



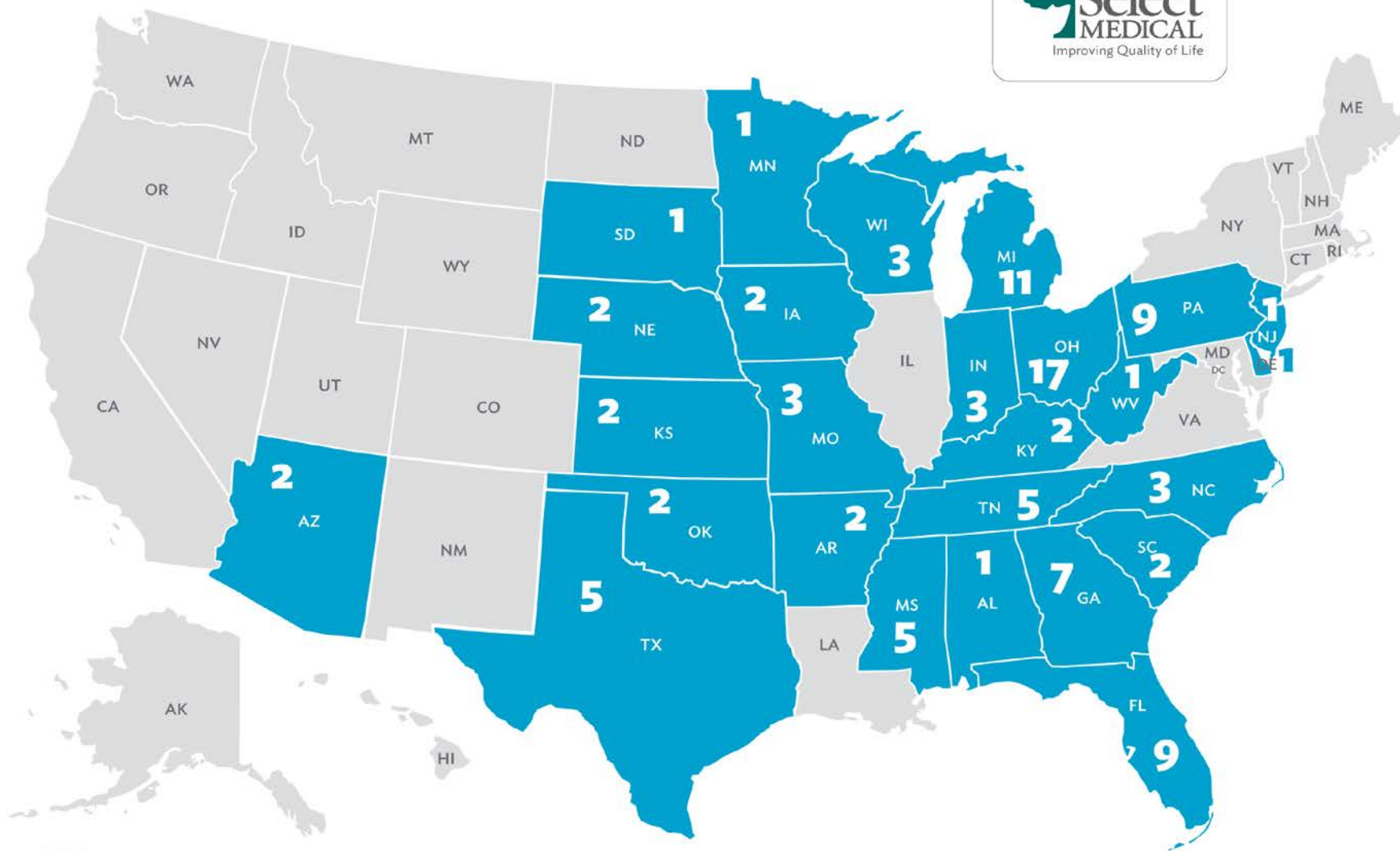
Decreasing CRE Incidence through Prevention in Long Term Acute Care Hospitals

