



HIMSS[®]18

The leading health information and technology conference

WHERE **THE WORLD** CONNECTS FOR HEALTH

Conference & Exhibition | March 5–9, 2018

Las Vegas | Venetian – Palazzo – Sands Expo Center

Improving Health through Interoperability and Information Sharing

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Grady Health System

www.himssconference.org



#HIMSS18

HIMSS18

The leading health information and technology conference

WHERE **THE WORLD** CONNECTS FOR HEALTH



Disclosure

This presentation is sponsored by BD.

Grady Health System



- Located in **Atlanta, Georgia**
- **Largest safety-net health system** in the state of Georgia
- **State's largest teaching hospital**
- **Our centers of excellence** – including best-in-class stroke, trauma, burn, cancer, and cardiac care
- **Busiest Nationally Accredited Level 1 Trauma Center** in Georgia
- **911 ambulance provider** for Metro Atlanta
- One of the country's **largest infectious disease programs**
- **World's first 24 hour comprehensive sickle-cell center**

Facts and Figures



APPROXIMATELY
620,000
PATIENT VISITS



25% OF ALL GEORGIA
PHYSICIANS RECEIVED SOME
OF THEIR TRAINING FROM
GRADY



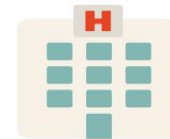
GRADY EMS RESPONDED TO
MORE THAN
125,000
911 CALLS



