We Are All Epidemiologists Now

Expert and Lay Knowledges in an Unfolding Medical Event

We are all epidemiologists

- Immersed in epidemiological models and claims, explicit or implicit
- Making daily decisions and projections
  - Can our kid’s friends come over?
  - Will school open after Pessah?
  - Bar Mitzvah in London at end of May?
  - Should we wash groceries handled by someone else? Wear mask to shops? Wash shoes when coming in?
  - My wife is coughing, should I go somewhere else?

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Intensive public engagement with epidemiology
Expertise in context of dynamic unfolding and massive uncertainty

- **What** do we know?
  - The young are protected
  - Does not persist on surfaces
  - Masks are ineffective and unnecessary
  - Fever as distinctive symptom
  - 14 days confinement
  - Can reinfection occur

- **Who** do we trust?
  - What is *indicator/evidence*?
  - What is *reliable* evidence?
  - Can we trust our *intuitions*?
  - What happens when our knowledge *contradicts* expert knowledge?

- **Interface** is very important
  - Communication of expert knowledge to public
  - Feedback of lay knowledge to science/experts
How long can coronavirus survive on surfaces?

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outside the box

Deadly viruses are no match for plain, old soap — here’s the science behind it

Published: March 14, 2020 at 6:34 p.m. ET

By Patti Thorndarson

Soap works better than alcohol and disinfectants at destroying the structure of viruses

This is how soap removes dirt and bacteria from the skin. Patti Thorndarson
Lost Sense of Smell May Be Peculiar Clue to Coronavirus Infection

Doctor groups are recommending testing and isolation for people who lose their ability to smell and taste, even if they have no other symptoms.

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Hunger for expertise

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Credibility “transfer”

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Changing and conflicting expert guidance
Conflict between expert guidance and lay intuitions

Epidemiological modeling and its assumptions

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• From: What do the models say?
  • To: What are the inputs to the models and what (if anything) is their relation to reality?
  • And: what is role of models when being wrong =ruin?

• People dying not tested
• Deaths undercounted (confounding factors ascribed/not)
• Testing of symptomatic mostly
• PCR testing that does not capture past infection
• Deaths are a lagging indicator
• Parameters not stable, but feedback from them to infection rates (with lag...)
• Place of models amidst other meta-criteria
  • Asymmetry in consequences (if model gives ground for caution, heed, if says caution not needed, be cautious...)
  • Non-ergodic processes....

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• Why?
  • Italy 10%
  • Germany 0.7%
• Difference because Germany/Austria
  • More accurate because of broad testing?
  • Less accurate because less prone to ascribe comorbidity deaths to virus
• Difference is real because: better quarantine? decentralized response? good health system with excess capacity? Cultural (respect for authority, socially distant)?
• Each has different prognostic implications...

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• Fallout carried: would it reach UK?
• Special monitoring stations for nuclear war.
• 4000 km, radioactive caesium deposited in heavy rains esp. Cumbian Fells (“Lake District”). 20 m in 24 hours

The Science of the Lambs (chap 6 in Collins, Golem)
The Sellafield reactor
AIDS: the « gay plague »

FIGURE 2. Number of AIDS cases among men who have sex with men (MSM), injection drug users (IDU), and persons exposed through heterosexual contact, by quarter-year of diagnosis — United States, 1981–2000
Two years to a cure??

- Time from diagnosis till symptoms
- Full blown AIDS is opportunistic diseases when immune system fails
- In particular, Helper T cells that are crucial against infections destroyed
- So, many steps
  - Find drug that stops reverse transcriptase
  - Some show effectiveness in vitro
  - Even if effective in killing in vivo, perhaps T cells already destroyed? Perhaps other permanent damage to immune system?
  - Are there side effects?
  - Is it effective?
  - Legal approvals
  - .......

Clinical controlled trials and the FDA

Growth in lay expertise and flexibility of professional protocols over course of AIDS epidemic to shorten drug readiness time
Formal air sampling and analysis

Stainless steel Summa canister

GC-MS

Undone Science and Citizen Science

Gwen Ottinger (2009): *Buckets of Resistance: Standards and the Effectiveness of Citizen Science*

Figure 2. Bucket, as Typically Deployed (Left), and Open to Show Tedlar Sampling Bag (Right) (Source: Photos by author)
Some final thoughts

- Mismanagement of expert-lay interface can cause public health damage
- Prior readiness for lay inputs and responsiveness
  - Data (obituaries in Italy)
  - Theories/conceptions (desertification, chlorine sunset)
  - Tools (DIY masks, ventilator splitting/parts)
- How does the Corona event condition readiness for other mega events (eg., global climate change)?
  - Relaxation, return to “normal,” all resources exhausted, or...
  - “we have your attention now”: things can change very fast, the normal is quite precarious, scientists have been giving advance warning for years, visceral awareness of multiplicative/cascading processes and secondary/tertiary effects

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END

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