Disclosure Statement

- I have no affiliation (financial or otherwise) with a pharmaceutical, medical device or communications organization.

Disclosure Statement

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KNOWLEDGE TRANSLATION STRATEGIES FOR ACTION – LET'S TALK ABOUT THE FUTURE OF PUBLIC HEALTH SURVEILLANCE!

Collaborator Session presented by: **Canadian Alliance for Regional Risk Factor Surveillance (CARRFS)**

Dr. Bernard Choi
Senior Research Scientist
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Public Health 2019 Conference, Apr 30, 2019, Ottawa, Ontario

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Action

Action

Action

- Knowledge for Action

Action

Action

Action

Knowledge for Action

Action

Barriers of Knowledge Transfer

Three Problems

- Volume of knowledge: 17,000 new biomedical books/year + 30,000 biomedical journals
- Complexity of knowledge: complicated designs, high power statistics, technical jargons
- Knowledge ≠ Action

Basic Principles of Knowledge Transfer

Knowledge Transfer

= integration + simplification

Gap between science and policy

My policy-maker doesn't understand me..

Can you come back with that 3 year study summarised in six bullet points in PowerPoint?

Gap between science and policy

5 Ways to bridge the gap between science and policy

1. Communication problem: complex science → visually interesting presentations
2. Time problem: a new breed of “translational scientists”
3. Taking initiative: science must be actively communicated and marketed, not merely disseminated through publications
4. Precise recommendations: Journal papers offer list of recommendations for actions, not “our results indicate that further research is needed”
5. Encourage all scientists to publish their findings in MEDLINE searchable journals

Knowledge to Action

Knowledge ➡ Action

- **Knowledge Management**: the process of creating, sharing, and using knowledge for action

- Knowledge Generation
- Knowledge Transfer
- Knowledge Use

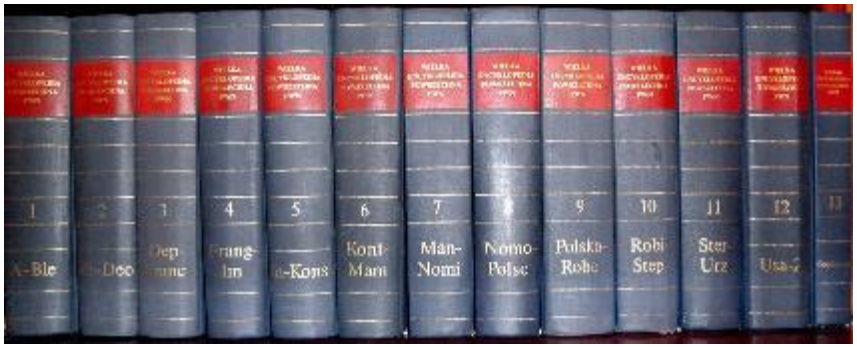
12 Steps from Knowledge to Action

Knowledge Generation	Knowledge Transfer	Knowledge Use
1. Credible Design	5. Relevant Content	9. Accessible Information
2. Accurate Data	6. Appropriate Translation	10. Readable Message
3. Sound Analysis	7. Timely Dissemination	11. Motivated User
4. Comprehensive Synthesis	8. Modulated Release	12. Rewarding Outcome

12 Steps from Knowledge to Action

Knowledge Generation	Knowledge Transfer	Knowledge Use
	5. Relevant Content	9. Accessible Information
	6. Appropriate Translation	10. Readable Message
	7. Timely Dissemination	11. Motivated User
	8. Modulated Release	12. Rewarding Outcome

5. Relevant Content



Methods of Information Dissemination

- Encyclopaedia approach
- Fire alarm approach

Composite health index

- Dow Jones Index
- Summary Health Index

6. Appropriate Translation

Health Proverbs

- From experiences of our ancestors
- “An apple a day keeps the doctor away” (1866)

New science-based Health Proverbs

- For our future generations
- “One and a half apple a day keeps the doctor away”?

