

Reengineering and Integrating Health Care Delivery: What Have We Learned in the 1990s?

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Scenario 1: Placing the receiver back into the phone cradle, the chief executive officer has just learned that her hospital, along with six others in the community, are to be integrated within the next 12 months into one region-wide system. Several of the hospitals are at various stages of planning, design and implementation of reengineering processes. She immediately wonders what impact this new policy will have upon her hospital's reengineering project, which is only 10 weeks away from beginning its implementation phase. Will implementation of the reengineering project be put on hold? Will savings targets and process redesign plans for the various departments need to be reexamined? How can she best motivate her project design teams, without losing any of the momentum and commitment to the reengineering effort which has been so carefully established over the last several months?

How will the new regional system's administration respond to the several hospitals' reengineering projects – will one be chosen as the prototype for the new system? What should she recommend to her Board about how to manage the project for the next nine weeks and beyond?

Scenario 2: *The Acting Executive Committee of the newly established FeelGood Health System is exhausted. A bevy of eager and energetic consulting firms have pitched their strategies on how FeelGood can simultaneously reengineer and integrate their three hospitals and ambulatory-care centre. To determine which consulting firm can best assist them with the integration and reengineering effort, FeelGood's Executive Committee must begin evaluating the various approaches to project design and management, cost savings-targets and priorities, and strategies for clinical integration. Where do they begin?*



MICHAEL DECTER

What we learn from this turbulent period will assist us as we prepare to enter the new millennium.

The 1990s have been a challenging decade for hospital leaders and managers. Virtually every hospital in Canada has experienced a reduction in its budget and staffing. Many have new broader governance structures and several dozen have closed or will soon close. From 900 independently-governed and managed hospitals, we are moving towards an acute health-service-delivery world of approximately 200 regional authorities and integrated systems. The two dominant trends in Canadian hospitals have been (1) reengineering (either formal or informal) to cope with revenue reductions and (2) consolidation imposed by provincial governments. What we learn from this turbulent period will assist us as we prepare to enter the new millennium.

As Canadian health systems continue to restructure, hospitals are no longer offered the choice of either reengineering or integrating health systems. Dramatic reductions in provincial funding and the adoption of new health-policy paradigms that focus on increasing outpatient/in-home programs and consolidating bricks and mortar now compel hospitals to both reengineer and integrate their services.

The key challenge hospital leaders face is clear: How do you approach system reengineering and integration? Should hospital reengineering and integration occur sequentially or simultaneously? In this article we examine the experiences of three North American hospital reengineering and/or integration projects, and provide a summary assessment of the lessons learned for hospitals and health systems that choose to pursue either sequential or simultaneous reengineering and integration. We also discuss the

advantages of information technology-led reengineering in creating successful integrated delivery systems.

For each hospital/health system profiled, we interviewed the reengineering project team leaders and hospital/health-system managers to discuss their experiences across a number of key issues:

- How do you govern and manage a healthcare system that is simultaneously reengineering and integrating?
- Which areas (i.e., governance, corporate, support services, clinical) should be integrated first? Which areas will be the most difficult to intergrate and why?
- Within an integrating health system, what happens if one hospital's reengineering process has produced more "successful" outcomes (in both patient care and cost savings) than the other integrating hospital(s) process(es)?
- How will simultaneous reengineering and integration processes affect the hospital's workforce? What communications strategies should be developed?
- Should Information Technology (IT) system investment and infrastructure be established before reengineering/integration and lead the process? Or should the reengineered/integrated system lead IT development?
- What role(s) should physicians assume during the hospital integration process? What are likely to be the key issues for physicians as hospitals pursue integration?
- Is it cost-effective for hospitals to simultaneously reengineer and intergrate? Will patient care be negatively affected by the two simultaneous processes?
- Does integration of hospitals into a system necessarily involve a uniform standard of care? Will all integrated facilities need to look and function identically? Are hospitals able to remain responsive to the needs of their unique, local communities?

EXAMPLE ONE: UNIVERSITY OF ALBERTA HOSPITALS – REENGINEER ... THEN REGIONALIZE ... THEN WHAT?

An 800-bed academic medical centre in Edmonton, the University of Alberta Hospitals (UAH), embarked on an extensive, integrated clinical-resource-

management and operations-restructuring engagement in 1993/94. The redesign phase began in March 1994, with financial targets of \$40-50 million on a cost base of \$260 million, or approximately 15-20% of annual operating expenses.

In addition to cost reduction, the project was designed to maintain or enhance the quality of care for patients and the quality of work life for employees. Various design teams were put in place. There were six patient design teams focusing on redesigning the clinical course of care from pre-through post-hospital activities, to shorten lengths of stay and reduce ancillary-resource utilization. These teams created care maps and clinical-practice guidelines for patient types, with significant opportunity for improved clinical-resource management. There were also six supplier and service design teams to develop cost-effective systems to enable work redesign.