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SELECT MEDICAL'S LTACH FOOTPRINT



AS OF 12.31.16



100+ Long-Term Acute Care Hospitals (LTACH)
(26 States)

BRANDS

Select Specialty Hospital
Regency Hospital

Growing Critically Ill Population

> 5M

of Patients admitted to
ICUs every year¹

17% - 39%

Of total hospital costs²
(\$121 billion annually)

1/3

Proportion of patients who
require mechanical
ventilation

25%

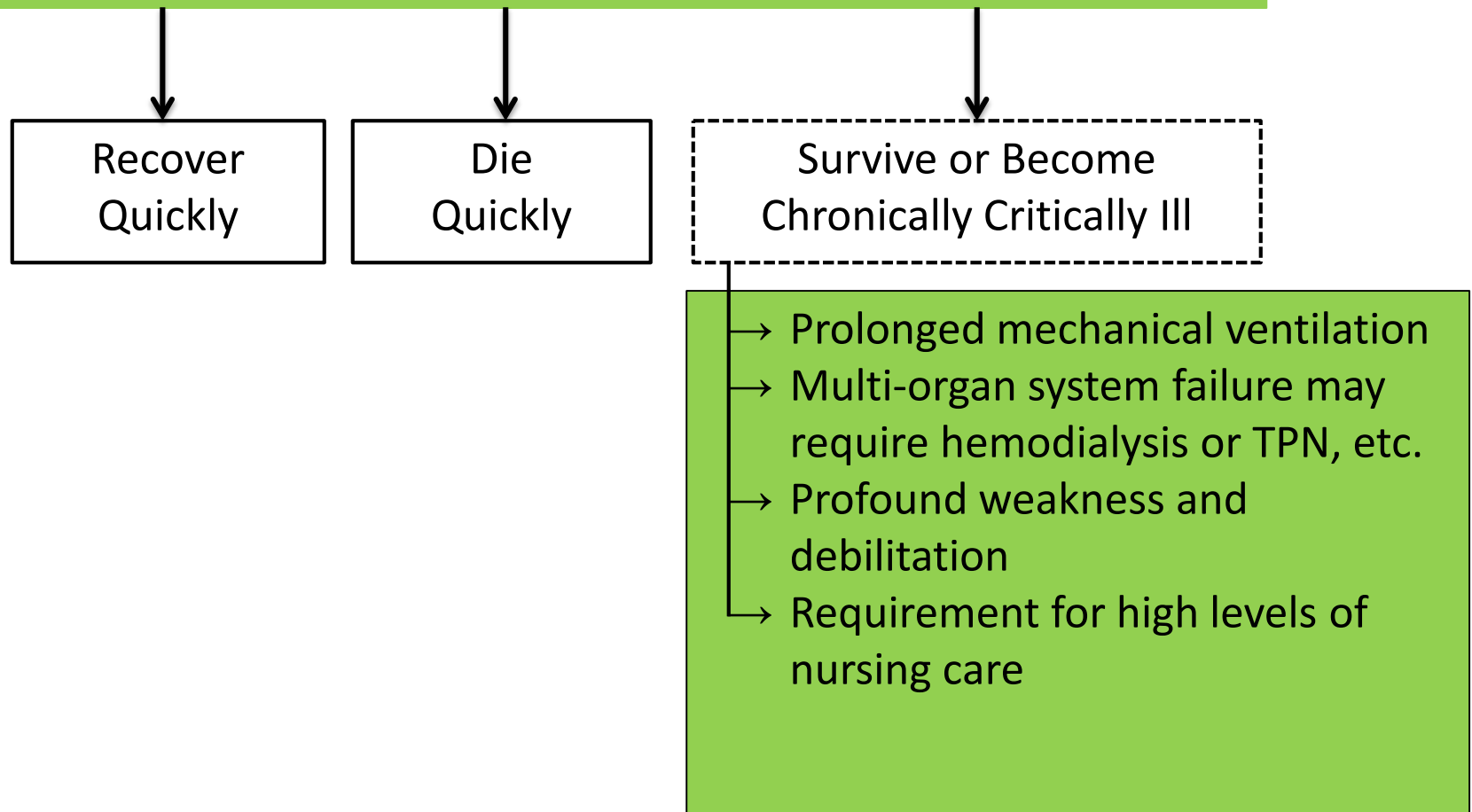
Percentage of patients on
a ventilator >7 days

