Clinical and Financial Successes at Advocate Health Care Utilizing our Tele-ICU Program

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Advocate Health Care

With Acknowledgement of:
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Advocate Health Care

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Objectives

- The success of telemedicine is not just about the technology, but how you use it

- Understand how tele-ICU can achieve clinical and financial benefits across a large healthcare system

- How population management tools can be employed collaboratively between the tele-ICU and ICU to improve patient outcomes and realize financial benefits

- Demonstrate how gap analysis affords an opportunity for telemedicine to improve evidence-based practice adherence in the ICU

- Verbalize how the tele-ICU is a facilitator of change management as much as an "intervention"

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Advocate Critical Care

- 10 hospitals / Five Level One Trauma Centers
- 16 ICUs
- > 6000 physicians / > 100 Intensivists
- Total = 393 beds
  - 296 Critical Care beds (plus three Outreach programs = 97 additional beds)
  - eMobile carts in the ED (N = 7)
  - Critical Access Hospital with eMobile cart
- > 24,000 ICU Admissions in 2014
  - Ventilator days: 29,706 on 6,419 cases
  - Total direct costs for days while the patients were treated in the ICU (excluding ED and OR costs) were approximately $200M or 17% of direct costs for inpatients
- eIntensivist and eRN coverage 24/7/365 with board certified critical care physicians
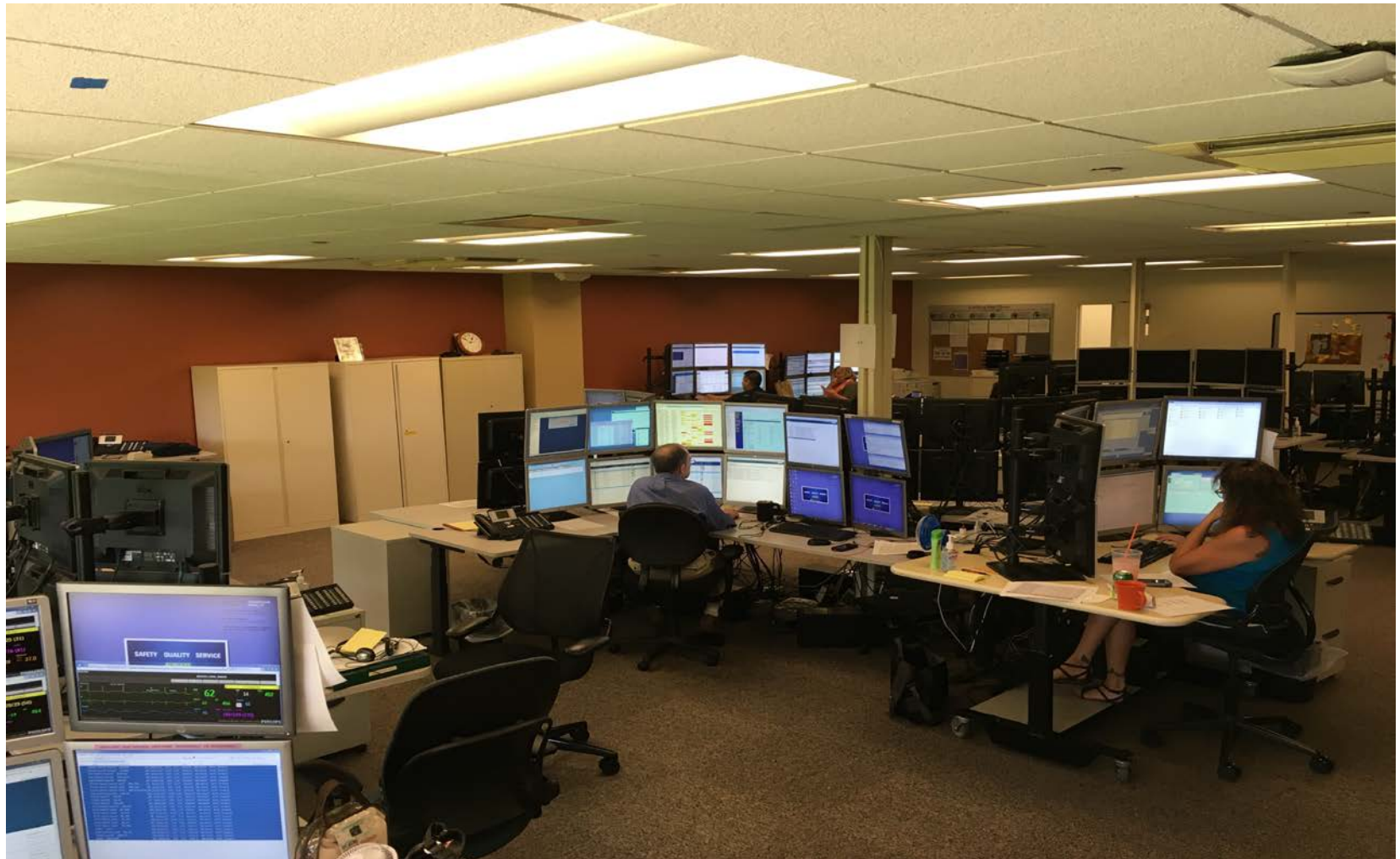
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Tele-ICU at Advocate

ICU-Telemedicine is care provided to critically ill patients by off-site clinicians using audio, video, and electronic links to leverage technical, informational, and clinical resources.

