

Prevention is Better than Cure

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DML and ADHB



Disclosures

- GSK have paid my airfare and accommodation to be here to give this talk
- GSK are paying my registration and accommodation for me to attend the International Congress on Infectious Diseases in Bangkok later this month
- Sanofi paid my airfare and accommodation to attend the International Society of Travel Medicine Conference
May 2011

Outline

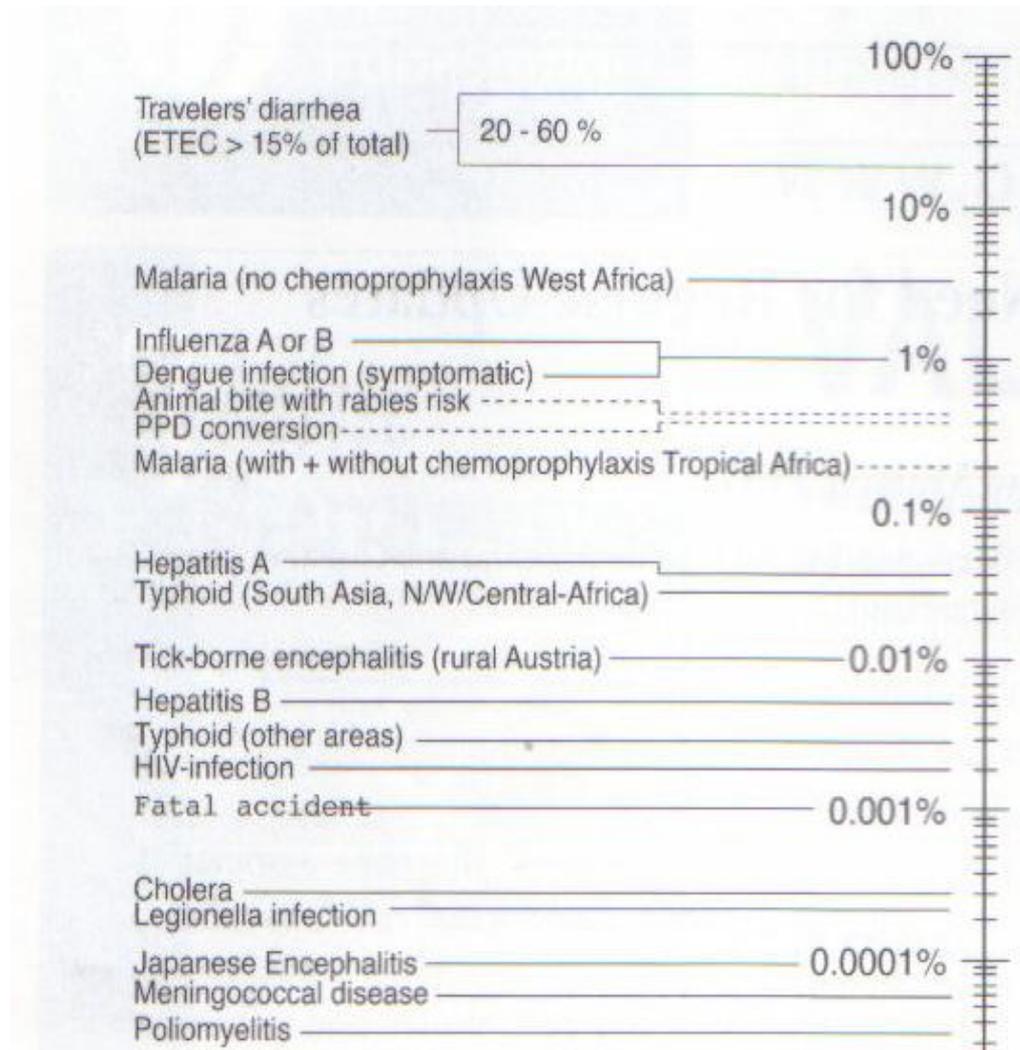
- Health problems during travel
- Visiting Friends and Relations
- Pre-travel care
 - advice
 - vaccinations
 - prescriptions

Health Problems

- 40% unwell
- 3% see doctor while away and 8% after return
- 0.5% hospitalised
- diarrhoea



Incidence Rate per Month



GeoSentinel Surveillance Network

- 30 travel or tropical medicine sites on 6 continents saw 17,353 ill returned travellers 1996 to 2004.
- Rate per 1000 patients
 - Systemic febrile illness: 226
 - Acute diarrhoea: 222
 - Skin disorder: 170
 - Chronic diarrhoea: 113
 - Respiratory disorder: 77
 - NEJM 2006; 354: 119-30

GeoSentinel Surveillance Network

- Malaria leading cause of fever from Africa
- Dengue ahead of malaria for all other regions
- Dengue, typhoid and malaria virtually equal causes of fever from South Central Asia

Common Skin Problems

Insect Bite Reaction



CLM



Deaths

- 1 in 100,000 dies
- Heart attacks (49%) followed by injuries and drownings (22%)
- More injuries than when at home
- Outcome of injury may be worse

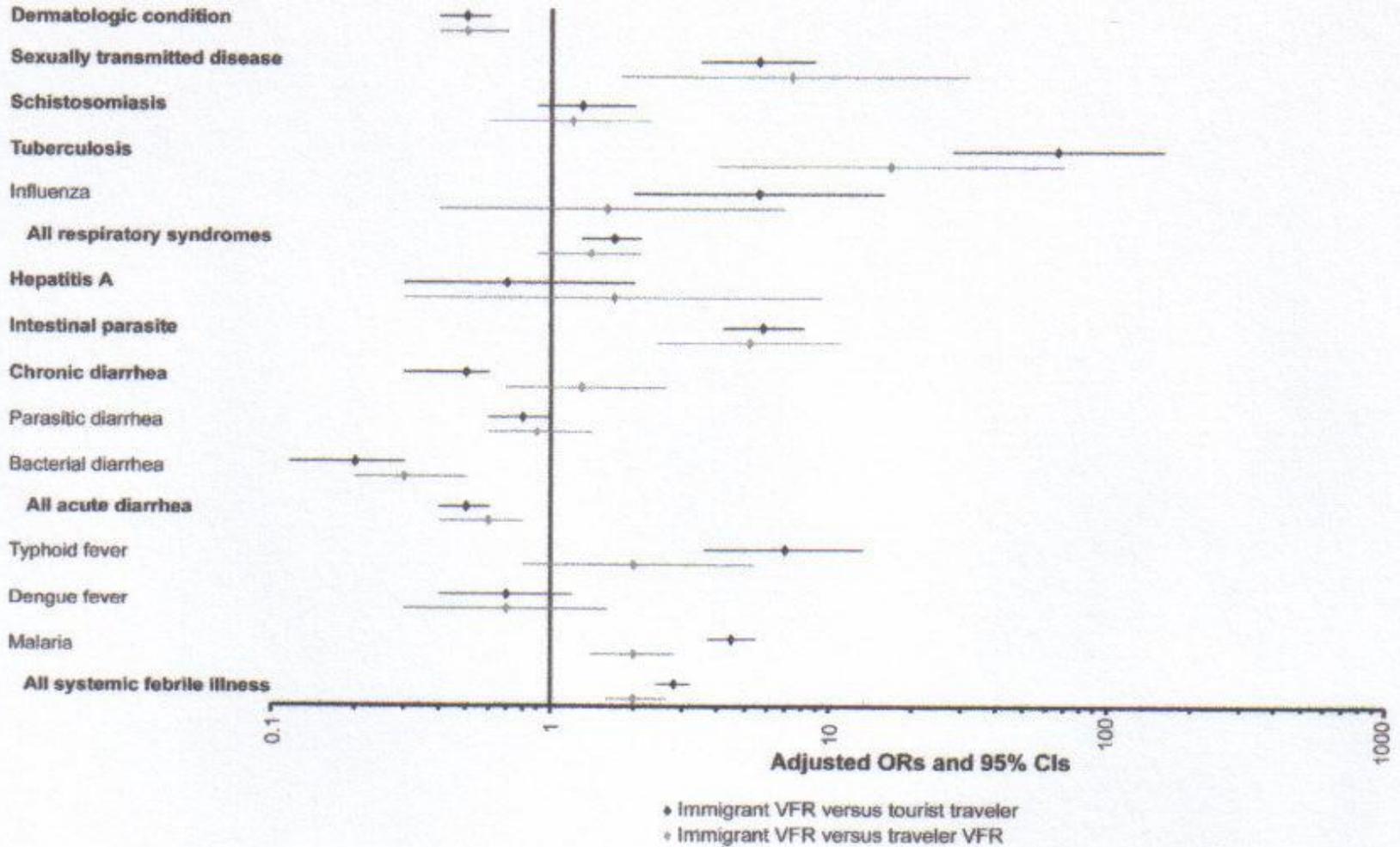






Visiting Friends and Relations (VFRs)