Health Songs, Story Telling

7. Timely Dissemination

Timely = ongoing

- Develop 365 health indicators for reporting to the general public after the evening news, one indicator a day

Chronic Disease Clock

- # chronic disease deaths so far this year
- # chronic disease deaths since midnight last night

7. Timely Dissemination

PAHO Chronic Disease Clock, 2007 Washington DC

Region of the Americas

NCD deaths this year

2,579,530

NCD deaths today

3,624

8. **Modulated Release**

Prioritize information/ Disseminate in stages

- World Health Report 2002, Chapter 4

SAFE

- Smoking, Alcohol, Food, Exercise

COPS

- Cholesterol, Obesity, blood Pressure, Stress

HARM

- Heart disease, Abnormal growth, Respiratory disease, Mental disorder

12 Steps from Knowledge to Action

Knowledge Generation	Knowledge Transfer	Knowledge Use
		9. Accessible Information
		10. Readable Message
		11. Motivated User
		12. Rewarding Outcome

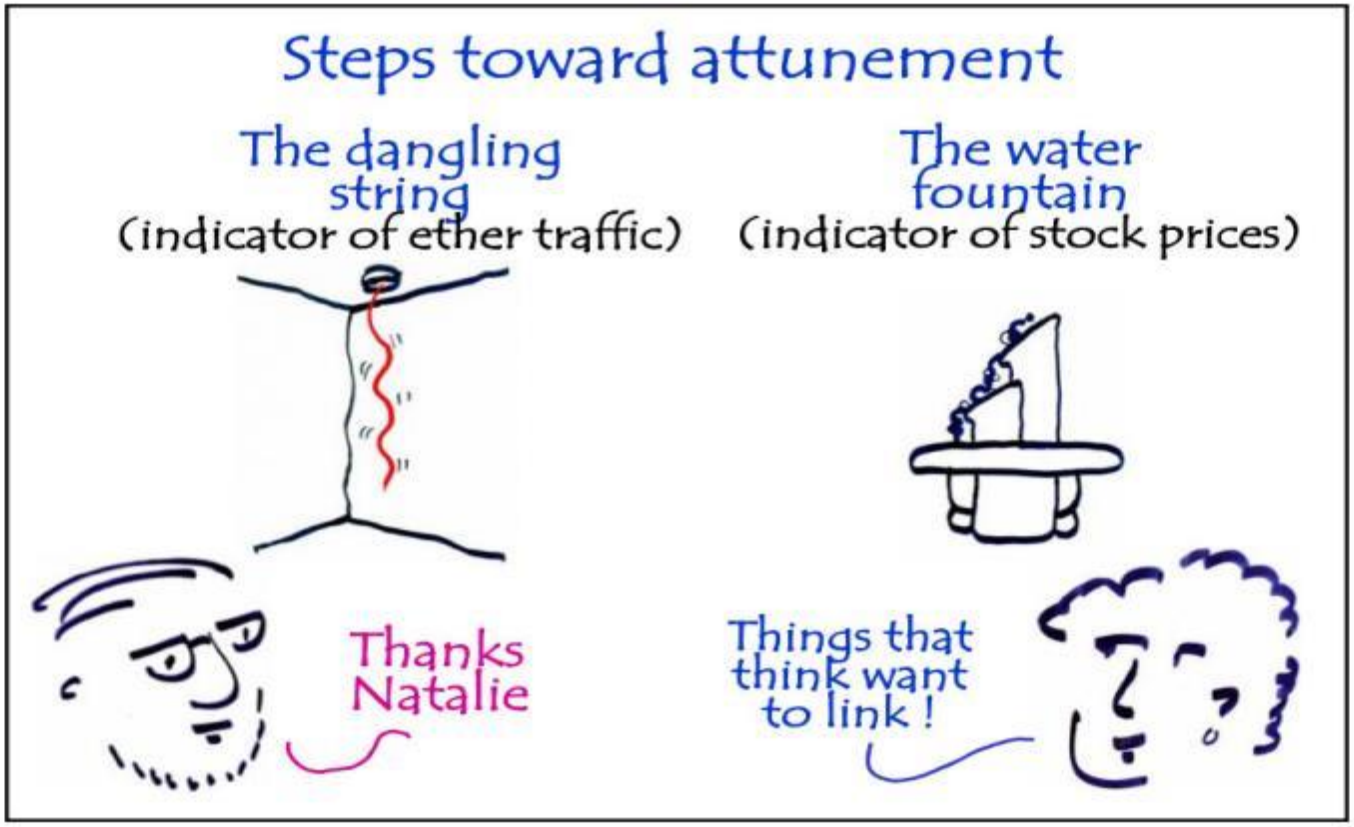
9. Accessible Information

Publish scientific findings in accessible formats

- On line ≠ accessible
- 2005 Google search on “Health + Information” = 103,000,000 websites
- 1 min/website, 8-hr day, 365 days a year = 588 years
- 2016 Google search = 294,000,000 websites = 1678 years
- 2018 Google search = 3,350,000,000 websites = 19,120 years
