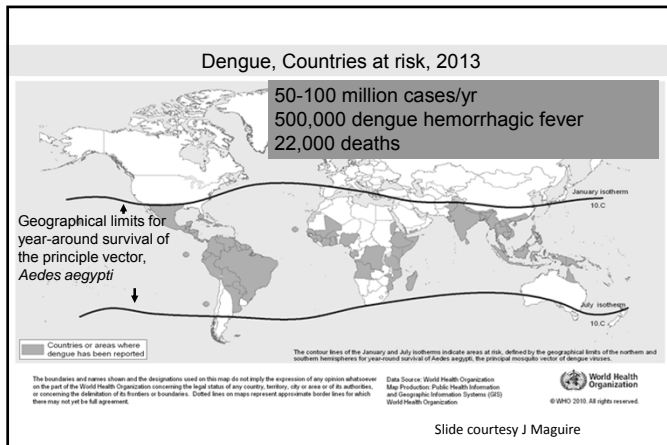


Challenging ID Cases

- Cases selected based on those commonly encountered in outpatient primary care practice – frequent source of curbsides
 - Zika in primary care
 - Interpretation of syphilis testing
 - Immunization and other preventive ID cases
- Participation required!

Case

- 31 year old man with questions about Zika
- Returned over 1 month ago from Panama, where he was visiting family for 2 weeks; no illnesses of note while there
- Heard about Zika, and worried about transmission of virus to his wife
- Wonders if he and his wife should try to conceive



Dengue

- Incubation period 1-14 days
- 5-7 days of fever; often biphasic
- Rash in ~50%: flushlike, later macular or morbilliform; capillary fragility
- Serologic tests negative during first 5-7 day
- Dengue shock syndrome/dengue hemorrhagic fever after second infections: rare in travelers



Aedes aegypti

Chikungunya

- “That which bends up”
- Dengue-like viral illness, transmitted by same vector
- Rare patients have incapacitating arthralgia/arthritis lasting weeks or months
- Cases widespread through tropics – though incidence may be declining in some areas

Zika

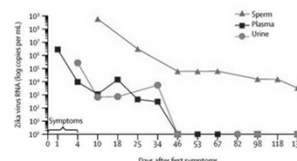
- Like dengue, with joint swelling, conjunctivitis
- 80% asymptomatic
- Increase in Guillain-Barre syndrome post infection
- Infection during pregnancy: microcephaly, fetal brain defects
- Sexual transmission

Areas of Active Zika Transmission



Zika, Conception, and Sexual Transmission

- Virus in sperm may be detected for 6 months after infection
- CDC Guidance: Avoid conception or, for pregnant women, unprotected sexual contact for 6 months after man leaves area of Zika transmission
- With negative test – “talk with healthcare provider”



	MDPH State Lab testing (requires MDPH approval)	Commercial Lab PCR (if obtained within 14 days of symptom onset)	Commercial lab IgM (if obtained between 4 days and 12 weeks of symptom onset)
Pregnant women with possible Zika virus exposures	✓		
Men with possible Zika virus exposures who are sexual partners of pregnant women	✓		
Patients with possible Zika virus-related neurological complications*	✓		
Everyone else with possible Zika virus exposure		✓	✓

*Neurological complications may include Guillain-Barré syndrome, transverse myelitis, meningoencephalitis. Mass Dept of Public Health 617-983-5800; Commercial labs: Viracor, Quest.

Timeframe to Wait Before Trying to Get Pregnant

- Possible exposure via travel or sex
 - Women: 8 week after symptoms or last exposure
 - Men: 6 months after symptoms or last exposure
- Living or traveling often to Zika area with:
 - Positive test
 - Women: 8 weeks after symptoms start
 - Men: 6 months after symptoms start
 - Negative test or no testing done – “talk with doctor or healthcare provider”

<https://www.cdc.gov/zika/pregnancy/women-and-their-partners.html>
Last revised Sept 30, 2016.



