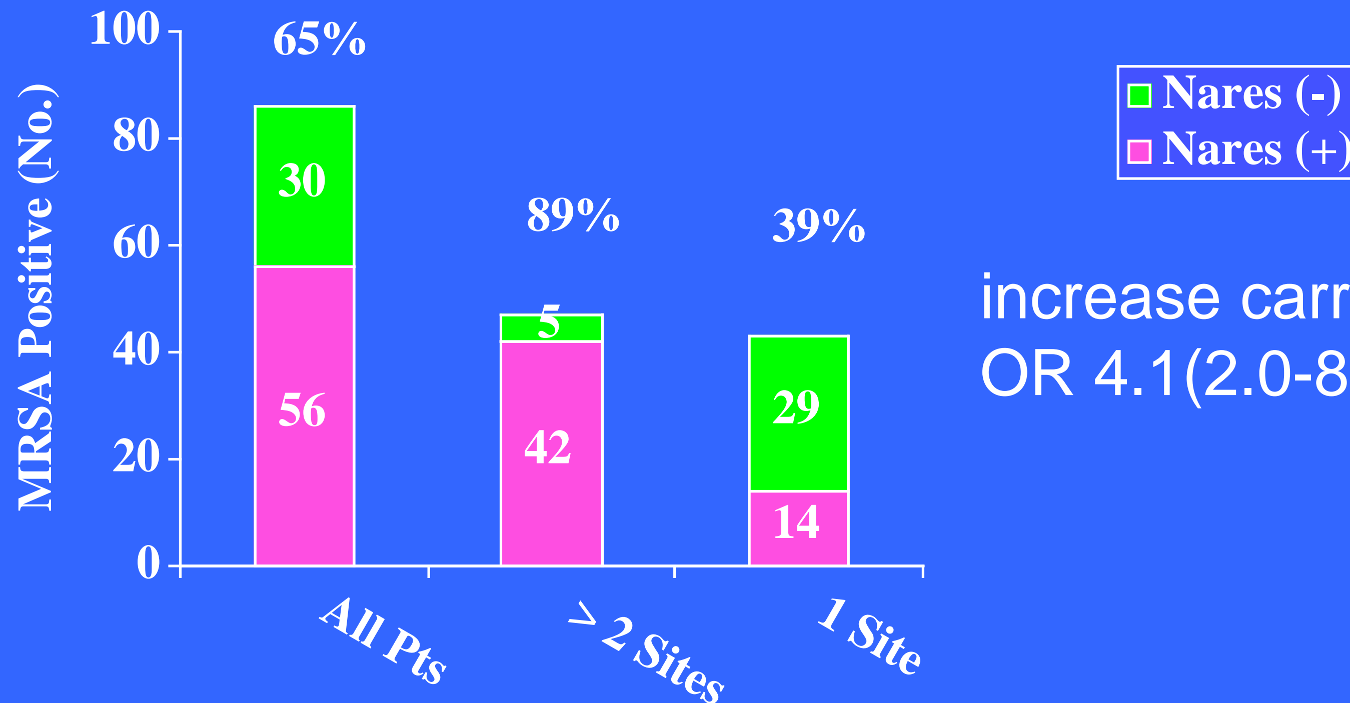
Evans ME et al. Am J Infect Control 2013;41:1093-1095.

VA MRSA Initiative
Nursing Homes (CLCs) 2009

- Expanded all Community Living Centers
- Evidence-based bundle
  - universal MRSA nasal surveillance (PCR)
    - admission
    - transfer,
    - discharge
  - contact precautions for all MRSA (+) !
  - hand hygiene
  - culture change

MRSA in LTCF
Do Nares Identify All Carriers?

Cultures nares, pharynx, groin, wounds



increase carriage devices
OR 4.1(2.0-8.1), $p<.001$

Mody L et al. Clin Infect Dis 2008;46:1368.
Mody L et al. JAGS 2007;55:1921.

MRSA in LTCF
Enhanced Standard Precautions

- Most not in contact isolation!
- Based on HICPAC guidance
- For relatively healthy residents:
  - mainly independent
  - use gloves and gowns for:
    - uncontrolled secretions
    - pressure ulcers
    - draining wounds
    - stool incontinence
    - ostomy tubes/bags.

http://www.cdc.gov/ncidod/dhqp/pdf/ar/mdroGuideline2006.pdf

MRSA in LTCF
Modified CDC Recommendations

- Based on CDC Siouxland VRE Study
- Resulted in lower NH VRE rates, but why not stated
  - fewer admissions?
  - fewer transmissions?
  - fewer infections?
- Contact Isolation rarely used (9%):
  - participate group activities if:
  - wash hands, continent stool
  - contained body fluids
  - clean equipment (chairs) outside room
  - waterless disinfection workers/pts

Ostrowsky et al. N Engl J Med 2001;344:1427.