At the onset of the UAH project, a goal was established to reduce operating costs by \$50 million over three years. The outcomes of the redesign effort had resulted in savings that exceeded the minimum targets for the project.

HOW DID REGIONALIZATION AFFECT THE UAH REENGINEERING PROJECT?

When the policy to regionalize throughout Alberta was announced in mid-1994, the UAH project was well under way. There was little the project team or UAH leadership could do to predict how the new regional model, i.e., the creation of the Capital Health Authority for Edmonton region, would "shake out" and affect the reengineering project. With the regionalization process proceeding very quickly, i.e., the authorities were announced and implemented within six months, the UAH project leadership saw three options for the remainder of their project:

1. Proceed as normal, unabated by regionalization.
2. Coordinate remainder of project with new regional leadership.
3. Delay project until regional structure is in place.

Project leaders were concerned that changing major aspects of the project could slow the redesign

process and accomplishments, distract the focus of the design teams on clear redesign targets, and risk arousing fear, confusion and uncertainty within project and hospital staff. In the end, the team decided to increase their original savings targets and proceed with the project as planned. UAH leadership believed that keeping a steady pace and proceeding with the project as normal would:

- Reduce the risk of having control of the project and its implementation "pulled" away from them.
- Position UAH to play a leadership role in the upcoming regionalization process.
- Enable the UAH project to serve as a "model" for the regional health authority in terms of patient-care redesign, cost-savings strategies, etc. This was important, as there were other hospitals in the region, such as the Royal Alexandra Hospital, that were simultaneously involved in the process of a patient-care redesign initiative.

The Capital Health Authority became operational just after the UAH project was scheduled to enter its implementation stage.

WHAT HAPPENED TO THE PROJECT AFTER THE CAPITAL HEALTH AUTHORITY (CHA) WAS IMPLEMENTED?

The majority of the UAH project implementation was halted in 1994. The lion's share of the redesigned areas – i.e., pharmacy, laboratory and diagnostics, materials management, and the scheduling of operating rooms – had significant regional implications. At that time, the CHA leadership decided to determine region-wide needs from a "top-down" perspective before acting upon individual hospital redesigns. Also, the redesigned core processes from the UAH reengineering required significant reinvestment in capital, training and IT implementation. The CHA, which had to pull 20% out of the regional budget within an 18-month time span, simply couldn't afford to build the infrastructure required to enable implementation of the complete UAH redesign. As a result, housekeeping, physical plant and some administrative project redesigns were the only project areas that were implemented after the redesign phase.

For the following 12 months, the environment remained very political and very tense. Across the region, there was a sense from each hospital that "some hospitals/areas were getting gored a little more than others." Overall, the regionalization process was initially viewed as a top-down, centralized effort to achieve consolidation and savings across the region. This left little room for "individuality" and any influence from hospitals and other providers.

Throughout 1996 and 1997, the CHA has dusted off the UAH project binder and reexamined the project redesigns. Several of their components have been considered and implemented on a regional basis, such as laboratory and radiology, the patient-care redesign model (which decentralized management of hospital staff to program teams), and selected initiatives on purchasing.

In 1997, a new "matrix" management structure has been adopted for CHA and its hospitals. Each hospital now has a COO, who also has upper-management (mostly VP) level responsibilities within the CHA. This approach seems to be working well.

Finally, the CHA has established its own organizational culture, and has moved beyond the politics of the 1994-95 health-system regionalization.

LESSONS LEARNED

- **Don't allow external environment to influence, or de-rail, the reengineering process.** Keep one eye focused on the project's targets and processes, and the other on potential opportunities to apply project-redesign models to a region-wide health system. This is important if you want to position your hospital to be a key player/leader within the new structure.
- **As a regional manager/leader:**
 - Anticipate resistance, accept that political loyalties do not change quickly, and employ strategies to reduce resistance.
 - Work with others in the system to develop a new, system-wide culture.
 - Use good benchmarking, baseline clinical outcomes and financial data to determine which

reengineering-project recommendations from each hospital should be applied to the regional level.

- Communicate clearly with all stakeholders, especially consumers.
- To succeed, the regionalized/integrated hospital system must have a good enabling infrastructure, such as a good information system.
- In the process of regionalizing a number of providers you must ensure that the model maximizes the strengths of individual providers. Reengineering enables the providers to identify and develop these strengths, and therefore should not be disregarded for the sake of the regional-reform model.
- Maintain an open dialogue with the local communities. Reengineering and regionalizing the local healthcare system can create concerns and a lack of trust from communities, if they are not communicated to on a regular basis.
- Regionalization is not the end, it is only the means. Simply regionalizing healthcare, by itself, will not achieve appropriate patient care at an appropriate cost.

