



Global Health in Historical Perspective: The Uses of History

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Learning objectives

1. Discover the pre-history of 'global health'
2. Develop strategies for using history as a global health 'laboratory'
 - Via comparing historical & contemporary responses to global health problems
 - Via assessing the efficacy, the successes, and the failures of different health interventions and strategies

'Global health' in the west: everything old is new again

Contemporary concerns with global health often stress the novelty of the processes involved. But in fact there are few differences *in kind* between our ‘globalized’ world, and the global world inhabited by our predecessors since at least the 18th century.

- **Think about it:**
Are
 - immigration,
 - travel,
 - global trade,
 - global communications,
 - war,
 - famine,
 - or infectious diseases**new phenomena?**



'Global health' in the West: Key events I



Left image: Adhémar de Monteil (Adhémar du Puy) charging the Saracens, brandishing the Sainte Lance d'Antioche. Medieval illumination from Wikicommons

Right Image: 'The Apothecary' from De Materia Medica des Dioskurides, The York Project

'Global health' in the West: Key events I

- Crusades -- [c.1095 - c.1291] Europeans and Arabs alike gained first hand knowledge of other medical systems and therapies, and were exposed to new diseases

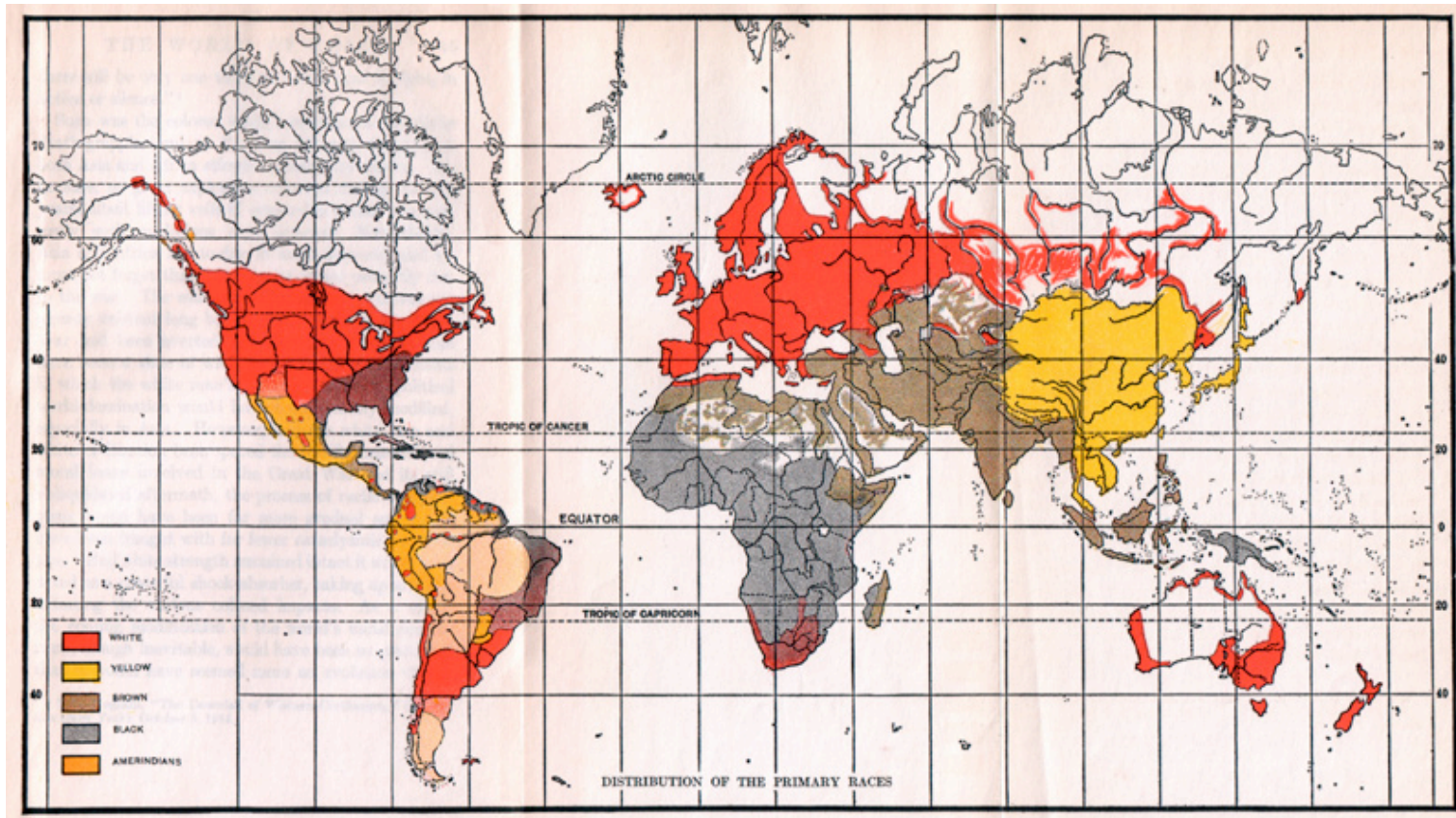
“The Frankish governor of Munaytra, in the Lebanese mountains, wrote to my uncle the sultan... asking him to send a physician to treat several urgent cases. My uncle selected one of our Christian doctors... He was gone for just a few days, then returned home. ...We besieged him with questions...”

