

Population Health Management

Paradigm Shift

[Tyler Morgan]

Welcome to the Health Catalyst Fall Webinar Series and thank you to all who have joined us for today's webinar, Population Health Fundamentals. My name is Tyler Morgan and I will be your moderator today.

Throughout our presentation, we encourage you to interact with our presenters by typing in questions and comments using the questions pane in your control panel. We will be answering questions at the end of the presentation during our questions and answers time. If we don't have time to address your questions during the webinar, we will follow up with you afterward. We are recording today's session, and within 24 hours after the event, you will receive an email with a link to the recording and also a link to the presentation slides. I am very pleased to introduce our presenter today, Dr. David A. Burton.

Dr. Burton is a former senior vice president of Intermountain Healthcare where he served in a variety of executive positions for 26 years. He spent the last 13 years of his 23-year career as co-architect with Dr. Brent James of Intermountain's Clinical Integration Strategy, which was the primary sponsor of Intermountain Data Warehouse. Dr. Burton was the founding executive vice president for Intermountain Managed Care Plans, now known as SelectHealth, which currently provide insurance coverage to over 500,000 members. He holds an MD from Columbia University College of physicians and surgeons and did his residency trainings at Massachusetts General Hospital in Internal Medicine. He was a charter member of the American College of Emergency Physicians and was board certified in Emergency Medicine. He practiced Emergency Medicine and was president of a single specialty group of 20 emergency care physicians for 9 years before joining the executive team at Intermountain. Dr. Burton currently serves as Executive Chairman of the Board for Health Catalyst.

I will now turn the time over to Dr. Burton.

Dr. Burton...

Population Health Management

David A. Burton, MD



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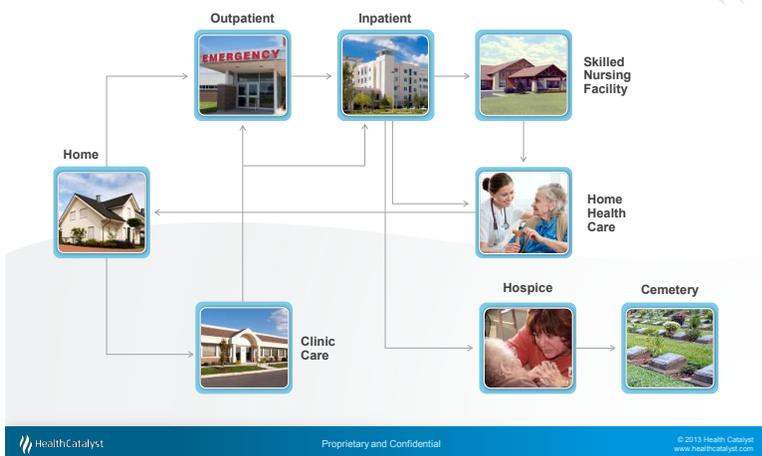
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[Dr. David A Burton]

I am very honored to have the privilege of discussing with you a very important topic about which I feel very passionately population health management.

Population Health Management

Emphasis on the Continuum of Care



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Population Health Management and the Continuum of Care

We have had a shift to where we are now beginning more and more to emphasize the continuum of care, starting with the Home and then direct access through the emergency care or going to the clinic and from there sometimes to the emergency care unit, other times directly admitted to the hospital. There has been in recent years more and more emphasis on post-acute care as the pressure to reduce length of stay has increased and to save cost based

on length-of-stay. This includes home healthcare (many of you will have an owned entity that provides home healthcare), skilled nursing facilities, and often from there back to home healthcare ..from the inpatient setting to hospice with the idea of helping patients die in dignity.

Population Health Management Paradigm Shift



A Paradigm Shift Away from Acute-Care Centric Management

What we are seeing is a shift now of paradigm from an acute care-centric management of patient care to a focus on the continuum, and therefore a population-centric management. Some of this is being driven by Federal Government programs such as Accountable Care Act and Accountable Care Organizations, other by commercial emulation of that in various forms of shared accountability for the risk and the reward of taking care of patients.

Poll question



1 Outpatient Inpatient

2 Outpatient Inpatient Home Health Hospice

3 Outpatient Inpatient Home Health Hospice Clinic Care

4 Outpatient Inpatient Home Health Hospice Clinic Care SNF

5 Other combination

We want to just take a brief poll and encourage you to select whichever most closely matches what your system has, whether you are in a situation where you have inpatient, outpatient, or where you have the full spectrum of the continuum.

Tyler?



QUICKPOLL

What venues of the continuum does your organization own or have under contract?

Please select one

- 1. Outpatient, Inpatient
- 2. Outpatient, Inpatient, Home health, Hospice
- 3. Outpatient, Inpatient, Home health, Hospice, Clinic Care
- 4. Out / Inpatient, Home health, Hospice, Clinic Care, SNF
- 5. Other combination

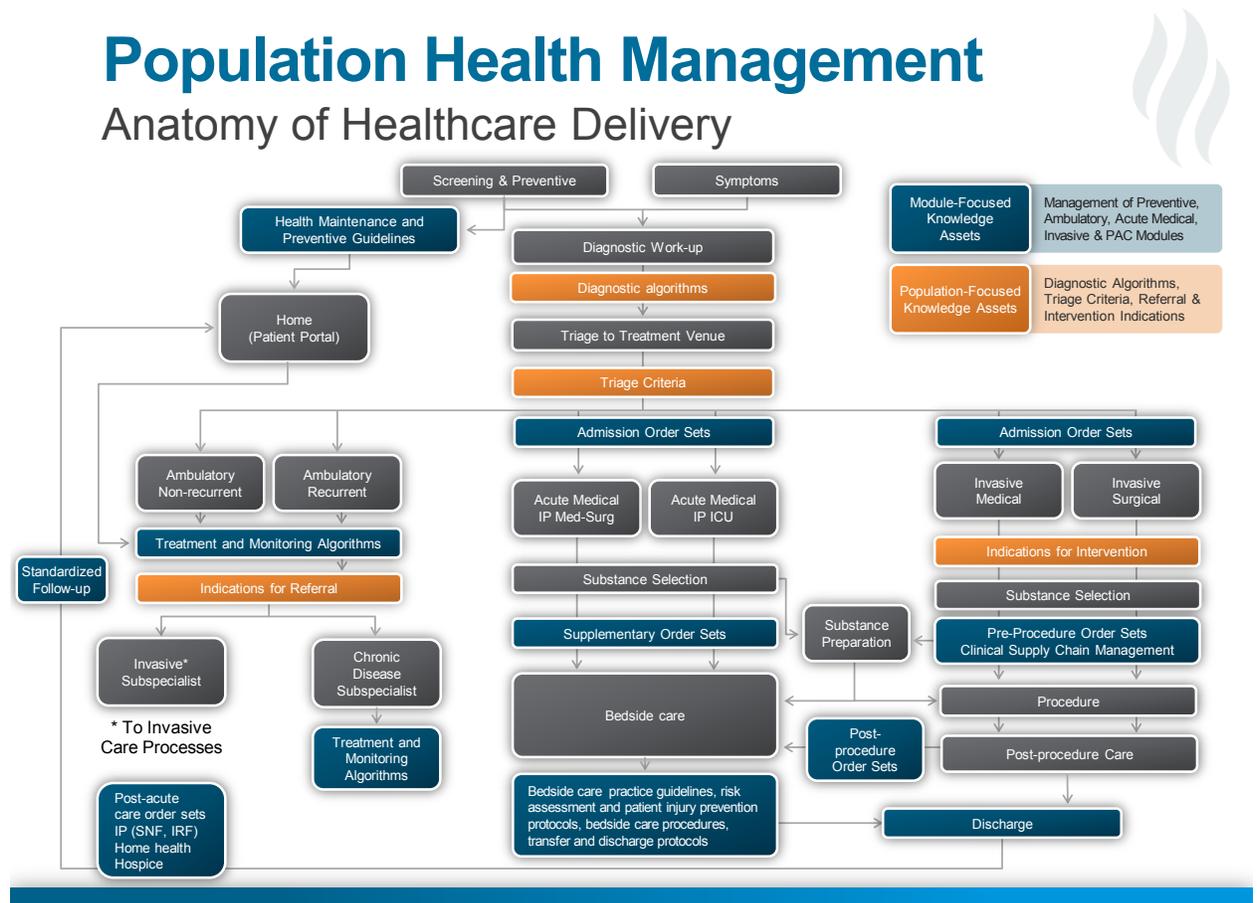
Tyler: Alright. We launched this poll out back when we are getting quite a few comments in our questions pane that the screen resolution is cutting off the bottom half of your slide. So we'll definitely address that. With our poll, again, we'll leave this up for another 15 to 20 seconds...

Dr. Burton: So now are we going to see the result?

Tyler: Alright. I'm going to close this poll in about 5 seconds and then we will show the results for everybody.

Tyler: The poll is now closed and here we have the results, Dr. Burton.

Dr. Burton: Interesting. So quite a bit of progression along the capture of the various venues in the continuum and that's a good thing that that shows progress in shifting the paradigm.



[Dr. David A. Burton]

The Anatomy of Healthcare Delivery

This slide is an attempt that I have undertaken over the years to try to capture on one slide where care flows as we go through the treatment of patients.

At the top of the slide, patients may present with symptoms or we may engage them in screening and preventive measures. And that leads, if there are positive findings in the screening and preventive or if they present with symptoms, to a diagnostic work-up. Once we arrive at a provisional diagnosis, there is a triage to treatment venues there that is often based on intuitive feel rather than that objective data. But the attempt there is to triage the patient to a venue in which they can be most safely and effectively treated, whether that be in an ambulatory setting, in an acute medical setting such as a Med-Surg or ICU, or whether there is a need for an urgent medical or surgical invasive treatment.

So as we proceed through the flow of that anatomy of healthcare delivery, there are at each of the steps standardized protocols or modules, as you see at the upper left, there are health maintenance and preventative guidelines which relate to those who in screening and preventive measures do not show any positives. This is keeping those who are healthy for as long as possible and that is an interface with the home.

These module-focused knowledge assets really have to do with the management of preventive, ambulatory, acute medical, invasive, and post acute care. So if I go to the ambulatory or clinic area, we have treatment and monitoring algorithms. If I have a positive diagnosis for a diabetic, then there is a sequence of events starting with diet and exercise, checking to see whether we achieved the treatment goal, if not, moving on to single oral agents for type 2 diabetics, and if we don't reach our treatment goal, adding a second oral agent and so on down through basic insulin therapy.

If after a period of time I fail to meet that goal, then we get into the second aspect of this. There are also similar treatment cascades or algorithms which we call 'order sets' that apply to the acute medical and the invasive sections of the algorithm and they lead down and triage to specific units. Usually there is substance selection, whether that's blood products or pharmaceuticals or fluid and electrolyte replacement, substance preparation, supplementary order sets after the patient has been admitted and we make rounds. There are pre-procedure order sets which include clinical supply chain management such as prosthetics and so on. And eventually, the cascade goes down to where there is an implementation of the things that are ordered which end up being bedside care practice guidelines, assessment of risks of patients for patient injury and prevention protocols, bedside care procedures, and then transfer and discharge protocols.

Similarly, after the procedure is completed, there is post procedure care, and then post procedure order sets if they are to be admitted to the hospital or discharged. Then to post acute care where we have order sets for inpatient facilities such as skilled nursing facilities, inpatient rehabilitation facilities, home health and hospice and then standardized follow-up instructions as the patient returns home. And so, those are the standardized steps in the treatment in the various venues of care.

Complementary to that are triage criteria or algorithms that say what tests should be ordered based on the diagnostic findings. Then once we have a provisional diagnosis, what are the triage criteria? One that's been well studied is the CURB-65 criteria for community-acquired pneumonia. Documenting how many of the risk factors are present helps us decide whether it's safe to treat in the ambulatory environment, whether they need to go into a med-surg unit or whether they are sick enough that they need to be in an intensive care unit.