EXAMPLE TWO: URBAN HEALTH SCIENCES CORPORATION (UHSC), ONTARIO

In Ontario, hospitals have differed in their responses to the dual pressures – health-system restructuring and hospital budget reductions – exerted by the provincial government over the past several years.

For most Ontario communities in a mid-sized urban region, the threat of government-imposed consolidation and closure has been present for several years. The intensity of this threat was heightened with the creation of the Health Services Restructuring Commission (HSRC) in 1996. In response, two of the region's major hospitals followed different paths to meet the immediate challenge of achieving significant budget restrictions and to prepare for a rapidly changing and uncertain future.

THE HOSPITALS' DECISIONS TO REENGINEER ...

Hospital A. In 1995, "Hospital A", which consisted of two inpatient institutions and several ambulatory clinics, embarked upon a centrally led, organization-wide operations reengineering process. One key factor

in motivating the senior leadership of this institution was the idea that implementing "cutting-edge" work redesign would place Hospital A "ahead of the pack". Ideally, Hospital A would find itself in a position of leadership once decisions were made, at a later date, regarding the regionalization of healthcare services.

With the assistance of a consulting firm, a project support team facilitated the work of numerous design teams in reviewing operating processes and recommending changes to a decision-making body comprising the hospital's senior leadership. The most significant shift was a move to decentralize almost all services to the patient-care units. Given the extent of the changes proposed, the implementation time-frame for these initiatives was extended to accommodate training and human-resource policy shifts.

Hospital B. Comprising two inpatient sites, "Hospital B" chose to reduce costs in a more decentralized, unit-based approach. Cost-reduction targets were assigned to business units, and directors were charged with the responsibility for delivering services within these new, decentralized models.

Interestingly, while each hospital's approach to reengineering differed, many cost-savings ideas and solutions were similar. However, both were hampered by the lack of local and provincial direction on regional integration, and thus were unable to explore more significant savings opportunities which might arise from consolidation of services across the region.

... AND THEIR DECISION TO INTEGRATE

In late 1996, before either hospital was able to fully implement their cost reduction strategies, the two hospitals decided to merge. The two incumbent CEOs left their positions, and a new, corporation-wide board and CEO were appointed.

Financial pressures were still significant (determined to be approximately 10% of the combined base operating budget). The new CEO charged the VPs with leading a renewed effort to review the redesign/savings efforts to date, determine additional cross-corporation opportunities for savings, and establish a process to achieve these savings. A cross-Canada operational benchmarking exercise

helped determine reduction targets by area of activity. An inventory of the level of consolidation of current clinical and support services, as well as high-level operational audits of two major clinical functions, helped determine the focus for further work.

Following this operational assessment, the CEO announced a new high-level organizational structure (VP and Directors), which established a three-pronged approach to integration:

1. An "Office of Integration" was established, charged with the responsibility for developing a framework for integration. Organization-wide task forces were struck to deal with the overall integration strategy for Education, Research, Clinical Programs and Services, Support Services, Human Resources, Information Technology, and Medical Affairs. Corporate philosophy, guiding principles, and strategic directions were developed specific to each task force. Other corporate issues such as corporate identity, transition management, bylaws, rules and regulations, committee structure, and a policy and procedures framework were overseen by an Integration Committee led by the Office of Integration.
2. Integration of clinical programs (led by VPs of Clinical Care) has "kick-started" the effort by consolidating delivery of two major clinical services to one site each. Additional program consolidation will be considered over the course of the next year; however, closures of institutions and of key services (such as Emergency Departments) will await the final decisions of the HSRC.
3. Finally, an "Integration and Redesign" project was established, supported by a team comprising staff from each of the corporation's composite institutions. A three-year time-frame for full implementation of savings strategies has been established, with accountability for achieving savings targets shared between the project support team and the VP responsible for the operational unit. This project is just getting off the ground, and is scheduled to complete its work in time to fully implement all redesign ideas by 1999.

