City of Hamilton
BOARD OF HEALTH

Meeting #: 18-005
Date: May 14, 2018
Time: 1:30 p.m.
Location: Council Chambers, Hamilton City Hall
71 Main Street West

Loren Kolar, Legislative Coordinator (905) 546-2424 ext. 2604

Pages

1. APPROVAL OF AGENDA

(Added Items, if applicable, will be noted with *)

2. DECLARATIONS OF INTEREST

3. APPROVAL OF MINUTES OF PREVIOUS MEETING

3.1 April 16, 2018 — 4

4. DELEGATION REQUESTS

4.1 Sarah Dickson, McMaster University respecting Item 7.1 Recreation's Healthy Food and Beverage Action Plan (BOH18014/HSC18019) (City Wide) (for today's meeting) — 10

4.2 Kristen Villebrun, respecting Item 7.1 Recreation's Healthy Food and Beverage Action Plan (BOH18014/HSC18019) (City Wide) (for today's meeting) — 11

4.3 Karen Rathwell, Wellington Water Watchers, respecting Item 7.1 Recreation's Healthy Food and Beverage Action Plan (BOH18014/HSC18019) (City Wide) (for today's meeting) — 12

4.4 Mary Love, respecting Item 7.1 Recreation's Health Food and Beverage Action Plan (BOH18014/HSC18019) (for today's meeting) — 13

5. CONSENT ITEMS

5.1 Prohibiting Smoking Within City Parks and Recreation Properties: Schedule "A" Update (BOH07034(l)) (City Wide) 14

5.2 Suitability of Bayfront Beach as a Public Beach (BOH16008(b)) (City Wide) 32

5.3 Co-Locating Naloxone with Automated External Defibrillators (BOH18005) (City Wide) 42

5.4 Integrated Pest Management Best Practices Including the Use of Acaricides to Mitigate Tick Populations (BOH18019) (City Wide) 49

6. PUBLIC HEARINGS / DELEGATIONS

7. STAFF PRESENTATIONS

7.1 Recreation’s Healthy Food and Beverage Action Plan (BOH18014/HSC18019) (City Wide) 59

Note: Presentation for this report will be distributed under separate cover.

8. DISCUSSION ITEMS

8.1 Clean Air Hamilton 2018 Programs (BOH18020) (City Wide) 72

9. MOTIONS

10. NOTICES OF MOTION

11. GENERAL INFORMATION / OTHER BUSINESS

11.1 Correspondence from the Ministry of Long-Term Care respecting Ontario Public Health Standards: Requirements for Programs, Services, and Accountability, School Health Guideline, 2018 78

Recommendation: Be received.

Due to bulk, the School Health Guideline will not be printed, but can be viewed online at www.hamilton.ca

11.2 Correspondence from the Ministry of Long-Term Care respecting Ontario Public Health Standards: Requirements for Programs, Services, and Accountability Guidelines, 2018 116

Recommendation: Be received.

Due to bulk, the Guidelines will not be printed, but can be viewed online at www.hamilton.ca

11.3 Amendments to the Outstanding Business List

12. PRIVATE AND CONFIDENTIAL

13. ADJOURNMENT

BOARD OF HEALTH
MINUTES 18-004
1:30 p.m.
Monday, April 16, 2018
Council Chambers
Hamilton City Hall

Present: Mayor F. Eisenberger
Councillors A. Johnson, J. Farr, S. Merulla, C. Collins, T. Jackson, D. Skelly, T. Whitehead, M. Pearson, L. Ferguson, and A. VanderBeek

Absent with regrets: Councillors D. Conley, B. Johnson, R. Pasuta and J. Partridge – Personal, Councillor M. Green – City Business

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THE FOLLOWING ITEMS WERE REFERRED TO COUNCIL FOR CONSIDERATION:

1. Stock Epinephrine Auto Injector Expansion in Restaurants (BOH13040(d)) (City Wide) (Item 5.1)

(Feguson/Pearson)
That Report BOH13040(d), respecting Stock Epinephrine Auto Injector Expansion in Restaurants, be received.

CARRIED

2. Public Health Services 2017 Annual Report (BOH18010) (City Wide) (Item 5.2)

(Farr/VanderBeek)
That Report BOH18010, respecting the Public Health Services 2017 Annual Report, be received.

CARRIED

3. Board of Health Self-Evaluation (BOH18011) (City Wide) (Item 5.3)

(Pearson/Whitehead)
That Report BOH18011, respecting a Board of Health Self-Evaluation, be received.

CARRIED

4. Reduction of Airborne Particulates in Hamilton (BOH18018) (City Wide) (Item 5.4)

(Merulla/Collins)
That Report BOH18018, respecting a Reduction of Airborne Particulates in Hamilton, be received.

CARRIED

5. Hamilton Airshed Modelling System (BOH18016) (City Wide) (Item 7.1)

(Merulla/Whitehead)

(a) That staff work with Golder Associates to undertake sub-region analyses using the Hamilton Airshed Modelling System, and in consultation with key stakeholders and affected residents;

(b) That staff examine the feasibility of using Hamilton Airshed Modelling System to estimate morbidity and mortality outcomes associated with air pollution and report back to Board of Health, ***if applicable***;

(c) That the Board of Health direct Public Health Services' staff to work with City of Hamilton Planning staff to review the Hamilton Airshed Modelling System analysis and determine appropriate applications for planning directions and decisions and report back to Planning Committee in Q1 2019;

(d) That the Board of Health request the Ministry of Environment and Climate Change to work with the City of Hamilton, other Ontario municipalities and levels of government regarding traffic-related air pollutants to address transboundary transportation contributions impacting the City of Hamilton;

(e) That the Board of Health advocate that the province of Ontario adopt the 24-hour Canadian Ambient Air Quality Standard for fine particulate matter (PM 2.5) of 28 micrograms per cubic metre of air (28 μg/m3) as air quality benchmarks for the maximum desirable concentration of particulate matter in the City of Hamilton; and

(f) Support the Ministry of the Environment and Climate Change in their proposal for a new policy focusing on Cumulative Effects Assessment in air approvals: "to more effectively consider cumulative impacts from multiple air pollution sources - both industrial and non-industrial" to address air quality issues in the City of Hamilton.

Main Motion *As Amended* CARRIED

6. Correspondence from the Assistant Deputy Minister, Health and Long-Term Care, respecting Ontario Public Health Standards: Requirements for Programs, Services and Accountability (Item 11.1)

(Whitehead/Skelly)
That the Correspondence from the Assistant Deputy Minister, Health and Long-Term Care, respecting Ontario Public Health Standards: Requirements for Programs, Services and Accountability, be received.

CARRIED

FOR INFORMATION:

(a) CHANGES TO THE AGENDA (Item 1)

The Clerk advised the Board of the following change:

1. REVISED STAFF PRESENTATION

7.1 Hamilton Airshed Modelling System (BOH18016) (City Wide) (Item 7.1)

A revised version of the presentation has been distributed to the Board, and uploaded to the website.

(Pearson/Farr)
That the agenda for the April 16, 2018 Board of Health be approved, as amended.

CARRIED

(b) DECLARATIONS OF INTEREST (Item 2)

None.

(c) APPROVAL OF MINUTES OF PREVIOUS MEETING (Item 3)

(i) March 19, 2018 (Item 3.1)

(VanderBeek/Ferguson)
That the Minutes of the March 19, 2018 meeting of the Board of Health be received, as presented.

CARRIED

(d) PRESENTATION (Item 7)

(i) Hamilton Airshed Modelling System (BOH18016) (City Wide) (Item 7.1)

Kevin McDonald addressed the Board with an overview of the presentation for Report BOH18016, respecting the Hamilton Airshed Modelling System.

Matt Lawson addressed the Board with an introduction of Anthony Ciccone, Ph.D., Golder.

Anthony Ciccone, Ph.D., Golder addressed the Board with a presentation on Report BOH18016, respecting the Hamilton Airshed Modelling System, with the aid of a PowerPoint presentation. A copy of the presentation has been included in the official record.

(Merulla/Whitehead)
That the presentation for Report BOH18016, respecting the Hamilton Airshed Modelling System, be received.

CARRIED

(Farr/A. Johnson)
That sub-section (b) of Report BOH18016, respecting the Hamilton Airshed Modelling System, be amended by deleting the phrase “if necessary”, and replacing it with the phrase “if applicable”:

(b) That staff examine the feasibility of using Hamilton Airshed Modelling System to estimate morbidity and mortality outcomes associated with air pollution and report back to Board of Health, ~~if necessary;~~ ***if applicable***

***Amendment* CARRIED**

For further disposition of this matter, refer to Item 5.

The presentation is available at www.hamilton.ca

(e) MOTION (Item 9)

(i) Feasibility of Workspace for the Physician Recruitment Specialist (Added Item 9.1)

(Whitehead/Farr)
That staff be directed to investigate the feasibility of providing an office space for the Physician Recruitment Specialist, within their offices.

CARRIED

(f) GENERAL INFORMATION / OTHER BUSINESS (Item 11)

(i) Amendments to the Outstanding Business List (Item 11.2)

(Pearson/VanderBeek)
That the following Items be marked as completed and removed from the Outstanding Business List:

Item A - Staff to report on Food Waste Management
January 12, 2015
(Addressed under Item 5.3 of the March 19, 2018 meeting)

Item D - Physician Recruitment - Policy respecting managed entry into the Family Health Network or Family HealthOrganizations - Q code enrolment premiums
May 21, 2015
(Letter sent out October 13, 2017)

Item I - Pilot-Project to Eliminate Sales of Products with Peanuts or Tree Nuts in four City of Hamilton Facilities
June 13, 2016
(Addressed under Item 8.1 at the March 19, 2018 meeting)

Item MM - Amendment to the City of Hamilton's Food Strategy (Revised)
(Addressed under Items 8.1 and 8.2 at the February 22, 2018 meeting)

Item CC - Millgrove Public School respecting a Food Recovery Program from Stores and Farmers for the Benefit of the FoodBank
June 19, 2017
(Addressed under Item 5.3 at the March 19, 2018 meeting)

Item DD - Stock Epinephrine Auto Injector Expansion in Restaurants (BOH13040(c))
June 19, 2017
(Addressed under Item 5.1 of this agenda)

Item EE - Reduction of Airborne Particulate in Hamilton
July 13, 2017
(Addressed under Item 5.4 of this agenda)

CARRIED

(Pearson/VanderBeek)
That the following Item's Due Date be revised:

Item L - Food Strategy Priority Actions 2 &3
August 11, 2016
Due Date: Q4 2018
Revised Due Date: Q1 2019

CARRIED

(g) ADJOURNMENT (Item 13)

(Farr/Collins)
That, there being no further business, the Board of Health be adjourned at 2:40 p.m.

CARRIED

Respectfully submitted,

Mayor F. Eisenberger
Chair, Board of Health

Loren Kolar
Legislative Coordinator
Office of the City Clerk

Form: Request to Speak to Committee of Council Form

Submitted on Wednesday, April 18, 2018 - 3:41pm

==Committee Requested==
Committee: Board of Health

==Requestor Information==

Name of Individual: Sarah Dickson
Name of Organization: McMaster University
Contact Number: [redacted]
Email Address: sdickso@mcmaster.ca
Mailing Address: 1280 Main St W

Reason(s) for delegation request:
I was requested by Councillor Johnson to delegate on the scientific reasons for banning bottle water.

Will you be requesting funds from the City? No

Will you be submitting a formal presentation? Yes

Form: **Request to Speak to Committee of Council**
Submitted on Thursday, April 19, 2018 - 1:17 pm

==Committee Requested==
Committee: Board of Health

==Requestor Information==
Name of Individual: Kristen Villebrun

Name of Organization:

Contact Number:

Email Address:

Mailing Address:

Reason(s) for delegation request: Banning bottled water at municipal buildings

Will you be requesting funds from the City? No

Will you be submitting a formal presentation? Yes

Form: **Request to Speak to Committee of Council**
Submitted on Tuesday, May 1, 2018 - 9:39 am

==Committee Requested==
Committee: Board of Health

==Requestor Information==
Name of Individual: Karen Rathwell

Name of Organization: Wellington Water Watchers

Contact Number:

Email Address:

Mailing Address:

Reason(s) for delegation request: I will speak to support Councillor Aidan Johnson's motion to ban bottled water sales from all municipal locations.

Will you be requesting funds from the City? No

Will you be submitting a formal presentation? Yes

4.4

Form: Request to Speak to Committee of Council
Submitted on Wednesday, May 2, 2018 - 12:05 pm

==Committee Requested==
Committee: Board of Health

==Requestor Information==
Name of Individual: Mary Love

Name of Organization:

Contact Number: [redacted]

Email Address: [redacted]

Mailing Address: [redacted]

Reason(s) for delegation request:

To support Councillor Johnson's motion for a ban on the sale of bottled water (and sugary drinks) at Hamilton municipal sites.

Will you be requesting funds from the City? No

Will you be submitting a formal presentation? Yes

CITY OF HAMILTON
PUBLIC HEALTH SERVICES
Healthy Environments Division

TO:	Mayor and Members Board of Health
COMMITTEE DATE:	April 16, 2018
SUBJECT/REPORT NO:	Prohibiting Smoking Within City Parks and Recreation Properties: Schedule "A" Update (BOH07034(l)) (City Wide)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Heidi McGuire (905) 546-2424, Ext. 6170
SUBMITTED BY & SIGNATURE:	Kevin McDonald Director, Public Health Services - Healthy Environments Division Healthy and Safe Communities Department

RECOMMENDATION

(a) That the City Solicitor be authorized and directed to prepare a by-law to amend By-law No. 11-080, updating Schedule "A" which lists the parks and recreation properties where smoking is prohibited; and,

(b) That the By-law amending By-law No. 11-080 be enacted by Council.

EXECUTIVE SUMMARY

City of Hamilton By-law No. 11-080 Prohibiting Smoking within City Parks and Recreation Properties came into force on May 31, 2012 to prohibit tobacco smoking and limit the impact of tobacco smoke on persons using the City's parks and recreational properties, buildings and structures. This By-law was enacted to protect and promote the health of the public generally, and particularly children and youth, as well as protect and enhance the quality and use of City property.

This report serves to update Schedule "A" under By-law No. 11-080. It does not in any way change or limit the parts of the City to which the By-law applies. The Schedule of properties serves a two-fold purpose:

- First, the Schedule provides detailed physical address information to assist with inspections and progressive enforcement of the By-law; and,

- Secondly, it demonstrates a level of due diligence on behalf of the City in promoting and notifying the public of where smoking is prohibited under the By-law.

This annual exercise updates the Schedule with any municipal property name changes, address changes and "new" property acquisitions that have occurred over the preceding year. The additions identified for this year occur in four City Wards. The properties identified within the Schedule in the other Wards remain unchanged.

Alternatives for Consideration – Not Applicable

FINANCIAL – STAFFING – LEGAL IMPLICATIONS (for recommendation(s) only)

Financial: There are no financial implications associated with this report.
Staffing: There are no staffing implications associated with this report.
Legal: The Amending By-law will assist with enforcement, by providing an updated list of the physical location of sites where smoking is prohibited.

HISTORICAL BACKGROUND (Chronology of events)

- By-law No. 11-080 was approved by the Board of Health on February 28, 2011, and passed by City Council on March 9, 2011
- By-law No. 12-242 which amended By-law No. 11-080 by adding Schedule "A", was approved by the Board of Health on October 15, 2012, and passed by City Council on October 30, 2012
- By-law 14-006 to update Schedule "A" was approved by the Board of Health on January 13, 2014 and by City Council on January 29, 2014
- By-law 15-112 to update Schedule "A" was approved by the Board of Health on April 1, 2015 and by City Council on April 8, 2015
- By-law 16-094 to update Schedule "A" was approved by the Board of Health on February 18, 2016 and by City Council on February 24, 2016
- By-law 17-081 to update Schedule "A" was approved by the Board of Health on April 26, 2017 and by City Council on May 10, 2017

POLICY IMPLICATIONS AND LEGISLATED REQUIREMENTS

No policy implications.

RELEVANT CONSULTATION

- City Councillors were notified and consulted on the Schedule additions in lead-up to the April 16, 2018 Board of Health.
- Corporate Services, Legal Services Division were consulted and engaged in Amending the By-law and corresponding Schedule.
- Public Works, Environmental Services - Parks and Cemeteries reviewed the revised Schedule.

In preparation of the original By-law and Schedule, City of Hamilton Councillors; Community and Emergency Services, Recreation Division; Public Works, Operations and Waste Management Division; Public Works, Environmental Services Division; Human Resources; and, the Senior Management Team, City of Hamilton were consulted.

ANALYSIS AND RATIONALE FOR RECOMMENDATION
(Include Performance Measurement/Benchmarking Data if applicable)

Schedule “A” to By-law No. 11-080 lists the physical location of properties, addresses, places and areas where smoking is prohibited under that By-law.

The Amending By-law replaces Schedule “A”, which has been updated to reflect additional acquisitions and changes to City of Hamilton recreational properties in the past year.

Namely, the amendment to Schedule “A” includes:

2. Additional recreational properties acquired by the City:
   a) Agro Park (Ward 15)

The existing Schedule “A” can be accessed through the following City of Hamilton web address: http://www.hamilton.ca/parks-recreation/parks-trails-and-beaches/smoke-free-parks-recreation-areas.

Schedule “A” will continue to be updated on an annual basis and the updated Schedule “A”, as approved, will be posted on the City’s website. This will ensure that future or proposed assets that are developed will be clearly outlined to the public and will also assist with enforcement.

ALTERNATIVES FOR CONSIDERATION

(Include Financial, Staffing, Legal and Policy Implications and Pros and Cons for each alternative)

Not applicable.

ALIGNMENT TO THE 2016 – 2025 STRATEGIC PLAN

Healthy and Safe Communities
Hamilton is a safe and supportive city where people are active, healthy, and have a high quality of life.

Clean and Green
Hamilton is environmentally sustainable with a healthy balance of natural and urban spaces.

APPENDICES/SCHEDULES ATTACHED

Appendix A to BOH07034(L) - Schedule "A" to Bylaw No. 11-080

Schedule "A" to By-law 11-080

Parks and Recreation Properties Where Smoking is Prohibited

NAME	LOCATION	WARD
87 Acres Park	1165 Green Mountain Rd.	Ward 11
A.M. Cunningham Parkette	300 Roxborough Dr.	Ward 4
Agro Park	512 Dundas St. W., Waterdown	Ward 15
Albion Estates Park	52 Amberwood St.	Ward 9
Albion Falls Nghd. Open Space	221 Mud Street	Ward 6
Albion Falls Open Space (1 & 2)	199 Arbour Rd.	Ward 6
Albion Falls Park	768 Mountain Brow Blvd.	Ward 6
Alexander Park	201 Whitney Ave.	Ward 1
Allison Neighbourhood Park	51 Piano Dr.	Ward 7
Amberly Park	284 Nakoma Rd., Ancaster	Ward 12
Ancaster Aquatic Centre	47 Meadowbrook Dr., Ancaster	Ward 12
Ancaster Arbour Parkette	135 Emick Dr., Ancaster	Ward 12
Ancaster Heights Park	770 Alexander Rd., Ancaster	Ward 12
Ancaster Lion's Outdoor Pool	263 Jerseyville Rd. W., Ancaster	Ward 12
Ancaster Rotary Centre and Morgan Firestone Arena	385 Jerseyville Rd. W., Ancaster	Ward 12
Ancaster Senior Achievement Centre Park	622 Alberton Rd. S., Ancaster	Ward 12
Andrew Warburton Memorial Park	199 Tragina Ave. N.	Ward 4
Armes Lookout	633 Mountain Brow Blvd.	Ward 6
Arrowhon Natural Area	165 Boulding Ave.	Ward 15
Austin Park	36 Dartford Pl.	Ward 7
Aylmer Parkette	120 1/2 Aylmer Cres.	Ward 9
Balfour Park	406 Scenic Dr.	Ward 8
Barton Melvin Triangle	373 Pottruff Rd. N.	Ward 4
Barton St. / Lake Ave. Open Space	2635 Barton St. E.	Ward 5
Battlefield House, Museum and Park	77 King St. W.	Ward 9
Battlefield Park Open Space	77 King St. W.	Ward 9
Bayfront Park	200 Harbour Front Dr. (excluding Bayfront Park City Yard & excluding Hutch's patio)	Ward 2
Bayfront Park Trail	200 Harbourfront Dr. E. and Bay St. N.	Trail
Bayview Park (Hamilton)	52 Burlington St. W.	Ward 2
Bayview Park (Stoney Creek)	14 Thomas Crt.	Ward 10
Beach Blvd. Park #1	540 Beach Blvd.	Ward 5
Beach Blvd. Park #2 (Jimmy Lomax Park)	1120 Beach Blvd.	Ward 5
Beach Blvd. Park #3	80 Beach Blvd.	Ward 5
Beach Strip Open Space #1 (Beach Trail)	1151 Beach Blvd.	Ward 5
Beach Strip Open Space #2	499 Beach Blvd.	Ward 5
Beasley Park and Beasley Park Bowl	96 Mary St.	Ward 2
Belmont Park	101 Hollybush Dr.	Ward 15
Belview Park	205 Belmont Ave.	Ward 3
Ben Nevis Dr. SWM	29 Ben Nevis Dr.	Ward 10

Schedule "A" to By-law 11-080

Parks and Recreation Properties Where Smoking is Prohibited

Benetto Community Centre Park	450 Hughson St. N.	Ward 2
Berklin Drive Ravine Land	15 Berklin Dr.	Ward 1
Berrisfield Park	125 Birchcliffe Cres.	Ward 6
Beulah Park	59 Beulah Ave.	Ward 1
Beverly Community Park & Arena	680 Hwy. #8, Rockton	Ward 14
Bill Foley Parkette	41 Mountain Brow Blvd.	Ward 15
Billy Sherring Park	1530 Upper Sherman Ave.	Ward 7
Binbrook Park	2651 Hwy. #56, Binbrook	Ward 11
Binbrook Parkette	2680 Binbrook Rd., Binbrook	Ward 11
Binbrook Road Open Space	25 Royal Winter Drive, Binbrook	Ward 11
Birch Avenue Dog Park	235 Birch Ave.	Ward 3
Birch Avenue Park	171 Birch Ave.	Ward 3
Birge Park and Pool	167 Birge St.	Ward 3
Bishop's Park	91 East Ave. S.	Ward 2
Block 114 Park	7 Pinecreek Rd.	Ward 15
Block 87 Park	64 Duncan Ave.	Ward 15
Bobby Kerr Park	100 Reno Ave.	Ward 6
Bow Valley Open Space	70 Lake Ave. N.	Ward 5
Brampton Street Park	110 Mead Ave.	Ward 4
Brockhouse Park	61 Fiddler's Green Rd., Ancaster	Ward 12
Broughton Park West	106 Terni Blvd.	Ward 6
Bruce Park	145 Brucedale Ave. E.	Ward 7
Bruleville Nature Park	265 Limeridge Rd. E.	Ward 7
Bruleville Park	100 Bobolink Rd.	Ward 7
Bryna Park	16 Bryna Ave.	Ward 7
Buchanan Park	111 Columbia Dr.	Ward 8
Bullock's Corners	40 Park Ave.	Ward 14
Bumble Bee Hill Park	224 Pleasant Ave., Dundas	Ward 13
Burkholder Park	478 East 25th St.	Ward 7
Candlewood Dr. SWM	167 Candlewood Dr.	Ward 9
Captain Cornelius Park	180 Limeridge Rd. W.	Ward 8
Carlisle Community Centre Park	1496 Centre Rd.	Ward 15
Carlisle Memorial Park	1487 Centre Rd.	Ward 15
Carlisle Walkways	46 Woodend Drive, Carlisle	Ward 15
Carluke Hall	435 Carluke Rd. W., Ancaster	Ward 12
Carpenter Ave. Open Space #1	291 Eastdale Blvd.	Ward 10
Carpenter Ave. Open Space #2	2 Carpenter Ave.	Ward 10
Carpenter Neighbourhood Park	145 Eagleglen Way	Ward 8
Carter Park	32 Stinson St.	Ward 2
Cascades Park	66 Livingstone Dr., Dundas	Ward 13
Cathedral Park	707 King St. W.	Ward 1

Schedule "A" to By-law 11-080

Parks and Recreation Properties Where Smoking is Prohibited

Cenotaph Park	324 Hwy. #8	Ward 10
Centennial Heights Park	12 Karendale Cres.	Ward 14
Centennial Park	71 Cootes Dr., Dundas	Ward 13
Central Memorial Recreation Centre	93 West Ave. S.	Ward 2
Central Park	168 Bay St. N.	Ward 2
Century Street Park	28 Century St.	Ward 3
Chappel East Park #1	1837 Upper Wentworth St.	Ward 7
Chappel Estates Neighbourhood Park	30 Wagner Dr.	Ward 7
Chedoke Crossway	158 Stroud Rd.	Ward 1
Chedoke Expressway Open Space	643 Main W.	Ward 1
Chedoke Pool	West 25th St. and Bendemere Ave.	Ward 8
Chedoke Twin Pad Arena (Park)	91 Chedmac Dr.	Ward 8
Chegwin Park	27 Chegwin St., Dundas	Ward 13
Cherry Heights Park	90 Stoney Brook Dr.	Ward 10
Churchill Park	255 Glen Rd. (excluding Gardens & Aviary)	Ward 1
Claremont Access Parkettes	65 Wellington St. S.	Ward 2
Cliffview Park	26 Upper Paradise Rd.	Ward 8
Cline Park	66 Pinewoods Dr.	Ward 9
Cloverleaf Dr SWM	83 Cloverleaf Dr., Ancaster	Ward 12
Cochrane Parkette	381 Cochrane Rd.	Ward 4
Colquhoun Park	20 Leslie Ave.	Ward 8
Commando Crt. SWM	20 Volterra Court and 70 1/2 Chudleigh St.	Ward 15
Commonwealth Square	80 Main Street W.	Ward 2
Concession 3 Pt., Lot 52, SWM	109 Cloverleaf Dr., Ancaster	Ward 12
Concession/Upper Sherman Parkette	401 Upper Sherman Ave.	Ward 6
Confederation Beach Park	80 Van Wagner's Beach Blvd.	Ward 5
Conservation Run	24 Newcombe Rd, Dundas	Ward 13
Copetown Lions Park	1950 Governor's Rd.	Ward 14
Coreslab Dr. Open Space	181 Coreslab Dr.	Ward 15
Corktown Park	175 Ferguson Ave. S.	Ward 2
Corman Park	23 Teak St.	Ward 10
Coronation Park / Arena / Pool	81 Macklin St. N.	Ward 1
Corporal Nathan Cirillo Leash-Free Area	799 Golf Links Rd., Ancaster	Ward 12
Courtcliffe Community Park	159 Carlisle Rd.	Ward 15
Courtcliffe Park Open Space	open space beside Courtcliffe Park, 159 Carlisle Rd.	Ward 15
Crerar Natural Open Space	58 Sirente Dr.	Ward 7
Crerar Neighbourhood Park #1	260 Sirente Dr.	Ward 7
Cumberland Tot Lot	280 Cumberland Ave.	Ward 3
Dalewood Park	108 Gary Ave.	Ward 1

Schedule "A" to By-law 11-080

Parks and Recreation Properties Where Smoking is Prohibited

Dalewood Recreation Centre	1152 Main St. W.	Ward 1
Dave Andreychuk Mountain Arena / Skating Centre	25 Hester St	Ward 7
Dean Vista Park	940 Arvin Ave.	Ward 11
Delottinville Park	73 Newcombe Rd., Dundas	Ward 13
Delottinville Park Open Space	50 Davidson Blvd, Dundas	Ward 13
Delta Park	1100 Main St. E.	Ward 3
Dewitt Park	151 Glenashton Dr.	Ward 10
Dewitt Parkette	503 Dewitt Rd.	Ward 10
Dieppe Veterans' Memorial Park	1033 Beach Blvd.	Ward 5
Dofasco Parkette	276 Beach Rd.	Ward 3
Dominic Agostino Riverdale Recreation Centre	150 Violet Dr.	Ward 5
Dover Park	66 Dover Dr.	Ward 5
Dr. William Bethune Park	60 Dicenzo Dr.	Ward 7
Dundas Community Pool	39 Market St. S., Dundas	Ward 13
Dundas Driving Park #1	71 Cross St. (excluding Dundas Driving Park City Yard), Dundas	Ward 13
Dundas Driving Park #2	71 Cross St. (excluding Dundas Driving Park City Yard), Dundas	Ward 13
Dundas Lion's Memorial Community Centre	10 Market St. S., Dundas	Ward 13
Dundas Open Space	50 Davidson Blvd, Dundas	Ward 13
Dundurn National Historic Site	610 York Blvd.	Ward 1
Dundurn Park	610 York Blvd.	Ward 1
Dundurn Parkette	490 York Blvd.	Ward 1
Durand Park	250 Park St. S.	Ward 2
East Kiwanis Place Parkette	236 Ottawa St. N.	Ward 4
Eastdale Park	81 Lincoln Rd.	Ward 10
Eastmount Park	115 East 26th St.	Ward 7
Eastwood Park and Arena	111 Burlington St. E.	Ward 2
Edgelake Park	12 Church St.	Ward 10
Edward's Memorial Park	55 Mercer St., Dundas	Ward 13
Eleanor Park	80 Presidio Dr.	Ward 7
Elmar Park	140 Brigade Dr.	Ward 7
Eringate Park	45 Shadyglen Dr.	Ward 9
Ernie Seager Parkette (formerly Grays Rd Parkette)	655 Grays Rd.	Ward 10
Escarpment Open Space #1	220 Charlton Ave. E.	Ward 2
Escarpment Open Space #2	75 James Mountain Rd.	Ward 2
Escarpment Ward 1	534 Dundurn St. S., 600 Scenic Dr.	Ward 1
Escarpment Ward 2	460 Charlton Ave. E.	Ward 2
Escarpment Ward 3	side of Sherman Access; from west of Ottawa St. S. to Graham Ave S along north side of Mountain Brow; 259 Wentworth St. S.	Ward 3
Escarpment Ward 4	from Graham St. S. around Mountain Brow to Mohawk Sports Park; 15 Kennilworth Access	Ward 4
Escarpment Ward 5 - #1	50, 102, 129 Kimberley Dr., 3 Greenhill Ave.	Ward 5

Schedule "A" to By-law 11-080

Parks and Recreation Properties Where Smoking is Prohibited

Escarpment Ward 5 - #2	590 Greenhill Ave; 460 & 500 Quigley Rd.; 190 & 200 Country Club Dr.	Ward 5
Escarpment Ward 5 - #3	760 Greenhill Ave.; 104 Centennial Pkwy S.	Ward 5
Faircourt Park	40 Faircourt Dr.	Ward 9
Fairfield Park	1501 Barton St. E.	Ward 4
Fairgrounds Community Park	305 Fall Fair Way	Ward 11
Falkirk West Park	1030 Upper Paradise Rd.	Ward 8
Father Sean O'Sullivan Memorial Park #1	1141 Greenhill Ave.	Ward 5
Father Sean O'Sullivan Memorial Park #2	1139 Greenhill Ave.	Ward 5
Fay Avenue Park	95 Broker Dr.	Ward 6
Felker Park	41 John Murray St.	Ward 9
Ferguson Station Park	244 King St. E.	Ward 2
Fernwood Park	796 Ninth Ave.	Ward 6
Ferrie Street Lot	449 Wellington St. N.	Ward 2
Ferris Park	25 Lynwood Dr.	Ward 10
Fieldcote Memorial Park	64 Sulphur Springs Rd., Ancaster	Ward 12
Fifty Rd. Parkette	622 Fifty Rd.	Ward 11
Fisher's Mill Park	370 King St. W., Dundas	Ward 13
Flamborough Centre Park	969 Centre Rd., Flamborough	Ward 15
Fonthill Park	289 Wendover Dr.	Ward 8
Frederick Parkette	2 Frederick Ave.	Ward 10
Freelton Community Park	170 Freelton Rd., Freelton	Ward 14
Gage Park	1000 Main St. E.	Ward 3
Garner Rd. E. SWM	1131 Garner Rd. E., Ancaster	Ward 12
Garth St. Reservoir	327 Stone Church Rd. W.	Ward 8
Garth St/Twenty Rd. Open Space	1995 Garth St.	Ward 8
Gary Hill Parkette	80 Queen St. N.	Ward 2
Gatesbury Park	28 Niska Dr., Waterdown	Ward 15
Gatestone Open Space	70 Second Rd. W.; 131 Gatestone Dr.; 73 First Rd. W.	Ward 9
Gilkson Park	50 Gemini Dr.	Ward 8
Glanbrook Sports Complex	4300 Binbrook Rd.	Ward 11
Glen Allen Drive Natural Open Space	25 Glen Allen Dr.	Ward 10
Glen Castle Park	30 Glen Castle Dr.	Ward 5
Glen Manor - The Veevers Home	22 Veevers Dr.	Ward 5
Glendale Park	255 Rainbow Dr.	Ward 5
Glenhollow Open Space	18 Glenhollow Dr.	Ward 9
Glenholme Avenue Park	308 Glenholme Ave.	Ward 4
Glow Park	159 Mead Ave.	Ward 4
Golf Links Park #1	226 Seymour Dr., Ancaster	Ward 12
Golf Links Park #2	226 Seymour Dr., Ancaster	Ward 12
Golf Links Rd. Open Space #1	1225 Golf Links Rd., Ancaster	Ward 12

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Parks and Recreation Properties Where Smoking is Prohibited

Golf Links Rd. Open Space #2	1226 Golf Links Rd., Ancaster	Ward 12
Golf Links Rd. Open Space #3	1258 Golf Links Rd., Ancaster	Ward 12
Gore Park	1 Hughson St. S.	Ward 2
Gourley Park	142 Duncairn Cres.	Ward 8
Gourley Park Open Space	142 Duncairn Cres.	Ward 8
Green Acres Outdoor Pool	50 Randall Ave.	Ward 10
Green Acres Park	880 Queenston Rd.	Ward 9
Green Millen Trail	7 Shoreview Pl.	Trail
Greenhill Open Space #1	415 Greenhill Ave.	Ward 5
Greenhill Open Space #2	351 Mount Albion Rd., 400 Greenhill Ave.	Ward 5
Greenhill Park	589 Greenhill Ave.	Ward 5
Greenhill Reservoir	22 Webster Rd.	Ward 5
Greenside Acres Park	171 St. Margaret's Rd., Ancaster	Ward 12
Guy Brown Park	154 Brian Blvd.	Ward 15
H.G. Brewster Pool	200 Dewitt Rd.	Ward 10
Hamilton Amateur Athletics Assoc.	250 Charlton Ave. W.	Ward 1
Hamilton Beach Recreational Trail	Grays Rd.	Trail
Hamilton Children's Museum	1072 Main Street East	Ward 3
Hamilton Dr. SWM	439 Hamilton Dr., Ancaster	Ward 12
Hamilton Harbour Waterfront Trail (Bayfront Trail)	Bayfront Park to Desjardins Canal; 200 Harbourt Front Dr.; 355 Longwood Dr. N.	Trail
Hamilton Military Museum	610 York Blvd.	Ward 1
Hammer Park (formerly Powell Park)	53 Birch Ave.	Ward 3
Hampton Park	28 Lupin Ave.	Ward 6
Hannon South Open Space / Dog Park	1450 Rymal Rd. E.	Ward 6
Harmony Park	484 Annalee Dr., Ancaster	Ward 12
Harry Howell Arena	27 Highway 5 W.	Ward 15
Harvey Park	618 York Blvd.	Ward 1
Hayward Park	13 Dalkeith Ave.	Ward 3
Hemming Park Open Space	263 Jerseyville Rd. W, Ancaster	Ward 12
Henry & Beatrice Warden Park	55 Lake Ave. N.	Ward 5
Heritage Green Community Trust Leash-Free Dog Park, Open Space & Trail	297 First Rd. W.	Ward 9
Heritage Green Sports Park	355 First Rd. W. (excluding Heritage Green Sports Park City Yard)	Ward 9
High Park	630 Hendry Lane, Ancaster	Ward 12
Highland Gardens Park	55 Hillcrest Ave.	Ward 1
Highland Gardens Reservoir	55 Hillcrest Ave.	Ward 1
Highland Green Park	287 Highland Rd. W.	Ward 9
Highview Park	879 Brucedale Ave.	Ward 6
Hill Park Recreation Centre	465 East 16th St	Ward 7

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Parks and Recreation Properties Where Smoking is Prohibited

Hill Street Park / Lots/ community gardens	13 & 26 Hill St.	Ward 1
Hillcrest Park	8 Eastwood Rd.	Ward 4
Hillside Park	57 Hillside Avenue, Dundas	Ward 13
Hixon Parkette	308 Hixon Rd.	Ward 5
Holbrook Park	442 Sanatorium Rd.	Ward 8
Homebrook Park	204 Stagecoach Dr.	Ward 11
Honorable Bob Mackenzie Park	122 Province Street N.	Ward 4
Hopkins Rotary Park	19 Second St. N.	Ward 9
Hunter Estates Park	314 MacIntosh Drive	Ward 10
Hunter Street General Open Space	95 James St. S.	Ward 2
Huntington Park / Recreation Centre	40 Broker Dr.	Ward 6
Huntingwood Ave. Open Space	18 Huntingwood Avenue, Dundas	Ward 13
Inch Park / Arena / Outdoor Pool	400 Queensdale Ave	Ward 7
J.L. Grightmire Arena	35 Market St. S., Dundas	Ward 13
Jack C. Beemer Park	68 Victoria Ave N	Ward 3
Jackie Washington Rotary Park	363 Wellington St. North	Ward 2
Jackson Heights Open Space	170 Tanglewood Dr.	Ward 11
Jackson Heights Park	188 Tanglewood Dr.	Ward 11
Jackson Park	439 Jackson St. W.	Ward 1
James Smith Park	50 Braithwaite Avenue, Ancaster	Ward 12
Jerome Neighbourhood Park	1306 Upper Wellington St.	Ward 7
Jerseyville Park	2688 Jerseyville Road West	Ward 14
Jimmy Thompson Pool	1099 King St. E.	Ward 2
Joe Sams Leisure Park	752 Centre Rd (excluding Joe Sam's City Yard)	Ward 15
John Prentice Park	45 Renata Court, Dundas	Ward 13
John Santarelli Plateau Park	4 Millen Road	Ward 10
John Watson Park	77 1/2 Donn Ave.	Ward 9
John Willson Park	480 Winona Road	Ward 11
Johnson Tew Park	71 Tews Lane	Ward 14
Joshua Ave. Open Space	33 Joshua Ave., Ancaster	Ward 12
Joshua Ave. SWM	36 Joshua Ave., Ancaster	Ward 12
Kaga Corner	6 York Rd., Dundas	Ward 13
Kay Drage Park	150 Macklin St. N.	Ward 1
Keith Park	90 Burton St.	Ward 3
Kenilworth Access Parkette #1	255 Kenilworth Ave. S.	Ward 4
Kenilworth Access Parkette #2	250 Kenilworth Ave. S.	Ward 4
Kenilworth Access Parkette #3	230 Kenilworth Ave. S.	Ward 4
Kennedy East Open Space	165 Christopher Dr.	Ward 8
Kennedy East Park	130 Malton Dr.	Ward 8
Kernighan Neighbourhood Park	20 Forbes St.	Ward 8

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Parks and Recreation Properties Where Smoking is Prohibited

