

R_Xcipes

For

Disaster

Eric Avery M.D.

Philigrafika – The Graphic Unconscious

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These are not recipes or prescriptions for health and wellbeing. These Rxcipes are chimeric fables mixing animals, humans and germs in ways that have produced history-changing plagues and incalculable misery and death. Like a fable, each Rxcipe is followed by an application which is meant to teach a lesson about the origin of infectious diseases and about our lives with animals

Recipe for Disaster: Conquest of the Americas

What you need:

- 20,000,000 Aztecs
- 1,500 Conquistadores
- 1 Old World person with Smallpox

Directions:

- Conquistadores arrive in the New World with one person infected with smallpox
- Count the Dead



Application:

When Europeans arrived in the New World they brought their Old World germs with them. The introduction of smallpox, measles and typhus to human populations without natural “herd immunity” led to tremendous death. The colonization of the New World might owe more to germs than to traditional weapons.

In Mexico, after the introduction of smallpox, the population fell from 20 million in 1518 to 3 million in 1568.(1) In 1763, General Jeffery Amherst, a British commander in North America ordered his soldiers to distribute blankets inoculated with smallpox virus to a problem tribe in the western territories. The tribe was obliterated and the epidemic crossed the Rockies, killing large numbers of Native Americans from southern California to the Arctic Circle. President-to-be Andrew Jackson employed this tactic in his battle against the Seminoles in Spanish Florida. As president he endorsed this strategy when he rigorously enforced the Indian Removal Act of 1830, which required the relocation of all eastern tribes beyond the Mississippi.

The origin of Smallpox is not fully understood, but it is thought to have originated from a camel pox virus in Egypt or India over 3,000 years ago.(2) Over centuries, it claimed millions of lives and perhaps has had the greatest impact on human history of any infectious disease.

Like smallpox, most (58%) of the 1407 known human pathogens are zoonotic, which means they normally occur in animals but also infect humans. (3) Major infectious diseases of temperate zones seem to have arisen overwhelmingly in the Old World (Africa, Asia and Europe) from domestic animals. The link to domestic animals is tied to the rise of agriculture, 11,000 years ago.

Temperate Diseases Likely Origins

Influenza A	ducks, pigs
Hepatitis B	apes
Measles	cattle
Mumps	mammals, possibly pigs
Pertussis	mammals
Rotavirus	domestic herbivores
Smallpox	camels
Tuberculosis	ruminants
Diphtheria	domestic herbivores
Plague	rodents
Typus	rodents

The main reason few tropical diseases arose from domestic animals is that such animals have historically been concentrated mainly in the temperate zones. The sole abundant domestic animal to have originated in the tropics is the chicken, from Southeast Asia.

