Emerging Infectious Diseases – notes from tutorials

1. A list of diseases was collated, encompassing a wide range of diseases and microorganisms (see attached sheets for some examples)

2. Some discussion on the definition of terms: emergence as a broad definition, but encompassing the spread of a new agent (eg HIV, vCJD); the recognition of an infection that has been present in the population before but gone undetected (eg sporadic legionellosis, hep E?); the realization that an established disease has an infectious origin (eg ulcers); the reappearance (re-emergence of a known infection after a decline in incidence (eg tuberculosis, measles); changes in virulence of given microorganism (eg E.coli O157, influenza, cholera)….

3. Some discussion on the importance of viruses in emerging diseases; of bacteria in re-emerging diseases (drug resistance)

4. Consideration of factors responsible for emergence (several sources of information). CDC in 1995 published the first list (3 factors, noted below), and others have added – some overlap.

    a. Family life (cdc, 1995). Including increased leisure time/range of activities, food shopping, eating, travel, money…
    b. Children in day care centers (cdc, 1995). More mothers working, more opportunity for spread of disease amongst pre-school children…
    c. Changes in human behaviour, STDs, recreational drugs, watersports, travelling
    d. People with lowered immunity (cdc, 1995). Elderly, HIV, iatrogenic (doctor induced) immunosuppression, more of these populations in hospitals
    e. Availability of antibiotics, misuse/overuse, increase in drug resistance
    f. International travel (especially for diseases with short incubation period, transmitted by inhalation)
    g. International trade (eg cargo boats, import/export of food)
    h. Climate change
    i. Agricultural practice. Intensive farming. Changes in food production. Antibiotics in animal feed
    j. Breakdown of public health measures: vaccines, water treatment
    k. Political upheaval – decrease in public health infrastructure Diphtheria in Russia, decrease in immunization; human tragedy/movement of peoples – cholera, typhoid etc.; late observation of changes due to poor communication – but observation is of little advantage to poor countries
    l. Mega-cities, increased population, poor water quality, overcrowding, public health issues, poverty

m. Deforestation, building dams, adventurous travel, brings human and pathogen/vector into contact. Modern technology and land use. Ecological issues
n. Microbial evolution/adaptability
o. Bioterrorism
p. Increased poverty in some populations of developed world

5. Why more common now?
    a. Better communication/global village, more recognition, more surveillance
    b. The changes are more apparent today (mega-cities, travel etc.)

Emerging diseases also in animals, plants, fish.
Note differences in factors in developed and undeveloped countries.
Supplement these lists with examples from your selected organisms, topical issues, lecture notes etc..