



ANBI 139

Evolution of Human Disease

Lecture 14: Cultural Attitudes towards Disease



Pascal Gagneux

Winter 2021

Siechehuus (Leper House) on the outskirts of Basel, Switzerland

Compassion for fellow humans?

2 million year ago in Georgia

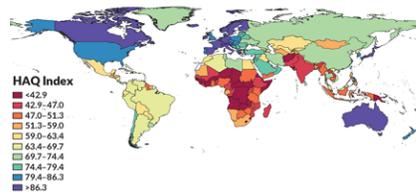


Homo erectus first appears outside Africa 2 million years ago.

Among the 5 famous skulls discovered in Dmanisi, Georgia, one belonged to an aged individual who was practically toothless, yet clearly survived for many years, indicating that others helped in chewing and preparing food.

Health Care Globally: Access and Quality

2015



HEALTH CARE PALETTE Countries shaded with cooler hues had better health care quality and accessibility in 2015 than those with hotter colors. Researchers created the Healthcare Access and Quality Index to assess each country's status.
R. BARBER et al. // THE LANCET 2017

Modern Health Care symbolizes the willingness of societies to care for the sick and injured. Access and quality vary greatly among societies and reflect moral priorities and overall resources.

Leprosy

Leprosy, also known as Hansen's disease (HD), is a long-term infection by the bacteria *Mycobacterium leprae* or *Mycobacterium lepromatosis*



In the middle ages, European cities would exclude lepers and sufferers were forced to announce themselves with bells or wooden ratchets.

Leprosy

Nine banded armadillo



The nine banded armadillos, one of the few mammals that invaded the southern part of North America after South and North America joined ~ 3 million years ago is one of the few non-human mammals that carries leprosy.

Tuberculosis (TB)

Tuberculosis is caused by *Mycobacterium tuberculosis*

the "white plague" or consumption

The most common cause of TB stigma is the perceived risk of transmission from TB-infected individuals to susceptible community members. Depending on geographic region, however, TB is also stigmatized because of its associations with HIV, poverty, low social class, malnutrition, or disreputable behavior.



When diseases are stigmatized, the fear of the social and economic consequences following diagnosis can make individuals reluctant to seek and complete medical care. The structure of a community's beliefs and norms about a disease and the resulting stigma can, therefore, substantially impact health.

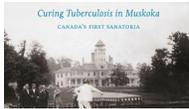
Practice question:

It is estimated that ~ 30% of humans are infected by *Mycobacterium tuberculosis*, yet far fewer ever develop symptoms of TB. What does that say about TB pathogenesis?

Host factors, such as genetics of immunity must be a big part of the equation.

Tuberculosis (TB)

Tuberculosis is caused by *Mycobacterium tuberculosis*
the "white plague" or consumption



Sanatoria were built in many mountain resorts of Europe and North America to treat patients suffering from TB.

The Black Death: Trade, Plague and flagellants

14th century ravage of Europe



Procession der Flagellanten, Gemälde, 1813, Wikimedia

The Black Death, (bubonic plague) caused by the bacterium *Yersinia pestis* swept through Europe multiple times starting in the 14th century. It killed around 30% of Europe's population, destabilized governments and the Church, contributing to the reformation and the birth of many new Christian denominations. The flagellants were groups of 200 to 300 people who went from town to town whipping themselves to do penance for their sins. They did not bathe and probably contributed to the spread of the plague.

Jews across Europe were blamed for the pestilence and thousands of them were massacred, the plague continued. Pope Clement VI eventually banned the flagellants and appealed to people to stop killing Jews.

Practice question:

How could flagellants, an order of fanatic Christians have contributed to the spread of the plague in Europe?

These people did not bathe and wandered from city to city, whipping themselves in public places to appease God's wrath.....

They must have been walking "flea bags" and with fleas came the plague.

1349 Basel, Switzerland

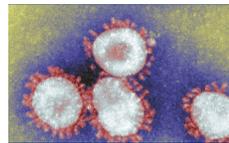


Blame:
Jewish communities
massacred across Europe



Always eager to blame other for disease: the 14th century plague was no exception: across Europe, Jews were accused of poisoning wells, leading to multiple programs where the entire Jewish population of several cities was murdered. This did not stop the plague and neither did it anti-Jewish prejudices.

SARS outbreak 2003



Severe acute respiratory syndrome virus outbreak in 2003, links to religious communities. Rapid reaction by the Chinese authorities and temporary changes of religious practices helped control the spread.