- 2019 Google search = 7,650,000,000 websites = 43,662 years

9. Accessible Information

Xerox's Research Center Palo Alto, California



10. **Readable Message**

Message understood by various audiences

Policy makers

- Extra burden on the society that can be removed by eliminating tobacco use for 1 year in Canada
- Total savings = $ 16.5 billion
- Number of deaths avoided = 47,000

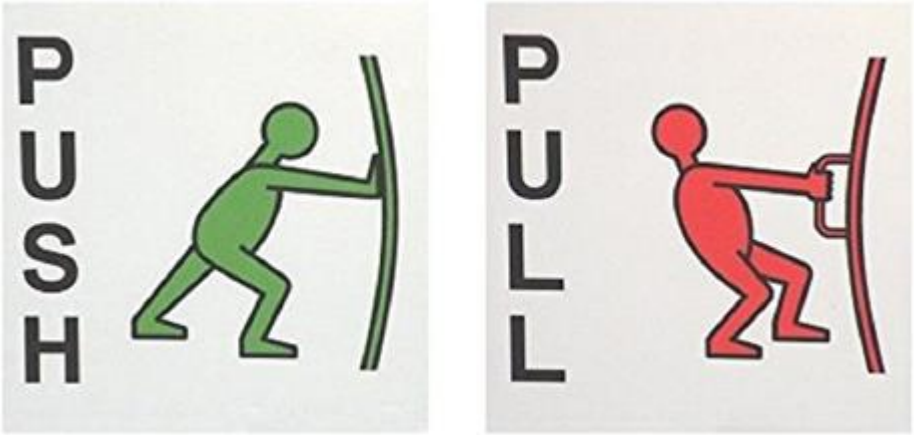
10. **Readable Message**

Message understood by various audiences

Teenagers

- Boys might be concerned about the negative effects of smoking on physical fitness
- Girls might be more concerned about the negative effects on aesthetics

11. **Motivated Users**



Create awareness of using knowledge

- The key is to create an atmosphere in which knowledge users are interested in and seeking out information, rather than being provided with unwanted information

12. **Rewarding Outcomes**

Project Big Life online calculators
www.projectbiglife.ca

1. Life expectancy
2. Heart & stroke risk
3. Sodium intake
4. Death risk in nursing home (coming)

Noticeable impact

Prediction models

- Computer software to calculate probability of risks of diseases and death, based on input concerning personal lifestyle, demographics, diet and smoking

Look to the Future

- Λοοκ το τηε Φυτυρε

  (Symbol)