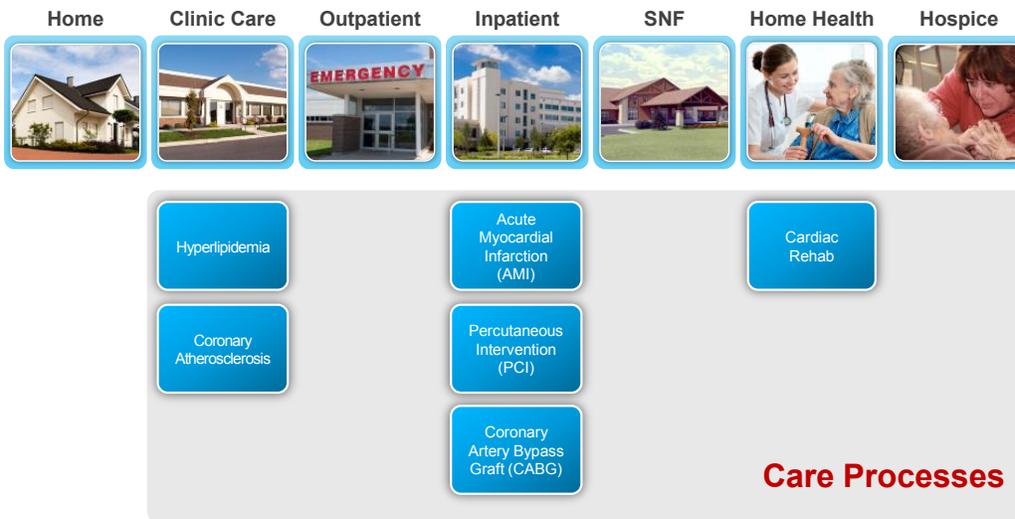
In the ambulatory setting, as we go down through those treatment and monitoring algorithms, there comes a point if we are not achieving our goal that we begin to meet indications for referral. And so, a diabetic who is treated progressively down through the algorithm and still has an unacceptable hemoglobin A1c may well be referred and meet indications after 9 months of not being able to achieve the target of the goal -- to be referred to an endocrinologist or other chronic disease subspecialist in diabetes.

Similarly, if we have a child that has acute otitis media that eventually becomes serious otitis media and we begin to see hearing loss and speech retardation, then it's time to send them to an Ear, Nose & Throat specialist for evaluation and possible placement of tubes.

Similarly, those who are referred either acutely or from this pathway to an invasive medical or invasive surgical subspecialist should meet indications for intervention. There should be standardized criteria which should be fulfilled before we embark on an intervention.

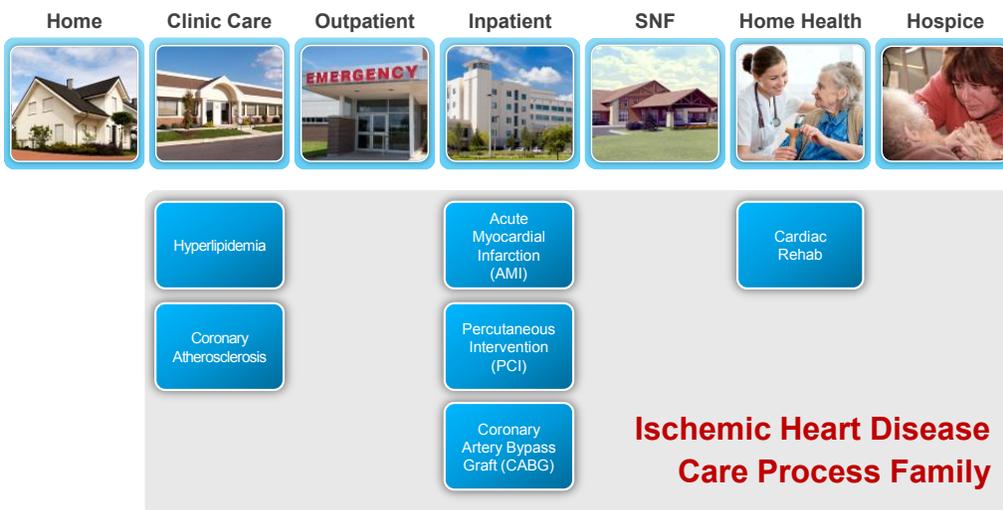
Population Health Management

Clinical Integration hierarchy - Care Processes



Population Health Management

Clinical Integration hierarchy - Care Process Families

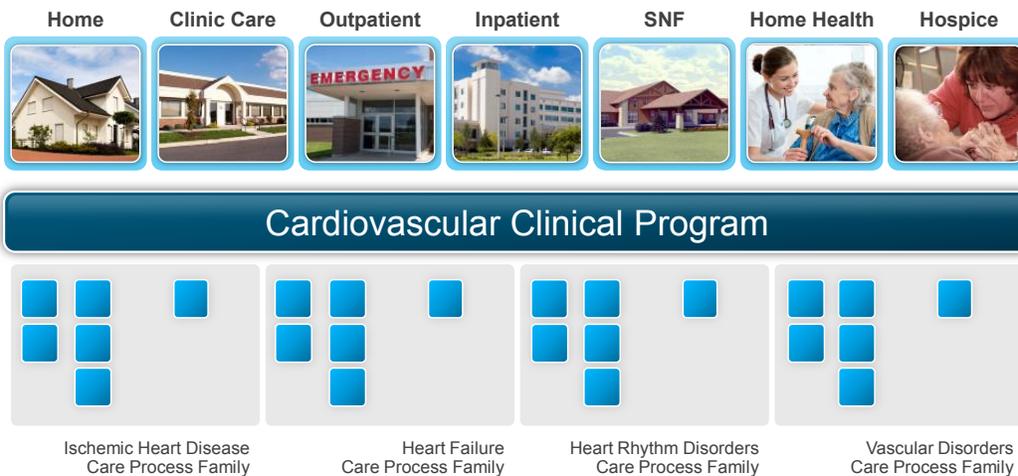


Clinical Integration Hierarchy for Care Process Families

Now if we look at the venues of care and the hierarchy clinically, it begins with care processes. There are processes of care that we manage in an ambulatory setting, there are those that require management in an inpatient setting, and there are post acute care processes that belong to, in this case, ischemic heart disease. That represents a family, if you will, of care processes that belong to ischemic.

Population Health Management

Clinical Integration hierarchy - Clinical Programs



Clinical Integration Hierarchy – Clinical Programs

Within a larger domain, for example the cardiovascular domain, that ischemic care process family is one of four major families, including heart failure, heart rhythm disorders, electrophysiology, and vascular disorders, that make up the great majority of what is in the cardiovascular domain.

Clinical Integration hierarchy

Clinical Programs – ordering of care



Clinical Programs – Ordering of Care

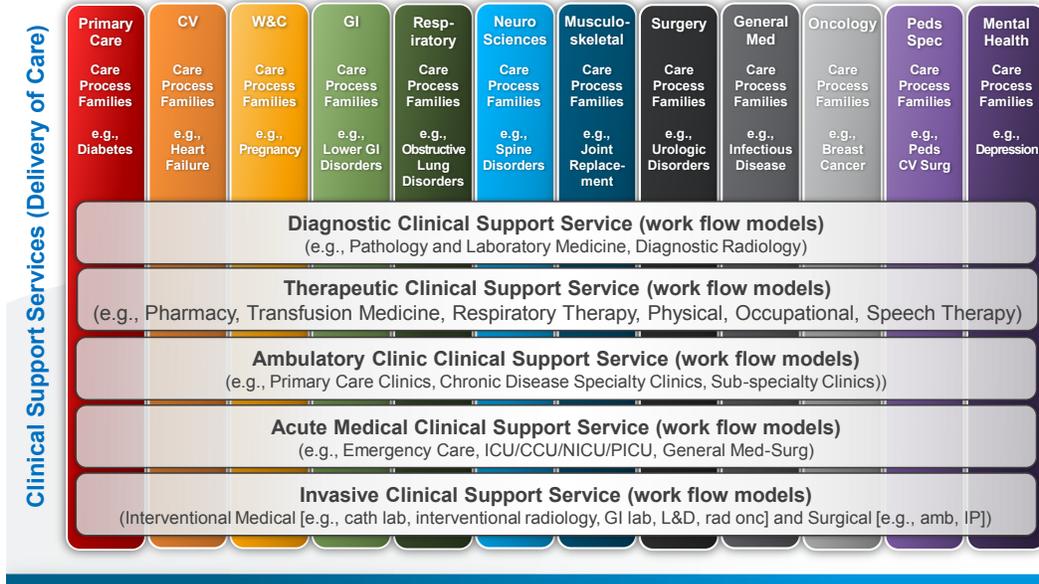
And then cardiovascular is one of several sister domains. The criteria for a domain is that the clinicians who participate in that domain share work processes. Either they work on things together or one team's output is another team's input.

Clinical Integration hierarchy

Clinical Support Services – delivery of care ordered

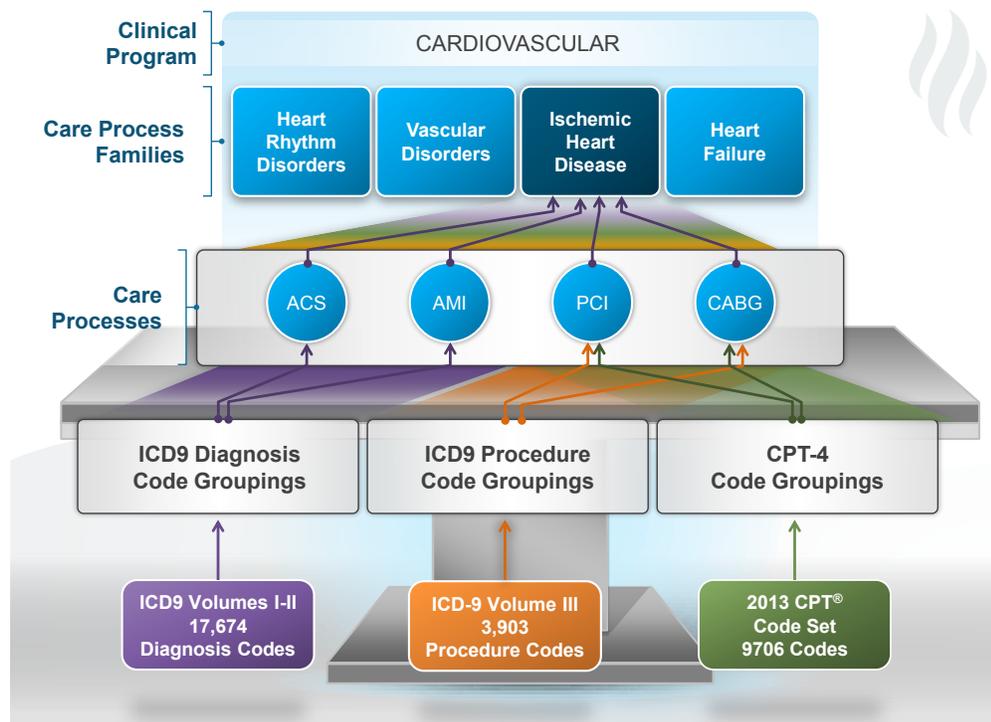


12 Clinical Programs (“Ordering of Care”)



Clinical Support Services – Delivery of Care Ordered

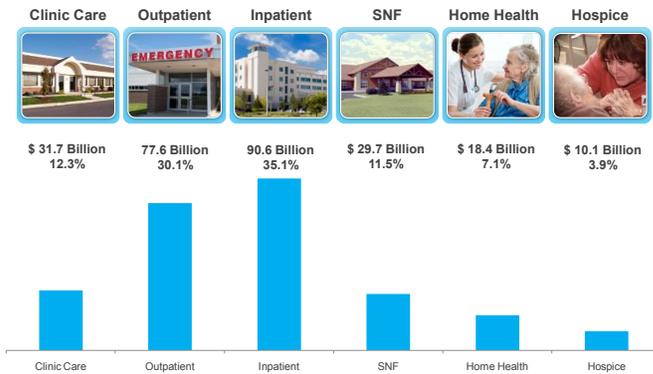
And so, you see those vertical or scientific flow domains, and they are supported by horizontal domains, including diagnostic clinical support services, therapeutic support services, ambulatory, the acute medical that we saw on the anatomy, and invasive. These vertical clinical programs order the care, and these horizontal clinical support services implement the care that is ordered. This is the scientific flow, the ordering of care. And this has to do with workflow, the implementation of the ordering of care. Patient injury prevention belongs as a part of the workflow because patient injury really is a defect in the implementation of the care.



