University Hospitals

HIGH RELIABILITY MEDICINE

INTRODUCTORY GUIDE






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July 2016

Dear Colleagues

Thank you once again for agreeing to lead a Wave 3 team for High Reliability Medicine. I am incredibly proud of the work we have done to date and I am confident your leadership will help continue to support our journey to provide the safest, most evidenced-based and efficient care possible to our patients.

Please find:

1) An introduction to the concepts and founding principles of HRM (this document)
2) A "play book" that outlines the data analysis that we have undertaken surrounding your particular clinical area.
3) The IOM Report of "A Learning Healthcare System"

I am looking forward to our kick off and thank you again for helping lead HRM.

All the best

Mike

Michael R Anderson MD

Chief Medical Officer

I. Introduction to High Reliability Medicine

Current Environment

University Hospitals (UH) has undergone considerable growth and innovation over the past five years as it has positioned itself as a provider of choice in the competitive Northeastern Ohio market. As a byproduct of growth and innovation, UH leadership has launched the High Reliability Medicine (HRM) initiative emphasizing increased focus on the patient and promotion of standardized, high-quality care delivery. Our focus remains: ***Patients…People….Process***

Overarching tenets of HRM include the following:

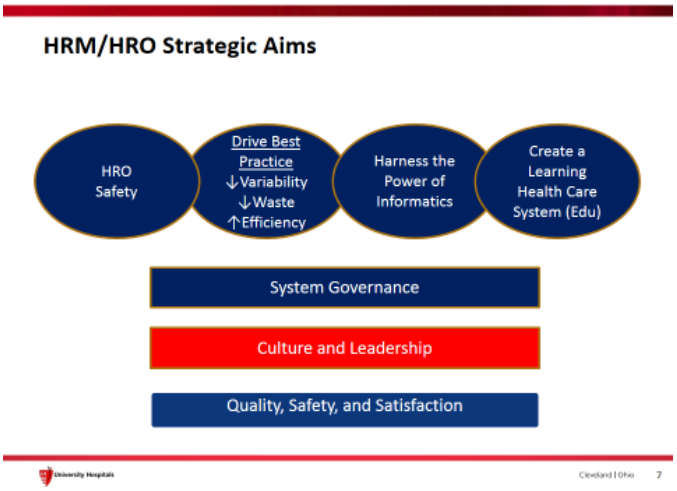
- HRM is among the highest priorities of our health system
- HRM implementation teams will be empowered to execute change with the full backup of C-Suite leadership
- HRM is unequivocally a system wide effort – all hospitals, facilities and clinical providers will be included
- HRM employs an important new methodology that "pivots" UH's traditional focus on supply chain, labor or quality and now roles all aspects of clinical delivery into one disease-based focus with multidisciplinary physician lead teams.

What is HRM?

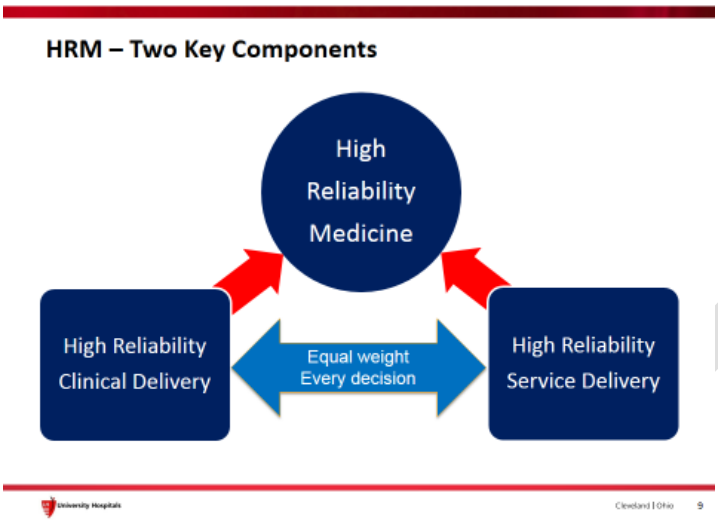
High Reliability Medicine is: a journey to provide safe, evidence-based and effective care that drives out unnecessary variations and creates value.

The HRM initiative will effectively operate around three guiding principles that include the following:

- **Improve Patient Safety**
  - » Promote the culture of being a High Reliability Organization (HRO) where every individual is focused on patient safety every day.
- **Drive High Quality Care**
  - » Utilized Evidence-Based Guidelines to Drive Care
  - » Implement Patient-Focused Care to Drive Patient Experience
  - » Create a "Learning Health Care System" where advancements and lessons learned are shared system wide
  - » Use the incredible power of the EMR to drive quality/safety
- **Reduce Practice Variation**
  - » Standardize Processes to Drive Quality Outcomes
  - » Standardize Processes to Improve Efficiency, Reduce Waste & Create Value



Please note, HRM focuses on Safety, Quality and Patient Experience and your team's work should address all three.



NOTE: The initial HRM Waves will primarily revolve around the INPATIENT stay. The outpatient portion of the care continuum will be included in the analysis and redesign (e.g., preoperative and post-acute care). However, purely outpatient care will occur separate and later in the HRM efforts (e.g., diabetes management).