- Less likely to seek pre-travel care
- May be in higher risk situations
- Increased risk of malaria (5x), typhoid (4x), hepatitis A (3x) and TB
- If you have such patients in your practice try and give them preemptive pre-travel advice
 - CID 2006; 43: 1185-93

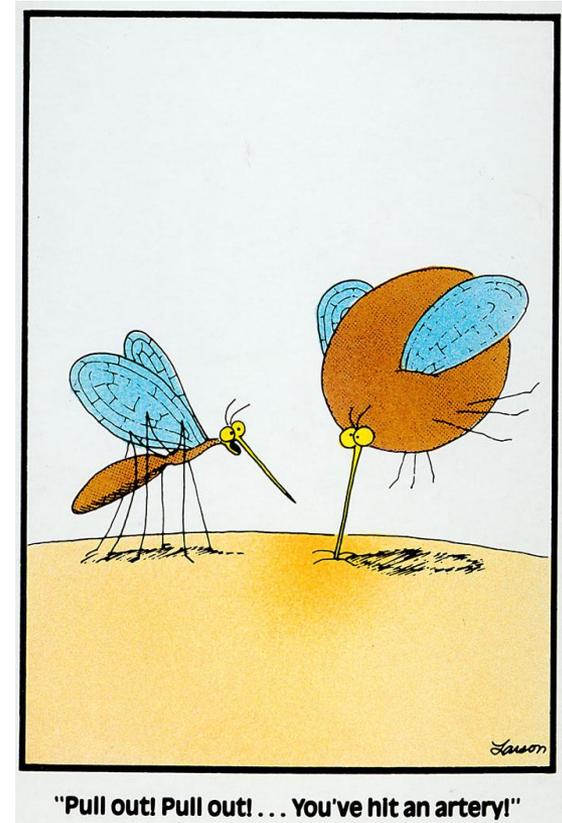


1. Advise and Discuss

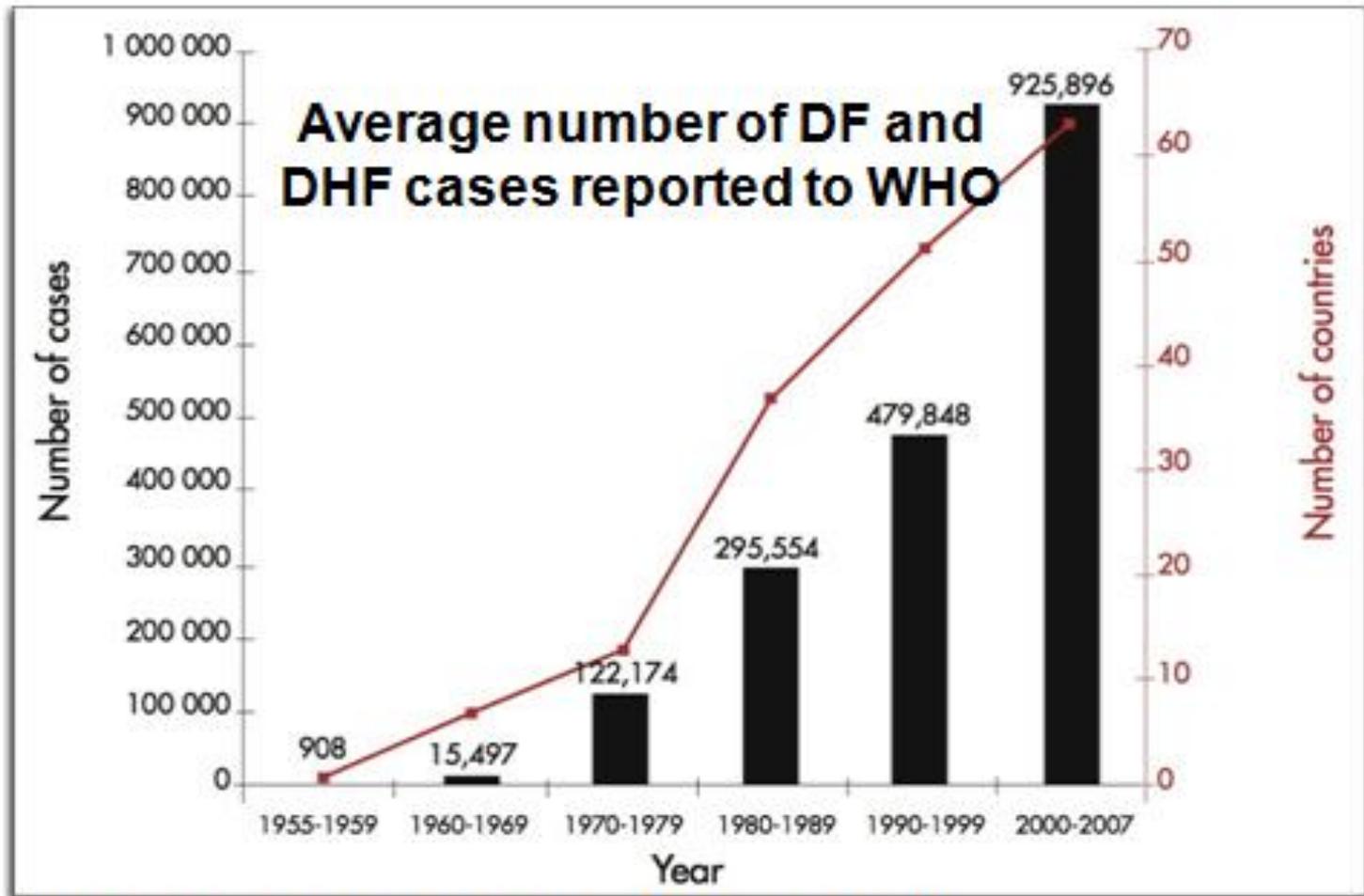
- Always
 - Insects
 - Ingestions
 - Indiscretions
 - Injury
 - Insurance
 - Injections
 - Immobility
 - Medication advice
- Sometimes
 - Immersion
 - Altitude
 - Inhalation

Insects

- Spread many illnesses
- DEET containing repellent
 - Remarkable safety profile
 - Down to 2 months of age
- Permethrin impregnated nets
- Vitamin B does not reduce bites
- Pregnant women more attractive to mosquitoes



Dengue is increasing dramatically



WHO. Dengue. Guidelines for Diagnosis, Treatment, Prevention and Control. Available at: http://whqlibdoc.who.int/publications/2009/9789241547871_eng.pdf Last updated: 2009. Accessed July 21, 2011.

