EXPLORING THE RELATIONSHIP BETWEEN WATERSHED HEALTH & ECOSYSTEM APPROACHES TO HEALTH

Dr. Karen Morrison, Ontario Veterinary College
Recognition by the Health Community

2010 CIHR-IPPH-CPHA*
Population and Public Health Research Milestone

Ecosystem Approaches to Health

*Cdn Institutes for Health Research – Institute for Population and Public Health - Canadian Public Health Assoc’n
EcoHealth 2012
Sustaining Ecosystems, Supporting Health

The 4th Biennial Conference of International Association for Ecology & Health
15-18 October 2012, Kunming, P.R China

Ecohealth 2014
August 13-15
Montreal
Ecohealth ≠ Ecosystem Health

**Ecohealth**
- An approach to understanding complex social-ecological systems
- Patterns, processes, relationships, context (Capra, 2005)
- Transdisciplinary

**Ecosystem Health/Integrity**
- Characterization of ecosystems against an ideal or undisturbed state
- Hard to define either health or integrity
  - who decides?
  - where do people fit?
- Ecology
Ecohealth in the Anthropocene

ecosystem services & human health and well-being
EcoHealth: A Continuum of Entry Points & Knowledge Systems

Landscape
Watershed, Forest, River, etc.

‘Issue’
Climate Change, Biodiversity Loss, etc.

Illness/Disease
Avian Influenza, Rabies, Depression, Obesity etc.

Ecology
Humans in Nature

Human Health and Well-being

‘Many ways of knowing’
Valerie Brown: TRANSFORMATIVE SCIENCE
Biophysical, social, ethical, aesthetic, sympathetic, personal, reflective
Yes, says the Ontario Federation of Anglers and Hunters ... believes controls on sewage-treatment plants should be loosened to help boost flagging fish stocks ...

An approach many scientists warn is ecologically dangerous.
Ecological Possibilities & Social Values (James Kay’s Diamond Diagram)

Who decides? Who decides who decides?
Watersheds & the ‘Hydrological Imperative’

-Malin Falkenmark, SIWI
Health: An Emergent Property

There is information relevant to public health that can only be derived from the gestalt that cannot be ascertained from the sum of its parts.

- Reidpath, 2005
Public health is nothing more than applied epidemiology ...

- Rickles, 2011

Without public health, there is no epidemiology

- Lilienfeld and Lilienfeld, 1982
Social & Participatory Epidemiology

Social Epidemiology

- Health states of individuals are not intrinsic properties ... transporting an individual to another context would change the health profile of that individual ...

Participatory Epidemiology

- A practical approach to epidemiology that gives stakeholders a greater role in shaping programs for public health, animal health, disease surveillance and research

Social and Environmental Determinants of Health
The key role of public health on this account is, then, to modify the environment (or ‘context’) in such a way as to benefit the individuals occupying it.

The environment itself then becomes the subject of the adjectives ‘sick’ and ‘healthy’ ...
Toxic algae bloom in Picton

Monday, August 13, 2012 2:29:57 EDT PM

Which is sick?

Harmful Algae Blooms (HABS)
Hamilton Harbour 2 weeks ago (Hamilton Spectator)

Charlton, M. 2008. Nearshore Waters. SOLEC

WARNING

HARMFUL ALGAE MAY BE PRESENT IN THIS WATER
CONTACT MAY CAUSE SERIOUS HARM TO
HUMANS AND ANIMALS

FOR MORE INFORMATION CALL
THE RESPONSIBLE AUTHORITY OR THE ALGAE INFORMATION LINE

1 800 999 457
the social or the ecological?

**Human Health**

**Fish Consumption**

**PCBs in OMOE individual 60 cm Lake Trout**
Compared to the Ontario Sport Fish Consumption Guidelines

- 2005
- 2006
- 2007

<table>
<thead>
<tr>
<th>Location</th>
<th>2005 PCBs (ppm)</th>
<th>2006 PCBs (ppm)</th>
<th>2007 PCBs (ppm)</th>
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</thead>
<tbody>
<tr>
<td>Lake Ontario</td>
<td>0.35</td>
<td>0.45</td>
<td>0.55</td>
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<tr>
<td>Lake Erie</td>
<td>0.20</td>
<td>0.30</td>
<td>0.40</td>
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<tr>
<td>Lake Huron</td>
<td>0.15</td>
<td>0.18</td>
<td>0.22</td>
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<tr>
<td>Lake Superior</td>
<td>0.10</td>
<td>0.12</td>
<td>0.14</td>
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</tbody>
</table>

Sensitive population limits used in graph:

- > 0.211 ppm: Do not eat
- 0.105 - 0.211 ppm: 4 meals / month
- < 0.105 ppm: 8 meals / month
What does it mean to be well?
Watersheds as Settings for Health
Pan-Canadian Watershed and Public Health Study:

Explicit Focus on Scale

<table>
<thead>
<tr>
<th>Area (km²)</th>
<th>Fraser River Basin</th>
<th>Lake Simcoe Region Conservation Authority</th>
<th>Otonabee Region Conservation Authority</th>
<th>Cowichan Watershed Board</th>
<th>Save our Seine</th>
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</thead>
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<td>244000</td>
<td>3303</td>
<td>1951</td>
<td>300</td>
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</table>
Food for Thought

- Intergenerational social capital and equity aspects of watershed programming
- Fraser Basin ‘too big for health programming’
  - BUT perfect for salmon … spiritual, cultural, social, moral, ecological health
- Strong movement toward indicators
  - ‘Fake fish’
  - How ‘protected’ are Cdns from the real state of their ecosystems?
- Isolation of people from their environments
  - Fear-based public health messaging
- Need for transparency, reporting, especially around community-level disease and environmental trends
  - Community right-to-know
The absence of a clear strategy and action plan for linking water, watersheds and watershed management to public health is a missed opportunity to improve the determinants of health.