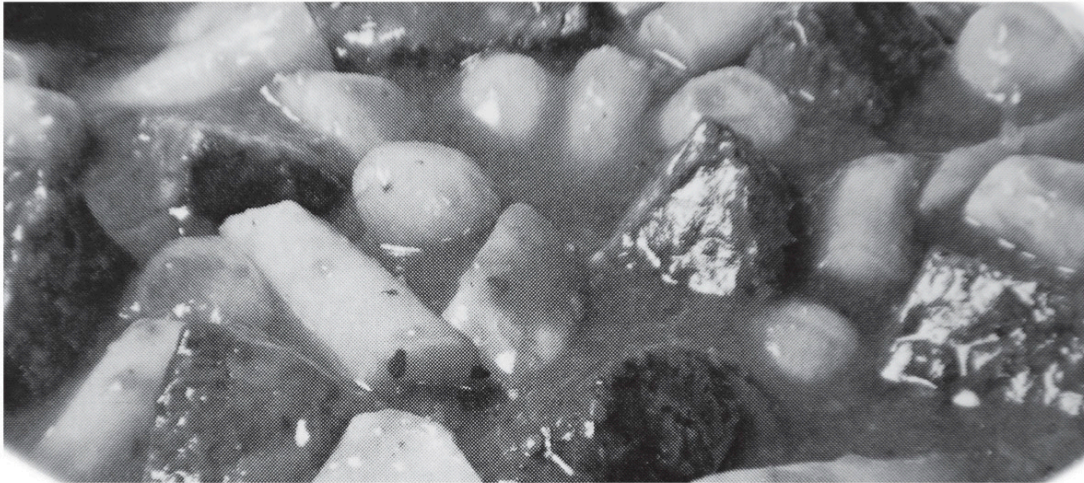
Tropical Diseases Likely Origins

AIDS	chimpanzee
Falciparum Malaria	birds
Cholera	aquatic organism?
Chagas Disease	wild and domestic mammals
Dengue Fever	old world primates
Sleeping Sickness	wild and domestic ruminants
Leishmaniasis	dogs, rodents

Our hunter-gatherer ancestors were less exposed to infectious diseases. They lived in small groups and were on the move searching for food. Water sources were not polluted and refuse did not collect. Low numbers discouraged infections because to sustain a disease that infects only humans and lacks an animal or environmental reservoir, each infected individual must pass the infection to at least one other person. (4)

As humans began producing their own food, wild grasses became varieties of wheat, rye, barley and rice. Rats and mice took up residence where grains were stored. Dogs were domesticated, followed by cattle, sheep, goats, pigs, horses and fowl. Tamed animals helped to create civilizations with their meat, hides, milk, eggs and bones, but they also transmitted many diseases. Small geographic areas that supported hunter gatherers could support many more people. Water was polluted, waste was scattered to cultivate land and refuse collected, increasing the opportunities for disease spreading insects.

Permanent settlements with people living in close proximity attracted mosquitoes and blood-sucking insects. Houseflies flourished and fleas and lice lived on the human body. Festering villages grew and put people within spitting, coughing and sneezing distance of each other. In these crucibles, large societies were born and infectious diseases emerged. (5)



Rxcipe for Disaster: Bush Meat Stew

What you need:

- 2 pounds bush meat
- ½ cup oil
- 1 tablespoon salt
- Juice of one lemon
- 1 cup water
- 1 tsp curry powder
- 1 onion, cut up
- 4 tomatoes, chopped
- 2 carrots, chopped

Directions:

Brown the meat in oil, adding salt, lemon juice and water. Simmer while sautéing vegetables in oil with curry. Add to stew meat. Cook until done.