If we look then at how we will measure the cost outcomes of the clinical care that is ordered and implemented and the safety of that care, we end up needing to map to that clinical integration hierarchy that we just looked at of care processes, the care process families and the domains. We need to link those to the ICD9 diagnosis codes of which the 17,000 plus, the procedure codes, smaller number, and then nearly 10,000 CPT codes. And as you will be aware, some of those codes span all of the domains, other ones are more specific to a venue like inpatient or outpatient, and some of them are mixed.

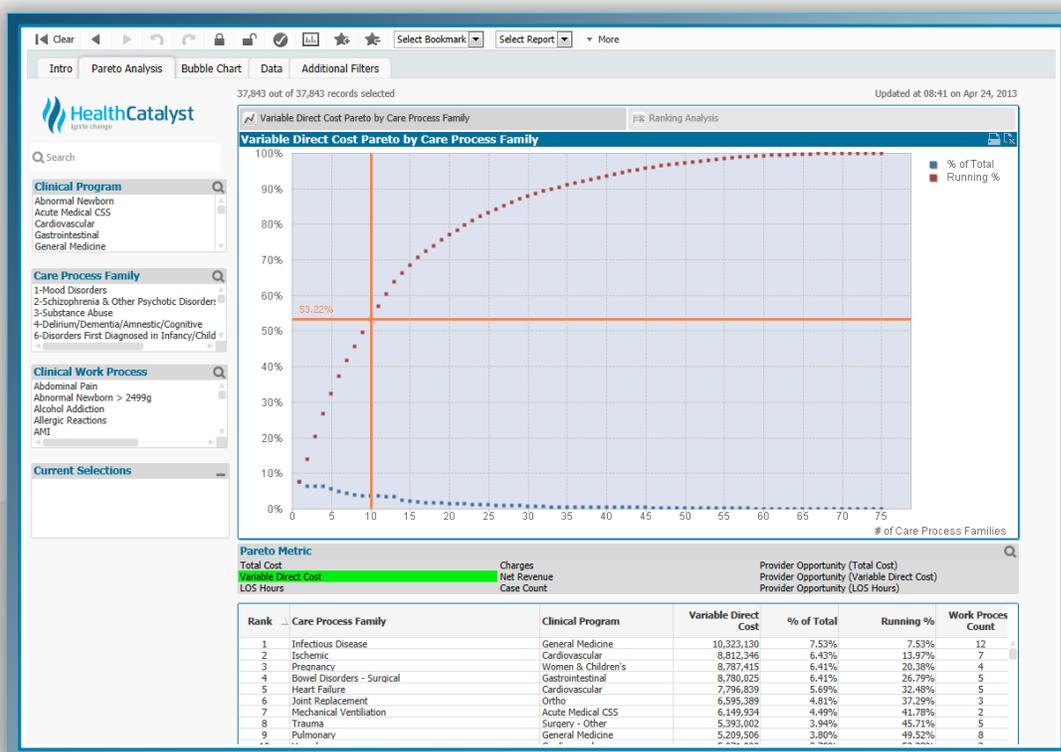
Population Health Management

Medicare 2011 fee-for-service payments by venue



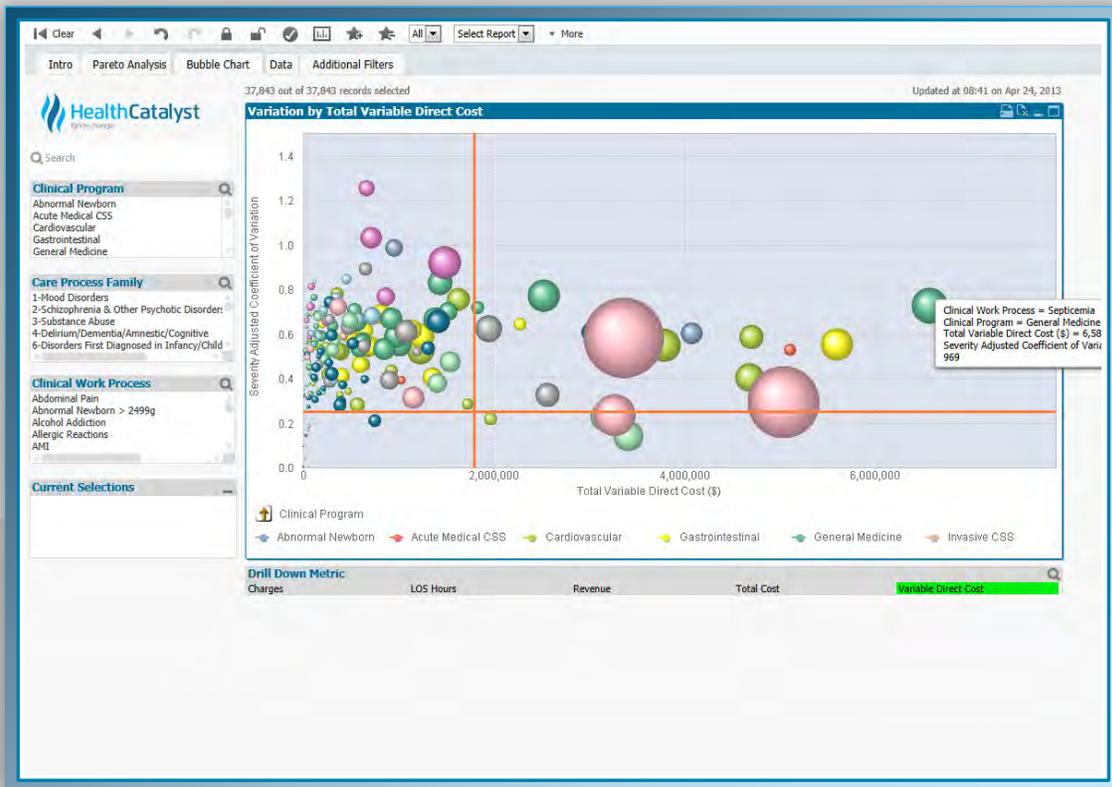
Medicare 2011 Fee-For-Service Payments by Venue

This is a draft study and it's a work in progress still, but Medicare recently published nationwide data for the benefit of those developing innovation proposals. We took those data and grouped them. They're not quite in this form, but we grouped them into clinic care, outpatient, inpatient, skilled nursing facility, and home health and hospice, just to show the relative contribution to the total dollar amount of each of the venues of care. Now, this understates just a little bit because this does not include, for example, inpatient rehabilitation facilities, and durable medical equipment. So, this isn't quite precise but at least gives you a directionally correct view of the importance, for example, of a focus on outpatient and inpatient, but also not neglecting the other important aspects of the continuum of care.



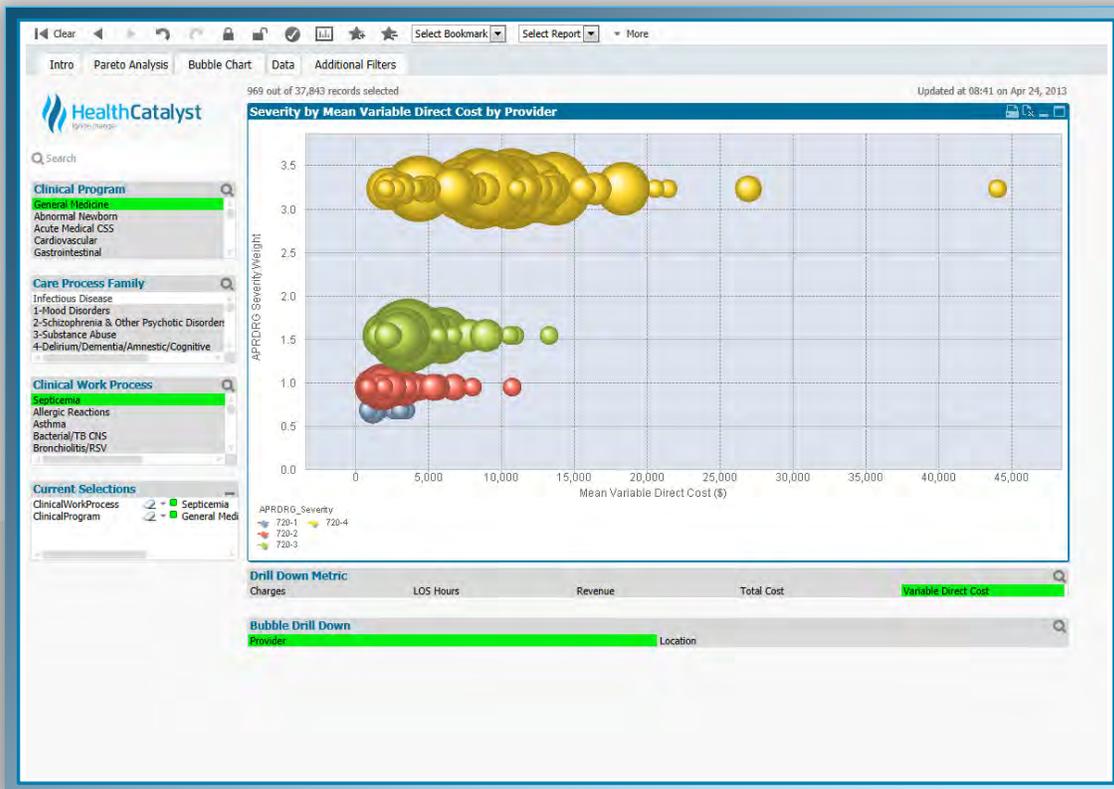
Key Process Analysis – Prioritizing the Opportunity for Variation Improvement

One of the things that we did very early on when Brent James and I initiated the clinical integration studies at Intermountain (and it was not nearly as elegantly done as these graphics represent), but in an Excel spreadsheet model we went through and grouped the care processes into care process families and then tied those to our standard costing system in order to identify the relative resource consumption of each of those major clinical care or care process families. Each of these blue dots represents one of those care process families: infectious disease, ischemic heart disease, pregnancy, and so on. The red dots represent the cumulative total of the blue dots. And so, you can see if I go up through the first 10 blue dots, the cumulative total of that is over 50%. These are direct variable costs that we're looking at, which we found to be the thing over which providers have the most control of the various possibilities of financial measures. Typically, if we get out to about 30 or 35 processes, we will get beyond 80% of the resource consumption, and the resource consumption is a pretty good surrogate for the risk to the patient. The higher the resource consumption, the more likely they are to be in an ICU, for example.



An Example of Septicemia Being a High Cost, High Variable Process

The next thing that we did was then to create bubbles at the next level of granular detail in the hierarchy. And so, here you see a screenshot of hovering over this bubble which is septicemia within the infectious disease care process family. The care process of septicemia on this particular graphic is both large as measured on the X axis by the variable direct cost dollars that are in that bubble, and it is also quite variable as measured by the coefficient of variation, the standard deviation divided by the mean. The size of the bubble represents the case count number. The number of cases is small, high ticket, and low frequency. Each of these other bubbles represents another clinical work process. The color of the bubbles relates to the clinical program or clinical support service that they belong to. Our physicians, in our experience, are always concerned about whether we have addressed severity. Using the tools that we have developed, we can drill into one of those bubbles.



Stratifying by APR/DRG Severity Levels

Now we are at the physician level and we're using the APR/DRG Severity index to stratify this. At the highest level acuity, you would expect more variability. But as we get down to the lower levels, we still see pretty significant variation in the cost of treating these patients. Each of these bubbles is a physician. The size of the bubble represents the number of cases for that physician. In the ideal, we'd like to see them stacked up on top of each other, clustered together. When we see variability, that represents an opportunity for improvement.