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A View of the eICU CORE

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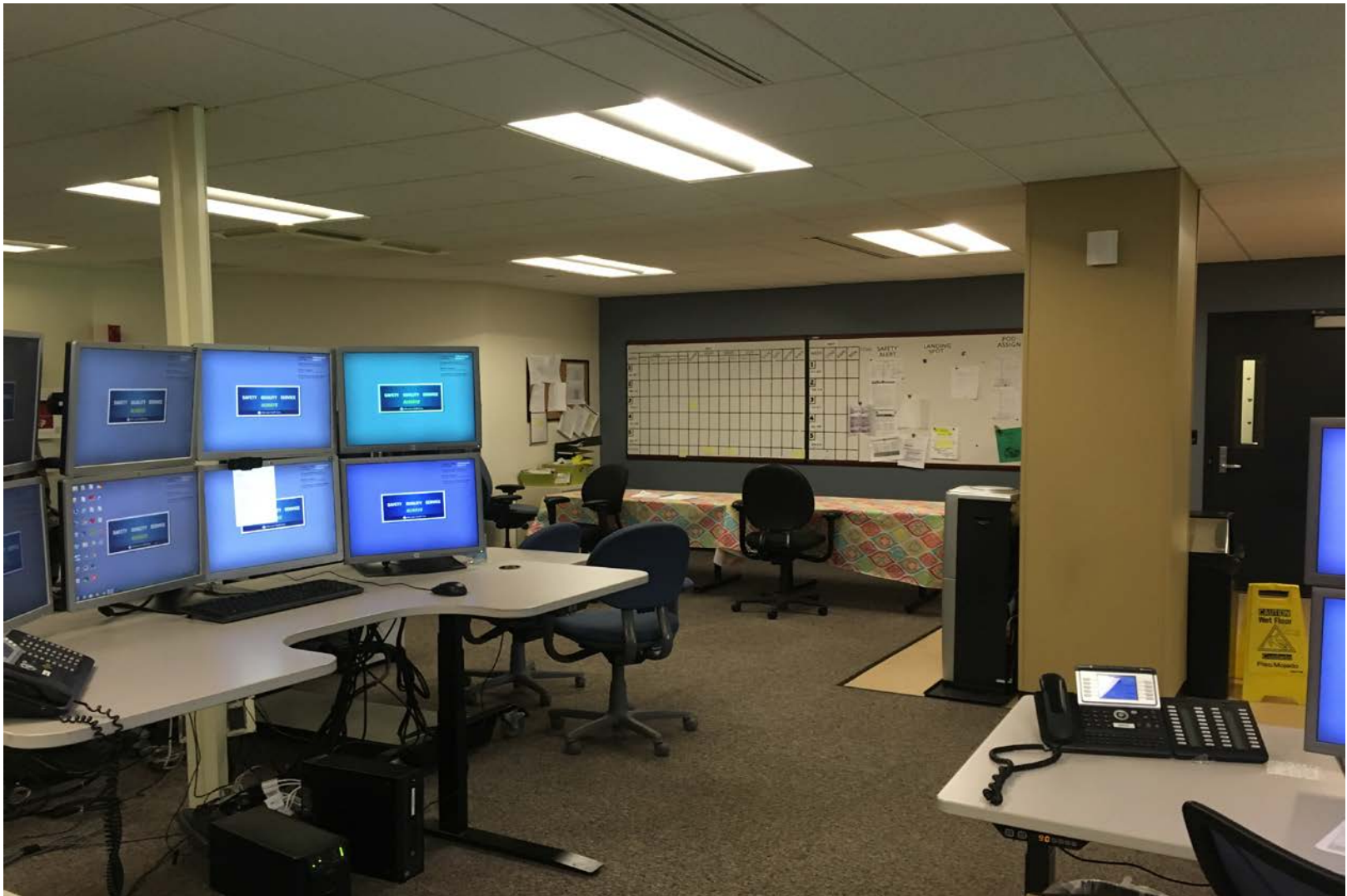
A View of the eICU CORE

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eIntensivist Workstation

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eCareManager™ System

File   Navigation   Camera

← Previous Patient   → Next Patient   ⟳ Refresh   Disconnect   🖼 Snapshot   🏠 Home   👥 Patient Census   👤 Log Out

H   CC1301) David, Test D. (Gender: Not Specified)   DOB: Not Specified   PID:1111   Account #:Not Specified   ADVOCATE HEALTH CARE : Go

View into a patient room from the eICU

Saved Positions

| Save |
| Restore |
| Rename |

default (default)

Two-Way View from eICU Perspective

Transformation to Integrated Care
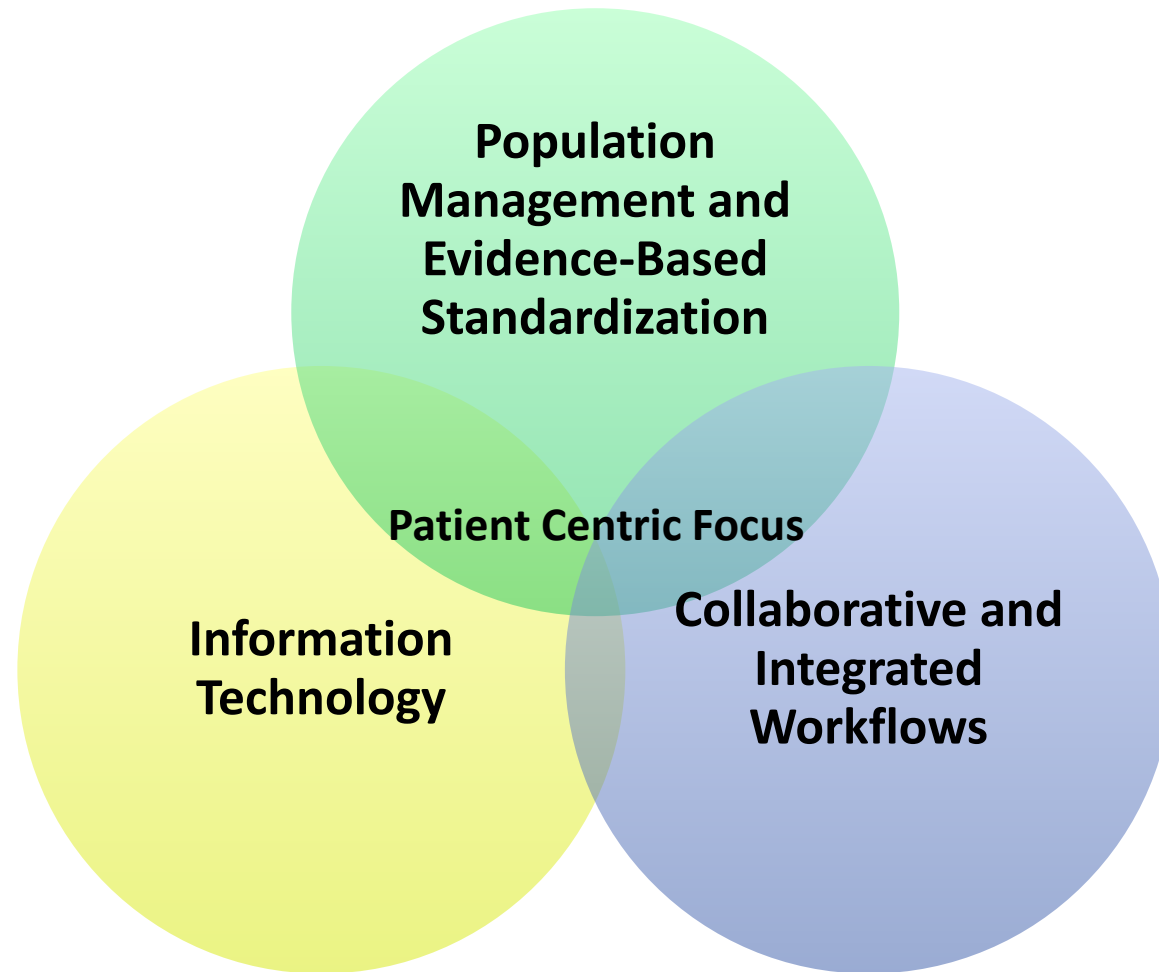
Benefits/ROI/**VOI**