145,000+
PATIENTS TREATED IN THE
EMERGENCY DEPARTMENT



300
VOLUNTEERS DEDICATED TO
HELPING PATIENTS AND
FAMILIES



6
GRADY NEIGHBORHOOD
HEALTH CENTERS



GRADY IS THE LARGEST
HOSPITAL IN GEORGIA WITH
953
LICENSED BEDS



MORE THAN
6,000
EMPLOYEES

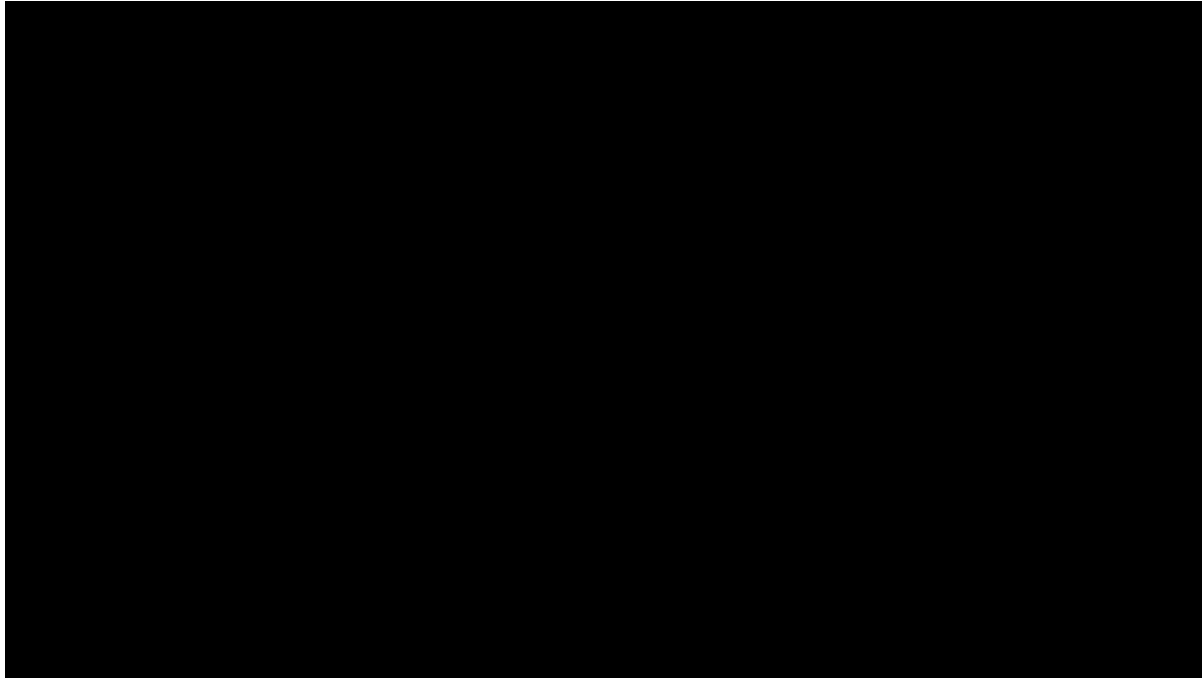
Transformational Innovation



Atlanta Can't Live Without Grady



Atlanta Can't Live Without Grady



Interoperability for Grady Health

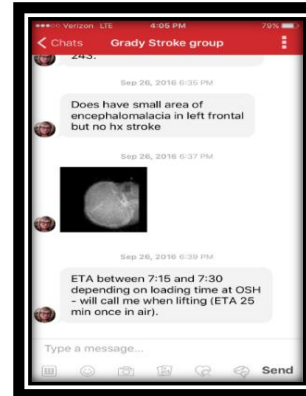


Tele-Radiology



Key Benefits

- Remote triage and consultation
- Rapid diagnosis
- Enhanced care team collaboration
- Reduced time to treatment
- Improved patient outcomes





Health Information Exchange



Care Everywhere Outside Records

Request Updates | Filters | Clear All Filters | Review Document

Home Documents

Filters: Clinical Summary Office Visit

Date	Type	Dept. Specialty	Providers	Document Source	Description
1/11/2018	Clinical Summary			Organization: 4400	
12/26/2017	Office Visit	Family Practice	Ranna, Diane	OCHN (Organization: 4400)	Diabetes mellitus without complication (HCC) (P...
12/25/2017	Office Visit			Organization: 4400	

↓

Patient Demographics

Reason for Referral

Reconcile Outside Info

System	Start Date	End Date	Source	Importance
✓ Outside name: Insulin (U100) 500 mg/ml	10/15/2015		Peer Vets Health System	10/15/2015
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✓ Outside name: Insulin (U100) 500 mg/ml	10/15/2015		Peer Vets Health System	10/15/2015
✓ Outside name: Insulin (U100) 500 mg/ml	10/15/2015		Peer Vets Health System	10/15/2015
✓ Outside name: Insulin (U100) 500 mg/ml	10/15/2015		Peer Vets Health System	10/15/2015
✓ Outside name: Insulin (U100) 500 mg/ml	10/15/2015		Peer Vets Health System	10/15/2015

With the Reconcile Outside Information activity, clinicians can easily add allergies, medications, problems, and immunizations from outside sources to the patient's chart.

Current Medications in Local Medical Record (After Changes Are Filed)

Medication	Start Date	End Date	Temp	Importance
Insulin (U100) 500 mg/ml	2008010			10/15/2015
Insulin (U100) 500 mg/ml	2008010	10/15/2015		10/15/2015
Insulin (U100) 500 mg/ml	2008010			10/15/2015

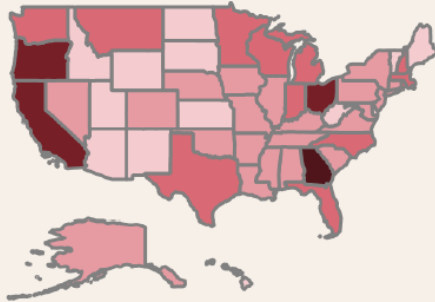
Key Benefits

- Improve patient safety by reducing errors
- Improve quality and outcomes at transitions of care
- Improve patient experience
- Reduce unnecessary redundant testing
- Reduce health related costs





We've exchanged patient records with organizations spanning **50 states**



We've exchanged patient records with more than

1,490 Hospitals

1,449 Emergency Departments

34,936 Clinics

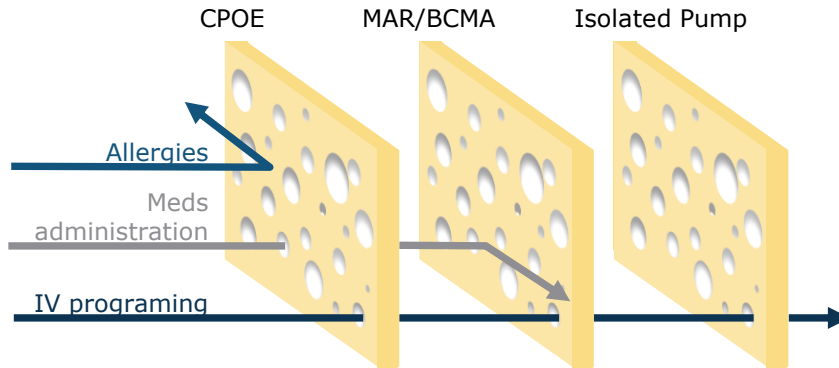
1,360,224 ▶ Patient Records Exchanged in 2017