Emir Usamah c 1140

'Global health' in the West: Key events I

- Renaissance -- [c14th-16th century] the 'rebirth' in Europe of classical medicine and natural sciences, *enabled by the mass cross-cultural exchange of texts and practices* preserved, refined, corrected and expanded by the Islamic world.

'Global health' in the West: Key events II



'Global health' in the West: Key events II

- **Age of exploration:** from the 'Columbian exchange', to the establishment of European trading posts and then settlements in India, China and Africa, to the 'Triangle Trade' -- this was the era in which the seeds of today's single global epidemiological environment were planted.

The 'Columbian exchange'

To Americas	From Americas
Smallpox, measles, malaria (falciparum), plague, tuberculosis	Syphilis (probably), yellow fever, yaws
Cattle, horses, wheat, bananas, coffee, sugar cane	Potatoes, tomatoes, maize, squashes, peppers, tobacco
African slaves, European conquistadors, settlers	Precious metals

The Triangle Trade

- Trade goods, weapons, later rum, from Europe and North America to Africa (to buy slaves)
- Slaves from Africa to North and South America (to labor on plantations)
- Raw materials produced with slave labor to North America, Europe (to feed industrial growth and production and pay for more slaves)

'Global Health' in the West:

Key events III The Age of Empire



Impact of empire: Exports from the West I

- **diseases** -- e.g. tuberculosis, sexually transmitted infections, 'childhood' diseases like measles
- **disease environments** -- cities, plantations, factories, mines
- **people** -- traders, soldiers, convicts, missionaries, doctors, bureaucrats, families

Impact of empire: Exports from the West II

- **medical ideas:** these came to structure interpretations of non-western cultures and peoples
 - ‘Race’
 - Recapitulation
 - Polygenesis
 - ‘Survival of the fittest’

Medicine and 'Imperial' Ideas

- 'Race'

CONSIDER: The biological races were defined in evolutionary and essentialist terms and in opposition to each other. If you define one race as incapable of reason, or child-like, or naturally slavish, what impact is that going to have on your governmental policies? And if you think of a race in that way, will you ever see its members as capable of self-governance? What kinds of institutions will you work to build, and who will be included in that process?

Thoughts about 'Race'

“Anatomy and physiology have been interrogated, and the response is that the Ethiopian or Canaanite is unfitted from his organization and the physiological laws predicated on that organization, for the responsible duties of a free man, but like the child, is only fitted for a state of dependence and subordination.”

Dr. Samuel Cartwright 1850

Race and Imperialism

“Take up the White Man's burden--
Send forth the best ye breed--
Go, bind your sons to exile
To serve your 'captives' need;
To wait, in heavy harness,
On fluttered folk and wild--
*Your new-caught sullen peoples,
Half devil and half child.*”

Rudyard Kipling, 'The White Man's Burden' 1899

Impact of empire: Exports from the West III

- **medical institutions:** hospitals, clinics, laboratories, professional associations, public health campaigns
- **medical practices:** vaccination, quarantine, physical examinations, dissection, bacteriology

Traits of Colonial Medicine I

- Emphasis on universalising claims and disregard for cultural distinctiveness (in other words, medicine should be practiced the same way everywhere)
- Creation and reproduction of race and gender stereotypes pathologizing the bodies of colonial people
- Used as a source of political authority and social control, legitimation
- Aimed at creating and reinforcing European political, cultural and social hegemony