▶ **Clinical**
- ❑ **Reduced mortality**
- ❑ **LOS**
- ❑ **Reduce adverse events**
- ❑ DVT
- ❑ Sepsis Mortality
- ❑ **Ventilator days/VAP's**
- ❑ CLABSI's
- ❑ Reduce Transfusions
- ❑ Improve nutrition
- ❑ Increase mobility

▶ **Financial**
- ❑ **Leapfrog compliant**
- ❑ **Reduced costs** ("avoid harm", fewer complications, VAPs, ADE's, sepsis, cost of 24/7 onsite intensivists....)
- ❑ **Reduced LOS**
- ❑ **Increased Capacity**
- ❑ Reduce unnecessary tests, xrays
- ❑ Reduce transfers to higher level facility

▶ **Other**
- ❑ **Standardize the delivery of ICU care (workflows and protocols)**
- ❑ Leverage scarcity of board-certified intensivists
- ❑ **Facilitate Data Reporting**
- ❑ **Process Flow Variability (Gap) Solutions**
- ❑ Avoid sleep deprivation
- ❑ Housestaff training and satisfaction
- ❑ Nurse satisfaction
- ❑ **Support of less experienced RN's**
- ❑ Patient/family satisfaction
- ❑ Decrease burnout of clinicians
- ❑ Extend Intensivist and critical care nurse career (most experienced)

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Variance in Practice of Tele-ICU

- Technology
- Types of ICU's
- Bedside intensivist staff model
- Bedside documentation/CPOE availability
- Remote center staffing patterns
- Qualifications of providers
- Hours of Operation
- Buy-in by bedside clinicians
- Adherence to best practices
- Use of quality and safety information
- Intensivist handover of their patients
- Community v. Tertiary Facility
- Teaching v. Non-teaching

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What Does Tele-ICU do to Improve Quality?

- Disease Management

    - Acute interventions

    - Patient surveillance for proactive intervention

- "Population Management" – Best Practices

- System Engineering

- Support Individual Unit Special Needs – Process flow variability through "gap analysis"

- Education

    - Resident eRounds

    - Nurse Mentoring

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What Acute Issues Does Tele-ICU Deal With?

- "First look" at all new admissions (seen within 30 minutes)
- Ventilator issues
- Arrhythmias, especially atrial fibrillation with rapid ventricular response
- Hypotension
- Electrolyte abnormalities
- X-ray checks requested by residents or nursing
- MD presence at code, RRT transfer, or before on-site MD arrival
- Adjustment of sedation
- Need for GI prophylaxis
- Ventilator liberation assistance
- Antibiotic stewardship
- Glucose management

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"Population Management"

- VAPs prevention
- DVT prophylaxis
- CLABSI Prevention
- Sepsis screen
- Ventilator liberation
- Multidisciplinary Rounding Tool
- Sedation Management
- CPR Auditing
- eNutrition
- ePharmacy
- Palliative Care
- CAUTI Prevention
- Ventilator Induced Lung Injury (VILI)

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eICU Report Sheet

Ventilator Associated Pneumonia(VAP) Bundle Assessment Screen

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ICU VAP: Avoided Cost Trend
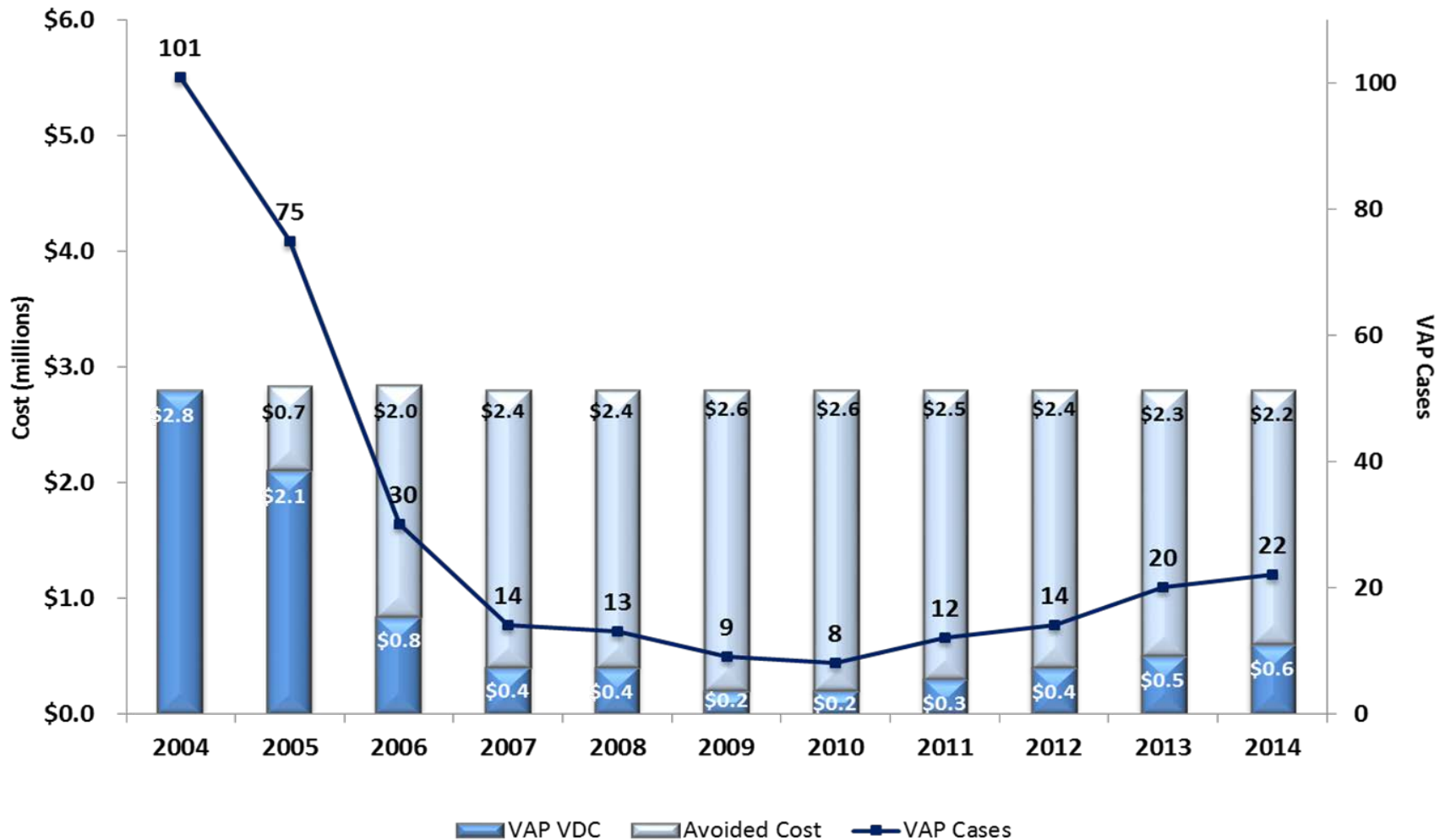
- Bethany Hospital excluded from January 2007 forward
- BroMenn Medical Center included starting in 2010
- Sherman Hospital included starting in 2013
- Data represents Adult ICU units only