There are usually two high level causes of the variability. One is data system problems. We're not calling it the same name or collecting the data at the same way. That's something we need to fix, which has to do with data quality assurance. The other cause is assignable variation, true differences in the way the care is delivered by the providers. That gives us an opportunity to work on standardizing the care, reducing the variation from provider to provider. And invariably, particularly in the inpatient setting, a reduction in variation has a desirable by-product reduction in cost.

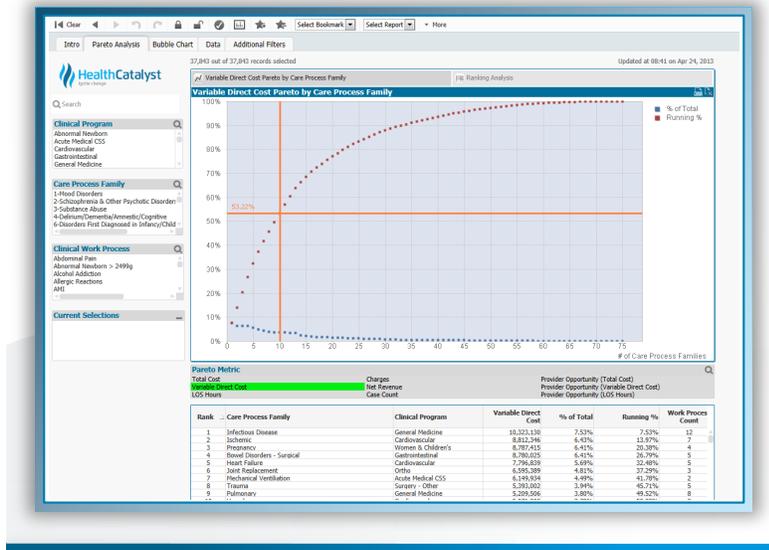
Poll question



How does your organization prioritize improvement projects

- Respond to desires of highest volume physicians with loudest voices
- Respond to regulatory and accreditation imperatives
- Based on pre-defined strategic criteria (including objective and subjective factors)
- Other

So, another poll question. How does your organization prioritize improvement projects?



Using the Key Process Pareto to Prioritize Project Improvement Opportunities

If we go back to the Pareto chart here, how do you go about deciding which of those you will work on? We almost invariably find when we engage with a new client that they are working on at least one project out here on the tail and the challenge of that is that the resources required to work on number 68 out here are pretty much equal to the resources required in terms of infrastructure support for number 2 or 3 or 1.

Poll question



How does your organization prioritize improvement projects

- Respond to desires of highest volume physicians with loudest voices
- Respond to regulatory and accreditation imperatives
- Based on pre-defined strategic criteria (including objective and subjective factors)
- Other

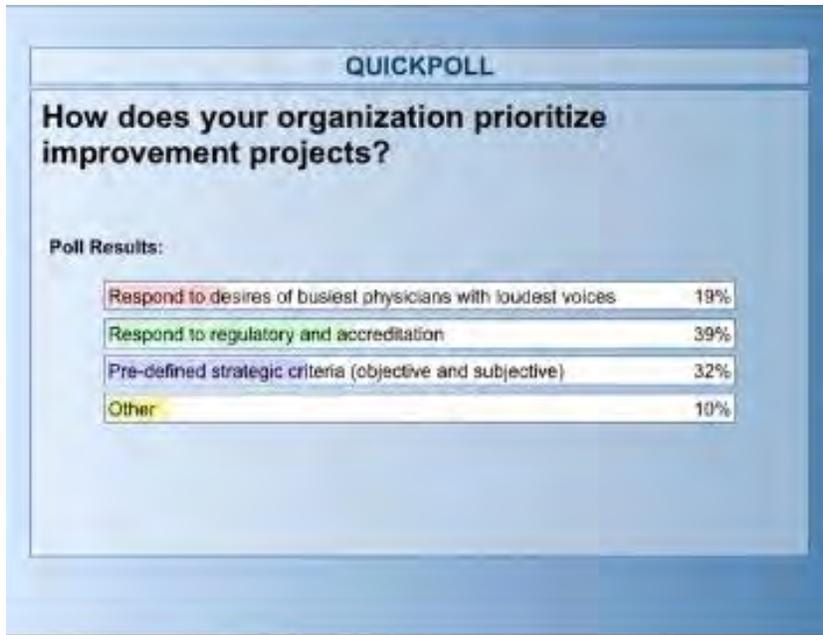
And so, the question then is how do you prioritize? Often when somebody is working on number 68, they've responded to a passionate physician that has a project that he or she wants to work on.

In other cases, we find kind of a reactive tactical approach where the institution is responding to regulatory and accreditation imperatives. And it's not to say those aren't important but are they driving the strategy or are they part of the pre-defined set of strategic criteria including both objective, as well as subjective factors or is there some other schema? So we'll get you a minute now. Tyler will tally the responses.

.....

Tyler: Alright. We've had the poll up for just a bit. We'll leave that up for another 15 seconds...

Tyler: Alright. We've got some great responses and I'll close the poll now.



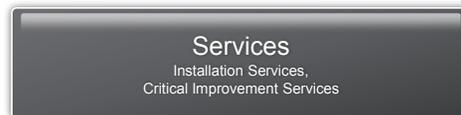
Tyler: And, Dr. Burton, here's the results.

Dr. Burton: That's great. And that's again quite encouraging that a significant portion of you have criteria established that you're using to prioritize. A significant number of you are also just trying to keep up with the regulatory challenges that we all face and that is pretty representative or maybe a little more sophisticated than we are used to seeing. So congratulations.

Our Philosophy: Be Systematic



Systematically
Change Process
and Behavior



Systematically
Apply Evidence
and Standardize



Systematically
Integrate Data
and Measure



[Dr. David A. Burton]

Health Catalyst Philosophy: Be Systematic

Now, as we try to approach building an infrastructure to be able to support effective population health management, our philosophy is that we need to be systematic. We need to start with integrating data and measuring where we are. Your response to the last poll question shows that you are reacting to regulatory and accreditation imperatives. There may be a tendency to purchase point solutions that help you address one or another flavor-of-the-year regulatory measure. But as that inventory of point solutions grows, it creates an absolute nightmare for the IT department trying to make sense out of all of the contracts and the data feeds.

Start With A Data Warehouse

We think it is critical to start with a data foundation, and that is a data warehouse platform that allows you to integrate into a common location all of those different sources systems, so that you can build a single source of truth about clinical, financial, and patient satisfaction data, etc. We employ a Late-Binding™ data warehouse, meaning that we don't bind vocabulary and business rules until the latest possible moment when we're ready to use things because those things that we are going to bind (as far as the business rules particularly) are constantly changing. Every time there's a scientific society meeting, something changes in those rules.

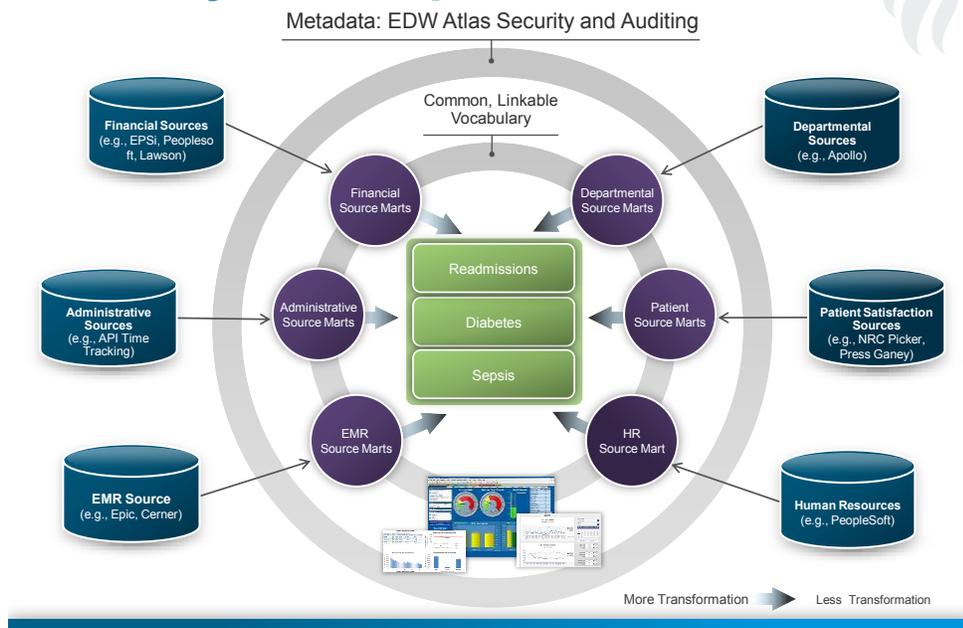
Analytic Applications

Next, on top of that platform, we need to systematically apply evidence and standardize the application of that evidence, and that has to do with analytic applications. We saw an example of that in the key process analysis, with the screenshots that we showed you. But it also has to do with dashboards that relate to the common metrics that you need to operate your system, what we would call foundational applications. And then it has to do with advanced analytics that relates to trying to improve workflow, patient injury prevention and management of populations like diabetics.

Organizing Interdisciplinary Teams to Implement Care Improvement

Finally, this doesn't happen just by implementing a technical solution. There is an organizational component to this. Part of that is the installation of the infrastructure that you need. The other part is perhaps the hardest, and that is organizing teams, interdisciplinary teams of physicians and nurses and administrative people that are actually going to lead the implementation of those improvements with regard to processes and scientific evidence.

Catalyst's Adaptive Data Model



The Health Catalyst Adaptive Data Model

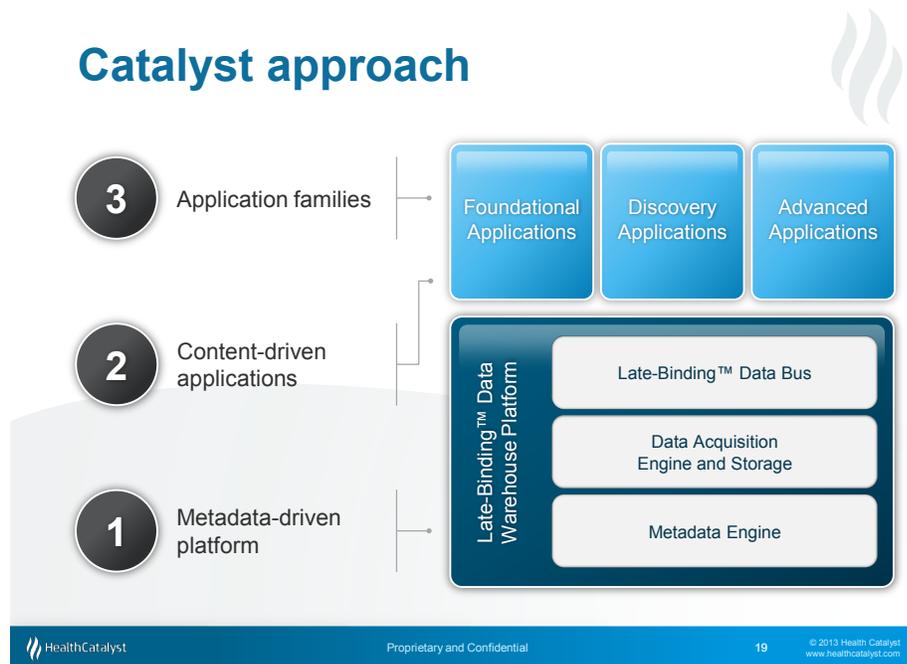
So if we start with that base, this is the way we go about integrating the disparate sources that are a part of your organization. Typically an organization will have some financial system, including something like PeopleSoft or Lawson and a costing system like EPSi. They will have some administrative sources like time tracking. A big part of this is the clinical system, the EMR source: Epic, Cerner, etc. Then as the organization becomes more sophisticated, there will be a desire to bring in departmental sources. So if we're working on cardiovascular and has a cardiovascular system, there will be data in there that we need in order to optimize our improvement projects. We have patient satisfaction sources, typically NRC Picker, Press Ganey. And then human resources often has a component of one of the financial systems like PeopleSoft.

