



Deferred Hospital Maintenance in Canada:

There is more to ‘a building’ than building it.

Preliminary Summary Report

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Preliminary Summary Report¹

Deferred Hospital Maintenance in Canada: There is more to 'a building' than building it, reviews the evidence of deferred maintenance in Canadian hospitals. It explores: what is deferred maintenance; why it is important; and what needs to be done about it – if anything.

A literature review and data analysis was used to assess the current status of deferred maintenance in hospitals and create estimates of deferred maintenance – based on the best available information.² In general, the data available on deferred hospital maintenance was low with only hospital audits – in a few provinces – benchmarks and good evidence from the university sector.

What is Deferred Maintenance?

Deferred maintenance (DM) – sometimes known as accumulated deferred maintenance (ADM) – is the practice of postponing maintenance activities such as repairs in order to save costs or meet budget targets.³ The two basic types of maintenance strategies are reactive – ‘run till it breaks’ – and preventative which seeks to prevent faults from occurring.⁴

There is some debate in the literature about what is the best method for describing deferred maintenance. Studies indicate information about the physical condition of assets and estimates of the cost of bringing those assets to a reasonable condition is the preferred method. It is believed that typical accounting practices do not satisfactorily report deferred maintenance estimates. By far the preferred method is physical inspection or facility condition audits.⁵

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1. This preliminary summary report was completed in preparation for the *Great Canadian Healthcare Debate*, a national health leadership conference being held in Charlottetown PEI on June 15-16, 2015.
 2. The study uses two main methods to estimate the ADM in Canada. They include using provincial hospital facility audits and population and health expenditure information from Statistics Canada and CIHI to calculate the ADR in Canadian hospitals. The second method used translates the results of a detailed ADR study in the University Sector in Canada into hospital sector results.
 3. Standing Senate Committee on National Finance, *The Role of the Government in the Financing of Deferred Maintenance Costs in Canada's Post Secondary Institutions*, *Parliament of Canada* October 2001; Retrieved April 21, 2015 at <http://www.parl.gc.ca/Content/SEN/Committee/371/FINA/rep/rep09oct01-e.htm>
 4. Khashayar, K. and Deuse, J., A Strategic Standpoint on Maintenance Taxonomy, *Journal of Facilities Management* Vol. 9 No. 2, 2011: pp. 96-113.
 5. Walker R. G. and Jones S., Reporting on Infrastructure in Australia: Practices and Management Preferences, *ABACUS*, Vol. 48, No. 3, 2012: pp. 387-413.

The literature points out that the key factors that drive maintenance costs are: building condition and age; complaints about building performance; availability of funding; and health and safety requirements.⁶ These are a few of the factors assessed in a typical facility condition audits.

Three key terms – and their acronyms – about deferred maintenance are important to remember. They are: the facility condition index (FCI), the current replacement value (CRV) and the accumulated deferred maintenance costs (ADM). The CRV is the cost to replace the facility in its current condition. The FCI is a measure of the condition or ‘newness’ of the facility. The FCI is simply the ADM divided by the CRV. A low FCI score (0%) indicates a new or like new structure. A high score (100%) is suggestive of a structure in need of demolition. A typical FCI score would be found in the 2-5% range. Usually the ADM and CRV are provided in dollars (\$).

As well, it is important to distinguish between annual maintenance costs and deferred maintenance costs. Maintenance is the ‘work’ of keeping something in proper operating condition. Deferred maintenance is the ‘maintenance work’ put off until another day. The literature revealed a ‘rule of thumb’ that 1.5% of CRV should be spent on maintenance per year.⁷ The literature also suggested that this figure could be as high as 2-4% per year.⁸

Another general rule of thumb in the building industry is known as the 1:5:200 rule – construction-maintenance-operation. It suggests that over the life of a building the cost of operating a business is 200 times the cost of construction and the cost of managing and maintaining the building is typically 5 times the cost of construction.⁹

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6. Ali A. S., Cost Decision Making in Building Maintenance Practice in Malaysia, *Journal of Facilities Management* Vol. 7 No. 4, 2009 : pp. 298-306.
 7. Kadamus J.A., Reeves P. and Mason S., Deferred Maintenance at Canadian Universities: An Update, *Canadian Association of University Business Officers*, Ottawa 2014.
 8. Vanier, D.J. (2001) Why industry needs asset management tools. *ASCE Journal of Computing in Civil Engineering*, 15(1), 2001: pp. 35-43.
 9. Evans, R., Haryott, R., Haste, N. and Jones, A., *The Long Term Costs of Owning and Using Buildings*, Royal Academy of Engineering, London, 1998.

The literature also highlighted the relative ‘value’ placed on new construction versus maintenance – maintenance invariably taking a back seat. Simply put, maintenance doesn’t have the political cache that ribbon cutting ceremonies for new construction has.¹⁰

Why is DM Important?