King Street Parkette	324 Highway 8	Ward 10
King Street West General Open Space	263 King St. W.	Ward 2
King Y Battlefield	70 King St. W.	Ward 9
King's Forest Park	150 Greenhill Ave	Ward 5
King's Mead Park	180 Lynbrook Dr.	Ward 8
Kinsman Park	387 Beach Blvd.	Ward 5
Kitty Murray Park	120 Kitty Murray Lane, Ancaster	Ward 12
Kopperfield Park	20 Idlewilde Lane	Ward 11
Laidman Park	170 Great Oak Trail, Binbrook	Ward 11
Lake Avenue Park	140 Lake Ave. N.	Ward 5
Lake Ontario Waterfront Trail	Bayfront Park and Desjardins Canal to Red Hill Valley	Trail
Lake Pointe Park	60 Westhampton Way	Ward 11
Langs Park	1119 Scenic Dr.	Ward 8
Lawfield Park / Arena	150 Folkstone Ave.	Ward 7
Lawrence P. Sayers Park	39 Lakegate Drive	Ward 10
Leadale Place Parkette	29 Leadale Place	Ward 8
Leaside Park	1155 Leaside Rd.	Ward 4
Leisure Park Open Space	752 Centre Rd	Ward 15
Leslie B. Couldrey Park	19 Bridlewood Drive, Dundas	Ward 13
Lifesavers Park	100 Cumberland Ave.	Ward 3
Lions Gate Park	79 Elmira Dr.	Ward 8
Lion's Outdoor Pool (Hemming Park)	263 Jerseyville Rd. W., Ancaster	Ward 12
Lisgar Park	95 Carson Dr.	Ward 6
Little Albert Park	1198 King St. E.	Ward 3
Little John Park	110 Little John Road, Dundas	Ward 13
Little League Park Ancaster (Spring Valley Bowl)	286 Jerseyville Rd., Ancaster	Ward 12
Little League Park Stoney Creek	880 Queenston Rd	Ward 9
Lucy Day Park	33 Clinton St.	Ward 3
Lynden Legion Park	206 Lynden Rd	Ward 14
Lynden Lions South Park	4070 Governor's Road	Ward 14
Macassa Bay Walkway	102 Harbour Front Dr.	Ward 2
Macassa Park	777 Upper Sherman Ave.	Ward 6
Macklin St. N. SWM	330 Macklin St. N.	Ward 1
Mahony Park	1655 Barton St E	Ward 4
Mansfield Park	141 Mansfield Drive, Ancaster	Ward 12
Maple Ave. Open Space	2 Maple Ave.	Ward 9
Maple Lane Park	157 Miller Drive, Ancaster	Ward 12
Mapledene Park	32 President Drive	Ward 10
Mapleside Park	13 Mapleside Ave.	Ward 1
Maplewood Green Park	155 First Road West	Ward 9
Maplewood Park	150 Second Rd. W.	Ward 9

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Parks and Recreation Properties Where Smoking is Prohibited

Margaret Street Park	17 Margaret Street, Waterdown	Ward 15
Marimat Gardens	30 Marimat Court, Dundas	Ward 13
Mark Anthony Graham Memorial Olympic Park	948 Mohawk Rd. W.	Ward 8
Marston Street SWM	268 Winterberry Dr.	Ward 9
Martino Memorial Park	147 King Street East, Dundas	Ward 13
Matilda Street Natural Playground	236 King St. W., Dundas	Ward 13
Matt Broman Park	645 Mountain Brow Blvd	Ward 6
McLaren Park	160 John St. N.	Ward 2
Meadowbank Parkette	44 Meadowbank Dr.	Ward 8
Meadowbrook Park	365 Wilson Street West, Ancaster	Ward 12
Meadowlands Park	160 Meadowlands Blvd., Ancaster	Ward 12
Meadowlands Soccer Pitch	933 Golf Links Rd, Ancaster	Ward 12
Memorial Park (Stoney Creek)	87 Glen Cannon Drive	Ward 10
Mill Street Open Space	300 Mill St., Dundas	Ward 13
Millgrove Community Park	855 Millgrove Side Rd	Ward 15
Mohawk / Sanatorium Parkette	260 Mohawk Rd. W.	Ward 8
Mohawk Gardens	1 Indian Cres.	Ward 7
Mohawk Meadows Park	645 Iroquois Avenue, Ancaster	Ward 12
Mohawk Sports Park	700 Mountain Brow Blvd. (excluding Mohawk Sports Park City Yard & excluding Lookout Lounge patio)	Ward 6
Montgomery Park	1570 Main St E	Ward 4
Moorland Park	160 Moorland Cres., Ancaster	Ward 12
Morton Park	50 Larraine Avenue, Dundas	Ward 13
Mount Albion Open Space	535 Mount Albion Rd. open space by Escarpment	Ward 5
Mount Hope Park	3027 Homestead Dr.	Ward 11
Mount Lions Park	450 Queen Victoria Dr.	Ward 6
Mountain Brow Park West	181 Mountain Park Ave.	Ward 7
Mountain Drive Park	935 Concession St.	Ward 6
Mountsberg Hall Park	2133 Centre Road	Ward 15
Mountsberg Park	2126 Centre Rd.	Ward 15
Mountside / Rifle Range Natural Open Space	1 Mountside Dr.	Ward 1
Mountview Park	115 San Antonio Dr.	Ward 8
Museum of Steam & Technology	900 Woodward Ave.	Ward 4
Myrtle Park	13 Delaware Ave.	Ward 3
Natural Open Space Ward 2	409 Queen St. S. / 405 Hess St. S.	Ward 2
Newcombe Rd. Open Space	74 1/2 Newcombe Rd., Dundas	Ward 13
Newlands Park	137 Lynbrook Dr.	Ward 8
Noble Kirk Park	1 Gavin Dr.	Ward 14
Norman Pinky Lewis Recreation Centre	192 Wentworth St. N.	Ward 3
Normanhurst Community Centre	1621 Barton St E	Ward 4

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Parks and Recreation Properties Where Smoking is Prohibited

North Central Community Park	467 Wentworth St. N.	Ward 3
North Wentworth Community Park	27 Hwy. 5, Millgrove	Ward 15
Norwood Park	187 Terrace Dr.	Ward 7
Oak-Knoll Park	701 Mountain Brow Blvd.	Ward 6
Oakridge / Lindsay Open Space	20 1/2 Oakridge Dr.	Ward 10
Oakwood Place Park	132 Sterling St.	Ward 1
Olympic Sports Park #1 and Olympic Arena	70 Olympic Dr., Dundas	Ward 13
Olympic Sports Park #2	71 Olympic Dr., Dundas	Ward 13
Open Space - 7 Innovation Drive	7 Innovation Dr.	Ward 15
Open Space - Aylmer Parkette	77 Mistywood Dr.	Ward 9
Open Space - North Wentworth Park #1	533 Hwy. 6	Ward 15
Open Space - North Wentworth Park #2	135 Hwy 5 W.	Ward 15
Open Space - North Wentworth Park #3	50 Clappison Ave.	Ward 15
Open Space - North Wentworth Park #4	182 Coreslab Dr.	Ward 15
Open Space Beside Coronation Arena	99 Macklin St. N.	Ward 1
Optimist Park (Ancaster)	237 Manitou Way, Ancaster	Ward 12
Palomino Ranch	6 Oldenburg Rd.	Ward 15
Paramount Drive Open Space	1 Chilton Dr; 2 Chilton Dr; 2 Pembroke St.	Ward 9
Paramount Park	1170 Paramount Dr.	Ward 9
Park Corridor	south side of the Lincoln Alexander Expressway from TB McQueston Park (Upper Wentworth St.) to Upper Ottawa Street; 140 Rexford Dr.; 15 Queenslea Dr.	Ward 6/7
Park Row North Parkette	190 Park Row North	Ward 4
Parkdale Park / Arena / Outdoor Pool	1770 Main St. E.	Ward 4
Peace Memorial Park	85 East 36th St.	Ward 6
Peace Park	530 Montgomery Dr., Ancaster	Ward 12
Peachwood Parkette	115 Peachwood Cres	Ward 10
Perth Park	300 Woodworth Dr., Ancaster	Ward 12
Pier 4 Park	64 Leander Drive	Ward 2
Pier 4 Park Trail	Pier 4 Park - Bay St N at Leander Dr.	Trail
Pinecrest Park	490 Evergreen Avenue, Ancaster	Ward 12
Pinky Lewis Parkette	169 Sanford Ave. N.	Ward 3
Pipeline Park	1203 Main St. E.	Ward 4
Pleasant Ave. Parkette	114 Pleasant Ave., Dundas	Ward 13
Postlawn Park	46 Fairlawn Court, Ancaster	Ward 12
R.T. Steele Park	45 Ellis Ave	Ward 4
Radial Park	1 Spruceside Ave.	Ward 1
Randall Park	140 Robson Cres.	Ward 7
Red Hill / Vincent Open Space	2400 King St. E.	Ward 5
Red Hill Bowl	1570 Lucerne Ave.	Ward 4
Red Hill Neighbourhood Park	320 Albright Rd.	Ward 5

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Parks and Recreation Properties Where Smoking is Prohibited

Richwill Park	27 Richwill Rd.	Ward 8
Riverdale East Park (Oaklands)	141 Vittorito Ave.	Ward 5
Riverwalk Park	5 Blueheron Lane, Carlisle	Ward 15
Robert E. Wade Ancaster Community Park	385 Jerseyville Rd. W.	Ward 12
Rockcliffe Gardens Park	40 Riley Street	Ward 15
Rockcliffe Gardens Woodlot	40 Riley Street	Ward 15
Rockview Summit Park	16 Grindstone Way, Waterdown	Ward 15
Rosebough Park	23 Rosebough Street, Greensville	Ward 14
Rosedale Arena	100 Greenhill Ave.	Ward 5
Rosedale Park / Pool	150 Greenhill Ave	Ward 5
Roxborough Park	70 Reid Ave. N.	Ward 4
Rushdale Park	130 Southpark Ave.	Ward 7
Ryckmans Neighbourhood Park & Natural Open Space	539 DiCenzo Dr.	Ward 7
Ryerson Recreation Centre	247 Duke St.	Ward 1
Sackville Hill Park	770 Upper Wentworth St	Ward 7
Saltfleet Arena	24 Sherwood Park Rd.	Ward 10
Sam Lawrence Park	255 & 371 Concession St.	Ward 7
Sam Lawrence Parkette	276 Concession St.	Ward 7
Sam Manson Park	80 Nash Rd. N.	Ward 5
Sanctuary Park	27 Sanctuary Dr., Dundas	Ward 13
Sanctuary Parkette	25 Sanctuary Dr., Dundas	Ward 13
Scenic Park	565 Aberdeen Ave.	Ward 8
Scenic Parkette	609 Scenic Dr.	Ward 8
Scenic Woods Park	220 Lavender Drive	Ward 12
Scott Park and Arena	1055 King St. E.	Ward 3
Seabreeze Park	75 Seabreeze Cres	Ward 11
Sealey Park	115 Main St S	Ward 15
Shamrock Park	105 Walnut St. S.	Ward 2
Shaver Estates Park	33 Brooking Crt	Ward 12
Shawinigan Park	1 Guildwood Dr.	Ward 8
Shawn Allen Eades Memorial Parkette (formerly Mohawk / Sanatorium Parkette)	260 Mohawk Rd. W.	Ward 8
Sheffield Ball Park	1227 Sheffield Rd	Ward 14
Sheldon Manor	22 Don Street, Dundas	Ward 13
Sherwood Meadows Park	14 Sherwood Park Rd	Ward 10
Sherwood Park	14 Sherwood Park Rd	Ward 10
Sherwood Vale Lot	15 Robinhood Drive, Dundas	Ward 13
Signature Park	950 Golf Links Road, Ancaster	Ward 12
Simcoe Street Lot	209 Simcoe St. E.	Ward 2

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Parks and Recreation Properties Where Smoking is Prohibited

Simcoe Tot Lot	38 Strachan St W.	Ward 2
Sir Allan MacNab Rec Centre and Park	145 Magnolia Dr	Ward 8
Sir Wilfrid Laurier Recreation Centre	70 Albright Rd.	Ward 5
Sir Winston Churchill Recreation Centre	1715 Main Street East	Ward 4
Skyway Park	189 Beach Blvd.	Ward 5
Smokey Hollow Park	150 Mill St. S., Flamborough	Ward 15
Somerset Park	256 Lloyminn Avenue, Ancaster	Ward 12
Southam Park	480 Upper James St.	Ward 8
Southampton Estates Park	185 Thames Way	Ward 11
Southbrook Park	111 Southbrook Dr.	Ward 11
Spring Valley Arena	29 Orchard Dr., Ancaster	Ward 12
St. Christopher Park	119 McAnulty Blvd.	Ward 4
St. Joseph's Dr. SWM	502 St. Joseph's Dr.	Ward 4
St. Joseph's Park	321 John St. S.	Ward 2
Stinson Street Playground	200 Stinson St.	Ward 2
Stoneham Park	50 Halson St., Ancaster	Ward 12
Stoney Creek Arena & Community Park	37 King St. E.	Ward 9
Stoney Creek Recreation Centre	45 King St. W., Stoney Creek	Ward 9
Stoneywood Park	271 Winterberry Drive	Ward 9
Strabane Community Park	1315 Brock Rd.	Ward 14
Strachan Street General Open Space	29 & 51 Strachan St. W.; 36, 76, 98, 134 Strachan St. E.; 376 Ferguson Ave.; 400-358, 399 James St. N.; 329-335 Hughson St. N.	Ward 2
Stroud Road Park	145 Stroud Rd.	Ward 1
Summerbrook Park	301 Brookview Crt., Ancaster	Ward 12
Summerlea West Park	151 Binhaven Blvd., Binbrook	Ward 11
Summit Park	215 Pinehill Dr.	Ward 11
T. B. McQuesten Park and Park Corridor	1199 Upper Wentworth St	Ward 7/6
T. Melville Bailey Park	45 Cloverhill Rd.	Ward 8
Talbot Lot	2121 Barton St. E.	Ward 4
Tapleytown Men's Club Park	315 Mud Street East	Ward 11
Tapleytown Park	368 Mud Street East	Ward 11
Templemead Park	30 Independence Dr.	Ward 6
Thorner Park	100 Deerborn Drive	Ward 7
Tim Horton's Stadium	75 Balsam Ave. N.	Ward 3
Todd Ofield Memorial Park	205 Orkney Rd.	Ward 14
Tom Street Park	92 Tom St.	Ward 1
Tower Park	46 Woodend Drive, Carlisle	Ward 15
Town Square Park	79 King Street East	Ward 9
Trenholme Open Space	135 Trenholme Cres.	Ward 6
Trenholme Park	135 Trenholme Cres.	Ward 6
Trillium Open Space	1135 North Service Rd.	Ward 11

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Parks and Recreation Properties Where Smoking is Prohibited

Troy Tot Lot	2310 Highway 5 W.	Ward 14
Turnball	232 Kirkwood Dr., Dundas	Ward 13
Turner Park	344 Rymal Rd. E. (excluding Turner Park City Yard)	Ward 7
Tweedsmuir	50 Victoria Ave. N.	Ward 3
Tyne Place Park	10 Tyne Place	Ward 8
Upper King's Forest Park	701 Mountain Brow Blvd	Ward 6
Upper Wellington / Fennell Park	244 Fennell Ave. E.	Ward 7
Valens Park	1818 Valens Rd	Ward 14
Valley Community Centre Park	287 Old Guelph Rd, Dundas	Ward 13
Valley Park Aquatic Centre, Community Centre, Arena and Pool	970 Paramount Dr	Ward 9
Veevers Park	688 Greenhill Ave.	Ward 5
Veterans Memorial Park	105 Huntingwood Ave., Dundas	Ward 13
Veterans Park Open Space	105 Huntingwood Ave., Dundas	Ward.13
Victoria Park	500 King St. W.	Ward 1
Village Green Park	291 Lodor St., Ancaster	Ward 12
Vincent / Gershome Open Space	2730 King St. E.	Ward 5
Vincent Massey Park	East 37th St. & 7th Ave.	Ward 6
Volunteer Field Park	27 Olympic Dr., Dundas	Ward 13
Walkers Outdoor Pool	Stonechurch Rd. E. and DiCenzo Dr.	Ward 7
Warren Park	46 1/2 Tally Ho Dr., Dundas	Ward 13
Waterdown Memorial Park	200 Hamilton St. N.	Ward 15
Waterford Park	10 Waterford Cres.	Ward 11
Wellington Park	399 King St. E.	Ward 3
Westdale North Open Space	203 Paradise N., 19 Macklin N., 182 Longwood N.	Ward 1
Westmount Recreation Centre	39 Montcalm Dr.	Ward 8
White Deer Park	25 Whitedeer Rd.	Ward 9
White Deer Park Natural Open Space	206 Gatestone Dr.	Ward 9
Whitehern	41 Jackson St. W.	Ward 2
Whitton Parkette	57 Whitton Rd.	Ward 4
Wildan Extension Park	3 Savona Cres, Freelton	Ward 15
Wildan Tot Lot	1 Wildan Drive, Freelton	Ward 15
Wildwood Park	639 Greenravine Dr., Ancaster	Ward 12
William Connell Park	1086 West 5th St.	Ward 8
William McCulloch Park	200 Bonaventure Dr.	Ward 8
William Schwenger Park	86 Claudette Gate	Ward 8
Windermere Basin Park	105 Eastport Dr.	Ward 4
Winona Park	1328 Barton St. E.	Ward 11
Winterberry Drive Open Space	400 Winterberry Dr.	Ward 9
Witherspoon Park	70 Witherspoon Dr.	Ward 13

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Parks and Recreation Properties Where Smoking is Prohibited

Woodburn Ball Park	1040 Golf Club Rd.	Ward 11
Woodlands Park	501 Barton St E	Ward 3
Woodlot Royal Conservatory	576 7th Concession Rd. E.	Ward 15
Woodward Park	589 Woodward Ave.	Ward 4
Woolverton Park	90 Charlton Ave. E.	Ward 2
York Blvd. General Open Space	889 York Blvd.	Ward 1
York Blvd. Parkette #1	12 York Blvd.	Ward 2
York Blvd. Parkette #2	397 York Blvd.	Ward 1
York Blvd. Parkette #3	324 York Blvd.	Ward 1
York Blvd, Parkette #4 (formerly York St.)	250 York Blvd.	Ward 2
Yorkshire Heights Park	106 Watsons Lane, Dundas	Ward 13

INFORMATION REPORT

TO:	Mayor and Members Board of Health
COMMITTEE DATE:	May 14, 2018
SUBJECT/REPORT NO:	Suitability of Bayfront Beach as a Public Beach (BOH16008(b)) (City Wide)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Eric Mathews (905) 546-2424, Ext. 2186 Gavin Norman (905) 546- 2424, Ext. 4812
SUBMITTED BY & SIGNATURE:	Kevin McDonald Director, Public Health Services - Healthy Environments Division Healthy and Safe Communities Department

Council Direction:

Not Applicable.

Information:

The purpose of this report is to inform Council of the outcome of activities completed in 2017 in support of recommendations from the Bayfront Beach Water Quality Investigations Study for the rehabilitation and maintenance of Bayfront Park to achieve reliable safe water quality for swimming.

In February 2016, shortly after initiation of the study, Public Health Services (PHS) advised Public Works Environmental Services Division that Bayfront Beach should be closed until action is taken to improve the water quality. Report BOH16008 - Suitability of Bayfront Beach as a Public Beach reported on the closure by Public Health Services. Environmental Services staff took immediate action and the beach has since been closed to swimming.

On March 21, 2016, following the closing of Bayfront Park Beach to swimming and in response to report BOH16008 - Suitability of Bayfront Beach as a Public Beach (Item 5.2), the Board of Health directed the following:

> That staff be directed to provide the Board of Health with a presentation on the outcome of the study on the Suitability of Bayfront Beach as a Public Beach, in the fall of 2016.

On April 20, 2017, staff reported back to the Board of Health on the study outcomes and preliminary recommendations outlined in Report (BOH16008(a)). The study findings confirmed the following factors are adversely affecting the water quality at Bayfront Beach:

- Physical characteristics of the beach, e.g. beach slope, sand moisture and grain size, and water circulation near the beach;
- Sources of pollution near the beach (predominantly waterfowl faeces) and within the general watershed of Hamilton Harbour, and;
- The occurrence of cyanobacteria blooms (Blue Green Algae).

To mitigate theses factors, it was recommended to start with low cost interventions in 2017 that might improve water quality, via monitoring implementation of the intervention and water quality. Interventions were also implemented at Pier 4 beach work due to its proximity to Bayfront Beach and similar water quality issues.

Report (BOH16008(a)) also indicated that prior to reopening Bayfront Beach for public use, action to improve the water quality needs to be implemented and a consistent improvement in water quality needs to be verified.

Recommended measure(s) included the continued use of bird control (with enhancements and new methods) and beach sand management strategies (including increased grooming and cleaning) as the best and most cost effective way to manage water quality related to *E.coli* contamination. For Blue Green Algae (BGA) blooms it was recommended to test the use of ultrasound technology to reduce its impact at the beach.

Through the 2017 season the study team was able to implement and measure the effect of bird control measures, but with high water levels, increased beach grooming was not possible as the beaches were under water. Despite implementing these measures throughout the 2017 swimming season, there was only a modest improvement in water quality related to *E.coli* and the use of ultrasound to treat Blue Green Algae had no effect at all. Another method of treating beach sand with hydrogen peroxide was also tested and found to be ineffective at reducing contaminants. To see the water quality

assessment for public beaches in Hamilton see Appendix A – Hamilton Public Health Services 2017 Beach Monitoring Report.

Overall, efforts to improve water quality failed and results in the 2017 Beach Monitoring Report indicate that BGA continues to be the predominant factor in closing the Harbour beaches to swimming (in recent years BGA has been responsible for beach closing greater than 50% of the available swimming days in the season). This is important in that without a practical way to control BGA it is unlikely that there will be a consistent and verifiable improvement in water quality even with significant reduction in *E.coli* contamination of the beach. Without a solution to the BGA issue, the Study Team is not recommending any further remedial efforts to restore the beach for swimming at this time.

Going forward, the Study Team intends to reconvene and discuss opportunities for the beach area on the basis that it will remain closed indefinitely for swimming. This will include revisiting options that envisaged converting the space to a wetland or for another recreational activities. Staff will then report to Public Works Committee respecting on how to proceed.

In the meantime, Parks and Cemeteries staff will continue with bird control measures at Bayfront Park as it is an important element of keeping the park clean and safe and will continue to do the same at Pier 4 Park beach. Although testing of water at Bayfront Park beach will cease, Public Health Services will continue to test water quality at Pier 4 Park beach through the 2018 swimming season. Pier 4 Beach is anticipated to be open and operated as a public beach during the 2018 swimming season. However, PHS will likely recommend closure of Pier 4 Beach (similar to Bayfront Beach) for the 2019 swimming season if a significant improvement in water quality does not occur at Pier 4 Beach during the 2018 monitoring season.

Appendices/Schedules Attached:

Appendix A to Report BOH16008(b) - Hamilton Public Health Services 2017 Beach Monitoring Report

Hamilton

Public Health Services - Healthy Environments Division
Healthy and Safe Communities Department
110 King Street West, 2nd Floor, Hamilton, ON L8P 4S6
Phone: (905) 546-2424, Ext. 3570
Fax: (905) 546-2787

Hamilton Public Health Services 2017 Beach Monitoring Report

This is an annual update regarding Hamilton Public Health Services (PHS) recreational water quality monitoring at Hamilton's public beaches and the activities undertaken by stakeholders to improve the water quality at these beaches.

Background

The Ontario Public Health Standards (OPHS) specify the public health programs and services Boards of Health must provide. Program and topic-specific protocols under the OPHS further define the minimum responsibilities every Board of Health is accountable to provide. The Recreational Water Protocol (2016) and the Beach Management Guidance Document (2014) direct Boards of Health on the delivery of local public health programs to assist in the prevention and reduction of water-borne illness and injury related to recreational water use at a public beach. A public beach is a public bathing area owned/operated by a municipality where the general public has access and there is reason to believe that there is recreational use of the water.

During the 2017 swimming season Hamilton PHS conducted routine beach surveillance at three beaches along Lake Ontario and three conservation area beaches. PHS also monitored water quality at two beaches in Hamilton Harbour; however they both remained closed to users. Pier 4 Park Beach was closed due to high water levels and was used as a temporary boat launch by a local boating club. Bayfront Park Beach was closed to users in 2016, and remained closed to users in 2017 due to history of poor water quality. PHS resumed water quality monitoring at Bayfront Beach in 2017 to assist in the evaluation of the effectiveness of various strategies that were implemented to improve the water quality at the beach.

Inspections are conducted before the swimming season begins, and at least once per week during the season to monitor the safety of the public bathing areas and establish strategies for the management of health hazards.

Water Quality Monitoring

PHS monitors the safety of public beaches by collecting and testing the beach water for E. coli at least once per week during the swimming season, which typically begins after Victoria Day in May and ends on Labour Day in September. E. coli are naturally found in the intestines of humans and warm-blooded animals. High numbers of E. coli in the water at public beaches indicate the presence of faecal contamination and the potential presence of other harmful microorganisms in the water. The recreational water quality guideline in Ontario is 100 E. coli Colony Forming Units (CFU's) per 100 ml of water. E. coli concentrations at or above this level could represent an increased risk of infection to swimmers.

The Beach Management Guidance Document (2014) states that a minimum of five samples must be collected at each beach and the geometric mean (GM) of E. coli concentrations must be used to assess recreational water quality and guide public health action. When the GM of E. coli concentrations are at or above 100 CFU's per 100 ml of water, warning signs are posted at the affected beach to advise potential bathers that the water may pose a health risk and the beach is deemed as unsafe for swimming. Additionally, PHS updates the City of Hamilton's Beach Water Quality Website www.hamilton.ca/beaches and the Safe Water Information Line outgoing phone message (905-546-2189) to reflect the current beach water quality status.

Cyanobacteria (Blue-Green Algae)

Cyanobacteria or blue-green algae (BGA) are microorganisms which occur naturally in aquatic environments and flourish in warmer, slow-moving or still waters with high nutrient levels and sufficient sunlight. Some cyanobacteria produce microcystin toxins which are the most commonly produced toxin of the cyanobacterial toxins. Microcystin toxins are tasteless, colourless and odourless and are toxic to both humans and animals. Typical exposure routes are through skin contact or ingestion/inhalation while swimming.

PHS monitors public beaches for the presence of microcystin toxins throughout the swimming season. The Canadian Recreational Water Guideline for microcystin concentrations in recreational water is 20 parts per billion (ppb). When potential toxin-producing BGA blooms are observed at a public beach PHS uses Abraxis™ test strips to measure the concentration of microcystin toxins in the water samples. When high concentrations of microcystin toxins are measured, the beach is closed and a swimming advisory is issued. PHS posts beach closure signs and issues a media release. The City of Hamilton's Beach Water Quality website (www.hamilton.ca/beaches) and the Safe Water Information Line (905-546-2189) are also updated.

2017 Beach Monitoring Results

The 2017 public beach monitoring program took place over a 15-week period, beginning the week of May 22 and ending the week of September 4. The following table on page 3 summarizes the data for the 2017 swimming season at eight public beaches in Hamilton. Although Bayfront and Pier 4 Beaches were monitored in 2017, the beaches were closed to users.

Lake Ontario beaches were open 92% to 98% of the time. Binbrook, Christie and Valens Conservation Areas Beaches were open 84%, 98% and 79% respectively. Although Bayfront Beach and Pier 4 Beach were closed to public use for the swimming season due to different reasons, the water quality was very poor; Bayfront Beach water quality was acceptable 27% of the time and Pier 4 Beach water quality was acceptable 30% of the time (Table 1).

Hamilton Harbour Beaches

Hamilton Harbour Beach Management Group meets at least twice per year to share research and discuss issues, projects and activities being done in and around Hamilton Harbour to improve the recreational water quality at the harbour beaches. Members of the group include staff from Hamilton Public Health Services, Hamilton Harbour Remedial Action Plan (RAP),

Environment and Climate Change Canada, City of Hamilton Public Works Department, and the Bay Area Restoration Council (BARC).

Table 1: 2017 Beach Monitoring Program Summary

Name of Beach	Total # of Days in Bathing Season	# of Days Beach Posted due to *E. coli*	# of Days Beach Closed due to BGA	Total # of Days Beach Closed	Total # of Days Beach Open	% of Days Beach Open
Hamilton Harbour Beaches						
Bayfront Beach*	105	22	55	77	28	**27%**
Pier 4 Beach*	105	18	55	73	32	**30%**
Lake Ontario Beaches						
Beach Boulevard	105	2	0	2	103	**98%**
Van Wagner's	105	8	0	8	97	**92%**
Confederation Park	105	6	0	6	99	**94%**
Conservation Area Beaches						
Binbrook Conservation	105	13	4	17	88	**84%**
Christie Conservation	105	2	0	2	103	**98%**
Valens Conservation	105	22	0	22	83	**79%**

***Bayfront and Pier 4 Beaches were closed to users in 2017**

The percentage of days that public beaches are open during the swimming season is an indicator of the recreational quality of the water at Hamilton's public beaches. Hamilton Harbour remains on the Great Lakes Areas of Concern (AOC) List. As a result, stakeholders have developed a Remedial Action Plan (RAP) for Hamilton Harbour in order to identify the challenges in the harbour and how they may be addressed. One criterion that needs to be satisfied in order to remove Hamilton Harbour from the AOC List is that harbour beaches must be open for swimming 80% of the time.

Bayfront Beach

The OPHS require Public Health Units to determine the suitability of a public beach for public recreational use. Due to a history of poor water quality at Bayfront Beach, PHS advised Hamilton Public Works that Bayfront Beach is not a suitable recreational area and that Bayfront Beach should be closed in 2016 until action is taken to improve the water quality. Bayfront Beach was closed for the 2016 season and Hamilton PHS did not monitor the water quality. In 2016-17 a water quality study took place by the City of Hamilton Public Works Department and the Hamilton Waterfront Trust in order to assess the historical water quality data for Bayfront Beach and provide potential fixes and use options. Activities undertaken in 2017 to improve the water quality at Bayfront Beach included increased waterfowl surveillance

and harassment and habitat modification. PHS resumed water quality monitoring in 2017 to assess the effectiveness of efforts to improve the water quality. Water quality was monitored four days per week for E. coli concentrations and microcystin toxins. Bayfront Beach water quality was acceptable 27% of the time during the 2017 season (Fig. 1), a slight increase from 22% in 2015.

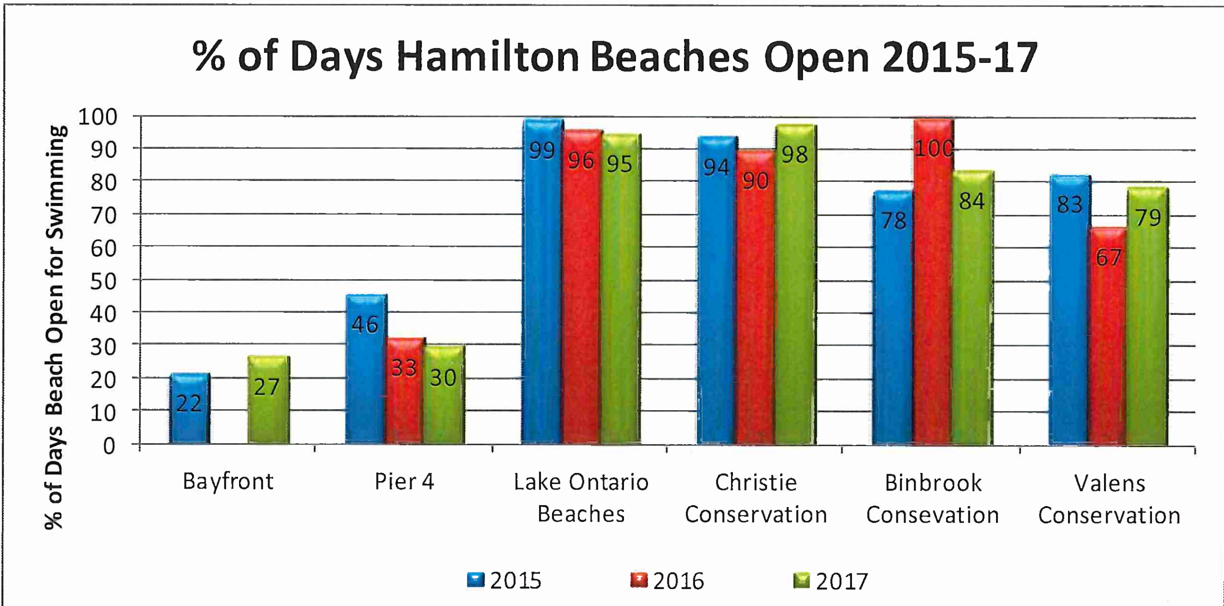


Fig. 1: Percentage of Days Hamilton Beaches Open 2015-17

High levels of E. coli concentrations have been an ongoing concern at Bayfront Beach and the water quality continues to remain very distant from meeting the Remedial Action Plan (RAP) delisting criteria of 80% open (Fig. 2)

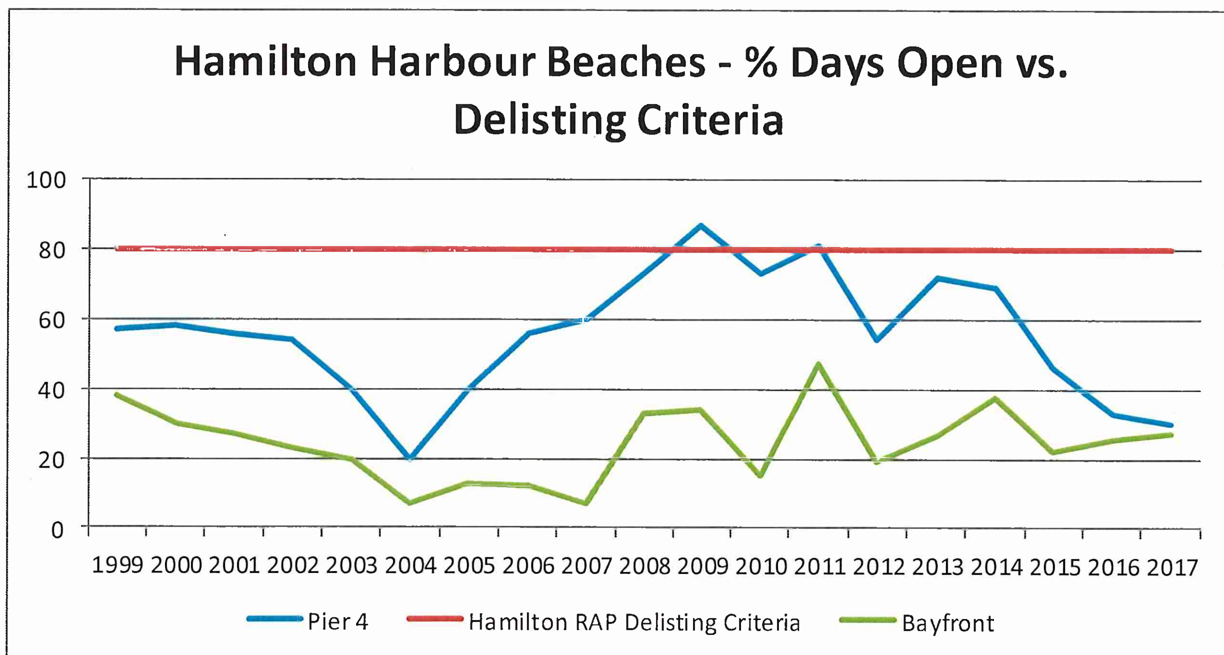


Fig. 2: Hamilton Harbour Beaches - Percentage Days Open vs. Delisting Criteria

Research has shown that high levels of bacteria are introduced to the water by waterfowl faecal droppings. Droppings can contaminate the water directly and indirectly through storm water runoff and beach sand. Bayfront Beach E. coli concentrations reached or exceeded 1000 CFU's per 100 mL of water several times during the 2017 season (Fig. 3). These events occurred in late May, on June 21, July 17 and in late August 2017. On several of these occasions the E. coli concentrations were safe for swimming on the days immediately prior to and after sudden spikes in E. coli concentrations. The high E. coli concentrations in late May were also observed at Pier 4 Beach and may have been caused by rainfall events, Combined Sewer Overflow (CSO) events and/or high water levels in Hamilton Harbour. However, the spikes in E. coli concentrations that happened later in the swimming season do not appear to be related to rainfall events, CSO events, or other environmental variables. This might indicate that the source of the E. coli at Bayfront Beach is localized near Bayfront Beach. When E. coli concentrations fluctuate drastically within very short time periods, risk to human health is greater due to the 24hour delay between collecting a water sample and receiving lab test results. If Bayfront Beach had not been closed for the 2017 season, beach users could have been placed at a significant risk of being exposed to pathogenic microorganisms.

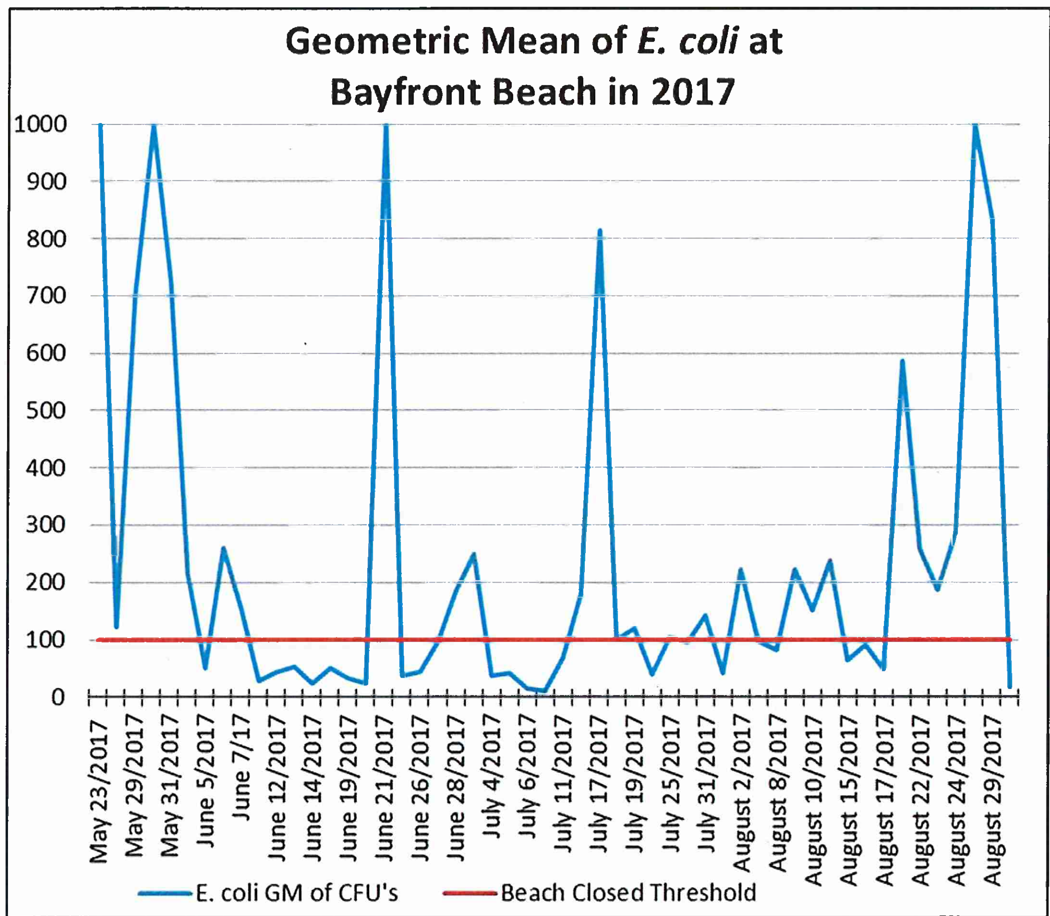


Fig. 3: Geometric Mean of E. coli at Bayfront Beach 2017

On July 12, 2017 microcystin concentrations from cyanobacteria were detected and exceeded warning levels at Bayfront Beach and the Bayfront Park Boat Launch. Public Health Services issued a media release to inform the public and stakeholders of the presence of microcystin toxins and beach closure signs were posted at the sites. The microcystin toxin-producing

cyanobacteria were present in the harbour for the remainder of the swimming season, and would have accounted for a 52% closure of the beach over the 2017 season.
Microcystin toxins have become a predominant reason for beach closures in Hamilton Harbour due to their tendency to remain well established in the harbour after they are detected. PHS continued to monitor for E. coli concentrations during cyanobacterial blooms. Data shows that had cyanobacteria not been present Bayfront Beach water quality would have been unsafe for swimming 50% of the time due to high E.coli levels. In 2017, Bayfront Beach water quality was unsafe 73% of the swimming season, with microcystins accounting for 32% of the swimming season when water quality did not meet the recreational water guidelines. Poor water quality due to cyanobacteria has been increasing over recent years and when coupled with high levels of E. coli bacteria, Bayfront Beach water quality is unsafe for swimming for the majority of swimming seasons. Despite activities undertaken to improve the water quality at Bayfront Beach in 2017, Hamilton Public Health Services cannot recommend that Bayfront Beach is suitable for public recreational.

