

Healthcare Systems and Organizations: Implications for Health Human Resources*

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What will the healthcare system and healthcare organizations look like in the year 2020? What requirements will they have for health human resources? These two questions require both a careful consideration of the general direction of change in health systems and a consideration of the pace of change over the next 15 years. The geographical focus of this article is Ontario, although broader international and Canadian trends are also considered in arriving at answers.

This article is organized in five brief sections, beginning with looking backward to look forward and proceeding through key trends, organizational evolution by sector and future health organizations and concluding with 10 implications for health human resources.

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Looking Backward to Look Forward

Do organizational changes impact on health human resource requirements? The answer, looking at the history of the past 15 years in Ontario, is a resounding “yes.” It is worth consid-

ering major health and human resource policy decisions taken in the past 15 years with a view to gaining insight into those decisions in the go-forward 15-year period. It is also worth considering the organizational changes that the healthcare system has undertaken to see trends. Put briefly, in the 1990s, we witnessed decisions on both physician human resources and nursing education that were taken in different manners, but both ended up moving the health system in the wrong direction. We reduced our training and education capacity at exactly the wrong time in nursing and medicine. Worse still, it took nearly a decade for corrective actions to be taken. A central reason for the policy errors was a lack of explicit linkage between organizational change and health human resource decisions. In the case of medical education, explicit decisions were based on intended organizational changes that were not implemented. In nursing education, organizational changes that were implemented led to unintended reductions in nursing education numbers.

The physician decision was taken at the national level based upon the Barer-Stoddart study (Barer and Stoddart 1992). The study and its implementation missed two important realities. First, the physician population was shifting from male dominated to more balance between male and female physicians. This held the implication that the average future physician would deliver less care than the average current physician. Second, recommendations were cherry-picked, that is, only some were implemented. Therefore, physician numbers were based on a prediction that did not unfold. In particular, the reform of

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primary care, a subject to which we will return shortly because it has great relevance to the next 15-year period, was not undertaken in parallel with the training reductions. In fact, it may be that one of the most powerful decisions in terms of health human resource planning in the next 15 years turns significantly on the success of the movement to interdisciplinary teams in primary care, for reasons that will be outlined subsequently.

The nursing decision was not taken on the basis of any overall study; it resulted from dozens, if not hundreds, of individual decisions at university, community college and hospital levels, all of which led to a dramatic reduction in the number of nurses educated. Organizational consolidation unrelated to nursing education had the impact of dramatically reducing the number of nurse graduates.

Both the decisions regarding physicians and nurses have been reversed. Significant increases in the number of nurses and physicians being trained are under way. It is not clear whether the increases are sufficient to offset just current shortages or whether they will also be sufficient to address an increase in retirements. Over the next 15 years, the retirements of baby boomers, who constitute a significant percentage of professionals in the health labour force, will represent a major shift.

Looking backward should tell us that there is an important connection between how we choose to organize health services and what human resource requirements result. For example, reordered primary care with multidisciplinary teams will require fewer doctors than solo practice family medicine. However, a shift of nursing work from hospital settings to home settings will not require fewer nurses.

Key Trends

It is my objective in this section to separate key trends that have an inherent impact on organizational structure in healthcare delivery from those that do not. The broad categories of trends include demographical change – largely the aging of the population – movement to a more consumer-driven health system and technological change. Having devoted an entire book, *Four Strong Winds*, to the forces of change several years ago, it is my intention to focus on those trends most likely to impact on organizational structure (Decter 2000).

The past 15 years have witnessed significant growth in the provision of non-traditional care. By *non-traditional*, two different dimensions are indicated. A range of providers beyond the traditional professional categories is providing more healthcare, for example, in fields of massage therapy and acupuncture aromatherapy. There has also been significant growth in the rehabilitation field; physiotherapy and chiropractic have expanded as the population has aged and there has been an increased need for these fields. These services are not provided within the hospital and physician sectors of healthcare. They will demand a greater number of skilled professionals. However,

this trend is not likely to impact structure.