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Sepsis Screening Tool

Sepsis Screening Tool

Hospital: TEST   Unit: TEST1   Bed   test2

Name: test, 2   MRN: 2222

☐ Patient has been transferred (Unable to be Screened)

☐ Pt. Septic > 24hr with no signs of a new infection

Admit Source: ED ▼

1. Is the patient already on the Sepsis Protocol?

No ▼

2. Is the patient's history suggestive of a new infection?

☐ Patient does not meet any of the following criteria suggestive of a new infection

☐ Pneumonia / Empyema	☑ Meningitis	☐ Bone / joint infection
☐ UTI	☐ Skin / soft tissue inflammation	☐ Catheter or device infection
☐ Acute abdominal infecion	☐ Bone / joint infection	☐ Endocarditis
☐ Unknown Source		

3. Are any two of the following signs and/or symptoms of infection both present and new to the patient?

☐ Patient does not have any of the following signs or symptoms

☐ Temp > 38.3 C (101 F)	☐ WBC <4 or > 12 or > 10 % bands	☐ Lactate > 2.2 mmol/L
☐ Temp < 36 C (96.8 F)	☑ Systolic Blood Pressure < 90 mm/Hg	☑ Creatinine > 2.0 mg/dl
☐ PaCO2 < 32 mm/Hg		☐ On Vasopressors
☐ Heart Rate > 90 bpm		☐ Bilirubin > 2 mg/dl (34.2 mmol/L)
☐ Resp. Rate > 20 bpm		☐ Platelet count < 100,000

[Submit]   [Cancel]

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Sepsis Screening Tool (cont'd)

Sepsis Hospital Mortality Index

4Q15 **Rolling 12 Months**
Target Index not benchmarked by Philips

	BMC	CMC	COND	GSAM	GSHEP	IMMC	LGH	SHERM	SSUB	TRIN	Total
4Q15	1.44	0.69	0.69	0.58	0.20	0.57	0.95	0.47	0.44	0.57	0.67
Rolling 12 Months	1.16	0.76	0.61	0.42	0.53	0.57	0.94	0.60	0.43	0.74	0.68
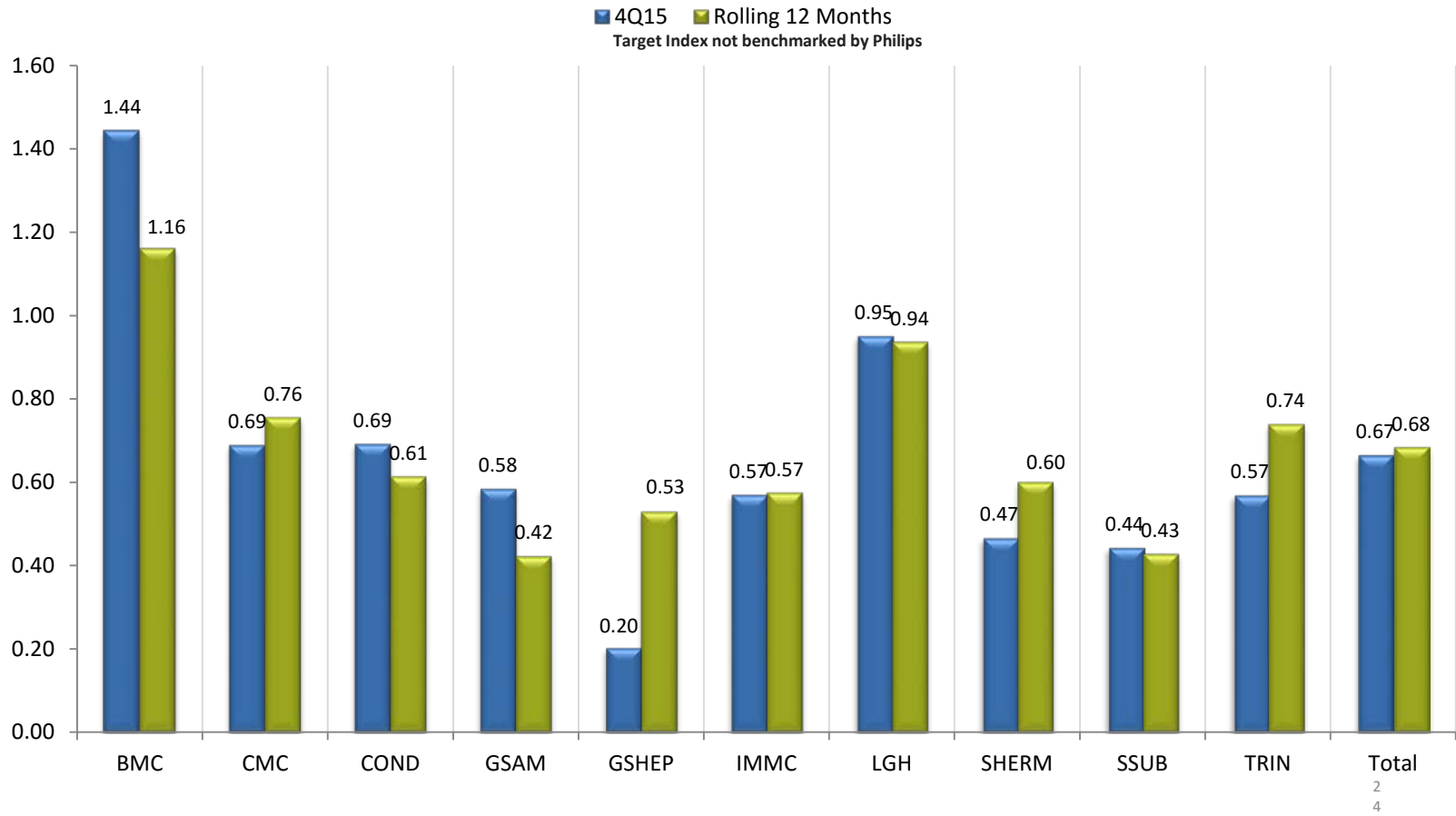
Data reflected is subject to rounding