Quarantine



A quarantine is used to separate and restrict the movement of persons; it is a 'state of enforced isolation'

Infected people were separated to prevent spread of disease among the ancient Israelites under the Mosaic Law, as recorded in the Old Testament



quaranta giorni, meaning 'forty days'. This is due to the 40-day isolation of ships and people before entering the city of Dubrovnik in Croatia 1348.

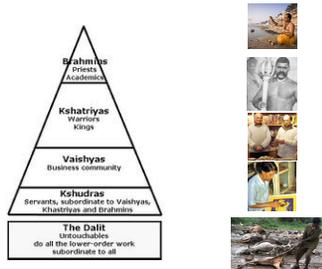
This was practiced as a measure of disease prevention related to the Black Death. Between 1348 and 1359, the Black Death wiped out an estimated 30% of Europe's population, and a significant percentage of Asia's population.

Practice question:

What is the origin of the word quarantine?

Forty days in Italian, the time ships were required to anchor off harbors in order to make sure these were not importing disease.

Hindu Cast System: Four Varnas



Adaptive systems against contagious epidemics?



The cast system in India goes back to the arrival of pastoralist Aryans from Mesopotamia. These new arrivals established a stratified social system and kept the darker skinned local populations (all Dravidian hunter gatherers) in lower castes. The people dealing with “impure” tasks such as emptying latrines and removing corpses were deemed “untouchable”. Such a system might serve to contain infectious disease in times prior to antibiotics.

Practice question:

As unfair as cast systems appear to be, how could these have helped diminish the risk of epidemics in ancient cities?

By minimizing contact between people who had high likelihood of infecting themselves by virtue of their occupations (latrine cleaners, tanners, undertakers etc)

Burakumin 部落民



Burakumin villages near Tokyo or Edo as it was formally known

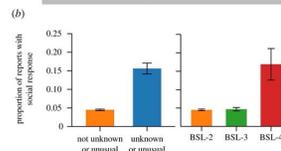
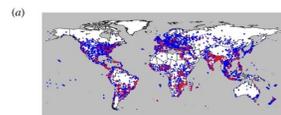


In Feudal Japan, the Burakumin, were relegated special parts of the cities

These people were treated as outcast based on their occupation, which included butchering and leather tanning and leather work.

The social stigma of the neighborhoods survives into modern times.

Social response most frequently occurs when the disease is novel to the region or clinically severe.



Shannon M. Fast et al., J. R. Soc. Interface 2015.

Social response most frequently occurs when the disease is novel to the region or clinically severe.

(a) The 11 926 disease outbreaks recorded by Ascel Bio between May 2008 and 2009 are shown. The majority of events were not associated with social response (blue); however, there were regional clusters of events with social response (red). (b) If a disease is unusual or atypical in a region or seen as unknown or mysterious to local experts, there is an increased likelihood of social response. Outbreaks of diseases with the highest BSL are likely to have social responses. BSL-4 diseases are severe and fatal, with no available treatments.

Unusual phenotypes



Albinos in Africa



Red heads in Europe



Al-Shymaa Kway-Geer,

Discrimination against society members with rare or unusual phenotypes include treatment of albinos in subsaharan Africa, Red heads or Gingers in Europe, left handed people in Europe and Asia.

Practice question:

Name two rare human phenotypes that have been historically strongly discriminated against: albinos and red hairs.

The need for blame

Magical thinking, witchcraft



Litigation



RICHARD GAGE
& ASSOCIATES
Top Vaccine Injury Attorney
in the entire United States
Serving Clients Nation-Wide

Often disease is blamed on third parties. Both witch doctors and lawyers can make an easy living out of these tendencies.

Practice question:

What are the parallels of witchcraft and litigation lawyers in the context of disease?

Both can make a living out of the urge to blame someone for the loss of a loved one.

Blame continued:

Bruno Bettelheim and "Refrigerator Mothers"

Fraudulent child
psychologist at
U. of Chicago



In the middle of the 20th century, psychologists tried to blame autism on the lack of emotional warmth of mothers.

Practice question:

What was the infamous mid 1900s theory for explaining autism?

"refrigerator mother" emotionally distant

HIV/AIDS

Blaming the victim:
Gay Plague
Disease of Sex workers

Denial:
Syndrome Inventé pour
Décourager les Amoureux (SIDA)

Blaming the CIA, the US military



In 1992, Director of Foreign Intelligence Service (SVR) Yevgeny Primakov admitted that the KGB was behind the Soviet newspaper articles claiming that AIDS was created by the US government: operation INFEKTION

Victims of disease are another easy target.