Gaps with Unconnected Devices



Unconnected medical devices impact safety



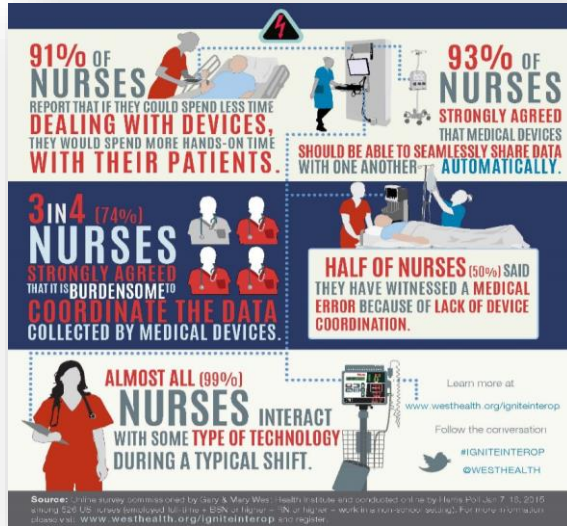
60% of smart pump IV infusions have administration errors²

Only 28% of infusion-related medication errors can be averted with dose error reduction software alone³

2. Schnock K, Dykes P, Albert J et al. The frequency of intravenous medication administration errors related to smart infusion pumps: a multihospital observational study. *BMJ Quality & Safety*. 2016;0:1-10. doi: 10.1136/bmjqs-2015-004465.
3. Guidance Article Infusion Pump Integration. *Health Devices*. 2013:210-221.



Unconnected Medical Devices Impact Quality



91% of nurses said medical devices take time from patients⁴

93% of nurses agree devices should share data automatically⁴

Delays in data entry can result in incorrect treatment and possible patient harm⁵

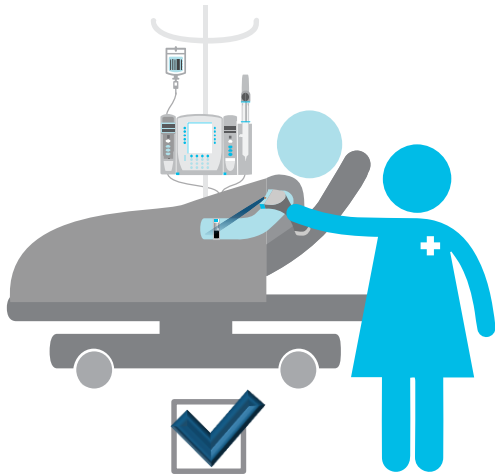


Infusion Pump Interoperability

BD Alaris™ System



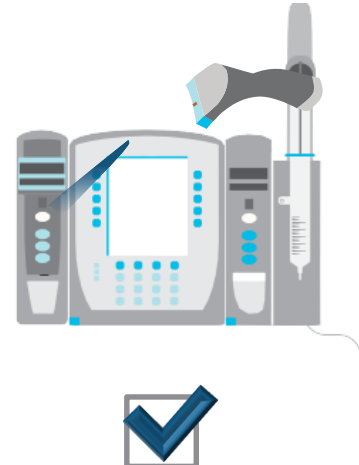
Brings pump and syringe infusions into BCMA workflow helping to protect more medications and patients



