

Zoonotic Disease and the Wildlife Professional

What You Wish You Didn't Know
but Absolutely Must

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(--AERIE)

Risks in the Field

- Vehicle accident / collision
- Equipment / ordnance failure or misuse
- Aircraft crash (non-wildlife)
- Lightning
- Propeller strike
- **WILDLIFE / ZOOONOTIC DISEASE**

Implications of Zoonotic Disease

- Difficult to diagnose
- Symptoms can mimic common maladies
- Fatality
- Lifelong debilitation
- Contagions don't win you friends and likes on Facebook!
- Lawsuit

--AERIE

- American Ecological Research Institute
- **Research**
 - Carnivore Status
 - Raptor Populations
 - Herpetology Surveys
- **Education and Training**
 - Mountain Lion Tracking & Ecology
 - Zoonotic Disease Risks
 - Raptor Ecology
 - Wildlife Immobilization / Handling



Zoonoses - Definition

- Diseases shared between animal and humans
- “Reverse Zoonosis”



Zoonoses – Reach and Impact

- 60% of all known infectious diseases are zoonotic
- 75% of emerging diseases originate from the wild and are zoonotic



Zoonoses and the Zombie Apocalypse

Increasing global...

- Human population
- Encroachment on environment
- Bushmeat
- Civil unrest and war
- Poverty
- Climatic warming



Remember....

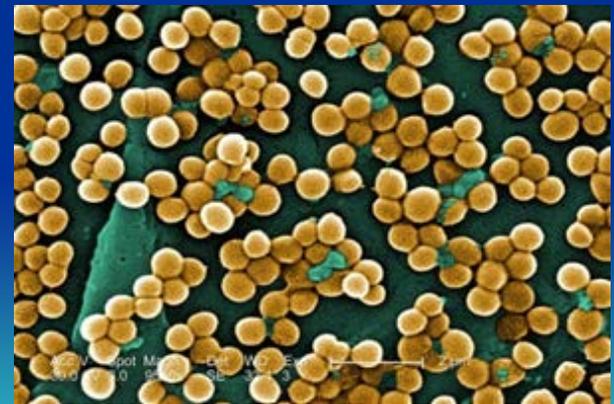
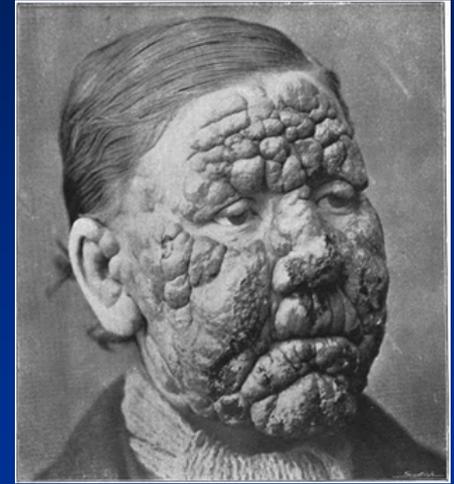
- The most profound SINGLE EVENT cause of human mortality ever...
- ...was very likely a ZONOTIC DISEASE



Infectious Disease - Causes



- Bacteria
- Fungus
- Virus
- Parasite
- Protozoa
- Prion



Infectious Disease - Causes



- Bacteria
 - Plague, Brucellosis, Leptospirosis...
- Fungus
 - Sporotrichosis, Cryptococcus...
- Virus
 - Rabies, Flu, Powassan, Bourbon...
- Parasite
 - Baylisascaris, Echinococcus, Mange
- Protozoa
 - Toxoplasmosis, Cryptosporidiosis, Giardiasis...
- Prion – Kuru, BSE, CWD, CJ



Transmission Routes



- Inhalation
- Ingestion
- Injection / Inoculation
 - Trans-mucosal
 - Trans-cutaneous
- Direct contact
- Aerosols
- Body fluids
- Vectors and Fomites
- **MULTIPLE ROUTES!**