Pier 4 Park Beach

Pier 4 Park Beach was closed to users during the 2017 season due to high water levels and was used as a temporary boat launch facility for a local boat club. Although the beach was closed to users, Public Health Services continued to monitor water quality. Pier 4 Park Beach has experienced a steady decrease in percentage of days open for swimming during the 2015-17 swimming seasons (Fig. 1). The percentage of days open at Pier 4 beach dropped to 30% in 2017 from 46% days open in 2015, and 33% days open in 2016. Pier 4 Park Beach also continues to remain very distant from meeting the Remedial Action Plan (RAP) delisting criteria of 80% (Fig. 2).

E. coli concentrations peaked in late May at Pier 4 Beach reaching 1000 CFU's per 100 mL of water on May 29, 2017. Unlike Bayfront Beach however, E. coli concentrations at Pier 4 Beach did not reach such levels again for the remainder of the swimming season (Fig. 4).

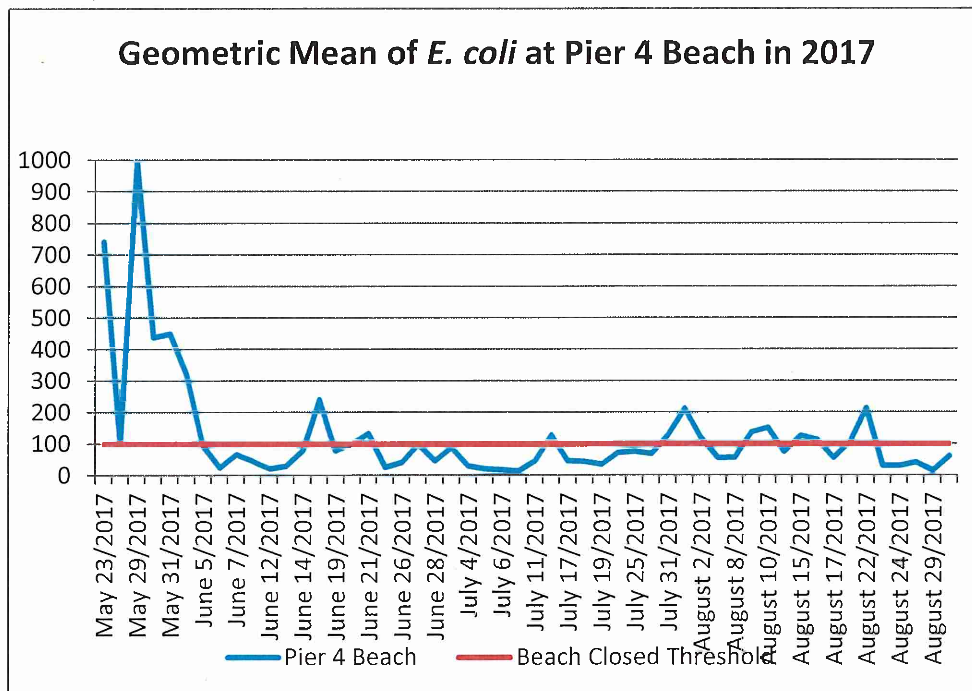


Fig. 4: Geometric Mean of E. coli at Pier 4 Beach in 2017

Microcystin concentrations from cyanobacteria were detected and exceeded warning levels at Pier 4 Park Beach on July 12, 2017 and were present in the harbour for the remainder of the season. Microcystin toxins alone would have closed the beach 52% of the season. A prolonged closure due to microcystin toxins would have been the predominant reason for closure at Pier 4 Park Beach, had it been open in 2017; contributing to the lowest percentage of days open yet at 30%. Pier 4 Park Beach experienced a record high water level in 2017 making planned activities to improve the water quality very challenging, as very little beach area remained. Pier 4 Park Beach would have been open to users for 67% of the season despite the high water levels, if microcystin producing cyanobacteria were not present. Hamilton Public Health Services will continue to monitor Pier 4 Park beach in 2018 as interventions to improve the water quality at this beach continue. PHS will likely recommend closure of Pier 4 Beach (similar to Bayfront Beach) for the 2019 swimming season if a significant improvement in water quality does not occur during the 2018 monitoring season.

Changes to the Ministry of Health and Long-Term Care (MOHLTC) Recreational Water Protocol 2018

In January 2018 the MOHLTC released a revised Recreational Water Protocol under the Ontario Public Health Standards, titled Operational Approaches for Recreational Water Guideline 2018. There is one noteworthy change in this new document that has the potential to affect the number of days that the water quality at public beaches will meet the MOHLTC beach water quality criteria. The MOHLTC has increased the water quality criteria from a geometric mean of less than or equal to (<) 100 E. coli Colony Forming Units (CFUs) to < 200 E.coli CFUs, or when the E. coli concentration in a single water sample is < 400 E. coli CFUs.

PHS staff reviewed 2017 beach monitoring data for Bayfront Beach to assess the effect this change would have had on the 2017 monitoring report for Bayfront Beach. Applying the 2018 water quality criteria to the 2017 lab test results at Bayfront Beach indicates the water quality at Bayfront Beach would have met the water quality criteria for E. coli 10% more often in 2017. A 10% increase in meeting the new water quality criteria is a poor result when the acceptable amount of E. coli in recreational water has been increased 100%. With the occurrence of BGA in Hamilton Harbour, the water quality at Bayfront Beach in 2017 would have met the new 2018 water quality criteria only 5% more often.

INFORMATION REPORT

TO:	Mayor and Members Board of Health
COMMITTEE DATE:	May 14, 2018
SUBJECT/REPORT NO:	Co-Locating Naloxone with Automated External Defibrillators (BOH18005) (City Wide)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Jan Johnston (905) 546-2424, Ext. 3055
SUBMITTED BY & SIGNATURE:	Michelle Baird Director, Public Health Services, Epidemiology, Wellness and Communicable Disease Control Division, Healthy and Safe Communities Department

Council Direction:

The Board of Health, at its meeting on December 4, 2017, received and referred the correspondence from the corporation of the City of Kingston, respecting a motion passed at the Kingston City Council Meeting on November 7, 2017 regarding naloxone to the Medical Officer of Health and the General Manager, Community and Emergency Services Department.

Executive Summary:

At the time of Kingston's motion, the federal and provincial changes to enhance appropriate and accessible harm reduction services had not yet occurred. The naloxone expansion to frontline workers and first responders, as well as the allowance of overdose prevention sites, to provide necessary health services to help reduce the growing number of overdose deaths affecting the most vulnerable populations in Ontario, occurred after the motion. Responding within the climate at the time, Kingston's motion resulted in the placement of two naloxone kits with Automated External Defibrillators (AEDs) in fourteen city-owned and operated facilities where AEDs currently exist. The co-location of naloxone with AEDS remains ineligible for Ministry of Health and Long-Term Care (MOHLTC) funding and thus Kingston incurs costs through their levy. Kingston, Frontenac, Lennox and Addington (KFL&A) public health staff responsible for the naloxone expansion program have recently reported the naloxone kits placed in these city facilities have remained unused.

Public Health Services (PHS) assessed the feasibility of placing two naloxone kits (two doses of intranasal naloxone spray per kit) with AED at city-owned and operated facilities where AEDs currently exist. Given the expanded availability of naloxone kits, the costs associated with such a program, and the potential for a more targeted approach, implementing such a program in Hamilton is not recommended at this time. Staff will report back on naloxone expansion as it progresses.

Background:

In September 2017, the MOHLTC provided 100% funding, under Ontario's Opioid Strategy, to each local board of health (BOH) to support building sustainable outreach and response capacity to address drug and opioid-related challenges in their communities to:

- Implement, maintain and/or expand local opioid-related response initiatives;
- Act as naloxone distribution leads for eligible community organizations, and;
- Support the implementation and/or enhancement of early warning systems to ensure the timely identification of, and response to, a surge in opioid overdoses.

An Opioid Response Plan and Enhancement of Early Warning Systems were created with input from various community partners. Specific objectives of the plan are to:

- Develop communication channels for the collection and sharing of relevant surveillance data to detect increases in opioid activity (www.hamilton.ca/opioidmonitoring);
- Facilitate a coordinated response to a surge in opioid activity:
- Establish the foundation for a long term Drug Strategy, and;
- Identify ways for community organizations to work together to combat the opioid issue and provide access to relevant resource material.

PHU-led expansion of the Ontario Naloxone Program (ONP) was announced by the MOHLTC on September 1, 2017 that Public Health Units would be able to order naloxone kits for eligible organizations including: Community Health Centres (including Aboriginal Health Access Centres); AIDS Service Organizations; Outreach organizations; Shelters; and Withdrawal management programs. These organizations must also:

- Work directly with drug-using populations at risk of opioid overdose through harm reduction programming, outreach and/or social determinants of health;
- Reach a difficult to reach (priority) population not otherwise served where there is known drug using/opioid activity, and;
- Has demonstrated staffing capacity to manage naloxone distribution/training with clients, inventory, and reporting to the ONP site.

Hamilton PHS is currently working on the process of enacting this expansion, which includes the development of:

- an application and approval process;
- a training program;
- an inventory management system data collection tools;
- a Ministry of Health and Long-Term Care reporting process; and,
- a Memorandum of Understanding for each organization.

Expansion to Police and Fire Services was launched January 28, 2018 by the MOHLTC and the Ministry of Community Safety and Correctional Services as an expansion of the ONP. On March 28, 2018, Council approved the "expanded use of naloxone on Hamilton fire vehicles" in which PHS Staff will support this naloxone expansion initiative (as above). Hamilton Police Services has also indicated that they will take part in the expanded naloxone program.

In less than eighteen months, Hamilton PHS staff distributed a total of 2601 naloxone kits, and 744 people were reported as being revived by the kits.

Participating Ontario pharmacies offer free injectable and nasal spray naloxone kits. A prescription is not required to access naloxone via pharmacies, however, it is required that a client show their health card. Through pharmacies a client can receive naloxone as well as training on how to recognize an opioid overdose and how to use the naloxone kit. This is an additional venue where naloxone is being made available to the community. In fact over the period September 2017 to February 2018 pharmacies in Hamilton distributed 1679 naloxone kits to clients.

Assessment:

AEDs

In Hamilton, there are around 250 AEDs in City of Hamilton facilities; each monitored by paramedics (includes libraries, rec centres/community centres). Epinephrine Auto Injectors are co-located with AEDs in which Recreation Centre staff is responsible for monitoring maintaining auto injectors in their facilities.

Overdoses

There is no current efficient means of accessing data from Hamilton Paramedic Services regarding the number of 911 overdose calls to City of Hamilton facilities as the system doesn't support this type of data extraction (manual audit would be required if data requested). The SIS PWID survey, among 48 people who had overdosed in the past, 69% reported last overdosing at a residence. From the Hamilton Paramedic Services data, most 911(55%) calls for suspected opioid overdoses occur at a residence:

Place	% of 911 Calls
Residence	55%
Street	20%
Public Place	16%
Other	20%

Cost Estimates

To locate two nasal naloxone kits with every AED located at City of Hamilton facilities approximate costs would be over $49,500 as well as the cost of around $4000-$6000 for customizing the 'Track your AED' web-based data base, to allow for tracking of AED co-located nasal naloxone. PHS costs for staff training (group training is upwards of 60 min/each session) as well as processes for monitoring and maintaining naloxone co-located with AEDs would need to be determined.

Future Naloxone Expansion

Although there may be an increase of the accessibility of naloxone by conveniently co-locating with AEDs in facilities such as recreation centres throughout the City of Hamilton, there is no existing evidence supporting that it is an effective response to the opioid crisis. The resource strain (staffing, distribution and maintenance of naloxone kits; training for City of Hamilton (COH) staff; the possibility that the locale may increase the chances of individuals accessing city facilities for the purpose of getting naloxone for the use of opioids; and the MOHLTC will not support this type of expansion suggest that a targeted approach would be more effective in building a sustainable response that is culturally and demographically appropriate. PHS will be exploring expansion at "hotspots" within the City of Hamilton. Hotspots could include COH facilities that have reported overdoses; staff that interact often with people at highest risk for overdose. Locale can be informed by Hamilton Paramedic Services consultation, MOHLTC consultation as well as the SIS study which demonstrated the area of greatest need and concentration of people who use drugs and are at risk for overdose.

PHS, along with community partners continues to address the opioid community crisis through opportunities such as naloxone expansion, delivery of harm reduction services via the mobile harm reduction van and supporting the implementation of an overdose prevention site. In addition PHS continues to monitor opioid surveillance data, including improving access to data such as paramedic data, in order to inform decision making related to opioid response.

Appendices Attached:

Appendix "A" to Report BOH18005 - Kingston City Council Minutes, Nov 7, 2017

11.3

Office of the City Clerk

November 8, 2017

Via email

To all Municipalities in Ontario with populations greater than 40,000:

Dear Sirs/Madames:

RE: Kingston City Council Meeting, November 7, 2017 – Motion Regarding Naloxone

At the regular meeting of Kingston City Council held on November 7, 2017, Council approved the following resolution, as amended, requesting that all municipalities in Ontario, with a population greater than 40,000, consider indicating their support for this most important initiative:

> **Whereas** opioids, include hydromorphone, oxycodone, fentanyl, carfentanyl, morphine, and heroin are a class of drug used primarily for pain relief; and
>
> **Whereas** Canada is among the top prescribers of opioids in the world, and Ontario has the highest opioid-dispensing rates in the country with nearly 2 million Ontarians dispensed an opioid in 2014/15, which totalled approximately 9 million dispenses putting roughly 15% of Ontarians on prescription opioids ; and
>
> **Whereas** opioids act as depressants on the respiratory system, which can slow or stop breathing, and lead to overdose and death if misused; and
>
> **Whereas** opioids are also accessed illicitly, either through diverted prescriptions or through the illegal drug market resulting in community crises in many parts of Canada and Ontario; and
>
> **Whereas** there has been an increase in opioid-related emergency department visits and admissions to hospital in Kingston and confirmed cases of both bootleg fentanyl and carfentanyl in the KFL&A region; and
>
> **Whereas** the presence of opioids such as fentanyl and the even stronger carfentanyl in the KFL&A and other illegal drug markets is concerning because Fentanyl can be 50 to 100 times more toxic than morphine, and even tiny amounts - the equivalent to one or two grains of salt - can cause overdose and death; and
>
> **Whereas** fentanyl and carfentanyl are being illegally mixed into a range of other drugs, such as heroin, cocaine, counterfeit pills such as Percocet and oxycodone, and cannabis increasing the risks that individuals can unintentionally consume these powerful opioids increasing their risk of overdose and death; and

Whereas KFL&A community partners are developing a comprehensive community response to tackle the opioid crisis that focuses on prevention, treatment, harm reduction, enforcement and surveillance; and

Whereas a comprehensive approach to reduce the morbidity and mortality from opioid intoxication and overdose includes increasing the availability of Naloxone in the community; and

Whereas Naloxone is a medication that can temporarily reverse an overdose caused by opioid drugs, and can save a life by keeping an individual alive while they wait for emergency support to arrive;

Therefore Be It Resolved That the City of Kingston partner with KFL&A Public Health to:

a) endorse the placement of two Naloxone kits with each Automated External Defibrillator (AED) in all city owned and operated facilities where AEDs currently exist with appropriate signage so that all staff and members of the public trained to use Naloxone kits are aware of their location and can respond safely to an overdose using naloxone; and

b) implement an education and training program on how to use Naloxone, in accordance with the Community Drug Strategy coordinated by KFL&A Public Health; and

That the City of Kingston encourage the provincial government through the responsible Ministers to work together to make Naloxone Kits easily available in all communities, and that the Province enact legislation and regulations as needed to limit the liability on non-paramedic responders when administering the drug to treat an overdose; and

That this resolution be forwarded to all municipalities in Ontario, with a population greater than 40,000, with the request that they consider indicating their support for this most important initiative; and

That this resolution be forwarded to the Association of Municipalities of Ontario, with the request that they include proposing a community drug policy that includes access to Naloxone in their respective engagements with the provincial government; and

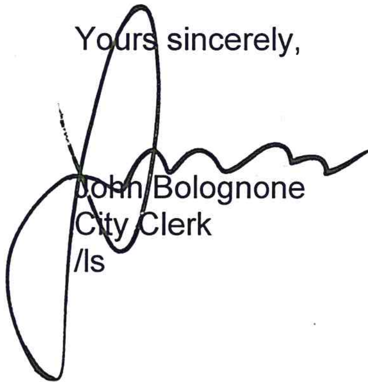
That this resolution be shared with the Premier of Ontario, all opposition leaders, the ministers of Health and Long-Term Care, opposition health critics, our local MPPs, the four school boards, and all City funded organizations; and

That the Government of Ontario consider measures to immediately and directly address over-prescription of legal narcotics by licensed physicians.

The Corporation of the City of Kingston
216 Ontario Street, Kingston, ON K7L 2Z3
Phone: (613) 546-4291 ext. 1247 Fax: (613) 546-5232 jbolognone@cityofkingston.ca

Should you have any questions, please do not hesitate to contact me.

Yours sincerely,



John Bolognone
City Clerk
/ls

The Corporation of the City of Kingston
216 Ontario Street, Kingston, ON K7L 2Z3
Phone: (613) 546-4291 ext. 1247 Fax: (613) 546-5232 jbolognone@cityofkingston.ca

INFORMATION REPORT

TO:	Mayor and Members Board of Health
COMMITTEE DATE:	May 14, 2018
SUBJECT/REPORT NO:	Integrated Pest Management Best Practices Including the Use of Acaricides to Mitigate Tick Populations (BOH18019) (City Wide)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Latchman Nandu (905) 546-2424, Ext. 5813 Connie DeBenedet (905) 546-2424, Ext. 3576
SUBMITTED BY & SIGNATURE:	Kevin McDonald Director, Public Health Services - Healthy Environments Division Healthy and Safe Communities Department

Council Direction:

The Board of Health at its meeting on March 19, 2018, passed a motion requesting that public health staff investigate the pros and cons of public use of pesticides for mitigating tick populations.

Background:

In 2018, the majority of City of Hamilton became an estimated risk area for Lyme disease. The estimated risk area covers a 20 kilometre radius from where the blacklegged ticks were discovered through annual multi-seasonal active tick surveillance. The area includes all parts of the city, except parts of Stoney Creek and Glanbrook (refer to map of estimated risk area, Appendix A). There is a higher estimated risk of encountering a blacklegged tick within a risk area, although blacklegged ticks could still be found outside of this area.

Lyme disease is an infection caused by the bacterium *Borrelia burgdorferi*. Lyme disease is spread to humans through the bite of infected blacklegged ticks (*Ixodes*

scapularis) and infection does not occur until the tick has been feeding for at least 24 hours.

This information report provides an overview of Integrated Pest Management (IPM) best practices including the use of acaricides (a pesticide that kills ticks, mites and related pests) to reduce tick populations.

Local Tick Data Statistics

The most common tick species submitted by the public to the City of Hamilton passive surveillance program is the American dog tick. Less frequently, blacklegged ticks, squirrel ticks or other types of ticks are submitted.
American dog ticks do not transmit Lyme disease and are considered a nuisance pest, not normally associated with illness in our geographical area. The graph below (Figure 1) shows the number of ticks submitted over a five-year period, from 2013 to 2017.

Of the 892 ticks submitted in 2017, 78 blacklegged ticks were found locally, i.e., within the City of Hamilton. Seven of these ticks have tested positive for the Lyme disease bacteria (*Borrelia burgdorferi*) and one tick tested positive for *Anaplasma phagocytiphilum*—an infection with this bacteria can cause anaplasmosis.

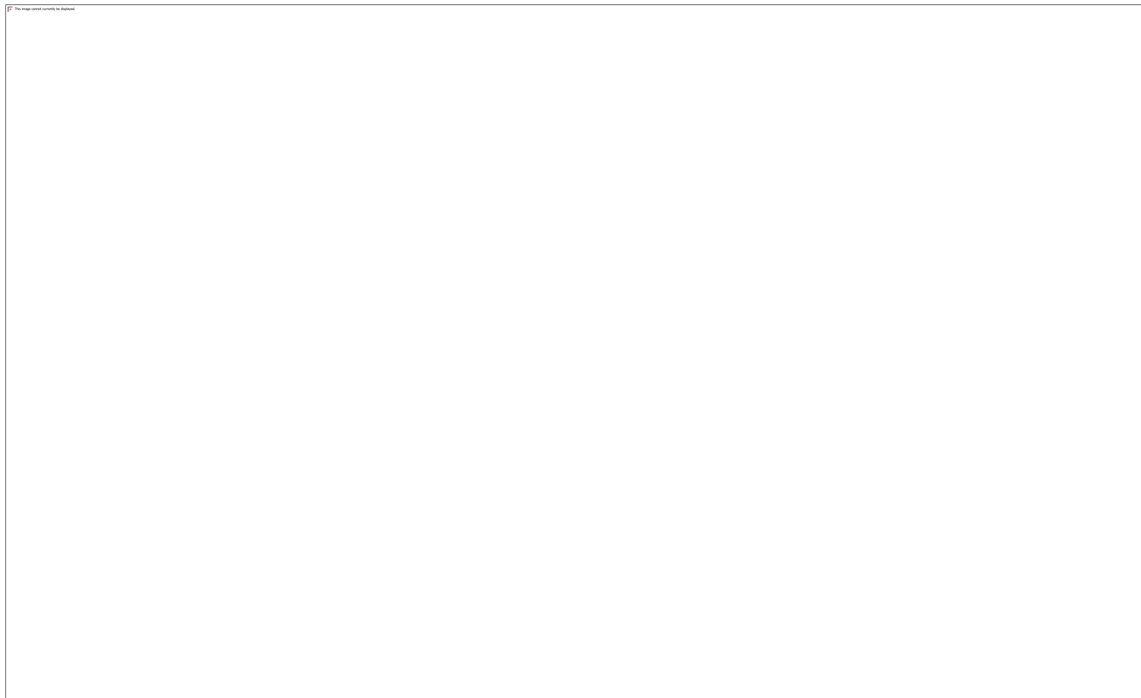


Figure 1: Annual Submissions of Ticks to the City of Hamilton, 2013-2017

Tick Ecology: Ticks, their hosts and environment

Ticks grow and reproduce by feeding on the blood of animals at different life stages. A tick's life cycle is comprised of four stages: egg, six-legged larvae, eight-legged nymph, and adult. Blacklegged ticks have a two-year life cycle; figure 2 illustrates the life cycle of blacklegged ticks. After hatching, a tick feeds at each life stage in order to survive[1]. Fed ticks will drop off the host after each feeding in order to moult into the next life stage[1]. The tick will then attach to a new host and continue the life cycle[1].

At the early stages, larvae and nymph ticks will feed on small to medium sized hosts such as rodents, birds, cats and other small mammals[2]. Due to its abundance, the white-footed mouse is the most common host species at this stage of tick development[1]. This is also the stage at which ticks can be infected by bacteria carried by host animals.

Adult ticks typically feed on wider ranging large animals, such as the white tailed deer. In the last stage, after feeding an adult female tick will seek out a sheltered area, produce a batch of 1,000-18,000 eggs, and die[1]. Once hatched, larval ticks will climb low vegetation such as grasses and low groundcover plants where they will await a host animal to feed[1], [2].

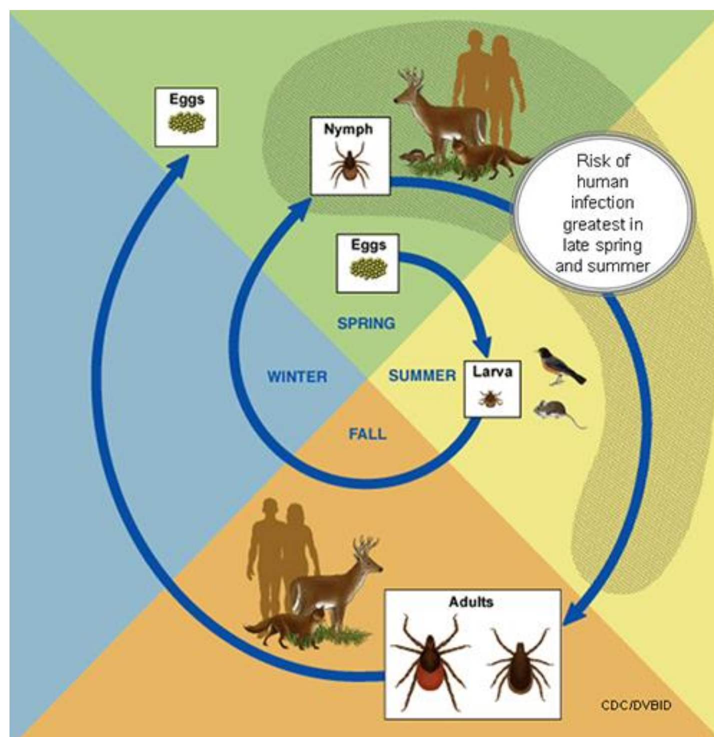


Figure 2: Life cycle of a blacklegged tick (image source: CDC)

Ticks must make direct contact with a host to gain access to feed. Since they cannot fly or jump, they will climb to the highest point of nearby, low-growing vegetation where they will cling with their front legs outstretched until they are able to make contact with a passing host—this action of looking for a host is called questing[1]. Once contact is made, the tick will attach itself to the animal to feed, where it can remain for several days[1].

A tick becomes infected with the Lyme disease causing bacteria when feeding on the blood of an infected host animal[2]. Small mammals are the known reservoir, and deer are not a source of the bacteria[1].

The ideal tick habitat for blacklegged ticks consists of a forested area with a dense shrub layer and deep litter layers[3]. The shrub layer vegetation and leaf litter provide moist, cool conditions, while providing cover and food resources for a variety of host animals[3]. Humans are accidental hosts as ticks can feed off any vertebrates including mammals, birds and reptiles[3].

Further, since hosts seem to be more abundant along forest edges, ticks tend to be more abundant at the margins of woodlands compared to forest interiors[1,3]. In residential settings, the majority of blacklegged ticks will be found within woods and associated edges, while about 10% occur in landscaped areas, particularly those with dense groundcover plantings[3]. Given the unfavorable microclimate, ticks are rarely found on lawns beyond a few feet from wooded edge[3].

Tick Management on Private Property– An IPM approach

Homeowners should be encouraged to use an integrated pest management (IPM) approach to managing ticks. Studies done on the use of acaricides to control tick populations on the perimeter of residential properties reported no impact on the risk of preventing tick bites and contracting Lyme disease[4]. Although the use of acaricides reduced the abundance of ticks in treated backyards, it did not eliminate the risk of ticks migrating from neighbouring properties, dropping off of animals (or pets) or reduce the possibility of a tick bite while doing recreational activities[4]. The use of prevention and personal protective measures that include frequent tick checks, dressing appropriately, and use of insect repellents along with the prompt removal of ticks helps to decrease the risk of contracting Lyme disease and other tick borne diseases.
An IPM approach to controlling ticks should include habitat management, biological controls, exclusion/reduction in hosts and the use of host targeted chemical controls[1,3].

1. Habitat management practices includes frequent mowing in landscaped areas, removing leaf litter, trimming back overhanging shrubs or tree branches. The goal of habitat management is to make tick friendly habitats undesirable. See Appendix B for a list of actions that can be taken.

2. Biological Control activities can include the use of predators, parasitoids or pathogens to reduce the population of a particular pest. Researchers have studied the impact of nematodes and pathogenic fungi as possible control methods. One product using pathogenic fungi is licensed for use in Canada.
3. Host exclusion/ reduction activities includes efforts to exclude or reduce the abundance of host animals such as the white-footed mice and the white- tailed deer on property by making the habitat less desirable usually by fencing or removal of food sources.
4. Host targeted chemical control involves the application of chemicals directly to host animals to target or repel ticks that might be feeding on the host animal. For people, this might include the use of insect repellents such as DEET or Icaridin.

In field studies, some limited success has been demonstrated around the use of biological controls, host exclusions/reduction and chemicals targeted to host animals. Best practices and the scientific research around tick management is still emerging.

Availability and use of Acaricides

Staff conducted a review of the Pest Management Regulatory Agency (PMRA) pesticide registry, consulted with the local office of the Ontario Ministry of Environment and Climate Change (MOECC) and surveyed local pest control operators to determine what approved chemicals are available for the control of ticks. The following products for tick control have been approved for commercial use: DeltaGard and Met52 EC Bioinsecticide. Additionally a plant based product (Mosquito Barrier) has been approved for use by home owners.

DeltaGard SC Insecticide (Bayer, 5% Deltamethrin, Registration # 28791) is a broad spectrum insecticide. This product is a commercial class product that is not available to homeowners and must be applied by a licensed Pest Control Operator. According to the product label, DeltaGard can be applied to turf areas including areas adjacent to forested areas, stonewalls, ornamental plantings and overgrown vegetation. Broadcast spraying with this chemical is not permitted (only perimeter spraying can be conducted) and use is limited to two applications per year.

Research conducted on the use of the active ingredient deltamethrin demonstrated that with a single application, there was a 90% or greater reduction in tick density[5]. However, this class of synthetic pyrethroids has a potential to cause unintended negative environmental impacts including being a known toxicant to aquatic organisms, non-target terrestrial plants, bees and other beneficial insects. Another drawback to the use of this chemical, is the potential for ticks to develop resistance to this class of pesticides.

A biological control product using pathogenic fungi spores is approved for use by commercial applicators. Met52 EC Biopesticide (Novozymes BioAg Limited, *Metarhizium anisopliae* strain F52, Registration # 30829) is approved for outdoor turf and greenhouse agricultural use. Ticks and target insects that come into contact with the fungus will become infected. The fungal spores once germinated will begin to grow inside the tick, causing the tick to die. A five-year study in New York is underway to determine the effectiveness of this product when used with other interventions to control ticks at a neighbourhood level[6].

Home owners and pest control operators are able to source Mosquito Barrier (Upper Canada Organic Products Inc, 99.3% Garlic juice, Registration # 31022) from a number of garden centres/distributors or purchase the product online. This product is a liquid insect repellent that is a concentrated garlic juice solution that is sprayed on plants, shrubs, and turf to repel mosquitoes and ticks. The product label claims that natural sulfurs in garlic repel mosquitoes and ticks. Re-application is indicated after heavy rainfalls and use is prohibited near aquatic habitats, irrigation or drinking water supplies.

In a survey of local pest control companies, at least one company reported the use of DeltaGard as a part of an integrated pest management approach to controlling ticks. Cost of treatment is dependent on the number of treatments and the size of the property. The service manager reported around 20 active clients around the Hamilton/ Niagara area. Another pest control company is investigating the use of Mosquito Barrier and other plant based or natural extracts to control ticks. No PCOs reported using Met52 EC biopesticide.

The effectiveness of acaricides is impacted by the seasonal activity patterns of blacklegged ticks[3]. For example, nymphal ticks are most active during late spring, early summer; the use of acaricides to target nymphs will have little impact on the larval or adult stage or even other types of ticks, since they are active at different times of the year.

In summary, the use of tick management strategies should include an integrated pest management approach that utilizes cultural practices to reduce tick habitats around the home owner's property with the goal of making the area around a home less favourable for ticks and their host.

Lyme disease prevention activities planned for 2018

Health promotion messaging will focus on increasing awareness of the following Lyme disease prevention tips:

- Know your ticks & where to expect them
- Prevent tick bites

- Do a tick check
- Remove ticks quickly using the correct methods
- Know the signs & symptoms

Social Media Campaigns:

Throughout this year, targeted messaging using social medial (Facebook, Twitter and Instagram) will be done. These activities include using promoted tweets, guest posting on Facebook, paid ads on popular webpages.

Education and Outreach:

Plans include sharing of resources and conducting presentations to internal and external stakeholders (Hamilton-Burlington trail council, outreach to local gardening groups, children recreational camps and information sharing with garden centres and landscape supply companies). A continuing education event for family physicians and veterinarians is underway and would include information on Lyme disease and ticks.

Factsheet and Resource Development:

Development of resource material is underway with the help of an outside marketing company. Factsheets focusing on at-risk populations and control measures homeowners can take to control ticks are also being created.

City of Hamilton Integrated Tick Management Plan:

Internal staff from various City departments including, public works, planning and economic development, risk management, health & wellness are working alongside external stakeholders from the Royal Botanical Gardens, Hamilton Conservation and Halton Conservation Authorities to develop a tick management plan for the City. The goal of the working group and this plan is to summarize the best practices for the management of ticks on private and public properties. And to make use of a risk based decision framework to guide mitigation activities.

Appendices/Schedules Attached

Appendix A to Report BOH18019 - City of Hamilton Lyme disease estimated risk area include risk
Appendix B to Report BOH18019 - Integrated Pest Management practices to prevent ticks in a backyard

References

[1] Stafford, Kirby C. Tick Management Handbook: An integrated guide for homeowners, pest control operators, and public health officials for the prevention of tick-associated disease. Connecticut: The Connecticut Agricultural Experiment Station, 2007

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[4] Hinckley, Alison F, et al. "Effectiveness of Residential Acaricides to Prevent Lyme and Other Tick-borne Diseases in Humans." The Journal of Infectious Diseases 214 (2016): 182-188.

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Appendix A to Report BOH18019
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City of Hamilton, Ontario

Hamilton
Healthy and Safe Communities

LYME DISEASE ESTIMATED RISK AREA, 2018

20 KM RADIUS | ROADWAY | PARK & CONSERVATION AREA | CITY BOUNDARY

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Integrated Pest Management practices to prevent ticks in a backyard

There are a number of ways to make your backyard less suitable for tick survival. These simple landscaping practices should form part of an integrated pest management approach to managing ticks:

- Mow your lawns frequently and keep leaves raked.
- Remove leaf litter, tall grasses, and brush from around homes, stonewalls, wood piles, and along the edge of lawns.
- Consider trimming, pruning trees around lawns to let in more sunlight.
- Plant deer resistant plant varieties or install fencing to exclude deer.
- Discourage rodent activity by removing woodpiles or stacking wood neatly in dry areas away from the home.
- Place bird feeders in open areas away from the home and consider feeding birds only during winter months when ticks are less active. In addition to birds, feeders can attract other tick hosts including mice and other rodents.
- Position playground equipment, decks, and patios in sunny locations away from yard edges, if possible.
- Install a 3-ft wide barrier of wood chips, mulch, or gravel between lawns and wooded areas and around swing sets and other recreational areas to minimize tick migration.
- Remove trash, brush piles, old furniture and other debris that offer places for tick hosts to hide.

This list of recommendations is put out by the Centers for Disease Control and Prevention (CDC), The Tick Handbook and the UMaine Cooperative Extension. Similar recommendations will be adapted in a factsheet aimed at homeowners.

CITY OF HAMILTON
PUBLIC HEALTH SERVICES
Healthy Environments Division
and
HEALTHY AND SAFE COMMUNITIES DEPARTMENT
Recreation Division

TO:	Mayor and Members Board of Health
COMMITTEE DATE:	May 14, 2018
SUBJECT/REPORT NO:	Recreation's Healthy Food and Beverage Action Plan (BOH18014/HSC18019) (City Wide)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Suzanne Neumann, (905) 546-2424 Ext. 3808 Romas Keliacius, (905) 546-2424 Ext. 4722
SUBMITTED BY & SIGNATURE:	Kevin McDonald Director, Healthy Environments Division Healthy and Safe Communities Department Chris Herstek Director, Recreation Division Healthy and Safe Communities Department

RECOMMENDATION

(a) That the General Manager of Healthy and Safe Communities be authorized to develop and implement a Recreation Healthy Food and Beverage Action Plan that increases availability of healthy food and beverage options while also reducing reliance on bottled water at City recreation facilities. The action plan will:

(i) Increase healthy food and beverage choices based on the identified Food and Beverage Guidelines;

(ii) Upon the expiry of existing corporate food and beverage contracts, assess renewals and/or newly proposed contracts for alignment with product offerings identified in Food and Beverage Guidelines;

(iii) Reduce availability of bottled water and investigate alternative healthy beverage options;

(iv) Promote and provide education about tap water and healthy food and beverage choices, and;

(v) Encourage volunteer-operated concessions within City of Hamilton facilities to eliminate the sale of bottled water and sugary drinks.

(b) That the item respecting, "Implications of Banning the Sale of Bottled Water at Municipal Locations" be removed from the Board of Health Outstanding Business List.

EXECUTIVE SUMMARY

Recreation spaces are key community spaces that can positively benefit the health of people of all ages. They provide an ideal location to promote a healthy food environment, as they already support physical activity and active lifestyles. Recreation has made some progress towards improving the nutrition environment in City-owned recreation facilities including reducing trans fats in fries and frying oil, standardizing beverage serving sizes, introducing healthier bars and expanding dairy offerings; however, it has been difficult to make large scale changes. The climate is currently suited to develop and implement healthy choice guidelines to reduce sugary drinks and to increase and promote healthy food and beverage options within recreation vending machines and over-the-counter food service locations.

Additionally, Public Health and Public Works were directed to review the broader implications of banning the sale of bottled water at municipal locations, while promoting water (particularly Hamilton municipal water) as the healthiest possible beverage choice. A healthy food and beverage action plan with an approach to consumer education, product availability, profitability and promotion will provide Recreation with the ability to assess service impacts, monitor and evaluate changes, respond efficiently, and ensure all actions are achievable and align with Our Future Hamilton priorities and the Food Strategy (Recommendation 9).

Recreation's Healthy Food and Beverage Action Plan will be comprised of six sections that are implemented over a three year period. Appendix "A" to Report BOH18014/HSC18019 is an infographic that summarizes the Action Plan. These sections involve identifying new food and beverage guidelines, then applying the guidelines to increase access to healthy food and beverage options in publicly-owned

facilities. A large focus is placed on strategies to promote both access to municipal drinking water and the benefits of healthy eating. A key feature of the Action Plan is to monitor, adapt and adjust every year to ensure that the Recreation Division is successful in increasing healthy food and beverage alternatives.

Alternatives for Consideration – Not Applicable

FINANCIAL – STAFFING – LEGAL IMPLICATIONS

Financial: Recreation's Food Service Unit is budgeted to generate $748,840 in revenue for 2018. There will be an unknown impact on revenue as it is difficult to predict how customers' purchasing patterns will shift. The approximate annual revenues associated with the sale of bottled water and sugary drinks are $20,000 and $44,000, respectively.

It is possible that these changes could have a negative impact on profitability (e.g. lower margins, high spoilage costs), based on the experiences of other large municipalities. The Food Service Unit intends on maintaining this existing budget and making up any losses through the sale of new products, new revenue streams (e.g. reusable water bottles, non-food vending, etc.), and strategic pricing of menu items.