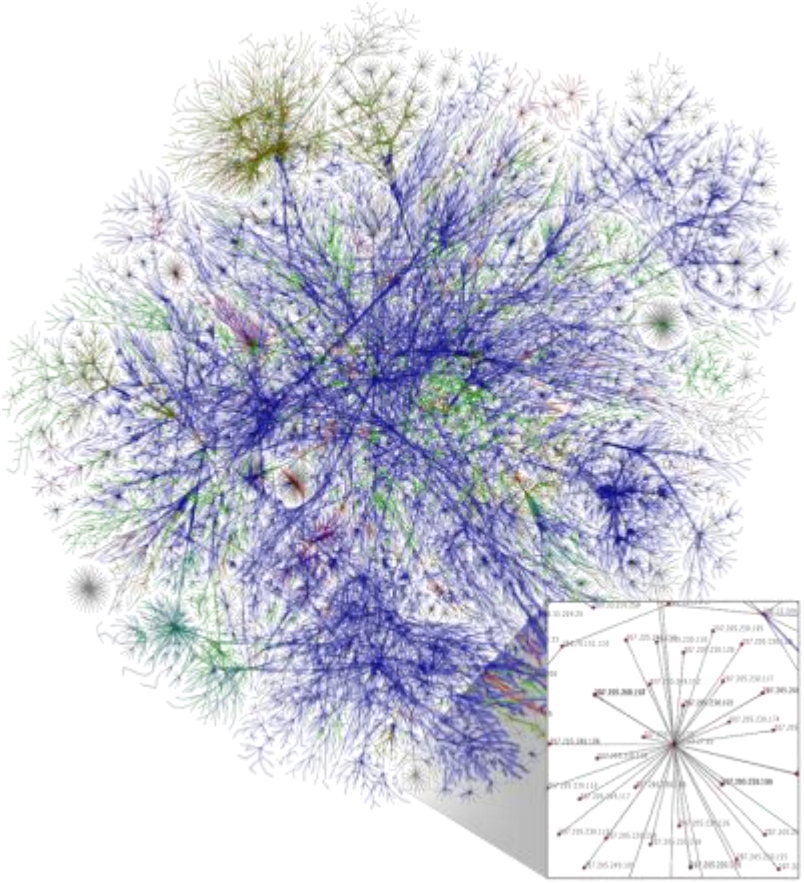
- ☹❑❑& ♦❑ ♦♒♏ ☞◆♦◆❒♏

  (Wingdings)

-

  (Webdings)

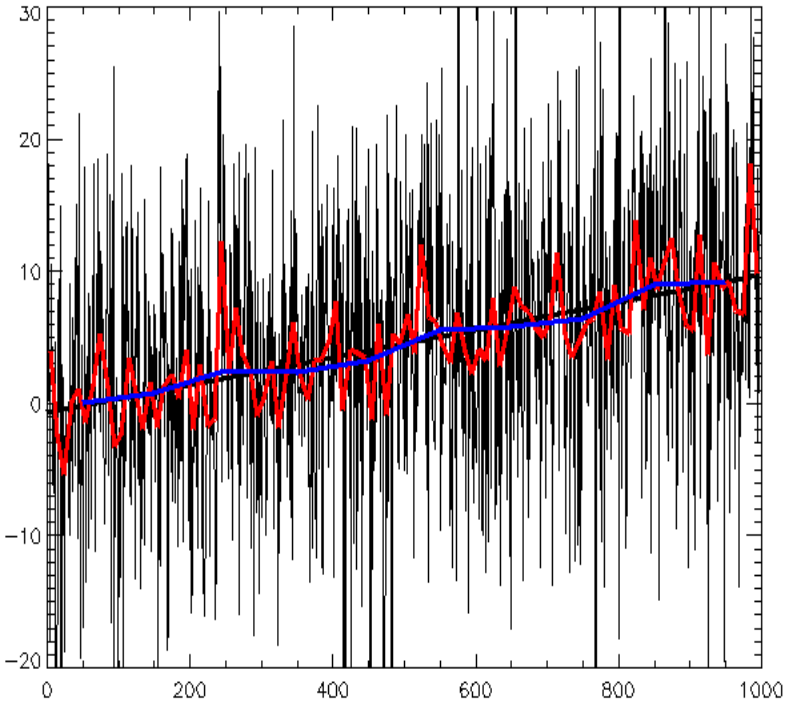
Computer Technology



A visualization of routing paths through a portion of the Internet. Each line connects two Internet Protocol (IP) addresses.