Scope & Approach

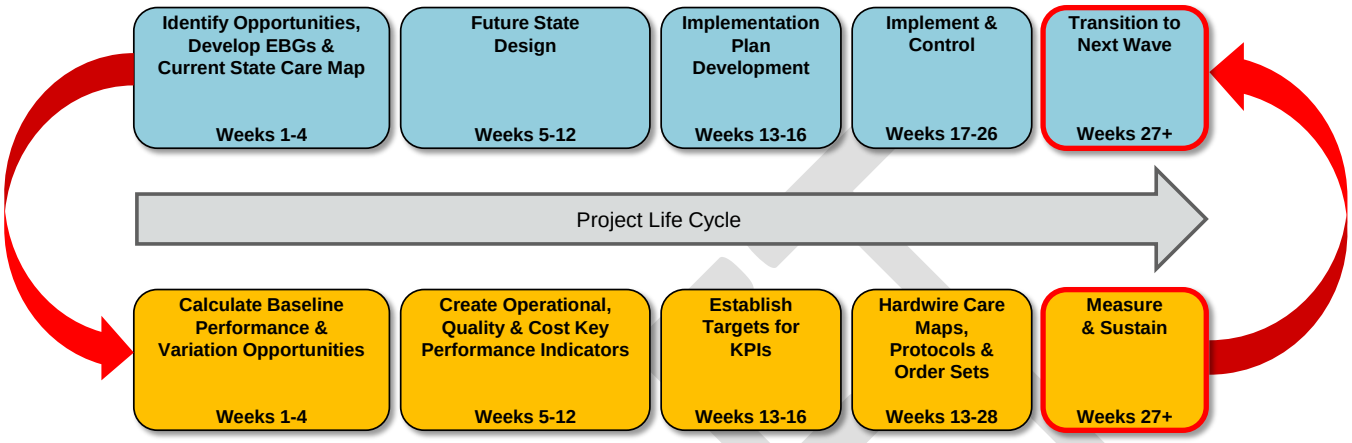
HRM engages multidisciplinary teams of physicians, nurses, pharmacists and other clinicians, lab, imaging, and supply chain operators, IT and frontline staff through a 16-week design and 12 week implementation process for targeted clinical conditions (i.e., DRG & diagnosis/procedure cohorts) focusing on the following key milestones:

- **Care Redesign Process and Identification of Clinical Variability**
  - » Identification of clinical variation, quality and cost opportunities within the targeted physician and patient cohorts including at the individual physician and facility level.
  - » Creation of agreed upon set of evidence-based clinical guidelines that will address identified opportunities
  - » Launch of Design Sessions focused on the multidisciplinary High Reliability Medicine Teams developing an enhanced future-state care maps incorporating the agreed upon evidence-based guidelines.
  - » Developing action plans and assigning team members roles and responsibilities around implementing evidence-based guidelines and hardwiring future state care maps.
  - » Education & training of Clinical Innovation Teams and frontline staff
  - » Implementation of evidence-based guidelines with a Control Plan put in place to monitor improvements and make
- **Parallel, Integrated Process of Target Setting & Performance Monitoring**
  - » Hardwiring of evidence-based guidelines and care maps

» Ongoing measurement of key performance indicators that demonstrate operational compliance to the evidence-based guidelines, quality improvement and cost reduction.

» Effective feedback loop to frontline staff around quality and cost performance with corrective action plans in place to address low performers.

Care Redesign Process



Target Setting & Performance Monitoring

Project Deliverables

As previously mentioned, HRM will operate around the guiding principles of reducing clinical variation, improving quality and controlling cost all in an effort to drive value to the organization and its key stakeholders. With these key tenets in mind, the High Reliability Medicine Teams will focus on the following deliverables:

I. Improving patient safety and quality outcomes with demonstrable impact around reducing patient safety failures, complications of care, mortality rates and readmissions
II. Driving out unnecessary variation in care at the facility and individual practitioner level and increase a culture of transparency.
III. Improving throughput and efficiencies resulting in lower labor and/or shorter lengths of stay
IV. Lowering per case direct variable cost for supplies, pharmacy, lab, radiology or other ancillary services.
V. Improving patient experience and engagement in everything we do.
VI. Increased use of technology for the purpose of driving standardized care (i.e., hardwiring evidence-based guidelines and care maps, standardizing order sets, monitoring operational compliance)

Overview of Project Tools & Templates

In an effort to drive scalability to future HRM initiatives, the High Reliability Medicine Teams for each targeted clinical condition will assist in the production and utilization of the following key tools and templates during the first 16 weeks of the project:

I. A list of Key Performance Indicators related to operational compliance, quality improvement, and cost reduction with defined baseline targets
II. Agreed upon list of evidence-based guidelines and a future state Care Map that is directly aligned with impacting identified opportunities – will need to be able to hardwire into Sunrise and other clinical information systems
III. A comprehensive implementation work plan with a defined timeline, roles and responsibilities for each team member
IV. A comprehensive performance dashboard that is produced on a recurring basis to monitor performance
V. A project realization schedule that reflects up-to-date performance against baseline targets

Cross-Collaboration with Other VIP Initiatives

The Value Improvement Plan (VIP) was launched in 2015 with the expectation of impacting quality of care and financial performance across the UH health system. Specific to the 2016 Fiscal Budget, VIP initiatives will focus on driving value around clinical variation reduction, labor and supply cost reduction, and revenue optimization through coding and documentation improvement. In the spirit of promoting system-wide integration, opportunities will likely be identified within the HRM project cycle that will require collaboration with other VIP implementation teams. It is imperative that HRM leverages the skills and expertise of other VIP resources in an effort to create a comprehensive clinical redesign strategy that addresses quality and cost drivers within their targeted clinical conditions. Our goals for the next four years are to achieve $**300 million** of revenue enhancements and cost savings by reducing variation, eliminating waste and maximizing reimbursement across the system.