Staffing: There are no staffing implications associated with Report BOH18014/HSC18019.

Legal: There are no legal implications associated with Report BOH18014/HSC18019. Staff will continue to work with existing vendors to provide an expanded selection of healthier options until completion of contracts.

HISTORICAL BACKGROUND

The following past events relate to the sale of food and beverages within City recreation facilities:

On June 1, 2006, the Community Services Committee received a report about Healthy Nutritional Environments in City Recreational Facilities (Report CS06015), which stemmed from the endorsement of recommendations for Creating Healthy Nutrition Environments in Schools and discussions about how recreation environments could support these actions.

On April 13, 2010, the Committee of the Whole received a report about Bottled Water (Report CS10035/PW10035), which recommended that the General Managers of Public Works and Community and Emergency Services be authorized to implement a strategy

to reduce reliance on bottled water at City facilities and events. The strategy included creating a social awareness campaign and increasing access to municipal drinking water wherever possible.

On March 2, 2011, the Emergency and Community Services Committee received a report (Report CS10035(a)) that provided the timelines associated with the strategy to reduce reliance on bottled water.

On May 26, 2011, the Senior Management Team approved the Corporate Healthy Food and Beverage Policy. An interdepartmental task group was formed to develop a plan to phase in the application of the Policy to vending machines, concession stands, and other operations where food is provided for sale to employees and/or the public. The projected impact on revenue and the uniqueness of the consumer environment versus the employee environment was a limitation to moving forward at that time.

The Public Works Committee, at its meeting in November 2012, received a report on the requirements for Hamilton to achieve recognition as a "Blue Community" (Report PW12090). Banning the sale of bottled water in public facilities and at municipal events is one of the three action items required for this recognition. The report concluded that, "While many of the goals of the Blue Communities Project are consistent with the objectives of the City of Hamilton, current and future funding opportunities available to the City would likely jeopardize the ongoing designation and as such it is not recommended that the City pursue the issue any further." This report was received by Council on November 28, 2012.

The Board of Health, at its meeting of August 11, 2016, endorsed a ten-year Hamilton Food Strategy (Report BOH13001(d)), which included Recommendation 9: Increase the amount of healthy, local food in publicly owned facilities to make the healthy choice the easy choice and Action 9.1: Reduce access to unhealthy foods in public facilities, particularly where vulnerable groups visit (e.g. children).

The General Issues Committee (GIC), at its meeting of December 7, 2016 approved the following:

(a) That Public Health and Public Works staff be directed to review the broader implications of banning the sale of bottled water at municipal locations, while promoting the drinking of water (particularly Hamilton municipal water) as the healthiest possible beverage choice.

The Board of Health, at its meeting of June 19, 2017 received a report on strategies to reduce excess sugary drink intake (Report BOH17022) and approved the following recommendations:

(e) That Public Health Services and Recreation work together to investigate the feasibility of creating healthy choices guidelines in recreation facilities that;
   (i) Aim to reduce sugary drinks and increase healthy options within vending machines and over-the-counter food service locations, and;
   (ii) Address food and drink advertising, promotion, and display with a focus on healthy options; and

(f) That staff within Public Works include water drinking fountains as an option during the public consultation and conceptual design phases of new park developments.

The Board of Health, at its meeting of March 19, 2018 received a report (Report BOH16024(a)/HSC18012) that discussed the feasibility of peanut restrictions in City facilities and approved the following recommendation:

(a) That signage indicating common allergens (e.g. nuts, dairy) that are contained in the food products available at concessions be posted to educate and assist with food purchase decision making for clientele.

POLICY IMPLICATIONS AND LEGISLATED REQUIREMENTS

There are no policy implications or legislated requirements associated with Report BOH18014/HSC18019.

RELEVANT CONSULTATION

The Healthy Environments and Recreation Divisions in the Healthy and Safe Communities Department worked collaboratively to design an Action Plan that is both healthy and realistic to operationalize. As part of this work, the project team consulted with:

- Public Works, Water – Discussed collaboration on promotional strategies for tap water;
- Public Arena Survey – In March 2017, a Food and Beverage Survey was conducted in three Arenas. This survey solidified that the people who buy food at our arenas would likely buy healthier options if they were priced competitively; and,
- Other Municipalities – Through the development of the Healthy Food and Beverage Action Plan, several municipalities were contacted in an effort to gain knowledge on best practices. Information was collected on banning bottled water and their healthy food strategies in Recreation. This information helped shape the City of Hamilton's Action Plan.

ANALYSIS AND RATIONALE FOR RECOMMENDATION

The Issue

In June 2017, Public Health Services and Recreation committed to work together to investigate the feasibility of creating healthy choices guidelines in recreation facilities (Report BOH17022). Recreation spaces are key community spaces that can positively benefit the health of people of all ages. They provide an ideal location to promote a healthy food environment, as they already support physical activity and active lifestyles. The following rationale reinforces that the climate is suited to develop and implement a comprehensive Healthy Food and Beverage Action Plan specific to City-owned recreation facilities:

- Key Directions from Our Future Hamilton Community Vision to:
  - Create an environment that promotes active and healthy living to support a high quality of life for residents;
  - Encourage all food providers to offer local, nutritious food options, education, and information about nutrition; and,
  - Facilitate physical and economic access to healthy, locally sourced and nutritious food for residents.
- Ecological concerns about bottled water sales;
- Council direction to review the broader implications of banning the sale of bottled water at municipal locations, while promoting the drinking of water (particularly Hamilton municipal water) as the healthiest possible beverage choice;
- Opportunity to augment municipal drinking water promotion in recreation facilities;
- A criterion within the Corporate Healthy Food and Beverage Policy that requires the use of municipal tap water rather than bottled water at City meetings and events;
- Approval of the Food Strategy implementation plan;
- Purchase and installation of a commercial fridge/freezer unit, using funds from the Healthy Kids Community Challenge, which will enable the Food Services Unit to centrally store and deliver a greater selection of healthy products;
- Request for proposal for snack vending nearing completion, and;
- Recommendation to post signage about common allergens (e.g. nuts, dairy) contained within the food products available at concessions to educate and assist with food purchase decision making for clientele.

A healthy food and beverage action plan with a comprehensive approach to consumer education, product availability, profitability and promotion will allow Recreation to appropriately assess service impacts, monitor and evaluate changes, respond efficiently, and ensure all actions are achievable and align with the Guiding Principles.

Guiding Principles

The Recreation Healthy Food and Beverage Action Plan details a three year phased implementation with indicators of milestone achievement and continuous review of

project targets. The detailed Guiding Principles (Appendix "B" to Report BOH18014/HSC18019) will inform the development of this plan and continue to guide the work as it progresses. The following is a summary of the principles:

- Access to Healthy Food and Beverages
- Free and Convenient Access to Tap Water
- Environmentally-Sustainable Drinking Water Services
- Financially-Sustainable Food Services
- Availability of Nutrition Information for Customers
- Socially-Responsible Marketing

Food and Beverage Guidelines
The Food and Beverage Guidelines (Appendix "C" to Report BOH18014/HSC18019) provide direction to help Recreation procure and prominently feature nutritious food and beverages that support good health and optimal participation in recreational settings. The guidelines were informed by "Eating Well with Canada's Food Guide", national nutrient criteria recommendations, and latest evidence. As the action plan progresses, adjustments to the criteria may be necessary to align with the latest nutrition recommendations, while supporting compliance within the Recreation setting; any adjustments will be tracked along with the rationale for change.

The Guidelines use nutrient criteria to group foods and beverages into three categories, with traffic light nomenclature.

- Green category items are the most nutritious items, characterized by whole ingredients that are minimally processed, high in essential nutrients, low in saturated fats, no artificially produced trans fats, little or no added fat, sugar, and sodium, and no sugar substitutes;
- Yellow category items provide less nutritional benefit and may have slightly higher amounts of sodium, sugar or fat, and;
- Red category items are those with little or no nutritional benefits, which should be limited to support health and wellbeing.

This approach will allow for the ability to track progress towards selling more Green Category items, can increase customer awareness of health, and may help to nudge customers towards healthier food and beverage purchases when paired with education, marketing, and pricing strategies.

Bottled Water
The City of Hamilton is proud to provide a consistent, high quality supply of drinking water to its residents through the municipal drinking water system. In 2017, the City of Hamilton produced over 77 billion litres of drinking water for its residents and businesses. Promoting tap water as the best choice for hydration in recreation facilities will improve the physical, financial and environmental health of our community and its

citizens. Currently, Recreation sells approximately 16,000 bottles of water annually, through concession stands and vending machines. This represents the majority of locations where the City of Hamilton sells bottled water directly. The City also sells water at the golf courses and at special events and tournaments. These sales locations will be excluded from this analysis, as they are licenced events where alcohol is sold and there is a legal requirement to have a variety of non-alcoholic beverages available for sale at moderate prices in relation to the prices charged for liquor. Bottled water is also sold through third party vendors and volunteer-operated concessions, where there are contracts in place or limited flexibility in controlling products.

Recreation's Food and Beverage Action Plan will outline improvements in municipal tap water accessibility, visibility and promotion. In partnership with Public Works, changes will be made to the physical and retail environments within recreation facilities to position municipal tap water more prominently than bottled water. Such changes will include ensuring adequate drinking water infrastructure, improving wayfinding to water filling stations (for example, using floor decals to direct customers towards water filling stations), removing bottled water from value combos, selling a variety of refillable water bottles, reducing visibility of bottled water, and augmenting promotion of municipal drinking water promotion in recreation facilities. Within their 2018 workplan, Hamilton Water will be refreshing the existing promotional material for municipal drinking water in recreation facilities. An audit will be performed at each recreation facility to gather information that will inform the specific location plan (e.g. facility layout, water infrastructure, existing promotion, needs for additional water promotion with measurements, wayfinding needs, etc). Municipal drinking water usage will be monitored in several arenas through meters on the water fill stations and compared to bottled water sales data to assess changes in consumer behaviour and further inform the Action Plan.

Given that water is the healthiest fluid choice for hydration, the Action Plan will ensure that sugary drinks are not positioned more prominently than water. Upon completion of the Cold Beverage contract in April 2021, there will be a review to investigate additional alternative healthy beverage options (such as plain milk or unsweetened milk alternatives).

Implementation Timeline (2018-2020)
The Action Plan will be divided into six sections and implemented over a 3 year period.
The sections are as follows:

1. Identify and Implement Guidelines to assess food and beverage products and group into green/yellow/red categories
2. Increase healthy food options in publicly-owned facilities
3. Reduce access to unhealthy food in public facilities
4. Identify and implement strategies to promote free municipal drinking water
5. Promote healthy options and educate customers on the benefits of healthy eating

6. Monitor and evaluate

In Year 1 (2018), introduce the Food and Beverage Guidelines to categorize the current food and beverage offerings within recreation centres and arenas, source healthier food and beverage items, increase selection of healthy options for tournaments, and issue a snack and non-snack vending Request for Proposal (RFP). As well, begin selling reusable water bottles, enhance the promotion of and wayfinding for municipal tap water, and identify indicators to monitor changes in offerings, sales, and purchasing behaviours.

In Year 2 (2019), evaluate the results and impacts of changes made in Year 1, especially with respect to water promotion and sales. Expand healthier food options to all concessions and launch the promotion of the healthier food and beverages choices (ie. traffic light approach, caloric information on display). Strategic pricing will be used to promote healthier food choices and reduce food waste for perishable items.

Year 3 (2020), evaluate the results and impacts of changes made in Year 2 around new healthy products offered and the net impact on business. Continue to add and promote healthy options in accordance with the Healthy Food and Beverage Plan. When the existing beverage contract expires in April 2021, plan to reduce the availability of bottled water, high sugar drinks and investigate alternative healthy beverage options (e.g. unsweetened milk and milk alternatives).

ALTERNATIVES FOR CONSIDERATION

Not Applicable.

ALIGNMENT TO THE 2016 – 2025 STRATEGIC PLAN

Healthy and Safe Communities
Hamilton is a safe and supportive city where people are active, healthy, and have a high quality of life.

Clean and Green
Hamilton is environmentally sustainable with a healthy balance of natural and urban spaces.

APPENDICES AND SCHEDULES ATTACHED

Appendix A to Report BOH18014/HSC18019: Infographic
Appendix B to Report BOH18014/HSC18019: Guiding Principles for Recreation Food and Beverage Service
Appendix C to Report BOH18014/HSC18019: Food & Beverage Guidelines for Recreation Facilities

Guiding Principles for Recreation Food and Beverage Service

The Recreation Food and Beverage Action Plan will describe a 3 year phased-in approach with indicators of milestone achievement and continuous review of project targets. The following guiding principles and assumptions will shape the development of this Plan and will continue to guide the work as it moves forward:

Access to Healthy Food and Beverages
Recreation environments have an important role in supporting healthy eating within our community. Visitors to City of Hamilton Recreation Facilities will have convenient access to a variety of nutritious foods and beverages that support health and athletic performance. Processed or prepared foods and beverages high in sodium, sugars, or saturated fat will be progressively less available, as these foods and beverages undermine healthy eating.

Free and Convenient Access to Tap Water
Municipal tap water will be conveniently available in Recreation facilities and promoted as the preferred source of hydration for health.

Environmentally-Sustainable Drinking Water
The City of Hamilton's drinking water consistently meets all Ontario Drinking Water Standards. Encouraging the use of municipal drinking water will have environmental benefits for our community.

Financially-Sustainable Food Services
Recreation food services must maintain a financially-sustainable business supporting healthy eating. This requires innovation, evaluation, and responsiveness to market changes. Providing nutritious foods and beverages that are priced-competitively against less nutritious alternatives will facilitate economic access to nutritious options. It will also increase revenue and broaden customer base.

Availability of Nutrition Information for Customers
With the support of Public Health, Recreation food services will provide credible nutrition information and education to help patrons navigate the complex food environment and encourage healthy eating.

Socially-Responsible Marketing
Strategic marketing will help to raise awareness and generate demand for nutritious food and beverages. Marketing of processed or prepared foods and beverages high in sodium, sugars, or saturated fat will be reduced, recognizing the influence of food and beverage marketing on children's eating preferences and practices.

Food and Beverage Guidelines for Recreation Facilities

As part of the Recreation Food and Beverage Action Plan, these guidelines aim to improve access to and discernibility of nutritious foods that support good health and optimal participation in recreational settings. The nutrient criteria and categories described below are based on *Eating Well with Canada's Food Guide*, national nutrient criteria recommendations, and latest evidence.

Nutrition Criteria
Categorization of foods and beverages will be informed by the nutrient criteria for schools established by the Federal, Provincial, Territorial Group on Nutrition and the closely aligned standards from Healthier Choices in Vending Machine in BC Public Buildings. As implementation of the Action Plan progresses, adjustments to the criteria may be necessary to align with the latest nutrition recommendations and support compliance within the Recreation setting; any adjustments will be tracked along with the rationale for change.

Categories
A traffic light nomenclature will be used to describe the three categories of food and beverages — Green, Yellow, and Red. This approach may facilitate tracking of progress towards selling more Green Category items and less Red Category items and may help to nudge patrons towards healthier food options, when paired with education, marketing, and pricing strategies.

Green Category
Green category items are the most nutritious options. Foods and beverages in this category are characterized by the following:
- Whole ingredients that are minimally processed;
- High in essential nutrients;
- Low in saturated fats;
- No artificially produced trans fats;
- Little or no added fat, sugar, and sodium;
- No sugar substitutes.

Example items in this category: Tap water; fruit smoothies made with fruit and lower-fat, unsweetened milk or yogurt; chili with extra-lean ground beef and lots of beans and vegetables

Guidelines for Selling Green Category Items
- Offer more variety from this category
- Stock sufficient volumes to meet demand
- Offer at a lower price than comparable Red category items
- Provide courtesy cups to facilitate free access to municipal tap water
- Rearrange displays to make green items more visible
- Allow consumers to sample new green items
- Use bright signs, packaging and colours for green items

- Make green category items the default choice in combo meals
- Use verbal prompts (eg."Would you like fruit with that?")

Yellow Category
Yellow category items provide less nutritional benefit and may have slightly higher amounts of sodium, sugar, or fat than those in the Green category. Food and beverages in this category are characterized by the following:
- Contain essential nutrients;
- Moderate amounts of added fat, sodium, and/or sugar;
- Minimal processing;
- May contain sugar-substitutes.

Example items in this category: Chocolate milk, dried fruit, some yogurts and granola bars, tuna or salmon and cracker snack packs.

Guidelines for Selling Yellow Category Items
- Reduce the amount and variety of yellow foods and drinks offered
- Provide yellow items in smaller serving sizes
- Provide healthier choices within the yellow category
- Do not promote or advertise yellow items at the expense of green items
- Do not let yellow items dominate the menu or choices displayed

Red Category
Red category items are those with little or no nutritional benefits and should be limited to support health and wellbeing. Food and beverages in this category are characterized by the following:
- Little to no nutritional value;
- High amounts of saturated fat;
- High amounts of added fat, sodium, and/or sugar;
- Lack of whole ingredients;
- High levels of processing;
- May contain sugar-substitutes.

Example items in this category: Sugary drinks, chocolate bars, chips, hot dogs, and confectionary.

Guidelines for Selling Red Category Items
- Stock less variety and less quantity from this category
- Limit the portion size of these items to packages that provides on average no more than 100 kcal/individual serving, where possible
- Restrict placement to make less prominent
- Charge more for these items than Green category items

References:

BC Ministry of Health, Population and Public Health Division. 2014. Healthier Choices in Vending Machines in BC Public Buildings. Retrieved from: http://stayactiveeathealthy.ca/sites/default/files/resources/Healthier-Choices-Vending-Policy-2014.pdf

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Federal, Provincial, Territorial Group on Nutrition. 2013. Provincial and Territorial Guidance Document for the Development of Nutrient Criteria for Foods and Beverages in Schools. Retrieved from: https://foodsecurecanada.org/sites/foodsecurecanada.org/files/pt_guidance_documenteng_-feb_18_2014.pdf

Health Canada. 2007. Eating Well with Canada's Food Guide: A Resource for Educator's and Communicators. Available at: https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/fn-an/alt_formats/hpfb-dgpsa/pdf/pubs/res-educat-eng.pdf

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CITY OF HAMILTON
PUBLIC HEALTH SERVICES
Healthy Environments Division

TO:	Mayor and Members of Board of Health
COMMITTEE DATE:	May 14, 2018
SUBJECT/REPORT NO:	Clean Air Hamilton 2018 Programs (BOH18020) (City Wide)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Trevor Imhoff (905) 546-2424, Ext. 1308
SUBMITTED BY & SIGNATURE:	Kevin McDonald Director, Public Health Services - Healthy Environments Division Healthy and Safe Communities Department

RECOMMENDATION

That the following vendors, identified by Clean Air Hamilton for the delivery of 2018 air quality programs to be funded through the 2018 Public Health Services operating budget, be approved:

(i) Cycle Hamilton Coalition Inc. for the delivery of Friendly Streets Hamilton ($12,000);

(ii) Green Venture and Corr Research Inc. for the delivery of Fresh Air for Kids with Anti-Idling ($10,700), and;

(iii) Green Venture for the delivery of Bus Brains – School Bus Monitoring ($5,877).

EXECUTIVE SUMMARY

Hamilton Public Health Services (PHS) provides approximately $40,000 in annual base funding to Clean Air Hamilton for the purpose of funding community programs, as well as other projects that inform and educate citizens about the quality of air in our City, and programs that aim to directly improve air quality in Hamilton.

This report describes the following three initiatives and seeks approval from the Board of Health for the associated funding costs:

1. Friendly Streets Hamilton ($12,000)
2. Fresh Air for Kids ($10,700)
3. Bus Brains – School Bus Monitoring ($5,877)

If approved, the funding for these programs would come from the 2018 PHS operating budget.

Alternatives for Consideration – See Page 5

FINANCIAL – STAFFING – LEGAL IMPLICATIONS

Financial: The programs identified by Clean Air Hamilton for delivery in 2018 total $28,577. This funding will come from PHS' approved 2018 budget.

Staffing: No staffing implications.

Legal: No legal implications.

HISTORICAL BACKGROUND

Originated in 1998, Clean Air Hamilton initiates research on air quality issues; provides policy advice to all levels of government; encourages emission reductions among organizations operating in Hamilton, and promotes behavioural changes among individuals living and working in Hamilton.

Every year, Clean Air Hamilton identifies programs that will further the goal of improving air quality through education and awareness on a variety of emission sources, including transportation, and air quality monitoring of air pollutants in the City of Hamilton. Recently, Clean Air Hamilton has changed the way it administers funding to better align with existing City policies, such as the City Enrichment Fund (CEF). Three external adjudicators with expertise in air quality and community engagement were selected to review all applications. The applications were scored based on a pre-approved set of criteria that were developed by staff with input from Clean Air Hamilton members. Applications were assessed on four major criteria:

1. Air Quality Impact (45%)
2. Community/Capacity Impact (25%)
3. Project Management (10%)
4. Organizational Viability (20%)

In September 2016, with collaboration of partners, Clean Air Hamilton identified five new strategic issues related to air quality improvements that the committee will focus on over the next two to three years:

Preface
Clean Air Hamilton is dedicated to improving air quality across the City of Hamilton. This will be accomplished through sound science based decision making, using the most up-to-date information and tools available, such as the Hamilton Airshed Model.

1. Governance & Structure: To remain a multi-stakeholder group dedicated to improving air quality by increasing public perception and expanding Clean Air Hamilton membership while providing communication and promotion of realistic, science based decision making and sustainable practices.
2. Air Zone Management: To comply with all Ministry of the Environment and Climate Change and Canadian Ambient Air Quality Standards. This will be done through implementation of a systems level approach and support towards an industrial mandatory monitoring regulation.
3. Transportation: To encourage and facilitate more use of public and active transportation through commentary on transportation related matters, supporting educational programs and localized monitoring leading to detailed information to encourage changes in behaviour.
4. Air Monitoring: To improve air monitoring activities across the City of Hamilton by providing support for additional portable air monitors and fixed air monitors that provide real-time monitoring for contaminants of concern in Hamilton.
5. Dust & PM2.5 Mitigation: To lower concentrations of PM2.5 across the City of Hamilton below Canadian Ambient Air Quality Standards by effectively utilizing the Airshed Model to create partnerships and pollution inventory specific to street sweeper and dust mitigation programs.

POLICY IMPLICATIONS AND LEGISLATED REQUIREMENTS

Not Applicable.

RELEVANT CONSULTATION

The programs identified for funding through Clean Air Hamilton were scored by three experts in air quality and/or community engagement and public health which included staff from the Ministry of the Environment and Climate Change, Health Promotion Specialist from Healthy and Safe Communities, and Professor Emeritus from University of Toronto. Staff created the scoring criteria with input from Clean Air Hamilton members.

Members of the Clean Air Hamilton include City staff from: Healthy and Safe Communities – Healthy Environments Division; Public Works – Transportation Division Energy and Facilities; Planning & Economic Development – Community Planning & Design Division.

Other members of Clean Air Hamilton include the Ontario Ministry of the Environment and Climate Change, Environment Canada, Health Canada, Green Venture, Environment Hamilton, Hamilton Conservation Authority, Mohawk College, McMaster University, Horizon Utilities, Corr Research, McKibbon Wakefield Inc., Hamilton Industrial Environmental Association, ArcelorMittal Dofasco, U.S. Steel Canada, and citizens.

ANALYSIS AND RATIONALE FOR RECOMMENDATION

Every year, Clean Air Hamilton identifies programs that will further the goal of improving air quality and addressing climate change in Hamilton. Programs and projects are selected for funding based on scoring criteria that assesses relevance of the project or program on:

1. Air Quality Impact (45%)
2. Community/Capacity Impact (25%)
3. Project Management (10%)
4. Organizational Viability (20%)

Clean Air Hamilton has identified the following three programs to be delivered by local partners to address air quality and climate change in the community in 2017:

1. ‘Friendly Streets Hamilton ($12,000) – Cycle Hamilton Coalition Inc.

   Cycle Hamilton was incorporated as a not-for-profit organization in 2015. It is a member-supported group of individuals, communities, and organizations that work together to make Hamilton a place where people of all ages and abilities can safely get around by bike to all parts of the city.

   Friendly Streets Hamilton was successfully piloted in 2017 conducting street-level audits in the area within a 1 km radius of the Hamilton General Hospital. They are proposing to integrate air quality into the Friendly Streets work where community members will learn about urban air quality challenges and they measure particulate matter ($PM_{2.5}$) during the street audits. They expect to engage around 200 community stakeholders in this initiative.

2. Fresh Air for Kids ($10,700) – Green Venture & Corr Research Inc.

   The “Fresh Air for Kids” program began in 2013 and has been a huge success educating hundreds of students across Hamilton on the importance of air quality and the Air Quality Health Index. Furthermore, the program develops air quality

maps using mobile monitoring data to help children choose low risk commuting methods and routes to school.

This year Green Venture, in partnership with Corr Research are planning to execute the Fresh Air for Kids programs at three schools across Hamilton. The program begins with neighbourhood mobile air monitoring survey using Ministry of the Environment and Climate Change (MOECC) mobile monitoring van, GIS analysis of the data that is used to create air quality maps for in-class exercises. They anticipate reaching 100 direct participants from the program and over 350 indirect participants (teachers, parents siblings etc.)

3. Bus Brains – School Bus Monitoring ($5,877) – Green Venture
Green Venture is a very successful non-profit organization that connects people with the tools and knowledge they need to create a healthier, more sustainable community where they live, work and play. The organization's Board of Directors and its staff have been tireless champions for air quality in Hamilton for two decades and implemented prominent air quality work through public education.

   This initiative from Green Venture would combine education on air quality and air pollutants along with citizen science opportunities for the students involved. Students will be trained on how to use the portable indoor air quality monitors prior to the monitoring. Each class or EcoTeam would loan the air monitor up to two weeks where students who ride the bus would measure the air quality in the cabin of the bus. Data collected will be analyzed by Dr. Matthew Adams and his students at the University of Toronto.

ALTERNATIVES FOR CONSIDERATION

Board of Health does not approve the funding. This is not recommended as this does not support actions to improve air quality and health in Hamilton.

Financial: If funding is not approved, it will create a financial pressure among community partners that may result in the programs not being implemented.

Staffing: No staffing implications.

Legal: No legal implications.

Policy: If the recommendation is not approved, PHS staff may be directed to use Procurement By-law Policy 11 (non-competitive procurement) to procure outreach services.

ALIGNMENT TO THE 2016 – 2025 STRATEGIC PLAN

Community Engagement & Participation
Hamilton has an open, transparent and accessible approach to City government that engages with and empowers all citizens to be involved in their community.

Healthy and Safe Communities
Hamilton is a safe and supportive city where people are active, healthy, and have a high quality of life.

Clean and Green
Hamilton is environmentally sustainable with a healthy balance of natural and urban spaces.

APPENDICES AND SCHEDULES ATTACHED

Not Applicable.

Ministry of Health and Long-Term Care

Assistant Deputy Minister's Office

Population and Public Health Division
777 Bay Street, 19th Floor
Toronto ON M7A 1S5

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Ministère de la Santé et des Soins de longue durée

Bureau du sous-ministre adjoint

Division de la santé de la population et de la santé publique
777, rue Bay, 19e étage
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Téléphone: (416) 212-8119
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April 13, 2018

MEMORANDUM

TO: Medical Officers of Health, CEOs, and Board Chairs

RE: Ontario Public Health Standards: Requirements for Programs, Services, and Accountability

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Dear Colleagues,

Further to the December 29, 2017, February 5, 2018 and March 20, 2018 memos which included the release of the official Ontario Public Health Standards: Requirements for Programs, Services, and Accountability (Standards), we are now releasing a fourth installment with an additional guideline.

The Standards and incorporated protocols and guidelines are published by the Minister of Health and Long-Term Care under the authority of section 7 of the *Health Protection and Promotion Act* (HPPA) to specify the mandatory health programs and services provided by boards of health.

The following official guideline is attached:
- School Health Guideline, 2018

While it is dated effective as of January 1, 2018 to coincide with the effective date of the Standards, the ministry's expectation is that implementation of requirements outlined in the protocols and guidelines begins as of the date of release, or, at the beginning of the next school year for those programs and services delivered in schools.

The remaining incorporated guidelines will be released shortly. Please see Appendix 1 for a summary of protocols and guidelines including those released previously, the one released today, and those anticipated in the coming weeks. As previously communicated, it is expected that boards of health will continue to operate business as usual until the remaining new guidelines have been released. The ministry will continue to work with all our health unit partners to support you as you implement the new Standards, protocols, and guidelines.

We are also happy to inform you that the Ministry's website for the Standards and related documents in English and French is active. Documents are being added as quickly as possible. Please access the website using one of the following links:

In English at:
http://www.health.gov.on.ca/en/pro/programs/publichealth/oph_standards/default.aspx;
In French at:
http://www.health.gov.on.ca/fr/pro/programs/publichealth/oph_standards/default.aspx

Thank you all for your continued support and collaboration. If you have any questions, please do not hesitate to contact the ministry by e-mail at PHTransformation@ontario.ca.

Sincerely,

Original signed by

Roselle Martino
Assistant Deputy Minister
Population and Public Health Division

c: Dr. David Williams, Chief Medical Officer of Health
Jackie Wood, Director, Planning and Performance Branch
Nina Arron, Director, Disease Prevention Policy and Programs Branch
Liz Walker, Director, Accountability and Liaison Branch
Laura Pisko, Director, Health Protection Policy and Programs Branch
Dianne Alexander, Director, Healthy Living Policy and Programs Branch
Clint Shingler, Director, Health System Emergency Management Branch

Appendix 1: Summary of Protocols and Guidelines with Release Dates

Document	**Release Date or Anticipated Release Date**
Child Visual Health and Vision Screening Protocol	March 20, 2018
Electronic Cigarettes Protocol	December 29, 2017
Food Safety Protocol	February 5, 2018
Health Hazard Response Protocol	February 5, 2018
Healthy Babies, Healthy Children Program Protocol	January 3, 2018
Immunization for Children in Schools and Licensed Child Care Settings Protocol	February 5, 2018
Infection Prevention and Control Complaints Protocol	February 5, 2018
Infection Prevention and Control Disclosure Protocol	February 5, 2018
Infection Prevention and Control Protocol	February 5, 2018
Infectious Diseases Protocol	February 5, 2018
Institutional/Facility Outbreak Management Protocol	March 20, 2018
Menu Labelling Protocol	December 29, 2017
Oral Health Protocol	March 20, 2018
Population Health Assessment and Surveillance Protocol	December 29, 2017
Qualifications for Public Health Professionals Protocol	February 5, 2018
Rabies Prevention and Control Protocol	February 5, 2018
Recreational Water Protocol	February 5, 2018
Safe Drinking Water and Fluoride Monitoring Protocol	February 5, 2018
Sexual Health and Sexually Transmitted/Blood-Borne Infections Prevention and Control Protocol	December 29, 2017
Tanning Beds Protocol	December 29, 2017
Tobacco Protocol	December 29, 2017
Tuberculosis Prevention and Control Protocol	February 5, 2018
Vaccine Storage and Handling Protocol	December 29, 2017
Board of Health and Local Health Integration Network Engagement Guideline	December 29, 2017
Chronic Disease Prevention Guideline	April/May 2018

Document	Release Date or Anticipated Release Date
Guidelines for Emergency Management	April/May 2018
Health Equity Guideline	March 20, 2018
Healthy Environments and Climate Change Guideline	March 20, 2018
Healthy Growth and Development Guideline	April/May 2018
Injury Prevention Guideline	April/May 2018
Management of Avian Chlamydiosis in Birds Guideline	April/May 2018
Management of Avian Influenza or Novel Influenza in Birds or Animals Guideline	April/May 2018
Management of Echinococcus Multilocularis Infections in Animals Guideline	April/May 2018
Management of Potential Rabies Exposures Guideline	April/May 2018
Mental Health Promotion Guideline	March 20, 2018
Operational Approaches for Food Safety Guideline	March 20,2018
Operational Approaches for Recreational Water Guideline	February 5, 2018
Relationship with Indigenous Communities Guideline	April/May 2018
School Health Guideline	April 13, 2018
Small Drinking Water Systems Risk Assessment Guideline	February 5, 2018
Substance Use Prevention and Harm Reduction Guideline	December 29, 2017
Tuberculosis Program Guideline	April/May 2018

Ministry of Health and Long-Term Care

School Health Guideline, 2018

Population and Public Health Division,
Ministry of Health and Long-Term Care

Effective: January 1, 2018 or upon date of release

Ontario

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1 Preamble

The Ontario Public Health Standards: Requirements for Programs, Services, and Accountability (Standards) are published by the Minister of Health and Long-Term Care under the authority of section 7 of the *Health Protection and Promotion Act* (HPPA) to specify the mandatory health programs and services provided by boards of health.[1,2] The Standards identify the minimum expectations for public health programs and services. Boards of health are accountable for implementing the Standards including the protocols and guidelines that are referenced in the Standards. Guidelines are program and topic-specific documents which provide direction on how boards of health shall approach specific requirement(s) identified within the Standards.

2 Purpose

The purpose of this guideline is to provide direction to boards of health on required approaches to developing and implementing programs and services that contribute to achieving optimal health of school-aged children and youth through partnerships and collaboration with school boards and schools. Specifically, this guideline outlines required approaches to Requirements 3 and 4 of the School Health Standard in the Standards:

- Developing and implementing a program of public health interventions to improve the health of school-aged children and youth; and
  - Offering support to school boards and schools to assist with the implementation of health-related curricula and health needs in schools.
- In doing so, this guideline includes the following components:
  - Key public health and content-specific frameworks and concepts (see section 4);
  - An overview of board of health roles and responsibilities (see section 5);
  - Required approaches (see section 6), including:
- Using a public health program planning cycle that supports boards of health to develop and implement a program of public health interventions by integrating all guideline components.
- Key considerations, including topics, for offering support to school boards and schools to assist with the implementation of health-related curricula and health needs in schools.
  - Core definitions to support this guideline (see Glossary).

3 Reference to the Standards

This section identifies the standard and requirements to which this guideline relates.

School Health Standard

Requirement 3. The board of health shall develop and implement a program of public health interventions using a comprehensive health promotion approach to improve the health of school-aged children and youth.

a) The program of public health interventions shall be informed by:
   - An assessment of the local population, including the identification of priority populations in schools, as well as school communities at risk for increased health inequities and negative health outcomes;
   - Consultation and collaboration with school boards, principals, educators, parent groups, student leaders, and students;
   - A review of other relevant programs and services delivered by the board of health; and
   - Evidence of the effectiveness of the interventions employed.

b) The program of public health interventions shall be implemented in accordance with relevant guidelines, including the *Chronic Disease Prevention Guideline, 2018* (or as current*)*; the *Health Equity Guideline, 2018* (or as current); the *Injury Prevention Guideline, 2018* (or as current); the *Healthy Growth and Development Guideline, 2018* (or as current); the *Mental Health Promotion Guideline, 2018* (or as current); the *School Health Guideline, 2018* (or as current); and the *Substance Use Prevention and Harm Reduction Guideline, 2018* (or as current).

Requirement 4. The board of health shall offer support to school boards and schools, in accordance with the *School Health Guideline, 2018* (or as current), to assist with the implementation of health-related curricula and health needs in schools, based on need and considering, but not limited to:

a) Concussions and injury prevention;
b) Healthy eating behaviours and food safety;
c) Healthy sexuality;
d) Immunization;
e) Infectious disease prevention (e.g., tick awareness, rabies prevention, and hand hygiene);
f) Life promotion, suicide risk and prevention;
g) Mental health promotion;
h) Oral health;
i) Physical activity and sedentary behaviour;
j) Road and off-road safety;
k) Substance[+] use and harm reduction;
l) UV exposure;
m) Violence and bullying; and
n) Visual Health.

[+] Substance includes tobacco, e-cigarettes, alcohol, cannabis, opioids, illicit, other substances and emerging products.

4 Context

Improving and protecting the health and well-being of school-aged children and youth is a priority for Ontario's public health sector, as childhood is a time when health practices and behaviours are learned, and adolescence is a period when both positive health behaviours (such as eating practices and physical activity) and risk behaviours (such as alcohol and substance use) are adopted.[3,4]

Schools are important settings for comprehensive health promotion among children and youth. Healthy students are better learners, and better educated individuals are healthier, making health and education interdependent.[5] The development and maintenance of effective partnerships and collaborations between boards of health and school communities (including school boards, schools, principals, educators, parent groups, student leaders, students, and the broader community) is fundamental to effective public health practice. Strong relationships are needed to support the development of healthy environments, curriculum resources, healthy policies, and all other aspects of health promotion.

Work within the education system is guided by the Ministry of Education's *Achieving Excellence: A Renewed Vision for Education in Ontario* and its four interconnected goals:

- Achieving excellence;
- Ensuring equity;
- Promoting well-being; and,
- Enhancing public confidence.[6]

The goal of promoting student well-being, encompassing cognitive, emotional, social, and physical development, as well as an individual's sense of self and spirit (Figure 1), closely aligns with public health's goal of achieving optimal health of school-aged children and youth.[7] In partnership with school boards and schools, boards of health have an important role in promoting school health and well-being.

Figure 1 Model of Well-Being

4.1 Key Public Health Frameworks and Concepts

This section outlines key public health frameworks and concepts to inform the development and implementation of public health programs and services that contribute to the achievement of optimal health of school-aged children and youth, with an emphasis on social determinants of health, health inequities, and comprehensive health promotion approaches.

4.1.1 The Population Health Promotion Model

This model (Figure 2) shows how a population health approach can be implemented through action on the full range of health determinants by means of health promotion strategies.[8] This model centres around three questions:

- "On **WHAT** should we take action?" – Acknowledges action is required across the determinants of health
- "**HOW** should we take action?" – Focuses on the actions in the *Ottawa Charter for Health Promotion* (below)
- "**WITH WHOM** should we act?" – Affirms that comprehensive action must be taken at multiple levels (e.g. individual, family, community, sector/system; and society) to bring about change.

Figure 2 The Health Cube

Source: Public Health Agency of Canada. Population health promotion: an integrated model of population health and health promotion. Ottawa, ON: Government of Canada; 2001. Reproduced with permission.[8]

4.1.2 Ottawa Charter for Health Promotion

This Framework provides the core strategies for health promotion action to support the achievement of optimal health of school-aged children and youth, including:

- Building healthy public policy;
- Creating supportive environments;
- Strengthening community action;
- Developing personal skills; and
- Re-orienting health services.[9]

The subsequent Jakarta Declaration reiterated the importance of the core strategies identified in the Ottawa Charter for Health Promotion, and added further emphasis that

comprehensive approaches are the most effective, settings offer practical opportunities for implementation of comprehensive strategies, and participation is essential to the empowerment of individuals and communities in order to sustain efforts.[10]

The Comprehensive School Health framework applies the core concepts and strategies identified in the Ottawa Charter for Health Promotion to the school health context.[11]

4.1.3 Social-Ecological Model of Health

The Social-Ecological Model (SEM) of health considers the complex interplay between Individual, Interpersonal, Organizational, Community, and Societal factors.[12] It highlights the range of factors that put people at risk or protect them, as well as how factors at one level influence factors at another.