Fear of terrible disease has been “weaponized” in propaganda wars such as the soviet operation INFEKTION.

Blame the others: case study Syphilis

The appearance of syphilis in Renaissance Europe became a classic example of passing the blame. Syphilis was christened the 'French disease' by the British, but the French held the Italians responsible. They returned the compliment. The Dutch blamed the Spanish, while the Russians blamed the Poles. In Japan the Portuguese were at fault, whereas the Turks simply called it the Christian disease. And when in 1769 Captain Cook observed the disease on Tahiti, it was known to all islanders as the British disease.

It is always the “other”

Indian Plague / Navajo Flu (Sin Nombre virus) 1993



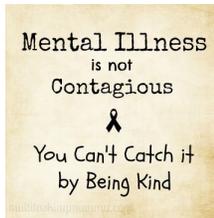
2009 H1N1: Mexican Flu, Veracruz Flu etc....
Wuhan virus, Kungflu, China virus.....

Recent outbreaks that were almost named after “outsiders” or geography

By this logic, HIV should be called the Los Angeles virus, after the first place where it was diagnosed.

Mental Disease

Possibly the most taboo of all diseases.



Disability or Other Ability?



The Price of 'Disability Denial'
Catherine Kudlick

Is deafness simply “other abled” or is it a disability?

Patient Advocacy



Little people of America is a powerful lobbying group for research and medical access. The people affected have self-organized and contribute to deciding new developments of therapies and other important developments.

Practice question :

Name a genetic condition that is well represented by a patient advocacy group:

Achondroplastic dwarfism by Little People of America

Patient Family Advocacy

Home / For Patients and Families / Rare Disease Information / Congenital Disorders of Glycosylation

Congenital Disorders of Glycosylation

NORD gratefully acknowledges Jaak Jaeken MD, PhD, Evr. Professor of Pediatrics, Center for Metabolic Disease, University Hospital Gasthuisberg, Belgium, for assistance in the preparation of this report.

Synonyms of Congenital Disorders of Glycosylation

- carbohydrate-deficient glycoprotein syndromes
- CDG
- CDG syndrome

General Discussion

Summary Congenital disorders of glycosylation (CDG) is an umbrella term for a rapidly expanding group of rare genetic, metabolic disorders due to defects in complex chemical processes known as glycosylation. Glycosylation is the process by which sugar "trees" (glycans) are created, altered and chemically attached to certain proteins or fats

Report Index

- Synonyms
- General Discussion
- Signs & Symptoms
- Causes
- Affected Populations
- Related Disorders
- Standard Therapies
- Investigational Therapies
- Resources
- Supporting Organizations
- References

Other groups of patients and their parents have organized into similar patient groups.

Colostrum taboos

profoundly non-adaptive cultural norms



Cameroon:

Region	Name	Preception	Treatment
Far/Extreme North	awidi	Evil spirits	Massage breast with herbal mixture to get rid of it
Adamaoua	ngame	Phases	Take traditional medicine
North-West	Edikent	Black milk	Press breast with hand to get rid of it
West	nam	Elbow that makes breast ache	Press breast with hand to get rid of it
	nam	Elbow that makes the veins and nipples	Press breast with hand to get rid of it
Rest of National Territory	Yellow liquid	Contains sexual germs	Spaced and thrown away (except periods of a year)

Using the Human Relations Area Files, (HRAF), a database of cross-cultural information "to promote understanding of cultural diversity and commonality" established in 1949, Raphael identified 32 different societies in which breastfeeding was initiated 3-7 days after the infant's birth.

Colostrum Through a Cultural Lens
by Katie Hinde in SPLASH! milk science update: February 2017

Cultures can have very maladaptive beliefs: i.e. colostrum is bad

Practice question:

Name two clearly maladaptive cultural practices:

Colostrum taboo

failure to offer education to girls

genital mutilation

African Meningitis Belt

Neisseria meningitidis



1987, Mecca strain



It first surfaced in 1987, when pilgrims became infected with a *Neisseria* variety known as serogroup A. In response, Saudi Arabia required that hajj travelers be vaccinated against the pathogen. In March 2000, pilgrims contracted a new strain, W135, and carried it back to the United States, Africa, Asia, and Europe, touching off small epidemics. Since 2002, vaccination against W135 is mandatory, as well.

Practice question:

How could religions unintentionally favor epidemics?