LESSONS LEARNED

- Establish organizational leadership of the newly merged corporation as quickly as possible. Unclear or diffuse accountability for results, even at the operational-assessment phase of a redesign effort, impedes decision making and, ultimately, the sense of ownership over assigned targets. Also, the human cost of indecision over an individual staff's future within the newly merged corporation – even over a period of several weeks – is significant, and should be minimized out of respect for employees.
- Establish an integrated vision, mission and values, management philosophy, and strategic direction upfront.
- Integrate operational accountability into the work-redesign effort. It is always important in major reengineering processes to ensure that those responsible for implementing changes have up-front involvement in design and decision making, and that the accountability for achievement of results is clear. This is particularly true if reengineering has begun in separate institutions, before the merging of operations.
- Mandate open agendas for system-wide integration/reengineering efforts. Respect and build on work already completed, but do not "pick" one institution's design solution to implement across a newly merged corporation: "a new way or our way" is always better than "my way or your way".
- Respect institution-specific culture, particularly in relation to previous experience with work-redesign and cost-savings strategies. Be aware that significant effort (blood, sweat and tears) has gone into work completed before integration. Respect institution-specific "shyness" regarding terminology (e.g., "reengineering" versus "redesign") and decision-making processes by developing a new common language and approach to addressing these issues.
- Accelerate "structural" initiatives (e.g., clinical-program consolidation) and bring them to closure as soon as possible. Having said this, it is important to be keenly aware of internal politics and regional positioning. UHSC benefited by having appointed a Chief Medical Officer (CMO) who was and

continues to be well respected by physicians and administrative leadership from all composite institutions. This has allowed for a smoother transition to consolidating clinical programs. Where this is not the case, more time must be taken to ensure effective implementation of any significant structural changes.

- **Communicate, communicate, communicate.** No change effort has ever floundered through over-communication; however, failure to over-communicate ensures trouble ahead.

Cost-Effectiveness. While two out of the five Helix hospitals had been part of the system for seven years, the hospitals' day-to-day operating functions had remained independent, and had not, in general, taken advantage of opportunities to consolidate management or processes. With the merger of three additional hospitals, Helix identified the need to reengineer and integrate all five hospitals in a system-wide context.

Competitive Marketplace. As the Baltimore market continued its "managed care evolution" (i.e., increasing predominance of HMOs and

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EXAMPLE THREE: BUILDING HELIX HEALTH: INTEGRATING AND REENGINEERING HEALTH CARE DELIVERY

Located in Baltimore, Maryland, Helix Health is a diverse organization with over 10,000 employees and 2,000 affiliated physicians and specialists. The population of the Baltimore area is approximately 2.5 million. The creation of Helix began in 1987, with the full asset merger of two large community hospitals. By 1997, Helix Health has grown to comprise five community hospitals, a for-profit physician organization, a non-profit subsidiary with ambulatory services and long-term-care facilities, and a for-profit subsidiary which includes a medical billing company, pharmacies and other businesses.

In 1994, leadership at Helix Health had established a guiding vision for the organization: that Helix Health would become one of the premier integrated delivery systems (IDS) in North America. By March of the following year, Helix determined that, if it were to emerge as a leading IDS, the time was right to begin a full-scale effort to simultaneously integrate and reengineer the operations of the five hospitals. A number of factors motivated Helix leadership to reach this decision.

other managed-care organizations in controlling patient volumes directed to providers), Helix was provided with the incentive to improve cost efficiencies and ensure a system-wide standard of quality patient care.

Leadership. Helix had begun to change its management structure, identifying some corporate functions to be centralized (i.e., finance, marketing, materials management, strategic planning, information systems, human resources, and public relations) and could now identify other areas to be centralized (for example case management). As a result, the system had developed strong leadership at the corporate level which was very committed to and capable of managing a simultaneous reengineering and integration process.

Resources and Time-frame. There was a fundamental belief amongst the Helix leadership that it did not make sense to separate the integration and reengineering processes. Reengineering the five hospitals individually would not have taken advantage of the system's economies of scale, nor would it have enabled Helix to reach its end goal of becoming, in an expedient fashion, a leading IDS.

HOW DID HELIX APPROACH REENGINEERING AND INTEGRATION?

Commencing in November 1995, membership on a Steering Committee, project, design, and work teams was drawn equally from all five hospitals and across all disciplines, including the managerial, professional and staffing levels. This approach to building teams was crucial in order to ensure project "buy-in" from senior management throughout the system, as well as to develop redesign models and processes that were created and driven from the "bottom-up" rather than imposed from system leadership, in a hierarchical, "top-down" manner. Also, this "integrated" project-team membership provided a fertile base for Helix to begin to develop a new organizational culture, attitude, and energy that would gradually take hold throughout the integrated delivery system.

To kick off the Helix integration and reengineering project, a solid seven months was devoted to building an operating vision for Helix, identifying financial, operational, quality, and service goals for system redesign and establishing a set of ground rules for recommending redesigned processes to the Steering Committee. A set of core system values was developed in accordance with the core values of each of the Helix hospitals.

