
MEMORANDUM

Appendix 3: PW 24-2019

Subject: Update on Need for Means Protection on Infrastructure in St. Catharines

Date: April 1, 2019

To: Public Works Committee

From: M. Mustafa Hirji, Medical Officer of Health & Commissioner (Acting)

Pursuant to Regional Council's request during approval of the Capital Budget at their meeting of Feb. 28, 2019, this memo provides an update as well as my current recommendation on the need for means protection at the element of infrastructure in St. Catharines where there have been several deaths by suicide.

Background and Current Situation

From October 2018 to December 2018, there were three deaths by suicide and at least one significant attempt from the infrastructure element in St. Catharines. In response to this, at PHSSC on Jan. 8, 2019, PHD 03-2019 recommended proceeding with planning to build a barrier to prevent deaths by suicide, while reserving a final decision until later in the year.

Councillors identified that the risk of deaths by suicide and urgency for a barrier was too great to defer the final decision. Committee therefore approved building of the barrier, which was subsequently endorsed by Council on Jan. 17, 2019. Council also amended the proposed Capital Budget to include a project budget to build this barrier, with that budget approved by Council on Feb. 28, 2019.

Since the Jan. 8, 2019 meeting, there have been three additional deaths by suicide in less than three months.

The rate of deaths by suicide at this location has therefore continued these past three months at the rate from the previous three months.

This rate, slightly greater than one death per month, would be the second highest in North America were it to become the new norm.

Scientific Evidence for Barriers

Recent scientific research finds that barriers are the most effective strategy to prevent deaths by suicide from falling from infrastructure:

- One 2015 review of all published research on suicide prevention identified means protection measures (barriers being the means protection barrier when falling

from infrastructure) to be the most effective strategy for suicide prevention, at least five time more effective than any other strategy¹.

- One 2014 review conducted by the McMaster Health Forum (Hamilton, Ontario) similarly found means protection to be in the set of most effective strategies for suicide prevention.²

As well, scientific evidence consistently shows that barriers do not just lead to people dying by suicide at alternate locations:

- A 2016 and a 2013 review combining the results of all previously published studies showed that while a barrier may cause some individuals to attempt to die by suicide by another means or at another location, many persons are prevented entirely from dying by suicide.^{3,4}
- A 2017 study showed that a barrier erected to prevent suicide from a location in Toronto led to effective elimination of deaths at that location, with no increase in deaths by other causes or at other locations—i.e these deaths were completely prevented.⁵

Cost Effectiveness of Barriers

Members of Council have debated the cost effectiveness of a barrier as compared to other potential strategies.

It should be emphasized that the barrier is a capital expenditure, and most other measures Council might fund would be operating expenditures. Money budgeted for the barrier cannot be reallocated to funding different operating measures. A complementary process is underway to examine possible operating expenditures through report *PHD 08-2019*.

Nonetheless, for Council's information, I am sharing some scientific evidence cost effectiveness here.

¹ Jane Pirkis, Lay San Too, Matthew J Spittal, Karolina Kryszynska, Jo Robinson, Yee Tak Derek Cheung. "Interventions to reduce suicides at suicide hotspots: a systematic review and meta-analysis". *Lancet Psychiatry*. 2015; 2: 994–1001. doi:10.1016/S2215-0366(15)00266-7

² Hirji MM, Wilson MG, Yacoub K, Bhuiya A. Rapid Synthesis: Identifying Suicide-prevention Interventions. Hamilton, Canada: McMaster Health Forum, 30 June 2014.

³ Gil Zalsman et al. *Suicide prevention strategies revisited: 10-year systematic review*. *Lancet Psychiatry* 2016; 3: 646–59 Published Online June 8, 2016 [http://dx.doi.org/10.1016/S2215-0366\(16\)30030-X](http://dx.doi.org/10.1016/S2215-0366(16)30030-X)

⁴ Jane Pirkis, Matthew J Spittal, Georgina Cox, Jo Robinson, Yee Tak Derek Cheung, and David Studdert. The effectiveness of structural interventions at suicide hotspots: a meta-analysis. *International Journal of Epidemiology* 2013;42:541–548. doi:10.1093/ije/dyt021

⁵ Sinyor M, Schaffer A, Redelmeier DA, et al. Did the suicide barrier work after all? Revisiting the Bloor Viaduct natural experiment and its impact on suicide rates in Toronto. *BMJ Open* 2017;7:e015299. doi:10.1136/bmjopen-2016-015299

A rigorous and precise comparison of costs is not possible here given that evidence of cost-effectiveness comes from different jurisdictions and different local contexts. Direct comparison of these costs is not precise. Nonetheless, in the table below are some rough approximations of cost-effectiveness that give a sense of the scale of cost of various measures.

