

Putting evidence at the centre of health
human resources planning.

The Research

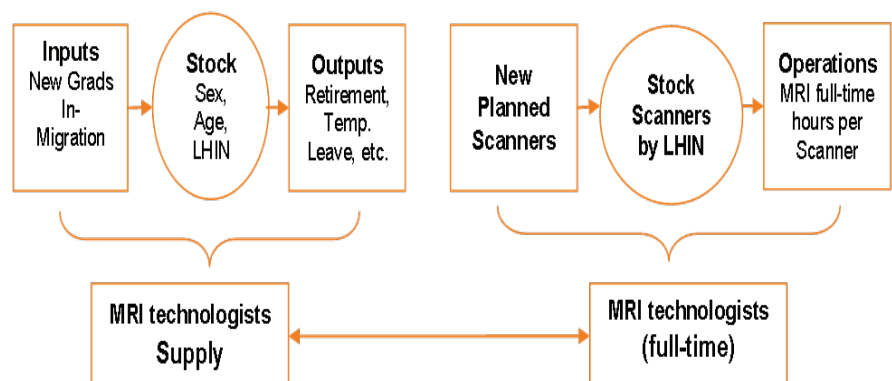
Diagnostic imaging utilization has significantly increased, in particular for magnetic resonance imaging (MRI). In response, Ontario is working to enhance its MRI system capacity, which involves considering the various related inputs: MRI scanners, operational funding, and medical radiation technologists with certification in magnetic resonance imaging (MRI technologists). For instance, increasing the capacity of existing MRI scanners through an increase in operating hours or increasing the supply of new scanners in the province will require an associated increase in the services of MRI technologists.

Health human resources (HHR) simulation models can help estimate the needed health workforce based on a desired operating level for some settings. To inform the deliberations of Ontario's MRI Expert Panel (2010), a model was developed to estimate the supply and demand for MRI technologists. The model is based on assumptions of the optimal ratios between the inputs to achieve various levels of operating hours.

Methods

A stock and flow is applied to estimate MRI technologist supply. Demand is based on the existing and planned number of MRI scanners (achieve steady state in 2012) in the province combined with the 2006 Expert Panel's¹ recommendations on optimal MRI operating ratios, such as the number of MRI technologists needed per scanner.

Supply and Demand Conceptual Model



Results

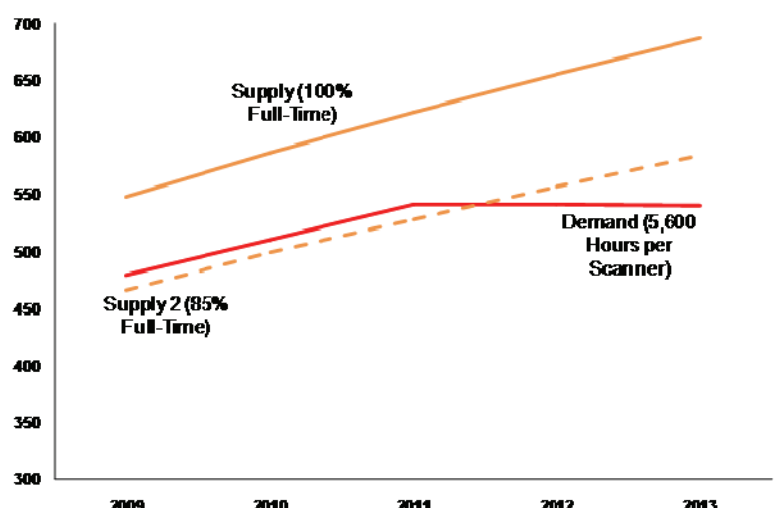
Based on trends, we estimate that the provincial supply of MRI technologists will increase by 6% per year until 2013. Assuming 5,600 annual operating hours per scanner, the province would need approximately 540 full-time MRI technologists in 2013. With 100% full-time participation of MRI technologists, the province could have a sufficient supply between 2009 and 2013. However, if 85%, as observed from preliminary data, of the available supply works full-time then the province achieves sufficient supply in 2011 and the gap is much smaller. Moreover, despite a provincial sufficiency there could be areas in the province that face shortages in technologists.

Limitations

Variation in Operating Capacity by Site and LHIN: The simulation assumes that all scanners in the province would operate at 5,600 hours annually. However, each LHIN and site may differ in operating hours depending on their environment and demand for services. For example, MRI hours reported in 2008/09 ranged on average from 3,000 to 8,000 per scanner by LHIN. Further refinement to the model would allow for variation in the optimal operating hours by LHIN.

MRI Workforce Hours: In 2009, more than 80% of MRI technologists also held a certification in radiography, suggesting they may work in another field. In addition, the full-time/part-time/casual workforce distribution should be accounted for, as individual work hour preferences and availability of positions by type will influence the supply. Improved data on what field MRI technologists work within (e.g. MRI or CT) and their rate of full-time work will enhance the model.

MRI Technologists Estimated Supply and Demand 2009-2013



Some Questions to Consider

1. Better workforce employment data through the Health Professions Database (HPDB), helped to create this model and generate different scenarios for supply. How can employers and LHINs use employment data in the HPDB to understand their local workforce trends and support their local planning?
2. MRI technologists are a subset of the radiography group, which means that increasing their supply may negatively impact the radiography supply. How can we address what the optimal mix between radiography and MRI technologists (or CT and MRI scanners) should be in the province?

Note: 1. 2006 Ontario MRI and CT Expert Panel Phase II Report

Health Human Resources Policy Branch
Forecasting and Modelling Unit