II. Project Resources

Governance & Organizational Structure

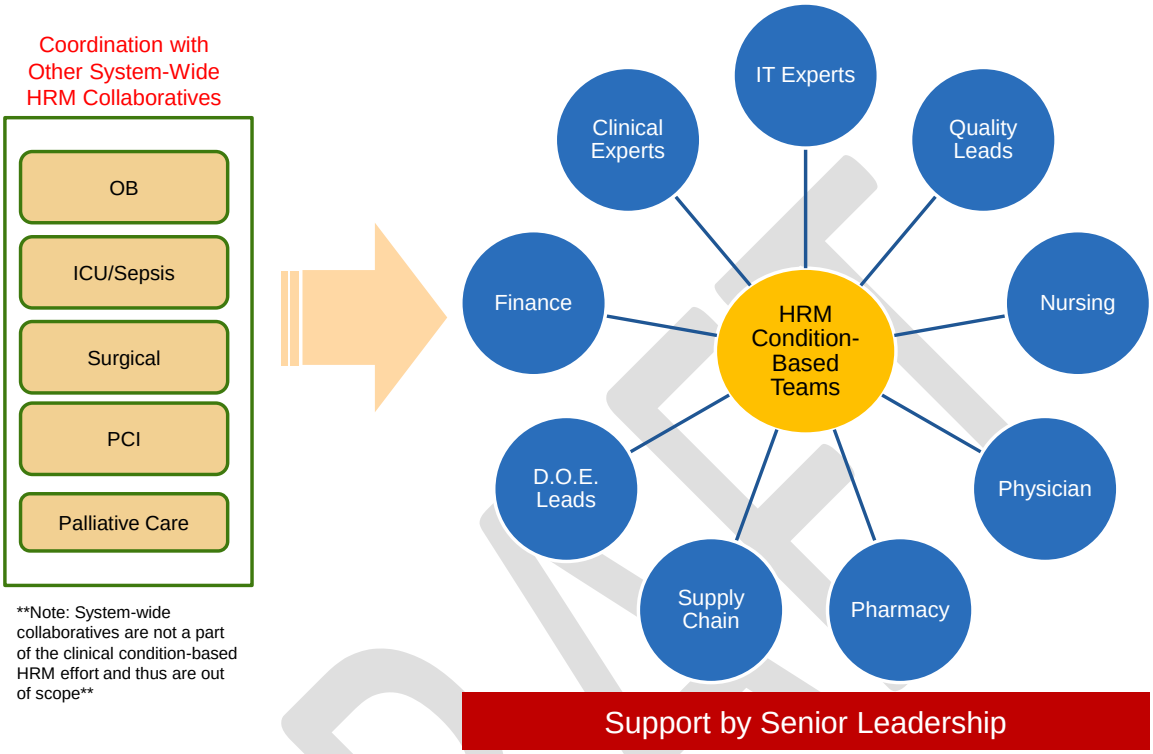
Critical to any successful clinical redesign project is the ability for all key stakeholders to communicate, collaborate and take action when necessary. Through the efforts of Dr. Anderson and the HRM operational co-lead, Ken Turner, a well-defined project governance structure was put in place to ensure successful engagement between VIP leaders, the HRM Steering Committee and High Reliability Medicine (HRM) Teams. Dr Don Decarlo serves as the Vice Chair of HRM and assures community hospitals are well represented in the teams and projects. As outlined in the project governance structure, senior leadership, the physician and administrative project leads and the multidisciplinary HRM Teams are represented with distinct roles, responsibilities and time commitments.

Project Organization Layer	Members	Roles & Responsibilities	Expected Time Commitment
HRM Steering Committee	• Initiative Leads: Michael Anderson, MD & Ken Turner • Committee Members: UH System CIO, CQO, DOE, CNO, CMIO, Supply Chain Leadership, VP Pharmacy	• Review identified opportunities and progress on initiatives. • Create processes for addressing individual and system wide variances in care • Remove barriers that may impede successful implementation	• Monthly steering committee commitment • Direct interaction with Team Leads on as needed basis
High Reliability Medicine (HRM) Team Leads	• Physician Lead • Administrative Lead	• Meet to discuss and approve preliminary cost & quality opportunities (*Both Leads*) • Identify, develop and approve Evidence-Based Guidelines (EBGs) based on current research and literature (*Physician Lead*) • Assist in developing physician educational programs and communication (*Physician Lead*) • Assist in identifying Multidisciplinary team members (*Both Leads*) • Co-facilitate design sessions (*Both Leads*) • Report initiative updates to the HRM Steering Committee on projects (*Both Leads*) • Interact directly with HRM subgroups/ subcommittees and remove any barriers to successful implementation (*Both Leads*)	• Weeks 1-10: 8-10 hours per week • Weeks 11-16: 6-8 hours per week • Weeks 17-23: 6-8 hours per week • Weeks 24-28: 3-4 hours per week

