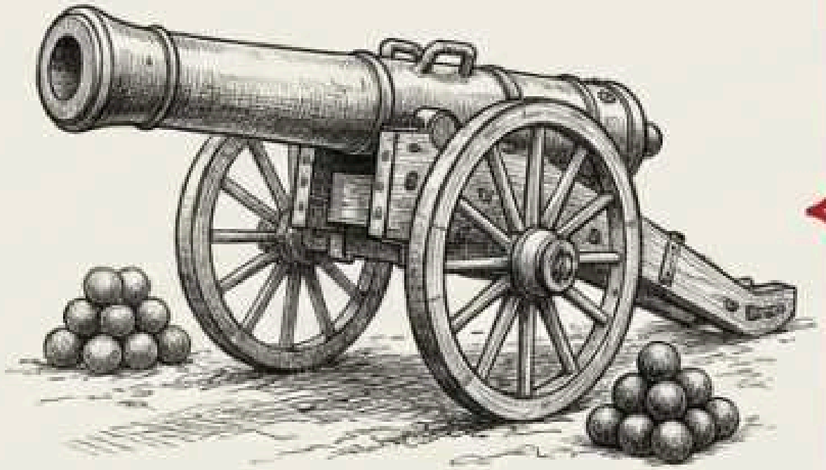
MED 512 B – Plagues and Wars

¶ 6.1

$Mortality_{Microbes} \gg Mortality_{Weapons}$





The Culprits:

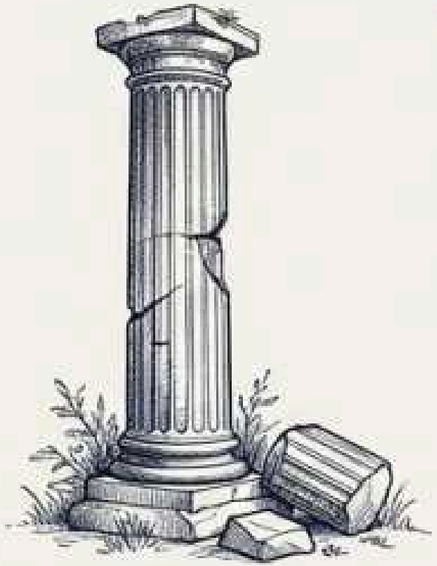
- Typhus
- Dysentery
- Typhoid
- Malaria
- Smallpox
- Wound infections

Camp Conditions = Crowding + Exhaustion + Bad Water + Vectors

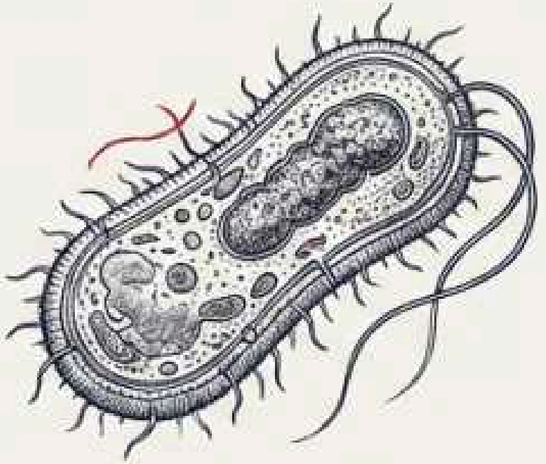
The host-microbe contest is a decisive, inseparable part of warfare, belonging in pathogenesis as much as military history.

Ancient & Medieval Epidemics

¶ 6.2







430 BCE

- Peloponnesian War: Plague strikes Athens.
- Clinical & civic details recorded by Thucydides (a survivor).
- Note: Exact organism remains debated.

540s CE

- Justinian's Reign: Plague spreads through the Mediterranean.
- Ancient DNA confirms the presence of the plague bacterium.

Late 1340s CE

- The Black Death: Arrives in Europe.