We have a security and auditing ring that is the boundary of the data warehouse. And then as you see down here at the bottom, more transformation is represented by the big arrows, less transformation is represented by the small arrows. So we do minimal transformation. We link these together. There is some conformity to some common linkable identifiers like patient ID and provider ID - things which are not changing rapidly which allow us to be sure that we're calling a patient in the financial system and in the clinical system the same way.

When we get ready to work on a specific improvement process, whether a clinical sports service looking at readmissions or a vertical care process like diabetes or sepsis, the transformation takes place in those extraction routines from the source marts, (which are pretty much a copy of the transactional system), and the subject area marts, which are much

more transformed but draw on the applicable relevant sources that we need in order to construct that single source of truth in a given area.

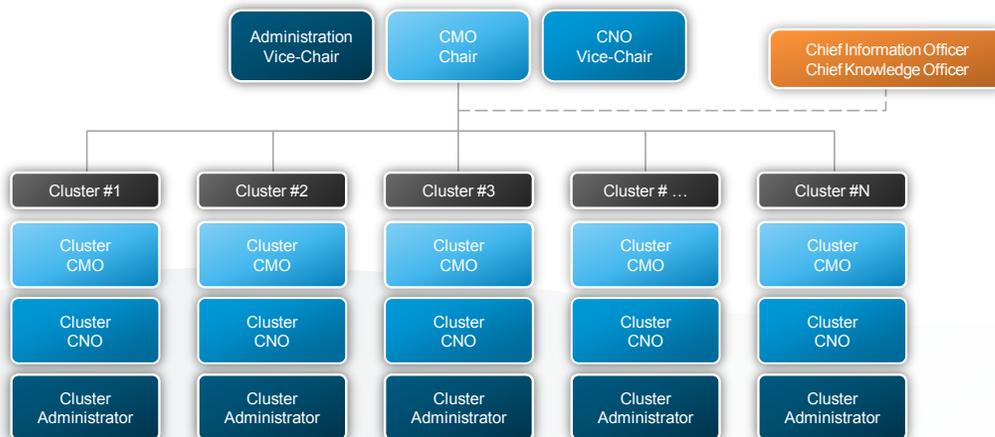
Then on top of those subject area data marts, we build visualizations, dashboards, and scorecards.



The Health Catalyst Approach

Our approach is to start with a metadata-driven platform with a metadata engine, a strategic plan for data acquisition, a place at an engine to store that, Late-Binding™ Data Bus that we talked briefly about. On top of that we build the content-driven applications: 1) foundational applications are those multiple applications spanning the company to support the operation of the institution; 2) discovery applications which show you how we are doing, where do we have problems, etc.; and then 3) advanced applications which actually support the improvement initiatives.

Clinical Integration Leadership Team (CILT)



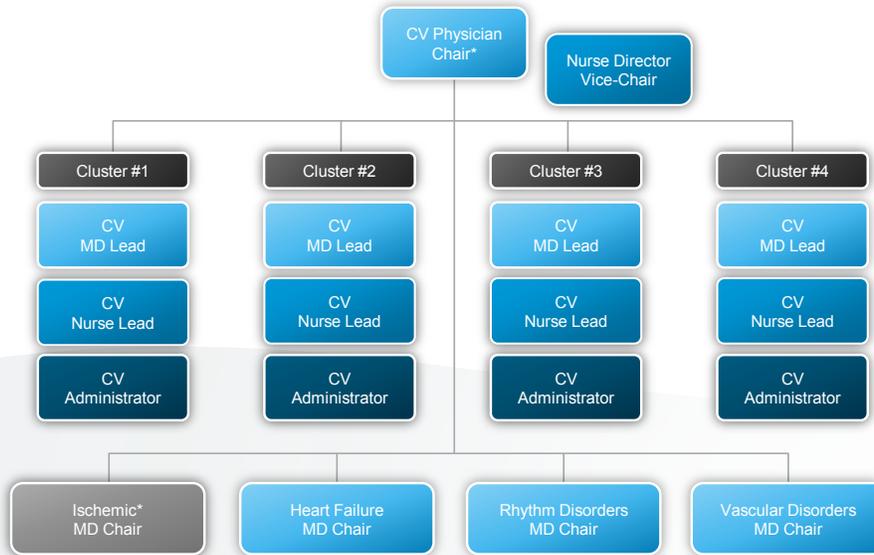
Cluster = Hub Hospital/Region, Medical Group, Health Plan, Section/Division

Clinical Integration Leadership Team (CILT)

We mentioned the importance of the organizational structure involving clinicians and administrative operations personnel. What we have found worked for us at Intermountain and has worked for our clients within Health Catalyst is that there needs to be somebody designated with appropriate representation both by discipline of administration, physician and nursing and also by geography. If everything is taught down from the corporate office, it will not be implemented very faithfully out in the frontline. And so, we encourage representation from clusters. Clusters are geographic or functional areas, so it could be regions of hospitals, it could also be a clinical organization like a medical group, it could be a captive health plan. All of those will be appropriate clusters to be represented in the decision-making so far as prioritization and also in the overall governance of the improvement initiatives, holding those accountable who have been given stewardship for the improvement initiatives.

We have a couple of high level staff boxes that we show here. One is a chief information officer. That's pretty common in all organizations. But what is often missing is the chief knowledge officer and that goes by various titles. Sometimes it's a CMIO or a chief quality officer but it's somebody looking after data governance and technical infrastructure and personnel to support the improvement initiatives.

CV Clinical Program Guidance Team

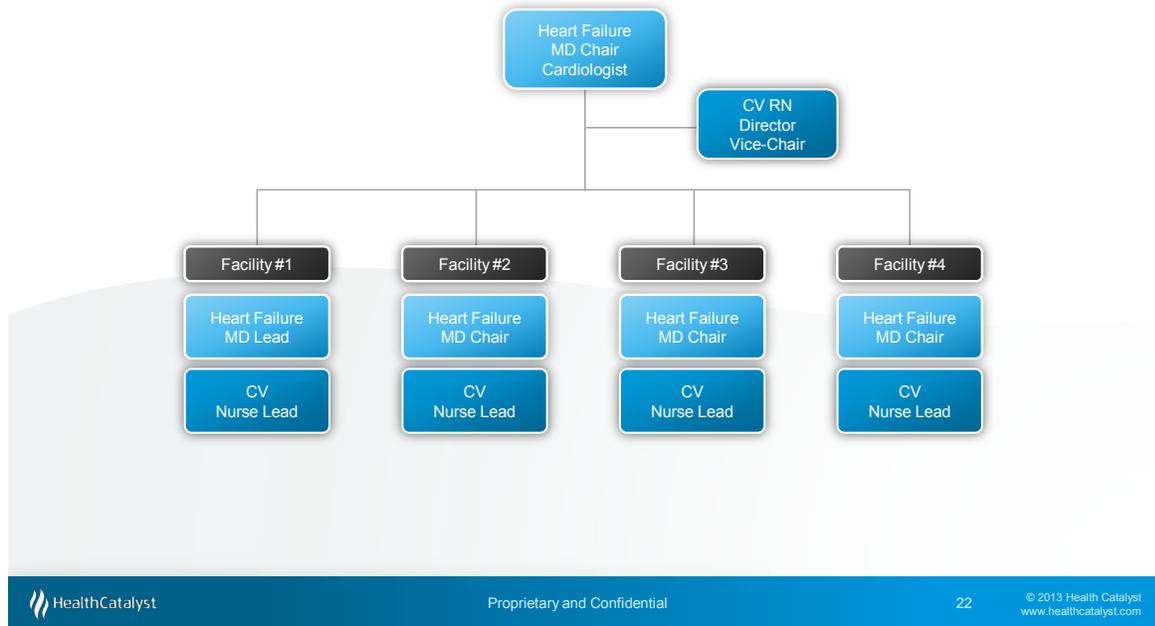


* One of the Clinical Implementation Team chairs also serves as the Guidance Team chair (Ischemic MD Chair in this example)

Clinical Program Guidance Team

The next level that functions underneath the clinical integration leadership team is a guidance team. They mirror in many ways the function of the clinical integration leadership team, but now they are looking after that for a domain, in this case, we've shown the cardiovascular clinical program. They have representatives specific to that domain from each of the relevant geographic areas. They also have representatives of the next level, which is the care process family team, so the chair of the ischemic heart disease, heart failure, rhythm disorders and vascular disorders teams. And once again you see the triads, the physician, nurse, and administrative operations officer.

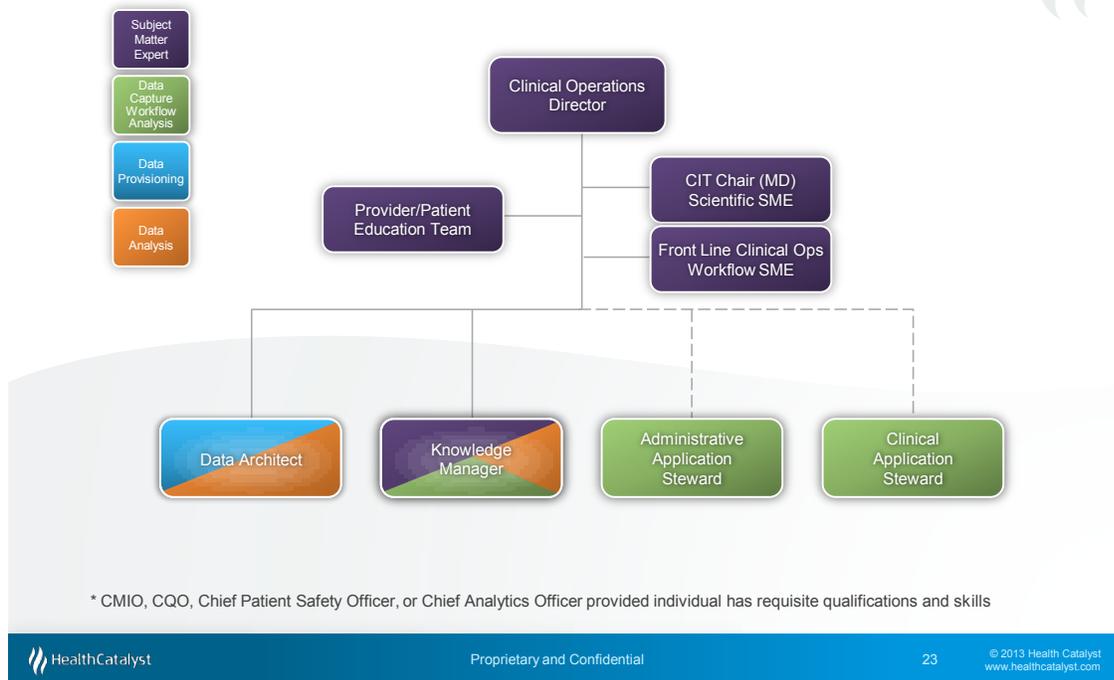
Clinical Implementation Team (CIT) Heart Failure Care Process Family



The Clinical Implementation Team

The rubber really meets the road with the clinical implementation team. And here we've shown the heart failure team in this particular case. We have a physician subject matter expert in heart failure chairing that team, and we've got a nurse director as the vice chair of the guidance team, full-time supporting that particular clinical implementation team. All of the facilities in the organization are represented. Since we're focused particularly on the clinical standardization and reduction of variations, the administrative operations people tend to glaze over unless they have a clinical background. So typically we will involve physician and nurse dyads from the facilities that provide those services.

