



SINI 2017
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Predictive Analytics: Proactive Integrated Capacity Management

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Objectives

- △ Describe methodology to embed organizational practices using predictive data to align patient demand and resource allocation.
- △ Illustrate examples of how using predictive analysis to right-size for demand can help improve quality and safety and drive top of license practice.

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Agenda

- △ What is Integrated Capacity Management
- △ Three (3) Health Systems Journeys
 - Organization A - Predictive Analytics and Cultural Assessment
 - Organization B - Transparency in Demand vs. Resources
 - Organization C - Patient Flow Rounds
- △ Results
- △ Questions

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The Integrated Capacity Management Model

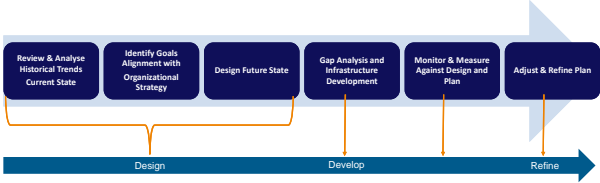


The diagram is a circular model divided into four quadrants, each with an icon and a brief description:

- Financial Impact:** Build data-driven plans and checklists.
- Quality Impact:** Proven predictive analytics.
- Satisfaction and Retention Impact:** Leverage equity and transparency to drive quality.
- Operational Impact:** Optimize patient flow.

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Integrated Capacity Management - Planning Continuum



The Planning Continuum consists of the following steps:

- Review & Analyse Historical Trends Current State
- Identify Goals Alignment with Organizational Strategy
- Design Future State
- Gap Analysis and Infrastructure Development
- Monitor & Measure Against Design and Plan
- Adjust & Refine Plan

Design | Develop | Refine

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3 Varied Systems, 3 Approaches

Organization A	Organization B	Organization C
<ul style="list-style-type: none"> • Four hospital system with \$1.8B in revenue • Efficient contracts with largest across Health insurance plans • Alignment strategies with key physician groups • Non-union • About us <ul style="list-style-type: none"> • 2,114 employees • 3,168 physicians • 280 medical residents • 1,339 licensed beds • 72,892 admissions • 205,898 emergency visits 	<ul style="list-style-type: none"> • 461 bed Level II Trauma Center • Women's & Children's Hospital - 72 beds • Rehabilitation Hospital - 60 beds • Small Hospital - 55 beds. • Small Hospital - 52 beds. • About us <ul style="list-style-type: none"> • Admissions: 25,392 • ED visits: 105,000; 66% of admissions • Employees: 3,755 (County's largest employer) • Active medical staff: 460 	<ul style="list-style-type: none"> • Large Health System, with many hospitals, \$4 Billion in operating revenue • Project focused in 5 hospitals • Strategic Targeting <ul style="list-style-type: none"> • Work on the patient experience of care • Aligning cost with value

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One thing we can all agree on!

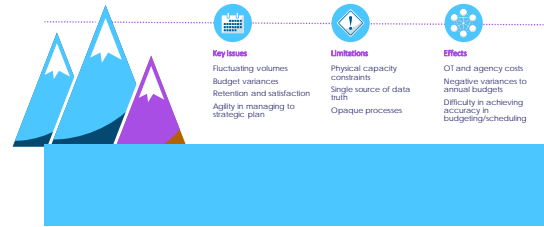
“ Staff nurses want to come into work every day, they want to practice at the highest level of their license and they want to positively impact patient care. And when we have the right number of nurses taking care of the right number of patients, good things happen. ”

—Corporate VP of Patient Care Services and Chief Experience Officer

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7

Capacity Management Challenges Faced



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The need for timely, data-driven decisions

3-5 Years	1-2 Years	1-4 Months	>30 days - today
What do we need to look like under value-based purchasing?	Where can we find more savings without drastic cuts?	How do we staff for unknown peaks and valleys?	What do we need to do to get these patients out by noon?
What is the next best use for this capacity?	...without hurting care quality, patient satisfaction or staff satisfaction?	What is the downstream impact of this OR schedule?	What can we do today to prepare for tomorrow? For the next shift?

How do we optimally deploy our capital and people resources?