Data Source: APACHE IVa/ 1Q2015, 2Q2015, 3Q2015, 4Q2015

Target Index not benchmarked by Philips

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Final Target State Guiding Principles

- Improve Communication/Coordination
- Achieve System Standardization of Care but with site innovation
- Creating a Critical Care Team with a strong leader
- **Documentation/Technology**
- Integrate Services (e.g. Pharmacy, PT, Resp Therapy…)
- Enable the Clinical Staff to care for the patient

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KRA Target Overview and Weights

	Measure	Min	Target	Max	Weight
67%	ICU Ventilator Days Index	Baseline	Mid of Min/Max	90th	19.0%
	CLABSI (ICU) SIR	50th	75th	90th	9.5%
	CLABSI (non-ICU) SIR	50th	75th	90th	9.5%
	Unassisted Fall Percentile Rank	50th	75th	90th	19.0%
	Culture of Safety Survey Percentile	50th	75th	90th	10.0%
33%	LOS	Moderate	Mid of Min/Max	Well	11.0%
	CI PHO Score	TBD	TBD	TBD	11.0%
	Readmissions Rate	50th	63rd	75th	11.0%

- **Lower weight on duplicative measures**
  - LOS and readmissions appear in both CI and AdvocateCare index

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ICU Ventilator Days Ratio

APACHE® IVa Ventilator Days Ratio

2015 Q4 - ADVOCATE HEALTH CARE

Advocate Health Care
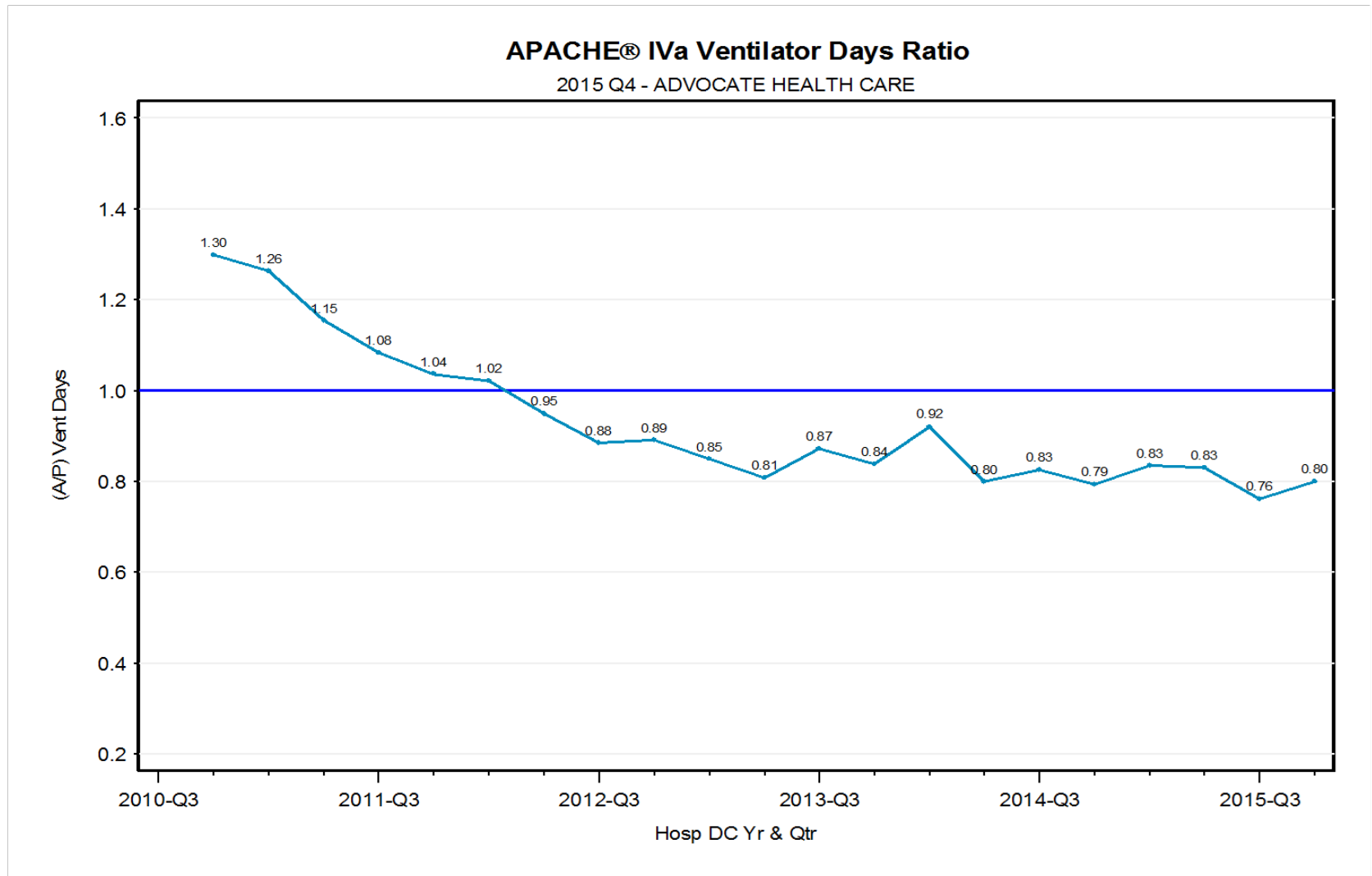
ICU/Hospital LOS Ratio

