AMR: PERSPECTIVES FROM SCIENCE AND TECHNOLOGY STUDIES (STS) & SOCIOLOGY

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Social Science Research on Antimicrobial Resistance, Bristol Zoo Gardens, 22 April 2016

Published work

- Meaning & interpretation
- How is AMR framed in public domains?
- Limits of some dominant framings
- Different framings
  - Implications for action

Framing of AMR

- Catastrophe metaphors
- Onus on individual behaviour
- **Do they work?**

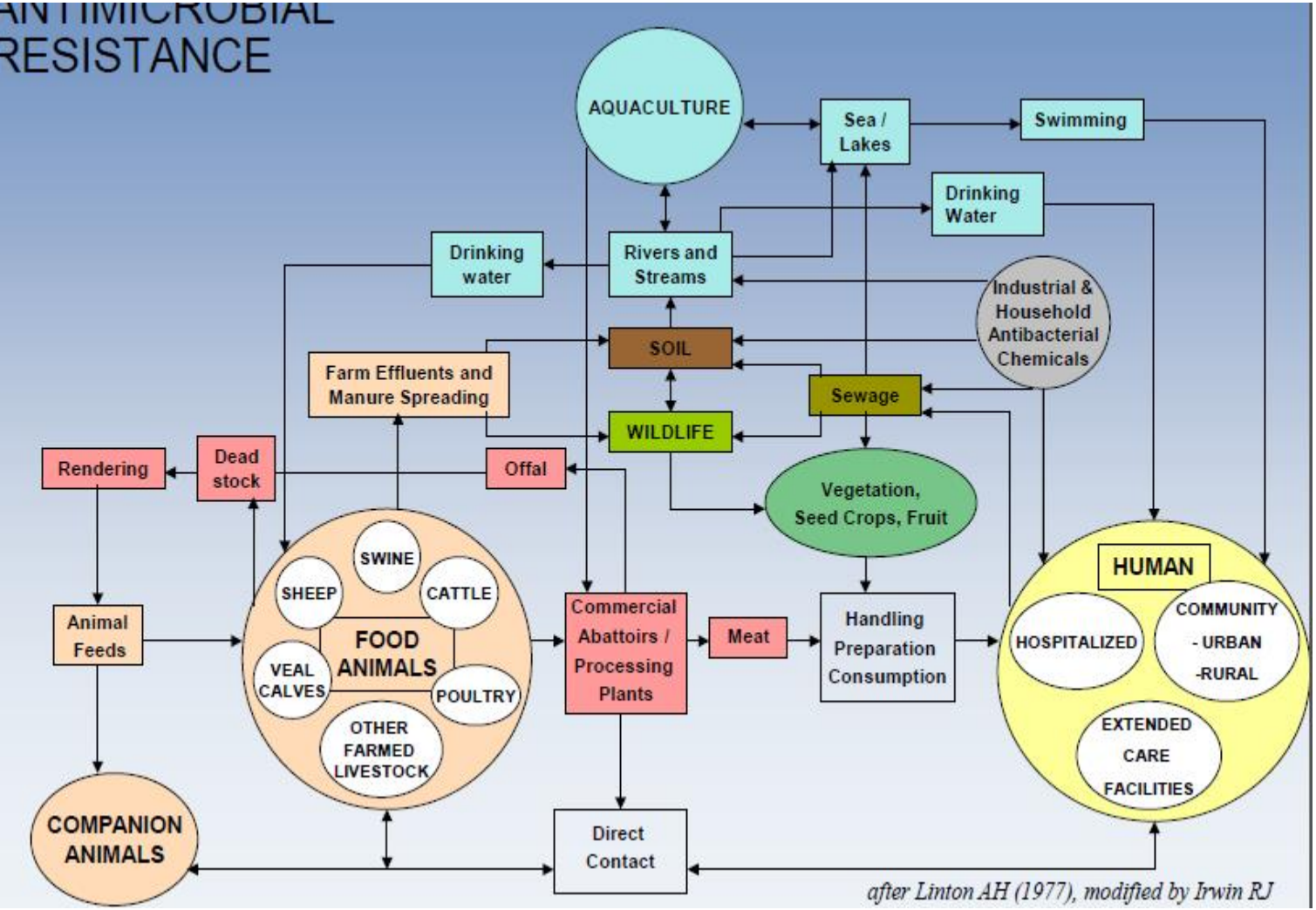
"The post-antibiotic apocalypse" and the "war on superbugs": catastrophe discourse in microbiology, its rhetorical form and political function

