

The Ontario Health Care Labour Market: Opportunities for Internationally Trained Physicians

Prepared for;



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3.0 The Pharmaceutical & Medical Devices Labour Market

Source:

- (1) Pharmaceutical and Medicine Industry HRSDC, Industry Profile , 2004
- (2) Report of the BIOCouncil: Building Ontario's Biotechnology Corridor, 2002
- (3) Biotech Ontario, Shaping The Future: Biotech Clusters, 2004

3.1 Industry Definition

This industry group comprises establishments primarily engaged in manufacturing drugs, medicines and related products for human or animal use. The Canadian brand name pharmaceutical industry is a group of about 80 multinational companies concentrated in the Toronto and Montreal metropolitan areas. The major companies in this group have pharmaceutical research and development operations and undertake basic, clinical and applied research in intramural and extramural programs.

Major segments within the pharmaceutical sector include:

- brand-name drug manufacturers,
- generic drug manufacturers,
- firms developing biopharmaceutical products,
- non-prescription drug manufacturers,
- firms undertaking research on a contract basis.
- Canadian universities, hospitals and research centres also play a pivotal role in the research and development activities of this sector.

Establishments in this industry may undertake one or more of several processes, including basic processes, such as chemical synthesis, fermentation, distillation and solvent extraction; grading, grinding and milling; and packaging in forms suitable for internal and external use, such as tablets, vials, ampoules and ointments.

3.2 Employment Patterns

Ontario is home to more than half the country's brand-name pharmaceutical and medical devices industries, and almost half the medical biotechnology industry.

The 1996 Census indicated an employment level in Ontario of 20,100 employees. Canada's Research-Based Pharmaceutical Companies (Rx&D) is a national association representing 24,000 men and women who work for 54 research-based pharmaceutical companies in Canada. Approximately 10,000 medical researchers are employed. Of this total, about 4,000 work within Rx&D member companies and an estimated 6,000 work at universities, hospitals and research institutions.

Key operations are run by global pharmaceutical giants such as GlaxoSmithKline, Amgen, Biogen, Genzyme, AstraZeneca, Eli Lilly and Pfizer.

Toronto accommodates 80 per cent of Canada's top high-tech businesses and is the largest cluster of biomedical and biotechnology companies in the country. In fact, over 40 percent of Canada's biotechnology industry is located in the Greater Toronto Area, one of the largest centres of medical R&D in North America. This region is recognized for its achievements and expertise in genomics / proteomics, stem cell research, photonics, drug research and development and neurosciences. Brand name pharmaceutical multinationals have invested substantially in local research and development: more than \$1.1 billion over the past decade. In addition, the Faculty of Medicine at

the University of Toronto and affiliated research institutes received over \$250 million in public research funding last year alone.

Employment in the industry can be broken down into five broad categories:

- research and development,
- manufacturing,
- sales and marketing,
- distribution and
- administration.

Employment in the industry is concentrated in the Toronto and Montreal areas. Ontario and Quebec account for approximately 90 per cent of industry employment.

It is the most highly-educated workforce in the Canadian economy, with 44 per cent of the researchers holding Masters or Doctorate degrees.

The workforce is evenly split between males and females.

Ontario's medical devices industry:

- 16,700 employees
- 585 companies
- Recorded revenues of US \$3.6 billion (CDN \$5 billion) in 2003

3.3 Pharmaceutical Sector Employment Trends

Employment Growth

Most companies expect that employee growth will occur in two areas: sales and marketing, and research and development. In addition, generic companies and some of the smaller innovative companies that are developing products will need product development and specialized manufacturing expertise, quality control and regulatory affairs expertise, and skilled production workers.

Between 1983 and 1995, employment in the sector (excluding extramural R&D) grew at an average annual rate of 2.1 per cent, rising from 15,268 to 19,657. In the early to middle 1990s, the aggregate employment level of the Canadian pharmaceutical industry was relatively stable, albeit with significant underlying shifts. Employment in some of the larger brand-name firms fell, while employment in generic companies and smaller brand-name firms (including bio-pharmaceutical firms) increased.