Traits of Colonial Medicine II

- Profound role of (tropical) environment in determining medical priorities, interpretations, policies
- Medicine state-oriented, state-dependent, expressive of imperialist ideologies
- Close links with military establishment
- Often enclavist, privileging European health over that of aboriginal peoples
- Sanitary and public health measures have strong component of population control

Exports from the West III Colonial Medicine on the Ground

As practiced in an African colony:

- Mostly tropical climates --> high European mortality and morbidity; diseases assumed to be different in kind to European diseases -->
- Emergence of new medical specialties to manage novel disease entities, address lack of sanitary infrastructure, promote imperial interests
- Little interest in training 'primitive' locals (see assumptions about 'race')
- Focus on urban environments, European enclaves, and on the health of workers to the exclusion of other populations

Impact of empire: Exports from the West IV

- **Ideas of citizenship and identity:** models of colonizing nations as 'home' for their imperial as well as their national subjects.
 - > This in turn would inform future patterns of migration, as noted in the migrant/minority rights campaigners' phrase, **'We are here because you were there'**.

Impact of empire: Imports from Empire

- **Diseases:** especially cholera, plague and in late 20th c. smallpox, drug resistant tuberculosis
- **‘Raw materials’:** new organisms, diets, models of vector-transmission, knowledge (including about the results of public health interventions)
- **Populations** and their own cultures, genotypes, cuisines, diets, medicines

Imports from Empire

“Many of the Chinese stores in our American cities keep a supply of Chinese drugs, and all of them sell Chinese proprietary medicines ... compounded in the Canton drug shops. These are always neatly packed and labelled, and accompanied with printed directions for their use. But there is often a regular drug business ... contained in numerous boxes and drawers on one side of the shop. Here, often, a Chinese doctor ... has his office.” Stewart Culin, *The Practice of Medicine by the Chinese in America*, 1887)

Imports from Empire

Chinese medicine in an Australian epidemic

- In the 1870s, diphtheria killed 4,574 in Victoria, mainly children; western drugs ineffective;
- Australians turned to newly arrived Chinese immigrants, and their traditional medicines;
- One such remedy produced apparent cures; ingredients (but not method of application) scientifically tested at behest of Australian Govt., found to be harmless but not unique;
- Australian doctors immediately sought legislation to bar Chinese medical practice (and eliminate the competition).

Imports from Empire: what does this Australian example tell us?

- Migrants bring expert knowledge and practices as well as micro- and macro-organisms, foods, etc.
- Historically, western elites were willing to extract raw materials from their colonies / subjugated cultures, but not to accept expertise. Has this attitude changed? What impact might it have on global health initiatives?
- Public often more flexible and open to cross-cultural medical expertise than professionals. Can this pragmatism be a resource for global health work? Might experts underestimate it?

'Global health' & the west: key events after WW II

- Emergence of global health organizations, public and private
- Decolonization -- the end of empire?
- The age of eradication? -- global efforts from smallpox to malaria
- Mass migration, mass air travel, and the new globalization
- Emergent and re-emergent diseases

Addressing Problems in Global Health:

How to use History

- Compare historical & contemporary responses to global health problems
- Assess long-term efficacy of different health interventions and strategies

Compare historical & contemporary responses to global health problems

Why?

Because hindsight is 20/20!

- Political, economic and social forces influencing those responses are more visible when more complete information is available about them

Case Study:
Responding to
tuberculosis in migrants
UK 1948-68



National Library of Medicine

Context 1: General

- Decolonization well underway, but no statutory immigration controls on citizens of Commonwealth nations (until 1962)
- UK experiencing *mass* in-migration of racially distinctive populations for the first time
 - ‘Windrush generation’ of service workers recruited from West Indies
 - Early ‘chain migration’ from rural Indian Subcontinent to urban industrial settings

Context 2: Medical

- Tax-funded National Health Service free at point of delivery to all UK residents, *including* recent arrivals; major investments in public health, mass radiological screening
- TB rates, falling since 19th C, beginning to rise again in urban areas with large immigrant populations
- Domiciliary chemotherapy not yet standard for all; hospital therapy still mandated for ‘wayward’ -- i.e., working poor, immigrants, non-whites

TB & Immigration: Public Fears

Letter to Minister of Health 1955

“I must stress the concern we feel with regard to the coloured people in our City. As Minister of Health we feel you should make this problem a priority. ... they should be subject to a strict Medical examination. ... We are spending thousands of pounds fighting [TB] yet these people are bringing T.B. ...into the country. ... Where is this going to end and what of our standard of Health? Are we going to watch this being undermined without at least trying to uphold it?”