Computer technology such as the Internet can improve information dissemination

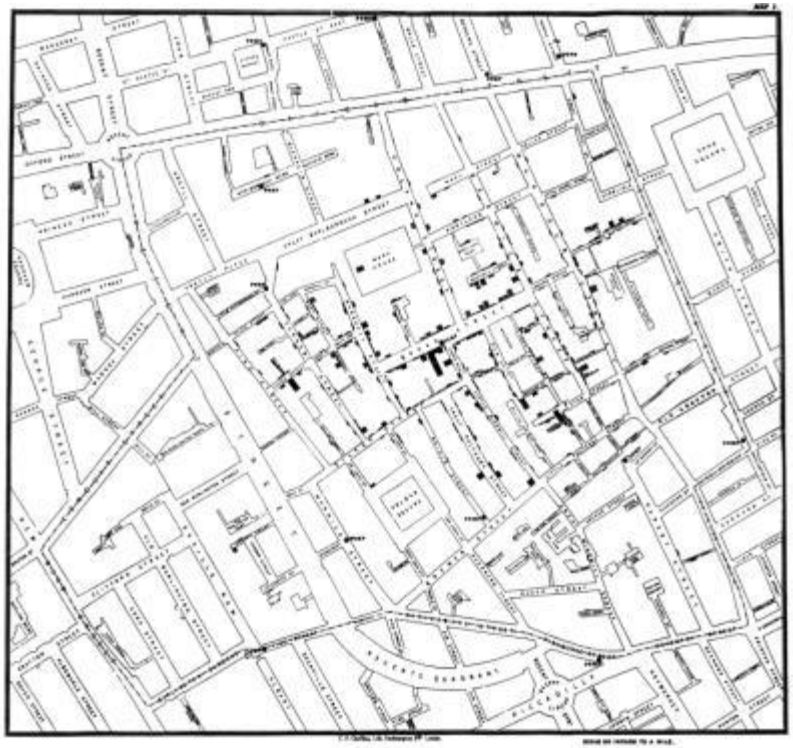
Improved Statistical Analysis



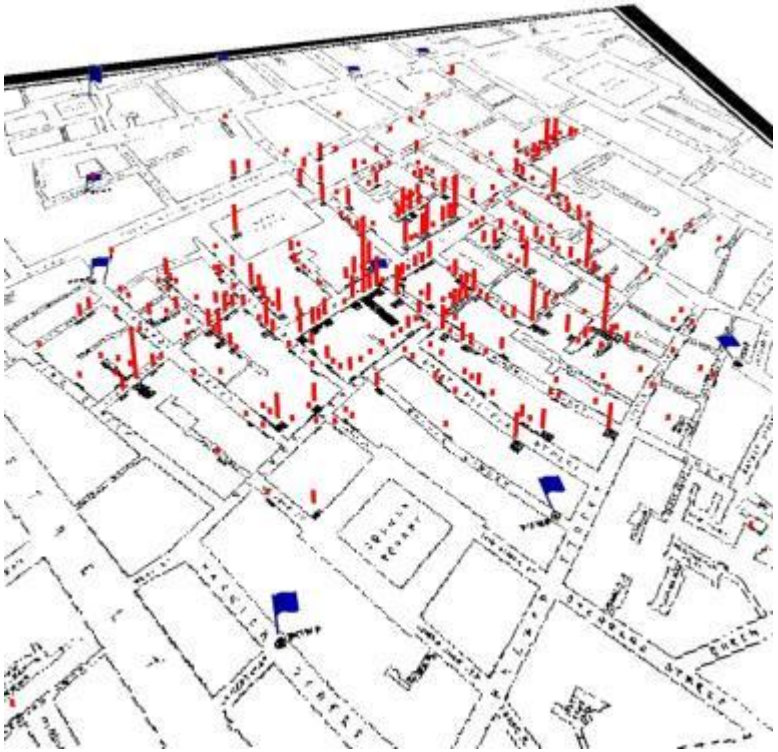
Time series: random data plus trend, with best-fit line and different smoothings

New methods of statistical analysis … time series methods, geographical and spatial methods can improve data visualisation.