Δ Population ≈ −33% (or more)

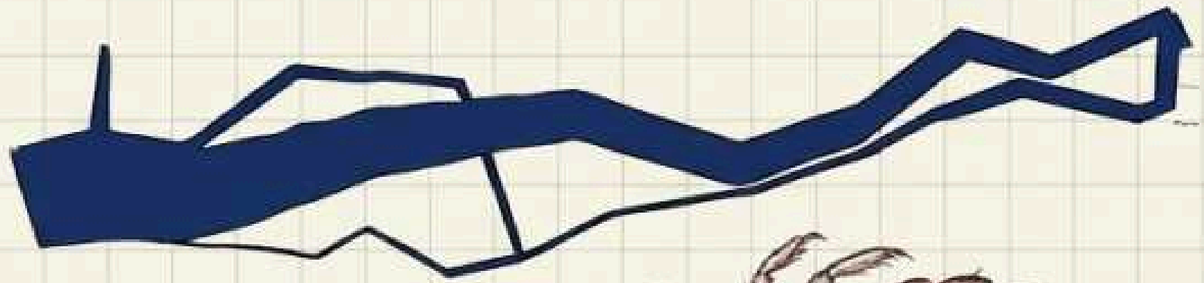
Without germ theory or specific treatments, societies were helpless. The political, religious, and economic consequences reached far beyond medicine.

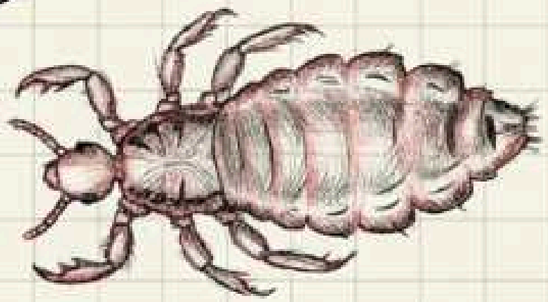
Napoleon in Russia (1812)

¶ 6.3

The Campaign:

Napoleon's Grande Armée enters Russia as a massive force, returning as a fraction of itself.





The Biological Reality:

Destruction = Russian Gunfire < (Typhus + Dysentery + Cold + Hunger)

The Vector: Typhus flourishes in crowded, dirty, poorly washed armies.

(Memorialized by Hans Zinsser in "Rats, Lice and History")

The Lesson: A military plan ignoring the microbial environment = ½ a plan.