Ingestions

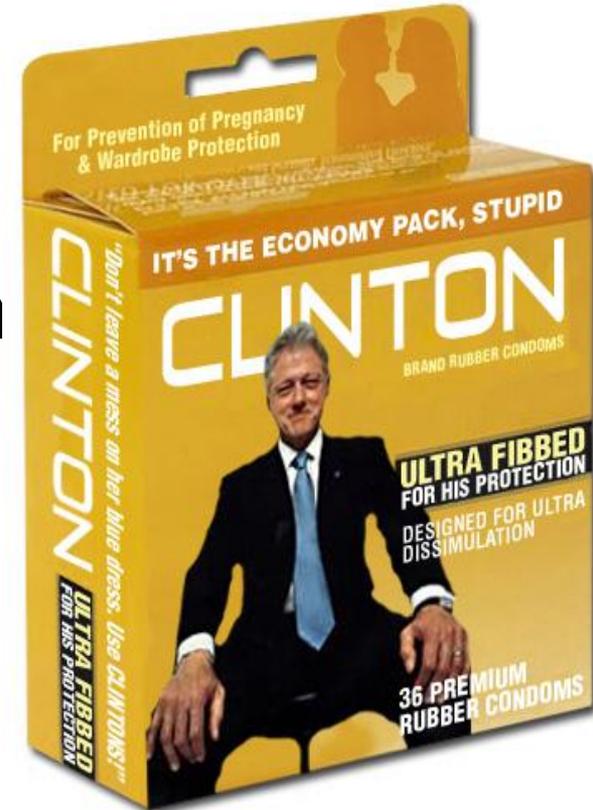
- No good evidence that care with oral intake reduces rates of traveller's diarrhoea
 - CID 2005; 41: S531-5
- May reduce other food borne illnesses
- Restaurant food more risky than that prepared in own kitchen
- Alcohol hand wash makes good sense

New Water Treatment

- Chlorine dioxide
 - more potent than chlorine
 - minimal taste
 - effective against all water borne pathogens
 - Aqua Mira or Portable Aqua
 - Sensitive to sunlight

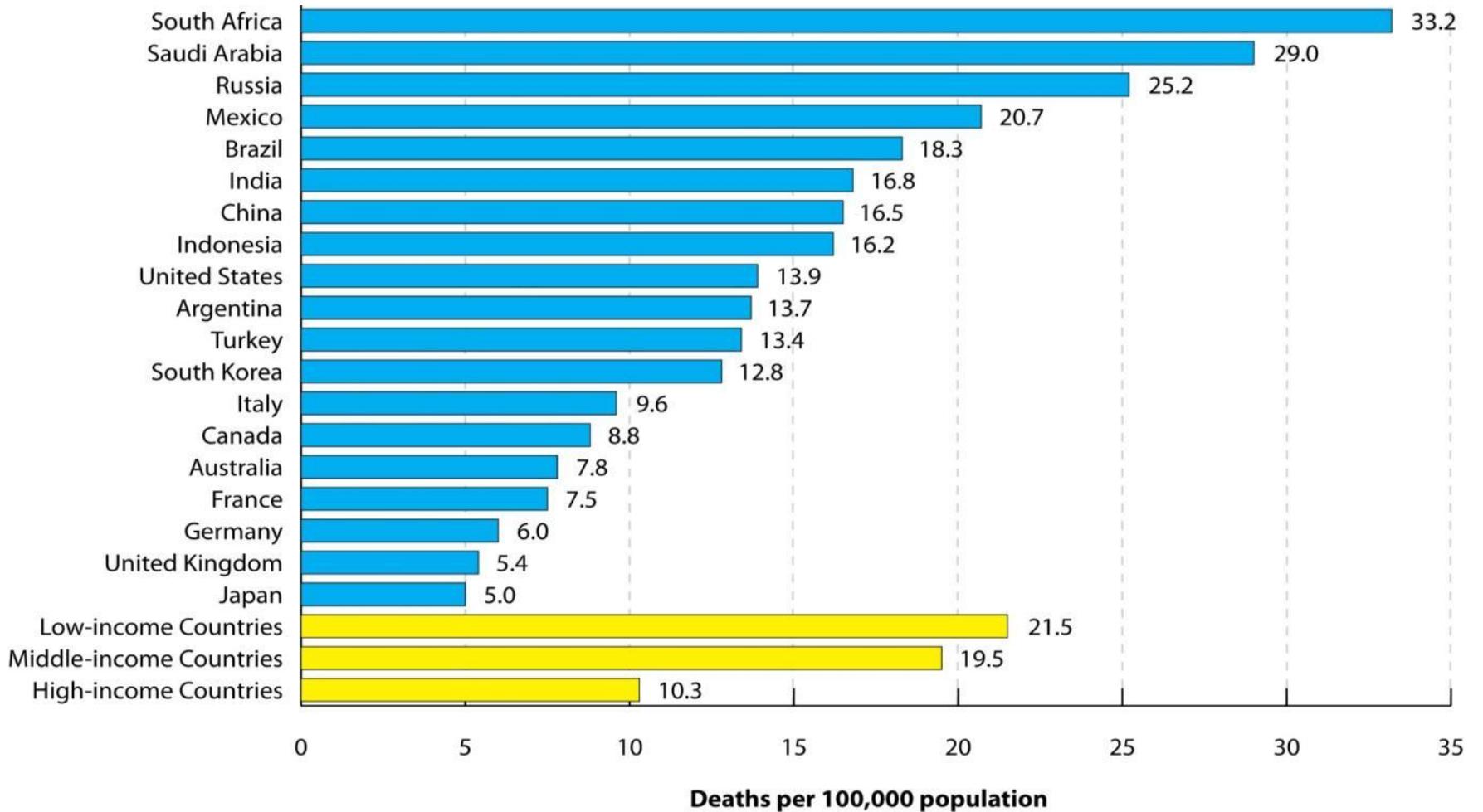
Indiscretions

- Travel increases the probability of casual sex
- Travelling alone
- HIV is global (40 million infected, most don't know it)
- Many STIs are more common in developing countries and more resistant to treatment
- Condoms lower risk



Injuries

- Be especially careful in countries that drive on the right hand side
- Avoid travelling alone and at night, bad weather
- Use helmets, seat belts etc
- Avoid looking like a rich tourist
- Keep valuables out of view
- Speak up if concerned about driver
- Flying may be safer than roads
- Don't swim alone or after drinking alcohol
- Don't feed or play with dogs or monkeys



Insurance

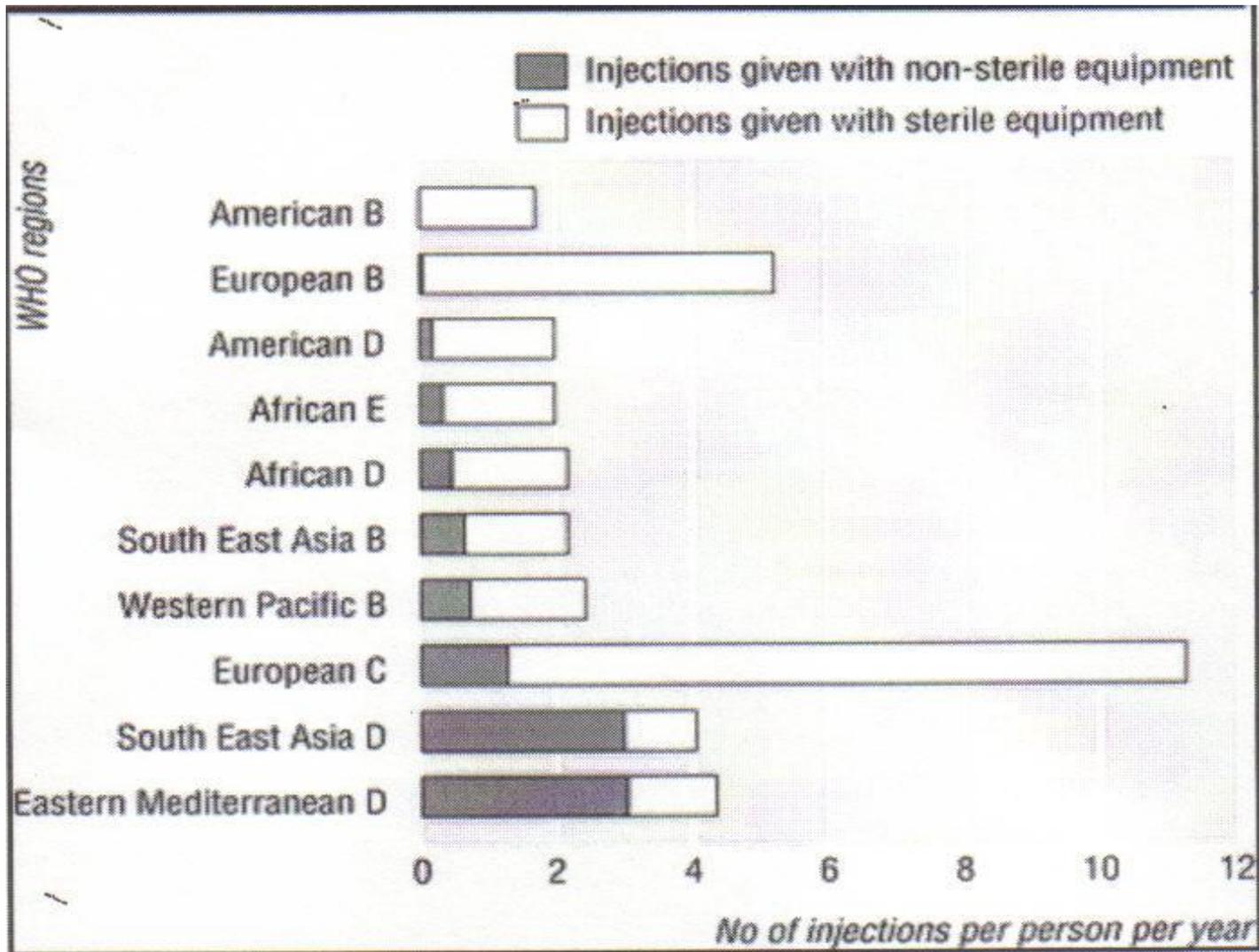
- Vital for all travel
- Check for exclusions
- Read policy carefully to see what is covered, level of excess
- Have a special policy if preexisting medical conditions, working overseas, doing “hazardous recreational activities”