In 1998, Canadian average salaries and wages for this sector totalled \$44,283, substantially higher than the average for the entire manufacturing sector of \$37,850. (*Source: Strategis*)

Age

Twenty-two per cent of the workers in this sector were between the ages of 15 and 29 whereas 26 per cent were found at the national level. The majority (64 per cent) of the employees in this sector was in the 30-49 years old age bracket, while in the whole economy, there were only 55 per cent. The older workforce may be due to the higher levels of education required in this field and the recruitment of experienced workers. (*Source: Statistics Canada, Census 1996*)

Education Level

Higher education is a prerequisite for many occupations in this field. Forty-three per cent of the employees have a university degree and at least 85 per cent have a high school diploma (Source: Statistics Canada, Census 1996)

Labour Turnover

In 1989 to 1993, the labour turnover for the pharmaceutical industry was 10 percentage points lower than that of all industries. Since 1993, the difference between the two has narrowed. In 1996, there was only a gap of 4 percentage points. This suggests that in recent years, the job security in this sector has decreased slightly. (Source: HRDC)

Reason for Leaving

There are few layoffs in this sector. Nineteen per cent of the workers who left the industry did so because of a shortage of jobs, compared to 46 per cent for all industries. In the sector, 22 per cent quit voluntarily versus 20 per cent for all of Canada. Fifty-nine per cent left the industry for other reasons such as: sickness, maternity, and bankruptcy, as opposed to 35 per cent for the whole nation. (Source: HRDC)

Previous Jobs

Of the workers who started a job in the pharmaceutical and medicine industry, 48 per cent had worked previously in the industry. This indicates a preference for the recruitment of experienced internal workers. (Source: HRDC)

Recruitment & Recruitment Issues

Companies tend to look within the industry for employees, previous jobs held by workers who started a job in the pharmaceutical sector in 1996.

Little hiring is done from universities, primarily because companies are looking for individuals with field experience. International competition occurs for top talent. Head-hunting is common. There is increasing reliance on the Internet as a tool for recruiting.

3.4 Pharmaceutical Employment Opportunities

Supply problems exist with respect to expertise in:

- regulatory and government affairs
- specialized manufacturing expertise
- recruiting experienced medical doctors is a problem because of supply constraints
- Some generic companies report problems recruiting experienced chemists and product development expertise.

Overall, the supply of human resources appears to be adequate to meet anticipated demand. While firms encounter some recruiting difficulties, these tend to be isolated cases with no consistent pattern suggesting a widespread skills gap.

Turnover is quite low, and those that leave typically go to another pharmaceutical company.

Total employment in the sector over the next five years is expected to grow, as pharmaceuticals are perceived as health care solutions.

Biopharmaceutical research encompasses a wide range of scientific disciplines:

- genetics,
- molecular biology,
- biochemistry,
- microbiology,
- physics,
- pharmacology, and
- information technologies.

The educational system appears to produce enough graduates to meet demand for entry level positions but skill shortfalls exist in a number of specialized research areas (e.g. biophysics, carbohydrates, and computational chemistry).

The other end of the technology spectrum requires expertise in process engineering and industrial scale-up (fermentation and downstream recovery and purification) and regulatory affairs (documentation and validation of manufacturing processes and quality control assurance); however, most of these skills are in short supply and must be imported.

The diverse range of skills required along with the dramatic pace of change is not reflected in current university courses. For example, bioinformatics requires a background in genetics, statistics, and software development, but most graduates lack such multi-disciplinary training. Also, there are no Canadian undergraduate degree programs in bioengineering; specialization options are normally offered within more traditional engineering programs. Initiatives to fill these skill gaps, include a post degree certificate program in bioinformatics launched by the Canadian Genetic Diseases Network and course requirements for an accredited degree program in bioengineering being developed by the Professional Engineers of Ontario in conjunction with the Canadian Engineering Accreditation Board.

The industry will also face an increased demand for experienced senior managers who can lead firms through strategic alliance negotiations and commercialization, and mentor younger managers. Canadian industry has not yet reached sufficient maturity to find managers with the necessary expertise. The international pharmaceutical industry has been an important source of managerial talent but there is intense competition for such managers worldwide.