MRSA in LTCF
VA Isolation Procedures

Enhanced Standard

- Secretions contained
- Continent
- Good hygiene
- Group participation
- HCW gowns/gloves for intimate care
- Visitors gowns/gloves if helping with care
- Designated equipment
- Hand hygiene

Contact Precautions

- Secretions not contained
- Incontinent
- Uncooperative hygiene
- Restrict to room
- HCW gowns gloves always
- Visitors use gowns/gloves if helping with care
- Designated equipment
- Hand hygiene

ENHANCED STANDARD PRECAUTIONS

Family and Visitors
If you have questions, go to the Nurses' Station

Everyone Must:

Clean hands when entering and leaving

Private

Utilize private room when possible or cohort with other residents who are colonized or infected with the same organism

Wear gloves when entering the room. A gown should be worn when anticipating contact with blood, body fluids, or other infectious materials.

Instruct or assist residents in performing hand hygiene when they leave the room

CONTACT PRECAUTIONS

(In addition to Standard Precautions)

Families and Visitors follow instructions on information sheet.

(If you have questions, go to the Nurses' Station)

Everyone Must:

Cleanse hands when entering and leaving room

Doctors and Staff Must:

Wear gloves when entering room

Wear gowns when in contact with patient or environment

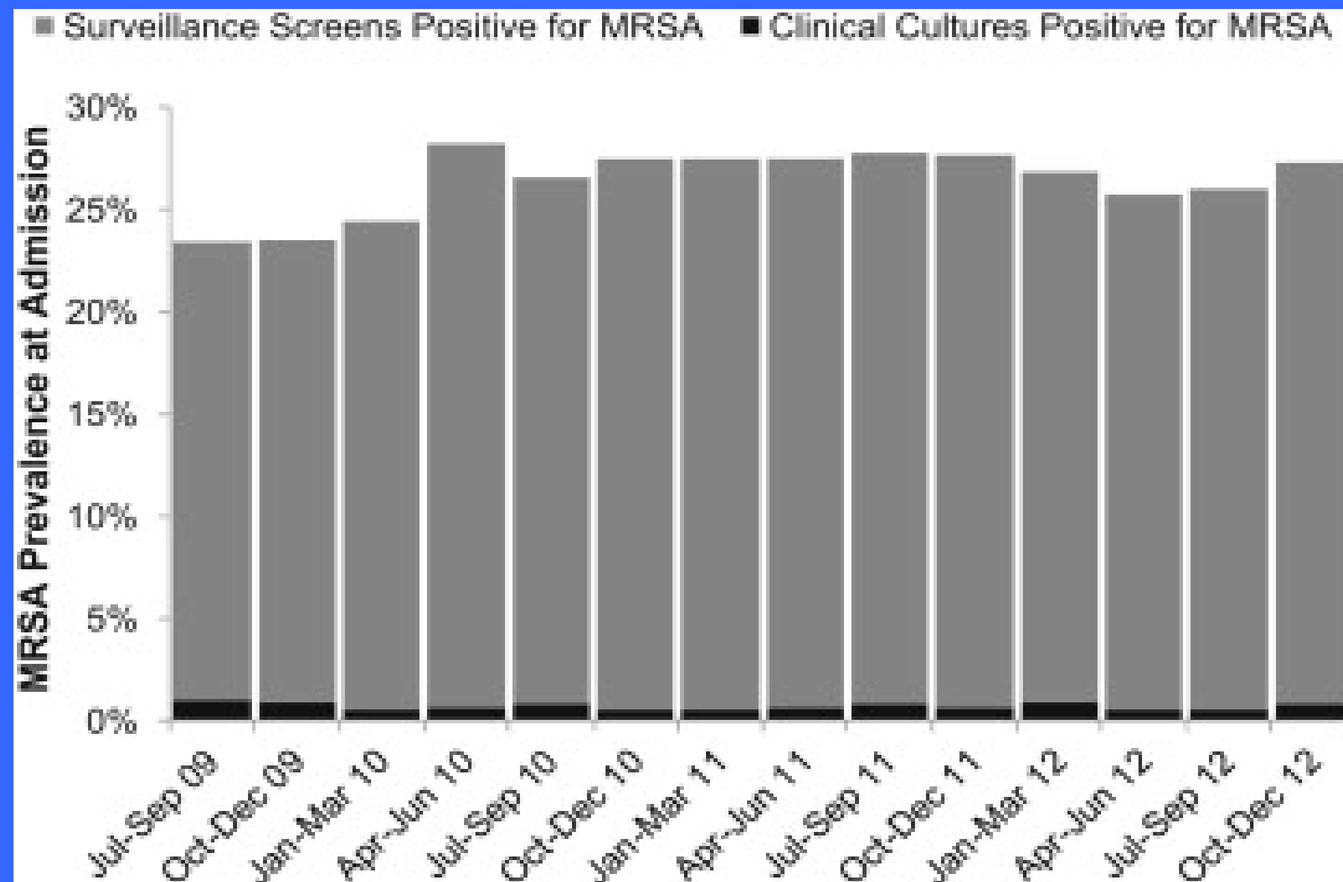


Fig 1. Quarterly prevalence of MRSA detected by clinical cultures or surveillance screening on admission to VA CLCs