Brigitte Nerlich

With a Reply by Richard James

'Post antibiotic apocalypse': discourses of mutation in narratives of MRSA

Brian Brown[1] and Paul Crawford[2]



ANTIMICROBIALS: A COMPLEX ECO-SOCIAL-TECHNOLOGICAL SYSTEM

Global Environmental Change

Source of graphic: Rebecca Irwin, Public Health Agency of Canada

Complex Systems - Wicked problems

- Climate change and antibiotic resistance "entangle life processes and social, economic, and political forces so tightly and on such a range of scales that, first, it is often difficult to identify stable sites of causal and moral responsibility and, thus, suitable moments of intervention and, second, that responses often have perverse outcomes" (Lee and Motzkau 2012)

Controversy studies: Meaning (still) Matters

- Criteria for evidence
- Uses of evidence
- Values & priorities
- Questions & problem framings
- More evidence – prolonged disagreement
- Mechanisms for recognising & accommodating diversity

NATURE|Vol 450|1 November 2007

Technologies of humility

Researchers and policy-makers need ways for accommodating the partiality of scientific knowledge and for acting under the inevitable uncertainty it holds.

Sheila Jasanoff

infinitely complex, and for any given

Science fixes our attention o

AMR: Lessons from Controversy Studies

- Hopes for global cooperation
  - "Science is less contested (than climate change)" (Observer editorial 2014)
- Controversy in the making?
- Priorities in Risk Assessment
  - What is a resistance gene? Ranking risk in resistomes

Nature Reviews Microbiology 2015 (Martinez et al debate with Bengtsson-Palme & Larsson)


Contents lists available at ScienceDirect

Journal of Rural Studies

journal homepage: www.elsevier.com/locate/jrurstud

ELSEVIER

Framing the agricultural use of antibiotics and antimicrobial resistance in UK national newspapers and the farming press

Carol Morris [a,*], Richard Helliwell [b], Sujatha Raman [b]

Open system model – overall selection pressure

Transmission of resistance model – evidence for linking discrete zones

" We are not talking about zoonoses……..It is exposure, surely, that is the issue." (David Heath MP, House of Commons Science & Technology Select Committee report on AMR, 2014, 4)

Wallinga/Burch debate in BMJ 2012

"We call for the creation of an organization similar to the Intergovernmental Panel on Climate Change (IPCC) **to marshal evidence and catalyse policy** across governments and stakeholders" (Woolhouse and Farrar, 2014 in *Nature* on AMR)

Source of image: John Hill, Wikimedia Commons, https://commons.wikimedia.org/wiki/File:Experts_Expect_the_Unexpected._Nubra.jpg

Questions for research (1)

Energy Policy
Volume 63, December 2013, Pages 114–122

Lessons from first generation biofuels and implications for the sustainability appraisal of second generation biofuels

Alison Mohr, Sujatha Raman

- Which uses of antimicrobials matter – where, to whom and why?
- Cultures of disposal
- Role for sociology/STS: methods for creative engagement across practices, meanings & forms of expertise

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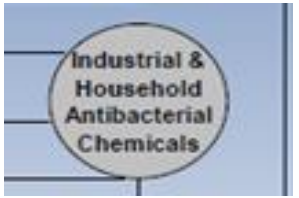

Questions for research (1)

How to dispose of antibiotics from cell culture?