Suicide Prevention Measure	Proportion of Deaths Prevented	Cost per Life Saved
<i>Media Reporting Guidelines</i>	1% ⁶	\$1,000 ⁷
<i>Means Prevention Barriers</i>	86% ⁸	\$50,000 ⁹
<i>Patrolling Attendant Intervening</i>	No Evidence Found	\$135,000 ¹⁰
<i>Primary Care Mental Health Intervention</i>	2.5% ¹¹	\$244,000 ¹²
<i>School-based Suicide Prevention</i>	1% ¹³	\$1,750,000 ¹⁴

As noted, the cost-effectiveness depends greatly on the local conditions. E.g. the media reporting guidelines cost is assuming there is no cycle of contagion fueled in part by media reporting. Were that to exist, significantly more than 1% of deaths might be prevented, and the cost per life saved would fall much lower.

Similarly, the \$50,000 per life saved for a barrier is assuming a rate of one death every two years over an assumed 80 year lifespan for the \$4 million infrastructure. That is significantly less often than the rate of 12 per year that has been observed the past six months, in which case cost-effectiveness would be closer to \$2,000 per life saved.

⁶ Mark Sinyor *et al.* *Media Guidelines for Reporting on Suicide: 2017 Update of the Canadian Psychiatric Association Policy Paper*. 2017.

⁷ World Health Organization. *Preventing suicide: a global imperative*. 2014. Assumed minimum 25 life years saved from prevented death by suicide.

⁸ Zalsman *et al.*

⁹ Assumption of 1 attempted death every 2 years, over 80 years, for a cost of \$4 million.

¹⁰ Cost of minimum wage employees (\$14 per hour) to cover 24 hours a day for an entire year. Assumed 10% payroll-related costs.

¹¹ Ingrid Zechmeister, Reinhold Kilian, David McDaid and the MHEEN. "Is it worth investing in mental health promotion and prevention of mental illness? A systematic review of the evidence from economic evaluations group". *BMC Public Health* 2008, 8:20 doi:10.1186/1471-2458-8-20

¹² Zechmeister *et al.* \$183,000 US converted to \$244,000 Canadian.

¹³ S. Ahern *et al.* "A cost-effectiveness analysis of school-based suicide prevention

Programmes. *European Child & Adolescent Psychiatry*. 2018. <https://doi.org/10.1007/s00787-018-1120-5>

¹⁴ Ahern *et al.* 47,017 Euros converted to \$70,000 per attempt prevented. Factored in that only 1% of attempts are prevented, and attempts result in death 4% to 25% of the time.

Nonetheless, even with a very modest rate of death at the infrastructure in question, a barrier would be significantly more cost effective than most other strategies.

Recommendation

In considering my recommendation, I have again consulted with Dr. Mark Sinyor, Psychiatrist (Sunnybrook Hospital) and Assistant Professor of Psychiatry (University of Toronto) who is an international expert in both suicide contagion and suicide prevention.

Deaths by suicide at the location in St. Catharines have continued at a very frequent rate (effectively the second highest rate in North America) over the past three months. There is now a continuous six month trend.

There is no science to predict whether a location is likely to remain a suicide magnet or not. However, the longer the trend of frequent deaths, the more likely that a location will become a suicide magnet. Given the high profile and significant discourse associated with deaths over the past six months, it is very likely that the location in St. Catharines is now associated with suicide with much of the population. Therefore, it can be expected that some deaths will continue even if measures to prevent further contagion are taken. Even a 10-fold decline in the rate of deaths would leave this infrastructure as a significant suicide magnet.

Barriers are highly effective at preventing deaths by suicide, and they are also highly cost-effective, and much more so than other measures.

My recommendation, therefore, is that construction of a barrier should proceed. It will make a significant reduction to deaths by suicide, is the most cost-effective way to address the recent cycle of deaths by suicide, and demonstrate to the Niagara community Council's and Niagara Region's resolve to address mental illness.

Respectfully submitted and signed by

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