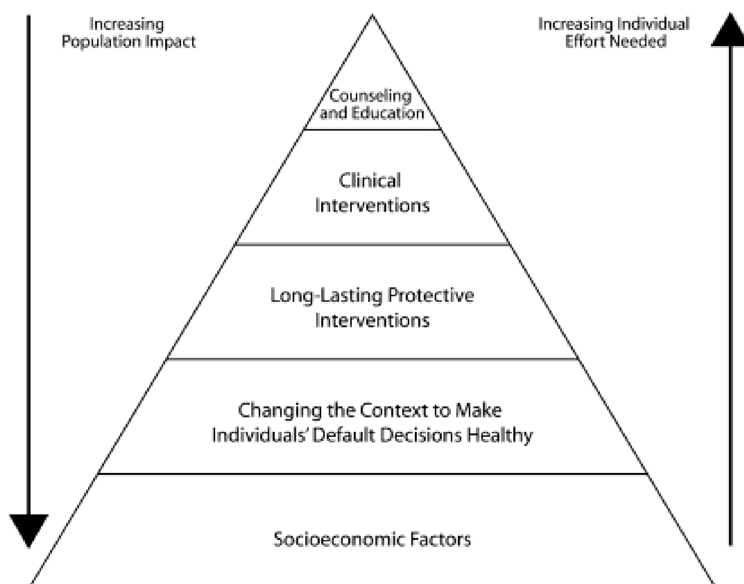
The school setting, an Organizational level setting, allows for supportive environment interventions to be implemented in order to improve the health and well-being of school-aged children and youth.[12] However, in order to increase the likelihood that such interventions may lead to healthy behaviours, it is important that school/Organization level interventions be integrated into strategies that account for multiple levels.[13]

4.2 Key Public Health Concepts

This section outlines key concepts to inform the development and implementation public health programs and services that contribute to the achievement of optimal health of school-aged children and youth.

- Upstream approach: seeking to address the causes-of-the-causes.[14]
- Proportionate universalism: achieving a blend of universal and targeted interventions in order to reduce inequities among groups.[15]
- Strength-based approach: emphasizing strength- and asset-based assessment and programming.[16]
- Life course approach: recognizing differences in risks and opportunities across the life course, including critical periods, as well as the cumulative effect of exposures within and across stages.[17]
- Intersectional approach: acknowledging that change must take place across a spectrum, from individual supports and services to organizational change; recognizing the unique historical, social, and political contexts that an individual will experience based on their individual combination of diversity factors such as race, gender, gender identity, ability, or status.[18]
- Population health impact pyramid (Figure 3): focusing on interventions that address supportive environments and social determinants is likely to have greater population impact versus relying solely on individual-level interventions.[19]

Figure 3 Population Health Impact Pyramid



Source: Frieden TR. A framework for public health action: the health impact pyramid. Am J Public Health. 2010;100(4):590-5. Reproduced with permission.[19]

4.3 Key Content-Specific Frameworks and Resources

This section provides a summary of key content-specific frameworks and resources to inform the development and implementation of public health programs and services that contribute to the achievement of optimal health of school-aged children and youth, in addition to frameworks and concepts relating to child and youth development that are outlined in the *Healthy Growth and Development Guideline, 2018* (or as current).

4.3.1 Foundations for a Healthy School

The Ministry of Education's *Foundations for a Healthy School* resource (Figure 4) is designed to help contribute to a learning environment that promotes and supports child and student well-being.[20] The resource outlines five broad, interconnected areas that, together, support a comprehensive approach to creating and sustaining healthy schools policies, programs, and initiatives:

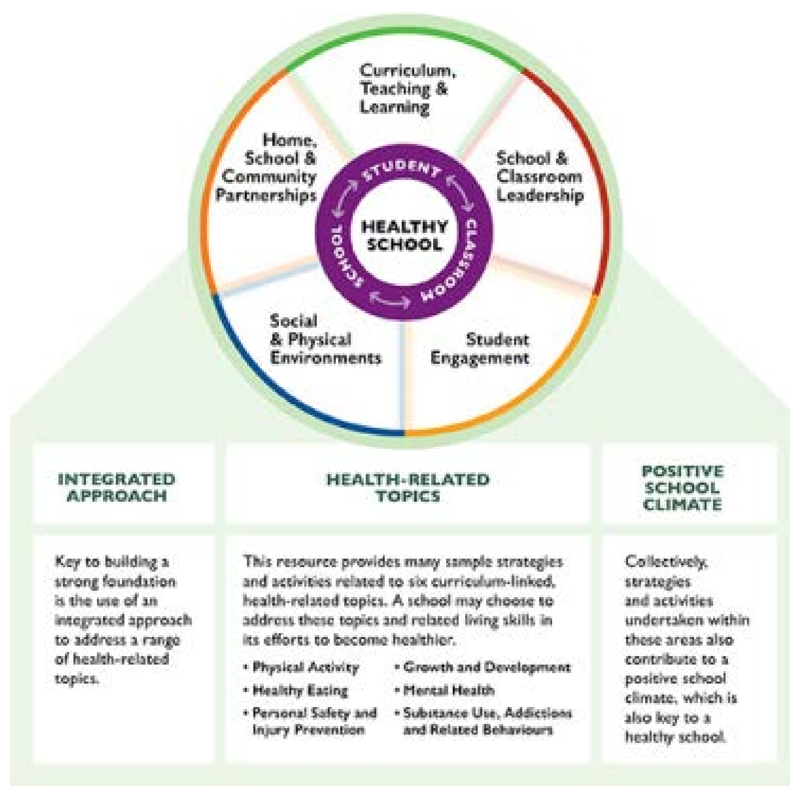
1. Curriculum, Teaching and Learning;
2. School and Classroom Leadership;
3. Student Engagement;
4. Social and Physical Environments; and
5. Home, School and Community Partnerships.

These interconnected areas align closely with the Ministry of Education's K-12 *School Effectiveness Framework* (2013), to support the integration of healthy schools work into school and school board planning and implementation processes.[21] This comprehensive

approach also complements, enriches, and reinforces student learning through the curriculum.

The *Foundations for a Healthy School* resource provides many ideas and starting points for boards of health to consider as they engage in work to promote health and well-being among school-aged children and youth. It includes sample strategies and suggested activities that can be used at the school level, in the classroom, or among students to address a range of health-related topics and contribute to a positive school climate.

Figure 4 Foundations for a Healthy School[20]



4.3.2 Health Equity and School Health

In addition to board of health requirements outlined in the Foundational Standards (see section 5.2), ensuring equity is a central goal of Ontario's publicly funded education system, as set out in *Achieving Excellence: A Renewed Vision for Education in Ontario* (2014).[6] This goal stems from a fundamental principle that every student should have the opportunity to succeed personally and academically, regardless of background, identity, or personal circumstances.

The *Equity and Inclusive Education Strategy* provides guidance and support to the education community in identifying and working towards eliminating systemic barriers that limit students' prospects for learning, growing, and fully contributing to society.[22]

Under this strategy, as well as the requirements outlined in *Policy/Program Memorandum No. 119, Developing and Implementing Equity and Inclusive Education Policies in Ontario Schools*, all publicly funded school boards are required to develop, implement, and monitor an equity and inclusive education policy.[23]

5 Roles and Responsibilities

The Standards accommodate variability across the province and require boards of health to apply the Foundational Standards in assessing the needs of their local population, implementing programs of public health interventions to improve the health of school-aged children and youth, and offering support to school boards and schools within the health unit. A flexible approach accommodates greater variability where there is an opportunity to plan programs to decrease health inequities and address the needs of priority populations. Boards of health shall consider all topics listed in the Standards, but can focus public health programs, services, and supports on those topics that address identified gaps and will have the greatest impact on improving the health of the local population. Boards of health are guided by the principles of Need; Impact; Capacity; and Partnership, Collaboration and Engagement.

5.1 Program Standards, Protocols and Guidelines

Requirement 3 of the School Health Standard requires boards of health to develop and implement a program of public health interventions using a comprehensive health promotion approach to improve the health of school-aged children and youth, informed by:

- An assessment of the local population, including the identification of priority populations in schools, as well as school communities at risk for increased health inequities and negative health outcomes;
- Consultation and collaboration with school boards, principals, educators, parent groups, student leaders, and students;
- A review of other relevant programs and services delivered by the board of health; and
- Evidence of the effectiveness of the interventions employed.

Additionally, Requirement 4 of the School Health Standard requires boards of health to offer support to school boards and schools to assist with the implementation of health-related curricula and health needs in schools, based on need and considering an array of topics (see section 6.2.1).

In operationalizing these requirements, boards of health shall consider linkages with programs of public health intervention developed in accordance with other Program Standards, as the health of school-aged children and youth is also impacted by each of the other Program Standards. In particular, there are linkages to school health and school-aged children and youth in the Healthy Growth and Development Standard.

There are also linkages to school health in other guidelines and protocols, including, but not limited to, the following:

- *Child Visual Health and Vision Screening Protocol, 2018* (or as current);
- *Chronic Disease Prevention Guideline, 2018* (or as current);
- *Food Safety Protocol, 2018* (or as current);
- *Health Equity Guideline, 2018* (or as current);
- *Healthy Growth and Development Guideline, 2018* (or as current);
- *Immunization for Children in Schools and Licensed Child Care Settings Protocol, 2018* (or as current);
- *Infectious Diseases Protocol, 2018* (or as current);
- *Injury Prevention Guideline, 2018* (or as current);
- *Mental Health Promotion Guideline, 2018* (or as current);
- *Oral Health Protocol, 2018* (or as current);
- *Safe Drinking Water and Fluoride Monitoring Protocol, 2018* (or as current);
- *Sexual Health and Sexually Transmitted/Blood-Borne Infections Prevention and Control Protocol, 2018* (or as current);
- *Relationship with Indigenous Communities Guideline, 2018* (or as current); and
- *Substance Use Prevention and Harm Reduction Guideline, 2018* (or as current).

5.2 Foundational Standards

The Foundational Standards inform all areas of board of health planning and programming as they underlie a comprehensive public health approach. There are three Foundational Standards that have implications for the School Health Standard:

- Population Health Assessment Standard
  - Public health practice responds effectively to current and evolving conditions, and contributes to the public's health and well-being with programs and services that are informed by the population's health status, including social determinants of health and health inequities.
- Health Equity Standard
  - Public health practice results in decreased health inequities such that everyone has equal opportunities for optimal health and can attain their full health potential without disadvantage due to social position or other socially determined circumstances.
- Effective Public Health Practice Standard
  - Public health practice is transparent, responsive to current and emerging evidence, and emphasizes continuous quality improvement.

6 Required Approaches

6.1 General Approaches

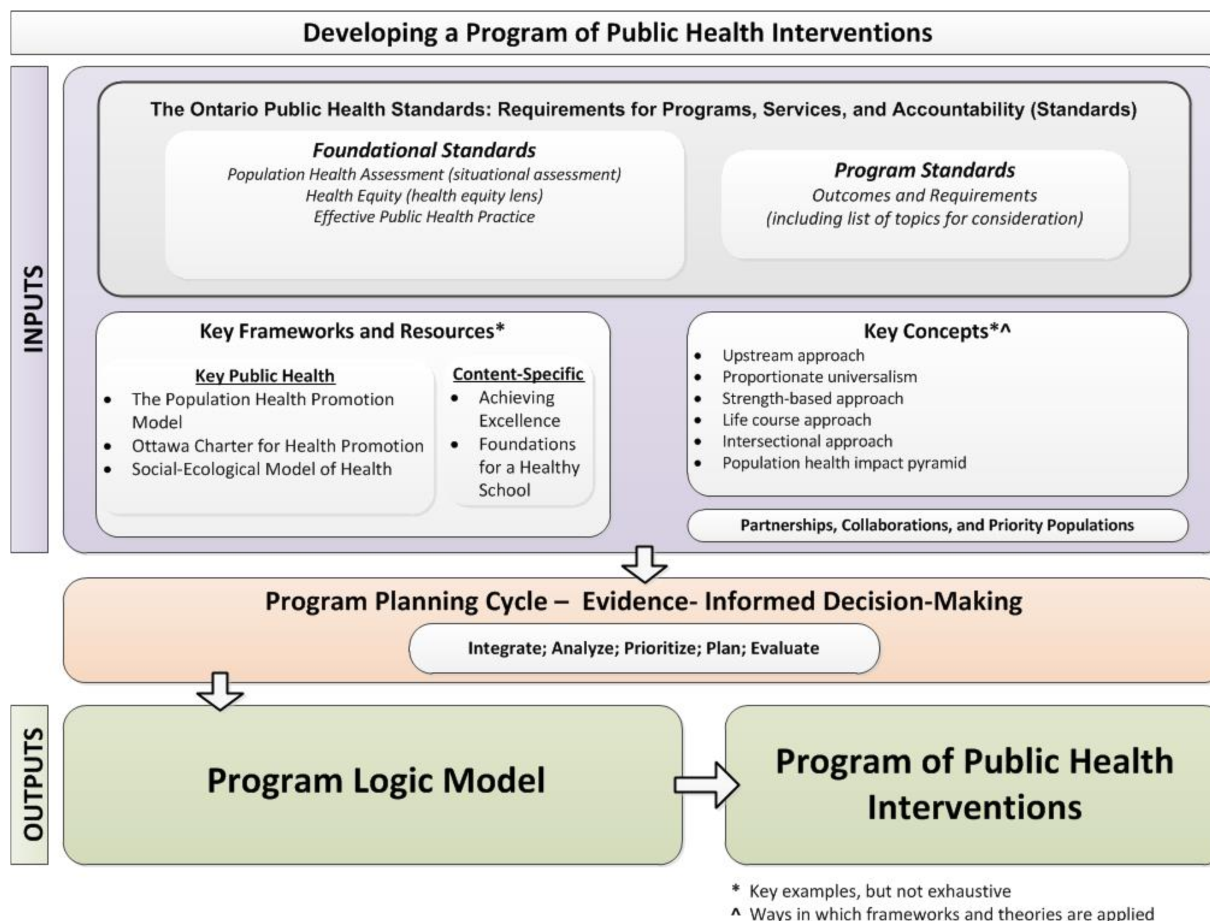
This section outlines required approaches that boards of health shall apply when operationalizing Requirement 3, developing and implementing a program of public health interventions to improve the health of school-aged children and youth in the health unit population, and Requirement 4, offering support to school boards and schools to assist with the implementation of health-related curricula and health needs in schools.

6.1.1 Public Health Program Planning Cycle

Boards of health shall use a public health program planning cycle to support evidence-informed decision-making (Figure 5), which shall include consideration of:

- The preceding key public health and content-specific frameworks, resources and related concepts (see section 4);
- Program outcomes and requirements outlined in the School Health Standard (see section 5.1), including the required topics for consideration (see section 6.2.1);
- Program outcomes and requirements outlined in the Foundational Standards (see section 5.2);
- Prioritization based on the principles outlined in the Policy Framework for Public Health Programs and Services: Need; Impact; Capacity; and Partnership, Collaboration, and Engagement; and
- Additional evidence-informed methods and tools for planning public health programs and services, as appropriate.[24,25]

Figure 5 Developing a program of public health interventions using a program planning cycle



6.1.2 Collaboration with School Boards and Schools

Additionally, boards of health are required to engage in partnerships, collaborations, and consultations in order to fulfill the requirements of the School Health Standard. In operationalizing this requirement, boards of health shall consider the following:

- Types of collaborations and partnerships that would be meaningful to improve the health of children and youth in the school environment, including, but not limited to:
  - Local stakeholders (students, families, parents/guardians, school staff, school administration, communities, school boards, licensed child care centres, etc.); and
  - Cross-sector collaborations among health, education, and other relevant sectors (e.g. university partners, not-for-profit organizations, municipalities, researchers and policy-makers, etc.).[26-28]

- Evidence-based practices and strategies that promote effective and sustainable collaborations and partnerships, including:
  - Developing a common vision, goal and shared purpose that outlines a common understanding of the issue(s) and potential solution(s);[26,29-32]
  - Understanding and outlining roles and responsibilities to provide structure for the contribution of team members;[31,33-35]
  - Engaging in clear and ongoing communications and a joint planning process, including establishment of a common language of key concepts to address differences in interpretation;[28,29,31,32,34,36,37]
  - Determining local school health outcomes and indicators (educational and/or health outcomes) that are realistic, relevant, and meaningful to all partners;[27,28,36,37]
  - Determining shared resources (e.g., time, staff, training, technical support, shared measurement systems, etc.);[28,29,31]
  - Applying supporting structures and mechanisms (e.g., formal/informal agreements, memoranda of understanding, etc.) to support the collaboration process;[27,32,34,36] and
  - Monitoring and evaluating partnerships to determine their effectiveness and identify and address gaps.[32]
- Development of a Memorandum of Understanding (MOU) or other arrangement in writing between local public health and education partners to facilitate implementation of public health programs and services in the school setting.[34]
- Integrated planning across the various public health programs and services to be implemented in the school setting, including but not limited to oral health screening, vision screening, and immunization services.

6.2 Considerations for Health Related Curricula and Health Needs in Schools

Requirement 4 of the School Health Standard requires boards of health to offer support to school boards and schools to assist with the implementation of health-related curricula and health needs in schools. Support may include, but is not limited to, assistance with the development, implementation and/or evaluation of evidence, resources, curricula, policies, programs, training, facilitation, and other activities in schools (including during before-and-after school programs), as may be identified in partnership with local school boards and schools.

In operationalizing this requirement, boards of health shall consider the following, in addition to applying the general approaches outlined in the preceding section of this guideline (see section 6.1):

- Provincially-developed curricula, such as:
  - *The Kindergarten Program, 2016* (or as current),
  - *The Ontario Curriculum, Grades 1-8: Health and Physical Education, 2015* (or as current); and

  - *The Ontario Curriculum, Grades 9-12: Health and Physical Education, 2015* (or as current).[38-40]
- Other provincially- or locally-developed curricula with relevance to the required topics for consideration (see section 6.2.1) and other population health needs in schools, as identified through local assessments and engagement with school boards, schools, school communities, and priority populations.
- Provincially-developed educator requirements and support materials, such as:
  - *Supporting Minds: An Educator's Guide to Promoting Students' Mental Health and Well-being, 2013* (or as current), and
  - *How Does Learning Happen? Ontario's Pedagogy for the Early Years, 2014* (or as current).[41-42]
- School board policy development and review cycles, including but not limited to those areas outlined in the topics for consideration where school boards are required to establish policies (see section 6.2.1).
- School board requirements relating to the provision of before-and-after school programs.
- Relevant policy/program memoranda for school boards and schools, such as:
  - *Policy and Program Memorandum 120: Reporting Violent Incidents to the Ministry of Education* (or as current): Requires school boards to report the total number of violent incidents to the ministry each year.
  - *Policy and Program Memorandum 123: Safe Arrivals* (or as current): Directs each elementary school to develop and implement a safe-arrival program to account for any pupil's unexplained failure to arrive at school.
  - *Policy and Program Memorandum 128: The Provincial Code of Conduct and the School Board Codes of Conduct* (or as current): Sets clear provincial standards of behaviour that apply to all individuals involved in the publicly funded school system—principals, teachers, other school staff, parents, volunteers, and community groups.
  - *Policy/Program Memorandum No. 138, Daily Physical Activity in Elementary Schools, Grades 1-8* (or as current): Requires that all students in grades 1-8 take part in 20 minutes of Daily Physical Activity each day during instructional time.
  - *Policy and Program Memorandum 144: Bullying Prevention and Intervention* (or as current): Requires all school boards to have a bullying prevention policy and plan to help prevent and address bullying in schools.
  - *Policy and Program Memorandum 145, Progressive Discipline and Promoting Positive Student Behaviour* (or as current): Requires all school boards to establish a policy and guidelines on progressive discipline, and requires every board to support student activities and organizations that promote a safe and inclusive learning environment, acceptance of, and respect for others, and the creation of a positive school climate.
  - *Policy/Program Memorandum No. 150, School Food and Beverage Policy* (or as current): Sets out nutrition standards for food and beverages sold in publicly funded elementary and secondary schools in Ontario.

- *Policy/Program Memorandum No. 158, School Board Policies on Concussion* (or as current): Directs school boards to develop and maintain a policy on concussion awareness, prevention, identification, management, and training.
- *Policy/Program Memorandum No. 161, Supporting Children and Students with Prevalent Medical Conditions (Anaphylaxis, Asthma, Diabetes, and/or Epilepsy) in Schools* (or as current): Directs school boards to develop and maintain a policy or policies to support students in schools who have asthma, diabetes, and/or epilepsy, and/or are at risk for anaphylaxis.[23]

6.2.1 Topics for Consideration

Boards of health shall consider the following topics when making decisions to offer support to school boards and schools to assist with the implementation of health-related curricula and health needs in schools to improve the health of school-aged children and youth, based on an assessment of local need as determined in partnership and collaboration with school boards and schools.

- **Concussions and injury prevention:**

  Concussions are injuries to the brain and represent a serious health issue with both short term and long-term effects.[43] Common mechanisms of concussion include participation in sport and recreation activity, falls and motor vehicle collisions.[43] Signs and symptoms of a concussion vary and include cognitive, sleep, physical or behavioural changes.[44] Repeated concussions are of particular concern given the significant impact they can have on an individual, across the lifespan.[43]

  Injury prevention refers to “ongoing strategies, policies, or programs designed to eliminate or reduce the occurrence and severity of injuries”.[45] In general, public health’s focus is on the prevention of injuries before they occur (i.e., primary prevention), although there may also be a role in applying other levels of prevention for specific types of injuries (e.g., increasing public and providers’ understanding regarding recognition and management of concussions). Injuries among children often happen at home, sports facilities or fields, and at school.[46] While at school, it is reported that the most common injuries occur from walking or running, fighting, and sports and recreational activities.[46]

- **Healthy eating behaviours and food safety:**

  Healthy eating involves the intake of water and consumption of foods from a variety of food groups while limiting processed or refined foods and beverages that are high in sodium, sugar, and saturated fat, with the overall goal of maintaining or promoting health and preventing disease. A substantial proportion of Canadians do not meet healthy eating recommendations and many factors challenge people’s ability to make healthy choices including social, economic, built and other environments and settings.[47-49] Healthy eating is important for the healthy development of children and youth and healthy eating behaviours are shaped when people are young.[50-54] Diet is a modifiable risk factor for the prevention of many chronic diseases and conditions such

as obesity, cardiovascular diseases, some cancers, type II diabetes, hypertension, and others.[47]

Considerations relating to food safety may include, but are not limited to, foodborne illness prevention; seasonal food safety messaging; safe preparation and handling of food; and new and emerging food safety risks.

- **Healthy sexuality:**

  Sexual health is a vital component of an individual's physical and emotional health and well-being. Healthy sexuality involves acquiring the knowledge, skills, and behaviours to enable good sexual health throughout life, including the prevention of sexually transmitted infections, unintended pregnancy, sexual dysfunction, and sexual violence. Sexually transmitted infections such as chlamydia, gonorrhea and syphilis have been rising since 2000, with rates of chlamydia and gonorrhea in Ontario being highest among young people aged 15-29.[55-56] The number of individuals diagnosed with HIV almost doubled between 2000 and 2015.[57] Some sexually transmitted infections, such as those caused by chlamydia, gonorrhea, hepatitis B, and the human papilloma virus, can result in serious health consequences including infertility, ectopic pregnancy, certain chronic diseases and cancers.[58,59]

- **Immunization:**

  The School Health Standard in the Standards requires boards of health to enforce the *Immunization of School Pupils Act*, and to assess the immunization status of children in accordance with the *Immunization for Children in Schools and Licensed Child Care Settings Protocol, 2018* (or as current).[60] The Standards also require boards of health to promote and provide provincially funded immunization programs to eligible students in the health unit through school-based clinics.

- **Infectious disease prevention:**

  Infection is a common problem among school-aged children and youth because schools are a site where a large number of young people, some of whom may not have developed effective personal hygiene habits or immunity to various diseases, come into close contact with each other.[61] Examples of common childhood infections include respiratory infections (e.g., bronchiolitis), common cold, and influenza; rashes due to parvovirus and impetigo; as well as other infections such as conjunctivitis and gastroenteritis.[62] The most important methods for preventing infectious diseases are hand washing and immunizations.[63,64] Under the *Immunization of School Pupils Act*, children and youth who attend primary or secondary school in Ontario must be immunized against designated diseases under that Act.[60,64]

- **Life promotion, suicide risk and prevention:**

  Suicide is a significant public health issue with deep and devastating effects on individuals, families, and communities. Understanding suicide is complex, it involves a wide range of factors including social, cultural, biological, psychological, spiritual, economic, and other factors, as well as the physical environments where people live,

learn, work and play.[65] In Canada, suicide is the second leading cause of death in 15–24 year olds and a significant minority of teens report ideation of suicide in the previous year.[66,67]

- **Mental health promotion:**

  Mental health promotion is the process of enhancing the capacity of individuals and communities to increase control over their lives and improve their mental health.[68] By working to increase self-esteem, coping skills, social connectedness and well-being, mental health promotion empowers people and communities to interact with their environments in ways that enhance emotional and spiritual strength. Evidence shows that initiatives that focus on giving "every child the best possible start" will yield the greatest impacts.[69] Adverse childhood experiences, such as poor attachment to parents, child abuse, family conflict, and neglect, have been clearly linked to risk for mental illness and addiction later in life.[70] Promoting mental and physical health holistically and simultaneously is integral to efforts to reduce health inequities and improve and protect the health and well-being of the population.

- **Oral health:**

  Oral health refers to the health of the mouth, teeth, gums, tongue, lips, and associated structures. It is an integral part of an individual's general health and well-being at every stage of life. Tooth decay, though largely preventable, affects over half of Canadian children aged 6 to 19 years old.[71,72] The burden of illness due to oral diseases disproportionately affects children from low-income families, Indigenous families, and new immigrants.[73] For school-aged children and youth, poor oral health can lead to eating and sleep disturbances, malnourishment, behavioural problems, learning difficulties, poor performance and absenteeism in school.[73-75] Over the lifetime, poor oral health can considerably impact an individual's daily activities, self-esteem, employability and quality of life, and is associated with the occurrence of several chronic diseases and other adverse health outcomes.[76-80]

- **Physical activity and sedentary behaviour:**

  Physical activity is a key component of an individual's physical, mental and overall well-being. It is a key health behaviour that reduces a child's risk for obesity, supports cognitive functioning, strengthens bones and muscles, improves mental health, self-esteem and confidence, improves school performance, and improves measures of fitness.[81-83] A substantial proportion of Canadians across all age groups are not meeting physical activity guidelines.[84-86] This includes the vast majority of school-aged children and youth in Canada not getting 60 minutes or more of daily moderate to vigorous physical activity.[87] Physical activity is shaped when people are young, as they are physically, socially and emotionally developing.[52-54,88] In adults, insufficient physical activity is associated with increased rates of a number of chronic and preventable conditions including, but not limited to, type II diabetes, heart disease, stroke, high blood pressure, high cholesterol, certain cancers, osteoporosis, and depression.[69,70]

Sedentary behaviour refers to postures or activities requiring little or no energy expenditure, including prolonged sitting, watching television, use of a computer, and motorized transport. Children and youth spend a large proportion of their time in sedentary pursuits, such as screen time.[83,89] Higher screen time is linked to higher levels of obesity and behavioural issues, as well as lower physical fitness, self-esteem, psychological well-being, and academic achievement.[89-92] In adults, sedentary behaviour is associated with all-cause and cardiovascular mortality, obesity, cardiovascular disease, type II diabetes, metabolic syndrome and some cancers.[89]

- **Road and off-road safety:**

  Injuries caused by motor vehicle collisions (MVCs) remain a significant public health problem in Canada. Injuries from transport-related incidents are a leading cause of overall injury costs in Canada, second only to falls.[93] The number of road deaths and injuries remain high with MVCs representing the leading cause of injury-related death in 0 – 24 year olds in Canada.[94]

  Off-road vehicles can include all-terrain vehicles, snowmobiles, dirt bikes, motocross bikes, amphibious vehicles, quad bikes and other similar vehicles. They are motorized vehicles used for both recreation and transportation purposes in Canada. Off-road vehicles represent an increasing mechanism for injury and fatality in Canadians, particularly in pediatric populations in remote areas of Canada, including Indigenous communities.[95]

- **Substance use and harm reduction:**

  The use of tobacco, alcohol, cannabis, opioids, illicit and other substances are key public health concerns. Substance use occurs on a spectrum ranging from abstinence to having a substance use disorder. Substance use most commonly begins during late childhood and early adolescence, which can lead to a pattern of behaviours with adverse health and social consequences.[96] This can include cognitive impairment since adolescence is a critical period for brain development and can be affected by substance use.[97] Other types of consequences include intentional and unintentional injury, violence, motor vehicle collisions, infectious diseases, chronic diseases, mental health problems and mental illnesses, addictions, and other consequences that directly affect individuals, communities, roadways, and neighbourhoods.[97-100]

- **UV exposure:**

  Exposure to UV radiation from the sun, without adequate protection, or from artificial sources like tanning beds, has significant adverse health outcomes. While there can be benefits of UV exposure, including facilitating vitamin D3 formation, UV radiation from the sun and tanning devices has been classified as a human carcinogen and is a key risk factor for skin cancers in addition to premature skin aging, eye problems, and weakening of the immune system.[101,102] A substantial proportion of Canadians spend time in the sun without the use of protection against UV radiation, and the incidence of preventable skin cancers continues to increase.[103-105]

Compared to adults, children and youth are at a greater risk of suffering damage from exposure to UV radiation, with the majority of a person's lifetime exposure occurring before age 18.[106] Compared with adults, children have potentially greater sun exposure, thinner and more sensitive skin, as well as eyes with lower capability to filter UV radiation.[106,107]

- **Violence and bullying:**

  The World Health Organization (WHO) identifies three classifications of violence based on the characteristics of those committing the violence: self-directed violence (e.g., suicidal behaviour); interpersonal violence (e.g., family/partner violence, bullying, or community violence); and collective violence (e.g., societal, political, or economic violence).[108] The WHO's typology creates further sub-classifications based on the nature of the violence: physical, sexual, psychological, and deprivation or neglect.

  Violence has far-reaching consequences for both mental and physical health, and negative associations with sexual health. It contributes to the risk of suicide, substance use and addiction, depression, anxiety, post-traumatic stress disorder, other psychological harms, chronic diseases, and social impacts (e.g., diminished academic achievement and worker productivity, and the deterioration of families and communities).[108-110]

  Bullying (e.g., physical, verbal, social, cyber) has serious implications for the mental health of children and youth, and if not addressed can lead to fatal outcomes, including suicide. For example, weight-based stigmatization, the most common form of bullying reported by students age 13 to 19, is associated with depression, anxiety, low self-esteem, body dissatisfaction, suicidal ideation, poor academic performance, lower physical activity, maladaptive eating behaviors, and avoidance of health care.[111] About a third of Canadian adolescents report being bullied, and the Internet and cyber-bullying are a growing problem.[112,113]

- **Visual Health:**

  Visual health is critically important to mobility, independence, social engagement, physical health, and educational and employment outcomes.[114] Uncorrected vision impairment is associated with higher rates of injuries, depression, and some chronic diseases, and can significantly affect a child's growth and development by limiting social, physical and educational participation.[114] Six out of ten children experiencing reading difficulties have uncorrected or undetected vision problems and almost 25% of school-age children have vision problems.[115]

7 Glossary

Comprehensive health promotion approach combines multiple strategies and addresses the full range of health determinants to enable people to increase control over, and to improve, their physical, mental and social well-being.

Population health is the health of the population, measured by health status indicators. Population health is influenced by physical, biological, behavioural, social, cultural, economic, and other factors. The term is also used to refer to the prevailing health level of the population, or a specified subset of the population, or the level to which the population aspires. Population health describes the state of health, and public health is the range of practices, procedures, methods, institutions, and disciplines required to achieve it.[116]

Program of public health interventions includes the suite of programs, services, and other interventions undertaken by a board of health to fulfill the requirements and contribute to achieving the goals and program outcomes outlined in the Standards.

Social determinants of health are the interrelated social, political and economic factors that create the conditions in which people live, learn, work, and play. The intersection of the social determinants of health causes these conditions to shift and change over time across the life span, impacting the health of individuals, groups, and communities in different ways.[117]

Targeted approaches use selection criteria, such as social determinants of health or risk factors to target eligibility and access to programs and services to priority sub-groups within the broader population.[118]

Universal approaches are programs and services that are available to the whole population.[118]

Well-being refers to an individual's cognitive, social, emotional, and physical development, and the development of their sense of self and spirit.[20]

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April 25, 2018

MEMORANDUM

TO: **Medical Officers of Health, CEOs, and Board Chairs**

RE: Ontario Public Health Standards: Requirements for Programs, Services, and Accountability

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Dear Colleagues,

Further to the previous memos (December 29, 2017, February 5, 2018, March 20, 2018 and April 13, 2018) which included the release of the official Ontario Public Health Standards: Requirements for Programs, Services, and Accountability (Standards), we are now releasing a fifth installment with 4 additional guidelines.

The Standards and incorporated protocols and guidelines are published by the Minister of Health and Long-Term Care under the authority of section 7 of the *Health Protection and Promotion Act* (HPPA) to specify the mandatory health programs and services provided by boards of health.

The following official guidelines are attached:

- Chronic Disease Prevention Guideline, 2018
- Healthy Growth and Development, 2018
- Injury Prevention Guideline, 2018 and
- Management of Potential Rabies Exposures Guideline, 2018

While they are dated effective as of January 1, 2018 to coincide with the effective date of the Standards, the ministry's expectation is that implementation of requirements outlined in the protocols and guidelines begins as of the date of release, or, at the beginning of the next school year for those programs and services delivered in schools.

The remaining incorporated guidelines will be released shortly. Please see Appendix 1 for a summary of protocols and guidelines including those released previously, the one released today, and those anticipated in the coming weeks. As previously communicated, it is expected that boards of health will continue to operate business as usual until the remaining new guidelines have been released. The ministry will continue to work with all our health unit partners to support you as you implement the new Standards, protocols, and guidelines.

As mentioned in the last memo, the Ministry's website for the Standards and related documents in English and French is up and running. Documents are being added as quickly as possible. Please access the website using one of the following links:
In English at:
http://www.health.gov.on.ca/en/pro/programs/publichealth/oph_standards/default.aspx;
In French at:
http://www.health.gov.on.ca/fr/pro/programs/publichealth/oph_standards/default.aspx

Thank you all for your continued support and collaboration. If you have any questions, please do not hesitate to contact the ministry by e-mail at PHTransformation@ontario.ca.

Sincerely,

Original signed by

Roselle Martino
Assistant Deputy Minister
Population and Public Health Division

c: Dr. David Williams, Chief Medical Officer of Health
Jackie Wood, Director, Planning and Performance Branch
Nina Arron, Director, Disease Prevention Policy and Programs Branch
Liz Walker, Director, Accountability and Liaison Branch
Laura Pisko, Director, Health Protection Policy and Programs Branch
Dianne Alexander, Director, Healthy Living Policy and Programs Branch
Clint Shingler, Director, Health System Emergency Management Branch

Appendix 1: Summary of Protocols and Guidelines with Release Dates

Document	Release Date or Anticipated Release Date
Child Visual Health and Vision Screening Protocol	March 20, 2018
Electronic Cigarettes Protocol	December 29, 2017
Food Safety Protocol	February 5, 2018
Health Hazard Response Protocol	February 5, 2018
Healthy Babies, Healthy Children Program Protocol	January 3, 2018
Immunization for Children in Schools and Licensed Child Care Settings Protocol	February 5, 2018
Infection Prevention and Control Complaints Protocol	February 5, 2018
Infection Prevention and Control Disclosure Protocol	February 5, 2018
Infection Prevention and Control Protocol	February 5, 2018
Infectious Diseases Protocol	February 5, 2018
Institutional/Facility Outbreak Management Protocol	March 20, 2018
Menu Labelling Protocol	December 29, 2017
Oral Health Protocol	March 20, 2018
Population Health Assessment and Surveillance Protocol	December 29, 2017
Qualifications for Public Health Professionals Protocol	February 5, 2018
Rabies Prevention and Control Protocol	February 5, 2018
Recreational Water Protocol	February 5, 2018
Safe Drinking Water and Fluoride Monitoring Protocol	February 5, 2018
Sexual Health and Sexually Transmitted/Blood-Borne Infections Prevention and Control Protocol	December 29, 2017
Tanning Beds Protocol	December 29, 2017
Tobacco Protocol	December 29, 2017
Tuberculosis Prevention and Control Protocol	February 5, 2018
Vaccine Storage and Handling Protocol	December 29, 2017
Board of Health and Local Health Integration Network Engagement Guideline	December 29, 2017
Chronic Disease Prevention Guideline	April 23, 2018

Document	Release Date or Anticipated Release Date
Guidelines for Emergency Management	April/May 2018
Health Equity Guideline	March 20, 2018
Healthy Environments and Climate Change Guideline	March 20, 2018
Healthy Growth and Development Guideline	April 23, 2018
Injury Prevention Guideline	April 23, 2018
Management of Avian Chlamydiosis in Birds Guideline	April/May 2018
Management of Avian Influenza or Novel Influenza in Birds or Animals Guideline	April/May 2018
Management of Echinococcus Multilocularis Infections in Animals Guideline	April/May 2018
Management of Potential Rabies Exposures Guideline	April 23, 2018
Mental Health Promotion Guideline	March 20, 2018
Operational Approaches for Food Safety Guideline	March 20,2018
Operational Approaches for Recreational Water Guideline	February 5, 2018
Relationship with Indigenous Communities Guideline	April/May 2018
School Health Guideline	April 13, 2018
Small Drinking Water Systems Risk Assessment Guideline	February 5, 2018
Substance Use Prevention and Harm Reduction Guideline	December 29, 2017
Tuberculosis Program Guideline	April/May 2018

Ministry of Health and Long-Term Care

Chronic Disease Prevention Guideline, 2018

Population and Public Health Division,
Ministry of Health and Long-Term Care

Effective: January 1, 2018 or upon date of release

Ontario

1. Preamble

The Ontario Public Health Standards: Requirements for Programs, Services, and Accountability (Standards) are published by the Minister of Health and Long-Term Care under the authority of section 7 of the *Health Protection and Promotion Act* (HPPA) to specify the mandatory health programs and services provided by boards of health.[1,2] The Standards identify the minimum expectations for public health programs and services. Boards of health are accountable for implementing the Standards including the protocols and guidelines that are referenced in the Standards. Guidelines are program and topic-specific documents which provide direction on how boards of health shall approach specific requirement(s) identified within the Standards.

2. Purpose

The purpose of this guideline is to provide direction to boards of health on required approaches in developing and implementing a program of public health interventions to support chronic disease prevention in the health unit population.

In doing so, the guideline includes the following components:

- Key public health and content specific frameworks and concepts (see section 4);
- An overview of boards of health roles and responsibilities (see section 5);
- Required approaches (see section 6):
    - Using a public health program planning cycle that supports boards of health to develop and implement a program of public health interventions by integrating all guideline components.
    - Topics that boards of health shall consider when making decisions to develop and implement chronic disease prevention programs of public health intervention.
- Core definitions to support this guideline (see Glossary).

3. Reference to the Standards

This section identifies the standards and requirements to which this guideline relates.

Chronic Disease Prevention and Well-Being

Requirement 2. The board of health shall develop and implement a program of public health interventions using a comprehensive health promotion approach that addresses chronic disease risk and protective factors to reduce the burden of illness from chronic diseases in the health unit population.

a) The program of public health interventions shall be informed by:
    i. An assessment of the risk and protective factors for, and distribution of, chronic diseases;
    ii. Consultation and collaboration with local stakeholders in the health, education, municipal, non-governmental, and other relevant sectors;

iii. An assessment of existing programs and services within the area of jurisdiction of the board of health to build on community assets and minimize duplication;
iv. Consideration of the following topics based on an assessment of local needs:
    - Built environment;
    - Healthy eating behaviours;
    - Healthy sexuality;
    - Mental health promotion;
    - Oral health;
    - Physical activity and sedentary behaviour;
    - Sleep;
    - Substance[*] use; and
    - UV exposure.
v. Evidence of effectiveness of the interventions employed.

b) The program of public health interventions shall be implemented in accordance with relevant guidelines, including the *Chronic Disease Prevention Guideline, 2018* (or as current); the *Health Equity Guideline, 2018* (or as current); the *Mental Health Promotion Guideline, 2018* (or as current); and the *Substance Use Prevention and Harm Reduction Guideline, 2018* (or as current).[†]

School Health

Requirement 3. The board of health shall develop and implement a program of public health interventions using a comprehensive health promotion approach to improve the health of school-aged children and youth.

a) The program of public health interventions shall be informed by:
    - An assessment of the local population, including the identification of priority populations in schools, as well as school communities at risk for increased health inequities and negative health outcomes;
    - Consultation and collaboration with school boards, principals, educators, parent groups, student leaders, and students;
    - A review of other relevant programs and services delivered by the board of health; and
    - Evidence of the effectiveness of the interventions employed.

b) The program of public health interventions shall be implemented in accordance with relevant guidelines, including the *Chronic Disease Prevention Guideline, 2018* (or as current); the *Health Equity Guideline, 2018* (or as current); the *Injury Prevention Guideline, 2018* (or as current); the *Healthy Growth and Development*

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[*]Substance includes tobacco, e-cigarettes, alcohol, cannabis, opioids, illicit, other substances and emerging products.