I'm trying to get some advice for disposal of antibiotic-containing cell culture medium. I'm just talking about standard DMEM/RPRMI with pen/strep. Does everyone just poor this down the drain? I've read the inactivation of the antibiotics can only be done by autoclave or incineration which I'm willing to take the time to do but I'm wondering if this is really necessary. Are the levels considered so low that it doesn't make sense to go to this trouble?

TOPICS

Embedded uses of antibiotics

How do cultures of mundane 'waste' management practices work?

Thanks, my understanding though is that bleach will only kill organisms within it and will NOT inactivate any antibiotics.

In our lab we just bleach them first then dispose them into bio-waste. You can also autoclave them first and then dispose them into bio-waste. either is OK.

Questions for research (2)

- Can resistance be reduced by reducing prescribing?
- "Growing evidence argues against the likelihood of achieving major reductions in resistance by reducing prescribing" (Livermore 2005 in Lancet)
- Role for sociology: Methods for anticipating controversy ('upstream') and engaging across contexts and criteria for judgment (e.g., precautionary principle)
- Scientific literature and debates within this literature need to be understood in their context – scientific and policy contexts vary

Questions for Research (3)

The Enemy Within: A new superbug, KPC/CRKP

By Maryn McKenna | March 28, 2011 | 12:15 pm | Categories: Science Blogs, Superbug

Remember NDM-1, the "Indian supergene" that created a media furor last fall and then fell below the news horizon? This is worse.

I have a story in the April *Scientific American* ("*The Enemy Within*," just previewed online) about a new and very troubling form of antibiotic resistance: Carbapenem resistance, spreading through Gram-negative bacteria such as *Klebsiella* (above, from the CDC) and *E. coli*.

Global Politics of how resistance travels South to North focus vs North to North & North to South

Methods to restore balance

CDC - Blogs - Safe Healthcare – N...

Safe Healthcare

Hosted by CDC's Division of Healthcare Quality Promotion

Preventing Infections in Healthcare Settings > Safe Healthcare

NDM-1: New Route, Same Destination - Untreatable Infections

Categories: Gram negatives, Healthcare-associated infections

September 17th, 2010 3:24 pm ET

Author – ***Brandi Limbago, PhD***

CDC's Division of Healthcare Quality Promotion

Brandi Limbago, PhD

You've likely seen the news over the last couple of weeks warning people about "The [so-called] New Superbug NDM-1," a newly discovered gene that makes bacteria resistant to last-resort antibiotics called beta-lactams or carbapenems. NDM stands for New Delhi Metallo-beta-lactamase, and in this case the NDM gene rendered antibiotics useless in three cases of infection with carbapenem-resistant *Enterobacteriaceae* (CRE). CDC discovered NDM-1 in the United States this year and reported it through the MMWR in June. Is it concerning? Absolutely; and we are working closely with healthcare providers and health departments to stop transmission of these bacteria.

That said, I'd like to point out that the story shouldn't be solely about these bacteria being new or imported from other countries; the story should be about the whole group of CRE and untreatable infections they cause. In reality, these are not the first CRE cases we've seen in the United States. Not even close. NDM-1 is actually just one type of CRE and represents a larger antibiotic resistance issue that we already have, right now, in this country. CDC has been working with partners to prevent a type of CRE known as KPCs (carbapenemase-producing Klebsiella pneumonia). The KPC gene also makes *Enterobacteriaceae* bacteria resistant to beta-lactam/carbapenem antibiotics, just in a different way than NDM-1. KPCs have been reported in about 35 states and are associated with high mortality – 40 percent in one report. It may be in the other 15 states as well, but has not been

Naming superbug after Delhi triggers ethical debate

Kounteya Sinha, TNN Apr 14, 2011, 04.49am IST

NEW DELHI: To name or not to name seems to have

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- Please do not cite without checking with me first - slides are particularly liable to be misinterpreted!

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