

THE POWER OF ALLSCRIPTS

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# Innovations that Inspire Smarter Care

Robert H. Leviton, MD, MPH – CMIO



# Give Back A Day – [WWW.MobilityCup.Com](http://WWW.MobilityCup.Com)

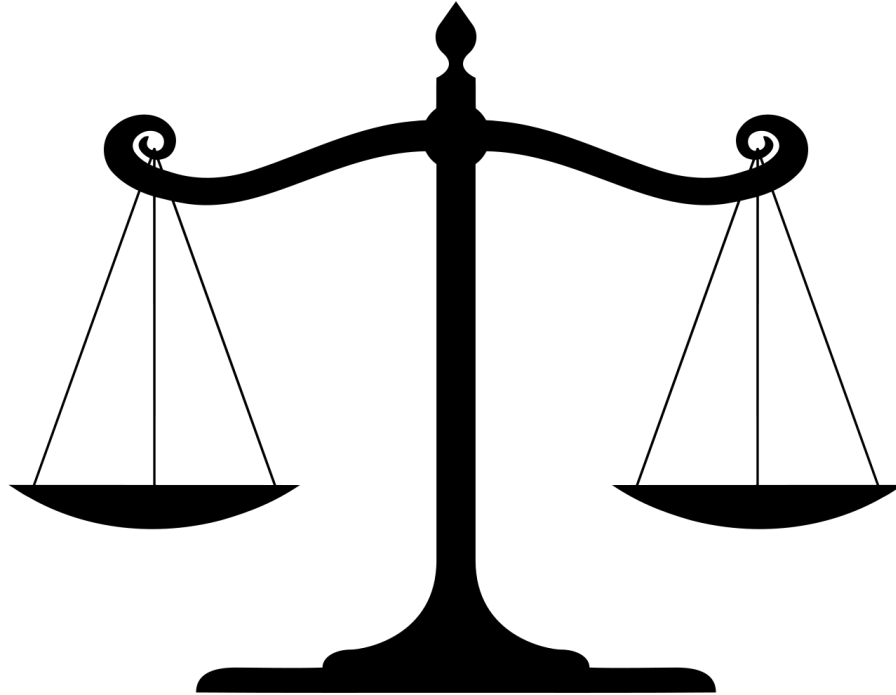
**RE/MAX**  2017  
*Mobility Cup | Coupe mobilité*  
  
Kelowna, BC  
September 11-15



## Canada's International Regatta for Sailor's with Disabilities

# What do Hospital and Healthcare Systems Seek?

Provide high  
quality care and  
services, deliver  
better care



Control costs and  
funds, improve  
efficiency



# What do Hospital and Healthcare Systems Seek?

- Achieve value from your investment.
  - Medication Adherence; IV to PO medications; Transportation Costs
- Design then Implement your solution that will demonstrate improved measurable outcomes.
  - Take weather and air quality, look at your disease incidence for asthma, then predict ED usage or provide advance warnings to your communities to take appropriate precautions
- As your community focuses on strategic alliances, engage your technology to be the central focus of your solution.
  - Ambulance Turn Around; Medication Compliance; Wearable Devices
  - Engage and challenge your universities and academic centers
- Document then report the advances in care, improvements in efficiency that you achieve using your EHR.
  - Clinical and Financial information readily available
  - Identify successful practices
  - Machine learning: real time risk determination of internal / external data analyzes patterns then presents real time reports

# What do Clinicians and Health Analysts Seek

- Stratify populations, understand rising risk patients and relevant gaps in care
  - Studied over 40 million patients identifying 7 subtypes, a suboptimal level of health literacy among asymptomatic individuals will go on to and develop complications
  - Census data, Geo/Environment data
- Proactive cohort management
  - Improving understanding of their disease processes,
  - Engagement in the care,
  - Continuous clinician consumable information
- Regulatory and evidence based guidelines for identification and management
  - Large scale predictive modeling and validation facilitate precision medicine and care
  - We know what medications and therapies will work and those that will not



Asthma



Coronary Artery Disease



Congestive Heart Failure



COPD



Diabetes



Hypertension



Readmission Analysis



Shared Savings & VBC

# What do Clinicians and Health Analysts Seek

- Derive insights across populations
  - Relevant events align and aggregate data into pathways for better understanding of therapies and outcomes.
    - The diabetic who develops sepsis, then renal failure, may respond to one regimen and not another leading to their survival or demise.
- Predictive models
  - Allow identification, intervention then prevention of serious complications and costly procedures, while improving outcomes.
- Claims based analytics and cost modeling



Asthma



Coronary Artery Disease



Congestive Heart Failure



COPD



Diabetes



Hypertension



Readmission Analysis



Shared Savings & VBC

# Claims Based Analytics and Cost Modeling

Condition	Patients with Condition	% Population	National Prevalence Stats	Annual Direct Cost Estimate
Hypertension	11,100,000	30%	29.1%	\$64.5 billion
Hypercholesterolemia	9,300,000	25%	31.7%	\$30 billion meds alone \$400 billion (stroke & MI)
Lower Back Pain	4,400,000	12%	12%	\$40 billion
Allergic Rhinitis	3,800,000	10%	8.4%	\$18 billion
GERD	4,200,000	11%	20%	\$10 billion
Diabetes	4,500,000	12%	10%	\$56 billion
Anxiety	3,900,000	10%	18%	\$42 billion
Depression	3,200,000	9%	6.7%	\$45 billion



# Enabling smarter care delivery

## Strengthening Your Foundation

Continue investment in community-aware systems across the continuum of care

## Elevating Your Success

Partner to develop and execute your strategy to meet your unique clinical, operational and financial needs