APACHE® IVa ICU LOS Ratio

2015 Q4 - ADVOCATE HEALTH CARE

Data points: 0.97, 0.91, 0.84, 0.81, 0.78, 0.74, 0.75, 0.74, 0.73, 0.73, 0.71, 0.75, 0.74, 0.75, 0.71, 0.70, 0.72, 0.71, 0.71, 0.69, 0.69

Y-axis: (A/P) ICU LOS

X-axis: Hosp DC Yr & Qtr (2010-Q3, 2011-Q3, 2012-Q3, 2013-Q3, 2014-Q3, 2015-Q3)
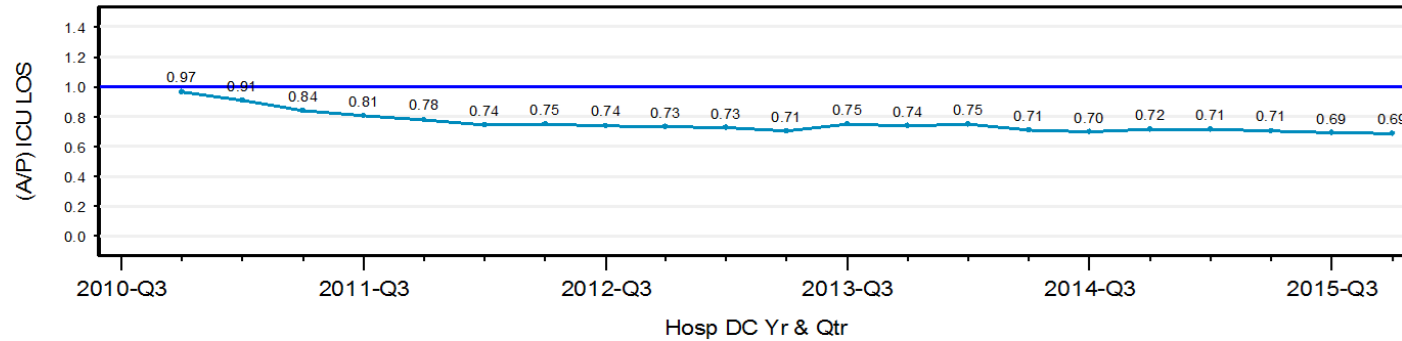
APACHE® IVa Hospital LOS Ratio

2015 Q4 - ADVOCATE HEALTH CARE

Data points: 0.87, 0.84, 0.80, 0.77, 0.76, 0.76, 0.75, 0.77, 0.78, 0.81, 0.78, 0.81, 0.81, 0.80, 0.76, 0.76, 0.76, 0.77, 0.75, 0.75, 0.78

Y-axis: (A/P) Hospital LOS

X-axis: Hosp DC Yr & Qtr (2010-Q3, 2011-Q3, 2012-Q3, 2013-Q3, 2014-Q3, 2015-Q3)

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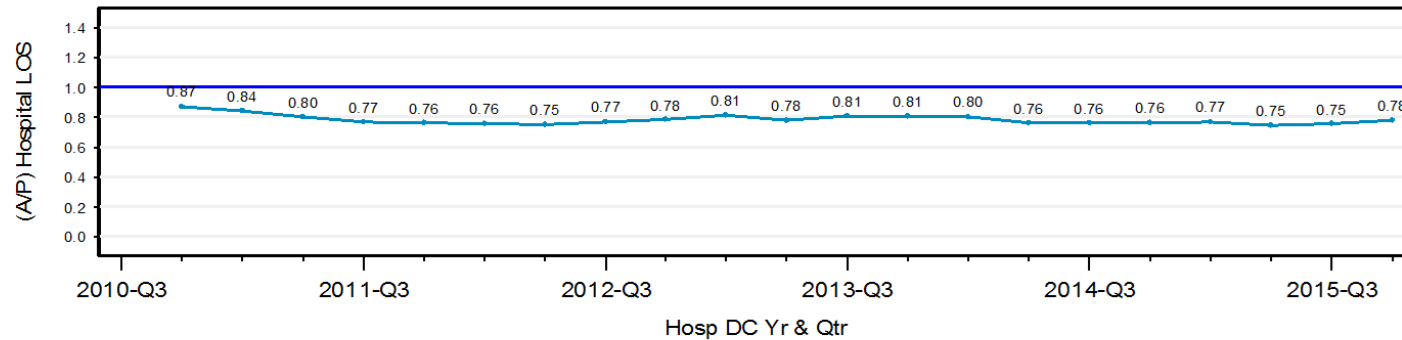
2015 Safety & Quality Accomplishments

Area of Focus	Initiative	Financial Impact
eICU®	Improvements in quality of patient care	23 ICU lives saved Decrease of 352 ICU days, resulting in savings of $305,382 Decrease of 331 ICU vent days, resulting in savings of $430,251

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Multidisciplinary Round Checklist