Deferred maintenance is an important if not critical concept that unfortunately gets readily forgotten. It is relatively easy to cut during tough budget cycles with the consequences being seen at a later date.

The struggles related to the current economic environment is driving cost containment at the federal, provincial, healthcare and hospital levels – including maintenance budgets. The Conference Board believes that if the provinces froze funding in health, education and social services it would still need to make significant cuts to all other program spending by 12% to balance its books.¹¹

Hospitals receive the largest share of health expenditures in Canada, and have not been immune from cost containment strategies. The Canadian Institutes for Health Information (CIHI) 2014 *National Health Expenditures Trends* report, comments that hospital spending is expected to grow by 2.1% in the year 2014, which is the slowest growth rate since the late 1990’s.¹² The hospital sector has been under considerable duress across Canada for an extended period of time. This trend will likely continue. The Conference Board of Canada forecasts that the share of spending on hospitals is expected to fall from 43.9 percent in 2001 to 36.6 percent in 2020.

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10. Lufkin P. S., Desai A. and Janke J., Estimating the Restoration and Modernization Costs of Infrastructure and Facilities, *Public Works Management and Policy*, Vol. 10 No. 1, July 2005: pp. 40-52.
 11. Beckman K, Fields D. and Stewart M., *A Difficult Road Ahead: Canada’s Economic and Fiscal Prospects*, The Conference Board of Canada, 2014: pp. ii.
 12. The Canadian Institute for Health Information, *National Health Expenditure Trends 1975-2014*, Ottawa, 2014: pp.13.

With the cost containment strategies cascading to hospital budgets, hospitals have attempted to manage budgets constraints – with very limited influence or control over major expenditures – with the result being a growth in deferred hospital maintenance costs. A short term solution with long-term consequences unless additional resources are provided at a later date. The struggle with this type of reactive approach is that it is in the context of an aging population, reduced labor participation rates and Federal Government intentions to reduce the growth rate in transfers to provinces for health expenditures. This change may help Federal finances but is definitely ‘not good or even acceptable’ for provincial governments, health care systems, hospitals – and resultant deferred maintenance increases.

The Federal Government used a similar expenditure reduction strategy in the mid-1990’s leading to significant stress on the health and hospital systems with the consequences still felt today. This type of reactive decision-making is not new. The Ontario Hospital Association (OHA) points out that managing health care is primarily focused on reactive solutions. It believes that reactive approaches have resulted in longer-term, structural issues being ‘placed on the back burner’. The OHA points out that investment in infrastructure – which also includes some deferred maintenance costs – contributes to better patient outcomes, supports increasing demand, improves work environments, supports efficiencies and innovation and address low levels of workforce supply. The OHA concludes that a paradigm shift is required to change the current way of thinking to a longer-term strategic approach in the health care system.¹³

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13. The Ontario Hospital Association Capital Investment Working Group, Capital Planning and Investment in Ontario’s Hospitals: A Sustainable and Comprehensive Approach to Meeting Patient Care Needs, *Ontario Hospital Association* November 2003: pp. 1-12.

Deferred Hospital Maintenance in Canada

There is good evidence in the literature that deferred maintenance is growing over time. Municipal governments have seen a 10-fold growth since 1985¹⁴ and the University sector, a more than doubling since 2000. Deferred maintenance has become a strategic priority for Universities and a good case study for Canadian hospitals. Universities led a major review in 2000 showing the extent of the problem. The review was led by CAUBO – The Canadian Association of University Business Officers. It found that there was a \$3.6 B ‘conservative’ estimate of ADM in Canadian Universities. It also found that the average Facility Condition Index (FCI) was 11.3%.¹⁵

The CAUBO review led to a Standing Senate Committee examination that found the problem was large enough that it potentially posed health and safety risks to staff and students. They concluded that the magnitude of the problem suggests that government assistance was required.¹⁶ A follow-up study by CAUBO in 2014 showed revised estimate for ADM in Canadian Universities was \$8.4B or \$42/GSF. Interestingly, over 80 percent of the universities used data that was collected through physical audits in the last four years. It also highlighted that ADM was significantly higher in the Eastern and Western provinces – by almost 20 percent.¹⁷

A variety of data sets were used in this preliminary study – from CIHI, Statistics Canada and hospital facility audits to estimate the scale of hospital deferred maintenance in Canada. These estimates suggest that the cost to replace all hospitals in Canada – the ‘national hospital CRV’ – is approximately \$160 B and the accumulated deferred maintenance costs are in the range between \$5 B and \$35 B with an average of approximately \$20 B. Accounting for the significant variations in ADM across the country provides revised estimates that range between \$4 B and \$28 B with an average of \$15.4 B.¹⁸