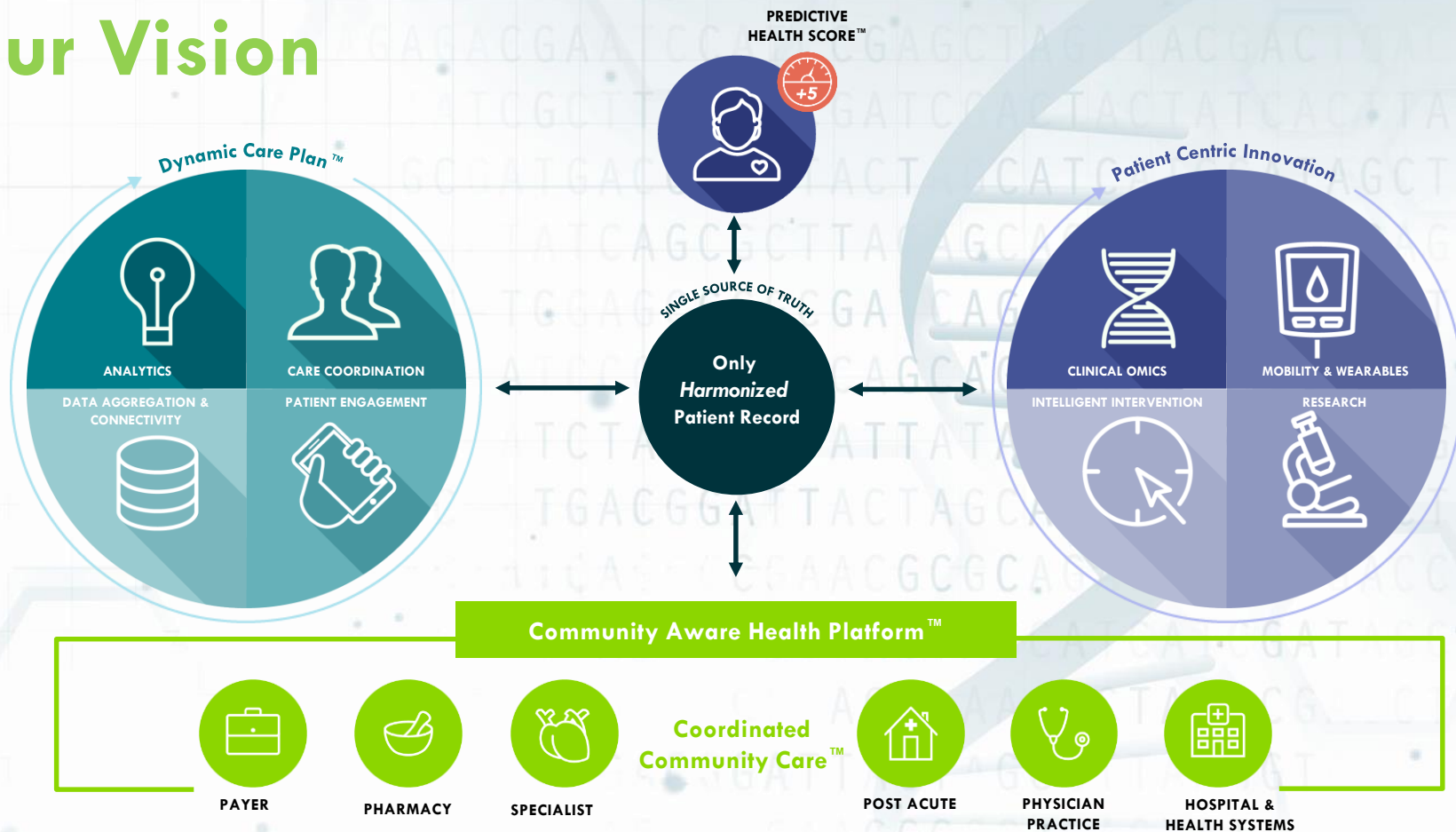
## Connecting Your Community

Align patients and care providers to foster population health through care coordination, analytics and patient engagement

## Building a Bridge to Our Future

Deliver new capabilities to enable precision medicine and consumer-centered care

# Our Vision



# Sunrise Enterprise

Unrivalled connectivity, network and data across healthcare

- ~2,500 Hospitals
- 45K+ Physician Practices
- ~180K Physicians
- 2B+ Open API Data Shares
- 12M+ Post-Acute Referrals
- 10M+ Connected Consumers
- 45K+ Post-Acute Network

In Canada

- HQ: Richmond BC, 180 employees
- 2 Provinces, 570 Communities, 35 facilities
  - Saskatchewan
  - Manitoba
  - British Columbia
  - Alberta
  - Ontario
  - New Brunswick