Data Visualisation



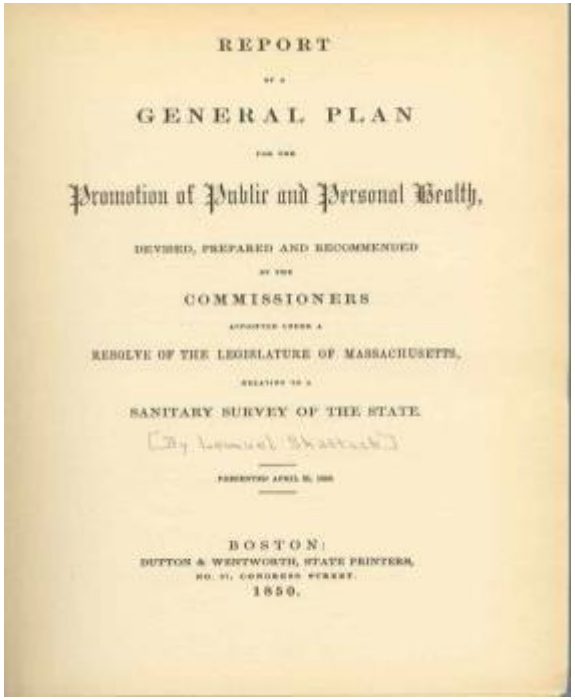
Original map made by John Snow in 1854.
Cholera cases are highlighted in black



3D Visualization of analysis.
Blue flags, water pumps;
red bars, deaths at that address

Improved Methods of Information Dissemination

Hard copy reports have been used since 1850. There is a need for new methods of information dissemination … paperless or electronic media.



REPORT

GENERAL PLAN

Promotion of Public and Personal Health,

DEVISED, PREPARED AND RECOMMENDED

COMMISSIONERS

RESOLVE OF THE LEGISLATURE OF MASSACHUSETTS,

SANITARY SURVEY OF THE STATE.

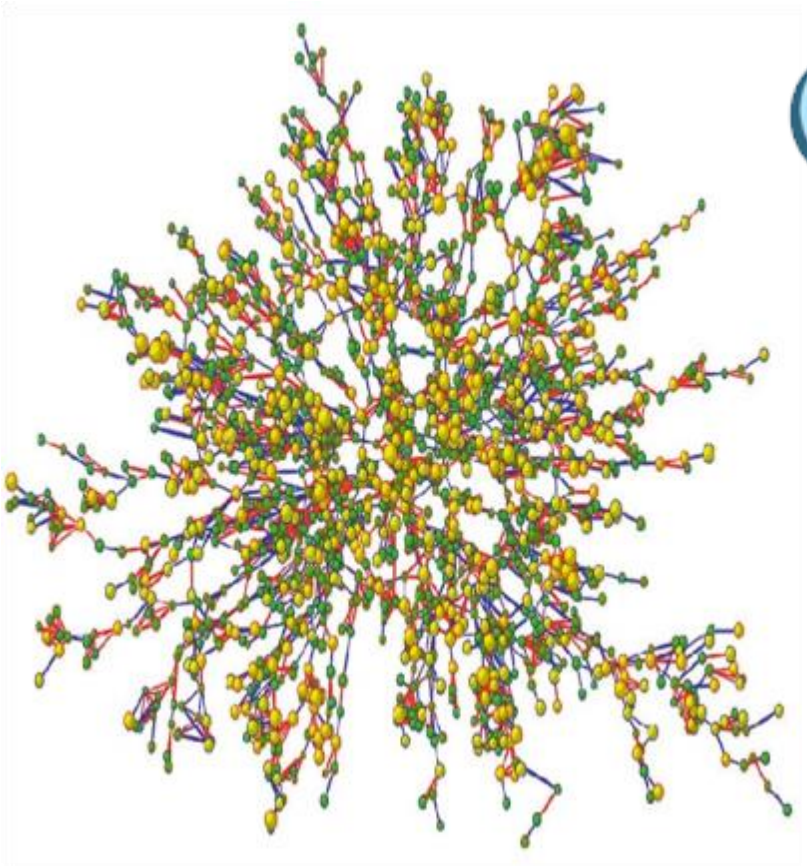
BOSTON:
DUTTON & WENTWORTH, STATE PRINTERS,
1850.