Zika Virus



ZIKA & PREGNANCY



Teaching Points:

- 1) Zika may be sexually transmitted for 6 months after infection
- 2) Guidance in this disease changes frequently!

<https://www.cdc.gov/zika/>

Case

- 82 year old man, subacute mild cognitive decline
- As part of w/u, has syphilis testing:
 - TP-EIA positive; RPR 1:1; TP-PA positive
- General PE normal
- No prior treatment for syphilis

Syphilis Alphabet Soup

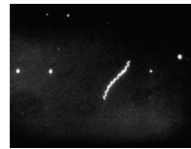
- RPR
- VDRL
- TRUST
- MHA-TP
- TP-PA
- FTA-ABS
- TP-EIA



Use of Syphilis Tests

Screening

- RPR
- VDRL
- TRUST
- TP-EIA



Positive Darkfield Test

Confirmatory

- FTA-ABS
- MHA-TP
- TP-PA



Rabbit

Syphilis: Non-Treponemal Tests

- VDRL, RPR
- Detect non-specific AB directed at cardiolipin-
lecithin-cholesterol antigens ("reaginic" AB)
- False-positives common, usually low titer
- Used for: screening, following response to treatment

Change in VDRL/RPR Titer Over Time

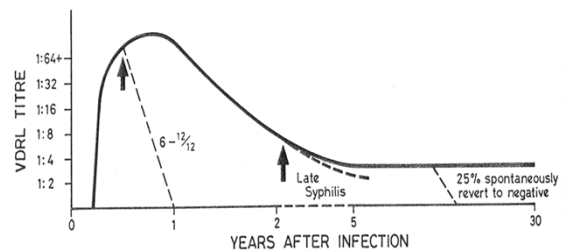


Figure 1. Variation of VDRL (Venereal Disease Research Laboratory test) titer in untreated syphilis. The arrows indicate treatment and the dashed lines show the course after treatment, following infection at time 0. Widespread variation from this simplified generalization may occur.

Ann Int Med 1986;104:368-76.

Treponemal Tests

- FTA-ABS, MHA-TP, TPPA, and treponemal-EIA (TP-EIA)
- Detect *specific* AB directed at *T. pallidum* antigens; however, false + rarely occur
- Recorded as reactive or non-reactive
- FTA-ABS, MHA-TP, TPPA used for confirmation of reactive RPRs
- TP-EIA increasingly used for screening in high volume settings

Don't Fall For This Trap

Hi Paul,

Quick question – I sent an RPR on a patient who has mild dementia and it came back positive, with a positive TP-PA. I don't really think she has neurosyphilis.

What should I do?

Thanks,
Scott

Teaching Point:
A Low RPR does not exclude
neurosyphilis

Case

- 75 year-old woman with questions about the zoster vaccine
- Husband has CLL and is receiving chemotherapy
- She is concerned about transmitting vaccine virus to him

Zoster Vaccine

- Live attenuated virus
- 14X strength c/w varicella vaccine
- Indicated for immunocompetent adults > 60

Zoster Vaccine: Who's Immunocompromised?

- Neoplasms affecting the bone marrow or lymphatic system
 - Post treatment: assess on case-by-case basis
- Acquired or congenital defects in cellular immune function
- HIV with symptoms or CD4 < 200/15%
- Immunosuppressive therapy
 - Prednisone ≥ 20 mg/d for ≥ 2 weeks
 - Recombinant human immune mediators and immune modulators (e.g. TNF blockers)

MMWR 2008;57:1-30.

Varicella: Who Can be Considered Immune?

- History of chicken pox
- Healthcare-provider diagnosis of zoster
- Lab evidence of immunity
- Prior receipt of varicella vaccine (2 doses)
- **US-born before 1980**
 - Date of birth does not apply to immunocompromised, pregnant women, or healthcare workers

MMWR 2008;57:1-30.