By contrast, management of chronic diseases is another sphere with both unmet needs and future growth. Ontario will experience the same phenomena as other jurisdictions of an aging population coping with an array of chronic conditions. Increasingly, experts are noting that better outcomes are obtained by managing chronic diseases such as diabetes in a tighter fashion. By 2020, it is probable that more than one million Ontario residents suffering from chronic diseases will be enrolled in formal disease management programs. The successful implementation of such programs will require structural change, particularly to primary care. Disease management cannot be carried out readily in a solo family physician setting. Multidisciplinary teams and robust information technology including electronic patient records are necessary elements.

Patient demands for timelier, more appropriate and higher-quality care are also likely to force structural changes in health-care delivery. Overall, a movement toward greater integration of care is likely to meet these consumer-type demands. As well, greater investments in health information are inevitable to meet the needs for greater information on the part of patients about their care journey.

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Organizational Evolution by Sector

Although stated goals for healthcare delivery reform espouse a more integrated system, Ontario's current realities are still a health organizations differentiated by the care they are delivering. Unlike provinces such as Alberta or Saskatchewan where a regional health authority delivers hospital care, home care, public health, chronic care and other types of care, in Ontario the organization form varies by sector. The mandate of the 14 Local Health Integration Networks (LHINs) is to plan, coordinate and fund health services, not to directly deliver care services.

Hospitals

For more than a decade, the major trend affecting hospitals worldwide has been a continual shortening of length of stay. Due to technological change as well as financial pressure, hospitals have moved 70–80% of their surgeries to a day basis. For the remaining surgeries, there has been an ongoing effort to shorten the lengths of stay. In many cases, this shortening has been dramatic. For example, in obstetrics, an average length of stay of five to seven days was not unheard of two decades ago. Now 24- and 48-hour lengths of stay are more typical. Whole

classes of surgery have been moved from an in-patient to an outpatient basis. In addition, the entire enterprise of surgery of an exploratory nature has given way to much improved diagnostic imaging.

In 2005, for the first time in a decade, average length of stay, including that in Ontario hospitals, increased slightly. Whether this marks the reaching of a plateau, to be followed by an increase in length of stay, or whether it simply marks a deceleration in the shortening of length of stay will require several more years of data. What is significant is that the most dominant trend driving staff requirements for hospitals seems to have come to a resting point. The stabilization of lengths of stay coupled with the demographics of an aging population will result in more hospital-based surgeries, particularly for procedures such as joint replacements. (The trend is less clear in the case of cardiac surgery, where the innovation of coated stents seems to be driving a reduction in cardiac bypass surgery.) Overall, the trends seem to suggest that the decline in the hospital sector from roughly 50% of total health spending and total healthcare activity to about one third is stabilizing and is likely to remain in this range or even to begin to increase slightly. The implication for health human resources is that hospital staffing will require replacement on the demographic basis of all those workers retiring over the next 15 years.

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Primary Care

If primary care in Ontario continues to move from a largely fee-for-service family physician model toward the larger practice groups with multidisciplinary teams, this will have a profound impact on health human resource planning. At the present time, the Ontario physician population of some 22,000 is equally divided between family physicians (48.5%) and specialists (51.5%). Over the next 15 years, not only will Ontario's population grow by perhaps 20–30%, the population will significantly age. The percentage of the population over the age of 80 years will expand dramatically, and that of the population over age 65 a little less dramatically. Both of these trends will increase the need for primary care. In particular, the need will be greater for assistance to patients and their families for the management of chronic diseases such as diabetes, heart disease, asthma, arthritis and cancer. The burden will not be easily borne by a system organized around the solo practice family doctor.

In 2004, Ontario had 10,656 family physicians. Of this group, 6,859 (64%) were men and 3,797 (36%) women. If one looks at those physicians over the age of 55 years – that is,

those likely to retire by 2020 – a different picture emerges. In this group, there are 3,124 physicians, 2,541 (81%) of whom are men. By 2020, the family physician workforce in Ontario will experience the retirement of 29% of its ranks. The new physician population will be close to gender balanced. The dominant form of primary care organization will have ceased to be the solo practice family physician. Reordered multidisciplinary primary care teams will have become the dominant form of organization.