TB, Immigrants & the Media

“Foreign TB cases are depriving us of hospital beds

Immigrants suffering from tuberculosis are being given priority for hospital beds over British people ... ‘Residents with tuberculosis are being denied medical attention in hospital beds’ ”

Birmingham Gazette, 6/2/56

TB, Immigrants & the Medical Profession

“We have spent an enormous amount of energy and money in attempting to rid this region of TB and it is being imported into the country without our being able to do anything about it. For reasons I cannot understand, the Ministry of Health refuses to screen ... – I could understand it if it were the Ministry of Disease instead of a Ministry of Health.”

Hospital Medical Director, London, 1953

TB, Immigrants and the Ministry of Health

“We have of course for years been living with the situation in which people get infected with TB by immigrants...The situation... has not been found to place an intolerable burden on the country’s Health Services, nor to lead to great public outcry. It was the great increase in immigrants from countries like Pakistan (where TB is rife) which led us to feel that some action should be taken.”

B. Fraser to Enoch Powell, Minister of Health, 1963

So: why didn't the UK follow the examples of Canada, Australia and the United States, and establish a medical border against the 'immigrant menace'?

Technical Problems

1. Ethics: “Once a case has been diagnosed as open T.B., the person cannot properly be put back and sent home in an aircraft” Ministry of Health memo 1962
2. Lack of resources: screening demanded scarce radiologists, but trapped them in boring dead-end jobs; and UK had no confidence in non-UK exams
3. Constraints of time and space: instituting border controls in Britain’s busy airports would create unacceptable delays for passengers and airlines even if not subject to screening

But these problems were solvable, albeit not without economic cost to the UK Government.

Political & Social Problems

“It would presumably be politically difficult to insist on X-Ray only in the case of nationals of certain countries ... In particular, any differentiation might lead to accusations of colour discrimination.

Commonwealth Relations Office to Ministry of Health, 1962

Political & Social Problems

“However reasonable the scheme may be, it will involve accusations of discrimination on the basis of colour. Recent experience has taught us how absurdly touchy the coloured Commonwealth countries can be when differential measures of health control are imposed.”

Commonwealth Relations Office to Ministry of Health, 1963

In the end, the UK did not impose exclusionary medical checks until after statutory bans on racial discrimination were in place AND it had become clear that the UK's political and economic interests were to be primarily in Europe, rather than the Commonwealth.

Questions to think about:

- What role was played by medical knowledge and data in this 'global health' decision?
- Comparing UK policy and TB rates to those of countries which did institute exclusionary medical checks in this period, do medical checks on migrants matter?

Case Study: Smallpox

Case study: Smallpox

Smallpox offers a particularly rich example of global health as a *historical* phenomenon:

- smallpox has been specifically identified and studied by many cultures for millennia;
- smallpox has played a visible part in global exchanges both of knowledge and of microbes for centuries (e.g. the Columbian Exchange).

For a quick summary of smallpox facts, see the Center for Disease Control's webpage:

<http://www.bt.cdc.gov/agent/smallpox/overview/disease-facts.asp>

Smallpox is contagious under conditions of direct, relatively prolonged person-to-person contact, but can occasionally be spread by disease matter, or by air in certain stages of the disease and in enclosed environments. Each infected person might be expected to infect 5-6 (generally intimate or household) contacts over the course of the disease. Fatality rates are about 30%, though severe scarring is much more common, and smallpox can cause blindness.

Case study: Smallpox

- Two basic kinds of smallpox: variola majora, variola minora
- Smallpox is caused by the orthopoxvirus variola and has no specific cure
- Smallpox symptoms include the characteristic rash, high fever, head and body aches



Child infected with smallpox in Bangladesh 1973. Smallpox eradicated in Bangladesh 1977.

