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New Definition

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Spring 2001
Vol. 16 No. 1

DataMap™: *A Dashboard to Guide the Executive Team*

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The Scenario

The Mission says quality and satisfaction, while the Margin says trouble. Length of Stay is creeping back up; patient flow is stagnating. It is a tense time for the health of organizations! The executive team is faced with a barrage of issues and pressure to make rapid decisions. Their challenge is how to move forward without sacrificing either margin or mission.

It is not uncommon to find the following scenario: As the organization suffers decreasing margins, the senior financial manager grills peers, demanding strategies that will further reduce operational costs. At the same time, the marketing, nursing, and case management directors struggle on a team challenged to improve declining scores indicating patient dissatisfaction with discharge planning. The case management director is also receiving reports about the high denials from Medicare and commercial payers, but cannot get attention to this problem from the business office, admitting, or the doctors until the number gets over half a million dollars. The director of the operating room interacts with the irate surgeon whose surgery has been postponed due to issues of capacity and the organization's inability to provide a bed to the postoperative patient. This is not to mention the fact that all directors are paged daily to let them know that the entire hospital is on bed alert, due to no beds for anyone. All of this occurs while the director of cardiac services struggles to obtain drill-down data that would identify the key clinical interventions that would indicate the financial and quality parameters of their care.

These seemingly isolated events highlight the fact that each administrator has a different focus, with different needs, goals, and different (or no) data. The result is a continuous, inevitable conflict between the operations and the revenue sides of the organization, compounded by the age-old struggles between cost/financial accounting, customer service, and clinical quality. How can organizations begin to make not only peace between the agendas of each component group, but also make the right decisions as rapidly as the environment dictates?

Introducing the Executive Team's Data Dashboard: DataMap™

Clearly, administrators have difficult decisions to make, and limited time to make them. They also do not have data that is either deep or wide enough to guide them in their decision-making. A multivariate data tool, developed from the original innovations of value compasses and data dashboards, will greatly assist organizations as they move forward in these very ambiguous, high-risk times.

If we conceptualize the formal organization as a human body, then we realize that all the people and departments are interdependent, and the actions and transactions in each part effect the functioning of the whole. In healthcare, **each transaction involves costs and**

quality, and therefore can be transformed into significant data, whether the transaction is dispensing the medication from the pharmacy, giving a medication, making a medication error, or teaching a patient about the medication. Only in a rare instance, can data stand-alone; data has a context.

Data can be collected, displayed, analyzed, and coalesced into an understanding of current condition, just as physical data can point to evidence of a heart attack, or the risk for one. The point of control for an executive team results from the well-known process of 1) determining which data is important enough to spend the time and money to record and collect, 2) displaying the data so that it will engage individuals and groups in discussions, and 3) analyzing and summarizing the data so that interdependencies are understood enough to point to a direction for change.

The DataMap™ at the executive level includes four domains, usually displayed in quadrants like the points on a compass:

- Operations
- Medical Management/Clinical Outcomes
- Finance
- Marketing/Planning

The quadrants are like gears in an engine. If the gears are separated from each other, the engine won't run. If the gears turn the same direction, they freeze and again, the engine won't run. The gears must be interconnected and turning in opposite directions because, as they rotate, they provide power for the engine.[1] Following are questions for your "engine":

- Does your executive team have reliable data for each quadrant?
- Does your data accurately reveal your organization's story?
- Is your executive team interconnected to create a unified understanding of the data and an Action Plan?

Background: The Value Compass Breakthrough

The Value Compass arrived on the health care scene in the mid-1990's, just in time to capture the energy and direct the confusion created by a new hunger for data. Some of the data needs required by those early leaders in clinical care and administration were:

- Variance data from clinical paths[2]
- Patient satisfaction data from traditional and newer tools
- Functional data, beginning with the SF 36 and then the SF12 from Medical Outcomes Trust, Boston, MA.
- Financial data, such as LOS and cost per case

Although Dr. Nelson and others published their innovation of the Value Compass in 1995 and 1996[3,4] the idea did not enter the mainstream of thought until the March 1997 Journal of Quality Improvement published an article by Levknecht et al from Butterworth Health System, Grand Rapids, Michigan.[5] They used it as an internal quality improvement tool by connecting it to each population managed with clinical pathways. The data was not used for public reporting, although payers were provided with report cards of Butterworth's cardiac prevention and rehabilitation programs. Their first report card, developed in 1995, was for the cardiac surgery pathway: "We drew on Nugent et al's description of their instrument panel approach. They recommend that clinical teams have one summary report for reviewing four main areas of outcomes—cost, clinical, satisfaction, and health status.

In developing the report card for the myocardial infarction pathway, we followed the expanded format..the use of the instrument panel or value compass along with the serial V process for improving outcomes."[6]

Eventually Butterworth added a demographic section to the report card called "Patient Case Mix". This section came from initial enrollment data about characteristics of the patient population for which the other data was collected. Sample population-specific demographic data included: % males and females, % smokers, % obesity, % hypertension, etc. The demographic data served to identify the population under study, and created a context for understanding the meaning of the other data.