Creating the vision for an integrated Helix Health system was a lengthy, yet important and worthwhile, exercise. Leadership, clinicians and staff from throughout the five hospitals collaborated on defining the values and success factors for Helix Health. The outcome of the visioning process was valuable to the project for several reasons:

- The collaborative visioning process engaged managers in the integration and reengineering project, illustrating that decisions throughout the project would not be made nor imposed in a "top-down" fashion.
- The established vision and set of values provided an anchor against which to test the impact and appropriateness of redesign recommendations.
- "Champions" were identified who would promote the project throughout the organization.

Helix had initially determined that an expense

reduction of \$50 to \$75 million was necessary to achieve the desired levels of profitability and accomplish its strategic objectives. To assess the feasibility of this target range, benchmarking analysis were completed comparing Helix operations to other state and national healthcare systems and hospitals. Based on these analysis, the overall reductions were readjusted to a target of \$65 to \$80 million. Helix also facilitated the development of operational goals and financial targets for each of four major operating areas: patient care, ancillary, general support and administrative services. Operational goals focused upon the identification and recommendation of opportunities to standardize and integrate services across the healthcare system (e.g., integrated case-management models, consolidation and standardization of purchasing, cross-training of staff, common distribution and administration, development of outcome/satisfaction measures).

A design team was appointed to each of the four operating areas and created a number of work teams (e.g., pharmacy, facilities, admitting). At one point, there were 80 work teams across the system which were building recommendations for redesigned work models and processes. Each recommendation presented by the design team to the project Steering Committee had to include:

- A clear description of the new model for operations;
- A rigorous financial analysis of the potential impact on future costs for affected cost centres;
- A statement of the potential impact on the quality of service delivery, with supporting documentation;
- An analysis of the investment costs for capital, employee training, severance, etc.;
- A plan for implementing the recommendation; and
- Signatures and comments from the stakeholders of the process, i.e., the employees affected by the redesign process.

The first, least complex, areas to integrate and reengineer were the administrative and support-services areas. Materials-management coordination and policy were centralized across the sites into one system-level-corporate manager portfolio; a purchasing director remained at each hospital. At the

corporate level, Helix decided to centralize much of the finance functions to the system-level, placing strategy, marketing responsibilities, and the development of human-resource policy with system leadership. To ensure that each hospital did not lose its unique identity – and ability to attract patients from local communities – Helix retained a CEO, CFO and VPs of Patient Care, Support Services and Medical Affairs at each site. While management of most ancillary and support-services areas (e.g., facility and materials management, medical records and laundry) were consolidated at the system level, there are a few functions (e.g., patient care, medical library and volunteer services) that continue to be managed at the site level. Some ancillary departments, such as pharmacy and diagnostic imaging, erected a matrix management model, with a system-level director to coordinate and oversee the policy and overall performance of the department, and site managers responsible for the department's day-to-day activities. In most cases, these site managers have a dual reporting relationship to both the system-level director and the appropriate VP at the hospital site.

and that the other Helix facilities might be required to adopt the one hospital's more expensive patient-care redesign. To build an integrated model of patient care, the Helix design team carefully assessed and compared each hospital's redesign model and results. This internal benchmarking process enabled the team to identify the best practices to be implemented across the system and to design a patient-care model that was specific to Helix.

To support the implementation of the patient-centred care redesign, Helix created an integrated case-management team model, comprising a nurse case manager, a utilization nurse and a social worker. A multidisciplinary team, comprising members from across all five hospitals, collaboratively developed the model, ensuring that the case-management structure complied with the principles and outcomes of the patient-care redesign. While the integrated case-management team model was designed for the inpatient setting, Helix anticipates expanding the model throughout the system's continuum of care.

Throughout the redesign and integration project,

It was crucial for the clinical redesign teams to remain closely linked with patient-care teams to ensure that reengineered patient-care models and workflows were "a proper fit" with the new streamlined clinical decision-making processes.

Integrating patient-care services was a more challenging task. Several of Helix's hospitals had previously undergone individual patient-care redesign projects – each with varying degrees of success. For example, one of the hospitals had recently developed a particular patient-centred care model that was expensive to implement, as it required several million dollars' worth of renovations to the facility's care units. This led to concerns that Helix would not be in a position to meet its patient-care cost-savings targets,

Helix ran a parallel redesign of their information systems (IS). Team members from the IS project sat at the same table with the operations and clinical redesign teams to ensure that installation of the new IS would be complementary to the redesigned operations and clinical models. To date, Helix has introduced a common financial information system and has standardized some clinical reporting activities (e.g., order entry, laboratory reporting) across the five sites.

DID HELIX INTEGRATE CLINICAL PROGRAMS ACROSS THE SITES?

Helix leadership elected not to integrate clinical programs across the system. Five hospitals, each with its own level of resources, case-management programs, different specialty mix of doctors, and geographic spread would have been extremely difficult to consolidate into one clinical model.