Evans ME et al. Am J Infect Control 2014;42:60-62

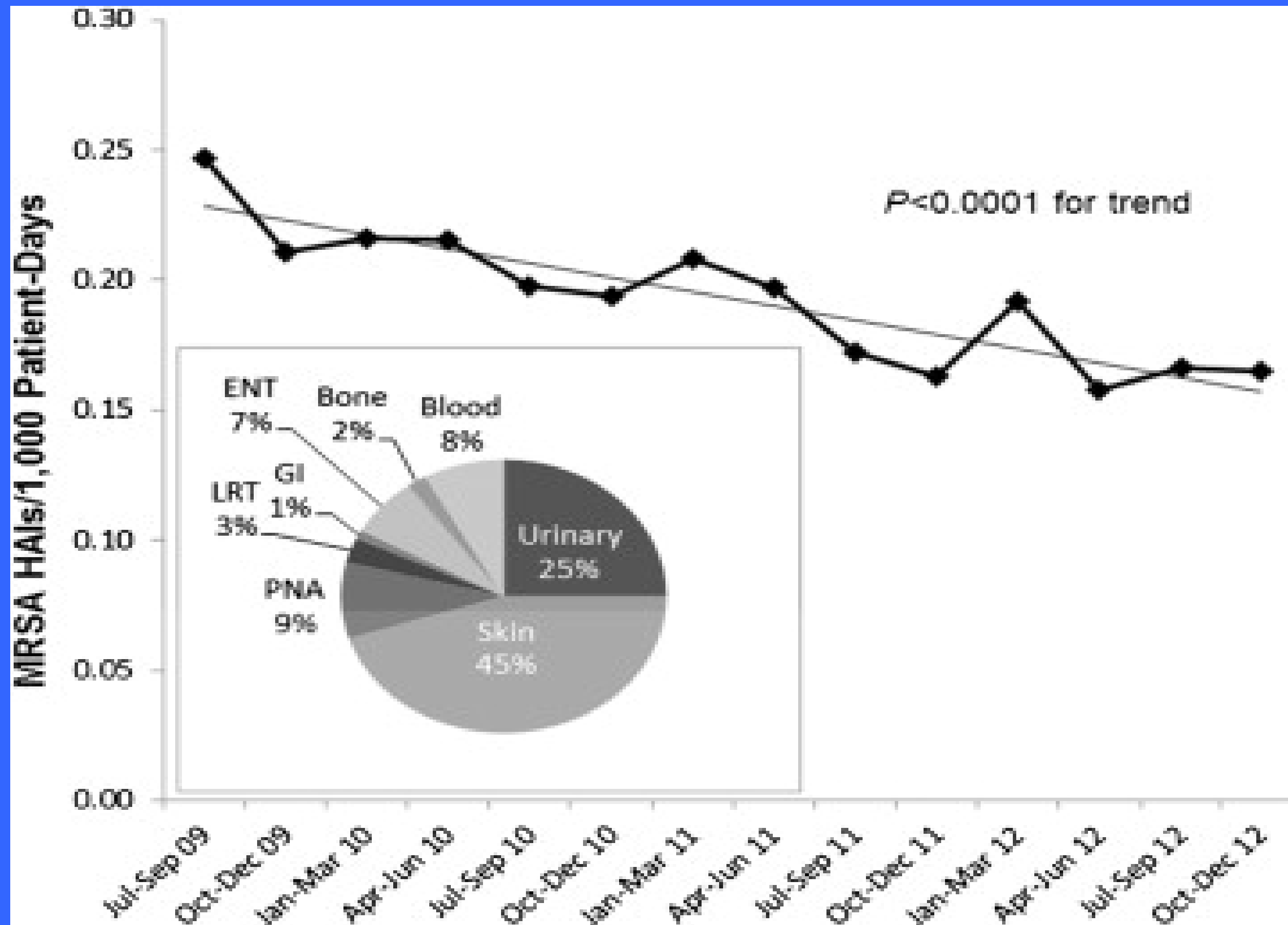
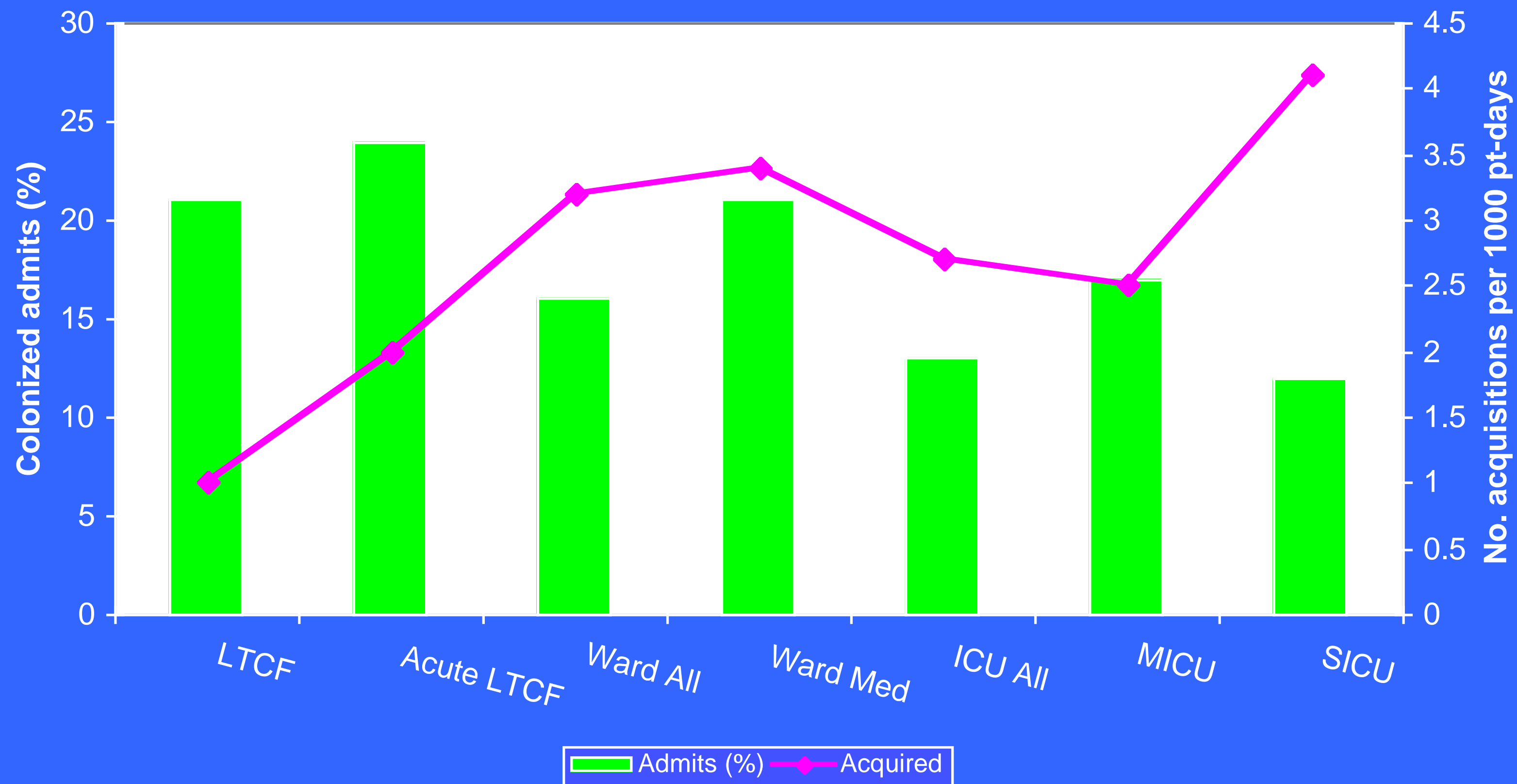


Fig 2. Quarterly MRSA HAIs per 1000 resident-days in the 133 VA CLCs nationwide

Evans ME et al. Am J Infect Control 2014;42:60-62.