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ICU CLABSI: Avoided Cost Trend
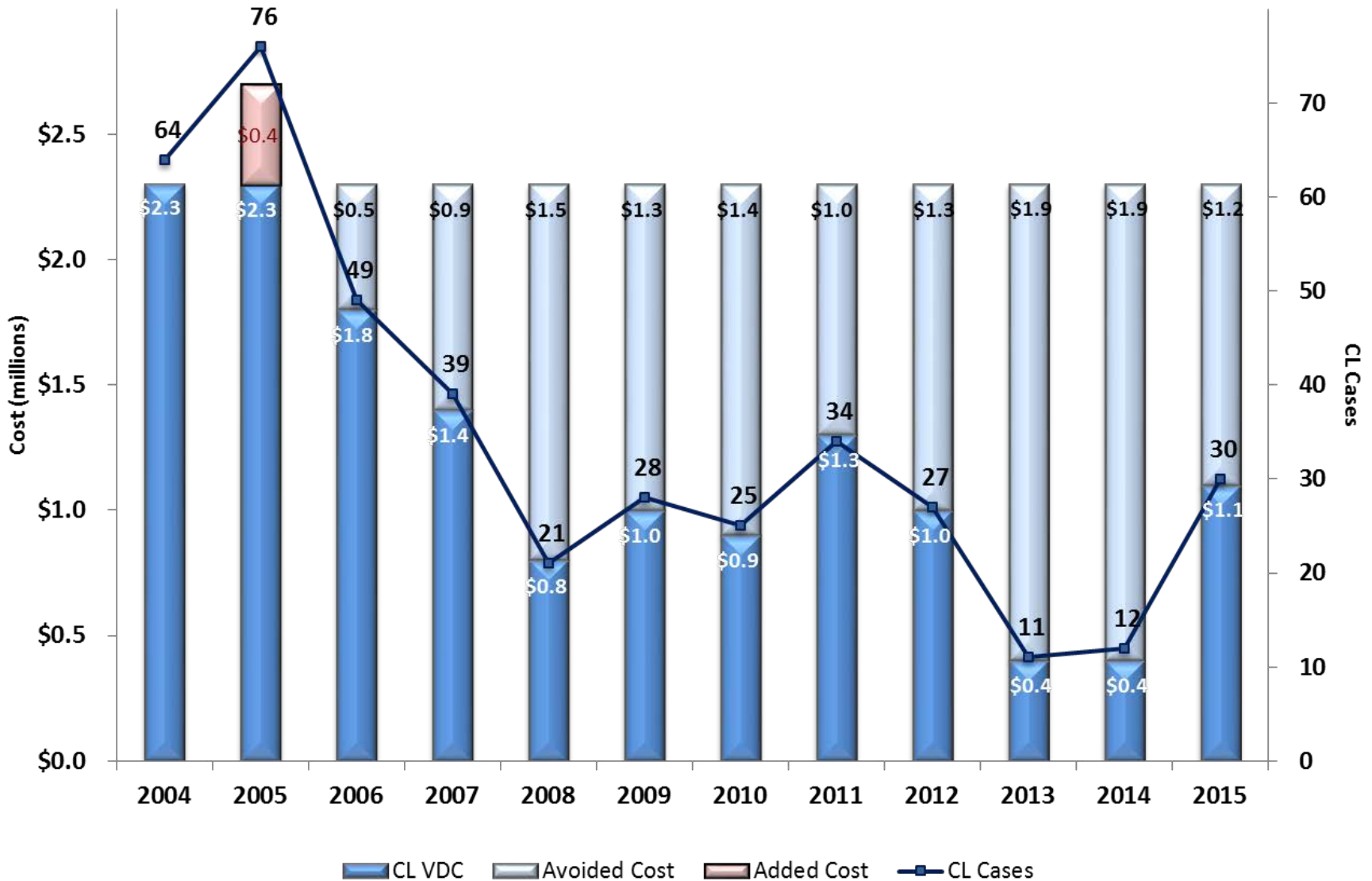
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Collaboration with Individual Sites on Certain Processes

- Pneumonia Screening

- CPR Audit

- Central Line insertion bundle compliance

- DVT Intensity of Prophylaxis

- Foley catheter assessment

- Sedation Withdrawal

- Multidisciplinary Rounds

- ED Sepsis Management

- Resident Coverage/Nurse Mentoring

- eNutrition

- ED Boarders

34

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Patient Safety Story

- An elderly patient arrived to the ED with severe shortness of breath and O2 sats in the 70's.   She refused intubation and was placed on BiPap. The decision was made to admit the patient and an ICU bed was requested. The ED was informed there were no beds available.

- While the patient was boarding in the ED, she was not tolerating BiPap and was having runs of V-Tach. The ED physician intubated the patient. The intensivist discussed the case several times with the ED physician, but did not come down to see the patient.

- Four hours later, the patient was still waiting for an ICU bed.   She had continued runs of V-Tach and was given Mag and Amiodarone.

Patient Safety Story

- The patient continued to receive care in the ED, including an EKG. Sixteen hours after the initial bed request, the patient was assigned a bed and report called to the MICCU. A repeat EKG identified a possible STEMI. Serial troponins identified STEMI.

- Three hours later the patient was taken to the Cath Lab and clinically progressed and was then considered a poor candidate for a CABG. The patient was returned to the ICU. Care was withdrawn and the patient expired.

Corrective Action

Collaborate with eICU team to identify potential solutions

- 4 eICU carts

- Create workflow process

- Hand off process with ED physician, ED resident, ED RN, Intensivist and eICU MD