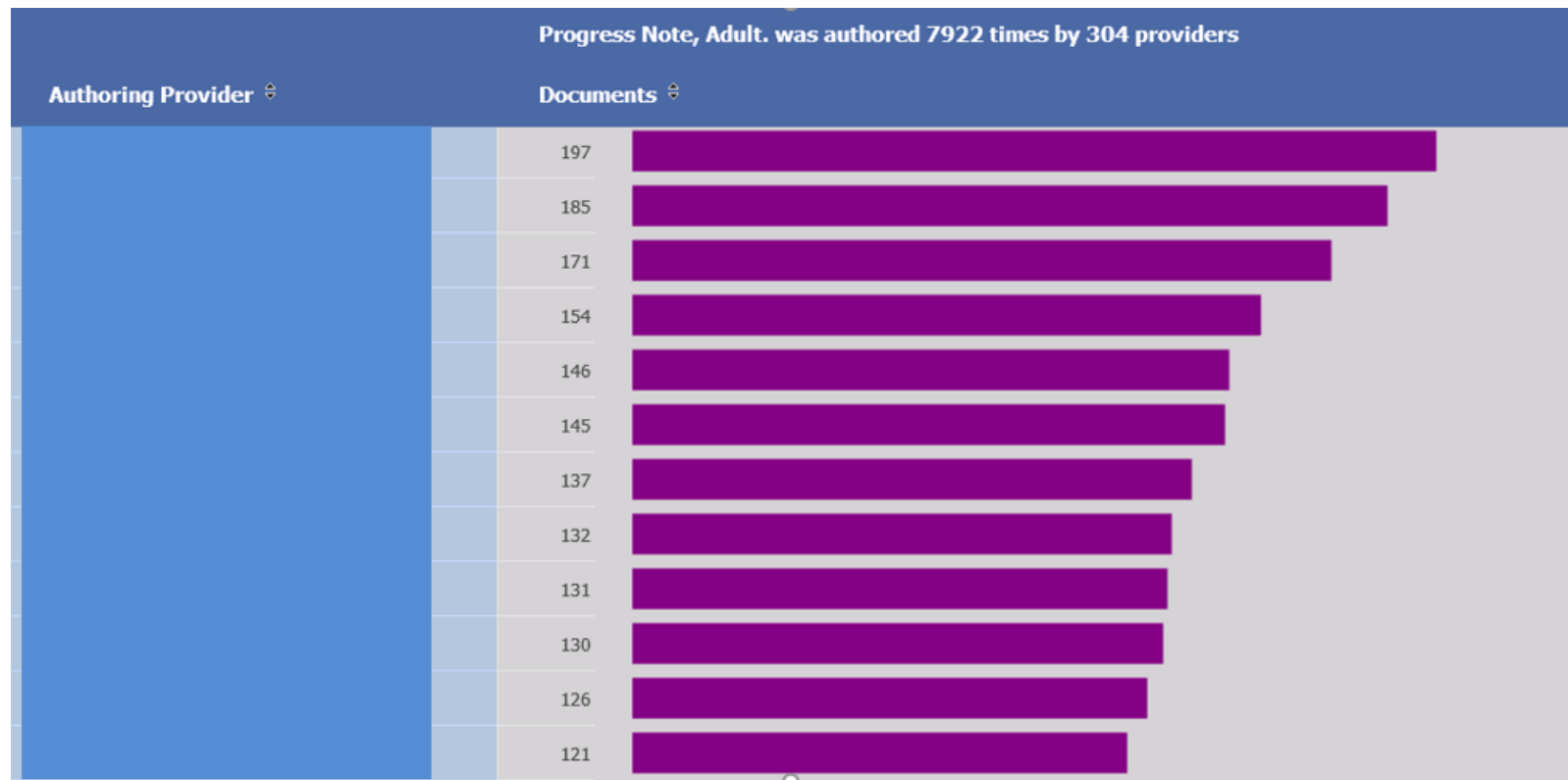
# You Can't Boil An Ocean



# But You Can Solve Problems- One Cup At A Time



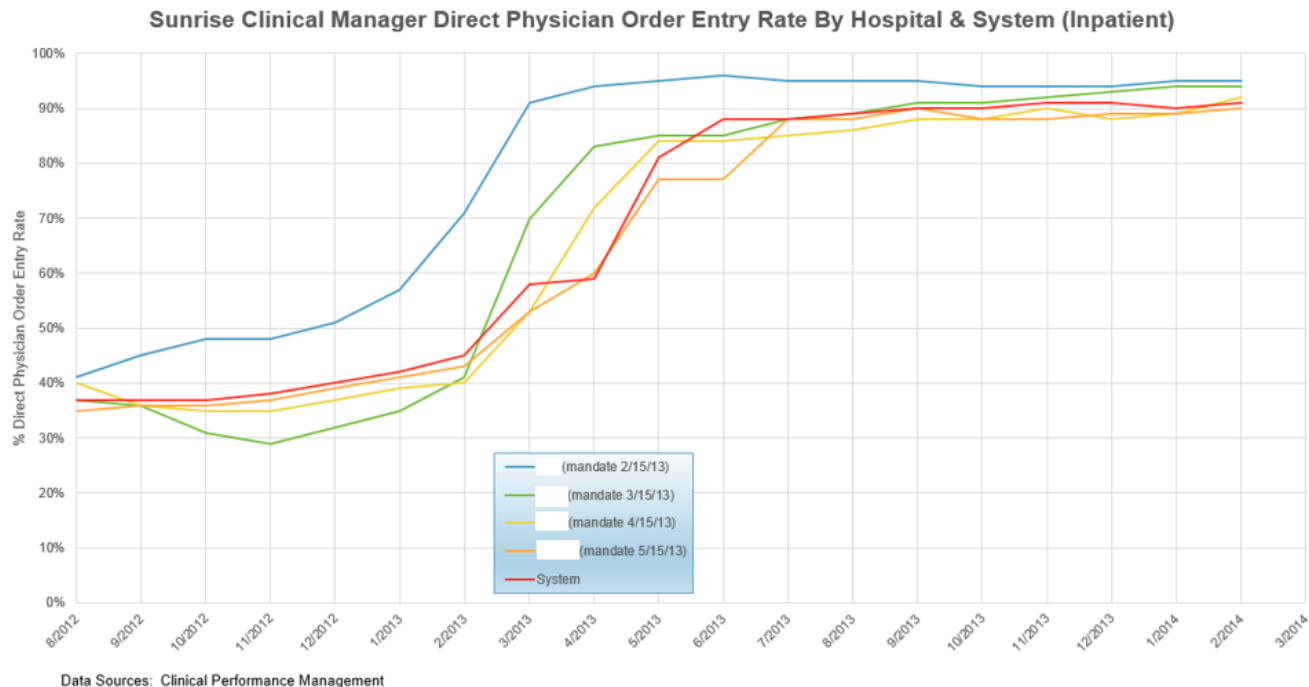
# Physician Progress Note Utilization





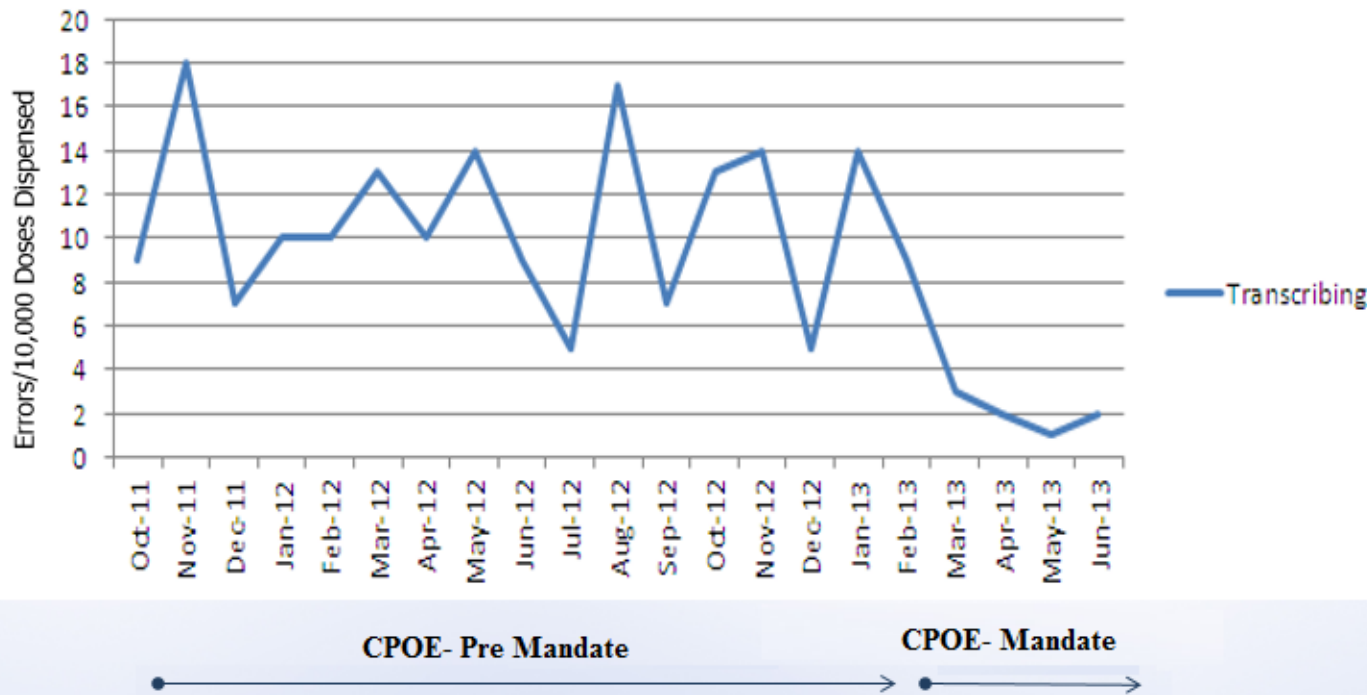
# Analytics: CPOE Utilization Rate

## CPOE Utilization Metrics: By Hospital & System



# Analytics: Drives Error Reduction

## Medication Transcription Errors



# ICU Delirium – Baylor Scott White

- **The Problem**
  - Increased incidence with mechanical ventilation
  - Associated with cognitive impairment
  - Increases in LOS, Costs, Mortality rate
- **The Solution**
  - Implement the ICU Delirium package
  - Implement the ABCDE Bundle and facilitate adherence to protocol
  - Measure adherence and outcomes
- **The Outcomes**
  - Increased adherence to protocol
  - Reduced incidence of ICU Delirium, Reduce LOS, Reduce Mortality rate

# ICU Delirium - Summary

## ABCDE Bundle Adherence at BSWH, 2012-2015

ABCDE: Sedation Awakening Trial (SAT)    Population- ABCDE Patients admitted to    between 7/1/2014 and 7/31/2014.    Report Criteria						
Visits	Total SAT Eligible Days	Eligible Days SAT Done (% Total)				
9	22	15 (68.2)				
Encounter Number	Location	Ventilator Date	SAT Eligible	SAT Done Per Documentation	SAT Done per Ventilator Mode	SAT Not Eligible Why Not
	BAS-C-CVICU-06-P	7/15/2014	✓			
	BAS-C-CVICU-04-P	7/17/2014	✓	✓	✓	
	BAS-A-2 ICU-12-P	7/13/2014	✓	✓	✓	
	BAS-A-2 ICU-12-P	7/14/2014	✓		✓	
	BAS-A-2 ICU-12-P	7/15/2014	✓		✓	
	BAS-A-2 ICU-12-P	7/16/2014	✓		✓	
	BAS-A-2 ICU-12-P	7/17/2014	✓		✓	
	BAS-C-CVICU-15-P	7/15/2014	✓		✓	
	BAS-A-2 ICU-09-P	7/23/2014	✗			patient scheduled for
	BAS-A-2 ICU-09-P	7/24/2014	✓	✓		
	BAS-A-2 ICU-09-P	7/25/2014	✓		✓	
	BAS-C-CVICU-10-P	7/26/2014	✓	✓	✓	
	BAS-C-CVICU-10-P	7/29/2014	✗			
	BAS-C-CVICU-10-P	7/30/2014	✗			Provider order to not perform
	BAS-A-2 ICU-10-P	7/28/2014	✓			
	BAS-A-2 ICU-10-P	7/29/2014	✓	✓		
	BAS-A-2 ICU-10-P	7/30/2014	✓	✓	✓	
	BAS-A-2 ICU-10-P	7/31/2014	✗			pt going
	BAS-A-2 ICU-10-P	8/1/2014	✓		✓	
	BAS-A-2 ICU-10-P	8/2/2014	✓		✓	
	BAS-A-2 ICU-10-P	8/3/2014	✓			
	BAS-A-2 ICU-10-P	8/4/2014	✓			

Adherence (%)