[†]The *Substance Use Prevention and Harm Reduction Guideline, 2018* (or as current) provides guidance on alcohol, cannabis, opioids, and illicit substances.

Guideline, 2018 (or as current); the *Mental Health Promotion Guideline, 2018* (or as current); the *School Health Guideline, 2018* (or as current); and the *Substance Use Prevention and Harm Reduction Guideline, 2018* (or as current).

4. Context

Chronic diseases, also known as noncommunicable diseases, are diseases that are not passed from person to person, are of long duration, and are generally slow in progression.[3] Chronic diseases of public health importance include, but are not limited to, obesity, cardiovascular diseases, respiratory disease, cancer, diabetes, intermediate health states (such as metabolic syndrome and prediabetes), hypertension, dementia, mental illness, and addictions.

Chronic diseases account for a substantial burden on the health of Ontarians and on the province's health care system. They are the leading cause of death in Ontario and are responsible for a high rate of morbidity, associated reductions in quality of life, and negative impacts on communities and the economy.[4] Chronic diseases account for substantial direct and indirect health costs, including years of healthy life lost from premature death and lost productivity from illness and disability.[5]

Chronic diseases are complex with many influencers, including a variety of factors that can either increase risk of or protect against the development or progression of chronic diseases. While some risk and protective factors for chronic diseases cannot be controlled (e.g., genetics, age), the risk of developing chronic diseases can be reduced through modification of healthy lifestyle behaviours. By eliminating four common and modifiable risk factors for chronic disease (unhealthy eating, physical inactivity, tobacco use, and harmful use of alcohol), 80% of heart disease and type II diabetes, and 40% of cancers could be prevented.[6] Reducing population-level exposure to these four common and modifiable risk factor behaviours has been identified as one of the most effective interventions to prevent chronic diseases.[4,7]

Chronic diseases intensify inequities, disproportionately impacting populations who are socioeconomically disadvantaged and other priority populations. Chronic disease prevention is a particularly pressing issue given that Ontario's population is aging, and older adults have higher rates of chronic diseases.[4]

4.1 Key Public Health Frameworks and Concepts

This section outlines key public health frameworks and concepts to inform the development and implementation of a program of public health interventions to support chronic disease prevention with an emphasis on social determinants of health, health inequities, and comprehensive health promotion approaches.

4.1.1 The Population Health Promotion Model

This model shows how a population health approach can be implemented through action on the full range of health determinants by means of health promotion strategies. This model centres around three questions:

- “On **WHAT** should we take action?” – Acknowledges action is required across the determinants of health
- “**HOW** should we take action?” - Focuses on the actions in the Ottawa Charter for Health Promotion (below)
- “**WITH WHOM** should we act?” - Affirms that comprehensive action must be taken at multiple levels (e.g. individual, family, community, sector/system; and society) to bring about change.[8]

Figure 1. The Health Cube

Source: Public Health Agency of Canada. Population health promotion: an integrated model of population health and health promotion. Ottawa, ON: Government of Canada; 2001. Reproduced with permission.[8]

4.1.2 Ottawa Charter for Health Promotion

This framework provides the core strategies for health promotion action when developing and implementing a program of public health interventions to support chronic disease prevention including:

- Building healthy public policy;
- Creating supportive environments;
- Strengthening community action;
- Developing personal skills; and
- Re-orienting health services.[9]

The subsequent Jakarta Declaration reiterated the importance of the core strategies identified in the Ottawa Charter for Health Promotion, and added further emphasis that comprehensive approaches are the most effective; settings offer practical opportunities for implementation of comprehensive strategies; and participation is essential to the empowerment of individuals and communities in order to sustain efforts.[10]

4.1.3 Social-Ecological Model of Health

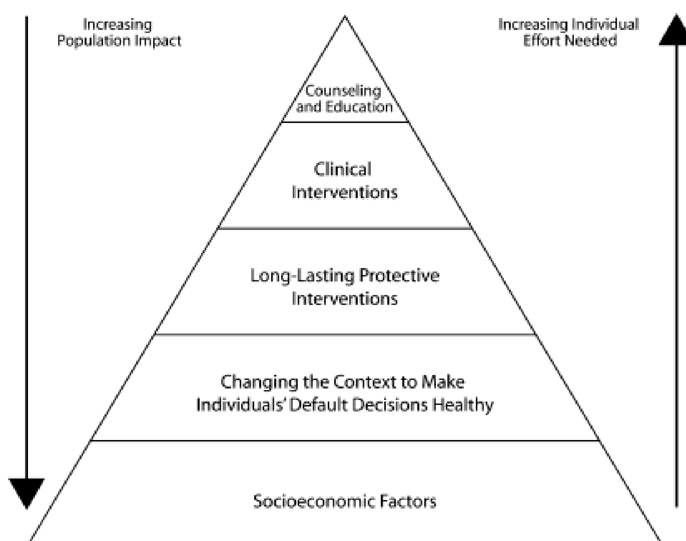
This framework considers the complex interplay between individual, relationship, community, and societal factors. It highlights the range of factors that put people at risk or protect them, as well as how factors at one level influence factors at another level.[11]

4.1.4 Key Public Health Concepts

This section outlines key concepts to inform the development and implementation of a program of public health interventions to support chronic disease prevention.

- Upstream approach: seeking to address the causes of the causes.[12]
- Proportionate universalism: achieving a blend of universal and targeted interventions in order to reduce inequities among groups.[13]
- Strength-based approach: emphasizing strength and asset based assessment and programming.[14]
- Life course approach: recognizing differences in risks and opportunities across the life course including critical periods, as well as the cumulative effect of exposures within and across stages.[15]
- Intersectional approach: acknowledging that change must take place across a spectrum, from individual supports and services to organizational change; recognizing the unique historical, social and political contexts that an individual will experience based on their individual combination of diversity factors such as race, gender, gender identity, ability or status.[16]
- Population health impact pyramid (Figure 2): focusing on interventions that address supportive environments and social determinants is likely to have greater population impact versus relying solely on individual-level interventions.[17]

Figure 2. Population Health Impact Pyramid



Source: Frieden TR. A framework for public health action: the health impact pyramid. Am J Public Health. 2010;100(4):590-5. Reproduced with permission.[17]

4.2 Key Content-Specific Frameworks and Concepts

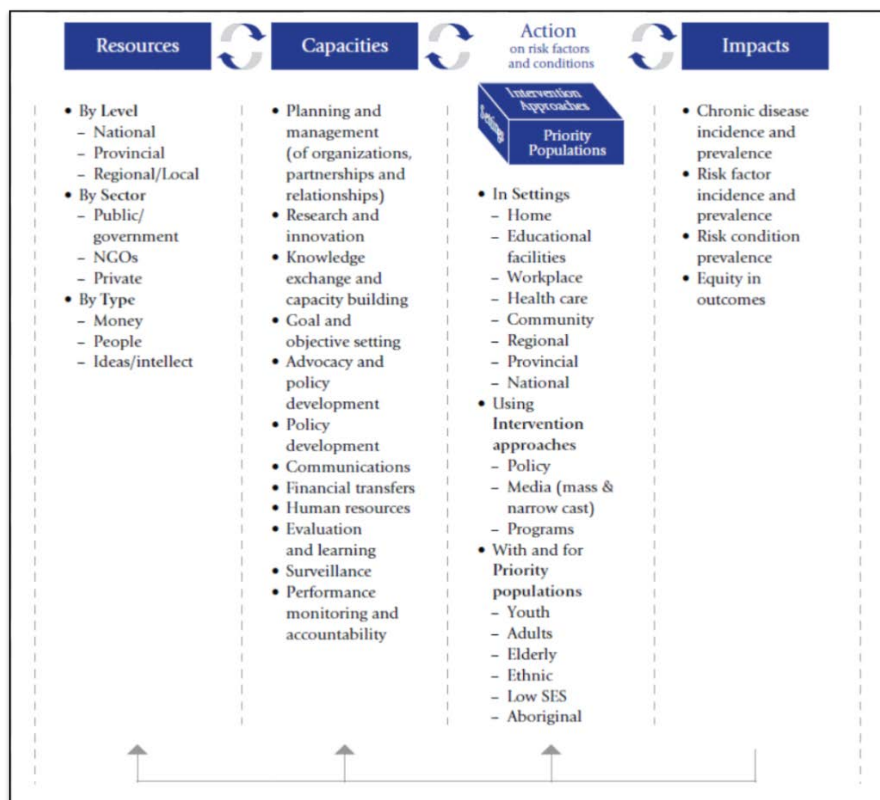
This section provides a summary of key content-specific frameworks and key concepts related to chronic disease prevention to inform the development and implementation of a program of public health interventions to support chronic disease prevention.

4.2.1 Primary Prevention of Chronic Diseases Framework

This framework provides a comprehensive approach to the primary prevention of chronic diseases including:

- The need for resources/investments in the form of people, money and ideas;
- The range of capacities required to effectively plan, implement and evaluate programming;
- The actions that consider intervention approaches, settings and priority populations; and
- The intended impacts addressing diseases, risk factors and inequities.[18]

Figure 3: Primary Prevention of Chronic Diseases Framework



Source: Chronic Disease Prevention Alliance of Canada. Primary prevention of chronic diseases in Canada: a framework for action. Ottawa, ON: Chronic Disease Prevention Alliance of Canada; 2008. Reproduced with permission.[18]

4.2.2 Key Content-Specific Concepts

Scope of Chronic Disease Prevention

The core focus of public health interventions to prevent chronic diseases emphasizes primordial and primary prevention. Prevention of disease occurs across four levels: primordial, primary, secondary, and tertiary. Primordial and primary prevention are more strongly tied to the health of the entire population, while secondary and tertiary prevention focus on those who already show signs of disease.

5. Roles and Responsibilities

The Standards accommodate variability across the province and require boards of health to apply the Foundational Standards in assessing the needs of their local population and to implement programs of public health interventions that reduce the burden of chronic diseases in the health unit population. A flexible approach accommodates greater variability where there is an opportunity to plan programs to decrease health inequities and address the needs of priority populations. Boards of health shall consider all topics listed in the Standards, but can focus public health programs and services on those topics that address identified gaps and will have the greatest impact on improving the health of the local population. Boards of health shall be guided by the principles of Need; Impact; Capacity; and Partnership, Collaboration and Engagement.

5.1 Program Standards, Protocols and Guidelines

The Chronic Disease Prevention and Well-Being Standard requires boards of health to develop and implement a program of public health interventions using a comprehensive health promotion approach that addresses chronic disease risk and protective factors to reduce the burden of illness from chronic diseases in the health unit population. The program of public health interventions shall be informed by:

- An assessment of the risk and protective factors for, and distribution of, chronic diseases.
- Consultation and collaboration with local stakeholders in the health, education, municipal, non-governmental, and other relevant sectors.
- An assessment of existing programs and services within the area of jurisdiction of the board of health to build on community assets and minimize duplication.
- Consideration of the following topics based on an assessment of local needs:
    - Built environment;
    - Healthy eating behaviours;
    - Healthy sexuality;
    - Mental health promotion;
    - Oral health;
    - Physical activity and sedentary behaviour;
    - Sleep;
    - Substance use; and

- UV exposure.
- Evidence of the effectiveness of the interventions employed.

Chronic disease prevention is also impacted by other Program Standards including, but not limited to:

- Healthy Environments Standard;
- Healthy Growth and Development Standard;
- Immunization Standard;
- School Health Standard; and
- Substance Use and Injury Prevention Standard.

There are linkages to chronic disease prevention in other guidelines and protocols, including:

- *Electronic Cigarettes Protocol, 2018* (or as current);
- *Healthy Environments and Climate Change Guideline, 2018* (or as current);
- *Healthy Growth and Development Guideline, 2018* (or as current);
- *Immunization for Children in Schools and Licensed Child Care Settings Protocol*, *2018* (or as current);
- *Mental Health Promotion Guideline, 2018* (or as current);
- *Menu Labelling Protocol, 2018* (or as current);
- *Oral Health Protocol, 2018* (or as current);
- *Population Health Assessment and Surveillance Protocol, 2018* (or as current);
- *Sexual Health and Sexually Transmitted/Blood-Borne Infections Prevention and Control Protocol, 2018* (or as current);
- *Substance Use Prevention and Harm Reduction Guideline, 2018* (or as current);
- *Tanning Beds Protocol, 2018* (or as current); and
- *Tobacco Protocol, 2018* (or as current).

5.2 Foundational Standards

The Foundational Standards inform all areas of board of health planning and programming as they underlie a comprehensive public health approach. There are three Foundational Standards that have implications for the Chronic Disease Prevention and Well-Being Standard.

- Population Health Assessment Standard
  - Public health practice responds effectively to current and evolving conditions, and contributes to the public's health and well-being with programs and services that are informed by the population's health status, including social determinants of health and health inequities.
- Health Equity Standard
  - Public health practice results in decreased health inequities such that everyone has equal opportunities for optimal health and can attain their full health potential without disadvantage due to social position or other socially determined circumstances.

- Effective Public Health Practice Standard
    - Public health practice is transparent, responsive to current and emerging evidence, and emphasizes continuous quality improvement.

6. Required Approaches

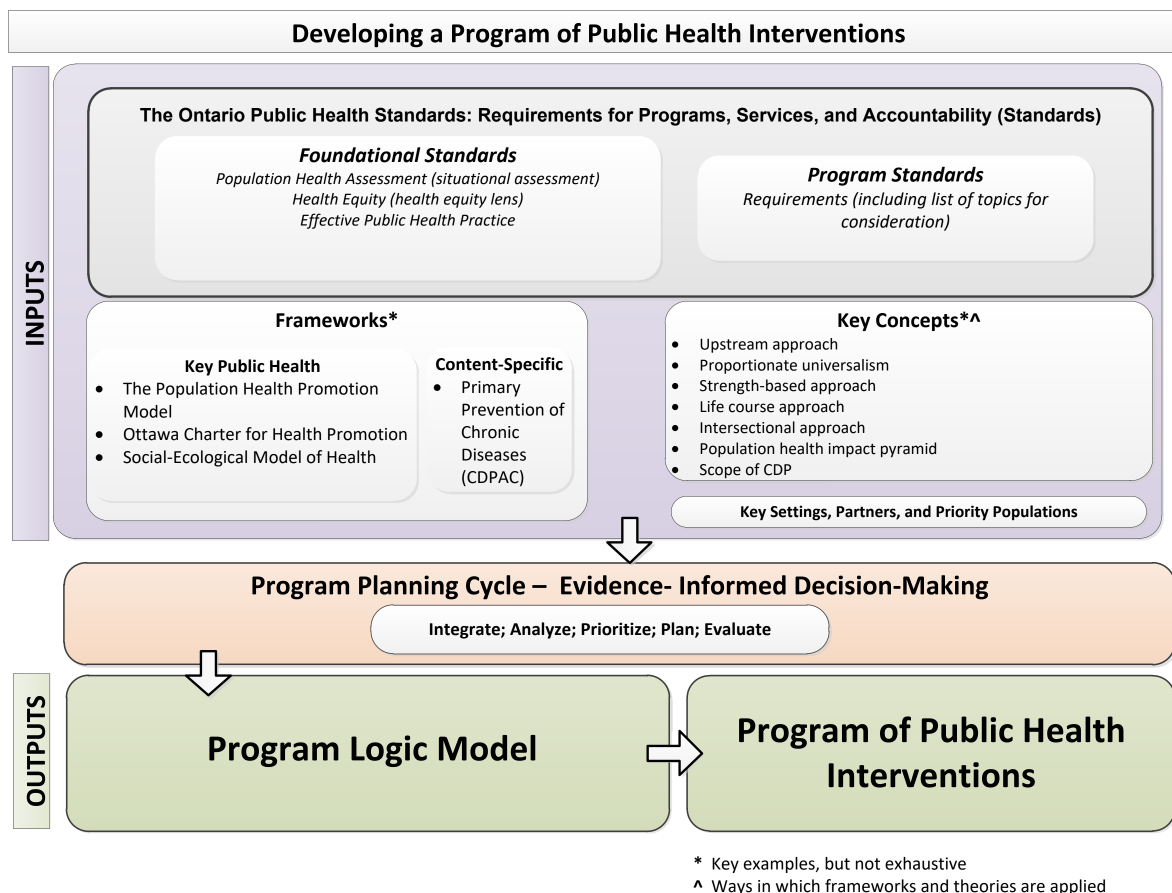
This section outlines required approaches that boards of health shall use when developing and implementing a program of public health interventions to support chronic disease prevention in the health unit population.

6.1 Public Health Program Planning Cycle

Boards of health shall use a public health program planning cycle to support evidence-informed decision-making related to the development and implementation of a program of public health interventions to support chronic disease prevention in the health unit population (Figure 4). This shall include consideration of:

- The preceding key public health and content-specific frameworks and related concepts (see section 4);
- Requirements outlined in the *Chronic Disease Prevention and Well-Being Standard, 2018* (or as current) and related Program Standards (see section 5.1);
- Requirements outlined in the Foundational Standards (see section 5.2);
- Key settings, partners, and priority populations, which may vary by chronic disease prevention topic and local context; and
- Key chronic disease prevention topics, based on an assessment of local need (see section 6.2).

Figure 4: Developing a program of public health interventions using a program planning cycle.



6.2 Topics for Consideration

Boards of health shall consider the following topics when developing and implementing a program of public health interventions to support chronic disease prevention based on an assessment of local need.

- **Built environment**
  The built environment is comprised of the buildings, transportation systems, energy systems, open space and agricultural lands that make up and support our communities. There is increasing evidence that the built environment has a direct impact on factors such as: employment; social support networks; and the physical and social environments that influence health and health equity and has been shown to impact physical inactivity, obesity, cardiovascular disease, respiratory disease, and mental illness, risk of injuries, and access to food.[19,20] It influences our exposure to environmental health hazards such as air pollution and extreme heat. The diverse and changing communities in Ontario are important to consider when thinking about the built environment and its impacts on health.[19,21]

- **Healthy eating behaviours**
  Healthy eating involves the consumption of foods from a variety of food groups and intake of water, while limiting processed or refined foods that are high in sodium, sugar, and saturated fat with the overall goal of maintaining or promoting health and preventing disease. Diet is a modifiable risk factor for prevention of many chronic diseases such as obesity, cardiovascular diseases, cancer, type II diabetes, hypertension, and others.[22] A substantial proportion of Canadians do not meet healthy eating recommendations and many factors challenge people's ability to make healthy choices including social, economic, built, and other environments and settings.[22-24]
- **Healthy sexuality**
  Sexual health is a vital component of an individual's physical and emotional health and well-being. Healthy sexuality involves acquiring the knowledge, skills and behaviour to enable good sexual health throughout life. It also includes the provision of information and services to prevent and manage sexually transmitted infections, unintended pregnancy, sexual dysfunction and violence. Some sexually transmitted infections, such as those due to the hepatitis B virus and the human papilloma virus, can result in the development of certain chronic diseases and cancers.[25] Sexually transmitted infections such as chlamydia, gonorrhea and syphilis have been rising since 2000.[26]
- **Mental health promotion**
  Physical and mental health are determinants and consequences of each other: positive mental health is critical to the maintenance of good physical health and in recovery from physical illness; conversely, mental health and its determinants can be improved in association with changes in social and physical environments.[27] Promoting mental and physical health holistically and simultaneously is essential to efforts to reduce health inequities and improve and protect the health and well-being of the population.
- **Oral health**
  A healthy mouth is a gateway to a healthy body. Dental diseases can lead to physical and psychosocial disability, influencing the way people eat, speak and socialize. Good oral health is essential as it is not only important in its own right but is associated with other chronic diseases such as diabetes, cardiovascular diseases, and aspiration pneumonia.[28] In addition, there are risk factors (e.g., diet, smoking, stress and trauma) which are a common cause for both poor oral health and other chronic conditions.[29]
- **Physical activity and sedentary behaviours**
  Physical activity is a key component of an individual's physical, mental and overall well-being. Insufficient physical activity is associated with increased rates of a number of chronic and preventable diseases such as type II diabetes, heart disease, stroke, high blood pressure, high cholesterol, certain cancers, osteoporosis, as well as with an increased risk of falls, fractures, and depression,

with resulting high economic impacts.[30,31] A substantial proportion of Canadians across all age groups are not meeting the recommended physical activity guidelines.[32,33]
Sedentary behaviour is postures or activities requiring little or no energy expenditure such as prolonged sitting, watching television, and extended time spent on computer and motorized transport. Sedentary behaviour is associated with an increased risk of: type II diabetes, cardiovascular disease and mortality; all-cause mortality (independent of physical activity); and certain cancers (e.g., colon, endometrial and lung cancer). Canadian adults are sedentary for most of their waking hours, and evidence demonstrates that children and youth spend a large proportion of their time in sedentary pursuits.[34,35]

- **Sleep**
  Sleep is a key component of an individual's physical, mental and overall well-being, with insufficient or disrupted sleep having immediate and long-term consequences. Both short and long sleep duration have been associated with adverse health outcomes including total mortality, cardiovascular disease, type II diabetes, obesity, respiratory disorders, and poor general health.[36,37] A substantial proportion of Canadians are not getting the right amount of sleep.[35,38]

- **Substance use**
  The use of tobacco, alcohol, cannabis, opioids, illicit and other substances are key public health concerns. Substance use occurs on a spectrum ranging from abstinence to having a substance use disorder. Substance-related health risks include cancer, cognitive impairment, mental illness, heart disease, cirrhosis of the liver, and fetal alcohol syndrome.[39] Alcohol in particular is associated with a variety of chronic diseases. Tobacco use impacts nearly every organ of the body, contributing to the development of chronic diseases such as cancer, respiratory, cardiac, vascular, neurological, and metabolic diseases, and death.[40] Tobacco use includes smoking and vaping of cigarettes and heated tobacco; smoking pipes and cigars; and sniffing, sucking, or chewing smokeless tobacco products. A comprehensive approach that includes preventing the initiation and escalation of smoking, protecting the community from exposure to second-hand smoke and vapour, motivating and supporting individuals to quit smoking, and identifying and reducing disparities in tobacco use and related harms can influence the impact of tobacco addiction on chronic disease.

- **UV exposure**
  Exposure to UV radiation from the sun or from artificial sources like tanning beds has significant adverse health outcomes without adequate protection. While there can be benefits of UV exposure, including facilitating vitamin D3 formation, UV radiation from the sun and tanning devices has been classified as a human carcinogen and is a key risk factor for skin cancers in addition to premature skin aging, eye problems and weakening of the immune system.[41,42] A substantial proportion of Canadians spend time in the sun without use of protection against

UV radiation, and the incidence of preventable skin cancers continues to increase.[43-45]

Glossary

Comprehensive health promotion approach combines multiple strategies and addresses the full range of health determinants to enable people to increase control over, and to improve, their physical, mental and social well-being.

Health promotion is defined by the World Health Organization as “the process of enabling people to increase control over, and to improve, their health. It moves beyond a focus on individual behaviour towards a wide range of social and environmental interventions”.[46] Health promotion strategies include: 1 - build healthy public policy; 2- create supportive environments; 3- strengthen community action; 4- develop personal skills; and 5- re-orient health services. It involves the population as a whole in the context of their everyday lives rather than focusing on people at risk for specific diseases and is directed toward action on the determinants or causes of health.[47]

Population health is the health of the population, measured by health status indicators. Population health is influenced by physical, biological, behavioural, social, cultural, economic, and other factors. The term is also used to refer to the prevailing health level of the population, or a specified subset of the population, or the level to which the population aspires. Population health describes the state of health, and public health is the range of practices, procedures, methods, institutions, and disciplines required to achieve it.[48] The term also is used to describe the academic disciplines involved in studies of determinants and dynamics of health status of the population.

Prevention (Levels of):

Primordial prevention addresses underlying economic, social, and environmental factors that lead to disease causation and aims to establish and maintain conditions that minimize health risks.

Primary prevention addresses specific causal factors for disease and aims to reduce the incidence of disease.

Secondary prevention addresses earlier stages of disease and aims to decrease the prevalence of disease through shortening its duration.

Tertiary prevention addresses later stages of disease (rehabilitation, treatment) and aims to decrease the impact and/or number of complications.[49]

Program of public health interventions includes the suite of programs, services, and other interventions undertaken by a board of health to fulfill the requirements and contribute to achieving the goals and program outcomes outlined in the Standards.

Protective factors are individual or environmental characteristics, conditions, or behaviours that reduce the effects of stressful life events. These factors also increase an individual’s ability to avoid risks, and promote social and emotional competence to thrive in all aspects of life.[50]

Risk factors are any attributes, characteristics or exposures of an individual that increase the likelihood of developing an unfavourable outcome.[51]

Social determinants of health are the interrelated social, political and economic factors that create the conditions in which people live, learn, work and play. The intersection of the social determinants of health causes these conditions to shift and change over time across the life span, impacting the health of individuals, groups and communities in different ways.[52]

Well-being refers to "the presence of the highest possible quality of life in its full breadth of expression focused on but not necessarily exclusive to: good living standards, robust health, a sustainable environment, vital communities, an educated populace, balanced time use, high levels of democratic participation, and access to and participation in leisure and culture."[53]

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Ministry of Health and Long-Term Care

Healthy Growth and Development Guideline, 2018

Population and Public Health Division,
Ministry of Health and Long-Term Care

Effective: January 1, 2018 or upon date of release

Ontario

1. Preamble

The Ontario Public Health Standards: Requirements for Programs, Services, and Accountability (Standards) are published by the Minister of Health and Long-Term Care under the authority of section 7 of the *Health Protection and Promotion Act* (HPPA) to specify the mandatory health programs and services provided by boards of health.[1,2] The Standards identify the minimum expectations for public health programs and services. Boards of health are accountable for implementing the Standards including the protocols and guidelines that are referenced in the Standards. Guidelines are program and topic-specific documents which provide direction on how boards of health shall approach specific requirement(s) identified within the Standards.

2. Purpose

The purpose of this guideline is to provide direction to boards of health on required approaches in developing and implementing a program of public health interventions to support healthy growth and development in the health unit population.

In doing so, this guideline includes the following components:

- Key public health and content specific frameworks and concepts (see section 4);
- An overview of boards of health roles and responsibilities (see section 5);
- Required approaches (see section 6) for:
  - Using a public health program planning cycle that supports boards of health to develop and implement a program of public health interventions by integrating all guideline components.
  - Topics that boards of health shall consider when making decisions to develop and implement healthy growth and development programs of public health intervention.
- Core definitions to support this guideline (see Glossary).

3. Reference to the Standards

This section identifies the standards and requirements to which this guideline relates.

Healthy Growth and Development

Requirement 2. The board of health shall develop and implement a program of public health interventions using a comprehensive health promotion approach to support healthy growth and development in the health unit population.

a) The program of public health interventions shall be informed by:
   i. An assessment of risk and protective factors that influence healthy growth and development.
   ii. An assessment of existing programs and services within the area of jurisdiction of the board of health to build on community assets and minimize duplication.

iii. Consultation and collaboration with local stakeholders in the health, education, municipal, non-governmental, social, and other relevant sectors with specific attention to:
    - School boards, principals, educators, parent groups, student leaders, and students;
    - Child care providers and organizations that provide child care services such as Community Hubs and Family Centres;
    - Health care providers and LHINs;
    - Social service providers; and
    - Municipalities.

iv. Consideration of the following topics based on an assessment of local needs:
    - Breastfeeding;
    - Growth and development;
    - Healthy pregnancies;
    - Healthy sexuality;
    - Mental health promotion;
    - Oral Health;
    - Preconception health;
    - Pregnancy counselling;
    - Preparation for parenting;
    - Positive parenting; and
    - Visual health.

v. Evidence of the effectiveness of the interventions.

b) The program of public health interventions shall be implemented in accordance with relevant guidelines, including the *Health Equity Guideline, 2018* (or as current); the *Healthy Growth and Development Guideline, 2018* (or as current); and the *Mental Health Promotion Guideline, 2018* (or as current).

School Health

Requirement 3. The board of health shall develop and implement a program of public health interventions using a comprehensive health promotion approach to improve the health of school-aged children and youth.

a) The program of public health interventions shall be informed by:
    - An assessment of the local population, including the identification of priority populations in schools, as well as school communities at risk for increased health inequities and negative health outcomes;
    - Consultation and collaboration with school boards, principals, educators, parent groups, student leaders, and students;
    - A review of other relevant programs and services delivered by the board of health; and
    - Evidence of the effectiveness of the interventions employed.

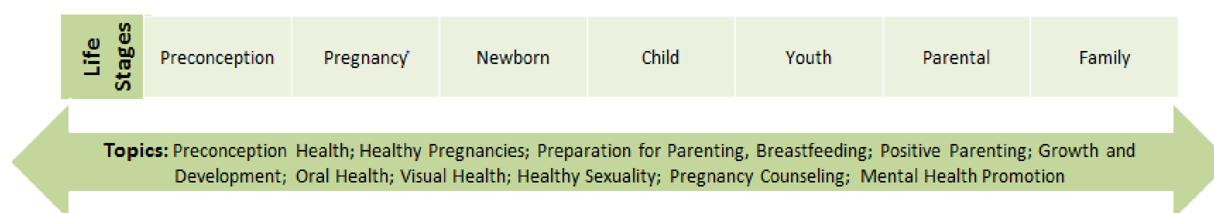
b) The program of public health interventions shall be implemented in accordance with relevant guidelines, including the *Chronic Disease Prevention Guideline,*

2018 (or as current); the *Health Equity Guideline, 2018* (or as current); the *Injury Prevention Guideline, 2018* (or as current); the *Healthy Growth and Development Guideline, 2018* (or as current); the *Mental Health Promotion Guideline, 2018* (or as current); the *School Health Guideline, 2018* (or as current); and the *Substance Use Prevention and Harm Reduction Guideline, 2018* (or as current).

4. Context

Healthy growth and development refers to a process that encompasses physical, mental, emotional and social well-being. It includes age-appropriate growth and development outcomes, such as motor, language, social, emotional and cognitive skills and abilities.[3] Healthy growth and development interventions are intended to help achieve a healthy start in life, including optimal preconception, pregnancy, newborn, child, youth, parental, and family health (See Figure 1).

Figure 1. Life Stages and Topics for Consideration for Healthy Growth and Development



Healthy child development is a key determinant of health, with robust evidence linking early life experiences to mental and physical health outcomes throughout the life course.[4] Because of the critical foundation laid by childhood experiences, investments in early childhood development can strongly influence population health and promote health equity, including impacting school success, economic participation, and social well-being.[5]

Healthy growth and development requires family-centered, community-based, culturally competent, coordinated care and support throughout the life course.[6]

4.1 Key Public Health Frameworks and Concepts

This section outlines key public health frameworks and concepts to inform the development and implementation of a program of public health interventions to support healthy growth and development with an emphasis on social determinants of health, health inequities, and comprehensive health promotion approaches.

4.1.1 The Population Health Promotion Model

This model shows how a population health approach can be implemented through action on the full range of health determinants by means of health promotion strategies. This model centres around three questions:

- "On **WHAT** should we take action?" – Acknowledges action is required across the determinants of health
- "**HOW** should we take action?" - Focuses on the actions in the Ottawa Charter for Health Promotion (below).
- "**WITH WHOM** should we act?" - Affirms that comprehensive action must be taken at multiple levels (e.g. individual, family, community, sector/system; and society) to bring about change.[7]

Figure 2. The Health Cube

Source: Public Health Agency of Canada. Population health promotion: an integrated model of population health and health promotion. Ottawa, ON: Government of Canada; 2001. Reproduced with permission.[8]

4.1.2 Ottawa Charter for Health Promotion

This framework provides the core strategies for health promotion action when planning, implementing, and evaluating healthy growth and development programs and services including:

- Building healthy public policy
- Creating supportive environments
- Strengthening community action
- Developing personal skills
- Re-orienting health services.[8]

The subsequent Jakarta Declaration reiterated the importance of the core strategies identified in the Ottawa Charter for Health Promotion, and added further emphasis that comprehensive approaches are the most effective; settings offer practical opportunities for implementation of comprehensive strategies, and participation is essential to the empowerment of individuals and communities in order to sustain efforts.[9]

4.1.3 Social-Ecological Model of Health

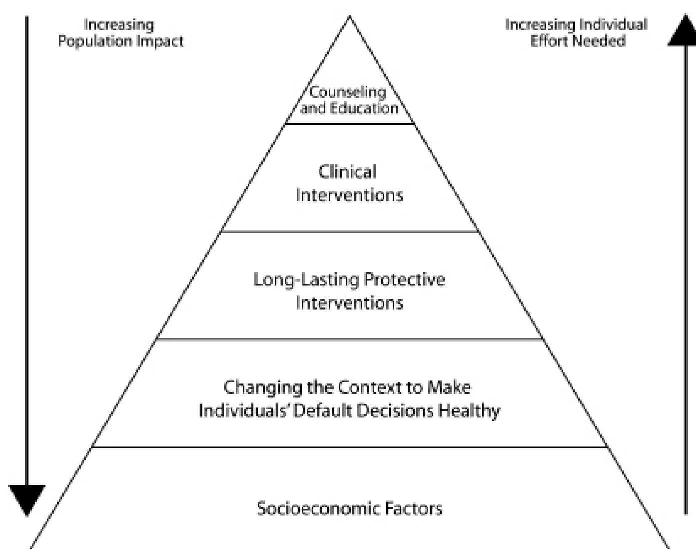
This framework considers the complex interplay between individual, relationship, community, and societal factors. It highlights the range of factors that put people at risk or protect them, as well as how factors at one level influence factors at another level.[10]

4.1.4 Key Public Health Concepts

This section outlines key concepts to inform the development and implementation of a program of public health interventions to support healthy growth and development.

- Upstream approach: seeking to address the causes of the causes.[11]
- Proportionate universalism: achieving a blend of universal and targeted interventions in order to reduce inequities among groups.[12]
- Strength-based approach: emphasizing strength and asset based assessment and programming.[13]
- Life course approach: recognizing differences in risks and opportunities across the life course including critical periods, as well as the cumulative effect of exposures within and across stages.[14]
- Intersectional approach: acknowledging that change must take place across a spectrum, from individual supports and services to organizational change; recognizing the unique historical, social and political contexts that an individual will experience based on their individual combination of diversity factors such as race, gender, gender identity, ability or status.[15]
- Population health impact pyramid (Figure 3): focusing on interventions that address supportive environments and social determinants is likely to have greater population impact versus relying solely on individual-level interventions.[16]

Figure 3. Population Health Impact Pyramid



Source: Frieden TR. A framework for public health action: the health impact pyramid. Am J Public Health. 2010;100(4):590-5. Reproduced with permission.[16]

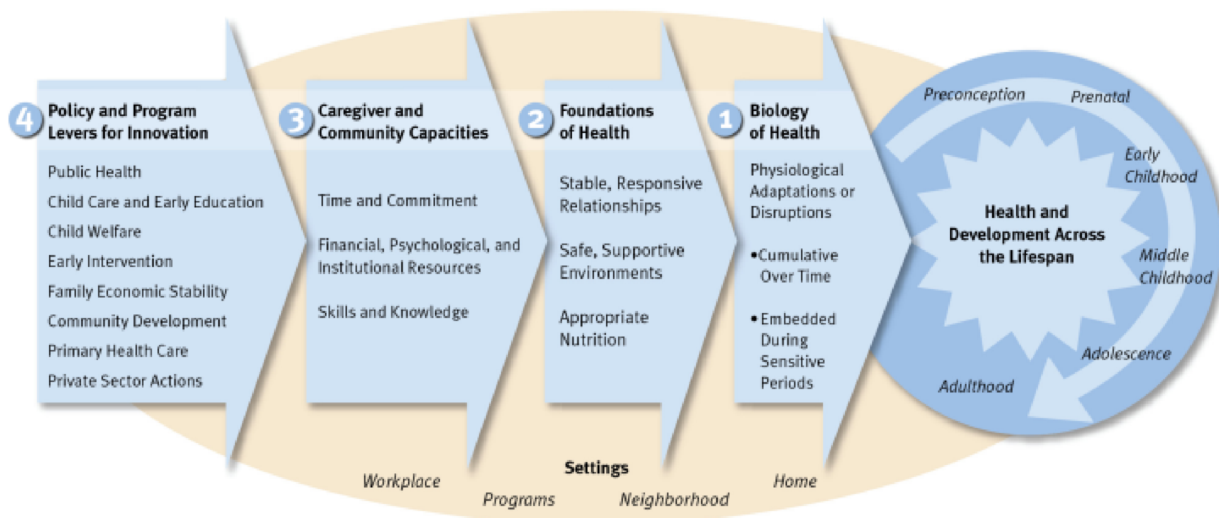
4.2 Key Content-Specific Frameworks and Concepts

This section provides a summary of key content-specific frameworks and key concepts related to healthy growth and development to inform the development and implementation of a program of public health interventions to support healthy growth and development.

4.2.1 Harvard's Early Childhood Policies and Programs Framework

The Center on the Developing Child at Harvard University developed an evidence-based framework addressing the contributors to early child development and which emphasizes the importance of action in a wide range of policy domains.[17]

Figure 4. Harvard's Early Childhood Policies and Programs Framework.



Source: Center on the Developing Child. The foundations of lifelong health are built in early childhood [Internet]. Cambridge, MA: Harvard University; 2010 [cited 2018 Jan 18]. Reproduced with permission.[17]

4.2.2 Key Content-Specific Concepts

Key concepts when applying these frameworks to practice include:

- **Developmental Assets:** a framework for positive youth development that includes 40 research-based internal and external strengths, supports, and non-cognitive skills that help children and youth to grow into healthy, caring and responsible adults[18]

- **Person-and-Family-Centred Care:** a holistic approach to the provision of care and services that encompasses not only the health of the individual but also their family, culture, and community.[19]

5. Roles and Responsibilities

The Standards accommodate variability across the province and require boards of health to apply the Foundational Standards in assessing the needs of their local population and to implement programs of public health interventions that promote healthy growth and development in the health unit population. A flexible approach accommodates greater variability where there is an opportunity to plan programs to decrease health inequities and address the needs of priority populations. Boards of health shall consider all topics listed in the Standards, but can focus public health programs and services on those topics that address identified gaps and will have the greatest impact on improving the health of the local population. Boards of health shall be guided by the principles of Need; Impact; Capacity; and Partnership, Collaboration, and Engagement.