Injections

- Travellers end up having injections: 1.5% of Canadian travellers on 1 month trip
 - J Travel Med 2000; 7: 259-66
- Overuse of injections in many developing countries
 - BMJ 2003; 327: 1075-78
- Reuse of injection equipment without sterilisation is common
- Avoid any puncturing of the skin unless the equipment is sterile



Chemical reaction between sodium hydroxide and hydrochloric acid.



Immobility

- Any form of travel
- Risk related to duration of travel
- Those with preexisting VTE risk factors are most vulnerable

Immobility

- Move legs frequently
- Drink plenty of water (not alcohol)
- Wear below knee compression stockings:
incidence of DVT 19 times lower
 - Angiology 2001; 52:369-74
- High risk travellers should have clexane injections
- No evidence that aspirin helps

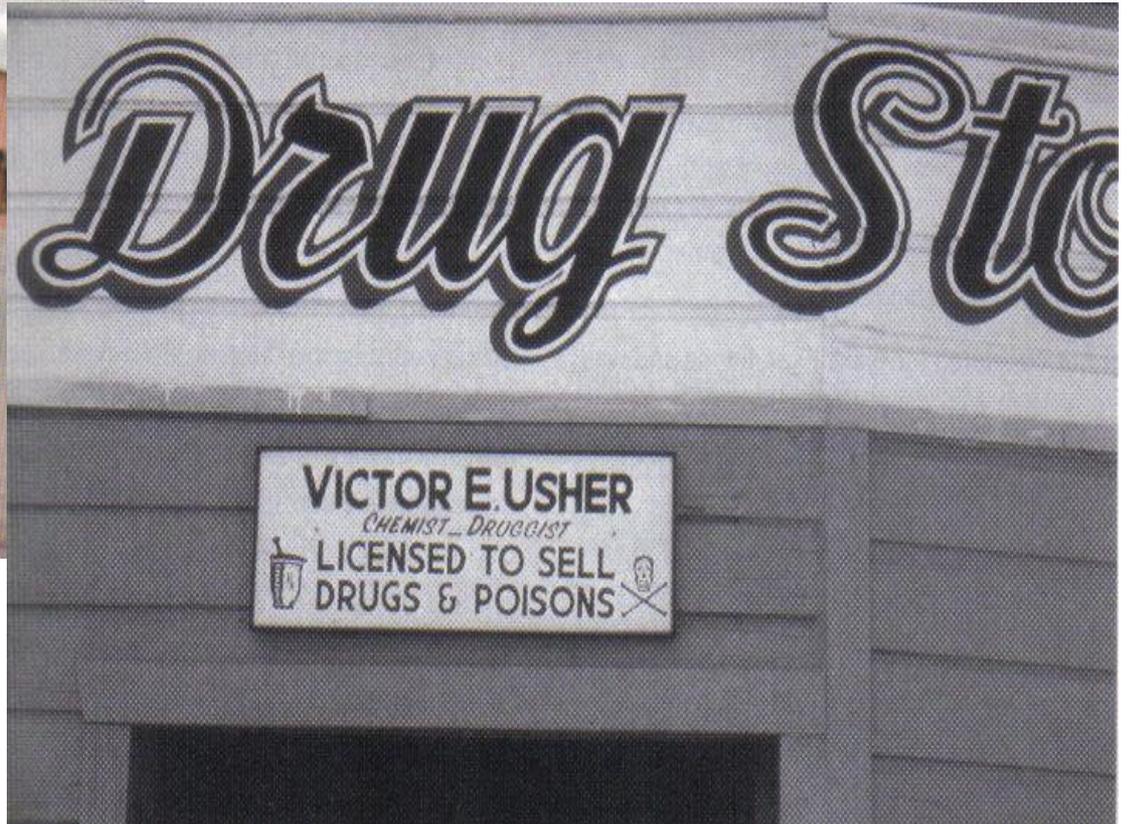
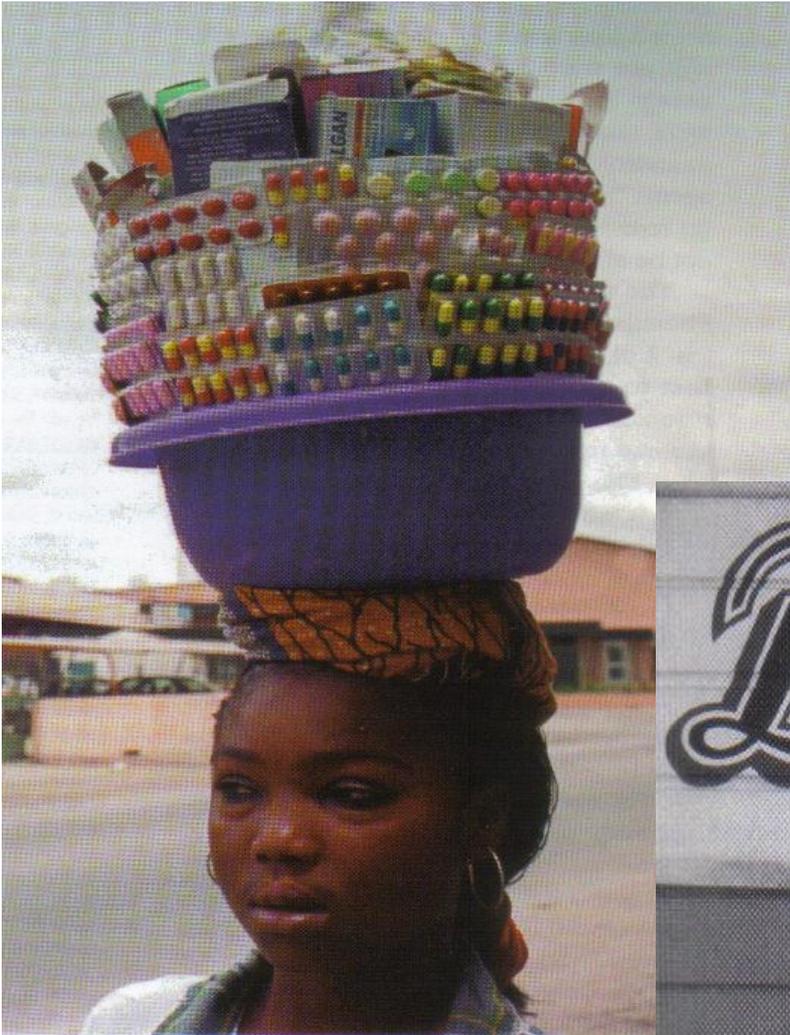
Medication Advice

- Take a letter from usual Doctor about any chronic illness and usual medications
- Have vital medications in two bags in case one is lost
- Have a self help kit as medications overseas may be fakes.