A Typical VZV Curbside Exchange ...

Subject: Cellcept and Varicella

Paul,

I have a patient on cellcept for dermatomyositis. Her son has just been diagnosed with chickenpox. She had it at age 11. Would you consider prophylactic Acyclovir? or assume she has immunity given that she had it before? If so how much Acyclovir? For how long?

Tony

Subject: RE: Cellcept and Varicella

Tony,

If she had chicken pox as a child, you do not need to worry. In the rare cases where people get it twice, the 2nd case is usually very mild.

Regards, Paul

A Typical VZV Curbside Exchange ...

Subject: Cellcept and Varicella

Cellcept doesn't change your mind? I'm a worrier!!!

Subject: RE: Cellcept and Varicella

We have lots of immunosuppressed patients out there (organ transplants, AIDS, biologics, etc) who get exposed to chicken pox, and if they're immune, nothing happens. (I assume she has not had a bone marrow transplant from a non-immune person!)

But of you're worried, and you'd rather do "something than nothing," you are free to give her acyclovir -- it's incredibly safe. You'll have to make up some dose/course.

Paul

Zoster Vaccine: Common Questions

- Should it be given to household contacts of the immunosuppressed?
- Should it be given to those with a prior history of zoster?
- Should it be given to those younger than 60?
- Should it be given to those older than 80?
- Should it be given to HIV+ patients? If so, which ones?

Teaching Point:
Give zoster vaccine to contacts of
immunosuppressed, but ...

Efficacy of an Adjuvanted Herpes Zoster Subunit Vaccine in Older Adults

Himal Lal, M.D., Anthony L. Cunningham, M.B., B.S., M.D., Olivier Godeaux, M.D., Roman Chlibek, M.D., Ph.D., Javier Diez-Domingo, M.D., Ph.D., Shinn-Jang Hwang, M.D., Myron J. Levin, M.D., Janet E. McElhane, M.D., Airi Poder, M.D., Joan Puig-Barberà, M.D., M.P.H., Ph.D., Timo Vesikari, M.D., Ph.D., Daisuke Watanabe, M.D., Ph.D., Lily Weckx, M.D., Ph.D., Toufik Zahaf, Ph.D., and Thomas C. Heineman, M.D., Ph.D.,
for the ZOE-50 Study Group*

- Inactivated vaccine or placebo given at months 0 and 2 to adults > 50, followed mean 3.2 years
- Incidence: 0.3 vs 9.1 cases/1000 person years (97.2% efficacy)
- Also has been studied in immunocompromised
- Approval expected "soon"

N Engl J Med 2015;372:22.

Case

- 64 year-old medical transcriptionist, calls you regarding upcoming dental work
- Six months prior, underwent elective hip replacement for OA, uncomplicated; tolerated perioperative cefazolin
- She requests prescription for antibiotics based on her dentist's and orthopedist's recommendation

Dental Prophylaxis for Endocarditis: Supportive Data

- Dental procedures may induce bacteremia with oral flora
- These bacterial species commonly cause endocarditis, a serious condition
- Animal models demonstrate the efficacy of antibiotic prophylaxis
- Endocarditis cases have increased in Great Britain since guidelines stopped recommending prophylaxis around dental work

Dayer MJ, et al. Lancet 2015.

Dental Prophylaxis and Prosthetic Joint Infections (PJI)

- Most common microbiologic causes of PJI: Staph aureus, coag-neg Staph, beta strep
- "Oral flora" account for approx 1-2% of cases
- Dental procedures linked to PJI only by case reports, very limited animal data
- CEA have repeatedly failed to demonstrate the utility of prophylaxis for this purpose

Wahl MJ. Clin Infect Dis 1995;20:1420-5.

However ...

"The less the evidence there is, the more antibiotic we give."