Scan



Scan



Scan



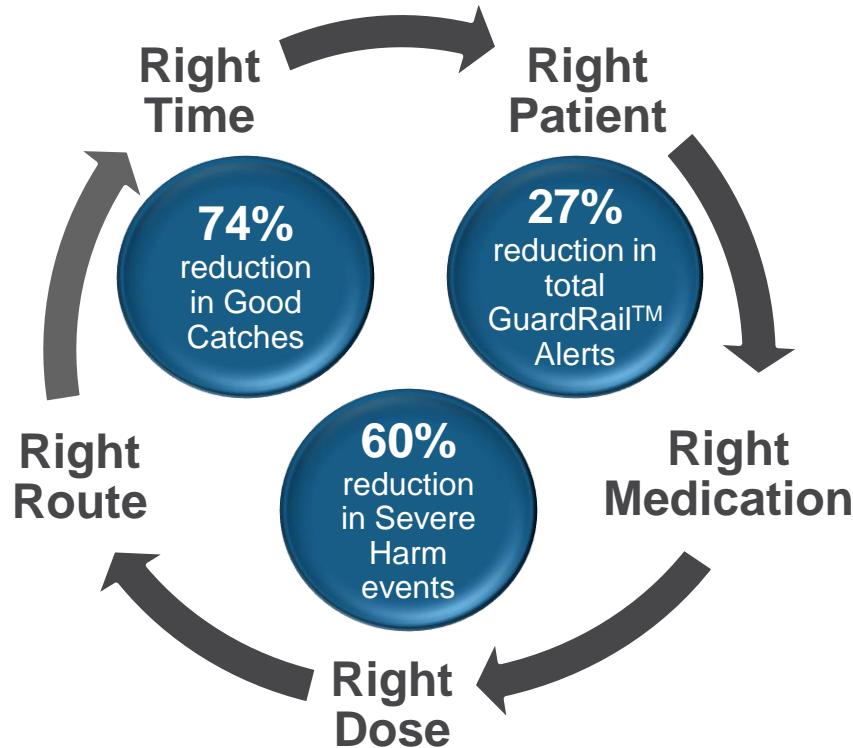
Infusion Pump Interoperability





Key Benefits

- 75% of infusion-related medication errors are **avoided with interoperability**³
- Brings pump and syringe infusions into BCMA workflow helping to protect more medications and patients
- Forces use of **Guardrails™** on every infusion and titration

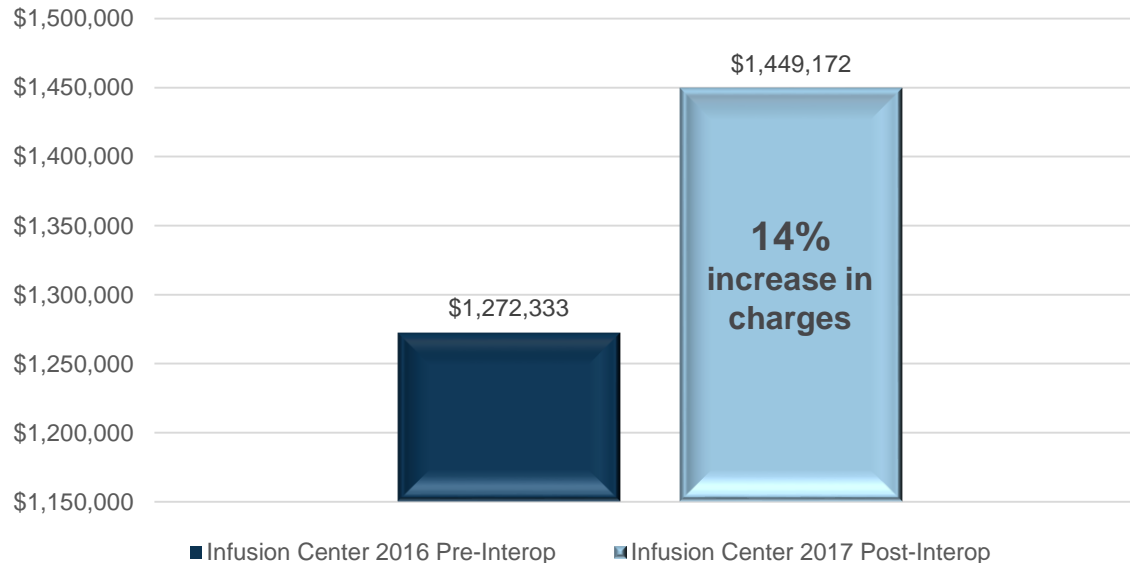
Achievements to Date



-  Linked the IV pump to the patient
-  Established a connection between what the MD ordered and what was actually administered

Infusion Interoperability

Financial Improvements Related to Documentation





Infusion Interoperability

Financial Improvements Related to Reduction in Severe Harm Adverse Drug Events (PADE)

\$1,225,000

in cost avoidance
due to reduction in
Severe Harm
Adverse Drug
Events

- 2015 2nd Qtr PADEs – 142
- 2017 2nd Qtr PADEs – 107
- Average cost of Preventable Adverse Drug Events - \$8,750 (Institute of Medicine, 2016)
- Total cost avoidance – (35 x \$8,750 x 4) = \$1,225,000



Infusion Visibility BD HealthSight™ Viewer



The interface displays various components for monitoring infusions:

- ATTENTION NOTICES:** Lists critical alerts such as 'Devices with Unlabeled in History Made', 'Device Not Communicating', and 'Device with Unlabeled Stopped'.
- CONTINUOUS INFUSIONS:** A timeline view showing infusion status for multiple patients, with color-coded bars for 'NORMAL', 'WARNING', and 'CRITICAL'.
- INFUSION TABLE:** A detailed table listing patient information, facility name, infusion name, drug, dose, rate, and status.