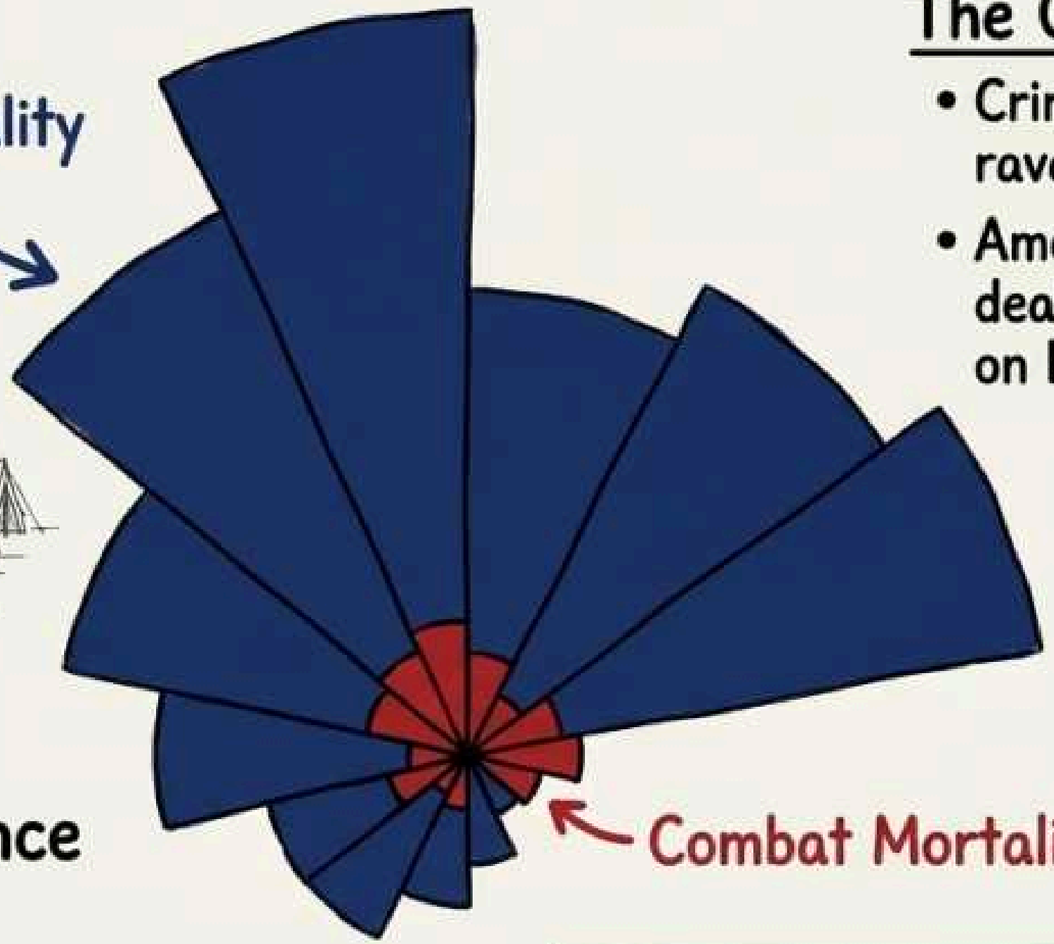
The Rise of Sanitation (1850s - 1860s)

¶ 6.4

The Catalysts:

- Crimean War: British forces ravaged by cholera & dysentery.
- American Civil War: Disease deaths dwarfed combat deaths on both sides.







The Intervention: Florence Nightingale at Scutari.

Cleanliness, organization, nursing, and rigorous use of statistics become a public argument.

Strategic Shift: Water + Waste + Hygiene → Military Strategy

The 1918 Influenza Pandemic

¶ 6.5

The Toll:

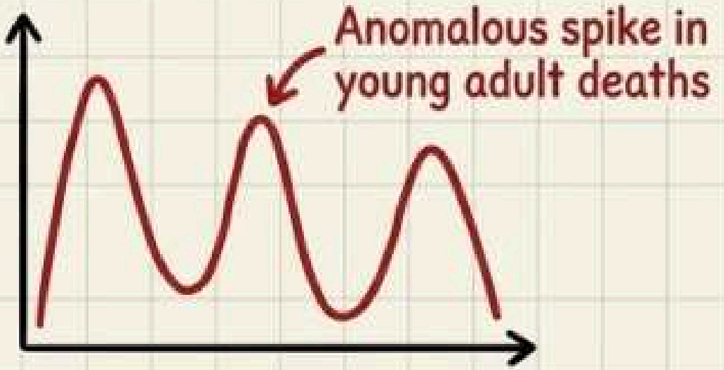
$N_{deaths} \approx 50{,}000{,}000$
(estimates vary)

The Mechanism:

Viral influenza infection +
Bacterial secondary pneumonia
(pre-vaccine, pre-antibiotics).



The Amplifier: Troop movements did not create the virus, but they carried it. The pandemic severely weakened workforces and armies globally in war and peace.