--Unknown Surgeon

Hi Paul,
 Sorry to bother you. I have a pt who is 5 years s/p knee replacement, recently s/p C diff infection. Needs a colonoscopy. Has been advised by her orthopedic surgeon to be pretreated with antibiotics prior to having a colonoscopy. She is understandably concerned about causing another bout of C. Diff. Should I treat her with empiric Flagyl after she gets the amoxicillin?
 Thanks.

Conditions to “Consider” Giving Antibiotics Before Dental Work to Prevent PJI

- Joint replacement < 2 years prior
- Inflammatory arthropathies (e.g. RA)
- Immunosuppression
- Diabetes
- History prior PJI
- Malnutrition
- Hemophilia



J Am Dent Assoc. 2003;134:895-9.

AAOS 2009: Give Prophylactic Antibiotics Indefinitely s/p Total Joint Replacements

The screenshot shows the AAOS website with a navigation bar at the top. The main content area is titled 'Information Statement' and 'Antibiotic Prophylaxis for Bacteremia in Patients with Joint Replacements'. It includes a section for 'About the AAOS' with links to Mission Statement, Membership Data, Board of Directors, Board of Governors, Board of Specialty Societies, Senior Management, Scientific Societies, and International Contacts. There is also a 'Careers' section and an 'AAOS Policies' section. The main text of the statement discusses the AAOS's current recommendations on the topic of antibiotic prophylaxis for total joint patients undergoing dental procedures, emphasizing that these recommendations may change as the result of the ongoing clinical guidelines development process around the topic of antibiotic prophylaxis for total joint patients undergoing dental procedures. It encourages clinicians to consider the recommendations in the context of their specific clinical situation and consult, where appropriate, other sources of clinical, scientific, or regulatory information prior to making a treatment decision. Clinicians are encouraged to check the AAOS website for the most up-to-date information.

<http://www.aaos.org/about/papers/advismt/1033.asp>

AAOS ADA American Dental Association® PREVENTION OF ORTHOPAEDIC IMPLANT INFECTION IN PATIENTS UNDERGOING DENTAL PROCEDURES

EVIDENCE-BASED GUIDELINE AND EVIDENCE REPORT

- *"The practitioner might consider discontinuing the practice of routinely prescribing prophylactic antibiotics for patients with hip and knee prosthetic joint implants undergoing dental procedures."*

J Bone Joint Surg Am 2013; 95:745

Dental Procedures: Risk Factor for Prosthetic Joint Infection?

- 339 case patients (knee or hip infection) and 339 control subjects at Mayo Clinic
- Findings
 - No increased risk for those undergoing dental procedures
 - No reduced risk for those receiving antibiotic prophylaxis
- Editorial: “Time to focus on the data” – reconsider antibiotics, but improve dental hygiene

Berbari, Clin Infect Dis 2010;50:8–16; Zimmrlin Clin Infect Dis 2010;50:17–19.

Take Home Message on Prophylactic Antibiotics for Dental Work

Teaching Point:
 Dental prophylaxis indicated for endocarditis prevention only

Case

- 36 year-old advertising executive with loose stools, bloating x 1 month
- Dates symptom onset to an extensive business trip to Asia, including Indonesia, China, and Nepal; pt convinced he has a “parasite”
- PE: No weight loss. Stool O/P exam: many *Endolimax nana*

Parasites are confusing ...

Hi Paul, 63 y/o female with h/o HTN and DM, presents for evaluation of "severe" anal itching x 2 weeks. Itching is worse at night and she does not believe it is diet related or associated with defecation. She is concerned she might have whip worm because her dog was recently dx with this. She reports stomach grumbling and excessive gas, but states she has always had this problem.