Instead, Helix leadership embarked upon a system-wide clinical resource-management initiative and developed a Clinical Effectiveness Unit (CEU). The CEU has accountability for clinical resource management across the Helix system.

The Clinical Process Redesign was a focused effort aimed at achieving system-level change in selected clinical areas. The redesign aimed to develop the required capability, at the system level, to manage the risks associated with the high-cost diseases that affect key populations, such as acute myocardial conditions, hip fractures and prostate disease.

Cost-savings targets were not set for the clinical process design work; redesigned clinical processes will enable savings from patient-care, ancillary, and support-services redesign. The clinical redesign team comprised 20 individuals from across the system: 10 members were physicians from different disciplines and the remaining 10 were a mix of leaders from pharmacy, nursing and other operational areas. Goals and targets for clinical process design were defined in terms of length of stay and ancillary utilization reductions. Opportunities to achieve operations-based savings were to be identified by clinical design teams; however, responsibility for designing and quantifying potential savings remained with the patient care, ancillary, and support-services design teams. It was crucial for the clinical redesign teams to remain closely linked with patient-care teams to ensure that reengineered patient-care models and workflows were "a proper fit" with the new streamlined clinical decision-making processes. Lack of communication between the teams would have jeopardized the patient-care team's ability to hit its overall savings and service targets.

Clinical process design focused on three major areas:

- Clinical-practice guidelines, pathways, and outcome measures were developed to support effective and efficient clinical decision making for diagnoses and procedures that utilize higher-than-expected resources and for ancillary services that are inconsistently and inefficiently used for a broad range of clinical applications.
- Physician information and reporting was redesigned to provide data and practice information to physicians in order for them to identify variances in clinical utilization, cost outcomes and patient satisfaction.
- Development of disease management set the foundation for the effective management of high-cost, chronic patient populations (i.e., congestive health failure, HIV/AIDS and geriatric). Helix Health reached its goal of identifying savings targets of \$65–80 million, and is currently implementing the redesigned patient-care, support-service, case-management, ancillary, and administration models. Helix continues to implement and refine the system-wide information technology to support the redesigned operational and clinical processes.

LESSONS LEARNED FROM HELIX HEALTH

- Developing a clear vision and set of values for the new integrated delivery system will drive the integration and redesign process. Taking the time up-front to engage management and staff in vision development may seem time-consuming; however, at the end of the day, you will have achieved considerable stakeholder "buy-in" to the project. This "buy-in" can fuel the project and keep everything on track when, seven or eight months down the road, indecision, uncertainty or fear arises within project teams or across the organization.
- At the outset of the redesign process, establish a small list of ground rules (e.g., 8 to 10) that will set parameters for design team decision-making. Parameters could include "go/no go" policies on outsourcing, consolidation and patient-care levers. This list will prevent indecision or conflict amongst teams, later in the redesign process.
- Address information-system redesign earlier in the

integration and reengineering process, and ensure that Information Technology design teams are closely linked with operational and clinical design teams.

- Achieve centralized, system-wide decision making and leadership early in the process. The project Steering Committee should include representation from system – and site – level management and physician leadership. A system-level patient care focus will add richness and rigor to the Steering Committee. Support from the system CEO will optimize the power and decision-making capabilities of the Committee and, hence, the legitimacy of the project.
- Maintain some key management positions and leadership at each site of the IDS. This will help to ensure that each hospital retains its local identity and relationships with the community. This is particularly important if the majority of the integrating facilities are community hospitals who rely on local markets from which to draw patient populations.

historically allocated a mere 2% of their operating budgets to information technology. The challenge for IDS leaders in the

U.S. has been to determine how best to achieve budget adjustments and employ strategies that can finance investments into a system-wide information technology.

In Canada, expanding hospital and health-system budgets to accommodate IT investment has proved to be much tougher. Reduced provincial funding to hospitals, with simultaneous massive health-system restructuring over the last 36 months, create significant barriers to purchasing the scope and quality of IT necessary to support a multi-site integrated delivery system. Consolidation of decision making into larger regional authorities can slow down or change hospitals' prior decisions on IT investment. Hospitals which have invested in developing an IT system, prior to regionalization, complicate the regional authority's ability to afford and implement

IDS builders must determine what infrastructure is required to support the successful delivery system. Information technology is often hailed as the critical infrastructure element which will enable both efficiencies and better quality.