High Reliability Medicine (HRM) Team	• Core Team Members:
	  ○ Neurosurgeons
	  ○ Nursing Leads
	  ○ IT
	  ○ Quality
	  ○ Finance
	• Additional Team Members (selected on as needed basis):
	  ○ Pharmacy
	  ○ Imaging
	  ○ Lab
	  ○ Supply Chain
		• Participate in Design Sessions
		• Develop future state Care Maps
		• Develop detailed implementation plans
		• Execute implementation plans working directly with frontline staff to operationalize and hardwire EBGs & Care Maps
		• Develop quality and cost key performance indicators to monitor ongoing progress
		• Assure communication is disseminated on project updates/outcomes to team members and frontline staff (*Subgroup/ Subcommittee Team Leads*)
		• Reports progress to the administrative/physician leads (*Subgroup/ Subcommittee Team Leads*)
			• Weeks 1-10: 10-16 hours per week
			• Weeks 11-16: 6-10 hours per week
			• Weeks 17-23: 6-10 hours per week
			• Weeks 24-28: 3-4 hours per week

DOE Project Management	• Operations Engineer	• Meeting logistics and preparation (e.g., kick-off meetings, design sessions, team and possibly subgroup/ subcommittee meetings) • Ongoing analytical support • Work plan development and ongoing maintenance (co-develop with HRM Team) • Co-develop Performance measurement and tracking with HRM Team, Quality, Finance and PCE Decision Support • Overall project realization tracking via the developed Dashboard (co-responsible with Finance, Quality and PCE Decision Support) • Status update report for HRM steering committee (signed off by HRM Team leads)	• Weeks 1-10: 10-16 hours per week • Weeks 11-16: 6-10 hours per week • Weeks 17-23: 6-10 hours per week • Weeks 24-28: 3-4 hours per week
Decision Support Leveraging PremierConnect® Enterprise	• Dedicated UH Decision Support Staff Member	• Direct interaction with DOE and HRM Team to develop performance dashboard consisting of operational compliance, quality and cost metrics • Ongoing reporting from PCE enterprise data warehouse	• 8 hours per week through 28 week project life cycle

The graphic below demonstrates the multidisciplinary interaction for the HRM condition-based teams. It is important to note that the condition-based implementation teams will coordinate with other global HRM collaboratives in an effort to drive comprehensive impact.



Team Membership

Clinical Innovation Team members will be collaboratively selected by the HRM Team leads and DOE Operations Engineer, based on the following criteria:

- Alignment with the identified areas of quality and cost opportunity (e.g., staff that can impact levels of care, length of stay, resource utilization & complications of care)
- A track record of high performance within their current role
- Ability to provide the time commitment of the HRM Team Leadership role(s)
- Displayed enthusiasm for clinical transformation and innovation

It is critical that selected team members are willing and able to perform the assigned roles and responsibilities as well as commit to the expected time requirements throughout the course of the 26 week implementation cycle. Engaged team members will increase the likelihood of driving the successful outcome of each initiative.

III. Project Life Cycle

Communication Plan

Implementing clinical redesign is a challenging endeavor. It requires commitment and desire to change from both clinical and operational staff. One of the critical elements to successfully launching a clinical redesign initiative is having a communication plan in place for senior leadership, initiative leads, and frontline staff. Each implementation phase of the project should include a communication plan for key stakeholders.

Identify Opportunities

The initial phase of the project life cycle is focused on identification and confirmation of opportunities for each targeted clinical condition. The DOE will work directly with the HRM Team leads to review all quality and cost opportunities identified through the internal variation analyses. As mentioned, the DOE leveraged EPSi™ patient encounter and billing detail to produce both the cost and quality analytics. All identified opportunities will be based on physician-level comparisons across any combination of APR-DRG, Severity of Illness and/or primary ICD-9 Procedure/Diagnosis code (based on feedback from the CIT physician lead). Any potential data discrepancies and/or patient outliers will be addressed by the DOE and removed from the analyses based upon feedback from the HRM leads.

Project Methodology:

1) Review the current state of care for patients within the DRG groupings
2) Critically asses patient flow and resource use, identify opportunities to improve care
3) Patient experience and opportunities for improvement should be considered at all levels.
4) Asses variability at both the facility and physician level in:
    a) Length of stay
    b) ICU use
    c) OR & Procedure time
    d) Pharmacy use
    e) Imaging
    f) Laboratory studies – pre and post
    g) Compliance with guidelines and order sets
    h) Ancillary providers
    i) Use of post-acute facilities
    j) Other
5) Evaluate each step to define true need, eliminate waste and unnecessary resource use (e.g., consults, social work, etc.)
6) Define best practice – use both internal and external benchmarks

7) Define outcomes – will likely be necessary to identify characteristics of outlier patients who may not fit best practice
8) Establish specific current state and future state metrics as well as methods to concurrently measure and track.