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9

Organization A:
Focus on Predictive Analytics and Cultural Change

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Executive Hospital Overview



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Engaging Managers/Executives

Daily Projection Report 07/06 - Summary Level
 Status as 07/06 Monday, December 06, 2016

Total Count	Projected	Actual	Variance
07/06	319	332	13

07/06 Yesterday to 07/06 Today

Unscheduled Patients by Department	Projected	Actual	Variance
Emergency	85	84	9
ICU	34	36	4
Other	71	84	13
Total	79	84	5

07/06 Today to 07/06 Tomorrow

Actual	Projected	Projected	Projected	Projected	Bank Open	Bank Free
332	319	319	319	319	80	463

Today's Projected Census at 1:00 and Projected Patient Activity from 07/06 to 1:00

Monday	Projected Census	Projected Admissions	Projected Discharges	Projected Net Patient Days	Bank Open	Bank Free
Monday	314	28	24	52	55	463

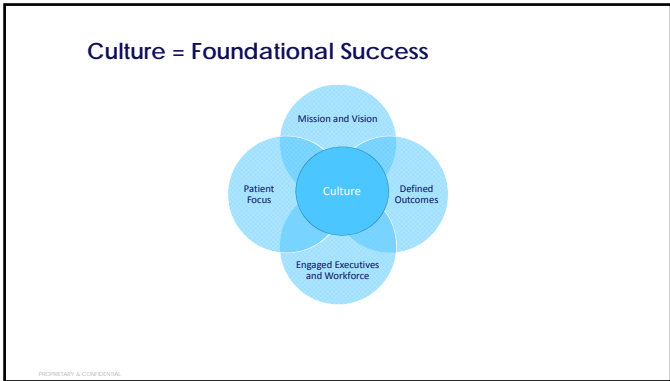
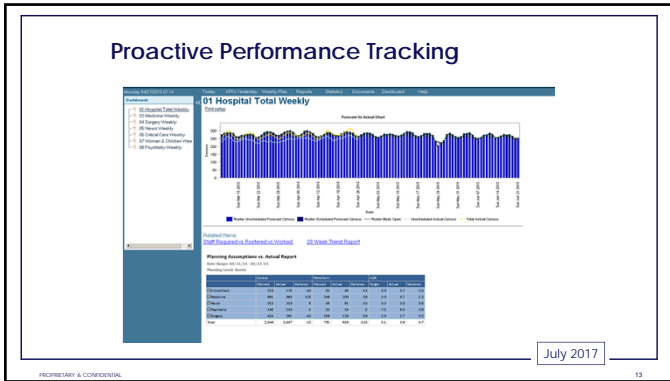
Projected Activity for the Next 8 Days

Day	07/06	07/07	07/08	07/09	07/10	07/11	07/12	07/13
Total	319	320	321	322	323	324	325	326
Admissions	85	86	87	88	89	90	91	92
Discharges	79	80	81	82	83	84	85	86
Net Patient Days	1500	1500	1500	1500	1500	1500	1500	1500

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12



You Can't Fix Culture

- △ Open Space Initiative
- △ Cultural Assessment
- △ Findings and Actions
- △ Fresh Perspective
- △ Hidden Stars

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Building Culture = Achieving Adoption

"It creates transparency ... that is the first step in improving processes."

"It's so nice to have something that I can just jump in, pull up a report, and see the trends of my unit. I love that. I wish more of the applications would do that."

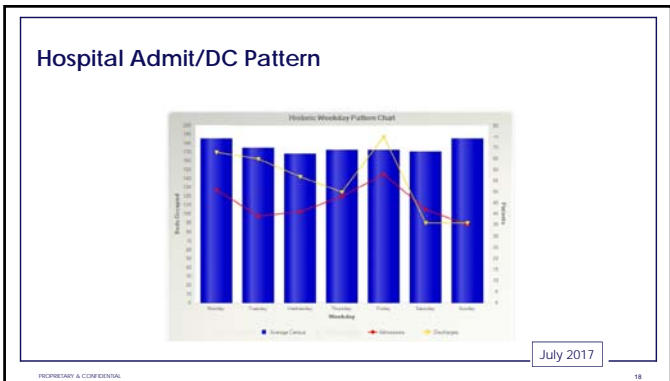
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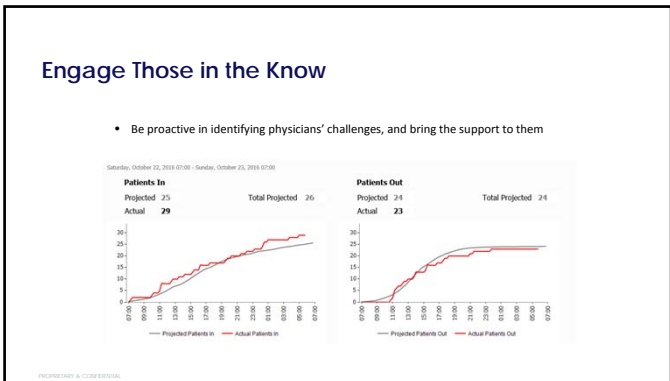
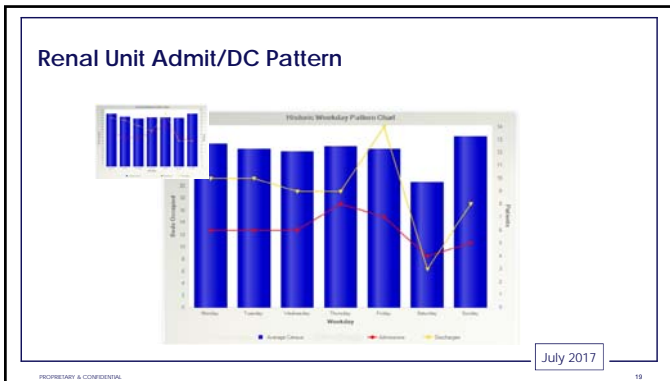
Section: 2.0