5.1 Program Standards, Protocols and Guidelines

The Healthy Growth and Development Standard requires boards of health to develop and implement a program of public health interventions using a comprehensive health promotion approach to support healthy growth and development in the health unit population. The program of public health interventions shall be informed by:

- An assessment of the risk and protective factors that influence healthy growth and development;
- An assessment of existing programs and services within the area of jurisdiction of the board of health to build on community assets and minimize duplication;
- Consultation and collaboration with local stakeholders in the health, education, municipal, non-governmental, social and other relevant sectors with specific attention to:
  - School boards, principals, educators, parent groups, student leaders, and students.
  - Child care providers and organizations that provide child care services, such as Community Hubs and Family Centres;
  - Health care providers and Local Health Integration Networks (LHINs);
  - Social service providers; and
  - Municipalities.
- Consideration of the following topics based on an assessment of local needs:
  - Breastfeeding;
  - Growth and development;
  - Healthy pregnancies;
  - Healthy sexuality;
  - Mental health promotion;
  - Oral health;

  - Preconception health;
  - Pregnancy counseling;
  - Preparation for parenting;
  - Positive parenting; and
  - Visual health.
- Evidence of the effectiveness of the interventions employed.

Healthy growth and development is also impacted by other Program Standards including but not limited to:

- Chronic Disease Prevention and Well-Being Standard;
- Infectious and Communicable Diseases Prevention and Control Standard;
- School Health Standard; and
- Substance Use and Injury Prevention Standard.[1]

There are linkages to healthy growth and development in other guidelines and protocols, including:

- *Child Visual Health and Vision Screening Protocol, 2018* (or as current);
- *Chronic Disease Prevention Guideline, 2018* (or as current);
- *Healthy Babies Healthy Children Protocol, 2018* (or as current);
- *Injury Prevention Guideline, 2018* (or as current);
- *Mental Health Promotion Guideline, 2018* (or as current);
- *Oral Health Protocol, 2018* (or as current);
- *School Health Guideline, 2018* (or as current);
- *Sexual Health and Sexually Transmitted/Blood-Borne Infections Prevention and Control Protocol, 2018* (or as current); and
- *Substance Use Prevention and Harm Reduction Guideline, 2018* (or as current).

5.2 Foundational Standards

The Foundational Standards inform all areas of board of health planning and programming as they underlie a comprehensive public health approach. There are three Foundational Standards that have implications for the Healthy Growth and Development Standard.

- Population Health Assessment Standard
  - Public health practice responds effectively to current and evolving conditions, and contributes to the public's health and well-being with programs and services that are informed by the population's health status, including social determinants of health and health inequities.
- Health Equity Standard
  - Public health practice results in decreased health inequities such that everyone has equal opportunities for optimal health and can attain their full health potential without disadvantage due to social position or other socially determined circumstances.

- Effective Public Health Practice Standard
    - Public health practice is transparent, responsive to current and emerging evidence, and emphasizes continuous quality improvement.[1]

6. Required Approaches

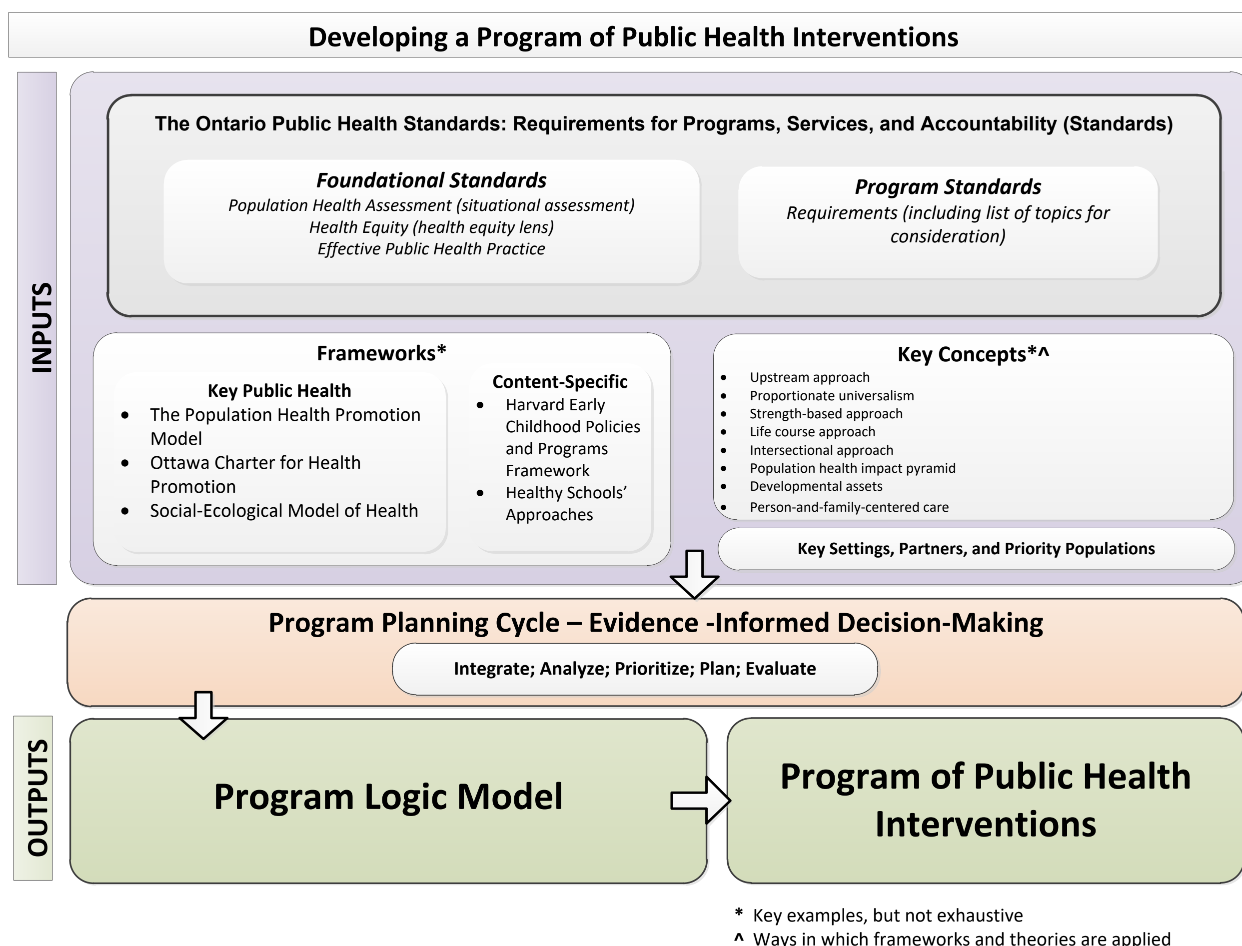
This section outlines required approaches that boards of health shall use when developing and implementing a program of public health interventions to support healthy growth and development in the health unit population.

6.1 Public Health Program Planning Cycle

Boards of health shall use a public health program planning cycle to support evidence-informed decision-making related to the development and implementation of a program of public health interventions to support healthy growth and development in the health unit population (Figure 6). This shall include consideration of:

- The preceding key public health and content-specific frameworks and related concepts (see section 4);
- Requirements outlined in the Healthy Growth and Development Standard and related program standards(see section 5.1);
- Requirements outlined in the Foundational Standards (see section 5.2);
- Key settings, partners and priority populations, which may vary by healthy growth and development topic and local context; and Key healthy growth and development topics, based on an assessment of local need (see section 6.2).

Figure 6: Developing a program of public health interventions



6.2 Topics for Consideration

Boards of health shall consider the following topics when developing and implementing a program of public health interventions to support healthy growth and development based on an assessment of local need.

- **Breastfeeding**
  Breastfeeding is the optimal source of nutrition to support healthy growth and cognitive development of infants.[20] Breastfeeding gives a healthy start to life, and provides short-and long-term health and neurodevelopmental benefits for the baby.[21,22] Mothers who breastfeed experience a delayed return of menses, which may help in child spacing. [23] Breastfeeding is also associated with a decreased risk for type 2 diabetes and certain breast and ovarian cancers.[23,24] Breastfeeding initiation rates have increased over time, but the rates for exclusive breastfeeding and breastfeeding duration are still low.[25]

- **Growth and Development**
  Healthy growth and development refers to a process that encompasses physical, mental, emotional and social well-being. Healthy child development is a key determinant of health, with robust evidence linking early life experiences to mental and physical health outcomes throughout the life course.[4] There is evidence of a health gradient in childhood development with socioeconomic factors clearly linked to healthy growth and development outcomes.[26] Interventions to ensure that all children have a healthy start in life can support physical, emotional, and mental health, including school success and economic participation.[5]

- **Healthy Pregnancies**
  Healthy pregnancies are essential to ensure the health of both the mother and child. Risk factors, such as alcohol intake, smoking, and poor nutrition in pregnancy, can lead to negative outcomes in the physical growth and cognitive development of the child.[27] In addition to prenatal care, interventions to improve modifiable risk and protective factors can better the health of the mother and child, families, and society overall.[28-31]

- **Healthy Sexuality**
  Sexual health is a vital component of an individual's physical and emotional health and well-being. Healthy sexuality involves acquiring the knowledge, skills and behaviour to enable good sexual health throughout life. It also includes the provision of information and services to prevent and manage sexually transmitted infections, unintended pregnancy (e.g., contraception, pregnancy counselling[*]), sexual dysfunction and violence. Sexually transmitted infections such as chlamydia, gonorrhea and syphilis have been rising since 2000.[32]

- **Mental Health Promotion**
  Mental health promotion is the process of enhancing the capacity of individuals and communities to increase control over their lives and improve their mental health. By working to increase self-esteem, coping skills, social connectedness and well-being, mental health promotion empowers people and communities to interact with their environments in ways that enhance emotional and spiritual strength. Evidence shows that initiatives that focus on giving "every child the best possible start" will yield the greatest impacts.[33] Adverse childhood experiences, such as poor attachment to parents, child abuse, family conflict, and neglect, have been clearly linked to risk for mental illness and addiction later in life. Promoting mental and physical health holistically and simultaneously is essential to efforts to reduce health inequities and improve and protect the health and well-being of the population.

- **Oral Health**

[*] Pregnancy counselling is listed as one of the required topics for consideration in the Healthy Growth and Development Standard.

Tooth decay, though largely preventable, remains the most common chronic illness among children.[34] Dental problems can result in eating and sleep disruption, which in turn is associated with underweight, poor performance in school, and failure to thrive.[35,36] Poor oral health is also detrimental for social outcomes such as low self-esteem, as well as longer-term impacts on employability.[37,38]

- **Preconception Health**
  Preconception, whether before a first or a subsequent pregnancy, is an opportune period to improve the health of women to prevent adverse maternal and infant outcomes. Risk factors that may occur during the preconception period include chronic conditions (e.g., obesity, hypertension, diabetes) and high-risk behaviours (e.g., alcohol intake, smoking, substance use).[39,40] These are associated with adverse outcomes such as low birth weight, birth defects or other complications, and infant mortality. [39,40] Approximately 40% of pregnancies being unplanned, preconception care aims to promote the health of women of reproductive age before conception and thereby improve pregnancy-related outcomes.[41]

- **Preparation for Parenting**
  Preparation for parenting is a significant stage that influences parents/caregivers as they transition from being partners to parents. Preparation for parenting may include a range of activities such as gathering supplies needed for the baby, information related to infant care, feeding and immunizations, pregnancy and parental leave/benefits etc. These have significant impact on the parent-infant relationship, infant development as well as the relationship between partners/caregivers.[42,43]

- **Positive Parenting**
  Positive parenting promotes healthy attachment with the parent and child, as well as child management strategies to promote positive behaviours in children. Positive and consistent parenting has been associated with successful child development and fewer behaviour problems.[44,45] Positive parenting can improve a child's development trajectory despite other risks, whereas inconsistent parenting and poor parenting have negative effects.[46,47] Children subject to harsh, inconsistent discipline practices are more likely to develop behaviour problems.[47] Interventions to promote positive parenting may not only improve child behaviour but general child health outcomes.[48-51]

- **Visual Health**
  Visual health is critically important to mobility, independence, social engagement, physical health, and educational and employment outcomes.[52] Uncorrected vision impairment is associated with higher rates of injuries, depression, and some chronic diseases, and can significantly affect a child's growth and development by limiting social, physical and educational participation.[52] Six out of ten children experiencing reading difficulties have uncorrected or undetected vision problems and almost 25% of school-age children have vision problems.[53]

Glossary

Comprehensive health promotion approach combines multiple strategies and addresses the full range of health determinants to enable people to increase control over, and to improve, their physical, mental and social well-being.

Developmental Assets is a framework for positive youth development that includes 40 research-based building blocks of healthy development that help children and youth to grow into healthy, caring and responsible adults.[18] Research has shown that the more developmental assets young people acquire, the less likely they are to engage in high risk behaviours and the more likely they are to do well in school, be civically engaged and value diversity.[18]

Early childhood development refers to the physical, cognitive, linguistic, and socio-emotional development of a child from the preconception stage up to age six.[54] This period encompasses the most rapid development in a human life. Research has found that early childhood experiences have a decisive impact on the architecture of the developing brain and therefore lay a critical foundation for later life health, well-being, cognitive capacity and social behaviour.[17]

Health promotion is defined by the World Health Organization as "the process of enabling people to increase control over, and to improve, their health. It moves beyond a focus on individual behaviour towards a wide range of social and environmental interventions".[55] Health promotion strategies include: 1 - build healthy public policy; 2- create supportive environments; 3- strengthen community action; 4- develop personal skills; and 5- re-orient health services. It involves the population as a whole in the context of their everyday lives rather than focusing on people at risk for specific diseases and is directed toward action on the determinants or causes of health.[56]

Life stages refer to developmental phases through which individuals pass over the course of their lives, including preconception, infancy, childhood, adolescence, adulthood, and old age, each with unique biological, psychological, and social characteristics.[57] Sub-phases within these stages are also often identified. Transitions between life stages can be accompanied by unique developmental needs, challenges and risks. This guideline focuses on preconception, pregnancy, newborn, child, and youth life stages, including the influence of parents and families on achieving a healthy start in life.

Population health is the health of the population, measured by health status indicators. Population health is influenced by physical, biological, behavioural, social, cultural, economic, and other factors. The term is also used to refer to the prevailing health level of the population, or a specified subset of the population, or the level to which the population aspires. Population health describes the state of health, and public health is the range of practices, procedures, methods, institutions, and disciplines required to achieve it.[58] The term also is used to describe the academic disciplines involved in studies of determinants and dynamics of health status of the population.

Program of public health interventions includes the suite of programs, services, and other interventions undertaken by a board of health to fulfill the requirements and contribute to achieving the goals and program outcomes outlined in the Standards.

Protective factors are individual or environmental characteristics, conditions, or behaviors that reduce the effects of stressful life events. These factors also increase an individual's ability to avoid risks, and promote social and emotional competence to thrive in all aspects of life.[59]

Risk factors are any attributes, characteristics or exposures of an individual that increase the likelihood of developing an unfavourable outcome.[60]

Social determinants of health are the interrelated social, political and economic factors that create the conditions in which people live, learn, work and play. The intersection of the social determinants of health causes these conditions to shift and change over time and across the life span, impacting the health of individuals, groups and communities in different ways.[61]

Well-being refers to "the presence of the highest possible quality of life in its full breadth of expression focused on but not necessarily exclusive to: good living standards, robust health, a sustainable environment, vital communities, an educated populace, balanced time use, high levels of democratic participation, and access to and participation in leisure and culture."[62]

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Ministry of Health and Long-Term Care

Injury Prevention Guideline, 2018

Population and Public Health Division,
Ministry of Health and Long-Term Care

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Ontario

1. Preamble

The Ontario Public Health Standards: Requirements for Programs, Services, and Accountability (Standards) are published by the Minister of Health and Long-Term Care under the authority of section 7 of the *Health Protection and Promotion Act* (HPPA) to specify the mandatory health programs and services provided by boards of health.[1,2] The Standards identify the minimum expectations for public health programs and services. Boards of health are accountable for implementing the Standards including the protocols and guidelines that are referenced in the Standards. Guidelines are program and topic-specific documents which provide direction on how boards of health shall approach specific requirement(s) identified within the Standards.

2. Purpose

The purpose of this guideline is to provide direction to boards of health on required approaches in developing and implementing a program of public health interventions to support injury prevention in the health unit population.

In doing so, the guideline includes the following components:

- Key public health and content specific frameworks and concepts (see section 4);
- An overview of boards of health roles and responsibilities (see section 5);
- Required approaches (see section 6):
  - Using a public health program planning cycle that supports boards of health to develop and implement a program of public health interventions by integrating all guideline components.
  - Topics that boards of health shall consider when making decisions to develop and implement injury prevention programs of public health intervention.
- Core definitions to support this guideline (see Glossary).

3. Reference to the Standards

This section identifies the standards and requirements to which this guideline relates.

School Health

Requirement 3. The board of health shall develop and implement a program of public health interventions using a comprehensive health promotion approach to improve the health of school-aged children and youth.

a) The program of public health interventions shall be informed by:
   - An assessment of the local population, including the identification of priority populations in schools, as well as school communities at risk for increased health inequities and negative health outcomes;
   - Consultation and collaboration with school boards, principals, educators, parent groups, student leaders, and students:

- A review of other relevant programs and services delivered by the board of health; and
- Evidence of the effectiveness of the interventions employed.

b) The program of public health interventions shall be implemented in accordance with relevant guidelines, including the *Chronic Disease Prevention Guideline, 2018* (or as current); the *Health Equity Guideline, 2018* (or as current); the *Injury Prevention Guideline, 2018* (or as current); the *Healthy Growth and Development Guideline, 2018* (or as current); the *Mental Health Promotion Guideline, 2018* (or as current); the *School Health Guideline, 2018* (or as current); and the *Substance Use Prevention and Harm Reduction Guideline, 2018* (or as current).

Substance Use and Injury Prevention

Requirement 2. The board of health shall develop and implement a program of public health interventions using a comprehensive health promotion approach that addresses risk and protective factors to reduce the burden of preventable injuries and substance use in the health unit population.

a) The program of public health interventions shall be informed by:
   i. An assessment of the risk and protective factors for, and distribution of, injuries and substance use;
   ii. Consultation and collaboration with local stakeholders in the health, education, municipal, non-governmental, and other relevant sectors, including LHINs;
   iii. An assessment of existing programs and services within the area of jurisdiction of the board of health to build on community assets and minimize duplication;
   iv. Consideration of the following topics based on an assessment of local needs:
      - Comprehensive tobacco control[*];
      - Concussions;
      - Falls;
      - Life promotion, suicide risk and prevention;
      - Mental health promotion;
      - Off-road safety;
      - Road safety;
      - Substance use; and
      - Violence.
   v. Evidence of the effectiveness of the interventions employed.

b) The program of public health interventions shall be implemented in accordance with relevant guidelines, including the *Health Equity Guideline, 2018* (or as current); the *Injury Prevention Guideline, 2018* (or as current); the *Mental Health*

[*] Comprehensive tobacco control includes: preventing the initiation of tobacco; promoting quitting among young people and adults; eliminating exposure to environmental tobacco smoke; and identifying and eliminating disparities related to tobacco use and its societal outcomes among different population groups.

Promotion Guideline, 2018 (or as current); and the *Substance Use Prevention and Harm Reduction Guideline, 2018* (or as current).

4. Context

An injury is the physical damage that results when a human body is subjected to energy in amounts that exceed the threshold of physiological tolerance, or from lack of one or more vital elements (e.g. oxygen).[3] The energy could be mechanical, thermal, chemical, or radiant.[3] Injuries are further defined by whether they are intentional or unintentional. Intentional injuries include interpersonal violence (homicide, sexual assault, neglect and abandonment, and other maltreatment), suicide, and collective violence (war).[4] Unintentional injuries represent the majority of injuries, with the precipitating events being predictable and preventable.[5]

Injuries are a serious societal and global public health issue, with important health, social and economic implications. Injuries do not occur by chance (i.e. they are not accidents), but are predictable and preventable. They affect individuals and communities disproportionately, with certain groups experiencing a higher frequency and/or severity of injury compared to others.

The economic burden of injury is substantial. In some cases, injuries result in a larger economic burden than some chronic diseases, such as heart disease and stroke.[6] Direct costs of injury may include health care costs such as sending paramedics to the scene of an injury, the ambulance to the hospital, acute hospital treatment followed by rehabilitation. Some injuries may require a number of surgeries. The patient may be transported by air or ambulance to a trauma centre or a centre with a specialty such as toxicology.[6]

In addition to direct costs to the health care system, injuries also result in indirect costs to the individual, family and community. Indirect costs of injury may include family needing to take time off work and pay for accommodation close to the treatment centre, thus leaving the rest of the family in the care of others. If additional treatment is needed over the years, the family may need to take more time off work, pay for food and accommodation, and pay for caregiving for the rest of the family.[6]

Non-quantifiable costs of injury include emotional trauma, permanent partial or full disability, altered career implications, dramatic changes in future roles in family and society, loss of independent living and the necessity for institutional care.[6]

Injury prevention refers to “ongoing strategies, policies, or programs designed to eliminate or reduce the occurrence and severity of injuries”.[7] In general, public health’s focus is on the prevention of injuries before they occur (i.e., primary prevention), although there may also be a role in applying other levels of prevention for specific types of injuries (e.g., increasing public and providers’ understanding regarding recognition and management of concussions).

4.1 Key Public Health Frameworks and Concepts

This section outlines key public health frameworks and concepts to inform the development and implementation of a program of public health interventions to support injury prevention with an emphasis on social determinants of health, health inequities, and comprehensive health promotion approaches.

4.1.1 The Population Health Promotion Model

This model shows how a population health approach can be implemented through action on the full range of health determinants by means of health promotion strategies.[8] This model centres around three questions:

- "On **WHAT** should we take action?" - Acknowledges action is required across the determinants of health
- "**HOW** should we take action?" - Focuses on the actions in the Ottawa Charter for Health Promotion (below)
- "**WITH WHOM** should we act?" - Affirms that comprehensive action must be taken at multiple levels (e.g. individual, family, community, sector/system; and society) to bring about change.

Figure 1. The Health Cube

Source: Public Health Agency of Canada. Population health promotion: an integrated model of population health and health promotion. Ottawa, ON: Government of Canada; 2001. Reproduced with permission.[8]

4.1.2 Ottawa Charter for Health Promotion

This framework provides the core strategies for health promotion action when developing and implementing a program of public health interventions to support injury prevention including:

- Building healthy public policy;
- Creating supportive environments;
- Strengthening community action;
- Developing personal skills; and
- Re-orienting health services.[9]

The subsequent Jakarta Declaration reiterated the importance of the core strategies identified in the Ottawa Charter for Health Promotion, and added further emphasis that

comprehensive approaches are the most effective; settings offer practical opportunities for implementation of comprehensive strategies, and participation is essential to the empowerment of individuals and communities in order to sustain efforts.[10]

4.1.3 Social-Ecological Model of Health

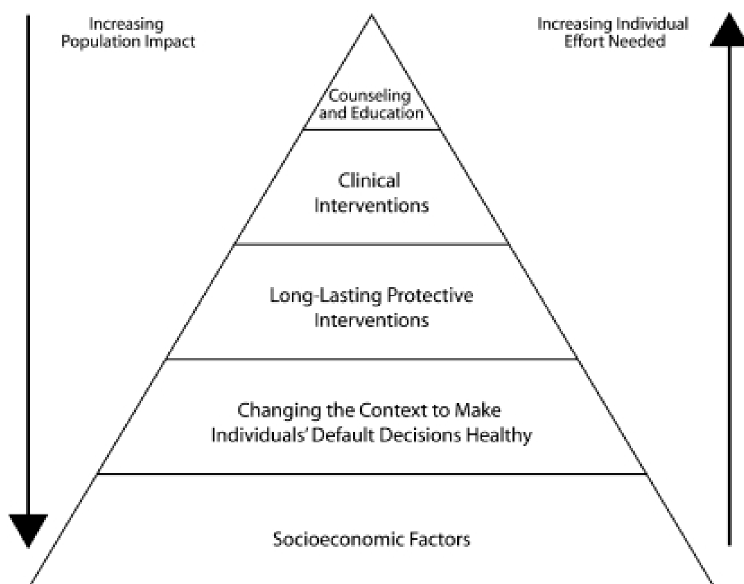
This framework considers the complex interplay between individual, relationship, community, and societal factors. It highlights the range of factors that put people at risk or protect them, as well as how factors at one level influence factors at another level.[11]

4.1.4 Key Public Health Concepts

This section outlines key concepts to inform the development and implementation of a program of public health interventions to support injury prevention.

- Upstream approach: seeking to address the causes of the causes.[12]
- Proportionate universalism: achieving a blend of universal and targeted interventions in order to reduce inequities among groups.[13]
- Strength-based approach: emphasizing strength and asset based assessment and programming.[14]
- Life course approach: recognizing differences in risks and opportunities across the life course including critical periods, as well as the cumulative effect of exposures within and across stages.[15]
- Intersectional approach: Acknowledging that change must take place across a spectrum, from individual supports and services to organizational change; recognizing the unique historical, social and political contexts that an individual will experience based on their individual combination of diversity factors such as race, gender, gender identity, ability or status.[16]
- Population health impact pyramid (Figure 2): focusing on interventions that address supportive environments and social determinants is likely to have greater population impact versus relying solely on individual-level interventions.[17]

Figure 2. Population Health Impact Pyramid



Source: Frieden TR. A framework for public health action: the health impact pyramid. Am J Public Health. 2010;100(4):590-5. Reproduced with permission.[17]

4.2 Key Content-Specific Frameworks and Concepts

This section provides a summary of key content-specific frameworks and key concepts related to injury prevention to inform the development and implementation of a program of public health interventions to support injury prevention.

4.2.1 Haddon's Matrix

Haddon's Matrix highlights the causes of an injury event, as well as the associated timeline.[18] Haddon's Matrix can be used to think beyond individual factors that contribute to injury, and toward a multifactoral approach to prevention. Haddon's Matrix also provides a framework to think about prevention efforts.[18] In addition to the matrix, there are the associated ten countermeasures that were designed to understand how prevention efforts can mitigate the causes of injury. The countermeasures can be used to further inform the selection of an intervention.[18]

4.2.2 Three E's of Injury Prevention

The Three E's of Injury Prevention, classified injury prevention programming into three categories of intervention: Education, Enforcement, and Engineering.[18] The Three E's can also include: evaluation, economic incentives, and empowerment.[18] The E's can be

used to think about the type of intervention that is being selected and implemented, and is used to recognize that a multi-faceted approach, or interventions that use more than one strategy, can have the greatest impact on injury.[18]

4.2.3 Key Content-Specific Concepts

Key concepts when applying these frameworks to practice include:

- Measures of burden (mortality, morbidity) are used to estimate the impact of injury in a population. These measures summarize the risk factors associated with injury, and the disability and/or death that results from an injury occurrence. The impact of injury is also measured in terms of cost including direct and indirect costs to the health care system, productivity, and those that cannot be measured similarly, such as emotional trauma and the impact that injury has on individuals and families.
- Population level health summaries can include PYLL (Preventable Years of Life Lost), QALYs (Quality-Adjusted Life Years) and DALYs (Disability-Adjusted Life Years).

5. Roles and Responsibilities

The Standards accommodate variability across the province and require boards of health to apply the Foundational Standards in assessing the needs of their local population and to implement programs of public health interventions that reduce the burden of injury in the health unit population. A flexible approach accommodates greater variability where there is an opportunity to plan programs to decrease health inequities and address the needs of priority populations. Boards of health shall consider all topics listed in the Standards, but can focus public health programs and services on those topics that address identified gaps and will have the greatest impact on improving the health of the local population. Boards of health shall be guided by the principles of Need; Impact; Capacity; and Partnership, Collaboration, and Engagement.

5.1 Program Standards, Protocols and Guidelines

The Substance Use and Injury Prevention Standard requires boards of health to develop and implement a program of public health interventions using a comprehensive health promotion approach that addresses risk and protective factors to reduce the burden of preventable injuries and substance use in the health unit population. The program of public health interventions shall be informed by:

- An assessment of the risk and protective factors for, and distribution of, injuries and substance use;
- Consultation and collaboration with local stakeholders in the health, education, municipal, non-governmental, and other relevant sectors, including LHINs (Local Health Integration Networks);
- An assessment of existing programs and services within the area of jurisdiction of the board of health to build on community assets and minimize duplication;

- Consideration of the following topics based on an assessment of local needs:
    - Comprehensive tobacco control;
    - Concussions;
    - Falls;
    - Life promotion, suicide risk and prevention;
    - Mental health promotion;
    - Off-road safety;
    - Road safety;
    - Substance use; and
    - Violence.
- Evidence of the effectiveness of the interventions employed.

Injury prevention is also impacted by other Program Standards including, but not limited to:

- Healthy Environments Standard,
- Healthy Growth and Development Standard,
- Safe Water Standard,
- School Health Standard, and
- Chronic Disease Prevention and Well-Being Standard.

There are linkages to injury prevention in other guidelines and protocols, including:

- *Healthy Growth and Development Guideline, 2018, (*or as current),
- *Mental Health Promotion Guideline, 2018, (*or as current),
- *Substance Use Prevention and Harm Reduction Guideline, 2018, (*or as current),
- *Recreational Water Protocol, 2018, (*or as current), and
- *Operational Approaches for Recreational Water Guideline, 2018, (*or as current).

5.2 Foundational Standards

The Foundational Standards inform all areas of board of health planning and programming as they underlie a comprehensive public health approach. There are three Foundational Standards that have implications for the Substance Use and Injury Prevention Standard.

- Population Health Assessment Standard
    - Public health practice responds effectively to current and evolving conditions, and contributes to the public's health and well-being with programs and services that are informed by the population's health status, including social determinants of health and health inequities.
- Health Equity Standard
    - Public health practice results in decreased health inequities such that everyone has equal opportunities for optimal health and can attain their full health potential without disadvantage due to social position or other socially determined circumstances.

- Effective Public Health Practice Standard
  - Public health practice is transparent, responsive to current and emerging evidence, and emphasizes continuous quality improvement.

6. Required Approaches

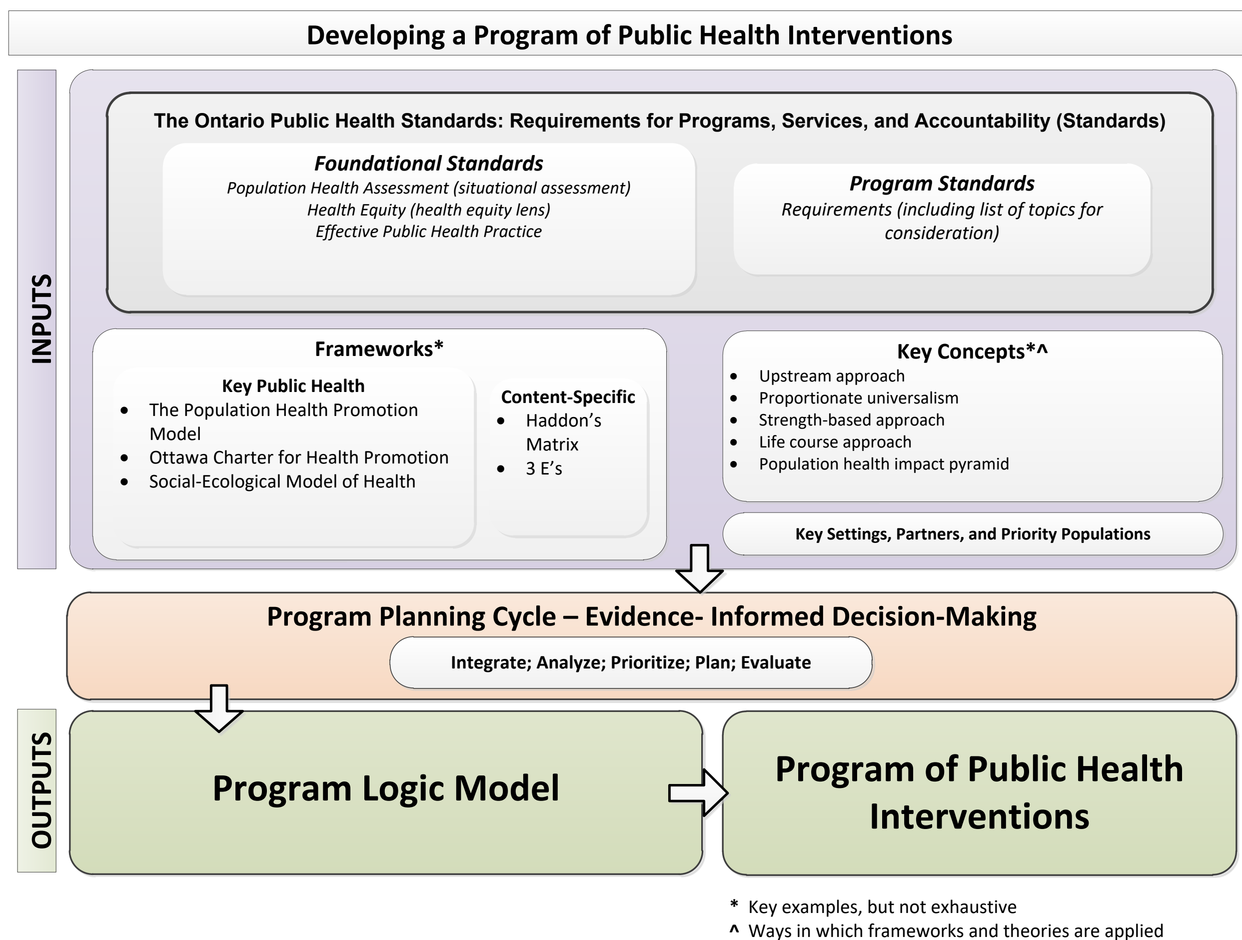
This section outlines required approaches that boards of health shall use when developing and implementing a program of public health interventions to support injury prevention in the health unit population.

6.1 Public Health Program Planning Cycle

Boards of health shall use a public health program planning cycle to support evidence-informed decision-making related to the development and implementation of a program of public health interventions to support injury prevention in the health unit population (Figure 3). This shall include consideration of:

- The preceding key public health and content-specific frameworks and related concepts (see section 4);
- Requirements outlined in the Substance Use and Injury Prevention Standard and related Program Standards (see section 5.1);
- Requirements outlined in the Foundational Standards (see section 5.2), and;
- Key settings, partners, and priority populations, which may vary by injury prevention topic and local context; and
- Key injury prevention topics, based on an assessment of local need (see section 6.2).

Figure 3. Developing a program of public health interventions using a program planning cycle.



6.2 Topics for Consideration

Boards of health shall consider the following topics when developing and implementing a program of public health intervention to support injury prevention based on an assessment of local need.

- **Concussions**
  Concussions are injuries to the brain and represent a serious health issue with both short term and long term effects.[18] Common mechanisms of concussion include participation in sport and recreation activity, falls and motor vehicle collisions.[18] Signs and symptoms of concussion vary and include cognitive, sleep, physical or behavioural changes.[19] Repeated concussions are of particular concern given the significant impact they can have on an individual, across the lifespan.[18]

- **Falls**
  Falls are a significant health issue in Canada representing the leading cause of injury-related hospitalizations in older adults and children under the age of 14 years, and the leading cost of all injury in Canada.[20-22]The most common injury type associated with falls in older adults is fractures, followed by sprains or strains. These injuries can lead to significant disability including the potential for institutionalization in long-term care settings.[20] Falls in children are of particular concern, as serious injury to the head may result, with potential long-term outcomes.[18]
- **Life promotion, suicide risk and prevention**
  Suicide is a significant public health issue with deep and devastating effects on individuals, families, and communities. Understanding suicide is complex - it involves a wide range of factors including social, cultural, biological, psychological, spiritual, economic, and other factors, as well as the physical environments where people live, learn, work and play.[23]
- **Mental health promotion**
  Physical and mental health are determinants and consequences of each other. Positive mental health is critical to the maintenance of good physical health and in recovery from physical illness and injury. Conversely, mental health and its determinants can be improved in association with changes in social and physical environments.[24] Promoting mental and physical health holistically and simultaneously is essential to efforts to reduce health inequities and improve and protect the health and well-being of the population.
- **Off-road safety**
  Off-road vehicles can include all-terrain vehicles, snowmobiles, dirt bikes, motocross bikes, amphibious vehicles, quad bikes and other similar vehicles. They are motorized vehicles used for both recreation and transportation purposes in Canada. Off-road vehicles represent an increasing mechanism for injury and fatality in Canadians, particularly in pediatric populations in remote areas of Canada, including Indigenous communities.[25]
- **Road safety**
  Injuries caused by motor vehicle collisions (MVCs) remain a significant public health problem in Canada. Injuries from transport related incidents are a leading cause of overall injury costs in Canada, second only to falls.[22] The number of road deaths and injuries remain high with MVCs representing the leading cause of injury-related death in 0 – 24 year olds in Canada.[26]
- **Substance Use**
  The use of tobacco, alcohol, cannabis, opioids, illicit and other substances are key public health concerns. Substance use occurs on a spectrum ranging from abstinence to having a substance use disorder. Public health interventions to reduce the health burdens associated with substance use can be targeted across the spectrum. Substance-related health risks and harms such as cognitive impairment, intentional

and unintentional injury, violence, motor vehicle collisions, among others directly affect individuals, communities, roadways and neighbourhoods.[27-29] Driving while under the influence of substances is harmful to individual and community safety.

- **Violence**
  The World Health Organization identifies three main classifications of violence, including self-directed violence, interpersonal violence, and collective violence.[30] Types of violence include child abuse and bullying, youth violence, intimate partner violence, workplace violence, sexual violence, gender-based violence, violence against women, and elder abuse. Violence is an important public health issue with far reaching consequences for both mental and physical health. It contributes to suicide, substance use problems, depression, anxiety, and other psychological harms.[31,32]

Glossary

Comprehensive health promotion approach combines multiple strategies and addresses the full range of health determinants to enable people to increase control over, and to improve, their physical, mental and social well-being.

Disability-Adjusted Life Year (DALY) is a population-based measure of the burden of disease and injury expressed in terms of hypothetical healthy life years that are lost as a result of specified diseases and injuries.[6]

Health promotion: is defined by the World Health Organization as “the process of enabling people to increase control over, and to improve, their health. It moves beyond a focus on individual behaviour towards a wide range of social and environmental interventions”.[33] Health promotion strategies include: 1 - build healthy public policy; 2- create supportive environments; 3- strengthen community action; 4- develop personal skills; and 5- re-orient health services. It involves the population as a whole in the context of their everyday lives rather than focusing on people at risk for specific diseases and is directed toward action on the determinants or causes of health.[34]

Population health is the health of the population, measured by health status indicators. Population health is influenced by physical, biological, behavioural, social, cultural, economic, and other factors. The term is also used to refer to the prevailing health level of the population, or a specified subset of the population, or the level to which the population aspires. Population health describes the state of health, and public health is the range of practices, procedures, methods, institutions, and disciplines required to achieve it.[35] The term also is used to describe the academic disciplines involved in studies of determinants and dynamics of health status of the population.

Potential Years of Life Lost (PYLL) is a measure of the relative impact of various diseases and lethal forces on society. PYLL highlights the loss to society as a result of youthful or early deaths. It is the sum of the average years a person or group would have lived had they not died prematurely, calculated using an average life expectancy of 75 years.[6]

Program of public health interventions includes the suite of programs, services, and other interventions undertaken by a board of health to fulfill the requirements and contribute to achieving the goals and program outcomes outlined in the Standards.