Massachusetts Report on the Promotion of Public and Personal Health, 1850

Information Technology

Social media, mobile devices and smart wearable and other IT devices provide new ways for knowledge transfer.

Networks to Disseminate Knowledge



AMNET
AMERICAS NETWORK FOR CHRONIC DISEASE SURVEILLANCE

Canadian Alliance for Regional Risk Factor Surveillance (CARRFS)
Alliance canadienne de surveillance régionale des facteurs de risque (ACSRFR)

A map of a social network of 2,200 people (NEJM, 2007)

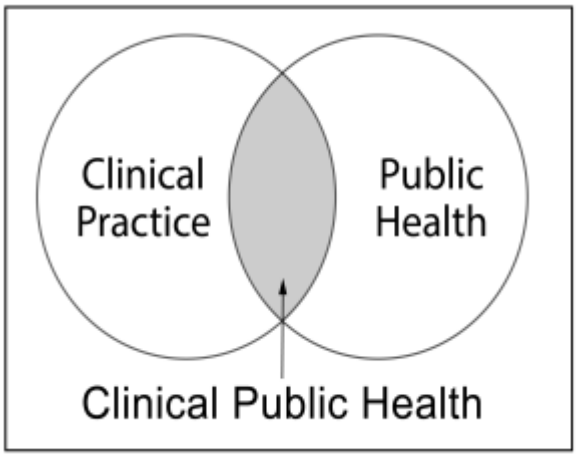
Clinical Public Health

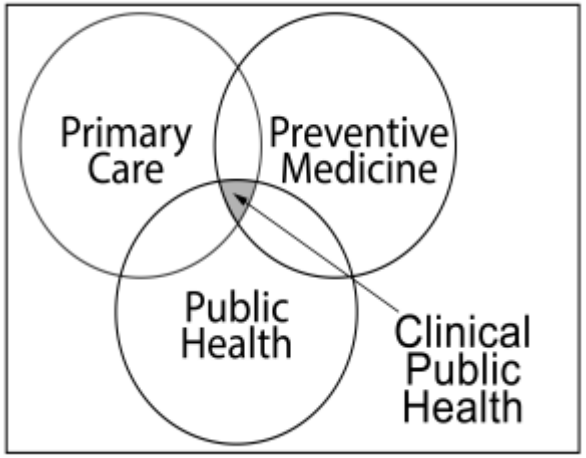
Collaboration of Clinical Practitioners with Public Health Practitioners

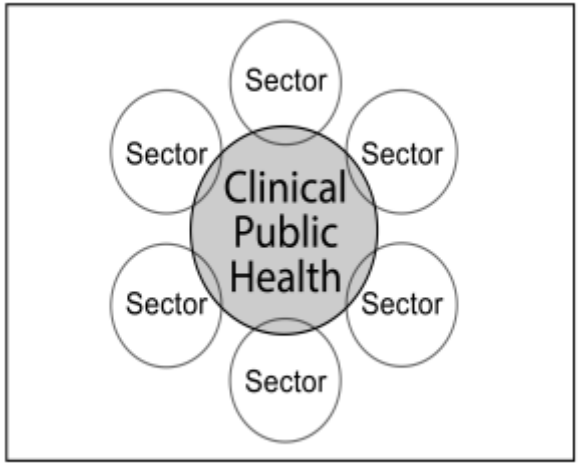
- In 2012, a new Clinical Public Health Division at the University of Toronto