Patient ID	Patient Name	Facility	Unit	Room	Infusion Name	Drug and Dose Unit	Dose	Rate	Qualifiers	Replacement Status	Start/End Time	Inf. Status	Remaining
L30033	Hoveler, Richard	Facility Name	ICU	800									
R120865	James, Jan	Facility Name	ICU	101	Lorazepam	400 mg/100 mL	400 mg	200 mL/hr	N/A	N/A	12/22/16 13:15	4hr 46min	0 mL
LPT0294	Smith, Bob	Facility Name	ICU	513	Diazepam	400 mg/200 mL	25.17 mL/hr		N/A	N/A	12/22/16 13:15	4hr 46min	0 mL
3488824	Clark, Bobbie	Facility Name	Med/Surg	210	Bevacizumab	N/A	N/A	125 mL/hr		N/A	12/22/16 13:15	4hr 46min	0 mL
R120864	Thomas, Jack	Facility Name	ICU	316	Yield	N/A	N/A	5.5 mL/hr		N/A	12/22/16 13:15	4hr 46min	55.50 mL
R120864	Thomas, Jack	Facility Name	ICU	316	Diazepam	80 mg/100 mL	30 mg/kg/hr	3.4 mL/hr		N/A	12/22/16 13:15	4hr 46min	138.27 mL
Unknown	Unknown	Facility Name	Unknown	Unknown	Statbolin	2.5 gram/200 mL	100 mg/kg/hr	42 mL/hr		N/A	12/22/16 13:15	5hr 46min	0 mL
0902-487	Fisher, Mark	Facility Name	Orthoped	311	Cefazolin	800 mg/100 mL	800 mg/hr	800 mL/hr		N/A	12/22/16 13:15	4hr 46min	108.27 mL
KMG0204	Das, George	Facility Name	Phed ICU	510	Unknown	N/A	N/A	30 mL/hr		N/A	12/22/16 13:15	4hr 46min	24.36 mL
L828244	Le, Barbara	Facility Name	ICU	104	Vancomycin	1000 mg/200 mL	1 gram	133 mL/hr		N/A	12/22/16 13:15	0hr 0min	0 mL
0902047	Clark, Richard	Facility Name	Med/Surg	214	Unknown	N/A	N/A	100 mL/hr		N/A	12/22/16 13:15	0hr 0min	0 mL
JPD0066	James, Jan	Facility Name	ICU	101	Alteplase	100 mg/100 mL	85 mg/hr	85 mL/hr		N/A	12/22/16 13:15	2hr 46min	70.05 mL
HT32676	Brown, Jill	Facility Name	L&D	320	Meg Bufen-L&D	20 gram/800 mL	4 gram/hr	100 mL/hr		N/A	12/22/16 13:15	4 hr 43 min	65.44 mL

Key Benefits

- *View infusion status in near real-time*
- Improves pharmacy operational efficiency
- Reduces unused IV preparations
- Reduces medication delivery time
- Stat IV order reduction





BD Pyxis™ ES System *Interoperability*



BD Pyxis™

Med Link Queue and Waste module

Challenges

- Need to spend more time with patients
- Need to reduce non-value added steps
- Need to reduce interruptions and errors

Value

- Patient-centric: brings workflow to patient bedside
- Efficient: streamlines nursing workflow
- Safe: helps minimize disruptions

Features

- Remote queue medications
- Remote waste documentation
- Check station availability
- Dose request

BD Pyxis™ Med Link Integration with **Epic**

Key Benefits

- **Single Sign On from Epic**
- **Access to Queue and Waste within EPIC eMAR**
 - Via tab or hotlink
 - Directly to Patient Orders within ES module
- **EPIC and ES Link co-visibility**

Medication Administration Simulation - Not For Human Use

Hawkins, Richard DoB: 11/10/1948 PID: LS003333
Male, 68 years old Loc: ICU 505

Scheduled IV Medications

insulin, 100 units in 100 mL
IV, Continuous, Routine
Start at 5 unit/h, titrate to maintain blood sugar