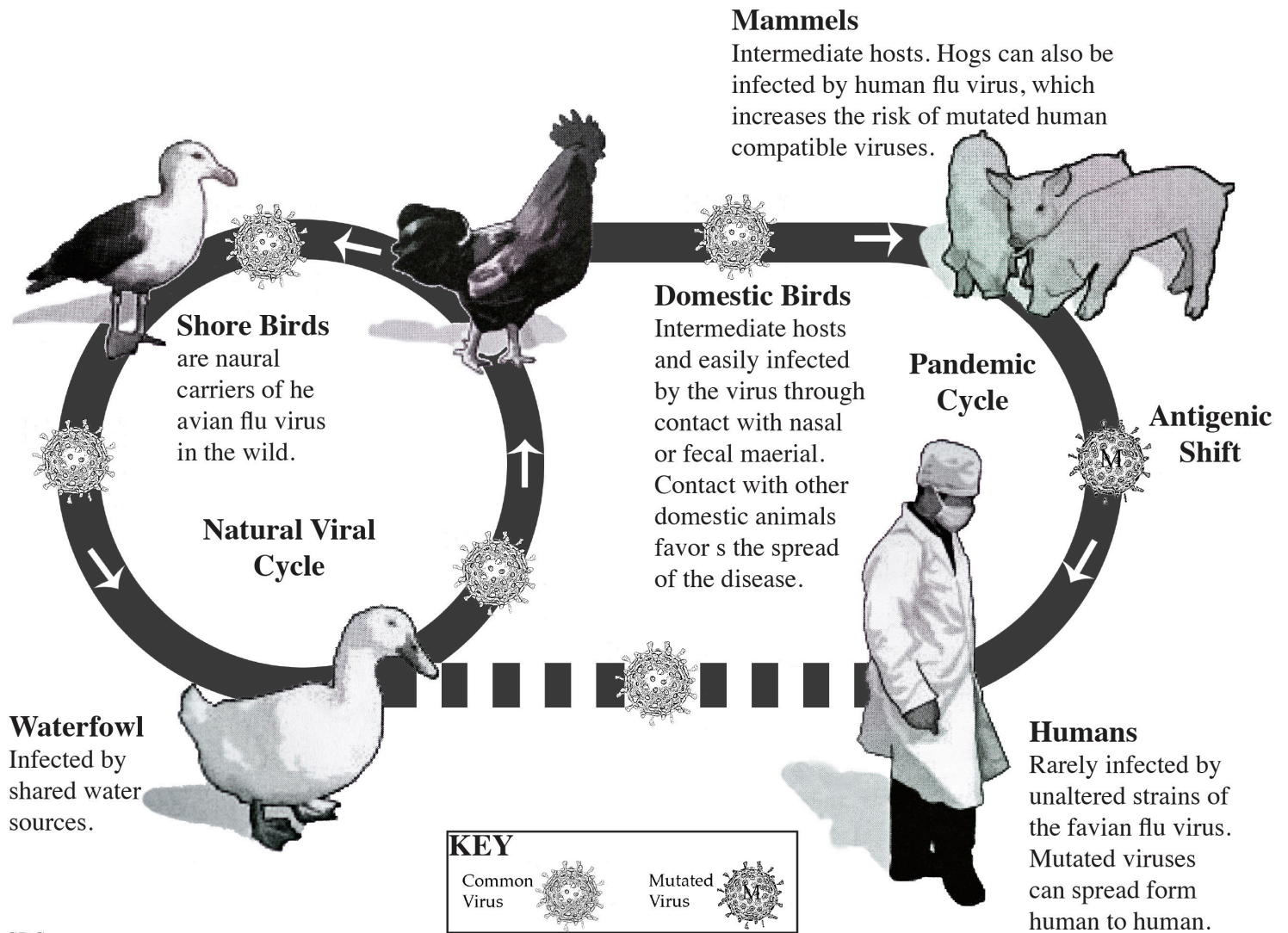
Application:

Bush meat refers to the meat of wild animals, killed for subsistence or commercial purposes throughout the humid tropics of Africa, Asia and the Americas. Every species of wildlife are hunted and eaten. This practice endangers species and exposes hunters and butchers to pathogens that can jump species.

Most emerging infections are caused by germs already present in the environment which are brought out of obscurity by changing conditions that provide new host populations(6). The virus that causes AIDS jumped to humans 60-70 years ago in Western Africa from the hunting and butchering of chimpanzees infected with Simian Immunodeficiency Virus. With a long silent incubation, HIV transmission was facilitated by population movement to cities, poverty and a weakened family structure. By the time AIDS was identified in 1981, it had spread beyond control. Political ignorance and denial compounded it's spread.(7) Today there are an estimated 60 million people infected with HIV; more than 25 million people have died of AIDS and 12 million children have been orphaned in Africa.

In 2002, SARS broke out in Southern China food markets. Air travel spread it to 8,000 people, killing 774 before it was contained. The virus jumped from bats to civets and then to humans. Civets are a key ingredient in exotic Dragon-Tiger- Phoenix- Soup". (8)