CIT Work Group

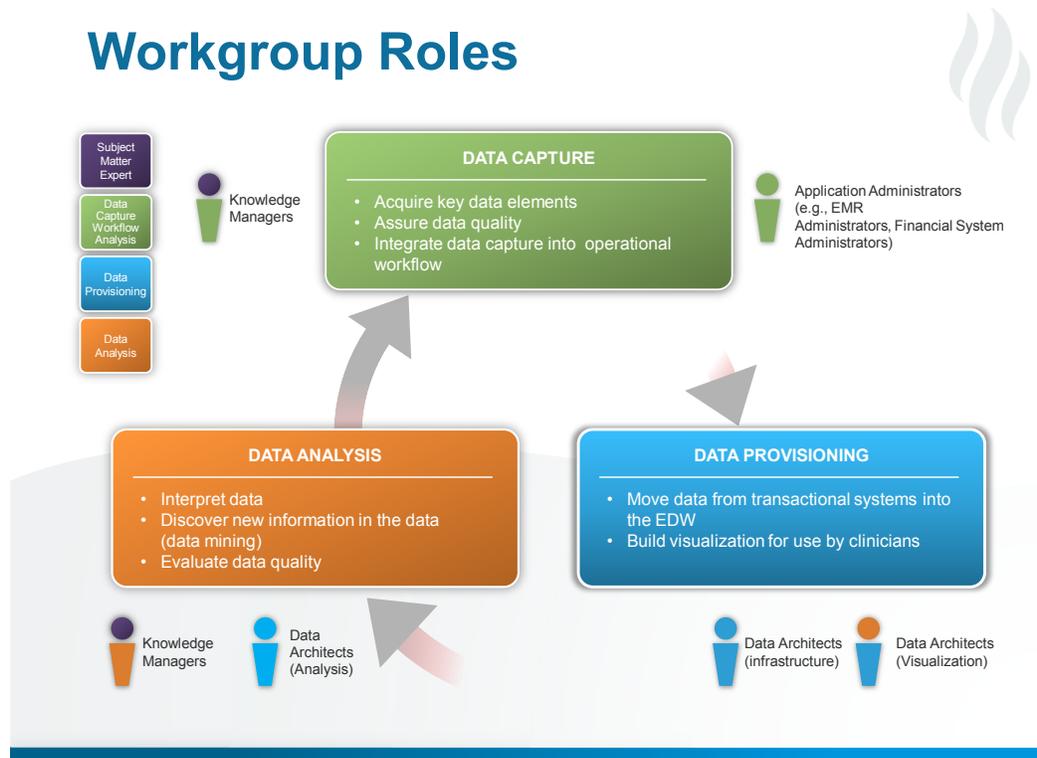


The Work Group Team

We want to save the time of the clinical implementation team. That brings us to the next level, which is a clinical implementation team work group. The work group is there to do the leg work between what are typically monthly meetings of that clinical implementation team. They are responding to hypotheses that are generated, mining the data, and are trying to provide the infrastructure support and the reconfiguration where necessary of the infrastructure to be able to measure and manage the things that are suggested as improvements. You usually have your clinical operations director in the early days chairing this, that's our nurse director, as the vice chair of the guidance team. You have your scientific subject matter expert, so our clinical implementation team chair. We've got a frontline clinical operations workflow subject matter expert, who is a nurse that's actually on the unit delivering the care that can bring us up short when we devise things that might to grind the workflow to a halt in our quest for pure academic implementation.

We have a shared resource across multiple clinical domains providing patient education teams. On every guidance team there is a data architect dedicated to that guidance team and a knowledge manager. The data architect is a technical person responsible for provisioning the data and also helping with data analysis. The knowledge manager often is a nurse with an interest in data, informatics and so on and is the boundary spanner between the subject matter experts, the clinicians, and the analysis part in partnership with the data architect and

also understanding the data capture. She or he is on the front end and therefore being able to relate to the administrative and clinical application stewards who are the experts in the financial system or in the clinical EMR system.



Workgroup Roles

If we look at those workgroup roles, we have data capture, data provisioning and data analysis. These help in the PDSA improvement cycle because as we use the system to measure and to manage, we find the things aren't as optimal as they could be. So we make improvements. You can see the people and the application administrators responsible for data capture informed and helped by the knowledge managers, the data provisioning and the data analysis.



Poll question



Which clinical organizational teams do you have

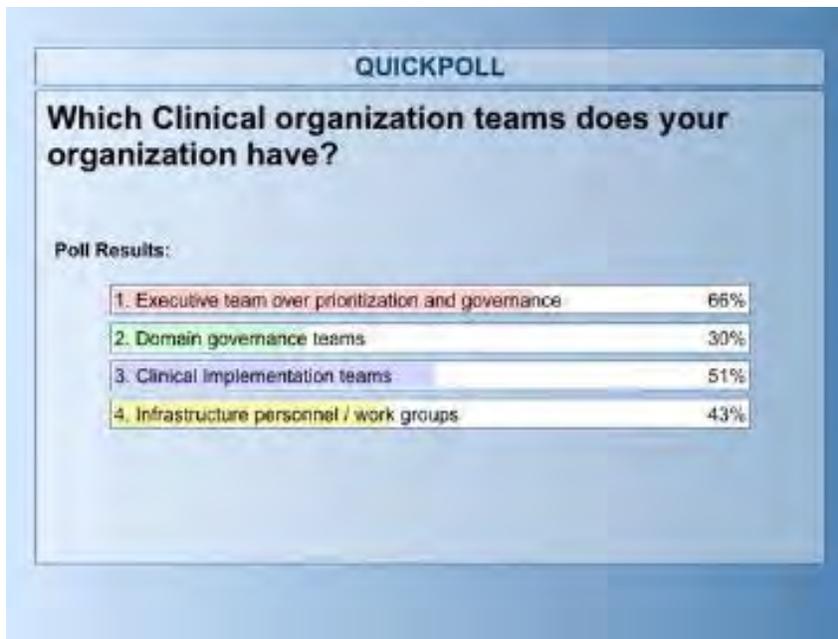
- Executive team responsible for prioritization and governance of clinical improvement initiatives
- Domain governance teams (e.g., CV Clinical Service Line teams)
- Clinical implementation teams (e.g., Heart Failure improvement team)
- Infrastructure personnel/work groups to support clinical improvement teams

Now, a poll question. Which clinical organizational teams do you have in your organization?

Do you have some kind of a governance in prioritization teams across the entire organization?
Do you have data or domain governance teams often that those would be a clinical service line?
Do you have clinical implementation teams, improvement teams that are organized around those care process families? And what kind of infrastructure support personnel like the work group have you budgeted for and trained?

[Tyler Morgan]

Okay. The poll is closed and here are the results, Dr. Burton.



[Dr. David A. Burton]

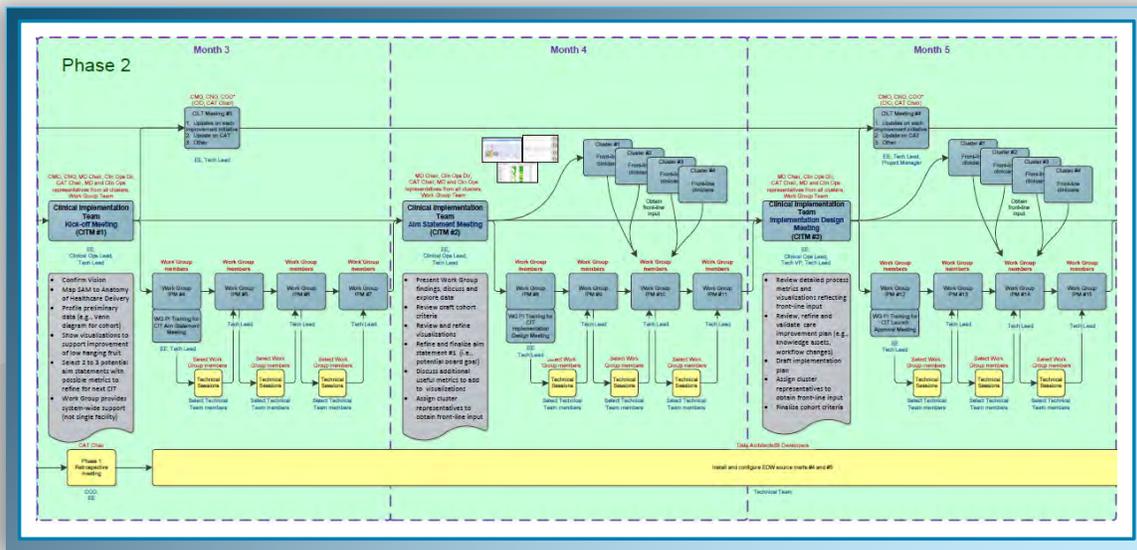
Very interesting. I'm pleased to see such a high number, 66%, that have an executive team that is helping to create strategic prioritization. That's really, really important. You can diffuse yourselves and pile the field an inch deep and a mile wide and really not accomplish much. 51% of you have some form of a clinical implementation team and that is encouraging. 30% have domain governance teams. And that's not surprising. If your organization is somewhat early in the implementation of the improvement initiatives, you don't really need that domain governance team layer until you have implemented multiple improvement teams at the clinical implementation team level. So, when I'm just doing heart failure, I don't have the need yet for the cardiovascular. But when I do heart failure and then I do ischemic heart disease and then I move on to electrophysiology or rhythm disorders, I begin to outstrip the capacity of one nurse to manage all of that. And then on the infrastructure personnel, that's pretty encouraging too. 43% of you said that you have provided some infrastructure personnel.

The Cardinal Sin in Improvement Initiatives

Often the cardinal sin in improvement initiatives is to get the physicians and the nurses all excited about focus on improving clinical outcomes. Then, you get into the meeting and there's some wonderful hypothesis generated, you show them a little bit of data, and then they generate some thoughts and some suggestions and you don't have adequate infrastructure personnel to test those hypothesis and bring the data back in a timely manner and pretty soon the clinicians disengage, particularly the physicians, if they aren't seeing answers to the questions that they asked.

And so, you can either use these improvement initiatives as the strongest tool you have to strengthen relationships with your physicians or you can severely damage your relationships if you get them excited and then don't provide the infrastructure support.

Implementation flow diagram

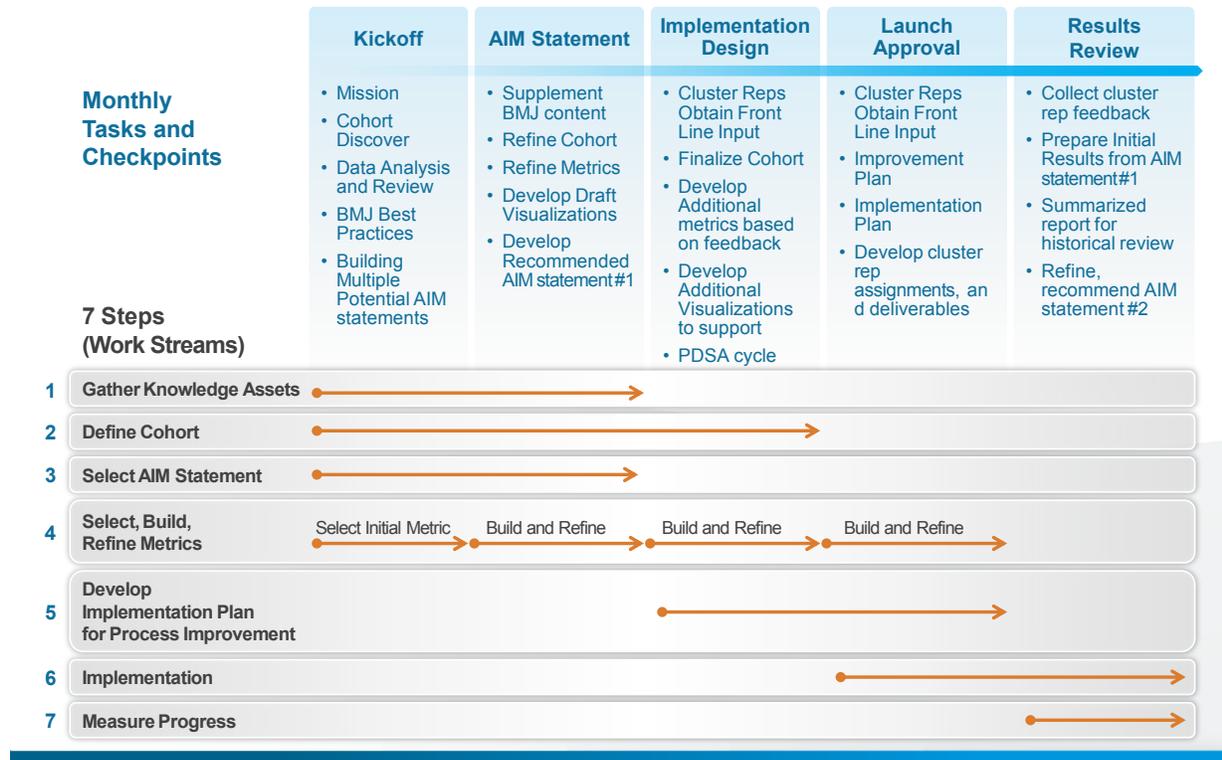


You Need an Implementation Flow

The next important thing is that as you have improvement initiatives, it's important that you have an implementation flow in mind. Here you see an example showing how those teams function, if you will, in a graphic. You have a clinical implementation leadership team meeting typically monthly or every other month looking at the priorities, holding people accountable. You have a clinical implementation team meeting on a monthly basis. You have your work group meeting on a weekly basis interfacing with technical support people in order to test and reflect, etc. Each of these meetings has a specific purpose, a kickoff, definition of an aim statement, their goal or objective, and then in between, the members of that team getting out to the frontline and bringing back some input, so that the frontline feels engaged and involved and is able to fingerprint. Then refining, reviewing, getting it ready for launch, going back up before launching it and getting the input on, we listen to you, here are the modifications we made. And then finally this only shows part of the cycle but launching and then measuring the

results. And so, that's just a schematic outline of how we do engagements and try to help the teams move forward and actually see improvement so that they remain engaged and get excited about what they're able to accomplish.

