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Pathogen flow…why it matters

"Pathogens" ≡ "disease-causing organisms"

Sanitation-related diseases

- 800 ***thousand*** diarrhoeal deaths/year...> 2 000 per day!
- Hundreds of ***millions*** of intestinal worm infections

How can we really improve public health without understanding:

- ***the relative size and importance of pathogen flows*** **(both solid and liquid)?**
- ***The impact of sanitation technology on pathogen flow?***

Amazingly, we are only beginning to address these questions.

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A Sanitation Nightmare

30% are sewered, but flows without effective treatment into water source

30% use improved pit latrines, but sludge emptied, recycled or dumped informally, without regulation

30% use septic tanks,

- Sludge is emptied, recycled or dumped informally without regulation
- Tank overflow goes directly into open neighbourhood drains

10% of the population practice open defecation…an obvious hazard

Q: Which of these represents the most significant public health hazard?

A1: We don't know, and even worse….

A2: Little rational guidance to offer the local govt about setting priorities!!

If we knew more about pathogen flows, and the effects of technologies on them, we could set better priorities!

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UNC work on these questions

Past

- Lit review on unsafe return of human excreta to environment
- 4 national level desk studies (one example in today's activities), based on JMP data and local expertise

Current

- Model Development
- Local field studies in India beginning shortly to measure pathogens and onsite tech performance in pathogen removal
- Long-run goal is simpler tools for urban sanitation planning

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Research team

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