A current state Care Map will be developed by the HRM team to help identify potential gaps in care, accountability of evidence based guidelines and variation of care across the system facilities. This Care Map will be the basis for the development of the Future State Care Map, where demonstrated improvements will be inserted to fulfill the EBGs and Care Continuum, and drive education needs for implementation.

The DOE will also be working in parallel to establish baseline quality and cost targets that will be leveraged for ongoing measurement of project realization. The HRM Team will agree upon the established baselines and will hold members accountable for developing improvement against said targets.

Defining Evidence-Based Guidelines

The HRM leads will work with the team to begin development of the Evidence-Based Guidelines (EBGs). The selected EBGs should cover the continuum of care and where necessary address any pre and post-acute care protocols.

The selected EBGs should align with the identified quality and cost opportunities. In essence, each EBG should link to a quality of care improvement (i.e., complications, mortality, readmissions and length of stay) and/or cost reduction (i.e., room & board, OR efficiency, supply and ancillary utilization). The DOE has developed a matrix to help assist each team with identifying what quality and cost opportunities will be impacted through implementation of each EBG (see Appendix: Evidence-Based Guideline Matrix Template). The goal is to prioritize the list of EBGs based upon potential impact to the quality and cost opportunities. There may be instances where certain EBGs may not be included in the Care Maps and Design Sessions due to low impact to the identified opportunities (e.g., post-operative ambulation of a patient may not be selected as an EBG for a clinical condition that is already operationally compliant in this area and shows no length of stay or complications of care opportunities).

The DOE will also work with the HRM leads to initiate defining the set of key performance indicators for ongoing performance monitoring. The Key Performance Indicators need to correspond to the EBGs and focus on measurement around the following areas:

- Lead Indicators – Operational Compliance to Evidence-Based Guidelines
  - » Are 100% of the patients receiving the evidence-based best practice 100% of the time?
  - » Example: Was intravenous antibiotic administered in the operating room approximately 30 minutes prior to the surgery? Yes/No
- Lag Indicators – Quality & Cost Indicators
  - » Correlations can be made around operational compliance and quality/cost improvement. If staff are compliant to the EBG, the result will be improved quality and lower cost.
  - » Examples: Length of Stay, Labor Expense per Case, Supply Expense per Case, Ancillary Utilization per Case, Complication Rates, Mortality Rates, Readmission Rates, Patient Satisfaction

Launch Future State Design Session

Once the HRM leads have agreed to the Evidence-Based Guidelines and the list has been prioritized via the EBG Matrix, the DOE will coordinate with the multidisciplinary HRM members to schedule Design Session(s) focused on the following key milestones:

- Develop and finalize future state Care Map
- Create work plan with specific Milestone and task assignments and due dates focused on operationalizing Care Maps

Care Maps will serve as the tool used to guide clinical practice based upon the Evidence-Based Guidelines. They will promote the following:

- Delivery of high quality care founded on evidenced-based guidelines
- Standardization to reduce variability in care
- Reliable multidisciplinary care
- Patient engagement
- Cost effective and efficient care
- Compliance to regulatory standards.

The Care Map should be structured in such a way that it includes a clinical decision tree with detail around the specific roles and responsibilities of frontline staff at each segment of the care continuum. Additionally, it should cover the types of order sets utilized and EHR touch points that must occur throughout the course of the patient's care. The separate PDF documents titled **ED Transition Phase Care Map** and **Transfer and IP Phase Care Map** provide sample Care Maps that were developed by the implementation teams as part of the HRM Wave 1 Sepsis effort.

It is critical that the HRM IT Team members closely participate in the design sessions to determine what can and should be hardwired in the clinical information systems to track compliance and provide a structured electronic guide of care for the frontline staff.
Once the future state Care Maps are developed, the DOE will engage the teams in development of work plans with milestones, task assignments and due dates that will serve as the guiding documents for the next phase of work.

It is important to note that Subgroups/ Subcommittees should be created to align resources with the appropriate work plans. Each Subgroup/ Subcommittee should assign a lead that will be responsible for assuring communication is disseminated on project updates/outcomes to team members and frontline staff.

When developing the Work plans, the facilitators will leverage the Design Session Templates to record the following (see Appendix: Design Session Templates):

- Current State – How is it done today?
- Desired Future State (based on Evidence-Based Guidelines) – How will it be done tomorrow?
- Barriers/Risk
- Action Plan to Implement
- Responsible Party

- Associated Key Performance Indicator

Concurrent with developing Future State Care Maps, the HRM team will also be working directly with IT to begin the EHR hardwiring process. Specific examples of hardwiring may include:

- Standardizing Order Sets
- Standardizing Clinical Checklists & Tools
- Creating Care Maps in Sunrise Clinical Manager with appropriate clinical decision trees and stop gaps that cannot be circumvented unless the caregiver is compliant to the Evidence-Based Guideline and/or contraindications are documented

Below is a sample agenda for a Design Session. **Note: Each Operations Engineer and HRM Team Lead will develop the schedule and agenda for their design session(s) based upon the project scope and resource time commitment.**