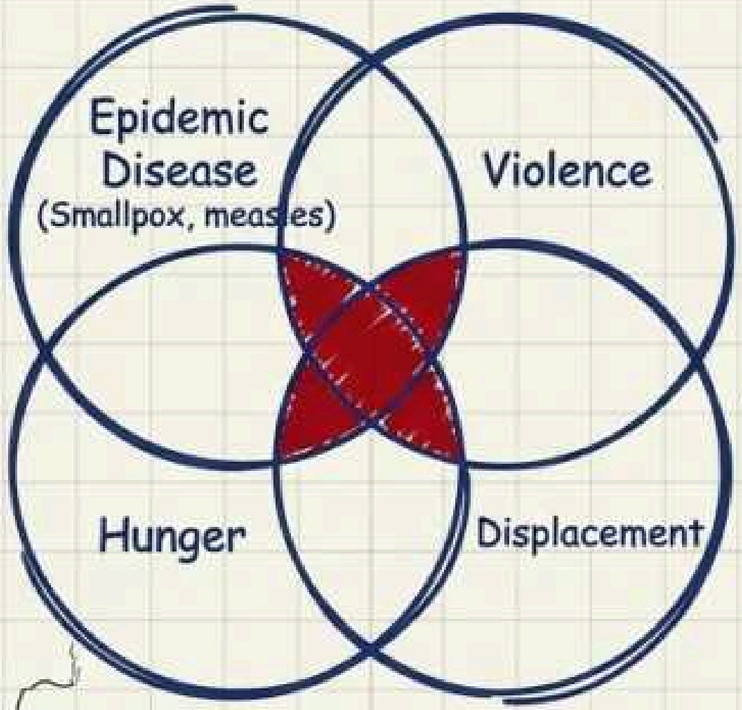


Reference: John M. Barry's 'The Great Influenza'

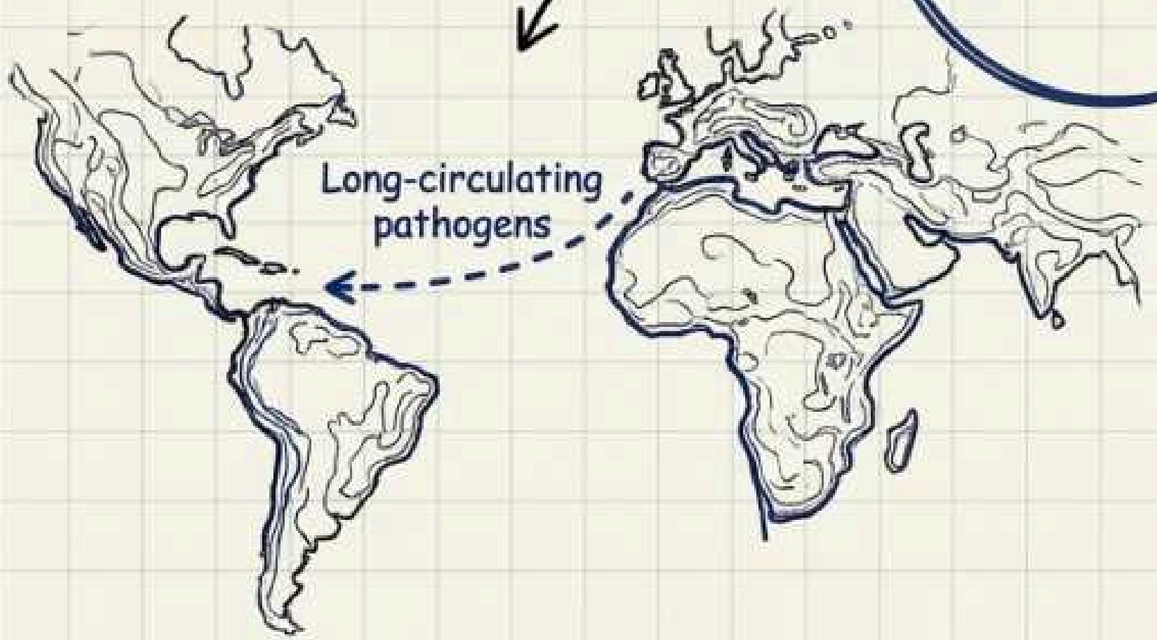
Post-1492 Epidemics in the Americas

¶ 6.6

Demographic Collapse Matrix



The Collision: Populations with no prior immunity met long-circulating pathogens, causing immense demographic collapse.