Most large religions have regular festivities that bring together global crowds in very high numbers: ideal for spread of infections.

Surveillance efforts

THE LANCET

59883 | LANCET Infectious Diseases | Volume 14, Number 5, May 2014

Haji: infectious disease surveillance and control

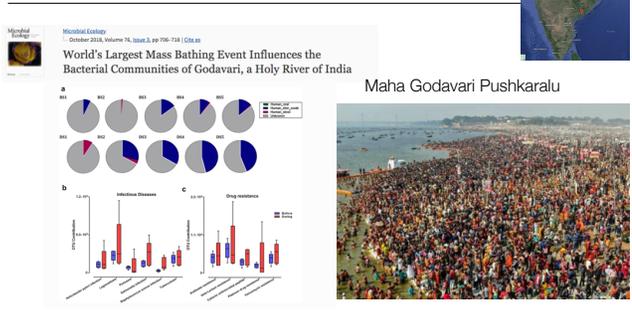
Prof Foad A. Menni, PhD^{1,2}, Prof Abdulrahman Zumla, PhD³, Rabeh A. Alshamir, MD⁴, Abdulrahman Alshamir, MD⁵, Khalid Z. Al-Hadi, MD⁶, Mohamed A. Elmaghrabi, PhD⁷, Khalid D. Shaheen, MD⁸, Khalid Z. Al-Hadi, MD⁹, Mohamed A. Elmaghrabi, PhD¹⁰, Prof Foad A. Menni, MD¹¹, Prof Abdulrahman Zumla, PhD¹², Rabeh A. Alshamir, MD¹³, Abdulrahman Alshamir, MD¹⁴, Khalid Z. Al-Hadi, MD¹⁵, Mohamed A. Elmaghrabi, PhD¹⁶, Khalid D. Shaheen, MD¹⁷, Khalid Z. Al-Hadi, MD¹⁸, Mohamed A. Elmaghrabi, PhD¹⁹, Foad A. Menni, MD²⁰

Published May 20, 2014 | DOI: [https://doi.org/10.1016/S1473-3099\(14\)10000-0](https://doi.org/10.1016/S1473-3099(14)10000-0)

Summary

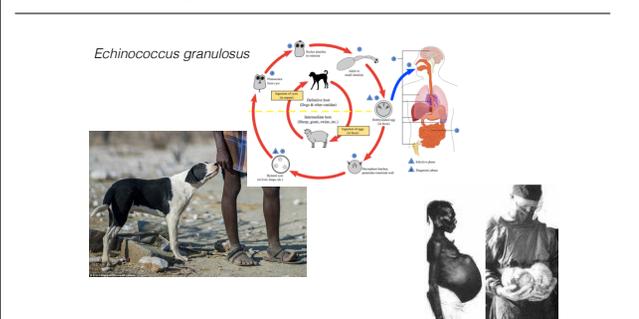
Religious festivals attract a large number of pilgrims from worldwide and are a potential risk for the transmission of infectious diseases between pilgrims, and to the religious population. The gathering of a large number of pilgrims could compromise the health system of the host country. The threat to global health security posed by infectious diseases with epidemic potential shows the importance of advanced planning of public health surveillance and response at these religious events. Saudi Arabia has extensive experience of providing health care at mass gatherings acquired through decades of managing millions of pilgrims at the Hajj. In this report, we describe the extensive public health planning, surveillance systems used to monitor public health risks, and health services provided and accessed during Hajj 2013 and Hajj 2012 that together attracted more than 3 million pilgrims from 180 countries. We also describe the recent establishment of the Global Center for Mass Gathering Medicine, a Saudi Government partnership with the WHO Collaborating Centre for Mass Gathering Medicine, Gulf Co-operation Council states, UN universities, and public health institutions globally.

Religious mass bathing



Pie chart depicts the signatures of human associated microbiota (skin, stool and oral) recovered during the mass bathing event. The color code denotes the source of bacterial communities associated with human-oral (green), skin (blue), and stool (red). Box plots represent functional acquaintance of bacterial communities across the gathering. The differential abundance of gene families associated with b infectious diseases and c drug resistance. Before samples (blue) and during samples (red)

Turkana, their dogs and their worms



The Turkana people of East Africa live in very intimate contact with their dogs and suffer from a huge load of echinococcus infection. These helminths can cause huge cysts in the body of infected humans.