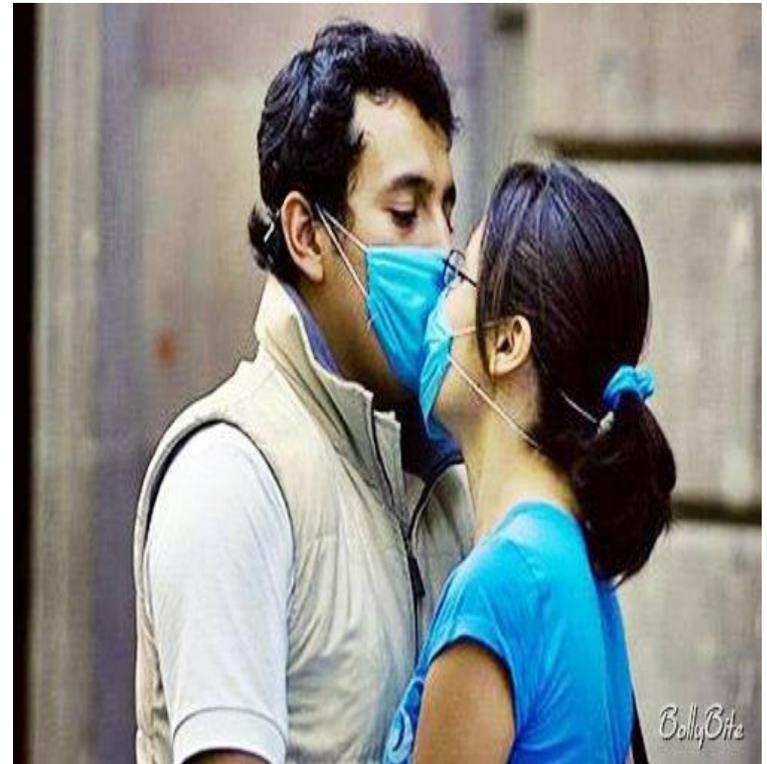
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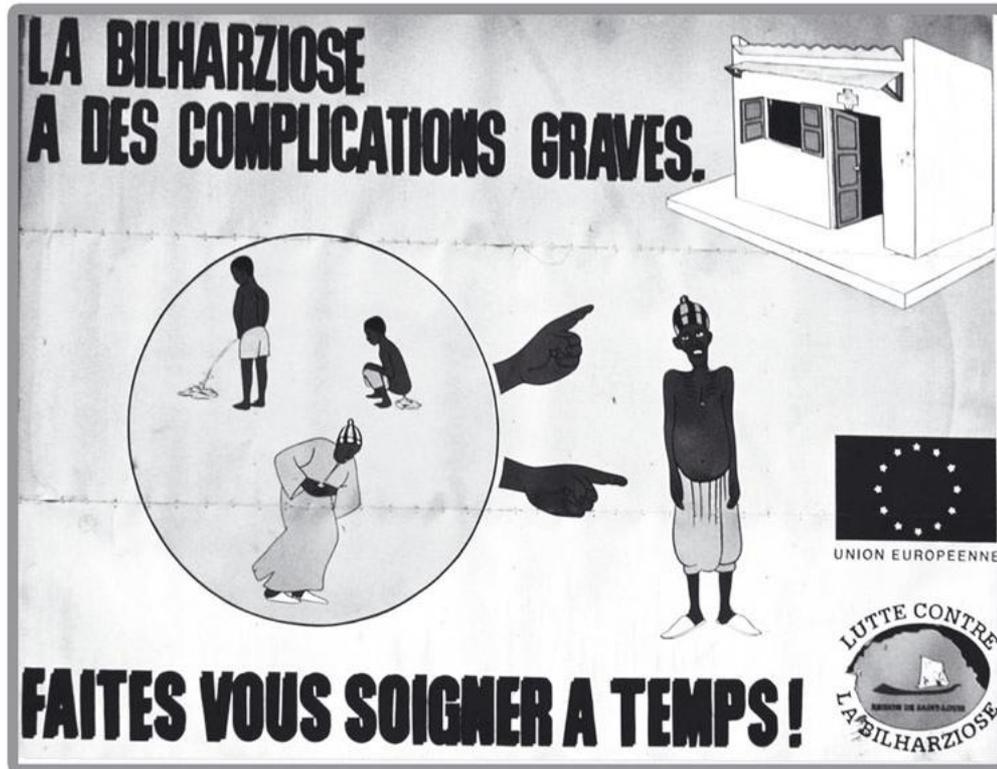


Inhalation

- TB, influenza, bird flu
- Dutch study showed 3.3% of travellers per year to areas of high TB endemicity are infected (2.8 per 1000 per month)
 - Lancet 2000; 356: 461-5
- Advise two step pre-travel mantoux testing with repeat after return or quantiferon gold for certain travellers
- BCG for young long term travellers
- Avoid live poultry/droppings



Immersion



- Avoid fresh water in Africa and most of Middle East
- Mekong in Laos
- Pockets in Brazil ,
Suriname,
Caribbean

Altitude



- Ascend gradually
- Know the symptoms
- Never go higher if have symptoms
- Descend if symptoms worsen while resting

2. Vaccinate

- Always
 - National schedule ones
- Sometimes
 - Japanese encephalitis
 - Meningococcal
 - Rabies
 - Typhoid fever
 - Yellow fever
- Often
 - Hepatitis A
 - Hepatitis B
 - Influenza
- Occasionally
 - Cholera
 - BCG

Hepatitis A

- Risk in travellers has declined 10 to 50 fold since 1970s
 - Clin Infect Dis 2006; 42: 490-7
- Primate studies suggest protection even when given after exposure so not too late to give it just before departure
- Don't need to restart if long interval between doses. Excellent boosting up to 8 years after initial dose
- Hepatitis A / hepatitis B combination or hepatitis A / typhoid combinations

Hepatitis B

- Most infectious of all blood borne viruses
- Virus air dried is infectious for at least one week
- Recent study showed incidence in Danish travellers to be almost the same as hepatitis A: Hep A 12.8 and Hep B 10.2 per 100,000 non-immune travel months
- Risk increased for males, those travelling alone or in a group of friends, those having sex during travel

Hepatitis B

- In adults under 40 years seroprotection after 1, 2 and 3 doses is 30-55 %, 75% and 90%
- 0, 1, 2 month or 0, 7 ,21 days should be followed by 4th dose at 12 months (protection then close to 100% and higher titre)
- With Twinrix 10 to 15% higher protection and higher titres after 2 doses and higher protection rate in > 60s (88% vs 73%)