Timeline	Agenda Item	Facilitator
30 Minutes	Overview of Identified Opportunities	HRM Physician Lead
1 – 1.5 Hour(s)	Overview of Agreed Upon Evidence-Based Guidelines	HRM Physician Lead
2 Hours	Development of Future State Care Maps	HRM Physician & Administrative Leads
2 Hours	Development of Implementation Work Plans	DOE
30 Minutes	Session Wrap-Up & Next Steps	DOE

Implementation Plan Development

After completion of the Design Sessions, the HRM teams will work with their Subgroups/ Subcommittees to finalize the detailed implementation plans. It is important that the HRM teams leverage the project management toolkit materials to assist with the development of their detailed implementation plans. The toolkits will include the following key items:

- DRGs/Procedures/Diagnoses in scope
- Team Charter
- Team Roster
- Implementation Work Plan with Detailed Tasks
- Data Collection Plan

- Status Update
- Performance Dashboard
- Standard Glossary of Terms

The separate Excel document titled **HRM Standard Toolkit Small-Large Bowel** provides a sample implementation work plan developed by the HRM Wave 1 – Small & Large Bowel implementation team. Note: the work plan includes detailed tasks with assigned owners, project start and due dates and improvement metrics.

Implementation

With their specific implementation work plans in place, the HRM team will develop dedicated training and education sessions to orient all frontline staff to the Evidence Based Guidelines and future state Care Maps. Frontline staff will need to be educated around specific changes that will affect their daily roles and responsibilities. The HRM Team can leverage the UH's staff training and education team members to create the appropriate training materials and schedule the dedicated training sessions.

The dedicated Implementation Subgroups will provide ongoing support to frontline staff to ensure successful adoption of the future state Care Maps.

It is imperative that the hardwiring process be initiated and completed prior to transitioning to the next wave of clinical conditions. All staff must be educated on the hardwired processes so that they can appropriately leverage standardized Care Maps and document compliance.

Physicians and frontline staff should be trained and educated around their roles and responsibilities relative to the implementation work plans, commencing the implementation phase. The success of implementation will be based on the following key factors:

- Frontline staff are committed to the success of the project and have a clear understanding of their roles & responsibilities
- A facility specific Physician and Nursing leader will be designated by each facility CMO to serve as the conduit to formal communication back to the HRM Team
    - » Formal communication – recurring scheduled meetings between the facility specific leaders and the HRM team members
    - » Informal communication – standing meetings and/or one-off discussions between the facility specific leaders and the HRM Team members
- IT has hardwired the EBGs & Care Maps into the Electronic Medical Record systems and set up the appropriate compliance tracking mechanisms
- Decision support has set up the performance dashboards with all selected key performance indicators and the DOE has coordinated recurring measurement with the appropriate data sources (weekly/monthly/quarterly)
- The HRM Team is frequently reviewing the dashboards and taking action where necessary
- When unforeseen barriers and/or risks prevent successful implementation, the HRM Team is communicating with HRM leadership to assist with removing said barriers
- In the event that barriers/risks cannot be circumvented, HRM Teams may modify Work plans to maximize the implementation effort

Key Elements for Implementation

Through the early stage HRM efforts, a “Top 10 List” was developed by UH clinical leaders outlining the key requirements for successful implementation. In conjunction with outlining the 2016 VIP fiscal imperatives and the overall HRM project charter, the following list will be communicated by leadership at all levels of the UH System as part of the High Reliability Medicine Care Redesign Implementation. It is critical that this list be reinforced by HRM leadership to team members throughout the course of the project life cycle.

I. Participation

- Everyone who interacts with patient in any way that can affect outcome or patient satisfaction needs to understand the HRM concept and what we are trying to accomplish

II. Evidence-Based Medicine

- The Guidelines, Care Maps and Program that have been developed are Evidence-Based
- Reinforce to the staff that “there is no place to hide from “Evidence-Based Medicine” - Insist that these guidelines be followed because the evidence supports doing so!

III. Medical Economics 2016

- Assure all providers understand the VALUE equation: VALUE = Quality + Experience/Cost
- Providers need to make thoughtful, educated VALUE oriented practice decisions
- Consider eliminating things that do not add VALUE to the care you provide

IV. Identify Your Leaders

- Who is respected, in authority, influential, identified as program leaders?
- The leaders must:
  - » Understand the principles of Evidence Based Medicine, HRM, and the VALUE Equation.
  - » Support and understand why the change is needed
- These leaders will be the directors of change

V. Review and understand the program

- Review how are you currently doing things and accept there is always opportunity for improvement
- This is a comprehensive program - understand what changes need to be made in your care processes to implement associated guidelines/care maps
- Task assignments to appropriate members of leadership team
- Follow the program!

VI. Patient Education

- Effective patient education reduces variance, inefficiency, complications, readmissions, unnecessary resource utilization and increases patient satisfaction, outcomes and VALUE
- Every patient needs to hear consistent message from everyone during episode of care

VII. HRM is a Journey not a Destination

- Create mechanism for program oversight and continuous process improvement
- Review quality, cost, efficiency metrics (“dashboard”)with leadership committee on regular basis
- Prompt recognition and response to quality/safety concerns (“stop the line”)

- Compare to other UH programs and National benchmarks
- Set Goals and Targets and continue to adjust in iterative fashion

VIII. Inventory of Resources

- Ask yourselves and leadership team "what resources do we have and what do we need to implement this program"?