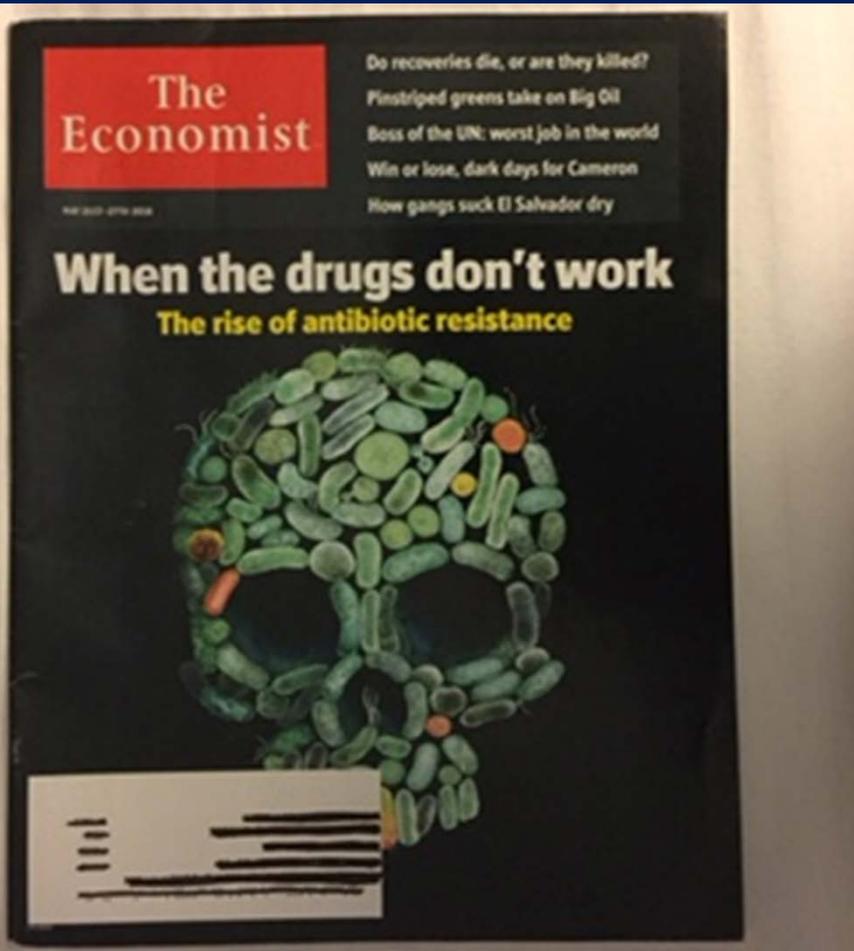
Key Points

- Be Aware of the Risks
- Minimize Exposure – carcass, feces, etc...
- Don't Get Bitten...By Anything!
- Practice Good Hygiene
- Disinfect Equipment
- Keep Current with Vaccines

Case: “Death by Tattoo”

- Day 0 – New tattoo – “Jesus is my life”
- Day 5 – Swim in Gulf
- Day 8 – Dallas ER
- Septicemia, febrile...
- *Vibrio vulnificus*
- Ventilator, intensive mgt, antibiotics...
- **Approx Day 60 – DEATH**
- Remember, life is fleeting...can change fast

Antimicrobial Resistance



- Code **RED!**
- New era of disease
- MRSA, MCR-1, blaCTX
- Nevada Patient –
Resistant to 26 USA
antibiotics! **DEAD!**
- **Minimize AB use**
- **Avoid infection**
- **Maximize biosecurity
and vaccination**

Rabies



- Virus
- 100% fatal
- 75,000 deaths / year
- BaRFS
- Exposure vs Infection
- “Treatment” is rapid administration of vaccine



- **BE PROACTIVE –
Get Vaccinated Today**

Rabies – Like Viruses

- Global occurrence
- Often linked to flying foxes and fruit bats
- Hendra
- Nipah
- Etc...



Bite Wounds - General

- Traumatic /
Pneumatic injury
- Infection (tetanus)
- *Capnocytophaga
canimorsus*



Fecal Parasites



NEGLECTED PARASITIC INFECTION:

Toxocariasis

Each year in the United States at least **70 people are blinded** by the parasite that causes toxocariasis; most of them are children.