Major efforts are already under way by the second successive government to create more integrated primary care. The main obstacles are threefold: (1) provider resistance, largely from the longer established members of the professions, (2) the electronic patient records needed for technology integrated care and (3) the absence of sufficient numbers of non-physician health professionals to make up the multidisciplinary teams. Simply put, team practice will substitute nurse practitioners, nurses, dietitians, physiotherapists and others for family physicians. If there are insufficient numbers of these other health providers, the reform will fail.

By way of example, one were to contemplate in Ontario a ratio of one nurse practitioner to every three family doctors, one would require 3,000–4,000 nurse practitioners. Yet only 800 nurse practitioners exist in the whole of Canada at the present time. Ontario's current policy directions favour increasing the number of physicians and nurses but show little trend toward increasing the number of nurse practitioners. If, instead, that ratio were one nurse practitioner for every two family doctors, Ontario would need 6,000 nurse practitioners. It is likely that some nurses already employed in primary care will upgrade their skills; nonetheless, a clear implication for health human resource planning in Ontario is not only the direction of primary care reform but its pace. At times, ambitious targets have been set by governments (80% within three years, by the Honourable Tony Clement) and not met (Ontario Ministry of Health and Long-Term Care 2002).

Home Care

Home care continues to expand as an aging population requires more care in the home, both to prevent hospitalizations and to allow recovery post-hospital procedures. The impacts of the purchaser-provider split and a tendering system implemented through the community care access centres (CCACs) have been to consolidate the home care sector into larger province-wide delivery organizations.

Health Informatics

Another major challenge facing the Ontario healthcare delivery system with implications for health human resources is the implementation of the electronic health record. Although Smart Systems for Health exists and employs a considerable group of

direct employees and consultants, the bulk of the activity in health informatics is taking place at the level of individual health organizations. Hospitals and other healthcare organizations are revamping their spending on informatics from 1–2% to 5–6% of their budgets. This trend can be expected to continue with significant implications to the number of people employed in health informatics throughout the provincial health delivery system.

It is unlikely that there will be an emergence of a major single dominant employer in the health informatics area, although it is possible that the winds could bring some entity into being with a specific focus. If there were a strategic investor modelled on Canada Health Infoway, the employment implications might be similar, with 100 total staff. The number of health informatics employers throughout the health system is likely to rise steadily through the next 15 years.

The pace of investment in health informatics will drive the pace at which the electronic health record is implemented in Ontario. Even on a slow track without a Malcolm Gladwell tipping point to accelerate it, it seems clear that all Ontarians will have an electronic health record by 2020. Their maintenance will employ thousands, if not tens of thousands, of personnel within the health system. This will be the second major group of new employees within healthcare.

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Future Health Organizations

Further consolidation of the hospital system is likely in the next 15 years. Over the past 15 years, Ontario reduced the number of hospital organizations by 25%, from 240 to 180. Whether further merger and consolidation will follow the regionalization model of other provinces is not clear. The LHIN reforms could lead to a further consolidation of delivery; but in the first several years as the LHINs commence, they are more likely to stick to a purchaser role and use competition among providers to improve efficiencies and outcomes. At some point, this process will lead to hospital organizations that are not as strong, further weakened by their inability to compete to be merged. A future government may consider a less gradual consolidation, but that is speculative. In an evolutionary scenario, Ontario might retain as many as 150 hospital organizations by 2020. In a more radical consolidation into integrated health systems, the number of organizations might be reduced to perhaps 60. The notion that the 14 LHINs will become monopoly provider organizations with the elimination of individual hospital and other care provider boards strikes me as unlikely given the political power of the Ontario Hospital

Association and individual hospital boards.

The implementation of the CCAC purchasing model for home care has led to a consolidation of home care delivery into fewer, larger organizations. Although, with the anticipated integration of the CCAC function into the LHINs and the implementation of some of the Caplan Report recommendations, it is uncertain whether this will continue. In fact, the proposal of Elinor Caplan to allow CCACs to extend contracts will likely diminish the competitive aspect and secure market share for existing providers in the short to medium term. Nor are new national agreements on minimum home care standards likely to affect Ontario as the province has already financed care in excess of the minimum package required by the 2004 accord among the governments.