IX. Be Steadfast in Support of HRM

- HRM promotes quality and VALUE which is not understood or embraced by all
- Anticipate and develop a plan to counter resistance

X. Transform Institutional Culture to Support HRM

- All of the above will require a transformation in your institutional CULTURE
  - » Remind everyone that with change comes opportunity

Measure, Sustain & Transition

Measuring performance is a critical step to the overall care redesign process. Throughout implementation and beyond, it will be critical for the High Reliability Medicine Teams to monitor and report their overall performance to the HRM Steering Committee and other key HRM stakeholders. As previously mentioned, the dashboards should include the following key performance indicators:

- Operational Compliance – compliance to Evidence-Based Guidelines/Care Maps
- Quality – complication rates, mortality rates, readmissions, length of stay
- Cost – cost per case, labor expense per case, supply expense per case, ancillary utilization

Dashboards will have the flexibility to provide frontline staff with critical performance feedback and also have the ability to be aggregated for executive leadership to review.

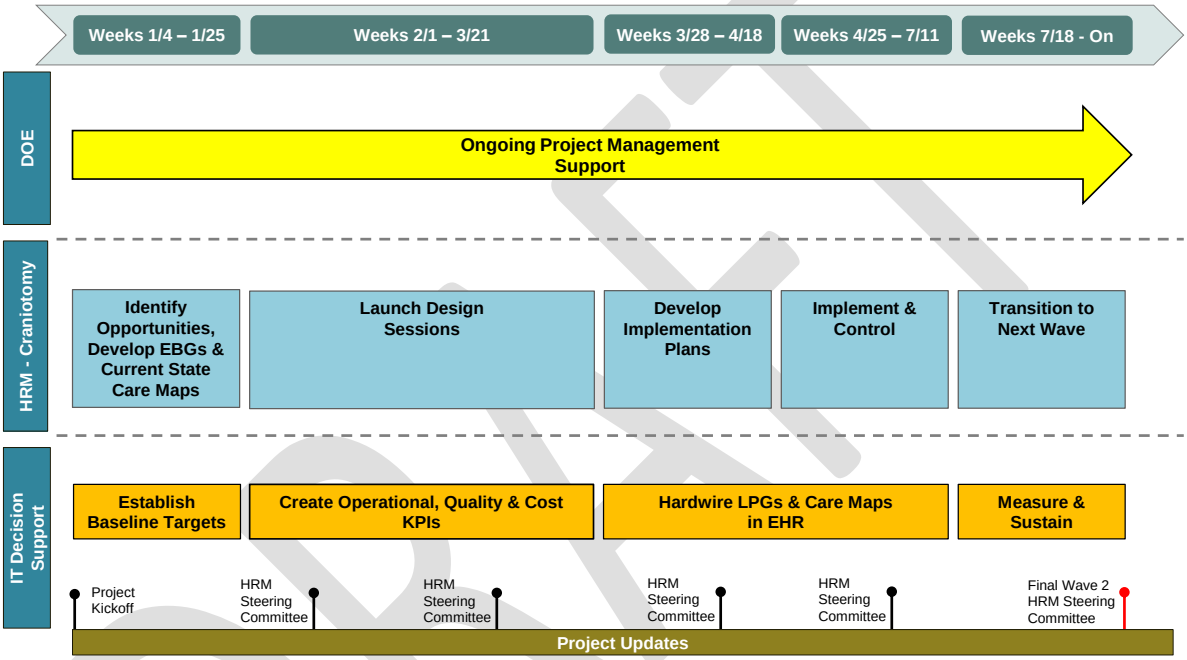
Below is a SAMPLE dashboard that includes baseline targets for each quality and cost key performance indicator. Note that the SAMPLE dashboard tracked performance on a monthly and quarterly basis.