# Bundle Impact on ICU Delirium

## Comparison Group: 25%-50% Composite Bundle Adherence

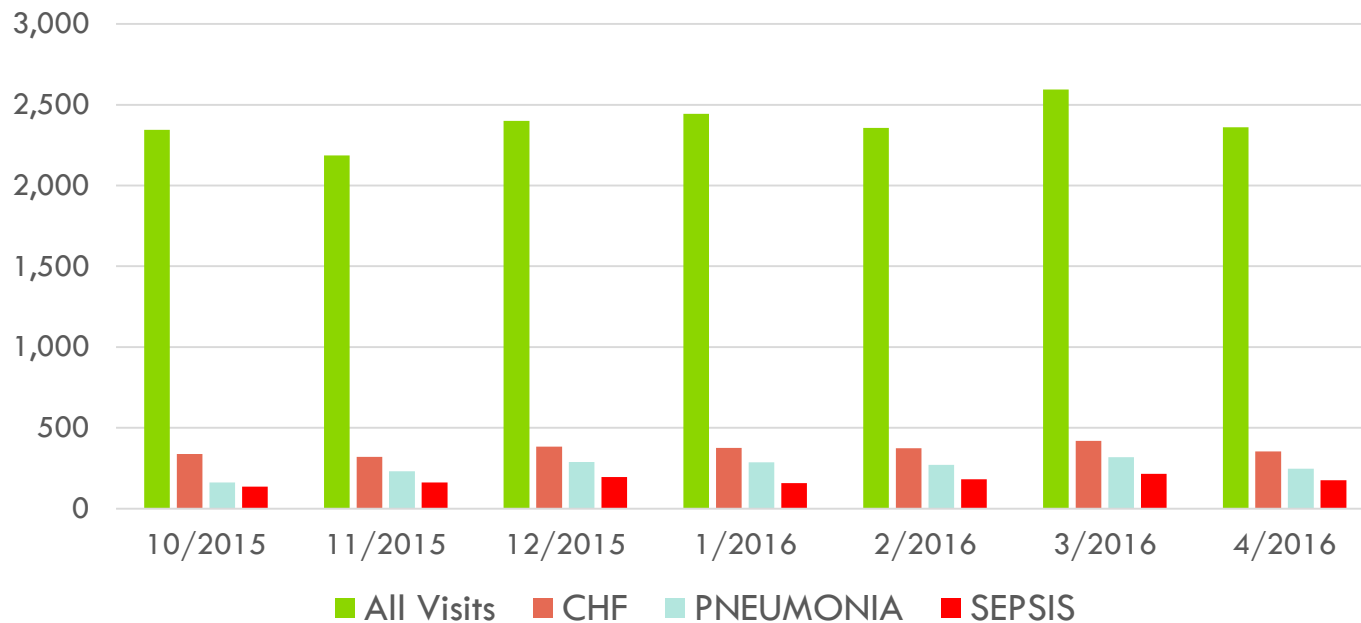
	Medium Adherence 50-75% (n = 1337)		High Adherence 75-100% (n = 869)	
Risk-adjusted Outcomes	Estimate	CI	Estimate	CI
Incidence of delirium (OR)	1.44*	(1.16, 1.79)	1.80*	(1.39, 2.34)
Duration of delirium (days) <sup>a</sup>	0.21*	(0.10, 0.32)	0.30*	(0.10, 0.50)
Incidence of coma (OR)	0.63*	(0.47, 0.83)	0.44*	(0.33, 0.61)
Duration of coma (days) <sup>b</sup>	-0.40*	(-0.46, -0.33)	-0.64*	(-0.78, -0.50)
Ventilator days	-0.14*	(-0.22, -0.05)	-0.40	(-0.50, -0.30)
Mobilized out of bed (OR)	2.37*	(1.78, 3.16)	4.56*	(3.31, 6.29)
Discharged home (OR)	1.43*	(1.15, 1.79)	1.71*	(1.31, 2.23)
Inpatient mortality (OR)	0.43*	(0.34, 0.54)	0.22*	(0.16, 0.31)