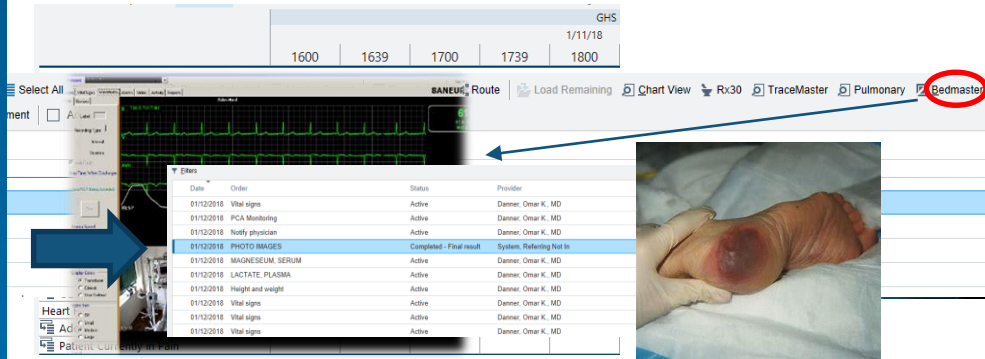
Cefepime, 2 GM
IV, Scheduled, Injection
Give over 8 hours

Acetaminophen, 1000 mg
Pill
Eat the pill

Potassium Chloride, 20mEq in 50mL
IV, Scheduled, Injection
Infuse over 1 hour

Pyxis ES Link

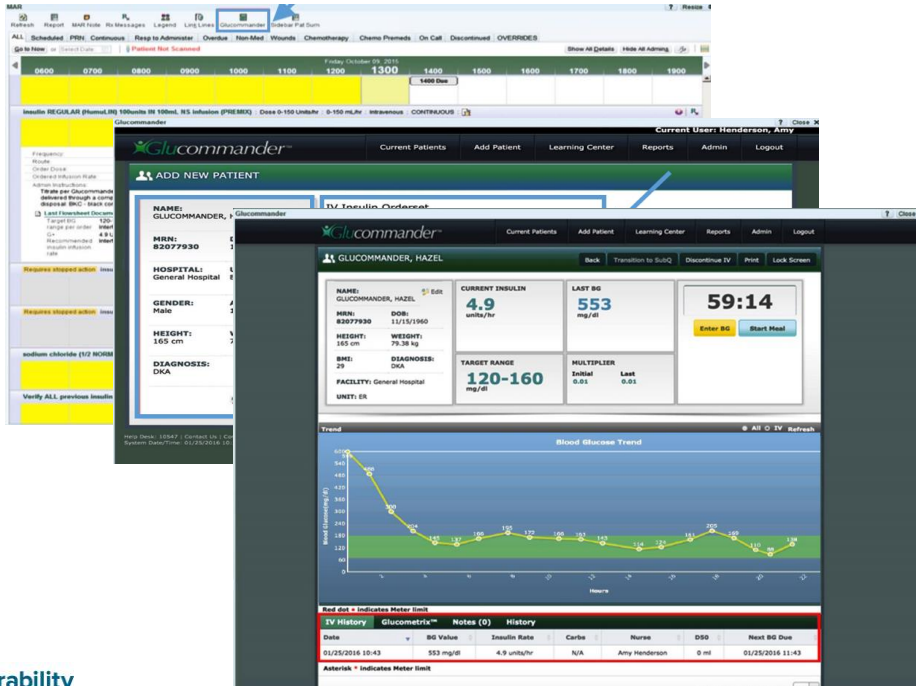
Device Interoperability



Key Benefits

- Promotes real-time data entry
- Improves data accuracy
- Enhances medical decision making
- Increases clinician efficiency

eGlycemic Management System



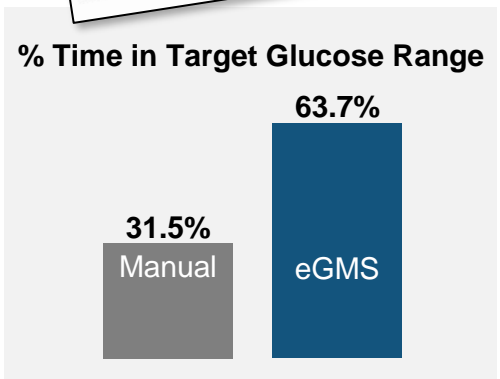
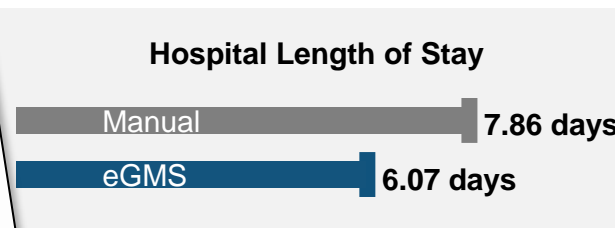
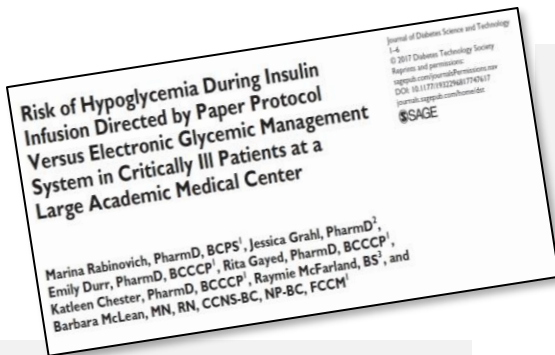
Key Benefits