Learn more: www.cdc.gov/parasites/npi/



- “Worms”
- Rounds, Hooks, Whips
- Eggs passed in feces
- Tapeworms
- Infectious “segments” (proglottids) or eggs
- **Don’t handle feces!**
- **Wash hands!**
- **Cook meat thoroughly!**



Baylisascaris procyonis

- Raccoon roundworm
- “Latrines”
- Fast-growing larva
- NLM
- 100 species... **DEAD!**
- **Treat raccoons as if they are deadly!**





Echinococcus multilocularis

- “Hydatid Tapeworm”
- Northern canids
- Fecal-Oral route
- South to CO
- IN, OH, SC
- **Treat all fecal matter as if it is deadly!**



Salmonella



- Enteric bacteria
- Sub-clinical carriers
- Reptiles / Amphibians
- Birds

- **Wash hands!**
- **Purell**

Urinary / Repro Fluids

- Leptospirosis
- Brucellosis



- **Hygiene!**
- **Handle animals and carcasses with care!**
- **Avoid contact with ALL body fluids!**



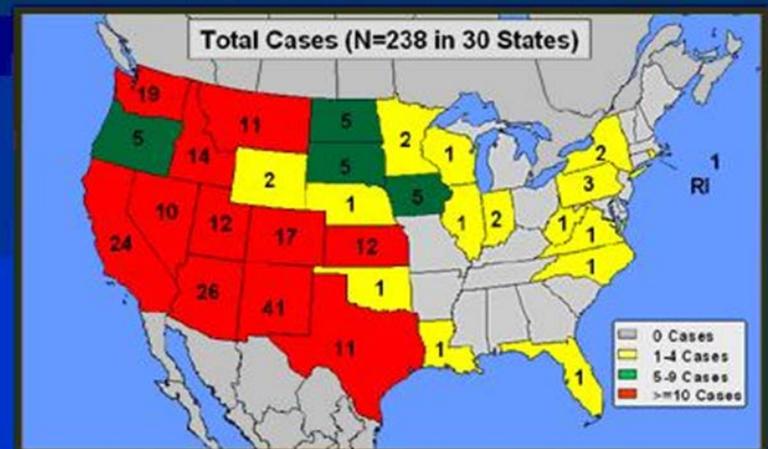
Urinary / Repro Fluids

- Hantavirus



- **Hygiene!**
- **Handle animals and carcasses with care!**
- **Avoid contact with ALL body fluids and waste!**

Hantavirus Pulmonary Syndrome Cases
by State of Residence
United States - February 4, 2000







Mites and Vectors

- Scabies / “Mange”
- Fleas
- Flies, Mosquitos
- Ticks

- **Use repellent**
- **Avoid bug bites**
- **Practice good hygiene**



Tick-Borne Diseases



- Lyme
- Anaplasmosis
- Babesiosis
- Powassan Virus
- Bourbon Virus
- Heartland Virus
- Tularemia
- Rocky Mtn Spotted Fever
- Typhus
- Ehrlichiosis
- Bartonella