<sup>a</sup>For patients diagnosed with delirium

<sup>b</sup>For patients diagnosed with coma

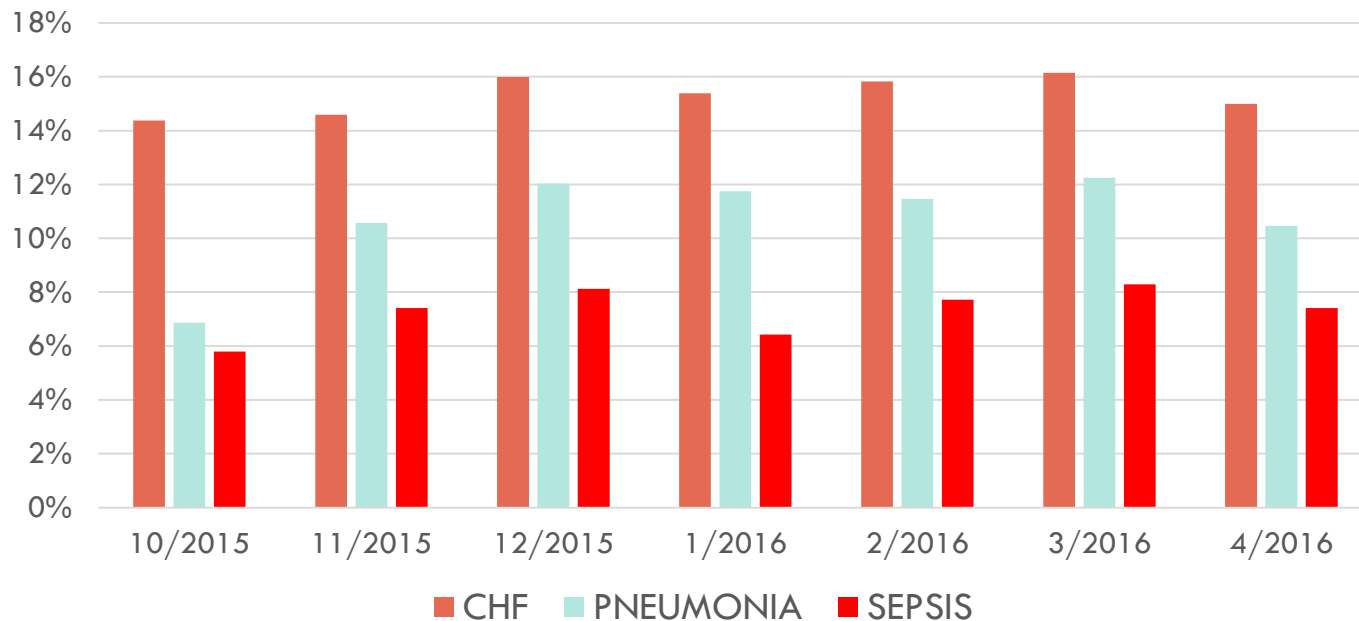
\*p < 0.05

# Prevalent Disease by Number of Visits

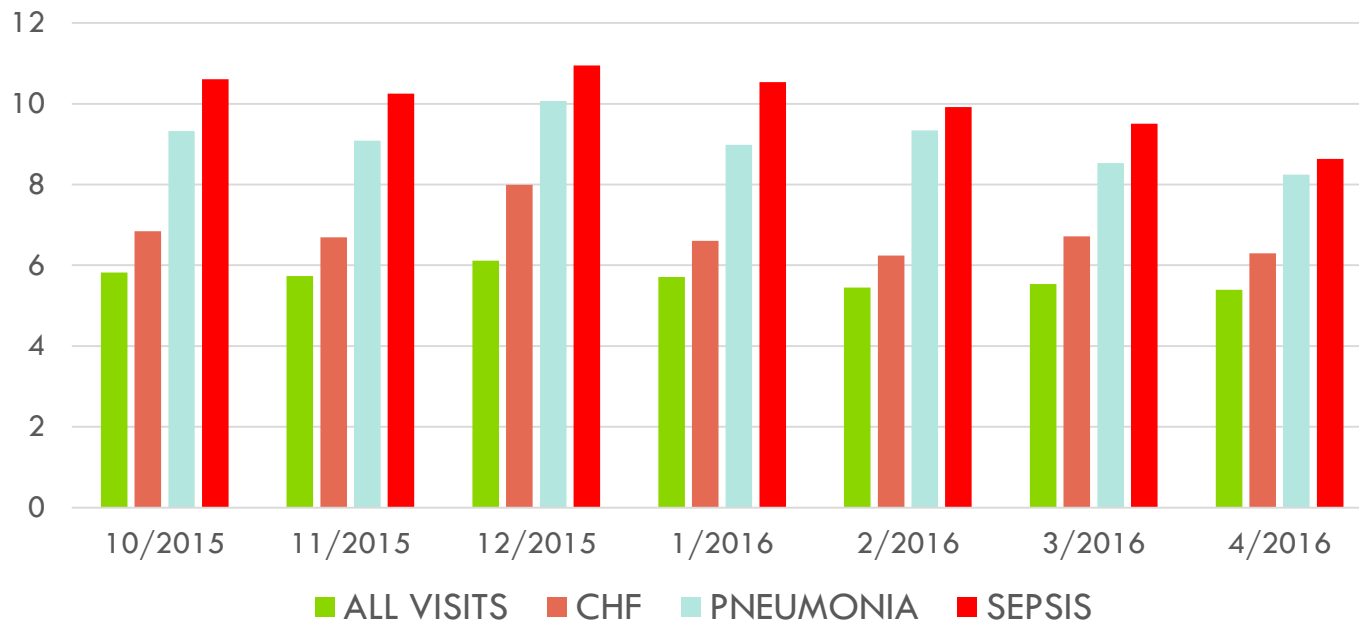




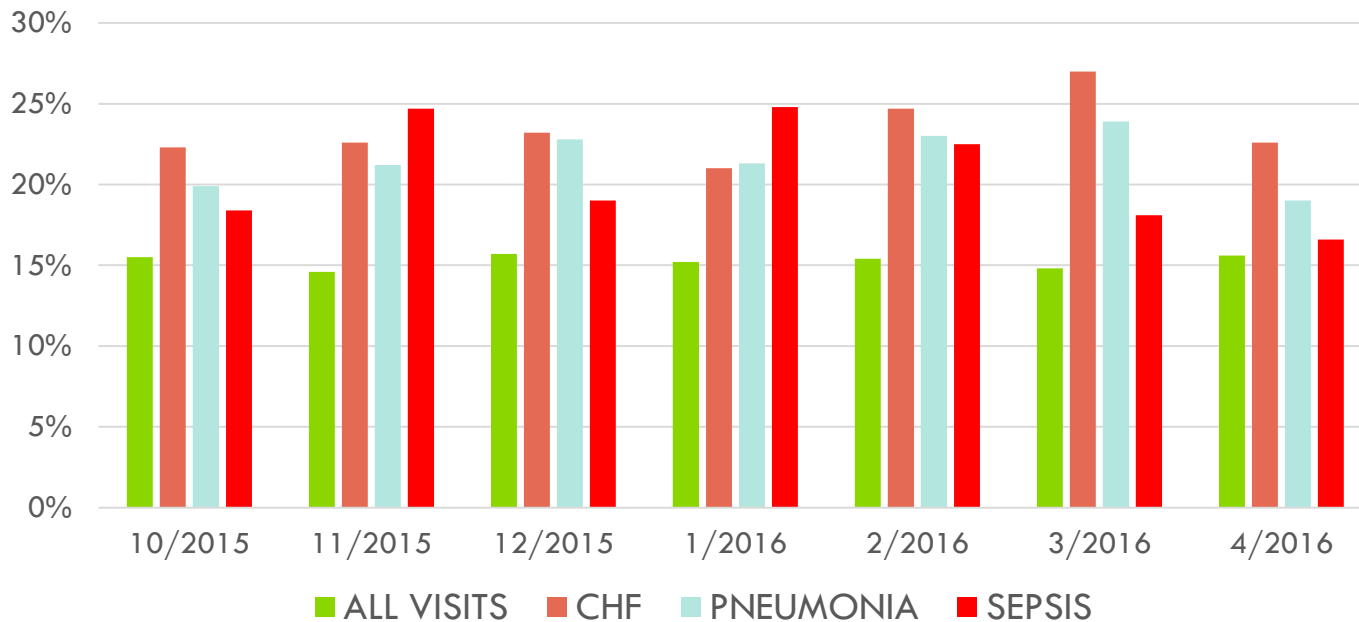
# Prevalent Disease by Per Cent of Visits



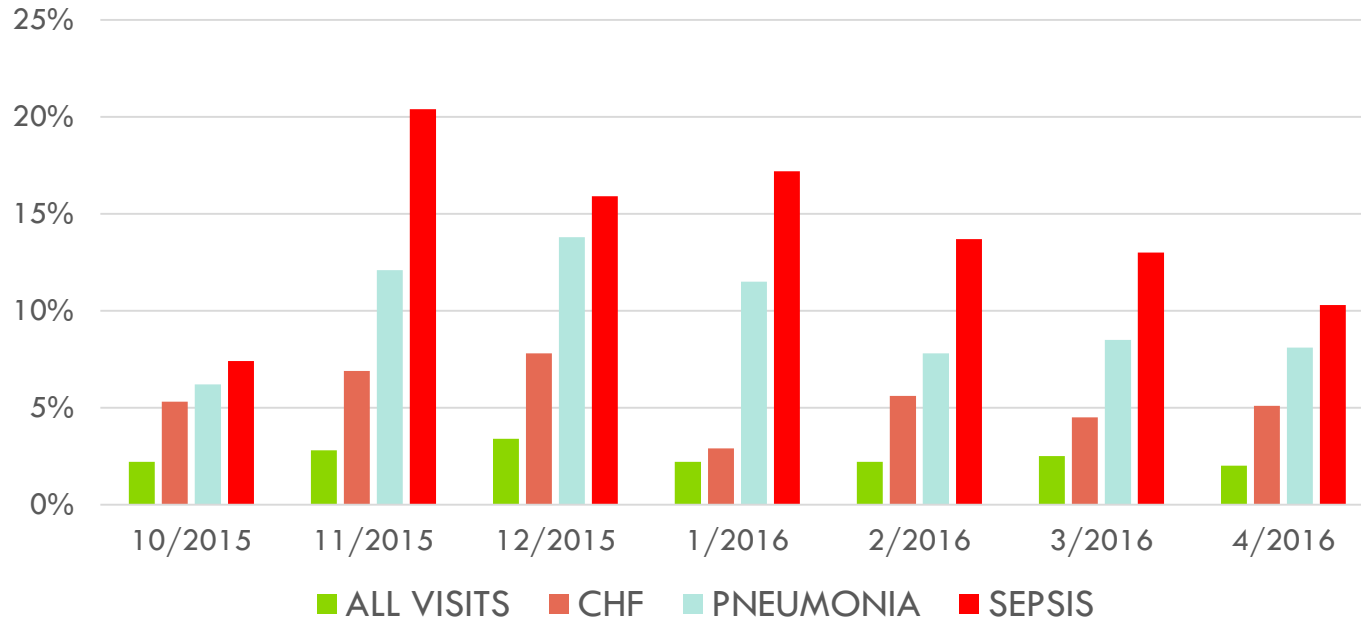
# Prevalent Disease by AVERAGE LOS



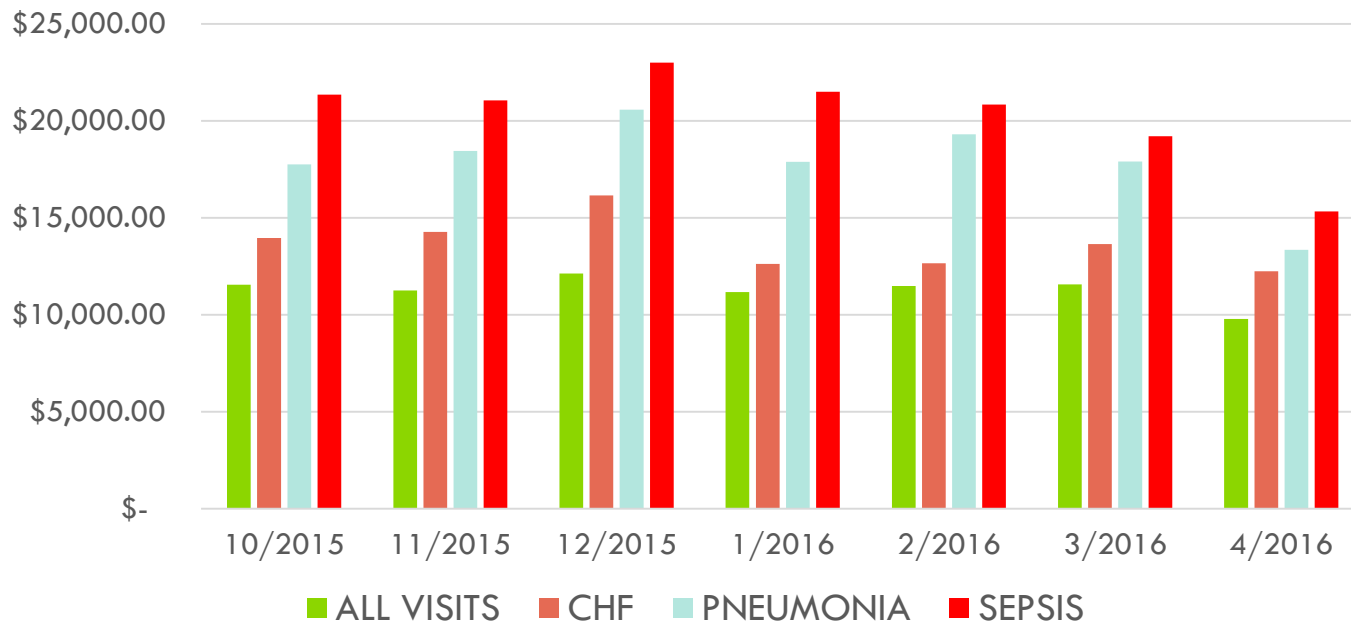
# Prevalent Disease by 30 DAY READMISSION RATE