After her exam I think cause is a hemorrhoid. Can whip worm be transferred from dogs to humans? Is it safe for her to take her dog's medicine? (I think she has already done this.) Also, I have always understood that whip worm typically presents with bloody diarrhea. Is this correct? Thanks, Brenda

Pathogenic Intestinal Protozoa

- Definite
 - *Entamoeba histolytica* -- travelers, invasion
 - *Giardia lamblia* -- most common
 - *Dientamoeba fragilis* -- eos, Rx tetracycline
 - Cryptosporidia, microsporidia, isospora, cyclospora -- need special stains
- Possible
 - *Blastocystis hominis* -- conflicting data, Rx metronidazole 750 TID x 10 days

Start D, Int J Parasitol. 2007 Jan;37(1):11-20; Boorom KF, Parasit Vectors. 2008; 1: 40.

Non-pathogenic Intestinal Protozoa

- Amoebae
 - *Entamoeba hartmanni*
 - *Entamoeba coli*
 - *Entamoeba polecki*
 - *Endolimax nana*
 - *Iodamoeba butschlii*
 - (*Entamoeba dispar*)
- Flagellates
 - *Trichomonas hominis*
 - *Chilomastix mesnili*

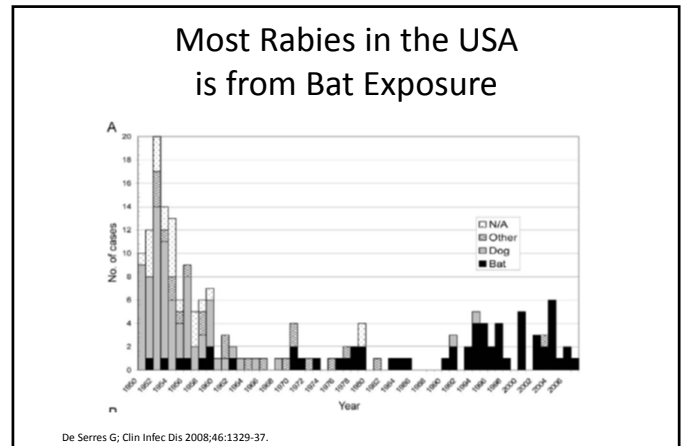
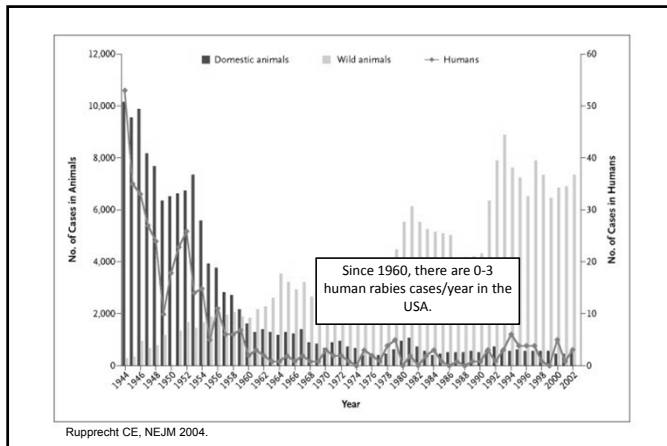
Aucott JN, et al. Infect Dis Clin North Am 1993; 7:467-85. Start D, Int J Parasitol. 2007 Jan;37(1):11-20; Boorom KF, Parasit Vectors. 2008; 1: 40.

Non-pathogenic Intestinal Protozoa and Ongoing Diarrhea after Travel

- Presence of organisms indicate fecal contamination of food and/or water – no treatment necessary if symptoms improve
- In severely symptomatic patients (especially with weight loss), consider:
 - Antigen studies – in particular for giardia, cryptosporidia
 - Special stains for cryptosporidia, microsporidia, isospora, cyclospora
 - Post-infectious lactase deficiency
 - Bacterial overgrowth
- Diagnosis of exclusion (but common!): Post-infectious irritable bowel

Case

- 44 year-old thoracic surgeon, contacts you for advice
- Bats seen in his house: in living room on several occasions, once in 4 year-old son's room while child was sleeping
- Opened windows and bats flew out
- No apparent contact with bats at any time



Bat Contact: Guidelines

“The risk for rabies resulting from an encounter with a bat might be difficult to determine because of the limited injury inflicted by a bat bite ...Situations that might qualify as exposures include finding a bat in the same room as a person who might be unaware that a bite or direct contact had occurred (e.g., a deeply sleeping person awakens to find a bat in the room or an adult witnesses a bat in the room with a previously unattended child, mentally disabled person, or intoxicated person).”