EXAMPLE FOUR: INFORMATION TECHNOLOGY – LED REENGINEERING: CRITICAL TO BUILDING A SUCCESSFUL INTEGRATED DELIVERY SYSTEM

Investing in system-wide information technology (IT) is not inexpensive. Sheldon Dorenfest and Company projects that American healthcare information-technology investments will increase from \$6.5 billion (U.S.) in 1993 to \$9.5 billion in 1996 and to \$15 billion by 2000. Unlike other industry sectors, such as banking and insurance, which spend 7% to 12% of their operating expenditures on information systems, hospitals, on average, have

region-wide IT systems: which hospital's IT becomes the region-wide system? Mandated with the critical tasks of consolidating management into one regional structure while simultaneously achieving budget reductions of 10–20%, regional authorities are unlikely to make the implementation of regional IT a key, immediate priority.

IDS builders must determine what infrastructure is required to support the successful delivery system. Information technology is often hailed as the critical infrastructure element which will enable both efficiencies and better quality through:

- Management of patients throughout the system, ensuring the delivery of appropriate services at the appropriate time and place;
- Effective cost control, via centralized ancillary service processing, automated documentation systems, and one-stop patient registration serving all of the system's facilities (e.g., through the implementation of a single electronic patient record which is accessible by networked providers along the system's continuum of care);
- Timely communications and provision of information to employees and providers throughout the system; and
- Access to clinical outcomes data which can measure performance of the system, set system-wide clinical standards and protocols, and provide clinical information to manage the health status of a given population.

THE RELATIONSHIP BETWEEN REENGINEERING AND INFORMATION TECHNOLOGY

Historically, a hospital's purchase of information systems has not always resulted in cost savings, nor in improved communications and information transfer between hospital staff. In clinical ancillary departments (e.g., laboratory and pharm computerized systems have often automated manual tasks and improved throughput, but did not change the underlying workflow; the number and skill mix of staff performing tasks remained the same. Similarly, these task-specific systems do not assist corporate decision makers in assessing cross-departmental performance and setting strategic directions.

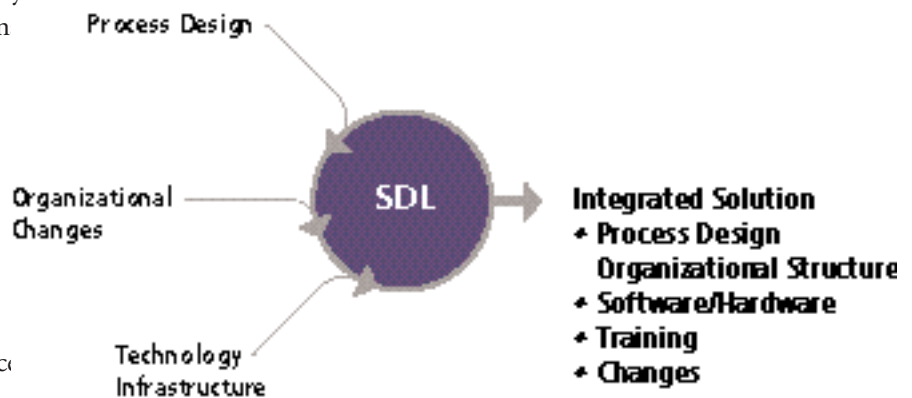
Are there creative strategies which hospital and health-system leaders should pursue in order to afford the next level of information systems that actively support complex decision making across a number of functions and sites? A small number of hospitals and health systems across North America are reexamining the relationship between reengineering and information technology. Rather than approach the purchase of IT to

achieve cost-savings targets after the reengineering process, some hospitals are opting to invest in an IT system before reengineering. Why?

- Savings generated from reengineering patient-care delivery can be reinvested into financing the purchase of information systems.
- Workflow can be redesigned to support new technologies, enhancing the information system's ability to achieve cost savings, efficiencies and improved patient care.
- Access to the information system during the reengineering process enables design teams to test and evaluate the impact of process-redesign options on patient-care delivery.

In an IT-led reengineering project, redesigned core processes complement information system implementation, but do not drive it. The capabilities of the purchased information technology will set the parameters for redesigned workflow, staffing and skill mix and ensure that the information system provides the expected cost savings and improvements to quality of patient-care delivery and enhanced decision making.

Such a process usually comprises three processes – reengineering, installation and implementation.



1. Core-process reengineering. For each department or area, an integrated approach is taken to determine the optimal process redesign, organizational change, and technology infrastructure required to support the new patient-care information system and to achieve savings targets. One approach used in an IT-led core-

process redesign is the application of a "Solution Demonstration Lab" or SDL, which allow project teams to use the information system to rigorously test the implementation of redesign solutions. The SDL provides an excellent opportunity to achieve early stakeholder-buy-in to new processes, develop effective training processes and prepare accelerated implementation strategies.

2. Installation of the Information System. The information system is installed in each department (e.g., patient registration), and is "tailored" to perform tasks and outputs in accordance with the redesigned core processes of that department. Throughout the tailoring process, redesign teams should be providing feedback to the installation team, ensuring the IT system produces the capabilities developed in the SDL.
3. Implementation of the Process Redesign. Once core-process redesigns have been created and tested within the SDL and the technology installed, change-management teams assess the organization's readiness for change and facilitate implementation of the new information systems and core processes.