Protective factors are individual or environmental characteristics, conditions, or behaviors that reduce the effects of stressful life events. These factors also increase an individual's ability to avoid risks, and promote social and emotional competence to thrive in all aspects of life.[36]

Risk factors are any attributes, characteristics or exposures of an individual that increase the likelihood of developing a disease or injury.[37]

Social determinants of health are the interrelated social, political and economic factors that create the conditions in which people live, learn, work and play. The intersection of the social determinants of health causes these conditions to shift and change over time across the life span, impacting the health of individuals, groups and communities in different ways.[38]

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Ministry of Health and Long-Term Care

Management of Potential Rabies Exposures Guideline, 2018

Population and Public Health Division,
Ministry of Health and Long-Term Care

Effective: January 1, 2018 or upon date of release

Ontario

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1. Preamble

The Ontario Public Health Standards: Requirements for Programs, Services, and Accountability (Standards) are published by the Minister of Health and Long-Term Care under the authority of section 7 of the *Health Protection and Promotion Act* (HPPA) to specify the mandatory health programs and services provided by boards of health.[1,2] The Standards identify the minimum expectations for public health programs and services. Boards of health are accountable for implementing the Standards including the protocols and guidelines that are referenced in the Standards. including the protocols and guidelines that are referenced in the Standards. Guidelines are program and topic-specific documents which provide direction on how boards of health shall approach specific requirement(s) identified within the Standards.

1.1 Introduction

The *Rabies Prevention and Control Protocol, 2018 (*or as current) is part of the Infectious and Communicable Diseases Prevention and Control Standard.[3] The purpose of the *Rabies Prevention and Control Protocol, 2018 (*or as current) is to prevent a human case of rabies by standardizing animal rabies surveillance and the management of human rabies exposures.[3]

This guideline document was created to assist staff at boards of health with the management of suspected rabies exposures. The document is a condensed version of the 'Rabies Vaccine' chapter in the *Canadian Immunization Guide*, with some amendments made by the Ministry of Health and Long-Term Care in order to adapt the information to an Ontario-specific context.[4] Please note that this document ONLY summarizes post-exposure prophylaxis (PEP) guidelines. For information about pre-exposure management and vaccination of high-risk occupational categories, please see the relevant chapter in the *Canadian Immunization Guide.*[4]

1.2 Reference to the Standards

This section identifies the standard and requirements to which this guideline relates.

Infectious and Communicable Diseases Prevention and Control

Requirement 11. The board of health shall provide public health management of cases, contacts, and outbreaks to minimize the public health risk in accordance with the *Infectious Diseases Protocol, 2018* (or as current); the *Institutional/Facility Outbreak Management Protocol, 2018* (or as current); the *Management of Potential Rabies Exposures Guideline, 2018* (or as current); the *Rabies Prevention and Control Protocol, 2018* (or as current); the *Sexual Health and Sexually Transmitted/ Blood-Borne Infections Prevention and Control Protocol, 2018* (or as current); and the *Tuberculosis Prevention and Control Protocol, 2018* (or as current).

Requirement 13. The board of health shall receive and respond to all reported cases of potential rabies exposures received from the public, community partners, and health care providers in accordance with the *Health Protection and Promotion Act*; the *Management*

of Potential Rabies Exposures Guideline, 2018 (or as current); and the *Rabies Prevention and Control Protocol, 2018* (or as current).

Requirement 14. The board of health shall address the prevention and control of rabies threats as per a local Rabies Contingency Plan and in consultation with other relevant agencies* and orders of government, in accordance with the *Management of Potential Rabies Exposures Guideline, 2018* (or as current) and the *Rabies Prevention and Control Protocol, 2018* (or as current).

*Currently these agencies include the Ministry of Natural Resources and Forestry (MNRF), the Canadian Food Inspection Agency (CFIA) and the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA).

Requirement 21. The board of health shall ensure 24/7 availability to receive reports of and respond to:

a) Infectious diseases of public health importance in accordance with the *Health Protection and Promotion Act*; the *Mandatory Blood Testing Act, 2006*; the *Infectious Diseases Protocol, 2018* (or as current); and the *Institutional/ Facility Outbreak Management Protocol, 2018* (or as current);
b) Potential rabies exposures in accordance with the *Health Protection and Promotion Act*; the *Management of Potential Rabies Exposures Guideline, 2018* (or as current); and the *Rabies Prevention and Control Protocol, 2018* (or as current); and
c) Animal cases of avian chlamydiosis, avian influenza, novel influenza, or *Echinococcus multilocularis* infection, in accordance with the *Health Protection and Promotion Act*, the *Management of Avian Chlamydiosis in Birds Guideline, 2018* (or as current); the *Management of Avian Influenza or Novel Influenza in Birds or Animals Guideline, 2018* (or as current); and the *Management of Echinococcus Multilocularis Infections in Animals Guideline, 2018* (or as current).

2. Post-Exposure Management

2.1 Species of Animal

The animals in Canada most often proven rabid are wild terrestrial carnivores (e.g., raccoons, skunks and foxes), bats, cattle and stray dogs and cats. If the incident involved a dog or cat, determining if it is a stray or domestic animal assists with the risk assessment. Generally, rabies is less likely in domestic animals, particularly domestic dogs, compared to stray animals due to the following factors: domestic animals *may be* more likely to be vaccinated; domestic animals may spend less time outdoors where exposure to a potentially rabid animal could occur; and an encounter with a potentially rabid animal is more likely to be recognized in a domestic animal.

Human exposures to livestock are usually confined to salivary contamination, with the exception of horses and swine, from which bites have been reported. The risk of infection after exposure to rabid cattle is low.

Squirrels, hamsters, guinea-pigs, gerbils, chipmunks, rats, mice or other small rodents, as well as lagomorphs (such as rabbits and hares) are only rarely found to be infected

with rabies because it is believed that they are likely to be killed by the larger animal that could have potentially transmitted rabies to them. These small animals can become infected by bat strains of rabies; however, no cases of transmission of bat strains of rabies from these animals to humans have been documented. Because these small animals are not known to have caused human rabies in North America, PEP should be considered only if the animal's behaviour was highly unusual. For example, a bite from a squirrel while feeding it would not be considered unusual behaviour and so does not warrant PEP based on this information alone.

Larger rodents, such as groundhogs, woodchucks and beavers, can potentially carry rabies. Although this is rare in Canada, the United States regularly reports a few cases of rabies in these species every year. Exposure to these animals requires an assessment of the circumstances of the exposure to determine the need for PEP, including the frequency of rabies in these animals in the geographic area, the frequency of rabies in other animals, the type of exposure, and the circumstances of the bite, including whether it was provoked or unprovoked.

2.2 Type of Exposure

Rabies is transmitted only when the virus is introduced into a bite wound, open cuts in skin, or onto mucous membranes such as the mouth or eyes. Three broad categories of exposure are recognized as warranting PEP: bite, non-bite and bat exposures.

Bite exposures: Transmission of rabies occurs most commonly through bites. A bite is defined as any penetration of the skin by teeth.

Non-bite exposures: This category includes contamination of scratches, abrasions or cuts of the skin or mucous membranes by saliva or other potentially infectious material, such as the brain tissue of a rabid animal. Non-bite exposures, other than organ or tissue transplants, have almost never been proven to cause rabies, and PEP is not indicated unless the non-bite exposure involves saliva or neural tissue being introduced into fresh, open cuts or scratches in skin or onto mucous membranes. These exposures require a risk assessment that considers the likelihood of salivary contamination.

Petting a rabid animal or handling its blood, urine or feces is not considered to be an exposure; however, such contact should be avoided. Being sprayed by a skunk is also not considered an exposure. These incidents do not warrant PEP.

Post-exposure prophylaxis is recommended in rare instances of non-bite exposure, such as inhalation of aerosolized virus by spelunkers exploring caves inhabited by infected bats or by laboratory technicians homogenizing tissues infected with rabies virus without appropriate precautions; however, the efficacy of prophylaxis after such exposures is unknown.

Exposures incurred in the course of caring for humans with rabies could theoretically transmit the infection. No case of rabies acquired in this way has been documented, but PEP should be considered for exposed individuals.

Bat exposures: Post-exposure rabies prophylaxis following bat contact is recommended when **both** the following conditions apply:

- There has been direct contact with a bat; **AND**

- A bite, scratch, or saliva exposure into a wound or mucous membrane cannot be ruled out.

Direct contact with a bat is defined as the bat touching or landing on a person. When there is no direct contact with a bat, the risk of rabies is extremely rare and rabies PEP is not recommended.

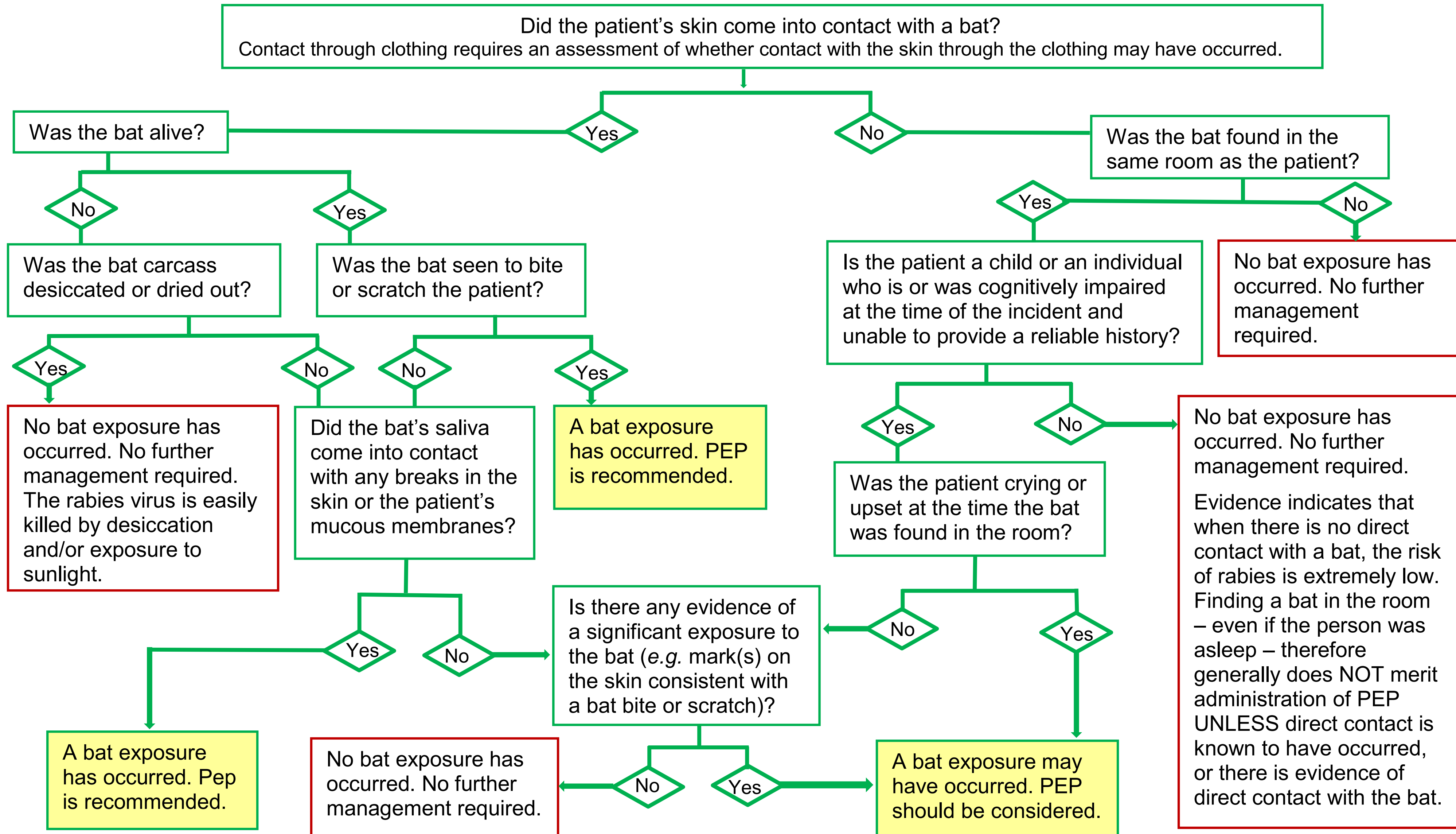
In an adult, a bat landing on clothing would be considered reason for PEP administration only if a bite, scratch, or saliva exposure into a wound or mucous membrane could not be ruled out. Therefore, if a bat lands on the clothing of a person who can be sure that a bite or scratch did not occur and that the bat's saliva did not contact an open wound or mucous membranes, then PEP is not required.

In a child, any direct contact with a bat (*i.e.,* the bat landing on or touching the child, including contact through clothes) could be considered a reason for PEP administration, as a history to rule out a bite, scratch or mucous membrane exposure may not be reliable.

When a bat is found in the room with a child or adult who is unable to give a reliable history, assessment of direct contact can be difficult. Factors indicating that direct contact may have occurred in these situations include the individual waking up crying or upset while the bat was in the room, or observation of an obvious bite or scratch mark.

Figure 1 below illustrates an algorithm for bat exposures and PEP administration

Figure 1: Algorithm for Bat Exposures and PEP administration



If there has been no direct contact with the bat, the bat should not be captured for testing and should be safely let out of the house. To remove a bat from the house, the area with the bat should be closed off from the rest of the house and people and pets kept out of the area. The doors or windows in the area with the bat should be opened to the exterior to let the bat escape.

If there has been direct contact with a bat, individuals should be instructed NOT to attempt to capture or kill the bat themselves, and a trained wildlife or animal control worker should be contacted to attempt to capture the bat. The worker should use extreme caution to ensure that there is no further exposure to the bat. They should wear appropriate Personal Protective Equipment, such as thick leather gloves, avoid touching the bat, and place the intact bat in a closed secure container. Once the bat has been captured and humanely euthanized, local public health officials should be contacted. The public health unit should contact the Ontario Association of Veterinary Technicians (OAVT) Rabies Response Program regarding rabies testing of the bat. Bats should be submitted intact for rabies testing.

Should the bat test positive, the public health unit should notify the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) if there are any pets in the household that may also have been exposed to the rabid bat, for appropriate follow-up of these animals.

Please note that spelunker exposure in caves will require special consideration, as explained above, under **Non-bite exposures**.

2.3 Investigation of the Incident

Each incident of possible exposure requires a full investigation by the public health unit. This should include an assessment of the risk of rabies in the animal species involved (including vaccination status, history of potential exposure to other animals of unknown rabies vaccination status, and travel history) and the behaviour of the particular domestic animal implicated.

Any mammal that has bitten a human or is suspected of being rabid should be reported to local public health officials. The ministry’s Public Health Veterinarian should be notified of any animal suspected of being rabid on the basis of a veterinary examination, regardless of whether it has been involved in a biting incident.

When the rabies virus is inoculated into a wound, it must be taken up at a nerve synapse to travel to the brain, where it causes fatal encephalitis. The virus may enter a nerve rapidly or it may remain at the site of the bite for an extended period before gaining access to the nervous system. More severe bites may be more likely to suggest the animal is rabid and these bites may also provide more opportunity for transmission of the virus because of the extent of exposure to saliva.

A higher density of nerve endings in the region of the bite increases the risk of developing rabies encephalitis. Bites on the hands and face are considered higher-risk exposures because of the density of nerve endings. Bites to the face and neck are also considered higher-risk exposures because of the proximity to cranial nerves leading directly into the brain.

A history of abnormal or aggressive behaviour in a domestic animal, potential for exposure of a domestic animal to other animals that could transmit rabies (including other domestic animals of unknown rabies vaccination status), and a previous encounter of a domestic animal with a wild animal should be considered when determining the likelihood that a domestic animal exposure carries a risk of rabies transmission.

An unprovoked attack is more likely to indicate that the animal is rabid. Nevertheless, rabid animals may also become uncharacteristically quiet. Bites inflicted on a person attempting to feed or handle an apparently healthy animal should generally be regarded as provoked. However, while unprovoked attacks are more likely to indicate that an animal is rabid, provoked attacks should NOT be interpreted to indicate a **lower** overall likelihood of rabies in the biting animal, as rabid animals are just as likely to bite when provoked as non-rabid animals. For example, attempting to pick up a rabid animal is likely to result in a bite exposure that would be classified as a provoked bite, but this should not lower the overall perceived risk of rabies transmission from that animal. Untrained individuals should never handle wild or stray animals or any domestic animal that is behaving unusually and children should be taught this precaution.

Domestic pets with up-to-date rabies vaccination are unlikely to become infected with rabies, although vaccine failures have been documented. A veterinarian should be consulted to determine if the animal is up-to-date with its vaccinations, and a copy of the animal's current vaccination certificate obtained. If there are other animals residing with the animal under investigation, their vaccination status should also be determined. Any domestic dog, cat, or ferret (regardless of vaccination history) that has bitten a human should be reported to public health officials for appropriate follow-up.

Dogs, cats and ferrets that are apparently healthy should be confined and observed for 10 days after an exposure incident, regardless of the animal's rabies vaccination status. Animals that are alive and healthy at the end of the 10-day period would not have transmitted rabies in their saliva at the time of the bite. If illness suggestive of rabies exists at the time of the bite or develops during the observation period, it should be examined by a licensed veterinarian as soon as possible. If the outcome of the veterinary examination supports a likely onset of clinical rabies in the animal, the animal should be humanely euthanized in a way that does as little damage to the brain as possible, and the head submitted for laboratory examination and rabies testing. Rabies virus is readily demonstrable in brains of animals with neurologic symptoms. The OAVT Rabies Response Program should be contacted to assist with organizing the testing.

The confinement and observation of an apparently healthy dog, cat or ferret can take place at the owner's home, an animal shelter, or a veterinarian's office, depending on circumstances including the reliability of the owner, the capacity to keep the animal away from people and other animals, and the suspicion of rabies in the animal. The person responsible for observation of the animal should be advised to notify public health officials if the animal becomes ill or escapes during the observation period. The animal should be observed by a public health official or veterinarian at the end of the 10-day observation period to ensure it is alive and healthy. Unvaccinated animals that remain healthy should be vaccinated at the end of the observation period.

Stray or unwanted dogs, cats or ferrets involved in an exposure that could potentially transmit rabies should be confined and observed as outlined above. If this is not possible, the animal should be humanely euthanized in a way that does as little damage to the brain as possible, and the head submitted for laboratory examination and rabies testing.

If the dog, cat or ferret has escaped, attempts should be made to find the animal and owner. If the dog, cat or ferret cannot be located, a decision should be made in consultation with public health officials regarding the need for PEP.

Generally, behaviour in wild animals cannot be accurately evaluated and should not be considered part of the risk assessment; however, some behaviour in bats may be considered abnormal and indicative of rabies, such as a bat attacking a person without cause or hanging on to a person tenaciously.

The period of rabies virus shedding in a wild terrestrial carnivore that is a rabies reservoir species (such as a raccoon, skunk, or fox) is unknown. Therefore, when these animals are involved in an exposure that could potentially transmit rabies, a trained wildlife or animal control worker should be contacted to capture the animal. The worker should use extreme caution to ensure that there is no further exposure to the animal. The animal should be immediately humanely euthanized in a way that does as little damage to the brain as possible, and the head submitted for laboratory examination and rabies testing.

When domesticated livestock species, such as horses, cattle, sheep, goats and pigs are involved in a potential rabies exposure of a human, a 14-day observation period may be used to rule out the potential for rabies transmission at the time of the exposure. If illness suggestive of rabies exists at the time of the bite or develops during the observation period, the animal should be examined by a veterinarian as soon as possible. If the outcome of the veterinary examination supports a likely onset of clinical rabies in the animal, it should be humanely euthanized in a way that does as little damage to the brain as possible, and the head submitted for laboratory examination and rabies testing.

Management of other animals (e.g. exotic pets, zoo animals, etc.) involved in potential rabies exposures should be determined on a case-by-case basis, in consultation with the ministry's Public Health Veterinarian.

The history obtained from a child who has been potentially exposed to an animal can be difficult to interpret and potentially unreliable. This should be considered when determining the appropriate post-exposure management.

3. Management of People after Potential Exposure to Rabies

The objective of post-exposure management is to neutralize the rabies virus at the site of infection before the virus can enter the central nervous system. Immediate and thorough cleaning and flushing of the wound with soap and water is imperative and is probably the most effective procedure in the prevention of rabies. Care should be taken

to clean the wound to its depth. Flushing for approximately 15 minutes is suggested. Some guidelines also suggest the application of a viricidal agent such as iodine-containing or alcohol solutions. Suturing the wound should be avoided if possible, and tetanus prophylaxis and antibiotics should be given as appropriate.

If exposure to rabies is considered highly likely, PEP should be started as soon as possible after the exposure. In other circumstances, if the initiation of PEP is delayed until test results from the involved animal are available, a maximum waiting period of 48 hours is recommended. In consultation with public health officials, the post-exposure vaccine series may be discontinued if appropriate laboratory testing of the involved animal is negative. If indicated based on the risk assessment, PEP should be offered to exposed individuals regardless of the time interval after exposure.

Post-exposure prophylaxis should begin immediately following exposure to a wild terrestrial carnivore (such as a fox, skunk or raccoon) in enzootic areas unless the animal is available for rabies testing and rabies is not considered likely. Initiation of PEP should not be delayed beyond 48 hours while waiting for laboratory tests if the exposure is from a terrestrial animal in an enzootic area. If PEP is started before the test results are available, in consultation with public health officials, the rabies vaccine may be discontinued if the animal tests negative for rabies.

When there is a known bat bite, scratch or saliva exposure into a wound or mucous membrane, rabies PEP should be initiated immediately because of the higher prevalence of rabies in bats. This is particularly important when the exposure involves the face, neck or hands, or when the behaviour of the bat is clearly abnormal, such as if the bat has attacked the person or hangs on tenaciously. If the bat is available for testing, PEP may be discontinued after consultation with public health officials if the bat tests negative for rabies.

If someone is touched by a bat (such as a bat in flight) and the bat is available for rabies testing, the health care provider may decide to delay PEP. PEP should not be delayed more than 48 hours. If a bat tests positive for rabies, the need for PEP should depend on whether direct contact with the bat occurred and not the rabies status of the bat. If someone is touched by a bat and a bite, scratch or saliva exposure into a wound or mucous membrane cannot be ruled out, but the bat is not available for testing it should be considered a direct contact and PEP given.

Table 1 outlines recommendations for the management of people after possible exposure to rabies. **These recommendations are intended as a guide and may need to be modified in accordance with the specific circumstances of the exposure.**

Table 1: Summary of Post-Exposure Prophylaxis (PEP) for Persons Potentially Exposed to Rabies

Animal species	Condition of Animal at Time of Exposure	Management of Exposed Persons not Previously Immunized against Rabies	Management of Exposed Persons Previously Immunized against Rabies
Dog, cat or ferret	Healthy and available for a 10 day observation period	1. Local treatment of wound 2. At first indication of rabies in animal, give RabIg and begin four or five doses of HDCV or PCECV 3. At first indication of rabies in the animal, arrange to have the animal tested for rabies	1. Local treatment of wound 2. At first indication of rabies in animal, begin two doses of HDCV or PCECV 3. At first indication of rabies in the animal, arrange to have the animal tested for rabies
	Unknown or escaped	1. Local treatment of wound 2. Consult public health officials for risk assessment	1. Local treatment of wound 2. Consult public health officials for risk assessment
	Rabid or suspected to be rabid*	1. Local treatment of wound 2. Give RabIg and begin four or five doses of HDCV or PCECV 3. Arrange to have animal tested for rabies, if available	1. Local treatment of wound 2. Begin two doses of HDCV or PCECV 3. Arrange to have animal tested for rabies, if available
Skunk, bat, fox, coyote, raccoon and other carnivores.	Regard as rabid* unless geographic area is known to be rabies free	1. Local treatment of wound 2. Post-exposure prophylaxis with RabIg and four or five doses of HDCV or PCECV should begin immediately. If animal is available for rabies testing, in some instances PEP may be delayed for no more than 48 hours while awaiting results. 3. Arrange to have animal tested for rabies, if available	1. Local treatment of wound 2. Post-exposure prophylaxis with two doses of HDCV or PCECV should begin immediately. If animal is available for rabies testing, in some instances PEP may be delayed for no more than 48 hours while awaiting results 3. Arrange to have animal tested for rabies, if available
Livestock, rodents or lagomorphs (hares and rabbits)	A 14-day day observation period can be used for livestock. Consider exposures involving all other animal species individually and consult the ministry's Public Health Veterinarian. Bites of squirrels, chipmunks, rats, mice, hamsters, gerbils, guinea pigs, other small rodents, rabbits and hares would only warrant post-exposure rabies prophylaxis if the behaviour of the biting animal was highly unusual. Bites from larger rodents (e.g., groundhogs, woodchucks, beavers) require a risk assessment.		

RabIg = human rabies immune globulin, HDCV = human diploid cell vaccine, PCECV = purified chick embryo cell culture vaccine.

* If possible, the animal should be humanely killed and the brain tested for rabies as soon as possible; holding for observation is not recommended. Discontinue vaccine if rabies testing of the involved animal is negative.

4. Schedule and Dosage

4.1 Post-Exposure Prophylaxis (PEP) of Previously Unimmunized Individuals

Post-exposure prophylaxis of previously unimmunized individuals should consist of both Rabies Immune Globulin (RabIg) and rabies vaccine. The RabIg provides immediate passive protection until the exposed person mounts an immune response to the rabies vaccine.

4.1.1 Rabies Immune Globulin (RabIg)

The recommended dose of RabIg is 20 IU/kg body weight for all age groups, including children, given on the first day of initiation of therapy (day 0). Because of possible interference of RabIg with the immune response to the rabies vaccine, the dose of RabIg should not be exceeded.

If possible, the full dose of RabIg should be thoroughly infiltrated into the wound and surrounding area. Infiltration of wounds with RabIg in some anatomical sites (finger tips) must be carried out with care in order to avoid increased pressure in the tissue compartment. If not anatomically feasible, any remaining volume of RabIg should be injected, using a separate needle and syringe, intramuscularly (IM) at a site distant from the site of vaccine administration. When more than one wound exists, each wound should be locally infiltrated with a portion of the RabIg using a separate needle and syringe. In such instances, the RabIg can be diluted twofold to threefold in a solution of 0.9% sodium chloride in order to provide the full amount of RabIg required for thorough infiltration of all wounds.

If the site of the wound is unknown, the entire dose should be administered IM at a separate site from where the rabies vaccine is administered. Rabies vaccine and RabIg should never be mixed in the same syringe.

Under no circumstances should vaccine be administered in the same syringe or at the same site as RabIg.

Protective antibodies are present immediately after passive vaccination with RabIg, but they have a half-life of only approximately 21 days. Since vaccine-induced antibodies begin to appear within 1 week, if RabIg is not administered as recommended at the initiation of the rabies vaccine series, there is no value in administering RabIg more than 8 days after initiating an approved vaccine course.

RabIg is supplied in 2 ml vials containing 150 IU/ml. Use the following formulae to calculate the dose required and use **Table 2** to determine how many vials to dispense:

- 20 IU/kg x (client wt in kg) ÷ 150 IU/mL = dose in mL

  dose in mL ÷ 2 mL/vial = # of vials to order
- 9.09 IU/lb x (client wt in lb) ÷ 150 IU/mL = dose in mL

  dose in mL÷ 2 mL/vial = # of vials to order

Table 2: Number of 2 mLVials of RabIg Required per Total Body Weight of Client

Total Weight		***# of 2mLVials***	***Total Weight***		***# of 2mLVials***
≤33 lbs	*≤ 15 Kg*	***1***	*>165 – 198 lbs*	*>75 – 90 Kg*	***6***
>33 – 66 lbs	*>15 – 30 Kg*	***2***	*>198 – 231 lbs*	*>90 – 105 Kg*	***7***
>66 – 99 lbs	*>30 – 45 Kg*	***3***	*>231 – 264 lbs*	*>105 – 120 Kg*	***8***
>99– 132 lbs	*>45 – 60 Kg*	***4***	*>264 – 297 lbs*	*>120 – 135 Kg*	***9***
>132 – 165lbs	*>60 – 75 Kg*	***5***	*>297 – 330 lbs*	*>135 – 150 Kg*	***10***

Note that the amount of RabIg administered may include administration of only a portion of one of the vials ordered. For example, a patient that requires 7mL of RabIg should only have 3.5 vials administered, rather than 4 full vials, with the remainder of the RabIg in the 4th vial being discarded.

4.1.2Rabies Vaccine

Vaccine should be administered IM into the deltoid muscle in older children and adults or into the *vastus lateralis* muscle (anterolateral thigh) in infants but never in the gluteal region as this may result in decreased response to the vaccine.

The rabies vaccine and RabIg should be given at different anatomical sites on day 0 using a separate needle and syringe. For subsequent vaccine doses, the limb where the RabIg was administered can be used.

The vaccination schedule for PEP should be adhered to as closely as possible and it is essential that all recommended doses of vaccine be administered. Although there is little or no evidence, in keeping with routine immunization practice it is recommended that, if a dose of vaccine is given at less than the recommended interval, that dose should be ignored and the dose given at the appropriate interval from the previous dose. If a dose of vaccine is delayed, it should be given as soon as possible and the schedule resumed respecting the appropriate intervals from the latest dose. If the vaccination schedule has been altered such as there is doubt about an appropriate immune response, post-vaccination serology should be obtained 7 to 14 days after completing the vaccination series.

Neutralizing antibodies develop 7 days after immunization and persist for at least 2 years.

Post-exposure prophylaxis should be started as soon as possible after exposure and should be offered to exposed individuals regardless of the elapsed interval. When notification of an exposure is delayed, prophylaxis may be started as late as 6 or more months after exposure.

Based on a risk assessment, and where the specimen is received at the lab within 48hrs of exposure, treatment may be withheld until the Fluorescent Antibody Test (FAT) result is available. The FAT report can be obtained within 6 to 24 hours from receipt of an animal specimen at the laboratory. If the suspect animal is a cat, dog, ferret or livestock species and is available for observation, then immunization may be withheld pending the animal's status after the observation period.

However, if the bite wound is to the head and neck region, prophylaxis should generally begin immediately and not be delayed, unless a risk assessment would support an observation period instead. Considerations that may support delaying initiation of prophylaxis and instead observing the animal include:

- If the animal is a domestic pet;
- If the animal is fully vaccinated;
- If the bite was provoked; and
- If there is very low prevalence of rabies in the area.

If a rabies exposure is considered likely then PEP should never be delayed.

PEP may be discontinued after consultation with public health officials if the animal tests negative for rabies.

4.1.2.1 Schedule & Dosage for Immunocompetent Persons

For PEP of immunocompetent persons previously unimmunized with rabies vaccine, four 1.0 mL doses of HDCV or PCECV should be administered IM. The first dose of the four-dose course should be administered as soon as possible after exposure (day 0). Additional doses should be administered on days 3, 7 and 14 after the first vaccination.

4.1.2.2 Schedule & Dosage for Immunocompromised Persons

Corticosteroids, other immunosuppressive agents, chloroquine, and immunosuppressive illnesses (*e.g.* congenital immunodeficiency, human immunodeficiency virus [HIV] infection, leukemia, lymphoma, generalized malignancy) may interfere with the antibody response to rabies vaccine. Refer to Part 3 of the Canadian Immunization Guide for an overview of which individuals are considered immunocompromised.

Previously unimmunized immunocompromised persons and those taking chloroquine, should continue to receive a five-dose vaccination regimen on days 0, 3, 7, 14 and 28. Immunosuppressive agents should not be administered during PEP unless essential for the treatment of other conditions.

Determination of antibody response is advisable if post-exposure vaccination is given to those whose immune response may be reduced by illness or medication. In these groups, antibody titres should be determined 7 to 14 days after completing the post-exposure immunization series to ensure that an acceptable antibody concentration has been achieved.

If no acceptable antibody response is detected, the patient should be managed in consultation with their physician and appropriate public health officials to receive a second rabies vaccine series, followed by serologic testing. RabIg should not be repeated at the initiation of this second course.

4.2 Post-Exposure Prophylaxis (PEP) of Previously Immunized Individuals

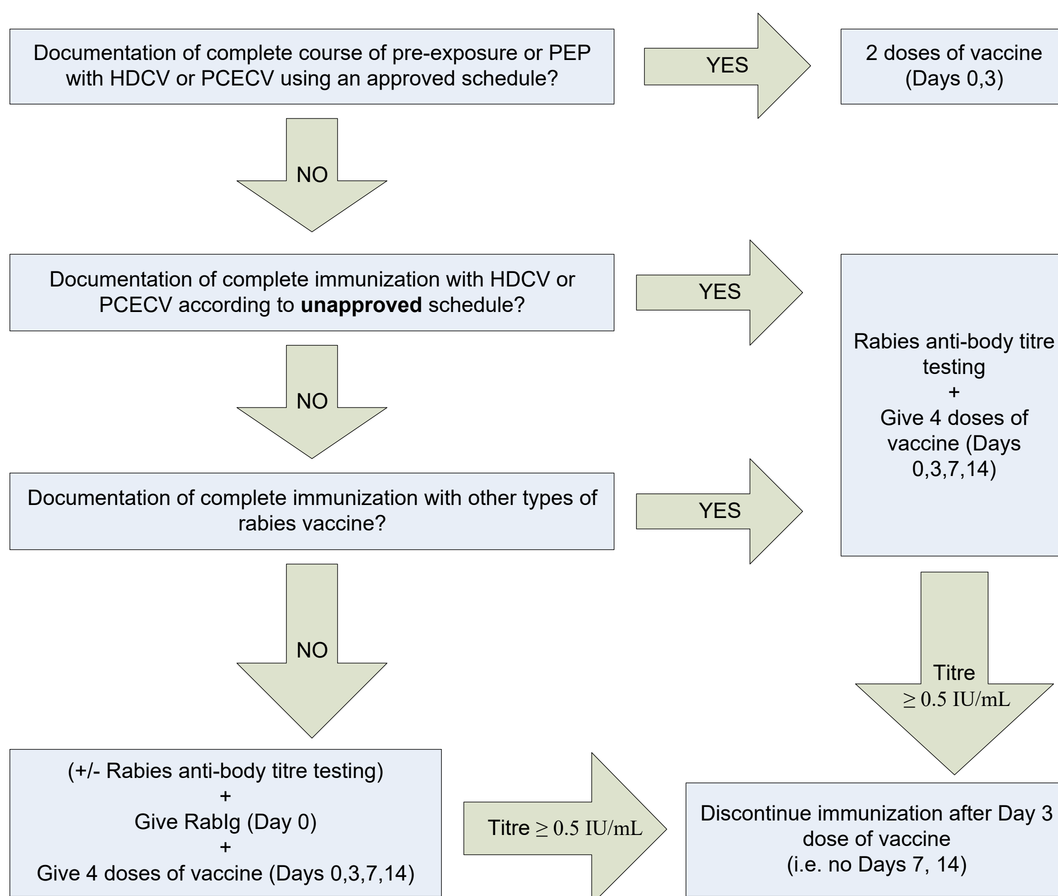
RabIg is not indicated and should not be given to someone who has been previously appropriately immunized as indicated below. In previously appropriately immunized individuals who require PEP, two doses of HDCV or PCECV, one administered immediately and the other 3 days later, are recommended. Appropriate rabies immunization consists of:

- Documentation of a complete course of pre-exposure or PEP with HDCV or PCECV; OR
- Documentation of complete immunization with other types of rabies vaccine or with HDCV or PCECV according to unapproved schedules with the demonstration of an acceptable concentration of neutralizing rabies antibody in serum. Refer to **Section 6, Serologic Testing** for information regarding when serologic testing is recommended.

A complete course of HDCV or PCECV plus RabIg is recommended for those who may have received rabies vaccines in the past but do not fulfill the above criteria for appropriate vaccination. A serum sample may be collected before the initiation of PEP, and if an acceptable antibody concentration (0.5 IU/mL or greater) is demonstrated, the vaccine course may be discontinued, provided at least two doses of vaccine have been given. If in doubt, consultation with an infectious diseases or public health physician is recommended.

Figure 2 outlines an algorithm for PEP administration schedule for previously immunized individuals.

Figure 2: PEP Administration Schedule for Previously Immunized Individuals



5. Route of Administration

RabIg is always given IM. If possible, the full dose of RabIg should be thoroughly infiltrated into the wound and surrounding area. If this is not anatomically feasible, any remaining volume of RabIg should be injected, using a separate needle and syringe, IM at a site distant from vaccine administration.

Rabies vaccine for PEP must be administered IM. Both HDCV and PCECV are approved in Canada for IM use.

6. Serological Testing

The Canadian national rabies reference laboratory for serology is the Public Health Ontario Laboratory, which considers an acceptable antibody response to be a titre of at least 0.5 IU/mL by the rapid fluorescent-focus inhibition test. Neutralizing antibodies begin to develop within seven days after starting the immunization series and persist for

at least two years. Protective antibodies are present immediately after passive vaccination with RabIg and have a half-life of approximately 21 days.

Because of the excellent immune response to rabies vaccine, healthy people immunized with an appropriate regimen do not require routine antibody determinations after either pre-exposure or post-exposure rabies vaccination, unless one of the following applies:

- Pre-exposure vaccination was given by the intradermal (ID) route – check serology at least 2 weeks after completion of the vaccine series. If using the ID route for a booster dose, serology should be checked at least 2 weeks after the booster dose.
- There has been substantial deviation from the recommended post-exposure schedule – check serology 7 to 14 days after completing the series.
- The person has been immunized with a vaccine other than HDCV or PCECV – check serology at least 7 to 14 days after completing the series.

Where antibody levels are required, a sample of 5cc whole clotted blood, or serum therefrom, should be submitted to the nearest Public Health Ontario regional laboratory or directly to the Central Public Health Ontario Laboratory (http://www.publichealthontario.ca/en/ServicesAndTools/LaboratoryServices/Pages/laboratory-location-and-contact.aspx). There is no charge for this test. To establish laboratory priority, please indicate the purpose of the sample.

7. Contraindications and Precautions

There are no contraindications to the use of rabies vaccine or RabIg after significant exposure to a proven rabid animal; however, care should be taken if PEP is to be administered to persons who are hypersensitive to the products or to any ingredient in the formulation or component of the container. Expert opinion should be sought in the management of these individuals.

For rabies vaccines and rabies immune globulin, potential allergens include:[3]

- IMOVAX® Rabies: neomycin, phenol red
- RabAvert®: amphotericin B, chick protein, chlortetracycline, neomycin, polygeline (gelatin)
- IMOGAM® Rabies: latex in vial stopper

Persons with egg allergies are not necessarily at increased risk of a hypersensitivity reaction to PCECV. If HDCV as an alternative vaccine is not available, PEP using PCECV should be administered to a person with a hypersensitivity to egg with strict medical monitoring. Facilities for emergency treatment of anaphylactic reactions should be available.

Persons with specific IgA deficiency have increased potential for developing antibodies to IgA after receipt of blood products including rabies immune globulin and could have anaphylactic reactions to subsequent administration of blood products containing IgA, such as RabIg.

Infiltration of wounds with RabIg in some anatomical sites (finger tips) must be carried out with care in order to avoid increased pressure in the tissue compartment.

A history of a serious allergic or neuroparalytic reaction occurring during the administration of rabies vaccine poses a significant dilemma in the post-exposure situation. The risk of rabies developing must be carefully considered before a decision is made to discontinue immunization. The use of corticosteroids to attenuate the allergic response may inhibit the immune response to the vaccine. The existing titre of rabies antibodies should be determined and expert opinion in the management of these individuals should be sought promptly.

Pregnancy is not a contraindication to PEP with rabies vaccine and RabIg.

Pre-exposure immunization with rabies vaccine should be postponed in persons with moderate or severe acute illness. Persons with minor acute illness (with or without fever) may be vaccinated. Post-exposure vaccination should not be postponed.

8. Other Considerations

Vaccine interchangeability: wherever possible, an immunization series should be completed with the same product. However, if this is not feasible, RabAvert® and Imovax® Rabies are considered interchangeable in terms of indications for use, immunogenicity, efficacy and safety.

9. Additional Resources

Communicable Diseases – General, RRO 1990, Reg 557. Available from: https://www.ontario.ca/laws/regulation/900557

PCEC/ RabAvert Product Monograph.

Ministry of Agriculture, Food and Rural Affairs, Rabies in Ontario. Available from: http://www.omafra.gov.on.ca/english/food/inspection/ahw/rabies.htm

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