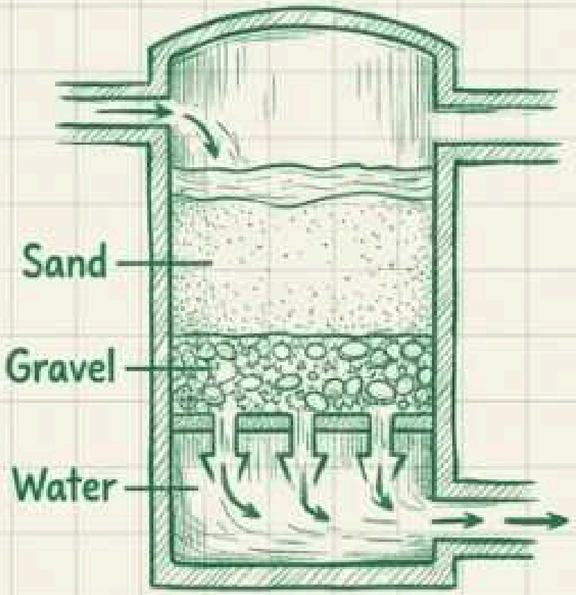


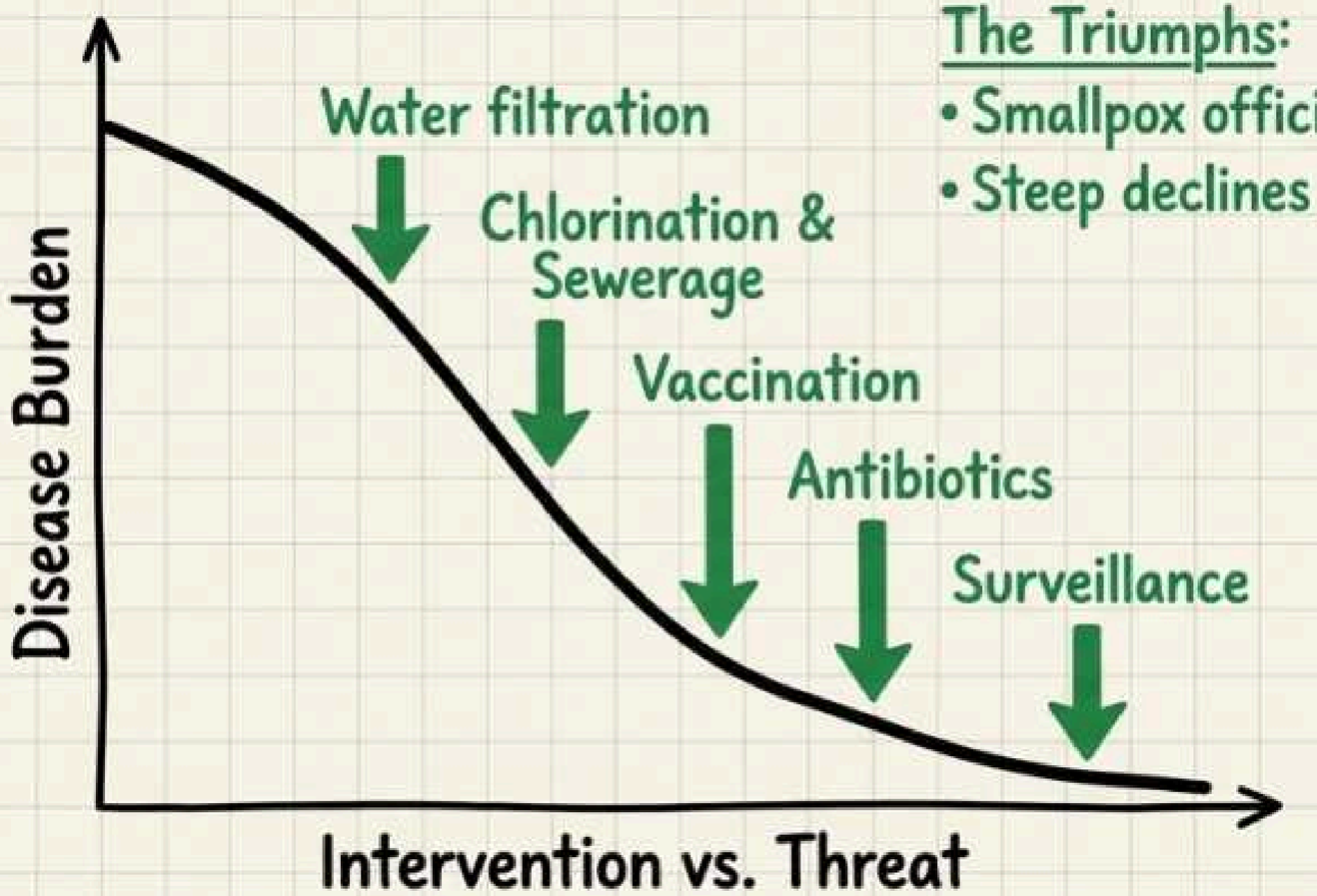
The Fort Pitt Debate (1763): Acknowledges the historical debate surrounding British officers contemplating the use of smallpox.