LESSONS LEARNED

Although the use of IT-led reengineering has been limited to a select number of sites across North America, the outcomes and research to date provide some useful insights for consideration as other hospitals and health systems explore opportunities for IT investment:

- **Seek innovative public-private partnerships as a possible strategy to generate initial investments for information systems.** Across North America, there are a number of large information-technology and telecommunications firms who are eager to apply their technologies and expertise to the healthcare sector. Given the Canadian government's commitment to building a national health-information network (e.g., \$50 million Canada Health Information System program, \$150 million Health System Transition Fund) there may be some value in a regional or integrated health system pursuing three-way partnerships with government and private-sector investors. This approach may be particularly attractive to the government if the proposed IT system for the regional authority or IDS is capable of tracking and measuring a wide range of evidence-based healthcare data.
- **Involve the provincial Ministry of Health and/or regional authorities as early champions of the hospital/integrated system's new information-technology project.** Engaging the Minister of Health as a vocal and active supporter of a hospital/integrated system's investment in an information system is important. The hospital/integrated system can leverage the Minister's support to influence Ministry and regional agenda and strategies on information-technology policy and implementation. If successful, the hospital/integrated system may position its information system as the regional or provincial IT system of choice, requiring other healthcare providers to ensure system compatibility.
- **Consider establishing a "Solution Demonstrations Lab" (SDL).** This can be a major contributor to the project's success. Unlike traditional reengineering projects, which usually require teams to hypothesize outcomes of redesign and savings targets, the SDL provides a "real-time" opportunity for teams to evaluate the impacts of redesigned processes. The SDL is also an effective tool in training team staff members on how to use the new software, and in identifying issues for full roll-out of the new system and process.
- **Ensure that the core-process redesign teams and installation teams work in parallel, with plenty of communication and collaboration.** The redesign and installation teams need to share ideas and concerns on a regular, interactive basis. Those who have had experience with this type of process tell us that there can never be too much communication and collaboration. Working together in such an integrated fashion will ensure that the process redesign and "tailoring" of the technology are compatible, and will reduce the amount of time and resources required to redo the redesigned processes and installation of the system.

- **The installation provider must recognize that installing IT systems within the healthcare sector will differ from experiences in other sectors.**

Unlike other sectors, such as banking or insurance, installing software within a hospital is a much more complex process, requiring considerable consultation time between the installation team and the multidisciplinary array of healthcare staff and clinicians. Stakeholder consultation is vital to ensure software accuracy and its appropriateness to care delivery. IT installation firms should anticipate that system installation within the healthcare sector will involve much more collaboration and consultation than they have experienced in other sectors.

- **Include unions in the redesign process as early as possible.**

As with more traditional reengineering projects, union involvement should occur early in the IT-led redesign process. Acknowledging and addressing potential barriers and issues sooner, rather than later, can enable all parties to develop positive, creative strategies and opportunities that support the redesign process, rather than slow it down.

- Physicians can be either valuable allies or powerful adversaries to process redesign and system implementation. Unlike other industries, this critical user and input group are essentially independent contractors. Attempting to force the use of a system without input and ownership by the hospital's physicians will ultimately result in failure of the IT-led redesign effort.

GUIDELINES FOR HEALTH CARE MANAGERS

There is no one right decision or path to success in hospital/health-system change management. The experiences reviewed above do suggest some directions. Key lessons include the following:

- Involve physicians in a significant fashion throughout the process.
- Stay the course – don't allow merger or regionalization to derail reengineering.
- Seek innovative partnerships with suppliers in information technology, supply chain and other areas.
- Include bargaining agents in change processes as early as possible.

- Keeping open agendas will enable more to be done simultaneously.

Unlike a mathematician with a precise answer, a hospital or health-system chief executive is more like a football coach with a playbook. The plays are headed:

- Reengineering
- Outsourcing
- Alliance
- Merger
- Regionalization

There is no perfect football play. You need to assess field conditions, the strengths of your team, and numerous other factors to decide what play to send in. The chief executive faces a similar dilemma. The operating environment must be assessed. Is the government decreasing funding or reinvesting? The team – including board, management, and front-line workers – must also be assessed.

Only when the external and internal considerations are fully weighted can the best play be selected. All plays have a time and place. Just as trying to kick a field goal on the first down is foolish, so too is starting to reengineer when a merger will disrupt management continuity. And just as each play has its moment, all plays are likely to be run at least once. What we have learned in the 1990s is that circumstance dictates play selection – and there are no panaceas. ■

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