Standard “organizational” work

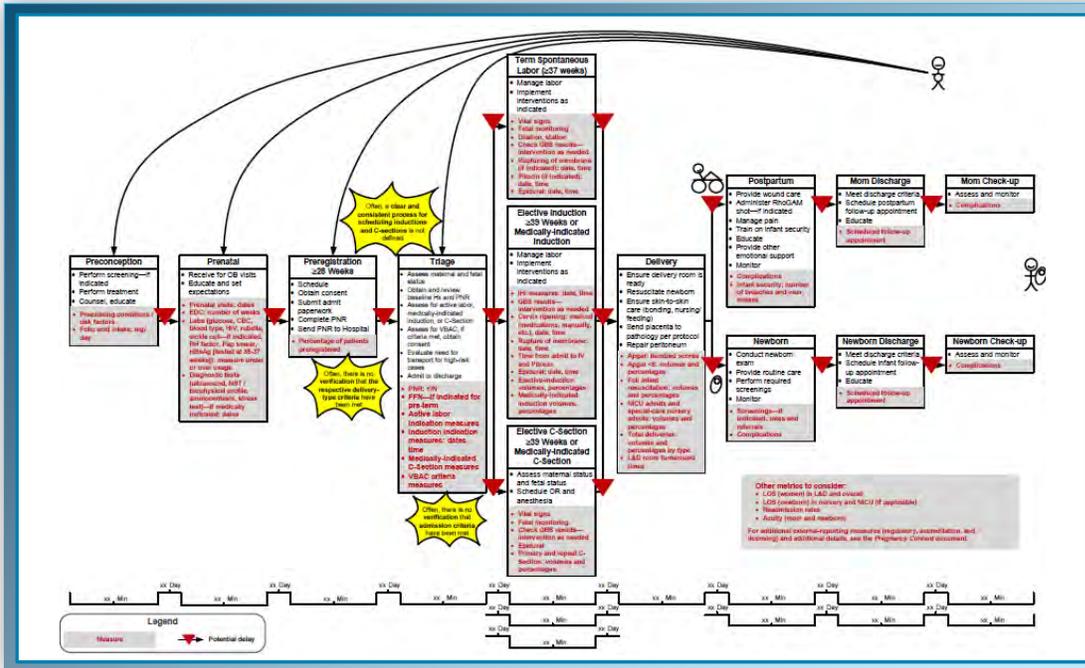


A 7-Step Process for Improvement Projects

This is a little more detailed view of the 7-step process here on the left that we use to move across these monthly meetings.

So here's our kickoff meeting, our aim statement meeting, implementation design, approval of launch after the input, and then measuring and reviewing the results of what we've been able to do. You need this kind of a work plan, if you will, and specific objectives, to show what's going to be on the agenda of each of these meetings in order to keep things moving and to show success.

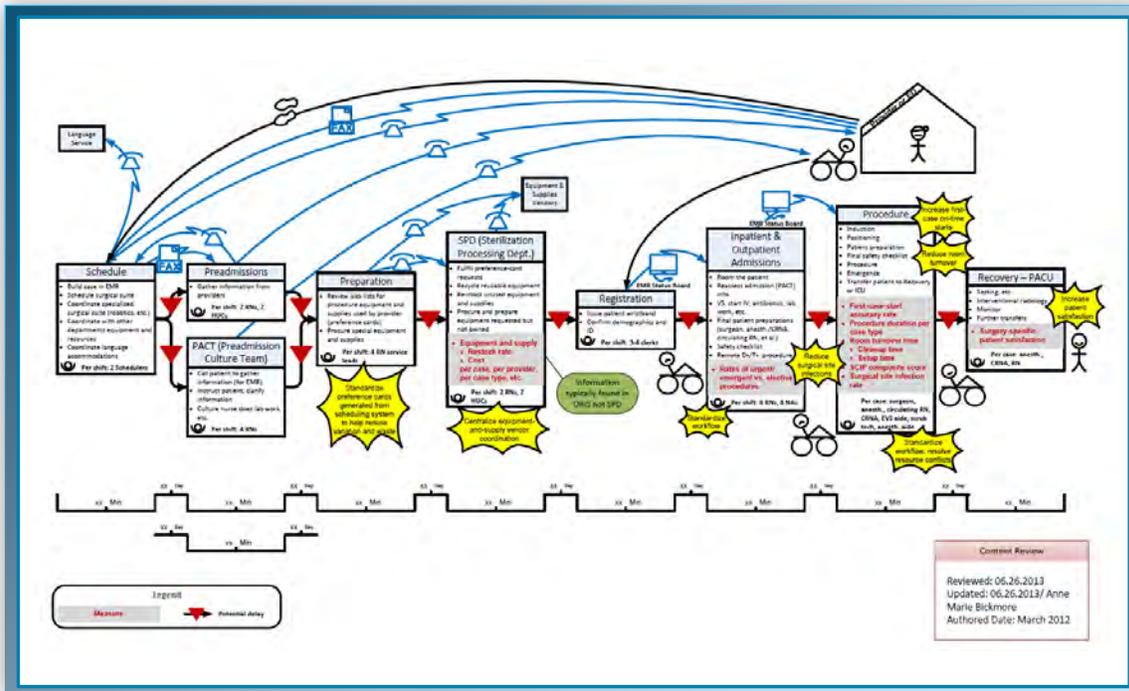
Pregnancy



Value-Stream Maps -- Pregnancy

The other thing that we found particularly helpful is to have a visual representation of really two dimensions, and these examples were crafted by our senior vice president of clinical operations, Holly Rimmasch, who is a nurse manager by background. She combined the elements of a value stream map workflow approach with the steps in the management, in this case, of pregnancy from prenatal through labor and delivery and so on, showing the scientific or clinical flow of care. So there's one for pregnancy.

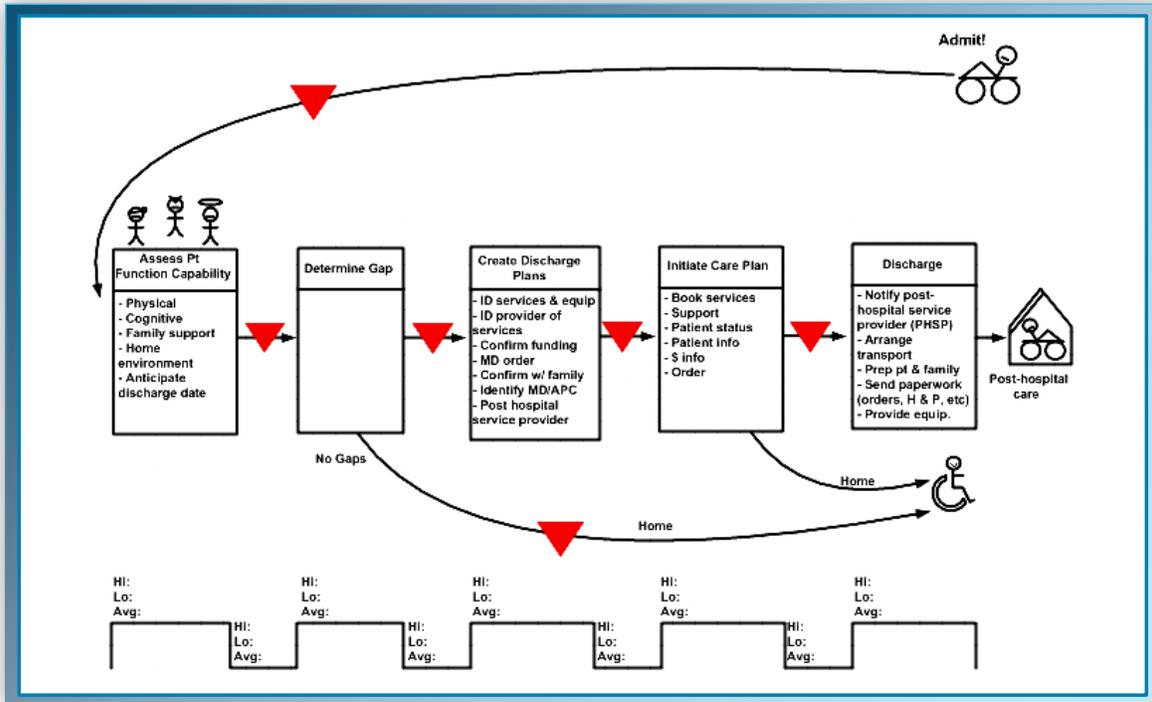
Surgical Services



Value Stream Maps – Surgical Services

Similar sorts of things apply in traditional value stream maps, an A3 analysis for the clinical support service. Here is the workflow laid out at one of our clients for their inpatient surgical services with the strong clouds of opportunity and the various connections to the patient. And those are – that's an example of a department-specific workflow.

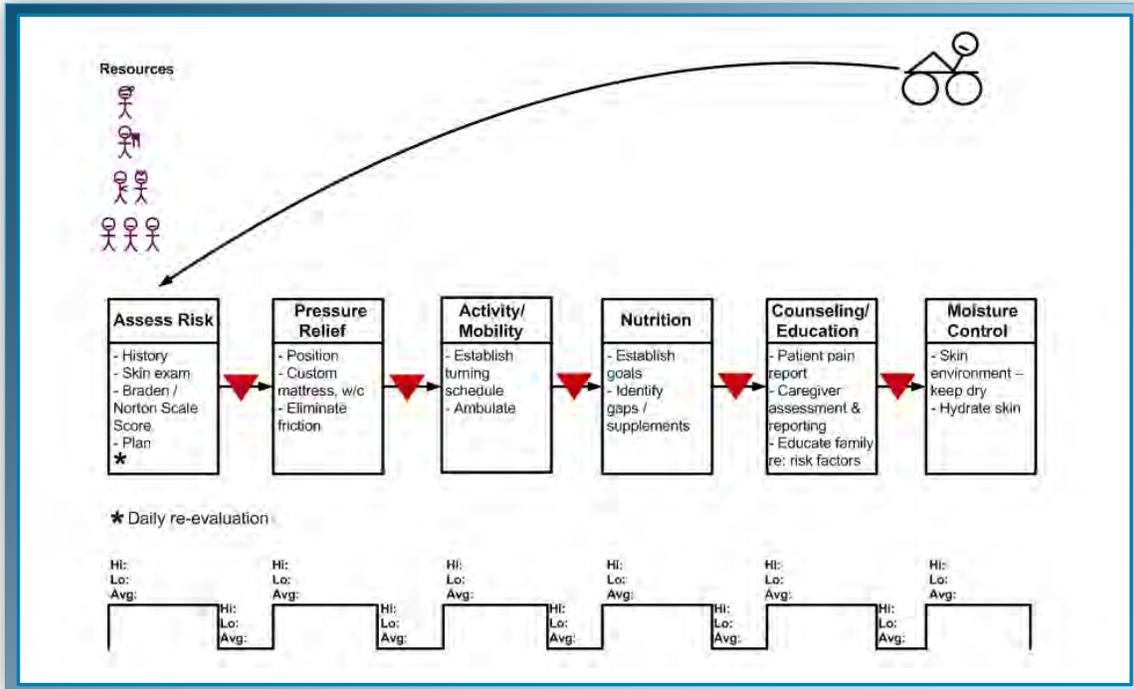
Discharge from hospital to post-hospital service



Value Stream Maps – Discharge from hospital to post-hospital service

Then there are some generic workflows that have to do and attached to multiple case types. So here is a discharge flow from the hospital to post hospital services to post acute care services.