Source: http://phil.cdc.gov/phil_images/20030304/27/PHIL_3265_lores.jpg

Treating Smallpox

Smallpox has a long medical history. Humans have responded to its threat with

- PRAYER
- PALIATIVE CARE
- VARIOLATION
- VACCINATION

and in the late 20th century,

- CAMPAIGNS FOR GLOBAL ERADICATION



Image Source: Centers for Disease Control [USA]

Smallpox: before vaccination

- C. 1000 BC Chinese medical texts describe variolation;
- 6th c. AD written accounts of smallpox pandemics in Europe and Asia;
- c. 1500 AD Europeans and African slaves introduce smallpox to Americas, with up to 50% morbidity to their 'virgin soil' populations
 - smallpox infected blankets deliberately used by colonists to spread the disease
- Lady Mary Wortley Montague observes variolation in Turkey, introduces technique to Europe c. 1718

From vaccination to eradication

- **1796** Jenner experiments with well-known fact dairy-maids exposed to cow-pox were immune to smallpox; first deliberate vaccinations with cow-pox serum performed.
- **19th c.** Legislative milestones and setbacks
- **1950s** heat-stable freeze-dried vaccine becomes available; reliable vaccination without refrigeration
- **1960s** bifurcated needle introduced for better 'takes'
- **1960s** West African workers develop 'surveillance and containment' ('ring vaccination') strategy, to replace impractical attempts at 'mass vaccination' in developing world.

WHO and Eradication

- 1966 World Health Assembly votes \$2.5 million special budget for eradication of smallpox
- 1967 eradication program begins: 30 countries endemic for smallpox, 12 more subject to frequent importation, 4 major reservoirs of disease [Asia, Brazil, Indonesia, sub-Saharan Africa].
- Approximately 10 million cases world-wide
- 1980 World declared smallpox free.

Why did the smallpox campaign succeed?

1. Nature of the disease: well-known, comparatively easy to recognize (at least for experienced doctors); incubation, contagious periods well-known and limited; long-term immunity possible;
2. Effective, inexpensive, and fairly stable vaccine available;
3. Risk and economic costs of sporadic outbreaks in non-endemic nations encouraged global, rather than strictly national action;
4. Action was voluntary, rather than compulsory -- but carrot (e.g. vaccination necessary to gain passport or entry to some nations) and stick (e.g. military-run mass vaccination activities during epidemics) approaches, as well as health education, encouraged acceptance of vaccination.

Question: Why have NO other global eradication campaigns succeeded?

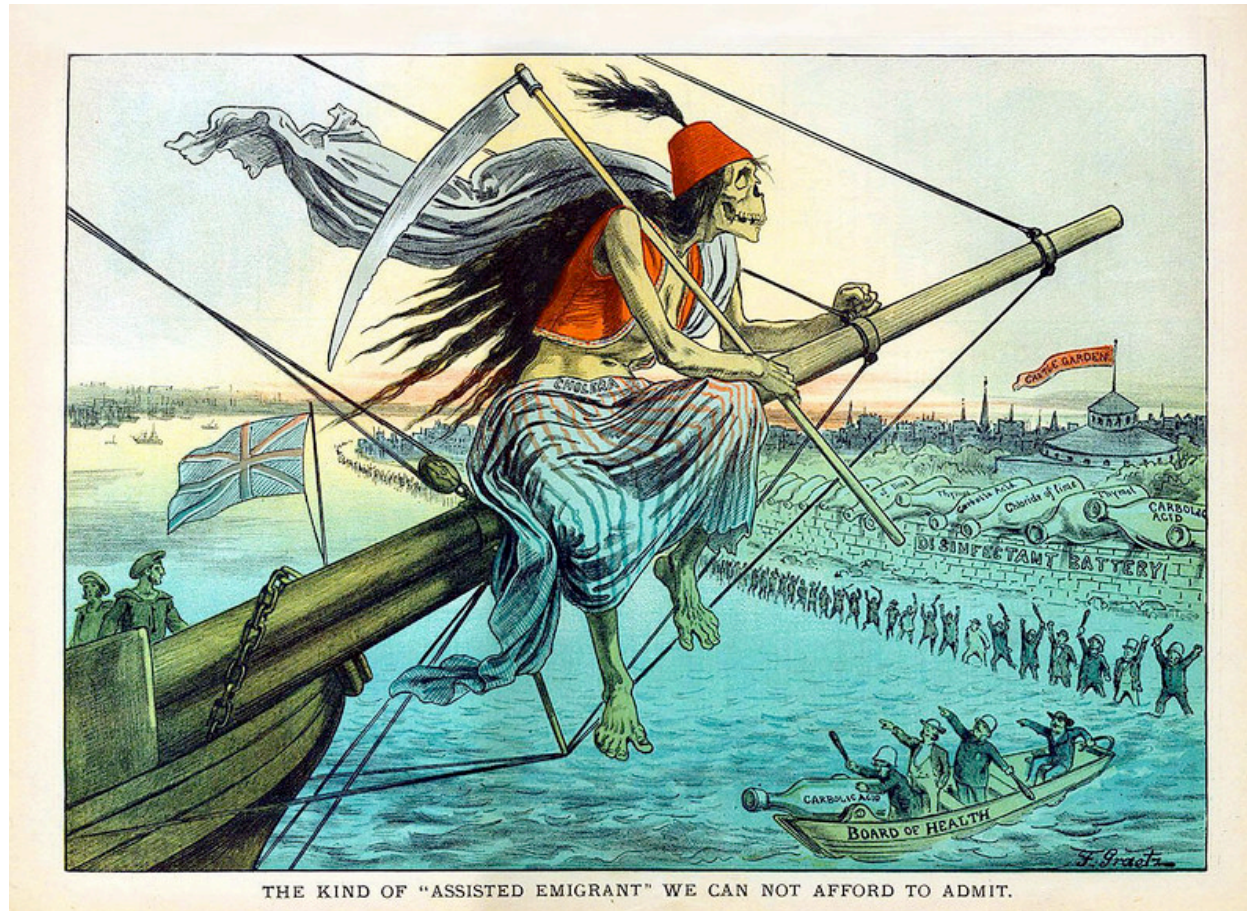
Malaria? Polio? Tuberculosis?