US Navy: Molecular Surveillance

NAVY MEDICINE
ABOUT YOUR HEALTH CARE EFFORTS CAREERS PRESS ROOM

Journal of Clinical Microbiology, Nov. 2010, p. 4238-4244
DOI: 10.1128/JCM.01730-10
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Initial Identification and Characterization of an Emerging Zoonotic Influenza Virus Prior to Pandemic Spread¹

David Metzger,¹ Darcie Boytes,^{1†} Christopher A. Myers, Peter Kammerer, Michelle Usabio, Dennis J. Faix, and Patrick J. Blair

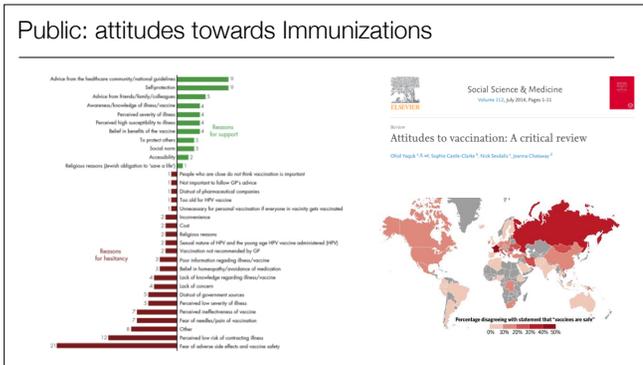
Department of Respiratory Disease Research, Naval Health Research Center, San Diego, California

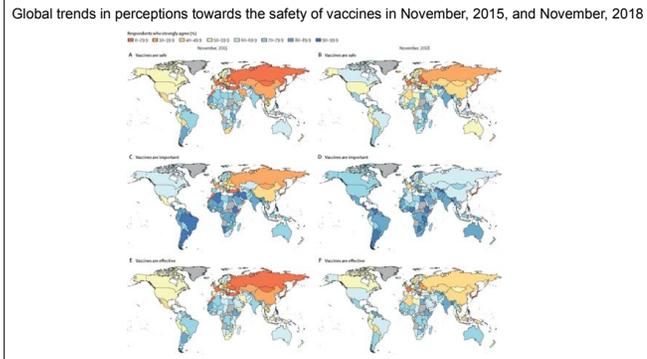
Received 30 June 2010/Returned for modification 10 August 2010/Accepted 10 September 2010

The H1N1 swine Flu virus was initially characterized right here in San Diego by US Navy Medical Researchers.
Active molecular surveillance is tantamount for a fleet with boats carrying large number of service personnel.

Daide Metzgar and Antonella Zampoli
Run Total Raptor experience
<https://www.totalraptorparapen.com/book-online>

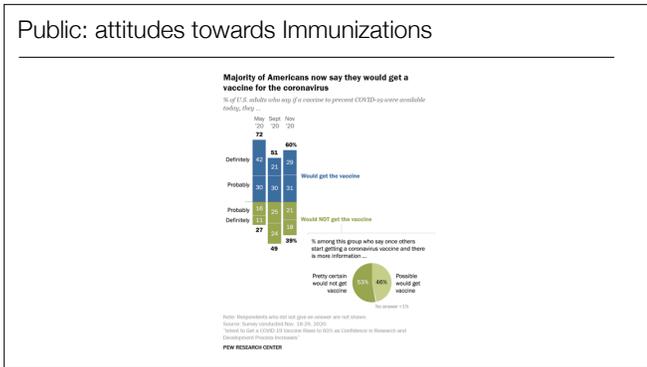
Mixed reasons for both positive and negative attitudes towards immunization



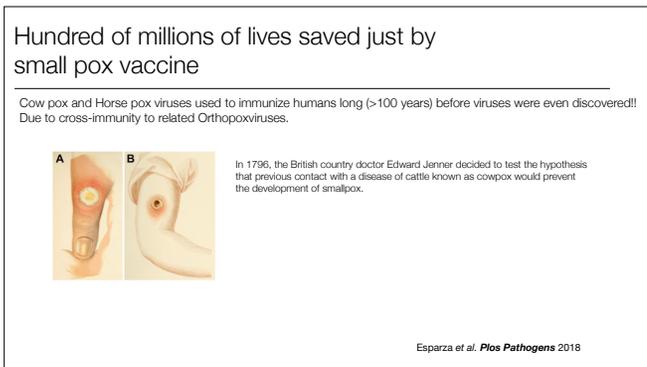


Global trends in perceptions towards the safety of vaccines in November, 2015, and November, 2018

Figure shows model-based estimates of the percentage of respondents strongly agreeing that vaccines are safe (panels A, B), important for children to have (panels C, D), and effective (panels E, F) in November, 2015, and November, 2018. No data were available for countries in grey.

