

WELCOME



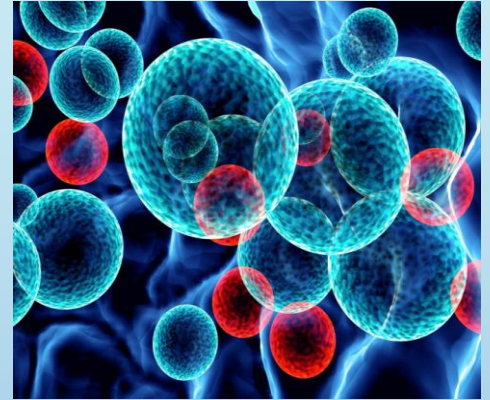
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EMERGING PATHOGENS



EMERGING PATHOGENS

- ❑ Infectious diseases have been an ever-present threat to mankind.
- ❑ Emerging infectious diseases are “new diseases; new problem (new threats)”.



- ❑ From the biblical plagues and the plague of Athens in ancient times, to the black death of the middle ages, the 1918 “Spanish flu” pandemic, and more recently, the HIV/AIDS pandemic, infectious diseases have continued to emerge and reemerge in a manner that defies accurate Predictions.

EMERGING PATHOGENS

An emerging infectious disease (EID) is a one-

- That is caused by a newly discovered infectious agent or by a newly identified variant of a known pathogen.
- Which has emerged and whose incidence in humans has increased during the last two decades and is threatening to increase in the near future.

Emerging infections account for at least 12% of all human pathogens.

EMERGING PATHOGENS

- EID are caused by newly identified species or strains (SARS)
- That may have evolved from a known infection (Influenza)
- Spread to a new population (West Nile fever) or
- To an area undergoing ecologic transformation (Lyme disease) or
- Be reemerging infections, like drug resistant TB.
- Nosocomial (hospital-acquired) infections, such as MRSA are emerging in hospitals.

EMERGING PATHOGENS

- ❑ The first emerging infectious disease of the 21st century (china, 2003)-
 - SARS (severe acute respiratory syndrome)
 - Total 8429 cases
 - 824 deaths 30 countries in 7-8 months in 2003

- ❑ The 2014 Ebola outbreak is the largest in history.

WHO published a priority list of pathogens expected to cause severe outbreaks in the near future

December 2015	February 2018
<ul style="list-style-type: none">➤ Ebola virus disease➤ Marburg virus disease➤ Lassa fever➤ Rift valley fever (RVF)➤ Crimean-congo haemorrhagic fever (CCHF)➤ Middle east respiratory syndrome coronavirus (mers-cov)➤ Severe acute respiratory syndrome (SARS)➤ Nipah	<ul style="list-style-type: none">➤ Ebola virus disease➤ Marburg virus disease➤ Lassa fever➤ Rift valley fever (RVF)➤ Crimean-congo haemorrhagic fever (CCHF)➤ Middle east respiratory syndrome coronavirus (mers-cov)➤ Severe acute respiratory syndrome (SARS)➤ Nipah➤ Henipaviral diseases➤ Zika

The second annual review by WHO On 6-7 Feb- 2018

A number of additional diseases were discussed and considered for inclusion in the priority list, including:

Arenaviral hemorrhagic fevers other than Lassa fever

Chikungunya

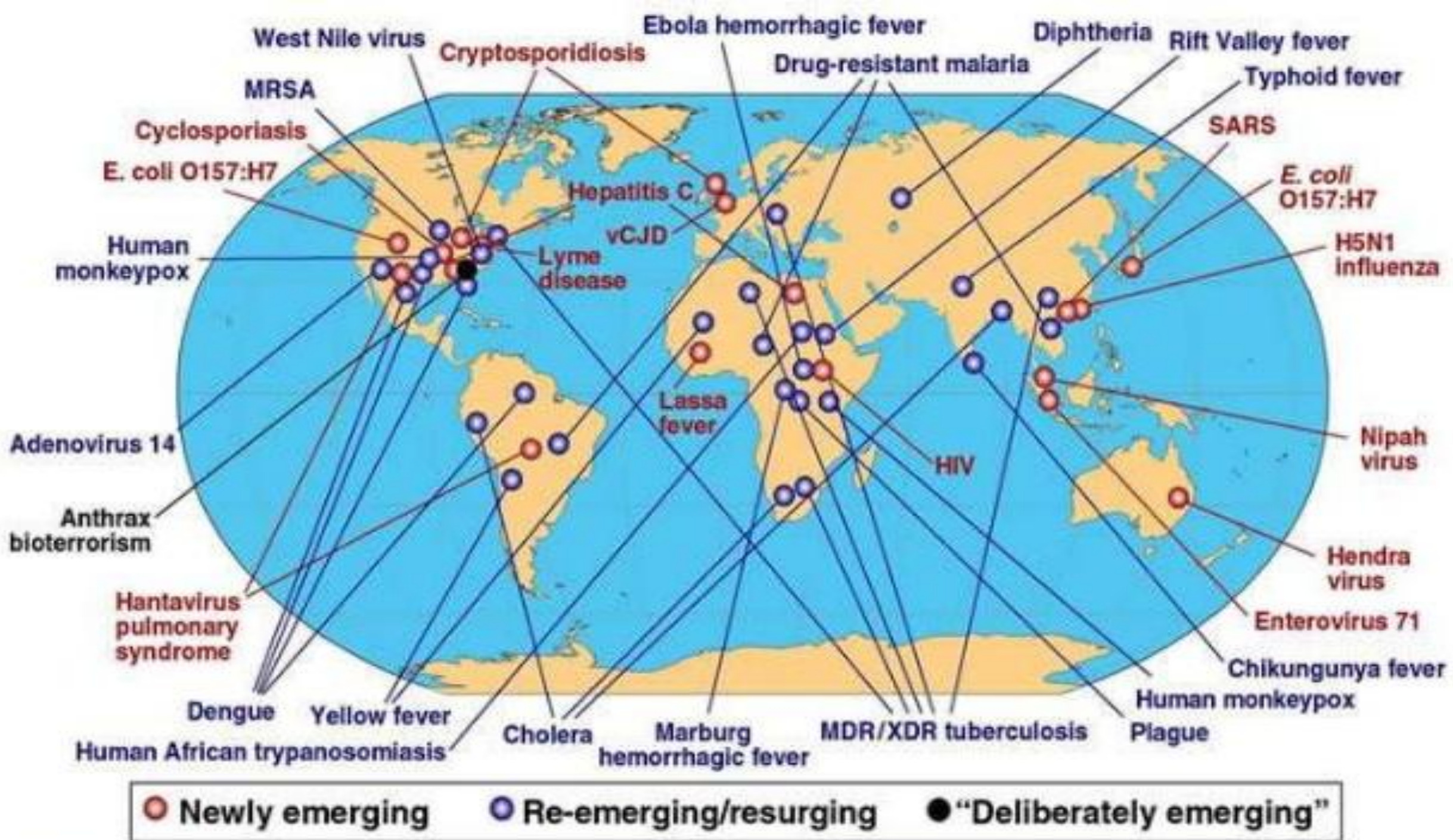
Highly pathogenic Coronaviral diseases other than MERS and SARS

Emergent non-polio enteroviruses (including EV71, D68)

Severe fever with thrombocytopenia syndrome (SFTS)

Several diseases were determined to be outside of the current scope of the blueprint

- Dengue**
- Yellow fever
- HIV/aids
- Tuberculosis
- Malaria
- Influenza causing severe human disease
- Smallpox
- Cholera
- Leishmaniasis
- West nile virus
- Plague.
- Bioterrorism organism