Consider

- East/West and North/South politics,
- the costs to non-endemic nations of eradication as compared to exclusion,
- the nature of the micro- and vector organisms involved,
- the relative ease/difficulty of rapid diagnosis,
- the technologies available to eradicators in the absence of a vaccine.

Case Study: Globalization: the shock of the new or old news?

Globalization and migration: old news, old anxieties



Globalization and global disease: old news

- Cholera one of first governmentally and institutionally recognized cases of 'global disease'
- 6 classic pandemics from 19th c on, following colonization and 1st wave of cholera globalization
- 1 definite and 1 suspected pandemic in 2nd wave globalization -- including El Tor strain, which has found non-human aquatic vectors (due to environmental degradation and 'hot systems' thus created?)

So what does and doesn't work?

See Kelley Lee and Richard Dodgson, 'Globalization and Cholera: Implications for global governance' in Kelley Lee, ed., *Health Impacts of Globalization: Towards Global Governance* (Basingstoke: Palgrave Macmillan, 2002): 123-14.

Techniques to halt the spread of cholera

Ineffective (why are these still popular?):

- Quarantine of affected regions, cities, ports, bodies
- Exclusion of 'suspect' groups, foods
- Port medical inspections

Effective (why don't we use these more?):

- Introduction of pure water supplies in endemic locations
- Introduction of better sanitation in endemic locations
- Support for improved environmental and agricultural conditions in endemic regions
- Education about food and toilet hygiene for all

Globalization: So what IS new?

- Pace of change, speed of passage
- Mass communications
- Mass migration (south to north, east to west)
- Formalized and globally recognized international health bodies

Historical approaches to use and build on: exploring history's 'experiments'

- Historians use different strategies to produce evidence about health, disease, and medical practices in the past. Here, we'll look at four which produce information relevant to 'global health'

1. Studies of specific sources of morbidity

Historians using this approach scrutinize:

- global epidemics, past and present e.g. smallpox, cholera, influenza, HIV-AIDS
- persistent sources of endemicity – e.g., malaria, tuberculosis
- patterns of chronic and genetic diseases -- e.g., noninsulin-dependent diabetes mellitus, sickle cell, obesity

SUCH STUDIES PROMOTE A DEEPER UNDERSTANDING OF EXISTING CO-FACTORS OF MORBIDITY & THE IMPACT OF EARLIER ATTEMPTS TO ADDRESS THEM.