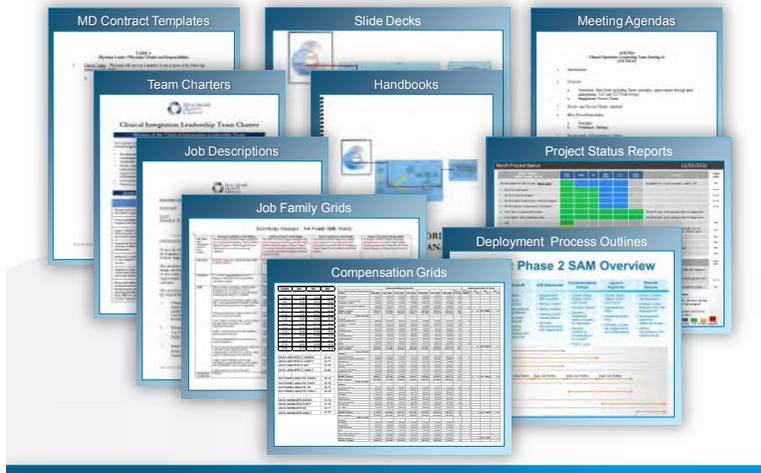
Pressure injury prevention



Value-Stream Maps – Pressure Injury Prevention

And finally a flow for pressure injury prevention. So similar format but it helps the clinicians understand what we're talking about, where we're going to improve, and it is also a key to identifying in that process flow when they go to that 7-step process which of those represents our best opportunity for improvement, where will we develop an aim statement or a goal.

Standard organizational work



Documentation is Needed

The other thing that we have found is that the personnel that you need to support these improvement projects and frankly just the operations documents often are not familiar things. We have charters for each of those teams, so that when we organize a team, we understand that we're going to be in for a dollar, not just a dime. If we say we're going to organize a clinical integration leadership team, then we understand there's a budget attached to that. Job descriptions for physicians that you may not have had and as you grow on mature job family grids, that provide a career path so that you don't just get your knowledge manager, your data architect trained and then someone steals them away into another department in your hospital or some other organization. Compensation grids for physicians and for technical infrastructure personnel and these are project status reports used by the operations people in implementing the improvement process. Meeting agendas for each of those monthly meetings that we talked about. Handbooks to recruit and orient. Slide decks to explain how things work.

Poll question



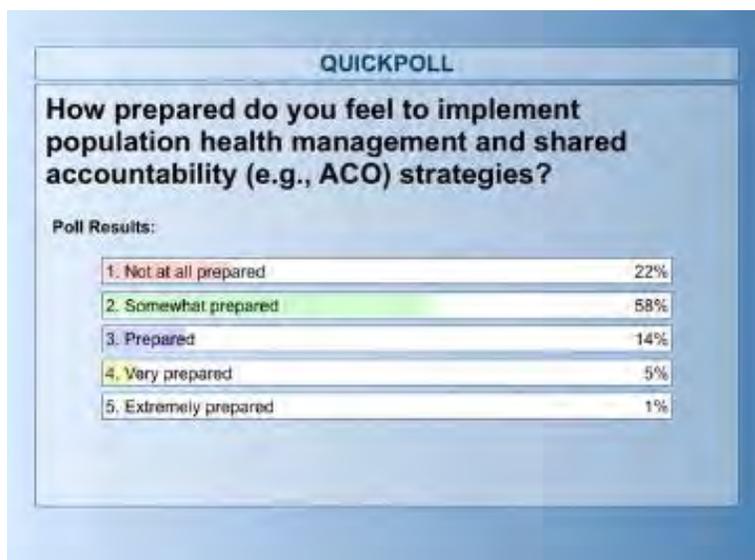
How prepared do you feel to implement population health management and shared accountability (e.g., ACO) strategies?

1. Not at all prepared
2. Somewhat prepared
3. Prepared
4. Very prepared
5. Extremely prepared

So, next poll question. How prepared do you feel to implement population health management and shared accountability, also known as ACO, or those kinds of strategies? Not at all prepared, somewhat prepared, very, or extremely

[Tyler Morgan]

Alright. The poll is closing...and here are the results, Dr. Burton.

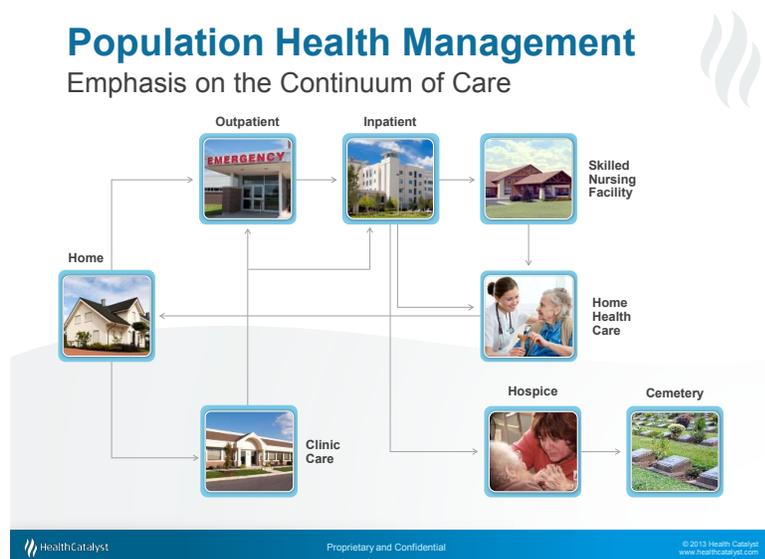


[Dr. David A. Burton]

So 58% of you self-assessed yourself as somewhat prepared, 22% not at all prepared and then the remainder in the prepared to extremely prepared with 1% of it extremely prepared. Congratulations. I think the 58% are a little ahead of the national average. I think we have had an enlightened audience that has joined the webinar and appreciate that.

So we'll now shift to questions and answers. We have about 10 minutes.

Questions and Answers



Tyler: Great. Thomas Amorosso asks, "Does the slide depicting relative cost of care by site include the cost to pharmaceuticals?"

Dr. Burton: I believe the answer to that is yes but let us check and make sure that's true. It does not include the cost that would be in an outpatient – I mean in an ambulatory pharmacy because that's in part B and the cost that we had in the innovation database provided by Medicare only include part A and part B but they would include the pharmaceutical costs in the cases, if you will, if that's what you're asking.

Tyler: Great. Claus Hammond asks, "With clinical organization teams, how do you harmonize among them so they don't work at cross purposes or work inefficiently?"

Dr. Burton: That's a great question and that really is one of the reasons that it is important to have an executive clinical integration leadership team. They are the referees and the arbiters. But what we found is that at Intermountain it took about 3 years to establish a culture in a new domain like cardiovascular, women and children's. And then after that culture developed, there was an amazing amount of statesmanship. We put heavy responsibility on those domain teams to help us prioritize the IT configuration and development dollars. And when we would get to an impasse, it was not hard for the cardiovascular people to bring forward their prioritized list and likewise then the women and children's clinical program. But then that clinical integration leadership team had to trade off a subcommittee, that team traded off the relative priority of cardiovascular vs. women and children's. When we got to an impasse, what we ended up doing was getting all of the physician and nurse leads of the various clinical programs in a room, presented the dilemma, and most often they solved it. One of them would step forward and say, "you know, we could wait, let's go ahead and the cardiovascular imperative seems more important this year than what we have put forward. We will subordinate to that."

Tyler: Dr. Burton, we have Chris Smith asking, "Do you have a readiness assessment guide for providers or population health ACOs?"

Dr. Burton: It's really a good question. And I don't know whether many or any of you are familiar with the Analytics Adoption Model, the Healthcare Analytics Adoption Model, which Dale Sanders, one of our senior vice presidents, was the primary author. Some of us contributed with Dale. We have taken that model which emulates the HIMSS EMR Adoption Model. It has 8 levels and we have developed questions around each of the three dimensions of that model. So the three dimensions being the technical infrastructure or platform, the measurement system, if you will; the second dimension being the deployment system, the teams that you organize that we talked about; and then the third dimension being the content, the evidence-based care on that anatomy slide that we looked at.

And so, yes, we do use this as an assessment and we've done assessments for a number of years and a number of clients. This last effort is a much more sophisticated approach to that to be able to come in and assess where you are with regard to the Analytic Adoption Model, which includes ACO readiness because it progresses up through the assumption of per capita risk. And we just want you to take away for sure, if you didn't remember anything else, one thought – there really are two major components to success with in a shared accountability environment like an ACO. The first is you have to create an asset, and your asset is a system in which you've wrung out the variation and improved the cost structure. Once you have that asset, then you can package and price

and decide how much risk you would be thinking and so on. But the primary job, which is really the population health management aspect of this, is to develop the asset and the improvement initiatives are the way you go about developing that asset.

We have a couple of whitepapers that I wrote on the website that you can certainly access. One is about [population health](#) and that really is the narrative around what we've been discussing today. The other is the [ACO shared accountability paper](#) and it talks about the packaging and pricing and risk assessment and those kinds of things.

Dr. Burton: So we're coming up on the hour. Let me just take one question here that deals with first the compliment that you've organized the teams very well. And then the hard question – "how often do clients implement the teams as you've outlined?" And the answer to that is all over the map. As we go into a client we generally aren't challenged about whether we know more about the black box, the platform, the data warehouse than they do. Some of our best customers are folks that have tried to do an internal development of a data warehouse and failed. So that's not usually a contest. But when you get to talking about the organizational structure and particularly if changes to the organizational structure are needed, for example, to more prominently involve nursing in order to be successful, then everyone in the organization is an expert. Everybody knows about organizational structure. And so, often it's an iterative process where they try it their way, maybe don't have as much success as they thought they would, come back and say, okay, we'll try these two things that you suggested, and over time begin to appreciate in many cases why we're suggesting the charters and the teams and the processes and the meeting agendas and so on to try to keep things on track. So, great question.

The hardest part for us at Intermountain was definitely the deployment. It was easy to do the science projects, especially at the hub facility. The hardest part was to deploy it out. And when we saw that we were getting consistent equivalent results of the 10 largest hospitals, we began to believe that we actually could succeed in transforming healthcare.

Thank you very much. It's been great visiting with you. I look forward to interacting with you in the future.

[Tyler Morgan]

Thank you, Dr. Burton. And thanks everyone for joining us. After the meeting closes, you will have the opportunity to take a short 5-question survey. Please take a few minutes and fill out

the survey so we can continue to bring you relevant content. Within 24 hours, you will be receiving an email with a link to the recording of this webinar, a link to the presentation slides and also a link to register for any of our upcoming webinars, either a webinar on Value-Based Purchasing and the Healthcare Analytic Adoption Model.

On behalf of Dr. Burton, as well as the folks that help Catalyst, thank you for joining us today. Have a great day. This webinar has now concluded.