- Application launches and fully functions from within EMR (single sign-on)
- Patient's insulin order set opens automatically
- Patient's dashboard continuously refreshes with insulin infusion rate recommendations and other glycemic indicators

eGlycemic Management System



Proven Outcomes (Published Studies)



Key Benefits

- Combines insights from a patient's condition with the physician order
- Potential impacts on improving:
 - Length of stay
 - Visibility into improved insulin management

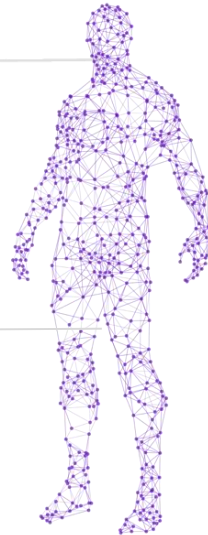
Cognitive Machine Interoperability Grady

A Cornerstone of Population Health

Grady Health is applying a unique Eigen Space based cognitive machine that helps our providers:

Determine the interventions that will most effectively reduce risk to drive clinical-level action and meaning

Accelerate time to value by driving intelligence across clients and patient populations



- Incorporated into the workflow of Grady's Mobile Integrated Health (MIH) program
- Clinician-embedded model that improves EMS use in high-risk populations
- Leveraging the patient-level risks and recommendations delivered by the cognitive machine
- MIH is better able to target home visits, remote monitoring and the actions that will decrease readmissions, 911 volumes, and ER visits

Interoperability with Cognitive Machine Learning

Key Benefits

- Improved productivity of nurses and case managers
- Smart rounding methodology
- Case managers are deployed based on complexity and likelihood of readmission
- Enhanced workload efficiencies
- Patient specific intervention recommendations that impact readmission reduction



Mobile Integrated Health Achievements 2016-2017

May – Nov 2016 (7 months)	Jan-June 2017 (6 months)
189 MIH reported visits	220 MIH reported visits
17 Avoided Readmissions	45 Avoided Readmissions
Total Visit Cost = \$37,500 (189 x \$200 p/visit)	Total Visit Cost = \$44,000 (220 x \$200 p/visit)
Total Jvion MIH ROI = \$190,400 (503% ROI)	Total Jvion MIH ROI = \$504,000 (1000% ROI)
Total 2016-2017 ROI = \$694,400	

Additional insights:

- *Significant readmission reduction if MIH visit was within 5-10 days of discharge
 - Readmission rates decreased by more than 10% in those cohorts
- *Readmission risk was reduced for future inpatient admissions after MIH visits
 - Impact lasts for several months (at least)



Telemedicine & Diabetic Eyes



Diabetes Facts:

The #1 cause of preventable blindness

- *50% of patients that have had diabetes for more than 10 years will experience Diabetic Retinopathy*
- *90% of patients that have had diabetes for more than 30 years will experience Diabetic Retinopathy*

Problem

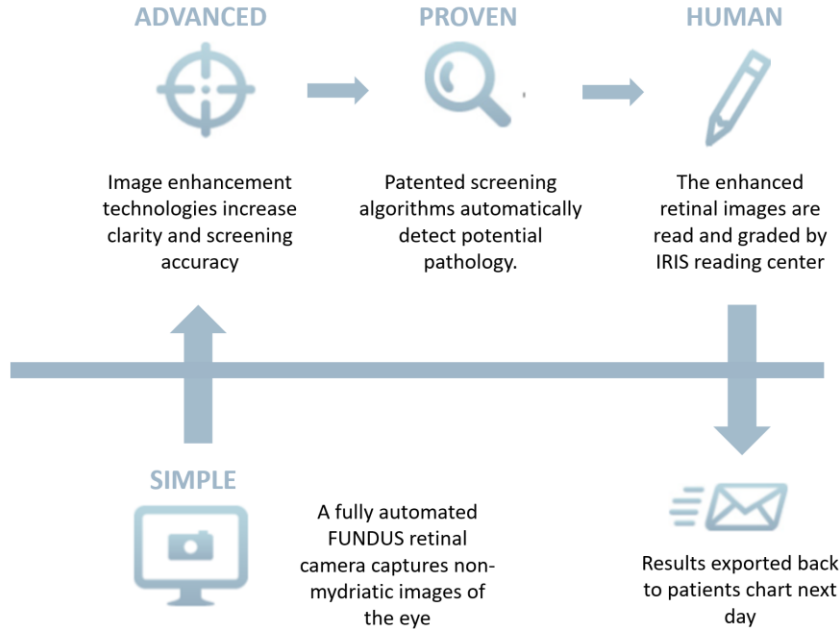
Overcapacity at the clinic & lack of insight regarding patients with pathology