Since the population-specific data displays, the method has been applied at various levels of healthcare information. For example, Weinstein et al, designed a "Patient Summary Report" for individual patients in The Spine Center, also at Dartmouth-Hitchcock Medical Center.[7] They believed that they would have a better understanding of their patient population with a balanced set of measures. Their Clinical Value Compass included:

- Patient's history, including treatment history for the current problem (such as back pain)
- Demographic data such as age, weight, education
- Clinical (biological) status
- Functional status (using SF36 and Oswestry scores)
- Expectation and satisfaction with treatment
- Costs/burden of illness to the patient (such as weeks of work missed).

"...The Value Compass system calls for measurement *prior* to onset of care, *during* care at regular intervals, and at the *conclusion* of care, enabling providers, patients, and administrators to evaluate the outcomes of care on a broad range of measures. While defining the broad categories of measures, the clinical value compass leaves the decision up to the clinicians, within various practice environments, as to what specific measures are to be used for each indicator and each population."[8]

An example of an administrative application of the value compass is the *Nursing Outcome Report* from Hartford Hospital in Hartford, Connecticut.[9] This multivariate data display is shown at the department and the unit levels. It was initiated to take steps to "fundamentally re-think and re-design clinical and business process to achieve dramatic improvements in critical measures of performance (including quality, service, satisfaction, and cost)...it is very important to have good data for decision-making. As the delivery of care takes new shape, information provided by the nursing staff will be an important link to secure the quality of patient care."[10]

The information included in the Hartford Hospital report begins with a "Demographic Explainer" that describes skill mix and years of experience of the nursing staff, current certifica-

tions and degrees, and nurses' perceptions of professional practice. A second portion reports "Nursing Outcome Indicators" in four quadrants:

- *Clinical:* IV site infections, falls, ulcers, etc
- *Satisfaction:* caring, pain control, perceptions of quality as reported by nurses and physicians
- *Functional:* discharge teaching, VNA communication
- *Financial:* labor costs

Another excellent example of a multivariate data tool was devised at the programmatic level for trauma patients.[11] As in the other applications documented here, the data is aggregated to reflect the same period of time. The overall goal of having the report is to facilitate knowledgeable decisions and continuous improvement. In other words, managers and administrators who sanction the construction and use of a multivariate tool are opting for the balanced control that the tool will produce. Because all data appears in the context of other data, blame and competition are decreased as the team conducts a comprehensive analysis and develops a mutual action plan.

Executive DataMap™ Description

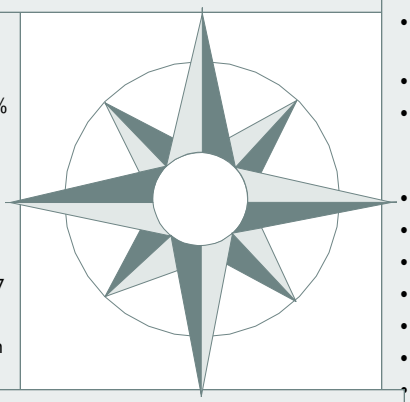
Figure 1 shows a sample executive-level DataMap™. It is most helpful for each organization to custom-define the quadrants, the "ownership" of the quadrants, and the data elements belonging within each quadrant. The quadrants shown in *Figure 1* are defined as below:

- ***Medical/Clinical Outcomes:*** Data that shows the results of the interventions of all disciplines. This quadrant would also include aggregated variance from critical outcome indicators as displayed on high-profile clinical paths/CareMap® tools. Overall longer-term physical and mental functional status scores as shown on SF12 or other tools would be placed in this quadrant because they are also outcomes.
- ***Operations:*** Data that describes the organization's ability to comply with regulations, standards of care, standards of practice, satisfaction of patients and staff, and other important goals such as "Number of days on bed alert" as a measure of patient flow. Operation targets often have direct links to financial targets.

Figure 1: Sample DataMap™

Medical/Clinical Outcomes:
See also drill-down reports by DRG/MDC
- Mortality during hospital stay, risk adjusted with APR-DRG
- Mortality at 3 and 6 months
- Infection rate in hospital
- Complication Rates
- Clinical Indicators pe Diagnosis, MDC, and MD
- MD order sets; Variations by casetype
- Functional Status – SF-12
- UHC Benchmark Outcome Report

Operations:
- Patient Satisfaction: overall = 85; Target = 91.8. ED = 84; Target = 85.3
- Re-admissions with 30 days = 12.8%; Target = 6%
- Unplanned ED visit within 24 Hours; no data available
- Decrease nursing (RN) vacancies from 10% to 3%
- Telemetry/Medical ICU LOS current 3.1 days, target 2 days
- Employee Opinion Survey: current 3.0; Target 3.27 on scale of 4
- Clinical Integration Survey: low score: "Information Systems," High Score: "Multidisciplinary Cooperation"
- MD Opinion Survey: Low score "Speed of admit from ER"