2. Studies of institutions and entities that affect health and health policy

Studies using this approach examine:

- the role of global trading companies/ militaries in the spread of diseases (e.g. cholera)
- the impact of the WHO, national govts, private charities in eradication efforts (e.g. smallpox)
- the historic role of corporate entities in promoting healthy or unhealthy behaviors

SUCH STUDIES RENDER VISIBLE THE DIVERSITY OF ACTORS AND RANGE OF INTERESTS INVOLVED IN GLOBAL HEALTH POLICY MAKING

3. Studies comparing historical and contemporary responses to persistent global health challenges

Studies using this approach might:

- Compare past and present responses to morbidity linked to mass migration
- Examine the relative efficacy of historic and current public health strategies for countering epidemic and endemic disease

SUCH STUDIES ILLUMINATE CONTINUITIES & CHANGES IN PUBLIC & POLITICAL ATTITUDES TOWARDS GLOBAL HEALTH, HEALTH RISKS AND HEALTH INEQUALITIES

4. Study and evaluate cross-cultural exchanges of knowledge/practice

Studies using this approach:

- Compare transmission of medical knowledge East to West, and West to East
- Assess effective and ineffective responses to medical ‘culture clashes’ between immigrants and their clinicians, post WWII

SUCH STUDIES ILLUSTRATE FUNDAMENTAL CHARACTERISTICS OF DIFFERENT MEDICAL SYSTEMS AND EFFECTIVE / INEFFECTIVE COMMUNICATION STRATEGIES IN GLOBAL HEALTH

Summary

- Health and medicine have been global for most of human history; few situations arise today for which we do not have historical precedent.
- Responses to global health problems too are rarely entirely novel.
- Therefore, it may be of use to people working in the field of global health to examine historical evidence about problems, solutions, and co-factors as they address the global health challenges we all face today.

General References

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- See also CUGH modules on smallpox, tuberculosis

Credits

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Supplementary Notes

Slide 5: 'Global health' in the west: everything old is new again.

'Every Dog (No Distinction Of Color) Has His Day,' Harper's Weekly, February 8, 1879 page 101. Published at a time of heightened anti-immigrant sentiment across the United States, this Harper's cartoon, unusually, draws attention to the hypocrisy and contradictions of the situation. The text beneath the image reads "Red Gentleman to Yellow Gentleman: 'Pale face 'fraid you crowd him out, as he did me.'" Behind them both sits a stereotyped black man sitting on a bale of cotton – a little reminder to the magazine's readers, perhaps, of the longer history of (forcibly) imported labor in America. The sign above his head reads 'My day is coming'. On the right hand side of the image meanwhile are more signs, whose contents highlight the ironies of the situation. At the top, one poster bears a crude image of an Indian running in front of a train is captioned 'Go West'. Below it is an image of a Chinese man, banging a drum labelled 'Chinese labor', chasing the train back towards the Atlantic. Next is a notice reading 'Down with the Nigger. KKK' and signed with a skull and cross bones. Beneath these, hangs a call: 'The Chinese must go!' signed by 'Kearney (a real American)' – Kearney was an anti-immigrant Irish-American politician in California. Here the illustrator was pointing out the hypocrisy of a nation of immigrants succumbing to anti-immigrant fever, and of the politicians who thrived on their fears. Further down, the largest print is on a proclamation. Under the headline "The Chinese Problem", it calls for state constitution to prohibit Chinese immigration, and for laws "providing for their banishment". Two smaller signs state: "Foreigners not wanted. Pat. Irish Esq." "Lager Beir Government we must have. Social Fritz, by order." Beneath, and by implication underlying all of these anti-immigrant statements is the final sign: "Knownothingism of the past. Down with the Irish. Down With the Dutch."

Anti immigrant and anti-foreigner movements have long drawn on public health concerns to justify racist or ethnocentric exclusionary policies. Even today many nations, including the United States, excludes immigrants with certain health complaints (including AIDS and TB).

Slide 6: 'Global health' in the west: Key events I

Historically, 'global health' looks very different from the perspective of Asia, Africa, or South America than it does from the perspective of Europe and North America. The constraints of time and space limit this module to presenting the western view only, at least until the emergence of the new globalization after World War Two. But it is worth noting, if only in passing that the Chinese explored the east coast of Africa well before their European successors, that the Spice Trade flourished happily and created its own cultural and epidemiological 'footprint' long before Europeans were able to engage in it directly, that artefacts and foodstuffs mark out extensive trading networks across the pre-Columbian Americas, and that gods, gold, and slaves likewise traversed the African continent before their movements were driven by European interventions. By and large, isolation was not a cultural or medical option, even before this era of high-tech global communications, mass migration by air, and global corporate entities.