EMERGING PATHOGENS IN BANGLADESH

- ❑ Tuberculosis- MDR, XDR
- ❑ Cholera
- ❑ DR Malaria
- ❑ Dengue
- ❑ Chikungunya
- ❑ Leishmaniasis
- ❑ Cryptosporidium

- SARS
- Pneumonia
- Influenza
- Swain flu
- Meningococcal disease
- Hepatitis B
- Hepatitis C
- Nipah

- ❖ E. Coli
- ❖ MRSA
- ❖ VRSA
- ❖ ESBL
- ❖ Salmonella
- ❖ Shigella

The Factors Responsible

➤ Improper planning of the township

➤ **Population explosion**

➤ Poor living conditions

➤ Over crowding

➤ Industrialization

➤ **Urbanization**

➤ Lack of health care services

➤ **Migration of population**

➤ Intense international travel

➤ Globalization

➤ **Indiscriminate use of antibiotics and development of resistance**

➤ **Increase in contact with animals**

➤ Insecticide resistance

➤ Alterations in micro-organisms

➤ **Environmental degradation with changing weather pattern.**

➤ Illiteracy and ignorance

➤ Natural disasters

➤ Immunization failure

DRUG RESISTANT EMERGING PATHOGENS

- Escherichia coli
- Klebsiella sp, Pseudomonas aeruginosa
- Neisseria gonorrhoea
- Pneumococcus
- Shigella, Salmonella
- Staphylococcus aureus (MRSA, VRSA)
- Carbapenemase-producing enterobacteriaceae (CPE)
- B. pseudomallei
- Malaria
- Tuberculosis

Need for Antibiotic Stewardship

While rising rates of antimicrobial resistance are driving many institutions to adopt antimicrobial stewardship programs, many are finding the principle difficult to put into practice. Some physicians from across the medical spectrum ignore recommendations to reduce unnecessary use of antimicrobials

Key Tasks in Dealing with Emerging Diseases

➤ Surveillance at national, regional, global level

- Epidemiological,
- Laboratory
- Ecological
- Anthropological

➤ Investigation and early control measures

➤ Implement preventive measures

- Behavioural,
- Political,
- Environmental

➤ Monitoring, evaluation

MANAGEMENT OF EMERGING INFECTIOUS DISEASE

A proactive and planned approach to ensure the appropriate prevention and control of the spread of disease. Strategic planning should include:

- ❑ **Phase I (non-alert)**- is a routine, preparatory state;
- ❑ **Phase II (alert)**- is the detection, confirmation and declaration of changes identified during non-alert conditions;
- ❑ **Phase III (response)** - includes the ongoing assessment of information and the planning and implementation of an appropriate response, which includes the coordination and mobilization of resources to support intervention activities
- ❑ **Phase IV (follow-up)** - activities include re-evaluation,

RECOMMENDATIONS

- Strengthening epidemiological surveillance & laboratory capabilities and services.
- Establishment of a rapid response team.
- Monitoring antimicrobial resistance.
- Establishment of international disease surveillance.
- Networking and advocacy.
- Screening on international travels and trades.
- Networks of laboratories that link countries and regions need to be established.
- Strong national and regional public health systems.

MESSAGE TO TAKE HOME

- Stop self medication
- Controlling re- emerging diseases through available cost-effective interventions such as early diagnosis and prompt treatment.
- Vector control measures are all important
- DOTS- best treatment for TB
- Research initiatives for treatment regimes and improved diagnostics, drugs and vaccines should be launched.

CONCLUSION

- The evolution of pathogens with resistance to antibacterial and antiviral agents continues to challenge us to better understand the mechanisms of drug resistance and to devise new ways to circumvent the problem.
- The relentless effort of scientists, government and academic, together with their industrial partners and international collaborators have made great stride in discovering novel diagnostics, antiviral and antimicrobial compounds, and vaccines, often with extraordinary speed.



THANK YOU