- Advancing technology contributes to improved survival from acute catastrophic illness
- There is a more frequent transition to chronic critical illness in this patient population
- This larger population will now have requirements for expertise in chronic critical illness

¹Crit Care Med suppl, 2008

²Crit Care Med 2013

Acute Critical Illness or Trauma



- LTACHs provide care to a unique patient population
 - Have had long and complicated ICU stays
 - Are typically elderly with chronic conditions superimposed on acute conditions
 - Are experiencing severe protein-calorie deficits
 - Have invasive devices
 - Have a history of sepsis and infections with a significant percentage of these caused by MDRO's
 - Are actively colonized with MDRO's at the time of admission
 - Have significant wound and skin issues present at the time of admission
- All of these create the perfect storm for patients at risk for infection complications



- Prolonged Mechanical Ventilation
- Complex pulmonary disorders
- Refractory COPD exacerbation
- Refractory CHF exacerbation
- Sepsis with sequelae
- Complex infectious disease
- Renal failure
- Postoperative management CVS, GI surgery
- CNS disease-TBI, postop, CVA/bleed

- Are at increased risk for infections due to multiple risk factors
- Resulting in a greater potential for being on antibiotics
- With each course of antibiotics, selective pressure increases until a MDRO gets selected out
- MDROs are exceedingly difficult to treat
- Horizontal spread of MDROs remains a threat
- Other issues include:
 - CDI
 - HAPU
 - Nutrition

Initiatives in place at Select Specialty Hospital Northwest Detroit

1. Besides the basics of Infection Prevention
 - a) CHG BATHING
 - b) Daily for vented patients and known MDRO
 - c) Weekly for all patients
2. Oral care, elevate head of bed, monitor residuals
3. Device Utilization Reduction
 - a) Foley Fridays
 - b) No Femoral lines
 - c) Avoid PICC lines
 - d) Promote Midlines

4. Active surveillance for MDROs

- a) “Did not really work for us”
- b) Literature claims 10%+ cultures

5. Probiotics

- a) Under consideration
- b) Mixed results in prior trials

6. Early isolation or Cohorting

- a) Theradoc
- b) Verigene

7. Antimicrobial Stewardship

- Avoid Quinolone use
- Use narrowest spectrum Abx
- Encourage obtaining cultures before Abx Dx
- Cultures should not be drawn from lines
- De-escalate Abxs as Cxs become available
- Differentiate infection from colonization
- Treat the patient not the culture
- Shorter courses of Abx
- Pay attention to inoculum effect
 - Proper dosing – especially betalactams
 - Use of synergy
- Aggressive source management



Has it Worked?



- Five (5) major components
 1. Planning
 2. Prevention
 3. Surveillance
 4. Control
 5. Reporting
- Comprehensive approach
- Intended to provide guidance to prevent, recognize and report infections
- Is consistent with all evidence-based guidelines, consensus statements and community standards (where applicable)
- Is a continuation of our overall pt/staff/visitor safety plan

- Planning
 - Risk Assessment & program eval
 - Readiness: Bio-terrorism, Pandemic Flu
 - Current antibiogram
- Controls
 - Environmental controls
 - Education of staff, patients & visitors
 - MDRO controls
- Prevention
 - HH/PPE
 - Cleaning/disinfection
 - Invasive device protection from contamination (bundles)
 - Vaccine compliance
 - Special transmission precautions for existing infections

- The policy of the Hospital is to prevent transmission of highly transmissible or epidemiologically important infections by direct or indirect contact
- Because of the fragility of the patient population and the high degree of MDRO colonization and infections at the time of admission, these have been expanded beyond the 2007 CDC Guidelines

- **Mandatory Reporting**
 - State specific required reporting
 - CMS requires:
 - CLABSI
 - CAUTI
 - VAE
 - Laboratory identified C-diff
 - Laboratory identified MRSA in the blood
 - Flu vaccine participation (employees/LIP/LDP; patients)
- **Internal Reporting**
 - HA Cdiff
 - HA MDRO infections of any kind (urine/blood/stool/sputum/wound/etc.)