Organization B:

Focus on Transparency in Demand and Resources

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Section 3.0

Organization C: Focus on Transparency and Patient Flow Rounds

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- ### Quality Flow Round
- Objectives of the Quality Flow Rounds:
- Standardize Process
 - Utilize Transparency to Drive Process across clinician roles
 - Improve Quality of Care
 - Decrease Length of Stay
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Transparency Drives Process

Developed a table grid that is displayed on all units and updated during their quality flow rounds to ensure everyone is in sync.

Room	Name	MRN	DOB	Admit	Location	Referral	SA	MA	PA	UC	MS	PTSD	Comments
1118	DR. BARRY	008-21-13											actual TRANS UPES 02
1119	BERTAL, R	58-02-08											
1120	BERTAL, R	58-02-20											
1121	BERTAL, R	58-02-01											
1122	BERTAL, R	58-02-02											
1123	BERTAL, R	423-23-20											missing PFTST schedule 01
1124	BERTAL, R	403-03-17											
1125	BERTAL, R	423-23-18											PT needs grant
1126	BERTAL, R	403-03-14											creating out of bed

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- ### Identify and select Discharge Acuity
- C = Patient has complicated discharge needs
 - New ECF / LTACH / Hospice / Acute Rehab
 - Medication assistance
 - Complex home care needs (multiple antibiotics, dressing changes, wound vac, etc.)
 - Placement issues (Vent/dialysis patients)
 - Challenging families
 - History or suspect abuse / neglect
 - History of drug dependency
 - Readmit within last 30 days.
 - D = Patient presents with highly complex psychosocial issues that are barriers to discharge.
 - Financial barriers to obtain required post discharge services
 - Homeless
 - Incarcerated
 - Guardianship
 - Out of area discharge
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Length Of Stay: Case Management



- Alerting case management of those patients whose LOS has exceeded their targeted GMLOS by activating the "Case Management Alert" on the patient in Visibility. Through the visualization of the board or via report the Director for Case Management can quickly assess and allocate appropriate resources to identify challenges and initiate the appropriate action.

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3 Varied Systems, 3 Approaches, GREAT Results across the board!

Organization A	Organization B	Organization C
<ul style="list-style-type: none"> Self-service analytics at every level Proactive, data-driven behavior Reliance on single source of truth Expanded resource pool Self scheduling Saving from fixing units to predicted demand \$700,000 (est) in reduced OT use 2 day reduction in LOS Reduced ED wait times 	<ul style="list-style-type: none"> Shaved 1/2 day off ALOS in 9 months (12% improvement) Executives approaching front line staff for help interpreting the data is powerful for engagement Engaged physician leaders on discharge planning and OR start times Better understanding of when staffing must peak and valley 	<ul style="list-style-type: none"> Implemented standard operating procedure Compare LOS with GMLOS on a daily basis to mitigate avoidable days Improved Discharge accuracy Decreased unanticipated discharges Improved clinical outcomes: <ul style="list-style-type: none"> Decreased CAUTI Decreased Falls with Harm Enhanced clinical manager's awareness of patient status Enables proactive management rather than fighting fires Assists with resource allocation

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26



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