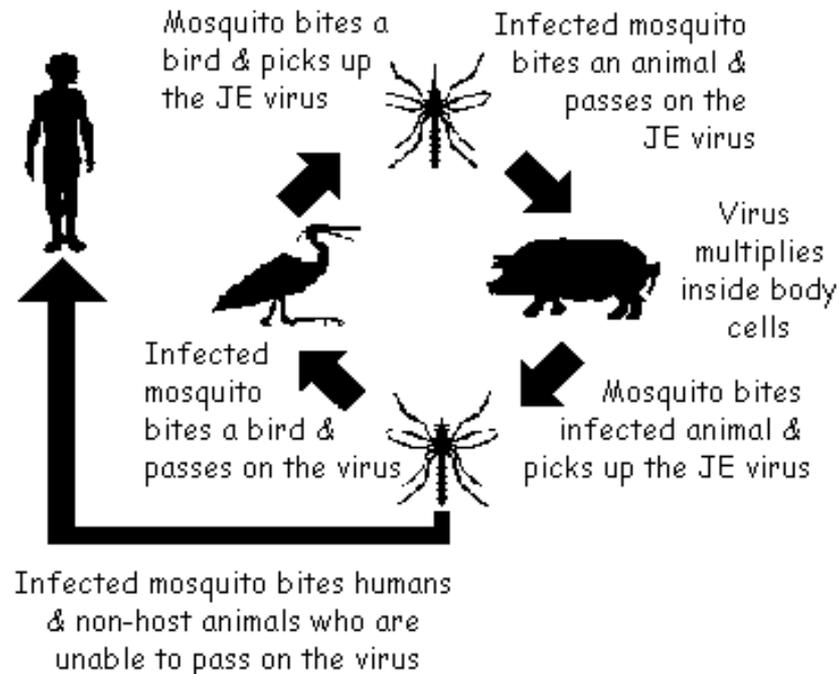
Influenza

- May be the most common vaccine preventable disease of travellers
- Cruise ships attack rates 17 to 37 %
- VFRs and long term travellers
- Promote the vaccine
 - J Tra Med 2005; 12: 36-44



Japanese encephalitis

- Spread by night feeding mosquitos in rural areas



Japanese encephalitis

- Seasonal, rainy season



Japanese encephalitis

- New vaccine: JESPECT
- Two doses 28 days apart
- Well tolerated
- Expensive
- Only for over 17 year olds

Meningococcal Vaccines

- Menactra (conjugate) or Mencevax or Menomune (polysaccharide ones)
- All quadrivalent : A, C, Y, W-135
- Conjugate vaccine stimulates T cell dependent response so effective at younger ages, better booster response and reduces nasopharyngeal carriage so herd immunity

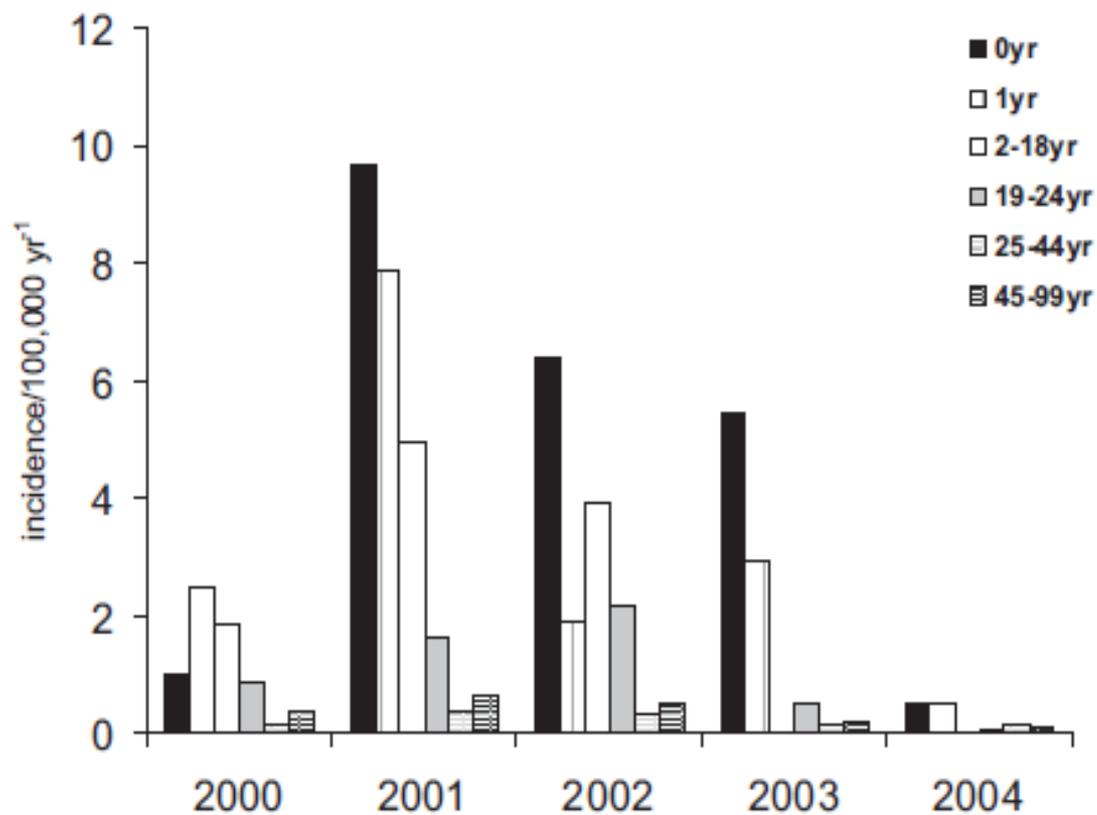
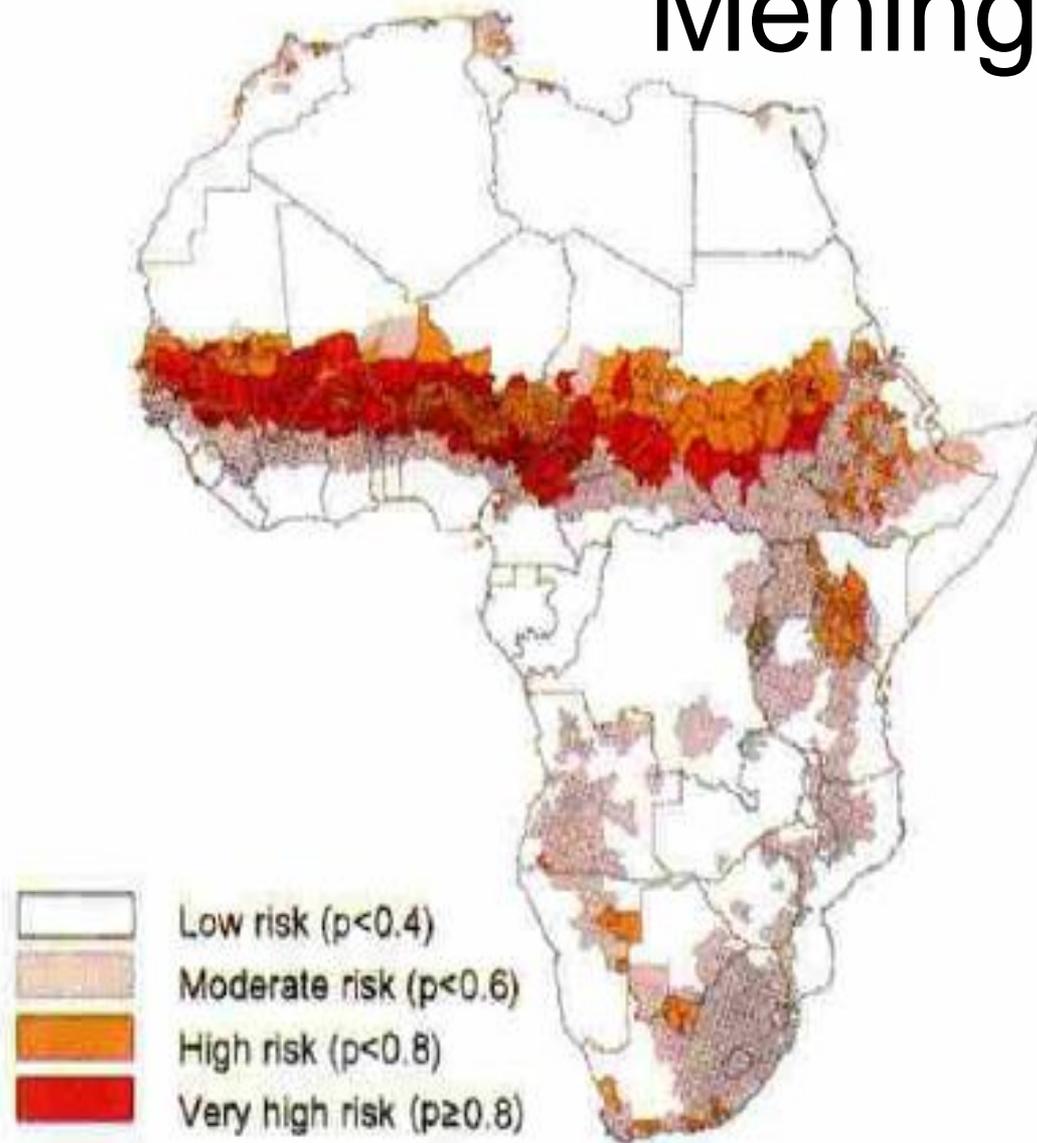


FIGURE 1. Incidence of meningococcal C disease in the Netherlands, by age group and year.