FROM THE DIRECTOR OF HELLBOUND: HELLRAISER II

ROSALIND ALLEN

AMI DOLENZ

PETER SCOLARI

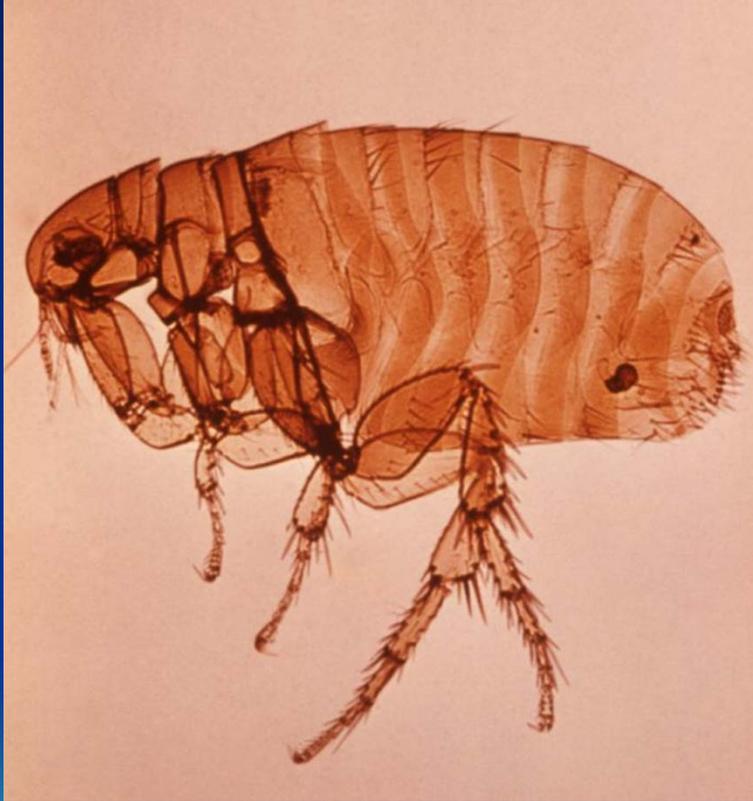
TICKS

SOMETHING
HUNGRY
IS ABOUT
TO HATCH.

DEARBORN PICTURES, FIRST LOOK PICTURES PRESENTS
"TICKS"
ROSALIND ALLEN AMI DOLENZ PETER SCOLARI
ANTHONY TRICERAY DOUG BERNICK STEVE GRASS
GARY SCHWELLER
JACK E. MURPHY TONY RAMEL



Flea-Borne Diseases



- Plague
- Tularemia
- Typhus
- Bartonella



Plague

- *Yersinia pestis*
- Global, western USA
- Rodents and fleas
- Pets
- Bubonic
- Pneumonic
- Septicemic

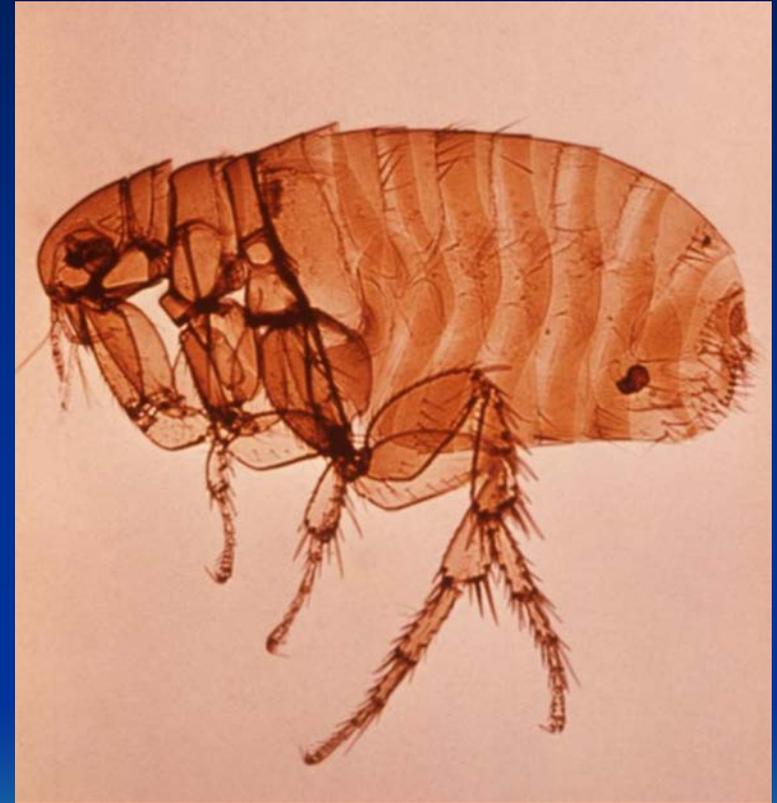


- **Handle animals with care**
- **Beware of ectoparasites**



Bartonellosis

- *Bartonella species*
- Rodents and fleas
- Pets
- Spectrum of symptoms
- Ninja-like! Scary!
- **Handle animals with care**
- **Beware of ectoparasites**



Aerosolized Diseases

- Tularemia
- Plague
- Brucellosis
- Influenza
- Cryptococcus
- Anthrax
- Rabies?
- Etc...



CWD

- Neurodegenerative prion
- TSEs
- Fatal
- Zoonotic?



- **Handle animals with care**
- **Avoid CNS tissue and body fluids**
- **Beware of ectoparasites**

Key Points

- Be Aware of the Risks
- Minimize Exposure – carcass, feces, etc...
- Don't Get Bitten...By Anything!
- Practice Good Hygiene
- Disinfect Equipment
- Keep Current with Vaccines

“Life’s tough.
It’s tougher if you’re stupid.”

Sgt Stryker
“Sands of Iwo Jima”
1949