Image credits:

Left image: Adhémar de Monteil (Adhémar du Puy) charging the Saracens, brandishing the Sainte Lance d'Antioche. Medieval illumination from Wikicommons

Right Image: 'The Apothecary' from De Materia Medica des Dioskurides, The York Project

Slide 7: 'Global health' in the west: key events I

Consider the following quotation from the 12th century Arab account of the Crusades, written by Emir Usamah c 1140:

“The Frankish governor of Munaytra, in the Lebanese mountains, wrote to my uncle the sultan... asking him to send a physician to treat several urgent cases. My uncle selected one of our Christian doctors... He was gone for just a few days, then returned home. ...We besieged him with questions...”

Our narrator then relates the Arab physician's story of his time with the Franks (at the time, a more or less generic term for Northern Europeans):

“They brought before me a knight who had an abscess on his leg and a woman suffering from consumption. I made a plaster for the knight and the swelling opened and improved. For the woman, I prescribed a diet to revive her constitution. But a Frankish doctor then arrived and objected, ‘This man does not know how to care for them.’ Addressing the knight, he asked him, ‘Which do you prefer, to live with one leg or die with two?’ ... As for the woman, the Frankish doctor examined her and said, ‘She has a demon in her head who has fallen in love with her. Cut her hair. When the knight answered that he preferred to live with one leg...the physician ordered, “Bring me a strong knight with a well-sharpened battle axe.” ... The marrow of the leg spurted out and the wounded man died that very instant. ...The woman began to eat their food again ... which aggravated the consumption. The doctor affirmed, “the devil himself must have entered her head.” Grasping a razor he cut... the shape of the cross, exposed the bone of the skull and rubbed it with salt. The woman died on the spot. ... I returned home, having learned much that I had never known about the medicine of the Franks.”

Source: Amin Maalouf, *The Crusades through Arab Eyes*, pp 131-2

Slide 8: 'Global health' in the west: key events I

The Renaissance in Europe (often divided by scholars into a series of national Renaissances) began in Italy in the late 14th century. Its origin in this particular region has been linked to a number of factors. Perhaps of most interest in relation to ideas of *global* health is the fact that Italy benefited by its location at the heart of the Mediterranean world from the flowering of Islamic science, mathematics, and medicine. Other relevant aspects were Durer's invention of the printing press c. 1450 (which considerably speeded and enhanced the flow of knowledge between communities in Europe); Europe's first contacts with the western hemisphere c. 1492; and rapid developments in anatomy and astronomy, respectively illustrated by Vesalius's *De humani corporis fabrica* [*On the fabric of the human body*], published in 1543, and the works of Tycho Brahe, Copernicus and Galileo.

Slide 9: 'Global health' in the west: key events II

"Distribution of the primary races" from Lothrop Stoddard, *The Rising Tide of Color Against White World-Supremacy* (New York: Charles Scribner's Sons, 1920). Of course this image is not an accurate map of race distribution – it was an ideologically loaded image created as part of a great debate about race, eugenics and (in the United States in particular) the dangers of immigration. For our purposes, it illustrates one endpoint of a process begun in the Age of Exploration [see next slide], as Europeans encountered and attempted to comprehend the non-European world. Using sciences of measurement, classification and categorization, each culture and civilisation was ranked and compared – and each was ranked below those of Europe. Similarly, through anatomy, physiology, anthropometry, and other medically allied sciences of the modern era, individuals from these cultures were assessed and found to be inferior to their European brethren. Medicine played a major role in these efforts – while at the same time the emerging disciplines of public health and tropical medicine were conveying (albeit often slowly and unevenly) significant benefits to the stigmatized and colonized populations as well as their imperial bureaucracies and bureaucrats.

The racial sciences:

Phrenology: the scientific study and categorization of the shape of the skull to predict character and characteristics

Craniometry: science devoted to the measurement of the skull (initially externally, subsequently internally) and correlation of such measurements to mental traits and abilities

Comparative anatomy: anatomical studies drawing their analytical power and results from comparisons between human-animal, or human-human (sexual or racial) comparisons

Anthropology: esp. physical anthropology