Who to give it to?

- Travellers to meningitis belt of Africa
 - Particularly if during dry season, health care workers, infants and children
- Those doing the Hajj pilgrimage (meningococcal vaccine in past 3 years is required)
- Consider for adolescents and young adults planning to stay in hostels/ overcrowded conditions
- (Menactra a routine vaccine in US for 11-12 year olds with a booster at 16 years)

Meningitis Belt



- **Sahel region** from Senegal and Guinea to Ethiopia
- Northern Uganda
- Eastern DRC
- Rift Valley
- Malawi
- NE Mozambique

Rabies Vaccination

- Rabies kills at least 55,000 people per year
 - Most cases reported from Asia
- Rabies is uncommon in travellers : 27 known cases in travellers since 2000
- Exposures quite common:
 - Nepal: 1 in 6,000
 - Back packers in Thailand: licks 3.56%, bites 0.69%
 - GeoSentinel: 47 per 1000 ill travellers

Who to vaccinate?

- Children
 - Half the victims of dog bites
 - More likely to be bitten on head
- Travellers to Asia
 - GeoSentinel study per 1,000 ill returned travellers
 - SE Asia: 124
 - South Central Asia: 90
 - South America: 25
 - Central America: 13
 - Sub Saharan Africa: 9

Who to vaccinate?

- Travellers to countries where cell culture vaccine not available
 - Pakistan, Burma, Bangladesh, Peru and Argentina
- Long term/ expats
- Those likely to be exposed to animals
- Anyone who wants it

How to vaccinate- IM

- Verorab 3 doses given on days 0,7 and 28 (21 days minimum): 0.5 ml IM
- Highly immunogenic
- Probably no need for future pretravel boosters
- If bitten travellers need to get two boosters

How to vaccinate-ID

- Cheaper alternative: 0.1 ml ID d 0,7 and 28
- Must check for efficacy day 35 – 42 as only about 95% effective so 6 weeks to do
- Only 12 months protection
- Will need a booster prior to future travel
- Not if immunosuppression
- Quicker option 2 doses of 0.1ml ID on day 0 and 2 more on d 7, single 5th dose and blood test on day 21-28

Educate all travellers about rabies

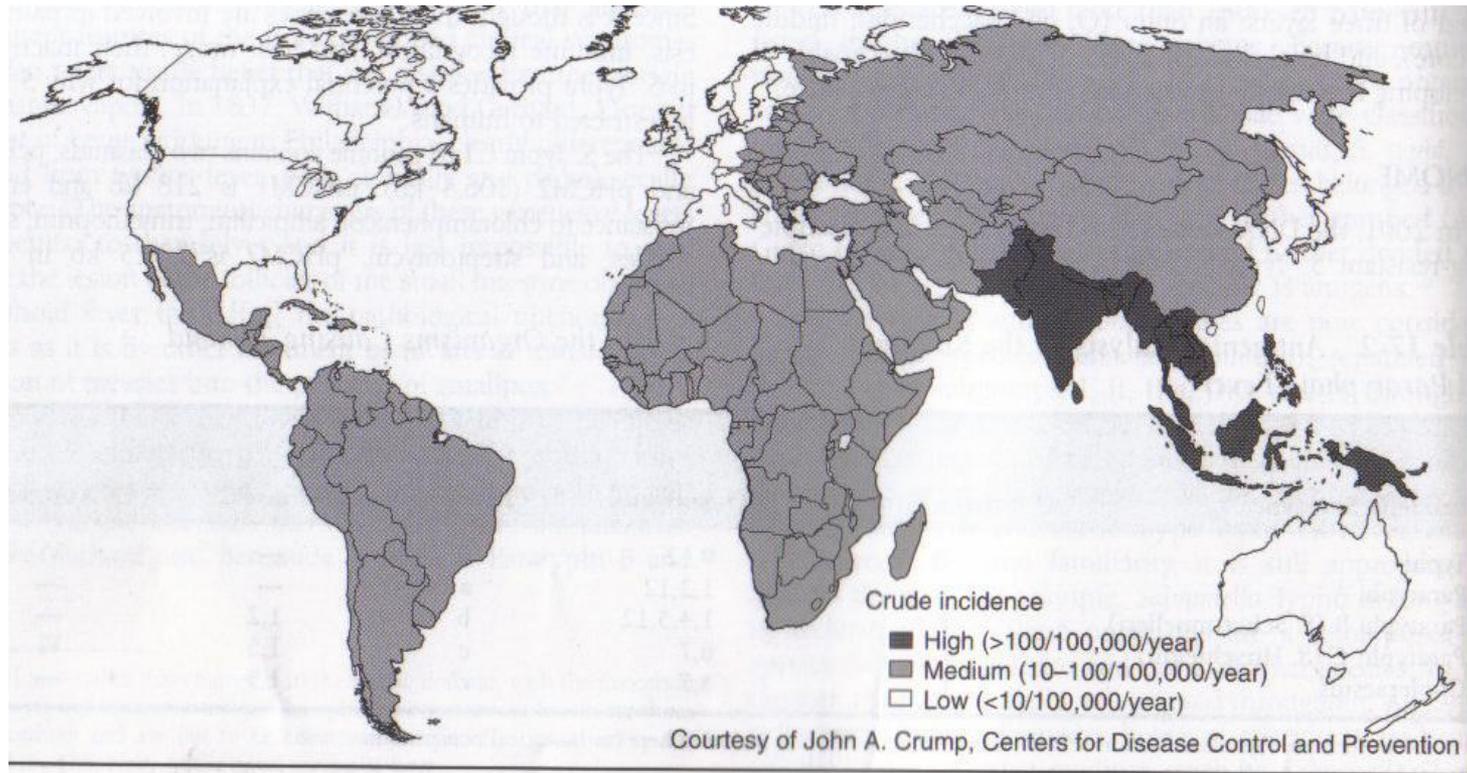
- Important to explain that in most parts of the world rabies is possible
- Try and avoid mammal bites especially dogs but any mammal including bats
- If bitten wash wound well
- If **vaccinated**: booster as soon as possible then another 3 days later



If previously unvaccinated

- 4 doses of vaccine on days 0, 3, 7, 14
- Rabies immune globulin (RIG) 20 IU/kg body weight infiltrated at site of bite
- Acceptable vaccines are cell culture ones rather than nerve tissue (reactogenic and low immunogenicity)
 - Human diploid cell vaccine (HDCV)
 - **Rabivac™** — purified vero cell vaccine (PVRV)
 - **Verorab, Imovax, Rabies vero, TRC Verorab™** — purified chicken embryo cell vaccine (PCECV)
 - **Rabipur™** — purified chicken embryo vaccine (PCECV)
 - **Lyssavac NTM** — purified duck embryo vaccine (PDEV)

Typhoid fever



Typhoid vaccination

- Immunisation has effectively reduced rates of typhoid fever in Thailand and Seoul
- Protection following typhoid fever is neither complete nor enduring
- Only protects against *Salmonella typhi* not paratyphi

Yellow Fever Vaccination

- Between 1970 & 2009 9 cases in travellers
- 8 died, 1 had been vaccinated and survived
- Live attenuated vaccine
- Two reasons for giving it:
 - Protect traveller from illness
 - To cross borders