Instructor's Boundary: Most destruction occurred without documented plans. This course notes the debate, takes no side on disputed details, and strictly refuses to treat a human catastrophe as a lesson in method.

The Public Health Defense

¶ 6.7





The Triumphs:

- Smallpox officially eradicated (1980)
- Steep declines in polio and measles



The Unfinished Work:
Malaria, Tuberculosis, HIV, emerging infections.

[Reality Check: Progress is partial, precious, and highly reversible. Antimicrobial resistance (AMR) threatens the gains.]

Biological Warfare & International Law

¶ 6.8

The Treaties

- 1925 Geneva Protocol: Forbade the use of bacteriological methods of warfare and poisonous gases.
- 1972 / 1975 Biological Weapons Convention (BWC): Forbids development, production, and stockpiling of biological and toxin weapons.



The Ethical Mandate:

The international community judges the weaponization of the microbial world as strictly illegitimate.

The Right Response = Prevention + Treatment + Care

Pathways for Further Study

¶ 6.9

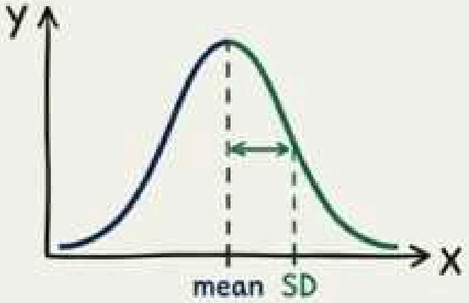
Next Steps

Pathogenesis & History



- Mechanisms of Microbial Disease (Schaechter)
- Plagues and Peoples (McNeill)
- Rats, Lice and History (Zinsser)
- The Great Influenza (Barry)

Statistics



Med 515 B
The quantitative thinking required for modern outbreak control.

Ethics



Phil 235 B
The ethical questions of medicine and war.

Read these with a clear sense of the contest, and an understanding of what a general education must refuse to teach (no practical art of harm).