- Implementation of evidence-based guidelines
 - Pneumonia
 - Ventilator Associated Events (Ventilator Associated Conditions-VAC and Ventilator Associated Conditions-possibly infection related-IVAC)
 - Device related infections
 - Influenza prevention



CARBAPENEM-RESISTANT ENTEROBACTERIACEAE



9,000

DRUG-RESISTANT
INFECTIONS
PER YEAR



600

DEATHS

CARBAPENEM-
RESISTANT
KLEBSIELLA SPP.

7,900



1,400

CARBAPENEM-
RESISTANT
E. COLI

THREAT LEVEL
URGENT



This bacteria is an immediate public health threat
that requires urgent and aggressive action.



**CRE HAVE BECOME RESISTANT TO ALL
OR NEARLY ALL AVAILABLE ANTIBIOTICS**





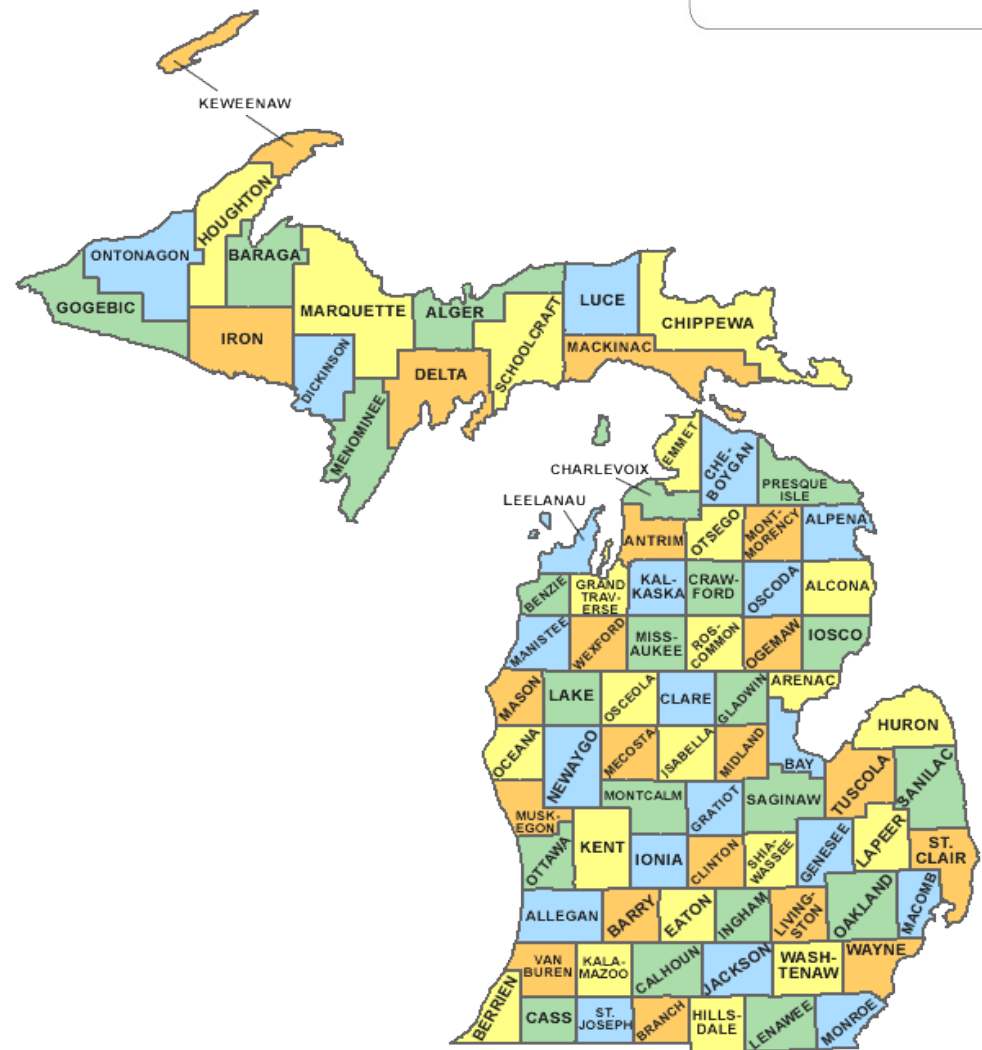
CRE Initiative Results in MI LTACHs

Resulted in decreased infection rates in long-term acute care hospitals

Goal:



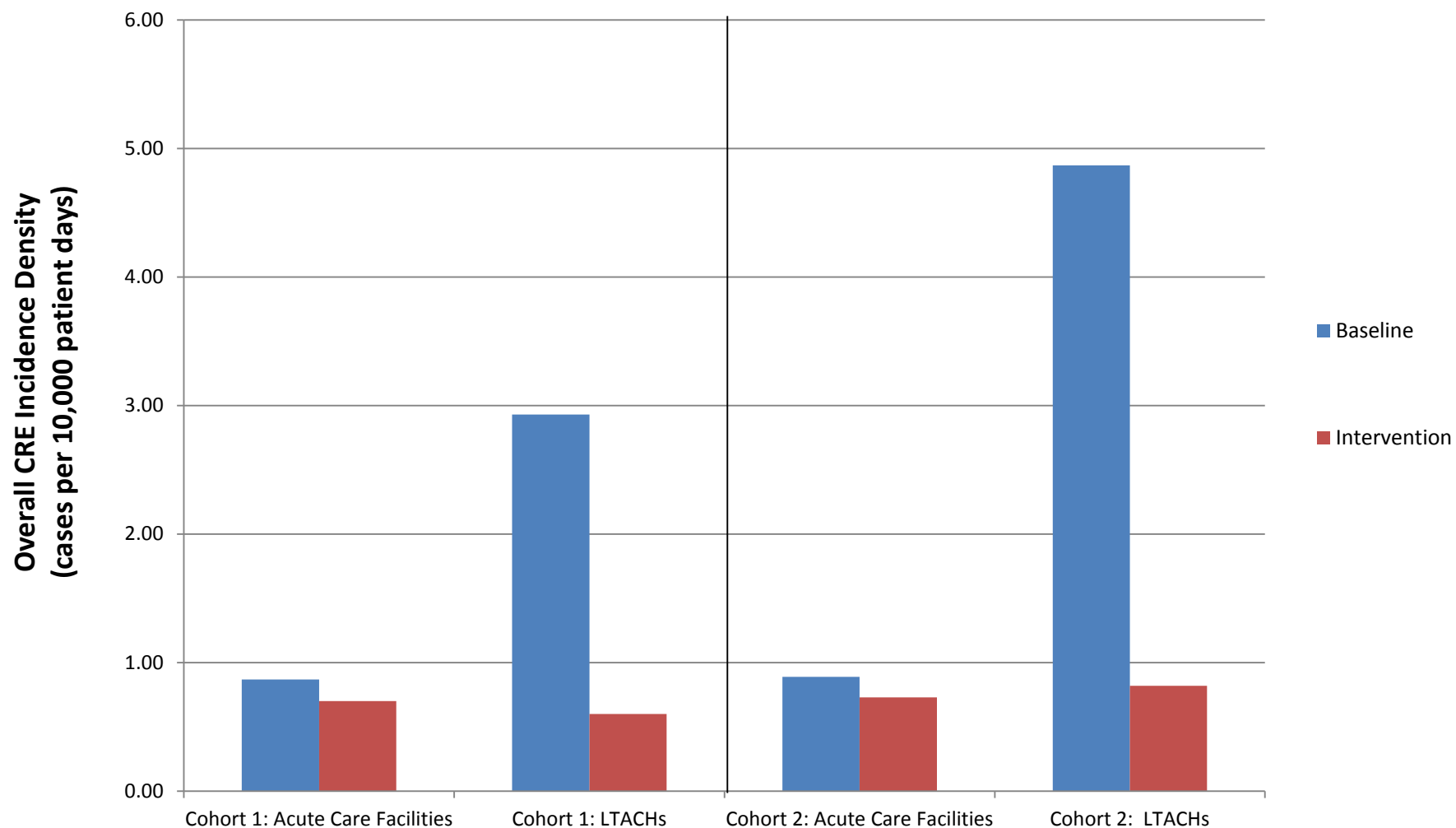
- Build a regional, public health model to reduce the spread of CRE