Metric	Baseline 03/2012 - 03/2013	Target	FY2013	4th Qtr - FY2013		October 2013	November 2013	December 2013	Oct - Dec 2013		January 2014	February 2014	March 2014	Jan - Mar 2014		April 2014
Encounters	76		69	17		8	5	7	20		8	9	7	24		‡
Observed Mortality %	34.21%		39.13%	29.41%		25.00%	20.00%	28.57%	25.00%		25.00%	22.22%	57.14%	33.33%		‡
Expected Mortality %	27.11%		27.95%	23.92%		19.65%	39.98%	27.20%	27.38%		32.10%	31.60%	40.03%	34.22%		‡
Mortality Index	1.26	1.00	1.40	1.23		1.27	0.50	1.05	0.91		0.78	0.70	1.43	0.97		‡
Observed Mean LOS	29.58		27.35	27.65		40.00	14.60	23.00	27.70		18.38	16.56	47.43	26.17		‡
Expected Mean LOS	14.97		15.32	14.92		11.36	18.33	14.28	14.13		17.18	13.69	14.56	15.11		‡
Mean LOS Index O/E	1.98	1.00	1.78	1.85		3.52	0.80	1.61	1.96		1.07	1.21	3.26	1.73		‡
LMS LOS Outliers # per period	9		7	2		1	0	0	1		0	0	1	1		‡
30 Day All Cause Readmission %	18.18%		23.81%	66.67%		0.00%	0.00%	0.00%	0.00%		33.33%	33.33%	200.00%	57.14%		0.00%
Discharge Orders by 10:00 %	‡		‡	‡		0.0%	25.0%	20.0%	13.3%		0.0%	0.0%	0.0%	0.0%		‡
Discharges by Noon %	7.9%	30	7.2%	5.9%		25.0%	0.0%	0.0%	10.0%		0.0%	0.0%	0.0%	0.0%		‡
ICU Days %	43.8%	0	52.8%	43.4%		22.8%	61.6%	32.3%	30.7%		57.8%	70.5%	20.5%	41.1%		‡
Supply Cost per Discharge CMI adj	3,636	0	3,004	2,965		6,469	1,103	1,438	3,508		1,134	1,210	3,225	1,797		‡
Variable Cost Per Discharge	46,751	0	41,323	42,536		76,786	17,762	24,161	43,611		20,998	20,824	49,133	29,139		‡
Variable Cost per Discharge CMI Adj	8,959	0	7,901	8,162		14,626	3,600	5,379	8,890		4,000	4,469	9,359	5,794		‡
Contribution per Discharges CMI Adj	7,247	0	6,056	4,297		17,110	-982	2,799	7,975		3,513	4,400	2,813	3,608		‡
Patient Sat Overall % on Scale of 100%	100.0%	85	‡	‡		‡	100.0%	100.0%	100.0%		‡	100.0%	‡	100.0%		‡
MCC/CC Capture Rate	100.00%	32	100.00%	100.00%		‡	100.00%	100.00%	100.00%		‡	100.00%	‡	100.00%		‡

Key to any implementation process is the ability to sustain the desired results post-implementation. Through staff education, hardwired processes and ongoing performance monitoring via dashboards, the appropriate structure should be in place to assure sustained results. Ultimately, the continued success of the program is dependent on the defined structure laid out in this introductory guide as well as the frontline staff's continued enthusiasm and desire to transform care.

IV. Project Timeline

Below is the anticipated project timeline for Wave 2 initiatives:



V. Appendix

Evidence-Based Guidelines Matrix Template

Evidence-Based Guideline	Improve Quality of Care						Reduce Cost of Care							Revenue Enhancement		
	Non-POA Complication Rates	Readmission Rates	Mortality Rates/ Lives Saved	Acute Length of Stay	Patient Satisfaction	Levels of Care	Room & Board	Supply	Lab	Rx	Imaging	OR	Therapy	Increase Volume (throughput/ capacity)	Denial Reduction	Coding & Documentation Improvement
SAMPLE – Post-op ambulation of Pt. Day 1	✓			✓			✓									
	↓ DVT/ PE Rate			↓ Pt. recovery time			↓ R&B days per case									

Design Session Templates

Evidence-Based Guideline	Current State – Are we doing it? How?	Desired State – How do we want to do it in the future?	Barriers/Risks to Achieving Desired State	Action Plans to Operationalize Desired State	Key Person(s) Responsible for Implementing Action Plans	Key Performance Indicators that will Measure Successful Implementation
SAMPLE - • Blood glucose on diabetics is checked on the day of surgery • Accuchek performed at time of IV placement	**Current State** • Only on diagnosed • diabetics • PAT- glucose high (what is high non-fasting ➔BS>200➔ phone call to ortho doc)	**Who?** • PAT NP add order to check list for patients non-fasting >200 **What?** • Notify surgeon if blood glucose >200 in PAT • In PAT, if blood glucose level over 200, pt. on DOS gets accuchek • Temporary stop if blood glucose is over 300 on day of surgery (infection issue) but needs to be correlated with Hgb A1C **When?** • PAT & day of surgery	None-identified	**Action Plan** • Develop an algorithm for blood glucose monitoring with endocrine department	EHR liaison, CMO & Diabetes Specialist (dedicated EHR subgroup)	**Operational Compliance** • Blood sugar was checked on diabetic patients on day of surgery pre-op holding

Lean Management Strategies: DOWNTIME

DEFINITION OF LEAN:
CONTINUOUSLY IMPROVING BY ELIMINATING WASTE

We all have waste in our work, and Lean thinking seeks out those areas of waste as areas of improvement. We define the various types of waste by using the common acronym DOWNTIME. Here are the classic eight wastes with examples of each:

Defects: adverse outcomes, medication errors, falls, broken equipment, wrong information, missing information

Overproduction: producing more work than is currently needed, excessive reports, information that is generated and not used, excessive testing or treatments

Waiting: delays of service for any reasons such as release of paperwork, doctor orders, approvals, or system downtime

Not Clear: ambiguity, vague or nonexistent procedures, instructions, or information; easily misconstrued or nondirective information that leaves a person confused as to how to proceed

Transportation: movement of patients, equipment, or information between locations

Inventory: excesses or shortages in what is needed to do the work

Motion: physically or mentally searching for needed information or items; movement to complete a task

Excessive Processing: extra or unnecessary steps in a process; making the work harder than it needs to be; examples include generating the same information in several formats, a machine with poor-fitting parts resulting in extra effort to use it

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