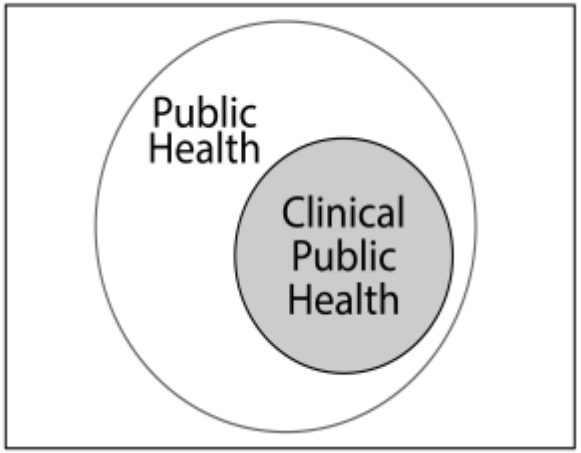
- From 2015-2018, 47 professors in the Division conducted a Delphi Survey to find out what “Clinical Public Health” is.

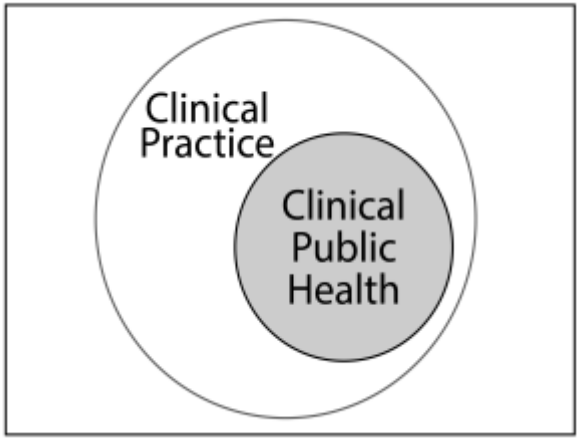
Clinical Public Health

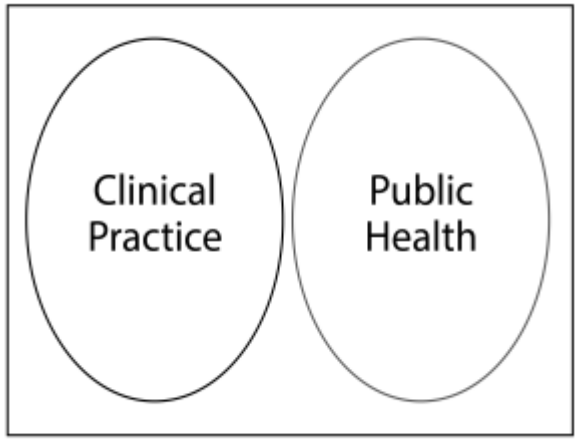












Education or Legislation?

Education

- An enlightening process that includes storytelling, discussion, teaching and training

Legislation

- A process of making laws
- Includes taxation

- **Education** - has an essential role in raising awareness about healthier lifestyle choices

- **Legislation** - if education fails or is simply not seen as sufficient or appropriate

Screw Driver or Hammer?

Screw Driver

Hammer

Education or Legislation?

- **Education** is like a screw driver - it takes more time and effort but the screw will stay longer

- **Legislation** is like a hammer - the effect is instant as the nail goes into the wall right away, but this may not last long.

Choi BCK. Understanding the basic principles of programme evaluation. J Epidemiol Community Health 2008; 62: 946.

Conclusion

- We need a wide range of tools to transfer knowledge to action

thank you
danke
謝謝
ngiyabonga
teşekkür ederim
gracias
спасибо
bedankt
dziękuję
obrigado
sukriya
kop khun krap
go raibh maith agat
mochchakkeram
arigatō
dakujem
grazie
terima kasih
감사합니다
merci
мерси
tapadh leat
dank je
hvala
mauruuru
sagolun
taiku
takk
ありがとう
ευχαριστώ
рахмат
Баярлалаа
хвала
mamnun
trugarez
shukriya
dhanyavadagalu
diolch
tanemirt
rahmet
najis tuke
mesi
sobodi
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enkosi
kiitos
dankie
faafetai lava
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mersi
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