Pharmaceutical Care

Pharmaceutical care is worth consideration. As the population ages and life expectancy continues to slowly rise, the continuing growth of pharmaceutical care will impact human resources requirements. The most obvious trend is expanded pharmacies and the displacement of community pharmacies with chain drug stores. Organizations such as Shoppers Drug Mart will continue to expand their market share. They are also likely to continue to increase their offerings of products for self-testing and patient management of their own health. A range of new diagnostic tests will be made available on a direct-to-consumer basis. The pharmacist's role will include assisting patients not only in managing prescription medications but in choosing non-prescription medications for common ailments. The supply of pharmacists and pharmacy assistants will expand steadily to meet these requirements. It is also possible that, in smaller centres, other health professionals such as physicians will locate in the chain drugstores.

Research

The past decade has witnessed impressive growth in the overall health research enterprise in Ontario. Not only have the hospital-based research foundations expanded, the government of Canada has significantly boosted funding for health research through the reformation of the Medical Research Council into the Canadian Institutes of Health Research.

Conclusions: Implications for Health Human Resources

Organizational change has important implications for health human resources. But more powerful may be the grinding of demography on both the health workforce and the patient population. Let us consider the top 10 list (with apologies to David Letterman) of areas in which organizational form and pace of investment will have the most impact on health human resource requirements:

1. The emergence of larger-scale primary care organizations staffed with a mix of physicians, nurse practitioners, midwives, pharmacists, nutritionists and dietitians will be the major driver of change. The pace at which this happens will be critical. The key impact will be a sustained demand for non-physician health professionals for these new organizations.
2. In the gradual consolidation scenario, the restructuring of healthcare delivery services will likely involve the replacement of a significant portion of the hospital workforce through this period. Nurses will be the largest group with possible supply problems. Replacement of nurse retirees will dominate the agenda. In nursing education, a shortage of educators to cope with the needed expansion of education will be a challenge.
3. In the scenario of radical consolidation into some 60 integrated health delivery systems, the human resource requirements will likely be met by more direct action. In jurisdictions with larger systems, much more direct linkage to educational institutions is evident; the integrated systems will enter into direct relationships to ensure access to new graduates in sufficient numbers. They will also initiate more robust internal training and upgrading programs.
4. Home care sector growth will need to be accommodated by specific training efforts so that home care is not the poor cousin to hospital nursing with high turnover.
5. The pace of health informatics will cause a significant demand for informatics personnel in health delivery organizations including hospitals, home care, LHINs and others. By 2020, every resident of Ontario will have an electronic health record that will require continual updating.
6. The continuing growth in the scale and sophistication of pharmaceutical care will require increased numbers of pharmacists and pharmacist's assistants. Changes to scope of practice and reimbursement that might permit prescribing of some medications by nurse practitioners and pharmacists could also expand human resource needs in this sector.
7. Larger, more integrated health services delivery organizations tend to develop more sophisticated and effective health human resource development programs. In the documented cases of Capital Health in Edmonton, a more rigorous planning and forecasting model has been adopted to predict future needs. In the Montreal Region, these efforts have included very organized mid-career, middle management training.
8. The LHINs are likely to require staff with specialized skills not readily available in the current healthcare system. It will be worth considering the 14 LHINs as a separate human resource need to be met with a combination of measures including mid-career training in purchasing.
9. The research enterprise in health will continue to expand

with a need for professionals with PhDs as well as lesser-skilled technical personnel. Health research will grow most rapidly in the molecular and gene therapy fields as well as in health services.

10. Organizational changes have consequences for health human resource requirements – sometimes unintended and unpredicted consequences. This fact leads to a broad point pertaining to the entire health workforce. It is a reasonable goal to educate a sufficient number of providers to achieve a modest surplus. Only with a modest surplus can organizational changes be accommodated without imposing excessive overtime and resultant injuries on the existing workforce. A modest surplus is also a way to avoid poor-quality care.

With regard to timing, the two most significant drivers of health organization change in Ontario will be the pace and scope of LHIN implementation and the speed of primary care reform.

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