- First eICU service in an ED with a continuous workflow process

Cumulative February 2015 thru March 2016

ECC eMobile Cart Percent by Unit Discharge Location

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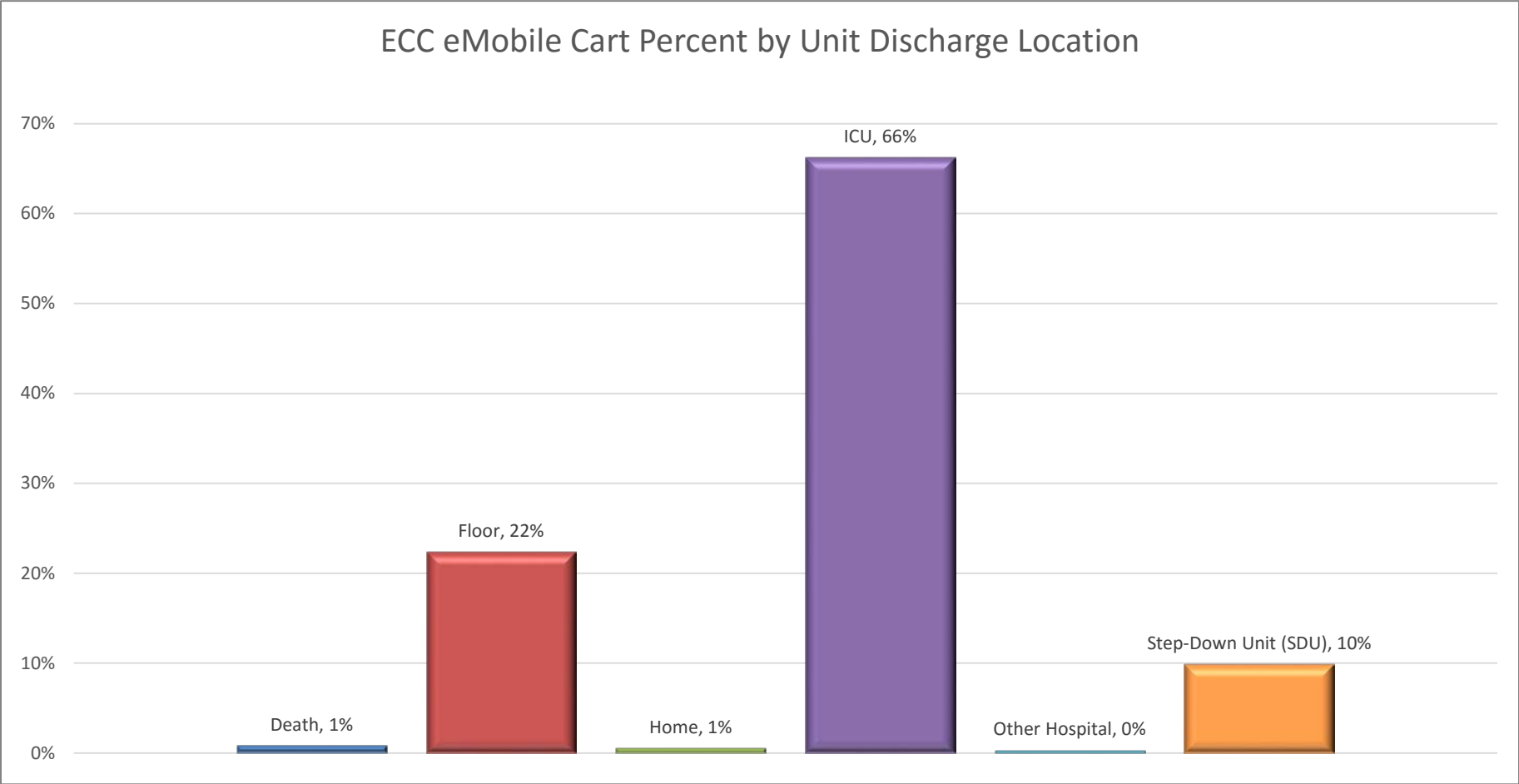
ICU vs. MED/Surg Saved Expenditures
February 2015 - March 2016
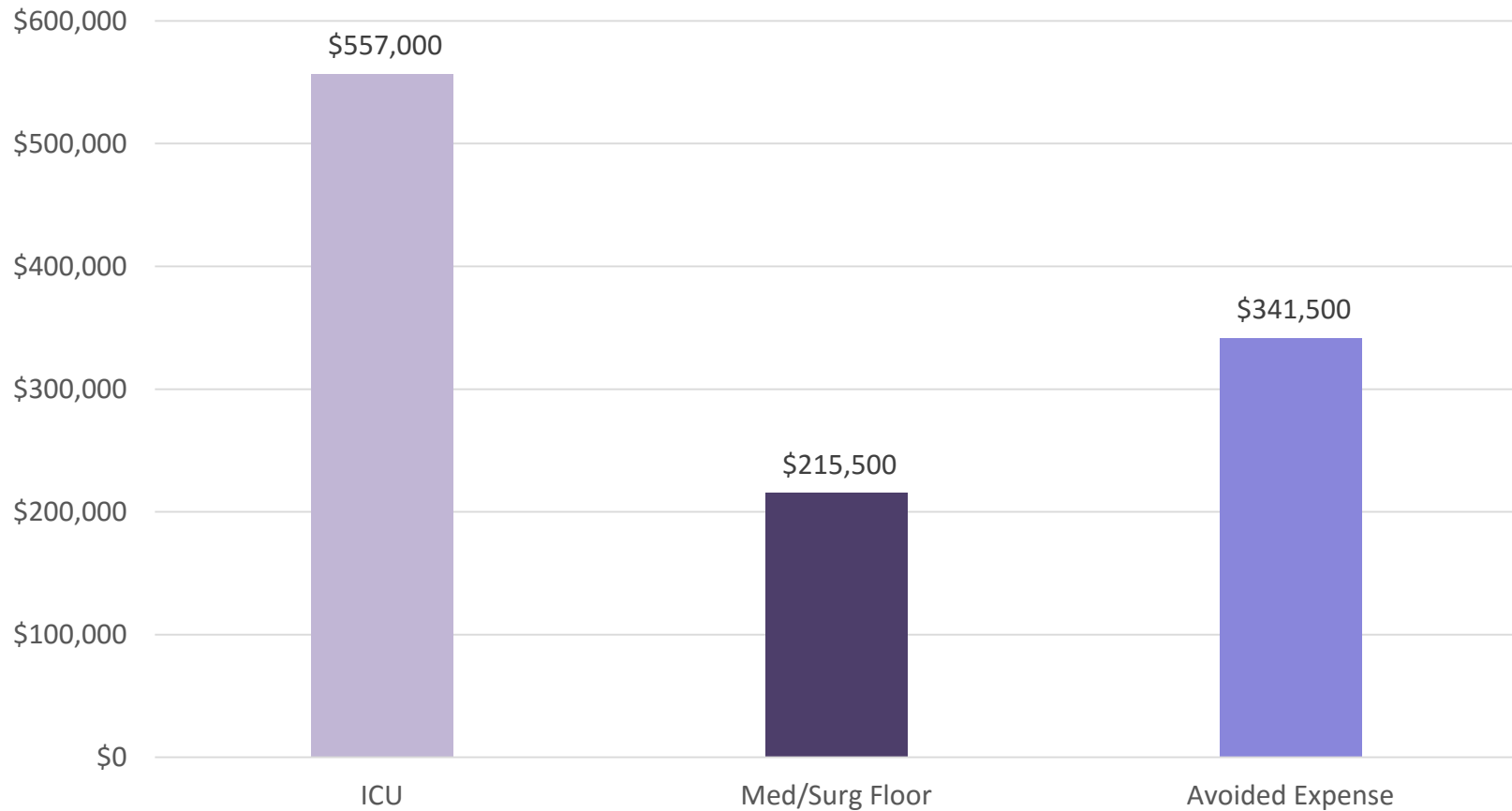
Other Benefits:
- No additional Patient Safety events for ICU/ED boarders
- Shorter LOS indicates improved throughput

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Advocate eICU Mentorship Program

Need:

- Our sites identified that new RNs often feel under supported at the bedside and this program was developed to bridge the gap from novice to advanced beginner ICU RN

Results:

- To date (from 2012), 80 RNs have completed the program; 8 currently enrolled and 10 in pipeline
- Will be expanded to outreach partners and to two additional Advocate sites
- This program is utilized as part of the recruitment/retention strategy by our ICUs

Lessons Learned:

- Adapt the program based on feedback from each participant
- eRN staff requested additional education on mentor/precepting principles
- Adjust eRN schedule, for consistency in mentor, based on number of participants
- Instituted support pods in CORE to provide support to mentor/coach

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Thank You!

Contact: Cindy.Welsh@advocatehealth.com

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