MMWR 2008;57:13.

Commercial
Guano Clean Up
Live Bat Removal
Histoplasmosis Remediation
Residential

Have a Bat in your House *Right Now?*

A bat in your house can be a frightening experience. It is also a potentially serious situation. With the information on this page, you can handle this in a calm and safe way.

Good decision making right now can save you worry and money. Please read carefully.

What to do with the Bat in your House

First - a couple things to keep in mind:

- The bat wants out of the house - there is no food or water for it in your home.
- The bats do not get ill in your house.
- Bats are not aggressive - but will bite if cornered.
- Bats teeth are very small. They can not bite through jeans or leather gloves.
- A percentage of bats carry rabies.

Step One - Important!

If there is ANY chance the bat has come in contact with someone in your house, the situation needs to be handled as a potential rabies exposure. A bat bite can be very small, and may not be detected.

- Was the bat discovered in a room where someone was sleeping?
- Are there young children who may not communicate their contact with the bat?
- Is there a dog or cat in the house?

If the answer is yes, there are only two options: either the bat must be captured and tested

Articles

- "Bats Are Our Friends"
- "Deadliest Toxins in Hidden Spaces"
- "Bat Related Human Rabies"
- "Bats And Rabies"
- "Bat Bugs - Or Bats Not?"
- "Bats and Property Damage"
- "Insurance Companies and Bat Exclusion"
- "Histoplasmosis - The Other Word of Bats"
- "Get That Bat Out of My House"
- "Being a Bat Exclusion Expert"

www.getbatsout.com

Rabies Vaccination after “Occult” Bat Exposure: Time to Reconsider?

- <5% of such exposures receive vaccination
- Incidence of rabies from bat in bedroom but no actual contact: 1 case per 2.7 *billion* person-years
 - Number needed to treat to prevent one case: 2.7 *million*
- If all eligible cases actually received vaccination, this would require 49 physicians and 491 nurses working full-time for a year
- Canada no longer recommends prophylaxis for bats in bedroom; USA still does

Clinical Infectious Diseases 2009;48:1493-1499

Extra Credit ...

Several case scenarios:

- A. A 32 year-old woman goes to her doctor when, after feeding a wild raccoon with a baby bottle, she took some sips of milk from the bottle herself to see if she could increase the flow.

Extra Credit

- B. A woman returns from a trip to the Galapagos Islands, where she was bitten on the hand while trying to pet a sea lion. She comes to see you requesting rabies vaccination.

Extra Credit

- C. A couple attends a "Champagne Cruise" on a warm summer evening, and the woman accuses her date of putting his hands under her skirt (he denies). Later that evening, she finds a wounded bat trapped under the elastic of her underwear.

Extra Credit

- D. A child finds a new piece of upholstered furniture in her dollhouse. After playing with it for several hours, she brings it to her mother. On closer inspection, it is in fact a dead bat, time of death unknown. They both seek rabies vaccinations for themselves.

Extra Credit

- E. The Massachusetts Department of Public Health learns that a child has brought a dead bat nailed to a wooden board to a South Boston public school. Many children have handled the bat, many others can't remember. The bat is analyzed for rabies at the State Lab, and is too decomposed for definitive results.

Extra Credit

- F. A 45 year old woman finds a bat in her house, and knocks it to the ground with a tennis racquet. Her husband then pounds it with a baseball bat, picks it up with a plastic bag and brings it to the State Lab for examination. At the State Lab, they are unable to find any bat brains at all. The couple requests rabies immunizations, and asks whether they should move out of the house because of the risk of aerosolized rabies virus.