Solution

PCP now conducts screening and refers patients with pathology



Outcomes of Early Detection



Key Benefits

The earlier diabetic retinopathy is detected, the greater the number of treatment options that are available at **much lower costs.**



Achievements to Date

Making a Difference Across the Entire Patient Population



What Grady has Achieved – Evidence-Based Outcomes

On a Mission to End
Preventable Blindness

6599 exams

133K Examined Nationally

40%

34%

25%

17%

15%

13%

25%

17%

- Patients examined with detected Pathology
- Patients diagnosed with Diabetic Retinopathy
- Patients identified with vision-threatening, progressive disease
- Increase in Risk Adjustment Eligible Diagnoses

SMART on FHIR

Improving Data Liquidity

A FHIR Future Burns Brightly for Population Health Management

As the healthcare industry warms up to FHIR, population health management and health data interoperability may be in for some significant improvements.



FHIR: The Future of Interoperability in Healthcare?

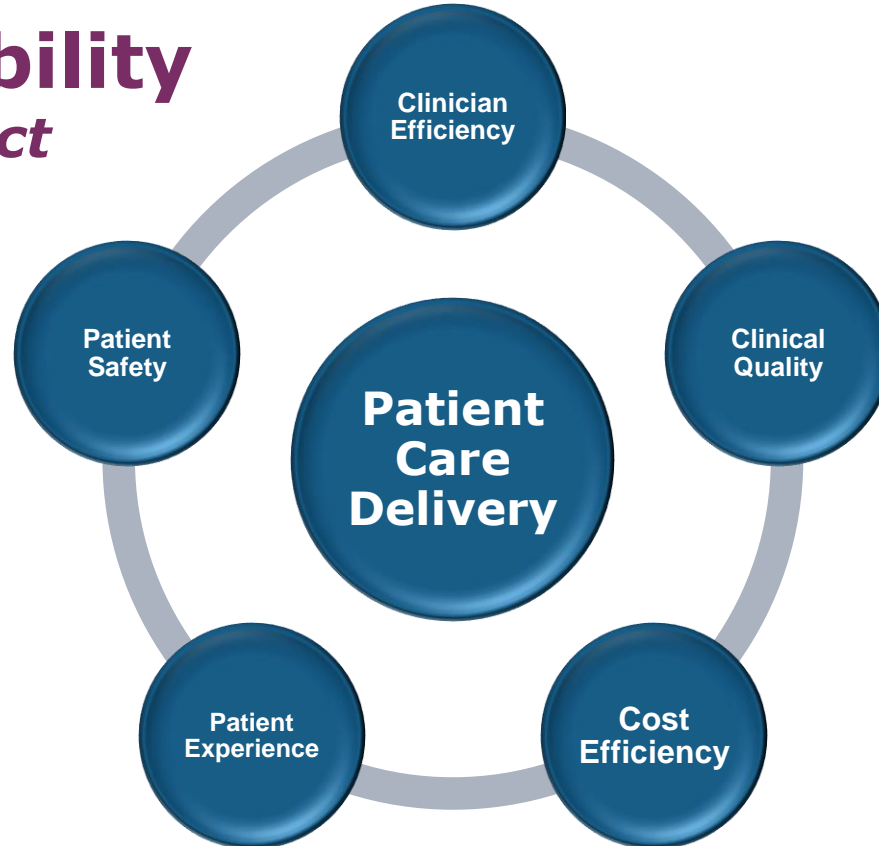
By Tony Catalano
Date: October 3, 2018
Category: Information Technology

Key Benefits

- Increases patient engagement
- Supports population health management
- Bolsters clinical decision support



Interoperability *Summary Impact*



Questions?



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