Finance:
- Average revenue per DRG target = 3% or 45th% of HBSI
- Median LOS target: 4.95, current 5.3
- Volume Targets:
  - –Inpatient days 85,000; current 84,330
  - –Outpatient days 3,700; current 3,650
- Patient days in AR 55; current 65
- Top ten DRGs = 52% volume
- 3 DRGs (14, 79, 89) = $1,155,987 loss
- Med/Surg cc capture rate 85%, Target 95%
- Delay days per rehab = 179; target 0
- Cost per case target: Decrease $100 overall
- CABG target under $10,000; Current = $15,000

Planning and Marketing:
- Gain approval for new cardiac cath lab
- Increase market share:
  - – OB deliveries from 200/month to 225/month
  - – Elective surgery – target not set for 2001
  - – Outpatient visits – increase by 10% from 250,000
- Maintain Top 100 Hospital Status
- Renew grant for Complementary Therapy Program: $400,000
- Increase distribution of Health Risk Appraisal by PHO from 75% to 80% new enrollees

Demographic Information:
Beds: 350
Census: 96%
Payer mix:

	% Admits	*LOS*
Medicare	59.7	5.85
Medicaid	10.9	8.13
Managed Care	8.2	5.6
Commercial	17.0	4.8
Self	4.2	6.3

Volume and Referral:

Discharges to home care	12%
Discharges to hospital subacute	5%
Discharges to acute rehab	8%
Discharges to SNF	10%
Total	35%

Adapted from Value Compass concept: Dartmouth-Hitchcock Medical Center

- ***Finance:*** Data that describes the cost of transactions and the revenue collected for those transactions; i.e. LOS, denials of payment, medicare case mix index medicaid enrollment figures, profit margin, etc.
- ***Marketing and Planning:*** Data that describes the organization's success with bringing in and keeping business, grants, etc. This quadrant also includes relationships with the community, awards, and other goals that enhance the hospital's reputation and/or market share.

The DataMap™ quickly and concisely displays areas of strength and weakness in the clinical and financial profile of the hospital. However, displaying the data is only the beginning. Just as population-specific collaborative practice groups need to have a lot of discussion to derive any meanings from the data, so does an executive team. In fact, it is important not to get distracted by the obvious strengths and weaknesses of the data, but to dig deeper into the gray areas by applying critical thinking. For example, a low case mix index may have more to do with inaccurate coding than any other reason. Inaccurate coding may be due to poor skill on the part of the coders, or poor documentation on the part of the physicians.

There may be some data that certain people want to ignore, while others think the same data is hopeful or tragic. For example, the vice-president of medicine may relish in the data that shows that medical admissions have increased, while the vice-president of finance knows that surgical patients increase the case mix index of the hospital, and therefore the revenue. Corrective actions for the action plan will only be as good as the formulation (diagnosis) of the perceived problem. Therefore, spending time as a team in discussion to determine the root causes (there are usually more than one) is mandatory.

One of the values of putting the data all in one place is that it reflects the reality that two opposing dynamics may co-exist. The confusion engendered by this is called cognitive dissonance, and as such, it is not a bad thing. In fact, working through cognitive dissonance is usually the way creative solutions are found. For example, if the DataMap™ shows that the readmission rate within 30 days is higher than desired for medical patients, but the length of stay has met the target, the data from the volume and referral report should be reviewed next. Perhaps the re-admissions are only for one or two case-types within the medical group, or perhaps the entire discharge planning process needs a review. This will lead to new information, which will point the direction to new actions. Executive teams that do not want to be confused with the facts, or do not want to invest their staff's time to find the root causes, will not embrace the DataMap™.

In many situations, the Director of Case Management can be a valuable internal consultant to the executive team. This person should have a working knowledge about many of the transactions that generate data in each of the quadrants, and can either advise the team, or assist them in digging deeper to explain the data and determine an action. The Director of Case Management will help the organization find ways to secure revenue for every patient, regardless of case-type, volume, or payer.

Summary

The DataMap™ is the next generation of report cards and value compasses. It has applicability at all levels of an organization, but is becoming essential to the executive team's ability to move forward with a strong foundation. The quadrants and associated data elements can be custom-designed, but cannot be ignored or acted upon in isolation from each other.

Just as a symptom such as confusion may be the indicator of dehydration, a neurological event such as TIA or stroke, or delirium, data is one symptom with critical meaning. Multiple types of data, compiled during the same time frame, will serve as an executive summary of the comprehensive health status of the organization.

All companies face the challenge of balancing cost, efficient management of system process, and quality outcomes. For survival with declining reimbursement, a health care organization must be well positioned to use a DataMap™ to manage the essential intersection of margin and mission.

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For a free *Dozen DataMap™ Pointers* emailed or faxed to you, call or email Karen Zander at The Center for Case Management 508-651-2600, KZander@cfcm.com.