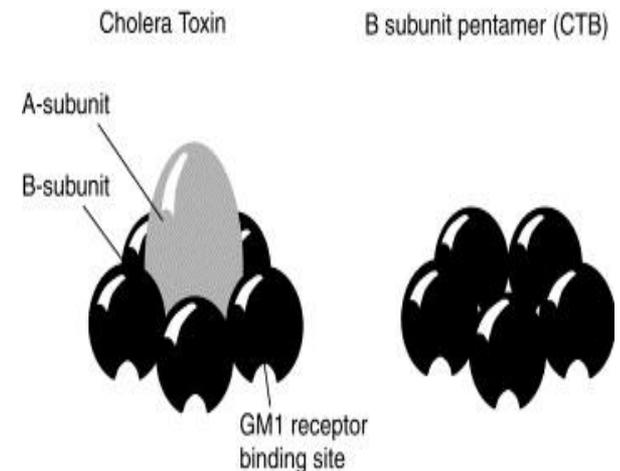


Yellow Fever Vaccination

- Single dose, over 9 months
- About a third feel unwell in 3 to 7 days after vaccination. Generally mild
- Serious adverse events:
 - anaphylaxis- 1 in 100,000
 - neurologic-0.4-0.8 per 100,000 (1.6 >60, 2.3>70)
 - viscerotropic- (65% mortality) 0.4 per 100,000 risk factors: older age (1 >60, 2-3 >70) and thymus disease

Cholera: Dukoral

- Inactivated: killed whole cell *V.cholerae* and recombinant cholera toxin B-subunit
- Cholera uncommon illness in travellers so usually just for health care/ aid workers
- Two- thirds of ETEC produce toxin that is similar to cholera toxin so through the B subunit there is some brief protection against ETEC



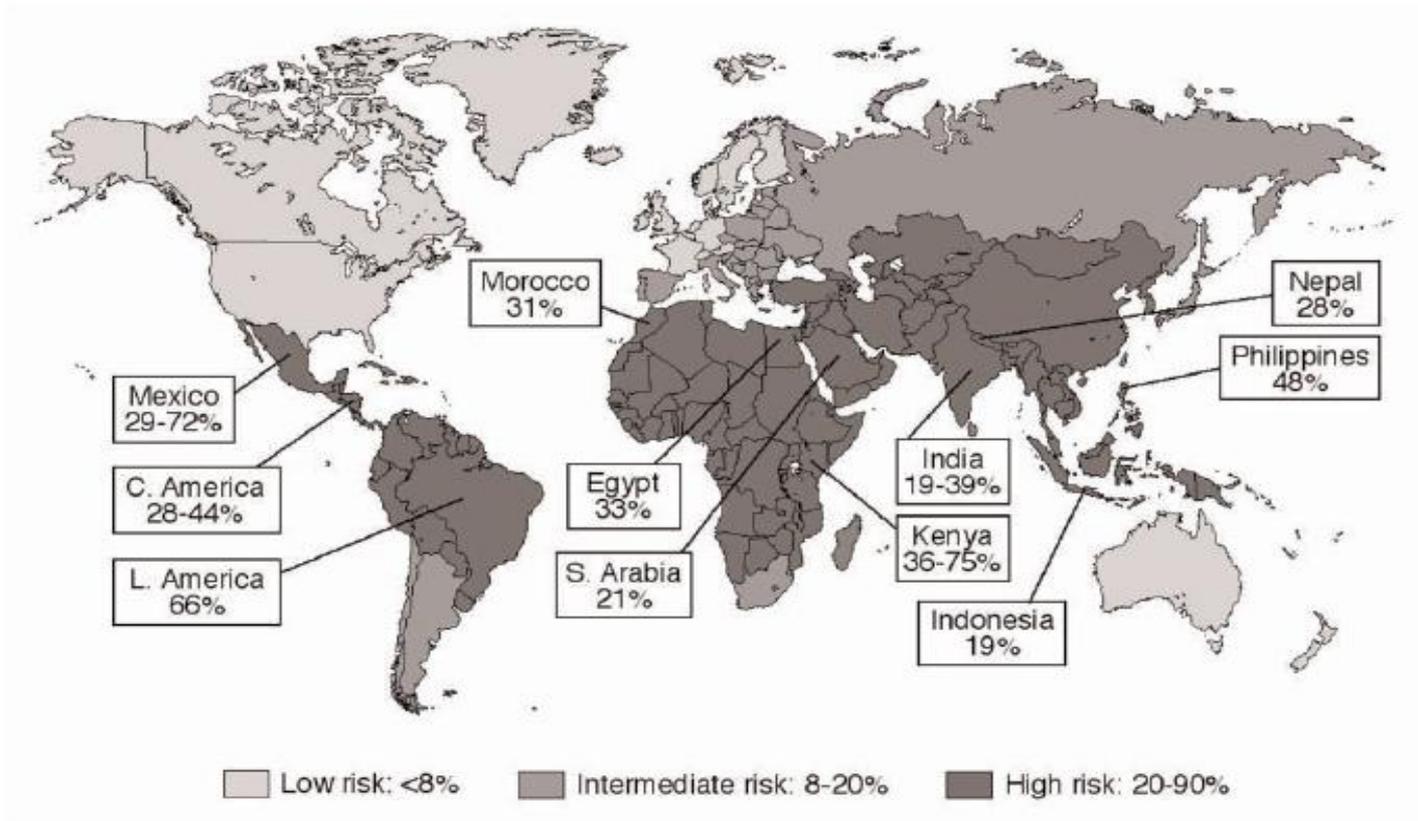


Figure 1 Percentage incidence of travelers' diarrhea caused by enterotoxigenic *Escherichia coli*.

- Between 19 to 75% of TD is ETEC and about 60% of ETEC have heat labile toxin
- Consider it for those at high risk of TD or who would tolerate it poorly

3. Prescribe

- Always
 - Regular medications
- Sometimes
 - Acetazolamide
 - Antimalarial medication
 - Condoms
 - Diarrhoea self treatment
 - ORS, loperamide, norfloxacin

Altitude

- Acetazolamide 125mg twice a day from the day before flying over 3,200m and for the first few days
 - Increased urination, tingling fingers and toes

Malaria Prevention

- Decline in malaria in many countries and a decline being seen in travellers
- In a 12 month study we did in Auckland in 2009 no cases of malaria were diagnosed in tourist NZers. Diagnosed in VFRs, new arrivals, refugees, missionaries
- Main choices remain doxycycline, malarone or mefloquine . Primaquine may be used

Antimalarials

	Mefloquine	Doxy	Malarone
Main SE	Neuropsych	GI, skin	GI
Dose	250mg/wk	100mg/day	1 daily
Start	3/52 pre	2/7 pre	2/7 pre
Continue after risk	4 weeks	4 weeks	7 days
Not for	Epilepsy, depression	Childhood, pregnancy	pregnancy
Cost	+++	+	++++

Malarone for children

- Previously only mefloquine or cut up (and no data to support this) malarone
- Now Malarone Junior (NZ >10 Kg, American CDC >5kg)

Weight	Dose
5- 8 kg	1/2
>8-10 kg	3/4
>10- 20 kg	1
>20-30 kg	2
>30- 40 kg	3
>40 kg	adult

Useful sites

- www.who.int/ith
- www.cdc.gov/travel
- www.fitfortravel.scot.nhs.uk
- <http://www.hpa.org.uk/Publications/InfectiousDiseases/TravelHealth/0701MalariapreventionfortravellersfromtheUK/>

Traveller's Diarrhoea Treatment

- Rehydration most important: WHO, gastrolyte etc
- loperamide for mild to moderate
- norfloxacin if severe especially if fever
- Overseas azithromycin frequently used



Not all questions
can be answered
by

Google

St Nic's Church, Nottingham

You are warmly
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Sunday worship at
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and 7.00 pm

There are groups for children
and young people as part of
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