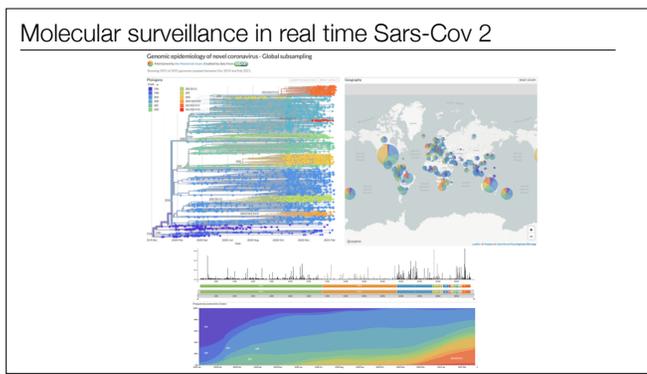
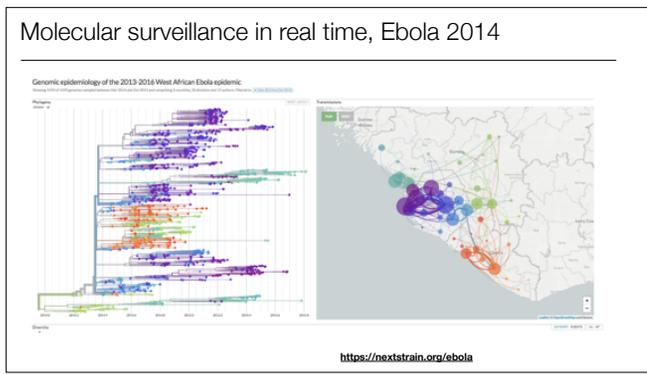


Mixed reasons for both positive and negative attitudes towards immunization



Very important international resource.

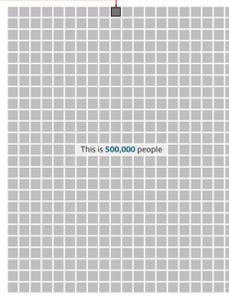
The image shows the homepage of the Nextstrain website. At the top left is the Nextstrain logo. Below it, the text reads "Real-time tracking of pathogen evolution". A paragraph follows, explaining the project's goal: "Nextstrain is an open source project that tracks the spread and genetic health of pathogens in real time. We provide a publicly accessible web portal where you can explore the genetic diversity of pathogens and track their evolution in real time. From the genetic diversity of pathogens, we can learn about their spread and evolution." Below this is a "READ MORE" link. The main content area is divided into several sections: "SARS-CoV-2 (COVID-19)", "Explore pathogens" (with sub-sections for SARS-CoV-2, Seasonal influenza, and West Nile virus), and "From the community" (with sub-sections for Dengue, Zika, West African Ebolavirus, Ebola, Avian Influenza, Malaria, Enterovirus D68, and Tetrahymena). Each section features a small thumbnail image representing the pathogen or disease.



Grim Covid 19 Milestone: 500,000 dead in the USA!



Imagine each of these squares is 1,000 people.



This is 500,000 people

The USA has just reached half a million Covid 19 deaths, more than any country on earth.

CORONAVIRUS CHRONICLES MARCH 1, 2021 ISSUE

WHY DOES THE PANDEMIC SEEM TO BE HITTING SOME COUNTRIES HARDER THAN OTHERS?

While the virus has navigated rich nations, reported death rates in poorer ones remain relatively low. What probing this epidemiological mystery can tell us about global health.

By Siddhartha Mukherjee
February 22, 2021



Cultural outlooks



Israel has had one of the best immunization records in the world.

Yet, the Haredi communities (ultra orthodox Jews) have twice the rate of Covid19 than the rest of the population.

Summary

Human societies have a variety of attitudes towards individuals suffering from different diseases.



Attitudes range from exclusion and ostracism to profound compassion.

Toothless skull of *H. erectus* 2 million years ago in Dmanisi is evidence for how far back caring for the elderly goes.

Social taboos generally help the disease, especially where these are infectious, e.g. leprosy, TB, HIV/AIDS, STIs.

Social systems may have been shaped by the threat of infectious disease: outcasts, untouchables, burakumin.

Cultural practices can be very harmful via spread of disease.

The need for explanations often leads to blaming, the victim, other groups, or the involvement of witchcraft (the governments, or big Pharma).