# Prevalent Disease by Per Cent MORTALITY RATE



# Prevalent Disease by AVERAGE COST PER VISIT



# Sepsis – Orlando Health

- **The Problem**

- Early identification and treatment of Sepsis tied to outcomes
- Sepsis accounts of increased LOS, Costs, Mortality rate

- **The Solution**

- Implement early warning and deterioration alerts
- Implement order set auto selections - Auto select Lactate, UA, Blood Culture, Renal panel-If Lactate  $> 2$ , auto order in 4 hours
- Implement Sepsis progress and follow up structured documentation
- Implement Clinical Performance Manager

- **The Outcomes**

- Early detection and treatment of Sepsis
- Reduced Mortality rate



# Sepsis - Summary

## Nurse

- Screening mandatory at shift change
- 3-tiered screening (SIRS, Sepsis, Severe Sepsis)

## Rapid Response

- Alerts to Rapid Response Team (RRT) based on Nursing Screen

## Physician

- Order set revisions
- Automated creation of Health Issue

**18% reduction in Mortality from 2013 to 2014**

# Pediatric Dose Range Checking- Phoenix Children's

- **The Problem**

- Pediatric patients are at higher risk for medication errors and Adverse Drug Event (ADE)
- Pediatric drug dose range alerts require evidence based content


- **The Solution**

- Implement the Pediatric Dose Range content
  - Highly Ineffective Dose (No Alert) - High Dose (soft stop) - Max Dose (hard stop)
- Implement CPM Alert Dashboards
  - Alert frequency / effectiveness and actions on alerts

- **The Outcomes**

- Decrease Adverse Drug Events (ADE)

# Pediatric Drug



**Of 330 Hard Stops  
each month,  
300 (90%) resulted  
in Order DC'ed or  
Modified !**

# Intravenous to Oral Medication Stewardship

- **The Problem**
  - 1/3<sup>rd</sup> of patients are eligible to switch to IV medications after 2-3 days of IV therapy
- **The Solution**
  - Implement the IVPO package
  - Alert clinician during IV order / diet ordering of potential to switch
  - Auto enter pharmacy consults
  - CPM monitoring reports
- **The Outcomes**
  - Reduced infection rates, Reduce LOS
  - Reduced medication costs

# Intravenous to Oral Medication Stewardship

Population Set: 
 Facility Name List:

Admission From: 
 Admission To:

Medication Order List:

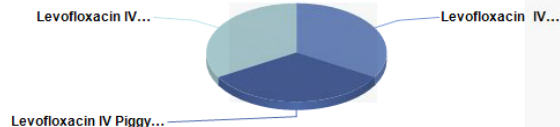
IV to PO Switch Therapy Main

Population- Demo- All Inpatient Visits Admission between 7/1/2015 and 10/31/2015.

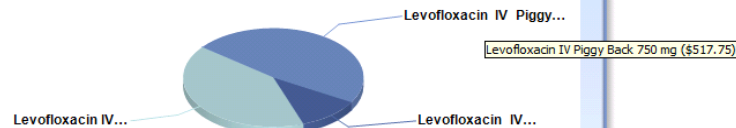
[Report Criteria](#)

Facility	Month/Year	Medication	IV Doses/ 1000 Patient Days	# IV Doses Administered	# IV Doses With Diet	% IV Doses with Diet
	7/2015	<a href="#">Levofloxacin IV Piggy Back 250 mg</a>	0.7	10	10	100
		<a href="#">Levofloxacin IV Piggy Back 750 mg</a>	1.6	22	22	100
		<a href="#">Levofloxacin IV Piggy Back 500 mg</a>	2.7	36	32	88.9
	8/2015	<a href="#">Levofloxacin IV Piggy Back 250 mg</a>	2.5	34	30	88.2
		<a href="#">Levofloxacin IV Piggy Back 500 mg</a>	9.1	126	114	90.5
		<a href="#">Levofloxacin IV Piggy Back 750 mg</a>	9.5	132	116	87.9
	9/2015	<a href="#">Levofloxacin IV Piggy Back 250 mg</a>	1.3	17	17	100
		<a href="#">Levofloxacin IV Piggy Back 500 mg</a>	4.5	59	53	89.8
		<a href="#">Levofloxacin IV Piggy Back 750 mg</a>	6.5	86	70	81.4
	10/2015	<a href="#">Levofloxacin IV Piggy Back 250 mg</a>	2.1	25	25	100
		<a href="#">Levofloxacin IV Piggy Back 500 mg</a>	7.3	87	79	90.8
		<a href="#">Levofloxacin IV Piggy Back 750 mg</a>	10.6	126	109	86.5

IV Medication Doses Administered With Diet



Potential Cost Savings: \$3,150.73



# Central Line Associated Blood Stream Infection

- **The Problem**
  - There is an interest Central Line Associated Blood Stream Infection (CLABSI) protocol documentation compliance
- **The Solution**
  - Implement the CLABSI package
  - Capture central line POA
  - Capture line days – insertion deletion content.
  - Alert RN if missing mandatory documentation
    - Current design utilizes the ABC assessment and cares to flowsheets
- **The Outcomes**
  - Increased utilization of all central line protocol parameters
  - Decrease CLABSI

# Central Line Associated Blood Stream Infection

Central Line Report: Main

Population- Demo- CVC Insertion, Patients Admitted Between 1/1/2015 and 1/31/2015

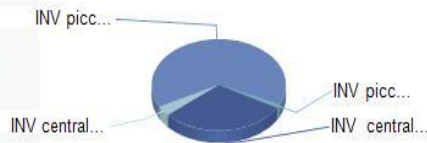
Report Criteria

Visits	Patients	Age (Avg)	Lines Inserted	Line Days	LOS Days (Avg)	Hospital Mortality Rate
92	90	57	145	1749	17	18.5