Colonization vs Acquisition MRSA - VA Sites (N=18)



Jacob JT et al. SHEA Abstract #22, 2008

MRSA Infection & Acuity French Facilities (n=43) 1995

	Mean New MRSA cases/1000 pt-days
ICU	2.82 (0.88-4.24)
Surgical	0.85 (0.42-1.16)
Medical	0.56 (0.34-0.88)
Pediatrics	0.0 (0.0-0.05)
Rehabilitation	0.57 (0.28-1.33)
Long-term care	0.15 (0.08-0.28)

Hopital Propre II Study Group ICHE 1999;20:478.

VA MRSA LTCF Initiative
What Did We Learn?

- MRSA Colonization is common in NH
- NHAI rates are lower than in hospitals
- Significant reduction in MRSA overall
- Questions remain?
  - did we reduce acquisition of MRSA infections?
  - was active surveillance helpful?

VA MRSA Initiatives Epilogue 1/1/2016

- Acute care hospital
  - All patients - nasal screen on admission
  - ICU - nasal screen on transfer to/from and on discharge
  - Other wards - no nasal screen needed on transfer to/from or on discharge
- Nursing homes
  - changes do not apply
  - provoked lot s of questions!
  - policy under discussion

Other VA LTCF Initiatives Enteric/MDRO

- *Clostridium difficile* - ongoing
- CRE Program proposed
  - assure ability to detect
  - retrospective surveillance for CRE
  - if CRE present, prospective surveillance
  - isolate CRE using contact or enhanced standard precautions per MRSA initiative
  - screen contacts
  - consider active surveillance if ↑cases

Multi-Drug Resistant Organism

Contact Precautions

(In addition to Standard Precautions)

Families and Visitors follow instructions on information sheet.

(If you have questions, go to the Nurses' Station)

Everyone Must:

Cleanse hands when entering and leaving room

Doctors and Staff Must:

Gown and glove before entering room

Use patient dedicated or disposable equipment. Clean and disinfect shared equipment

CRE in LTCF
CDC Guidance

- Review data prior 6-12 mo for CRE
- If CRE (+) residents are present?
  - demographics, admission dates
  - medications, outcomes
  - common exposures
    - procedures, transfers, wards
- Can you tell if CRE is really CPE?
  - if no, assume CRE is CPE

CDC. November 2015 Update. CRE Toolkit

CRE in LTCF
CDC Guidance

- Hand Hygiene
- High acuity post-acute care facilities
  - LTACHs
  - ventilator units in skilled nursing facilities
    - contact isolation all CPE carriers or infected
    - contact isolation all CRE carriers or infected
    - unless CRE not multidrug resistant?

CRE in LTCF
CDC Guidance

- Low acuity post-acute care facilities
  - rehabilitation facilities
  - SNF (no ventilators)
    - contact isolation difficult
- Consider contact isolation
  - if CRE or CPE colonized or infected if:
    - uncontrolled secretions
    - incontinent of stool uncontained
- Use enhanced precautions (gowns/gloves)
  - exposure body fluids
  - contamination of HCW clothes
  - bathing, toileting, dressings, devices
  - no restriction group activities

CRE in LTCF
CDC Guidance

- Communication about CRE/CPE
  - laboratory to facility
  - facility to facility transfers
- HCW Education
- Limit device use
- Antimicrobial stewardship
- Chlorhexidine bathing – contact isolation
- Environmental cleaning patient room daily
  - regular disinfection sink surfaces
  - no devices near sinks

HAI National Action Plan Phase 3: LTC

Priority	Area
#1	Enrollment 5% LTCF in NHSN
#2	*C. difficile* infection
#3	Vaccination residents
#4	Vaccination HCW
#5	CAUTI and catheter care

Fed Register 2012;77:43086-43087

Infection Surveillance in NH
US Perspective

- Involvement multiple stakeholders
  – Government, Payors, Insurance, Patients
- NHAIs in LTCF are important
- MDRO identified as a priority area
  – reimbursement “encourages” participation
- LTCF networks under development
  – assist in implimentation/quality improvement
  – validate or adopt new interventions