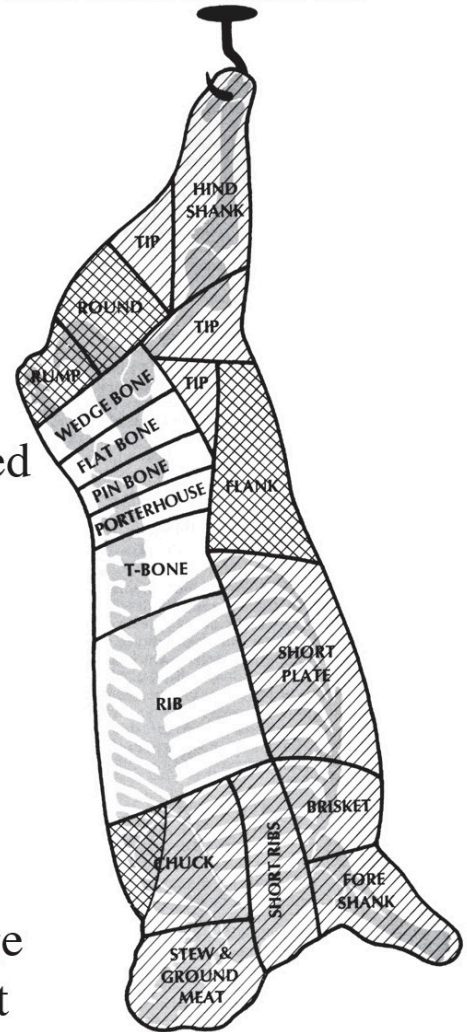
Influenza Virus Cycles



Recipe for Disaster: Cassoulet of Pork and Lamb in Beef or Chicken Broth

What you need:

- 1 ½ pounds white beans
- Chicken or beef stock
- 4 cloves garlic, crushed
- 1 medium-large onion, chopped
- 2 carrots, peeled and chopped
- 2 cups cored and chopped tomatoes
- 1 clove
- 3 or 4 sprigs fresh thyme
- 2 bay leaves
- ¼ pound salt pork
- 1 pound garlic (Italian) sausage
- 2 pounds pork shoulder or butt
- 2 pounds boneless shoulder or leg of lamb
- Salt and freshly ground black pepper to taste
- 1 cup red wine



What to do:

Cook the beans with the vegetables until the beans are tender. Add spices and salt pork and simmer for one hour. Brown meats in a hot oven and then stir into the bean mixture. Add wine or water and bake for 15-20 minutes. Garnish with parsley.

Application:

You won't get an infectious disease from this Recipe for Disaster. But the pork you cook with might come from a Concentrated Animal Feeding Operation (CAFO). Smithfield Foods, the world largest pork packer and hog producer operates massive hog-raising operations in the United States, Mexico, Poland and Romania. In Perote, Mexico where the first case of H1N1 Influenza was reported, a Smithfield subsidiary called Granjas Carroll raises 950,000 hogs per year. (9)

Besides producing cheap meat, factory farms pose risks to public health and the environment. They have unwittingly invented a way to accelerate the evolution of novel viruses and antimicrobial resistant bacteria and magnify opportunities for transmission of these pathogens from animals to workers who carry them into their communities.(10) Swine serve as “mixing vessels” for genetic reassortment of various types of influenza. Human influenza viruses do not easily infect birds and bird viruses do not replicate efficiently in humans but each can infect and mix in swine. The new H1N1 triple reassortment virus contains genetic components of human flu virus, avian flu virus, for the first time, two types of swine flu virus (North American and Eurasian). The mixing of the triple-reassortment North American influenza and the avian like strain probably happened as pigs were transported between North America and Europe. (11)

Application:

At a time when air travel makes it possible to reach the most remote corner of the planet in a matter of hours, any emerging or reemerging infectious disease stops being a local issue and instead becomes a global medical and public health priority. Where you sit on the plane and for how long contributes to in flight transmission.

The emergence of these new infectious diseases and resurgence of old ones like tuberculosis and cholera reflect changes in human ecology: rural-to-urban migration resulting in high-density peri-urban slums; increasing long distance mobility and trade; the social disruption of war and conflict; changes in personal behavior; and, increasingly, human-induced global changes, including widespread forest clearance and climate change. The use and misuse of medical technology also pose risks, such as drug-resistant microbes and contaminated equipment or biological medicines. (16)

We are back where we started this little book, groups of humans doing things that supported the development of infectious diseases which ricocheted back and forth between animals and humans in the crucible that we call civilization. Understanding how infectious diseases emerge and survive in populations is important for disease prevention and control.

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