Facility

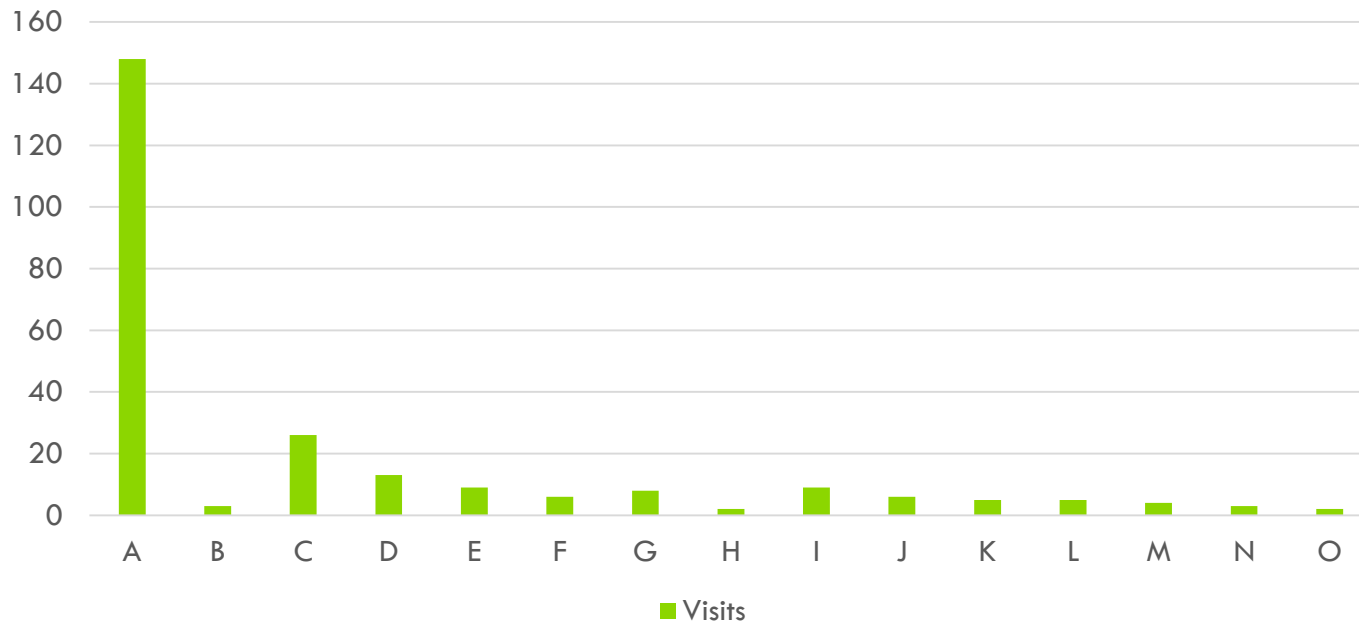


Lines Inserted



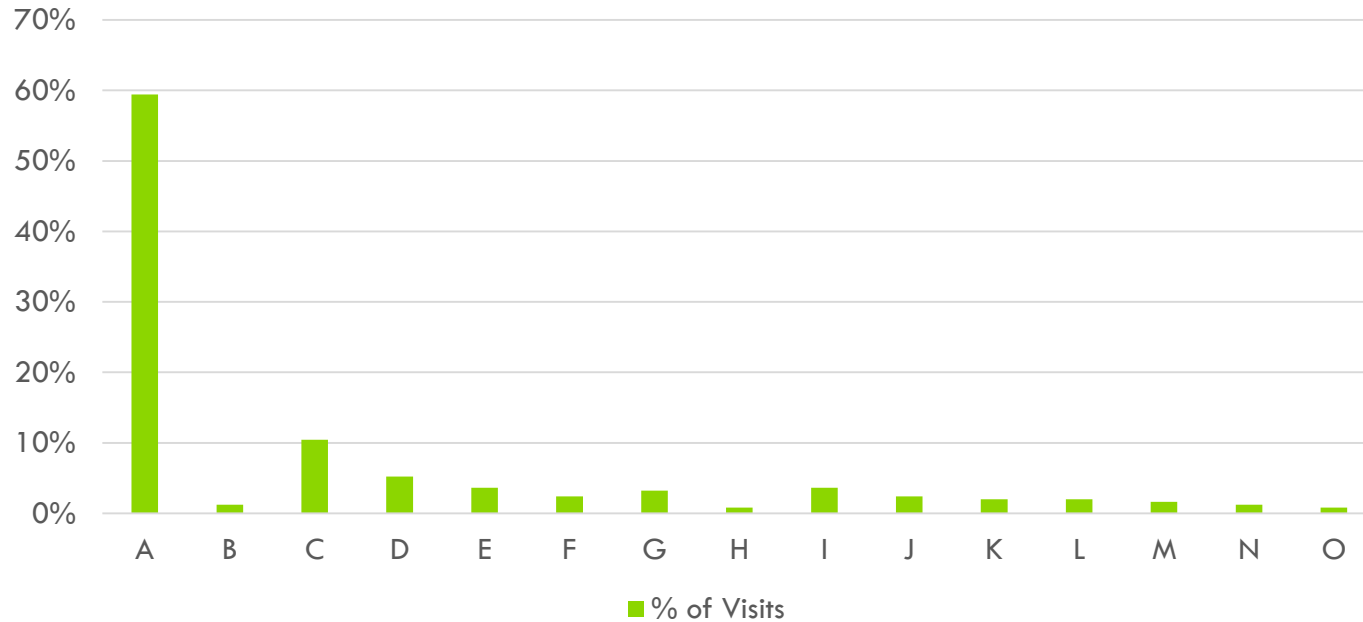
Encounter Number	Facility	Patient	DOB	Age	Admission	Discharge	LOS (days)	Insert Observation	Insert Date	Removal Date
				72	1/7/2015 12:00:00 AM	1/24/2015 12:00:00 AM	17	INV picc insert DT	1/14/2015	1/24/2015
				46	1/1/2015 12:00:00 AM	1/6/2015 12:00:00 AM	5	INV central line insert DT	1/2/2015	1/6/2015
				46	1/21/2015 12:00:00 AM	2/6/2015 12:00:00 AM	16	INV picc insert DT	1/21/2015	2/6/2015