MED 512 B Course Synthesis

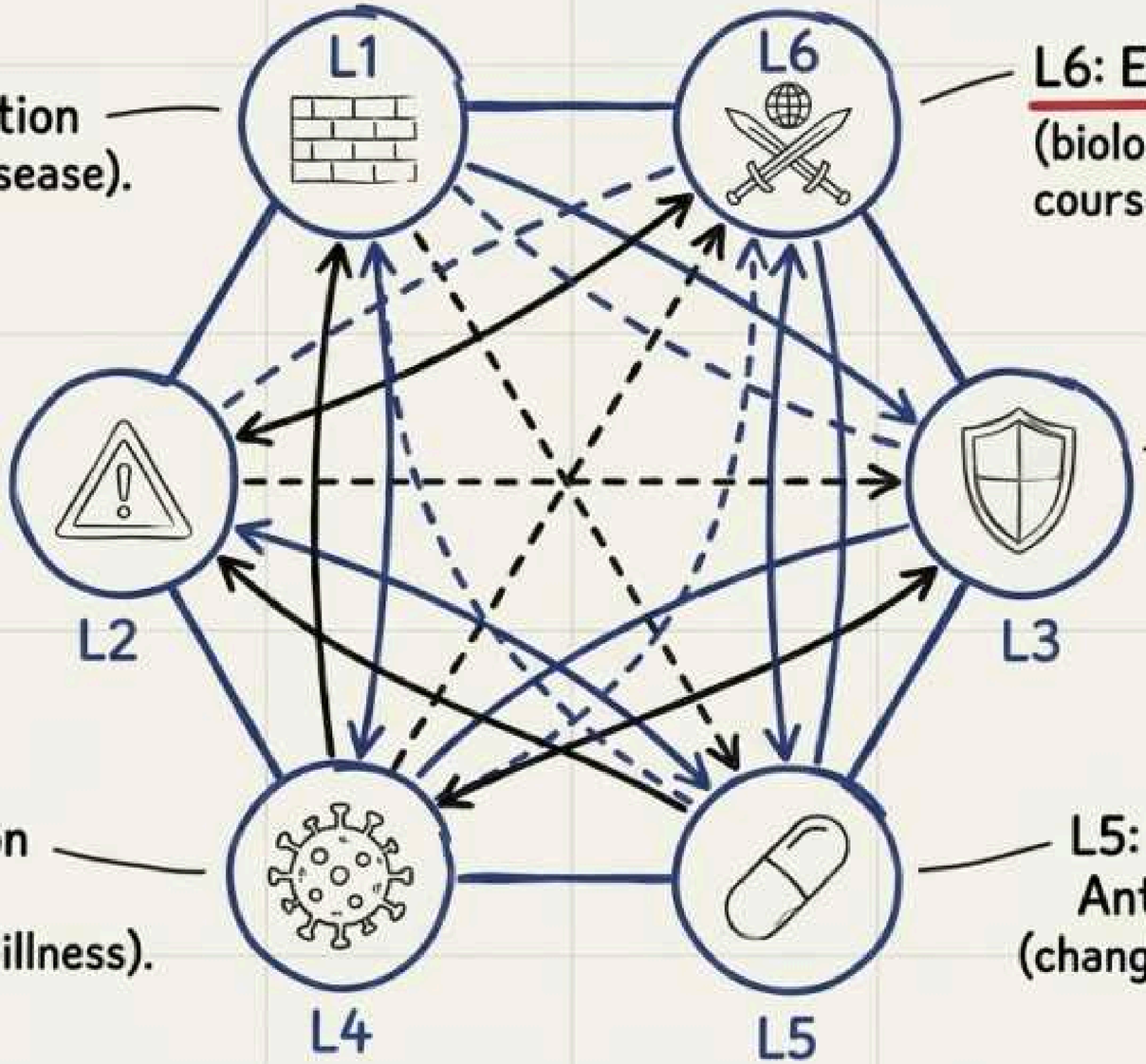
¶ 6.10

L1: Barriers & Colonization
(colonization is not yet disease).

L6: Epidemics & Wars
(biological warfare forbidden;
course will never teach as a craft).

L2: Toxins, Enzymes
& Inflammation
(how bacteria injure
the host).

L3: Innate & Adaptive
Immunity
(defense, memory,
evasion, and overshoot).



L4: Viral Multiplication
& Targeting
(acute/persistent/latent illness).

L5: Fungi, Parasites &
Antibiotic Resistance
(changing the odds, unfinished work).

Questions/Feedback: garyanderson@mail.grokbot.com | X: @garyanderson