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	Baseline Period	Intervention Period	# Acute Care Facilities	# LTAC Facilities
Phase 1	Sept 2012-Feb 2013	March 2013- Aug 2014	17	4
Phase 2	March 2014-Aug 2014	Sept 2014-Feb 2016	7	2
Phase 3	Sept 2015-Feb 2016	March 2016-Aug 2017	4	4

Overall CRE Incidence Density in STACHs and LTACHs



	LTACHs	Acute Care Facilities
Comparative patient days ratio	1	33
# of infections prevented in Cohort 1	37	197
Approximate comparative ratio of CREs prevented	6	1
# of infections prevented in Cohort 2	14	29
Approximate comparative ratio of CREs prevented	14	1



- Interventions are critically important in the LTACH environment: differential improvement was found in the LTACH environment after a CRE Prevention intervention as compared to other acute care hospitals
- Prevention strategies that encourage compliance and sustainability have a greater impact in the LTACH given the acuity of the patients

Usage



- LTAC patients immunocompromised
- On ventilators
- Most on Long Term ABX

What are We Doing to Stop the Spread?



- Education
- Proper PPE and Hand Hygiene
- Re-education



- Teaching about importance of PPE and HH
- Patient safety
- Employee safety

- Proper donning of PPE and HH
- Proper doffing of PPE and HH





- Make sure to gown and glove before entering the patients room
- Use carefully-don't spread the contamination
- Always remember to remove carefully
- **WASH YOUR HANDS**

- Contaminated
 - Outside front
 - Areas of PPE that have or are likely to have been in contact with body sites, materials, or environmental surfaces where the organism may be living
- Clean
 - Inside, outside back, ties on head and back
 - Areas of PPE that are not likely to have been in contact with the organism-dirty to clean

What Type of PPE Would *You* Wear?



- Just a thinking game for new hires
- While giving a shower?
- Transporting a patient off the floor to a test?
- Responding in an emergency situation?
- Taking vital signs?
- Cleaning an incontinence of stool?

- Educate the importance of HH and how it stops the spread of CRE and other microbes
- Foaming in and out of every room with no exceptions
- Importance of Educating the families

- Health care workers are hard working individuals
- Wearing plastic impermeable gown and gloves is not appealing but it's a must!
- Educating how to stop the spread of CRE and the fact that there are very limited ABX to treat it



- After orientation follow up with staff
- Make yourself available to answer any questions
- Education pamphlets are always available

- If we are not careful, we may all end up in hazmat suits
- Carbapenem Resistant Enterobacteriaceae (CRE) is more common than we think, so we need to act!





- SSH audits HH and PPE monthly
- We track and trend our data
- We report not only in board meetings but monthly to staff



- Get the staff involved
- Have them hold each other accountable
- Win/Win situation

- At Select Specialty Hospital, it's not just about following the rules
- It's ALL about
 - Patient Safety
 - Education and Protecting yourself

- Some of our worst offenders are the physicians
- PPE and HH are extremely important for YOU!

If we all hold each other accountable for our own actions, we can stop the spread of CRE/KPC



Thank You