# HIP REPLACEMENT VISITS



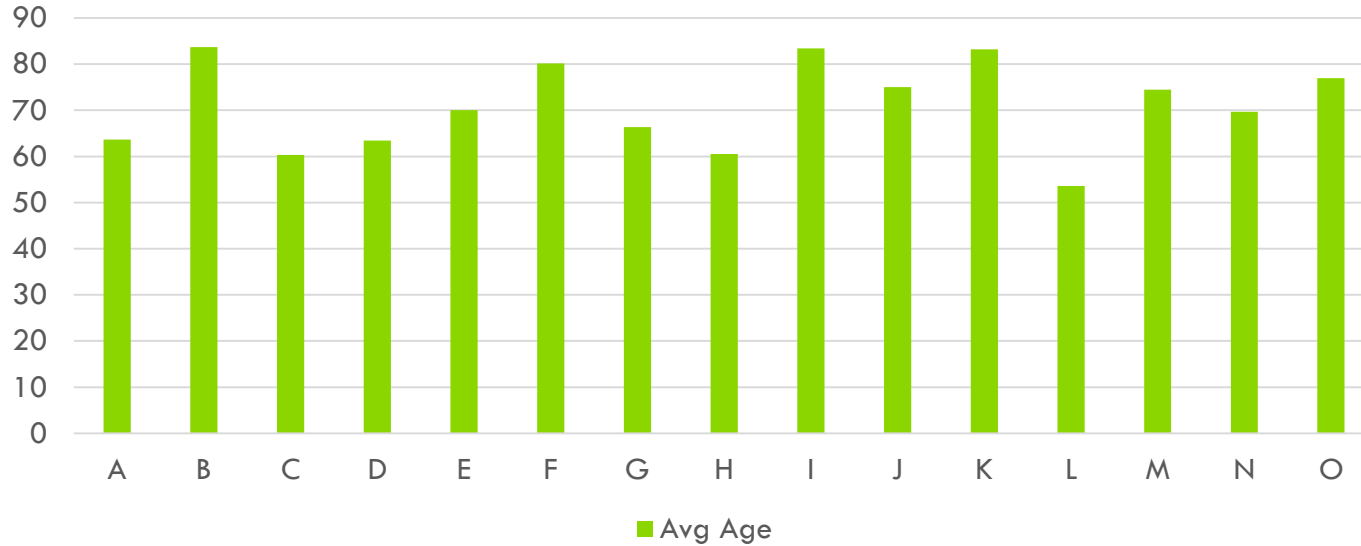


# HIP REPLACEMENT Per Cent of Visits

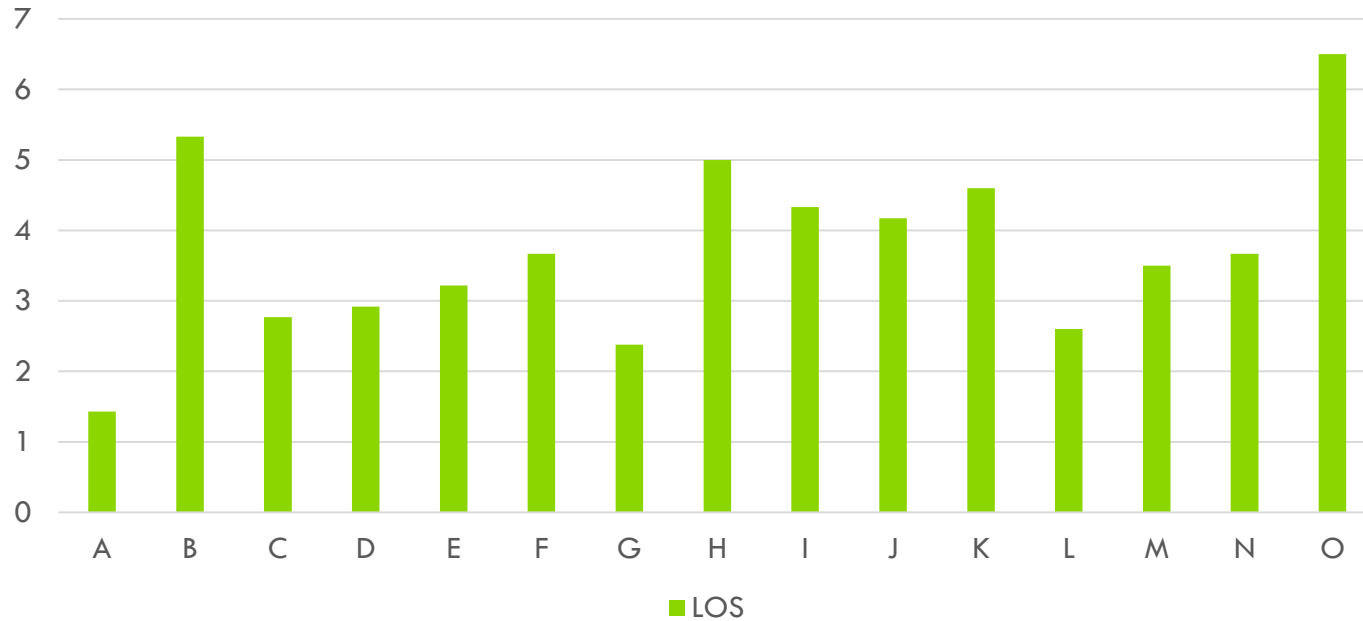


# HIP REPLACEMENT

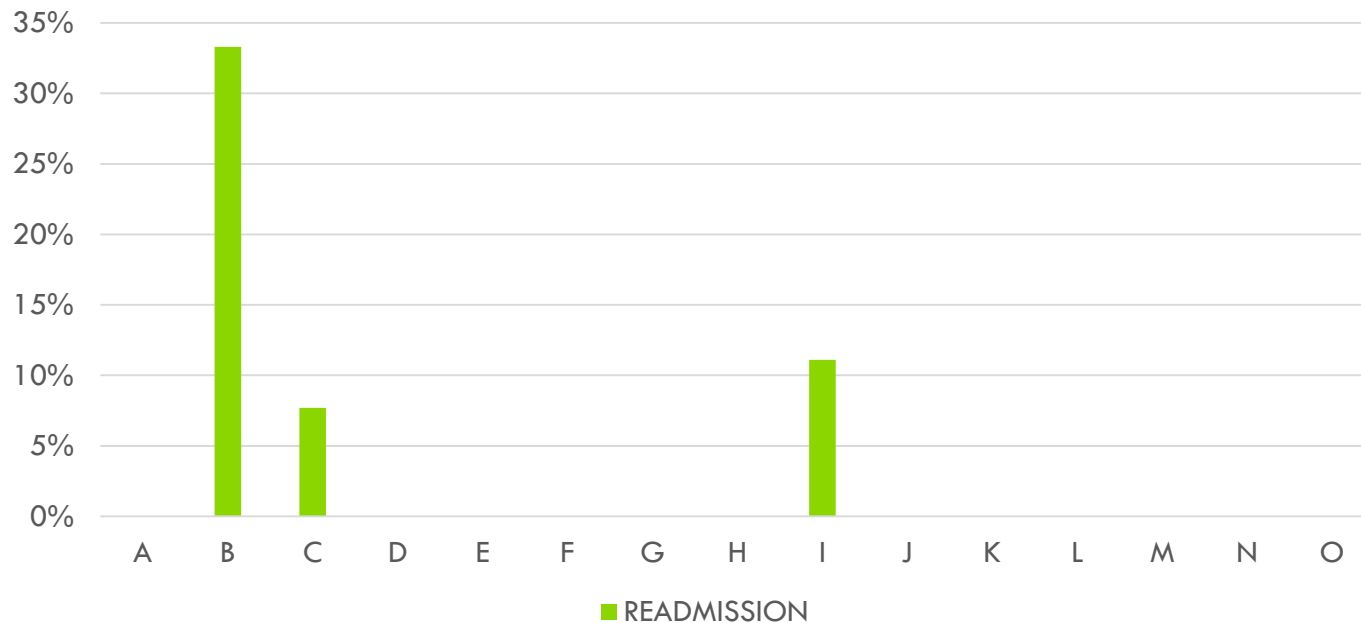
## Average Age



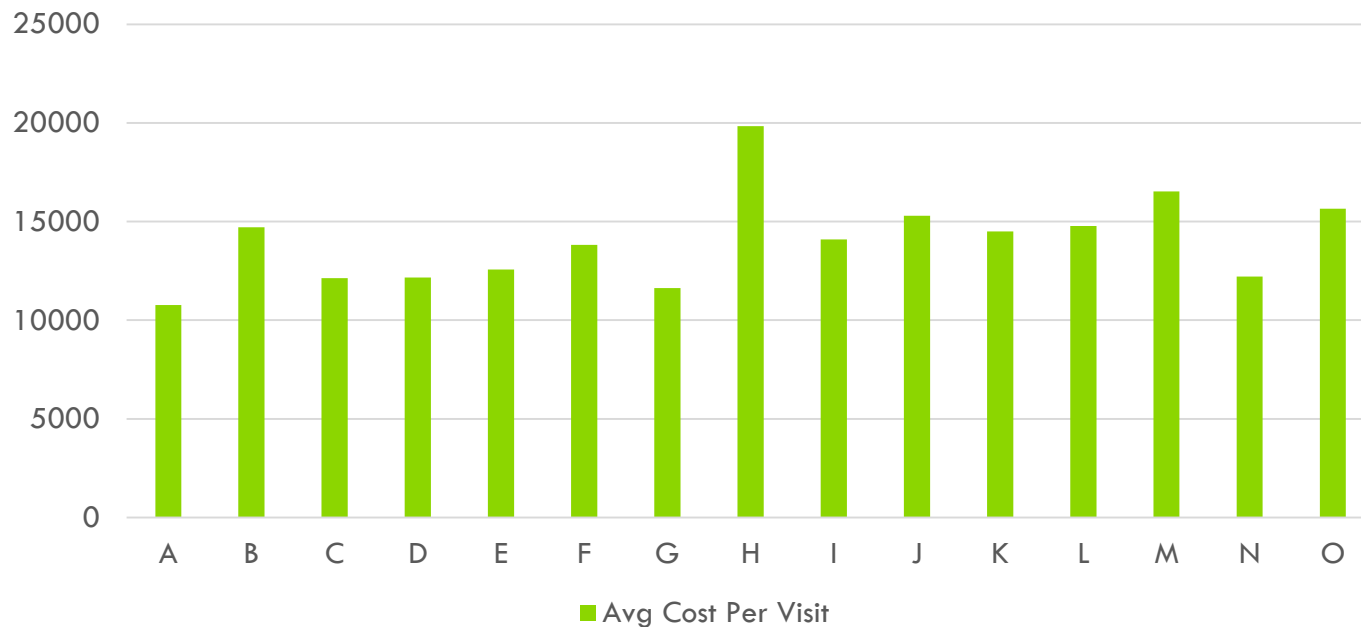
# HIP REPLACEMENT AVERAGE LOS



# HIP REPLACEMENT 30 DAY READMISSION RATE



# HIP REPLACEMENT AVERAGE COST PER VISIT



# Changing Practice and Improving Care in Calgary

- Ordering protocol developed that improves care of hospitalized patients with heart failure associated with a **20% reduction in readmissions at seven days and 8% reduction in readmissions at 30 days.**
- ED - **Reduced time from triage to antibiotics for sepsis patients** from 150 to 125 minutes (16%) in four months. One site dropped the time in half, **from 160 minutes to 80 minutes.**
- Increased use of lower dose of Ondansetron **by 5.7%, with a projected annual savings of CA\$84,987**
- Complete re-engineering of blood product ordering, delivery, administration and documentation that among many other outcomes resulted in **50% reduction** in the consumption of one of the most expensive products (Prothrombin Concentrate) such that the savings from this one product pay for the entire project within two years. Demonstrated a **cost savings of \$600,000 in the first 8 months.**
- **28% reduction** in antibiotic prescribing during implementation of order entry across adult hospitals (overprescribing of antibiotics drives costs, side effects, secondary infections and patient morbidity).



*Thank You*