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14. Mirza S., *Dangers Ahead: The Coming Collapse of Canada’s Municipal Infrastructure*, Federation of Canadian Municipalities, Ottawa, November 2007.
 15. Kadamus J.A., Reeves P. and Mason S., *Deferred Maintenance at Canadian Universities: An Update*, Canadian Association of University Business Officers, Ottawa 2014.
 16. Standing Senate Committee on National Finance, *The Role of the Government in the Financing of Deferred Maintenance Costs in Canada’s Post Secondary Institutions*, Parliament of Canada October 2001; Retrieved April 21, 2015 at <http://www.parl.gc.ca/Content/SEN/Committee/371/FINA/rep/rep09oct01-e.htm>
 17. Kadamus J.A., Reeves P. and Mason S., *Deferred Maintenance at Canadian Universities: An Update*, Canadian Association of University Business Officers, Ottawa 2014.
 18. At the time that this preliminary summary report was completed, the authors are awaiting information from two provinces. Once received, the ranges are likely to reduce with an increase in average and range confidence.

Translating the evidence from the university sector to hospitals provided estimate for ADM in Canadian hospitals at \$15.7B and \$18.0B respectively with an average ADM of \$16.85 B. Given that health and education expenditures track GDP fairly consistently, it is perhaps not too far of a stretch to use this comparison.

It is important to note that the three average scores created using different methods (\$20 B, \$15.4 B and \$16.85 B) are similar – in order of magnitude.

A final approach was used to estimate the minimum annual investment required to keep ADM in Canadian hospitals from growing any further – or ‘kept up’. The estimated range being between \$2.8 B and \$3.2 B annually.

What Needs to be Done about DM in Canadian Hospitals?

It is important to highlight that solving issues of deferred maintenance are not easy. It requires a substantial commitment of resources and tenacious dedication. Nothing however, can better state the business case for the investments in the time and resources required than measuring, reporting and managing the condition of assets.¹⁹

Good practices are identified in the literature and new ways of funding maintenance and deferred maintenance costs are put forward. The final report due in the fall, highlights the important role that the Federal Government played in the construction of hospitals over 50 years ago. Unfortunately the hospitals built 50 years ago were based on an acute care model and not designed for the level of chronic disease in our population today. A renewal process for

19. Selman J.R. and Schneider R., The Impact of Life-cycle Cost Management on Portfolio Strategies, *Journal of Facilities Management* Vol. 3 NO. 2, 2004: pp. 173-183.

Deferred Hospital Maintenance in Canada


Canadian hospitals is required to modernized and upgrade. It concludes with a suggested strategy with five elements to reduce or eliminate the hospital deferred maintenance 'problem' in Canada.

The elements of the strategy include:

- 1. First, Acknowledge That There is a Problem:** Acknowledging the scale, urgency and need for consistent data is the first step. The averages of the two main methods used to estimate the hospital accumulated deferred maintenance (ADM) costs range between \$15 B and \$20 B in Canada. Furthermore, the literature suggests that the problem is growing. To confirm this, standard data must be collected in all jurisdictions regularly – and publicly reported.
- 2. Make Sure the Problem Stops Growing:** Given the virtual scale of the problem, we need to agree at a minimum – to stop the problem from growing any further. The estimates in this report suggest that the cost to 'keep up' with the problem requires a \$2-3 B annual investment. The hospital sector in Canada would cost approximately \$160 B to replace them all today. Is it not worth investing 1-2 percent of this amount annually to protect the assets?
- 3. Generate New Sources of Funding:** There are a number of suggestions of funding mechanisms to potentially reduce the hospital ADM problem – including the use of P3 models that include maintenance costs, allowing hospitals to issue bonds or use reverse mortgages, the development of dedicated structures to fund hospital infrastructure and maintenance and strengthening supports for philanthropy of hospital operations.

4. **Federal Involvement as a Renewed Partner:** The Federal Government has had a history of supporting hospital construction up until recently. Given its history of funding of hospital construction almost 50 years ago, it has a responsibility beyond building it to one of renewal. At a minimum it should partner with the provinces to stop the hospital deferred maintenance costs from growing any further. Alternatively, the Federal Government can support hospital applications within the \$1.3 B public Infrastructure Investment commitment it made at the 2014 Australian G20 meeting.
5. **Sustainable Operations and Strategic Thinking:** The final element in the Hospital Maintenance and Renewal Strategy is a commitment required from hospital leaders to use preventative maintenance, ring-fenced funding and making maintenance a strategic function in hospitals. A more sophisticated and disciplined approach to infrastructure and maintenance is required.

There are significant deferred maintenance problems in hospitals across Canada and with the potential to access Federal infrastructure funds and the fiscal room that the Federal Government will see in 2017; it is time for them to partner with the provinces – again.



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