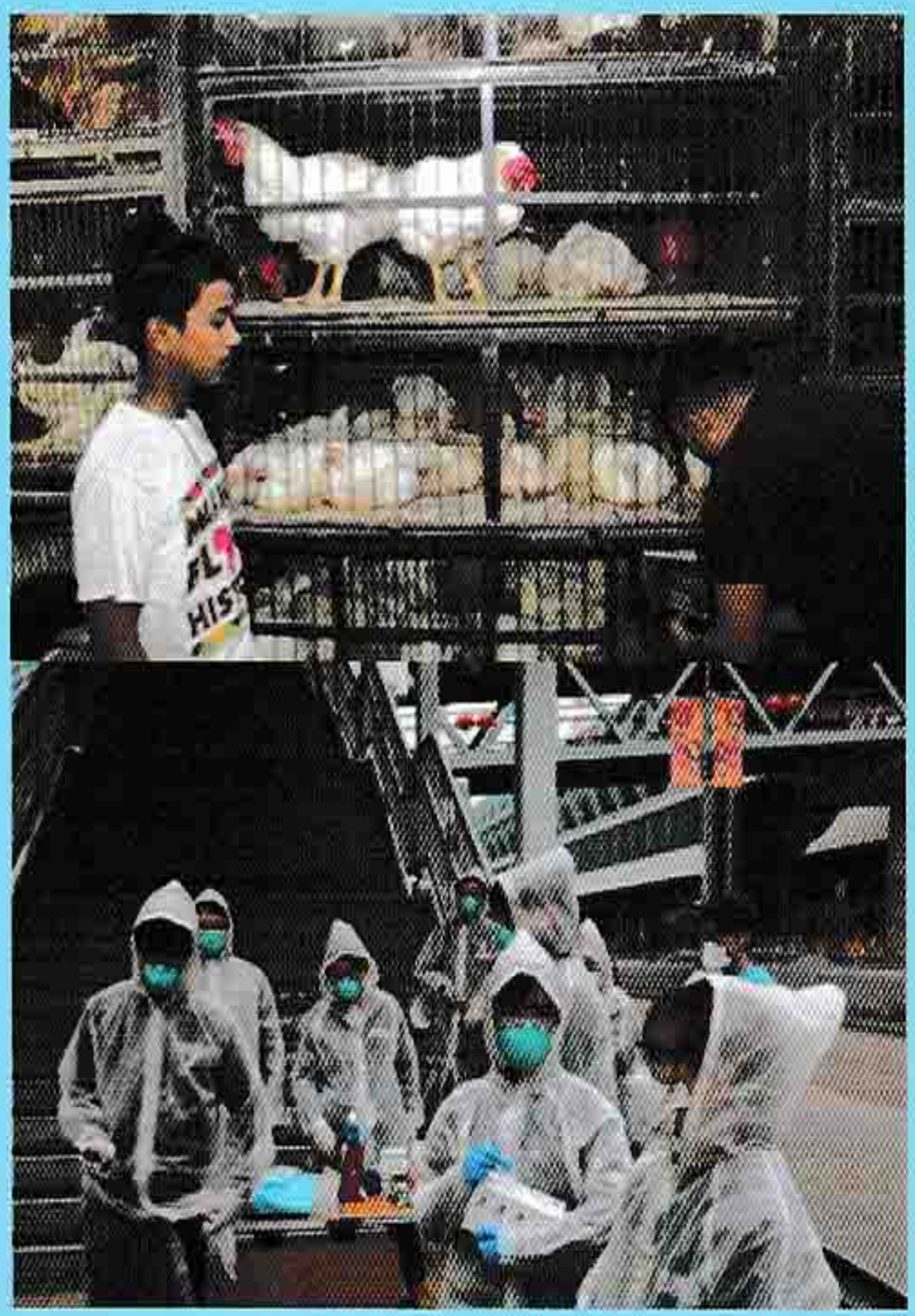

TRAINING MODULE
INFLUENZA

IHR, Migration Health, Emerging Re-Emerging
Diseases Control Programme.
Communicable Disease Control Division (CDC),
DGHS, Ministry of Health & Family Welfare

DGHS.MOH&FW BANGLADESH

IEDCR

আপনার স্বাস্থ্য আমাদের অঙ্গীকার
HPNSP
স্বাস্থ্য ও পরিবার কল্যাণ মন্ত্রণালয়

World Health Organization

Contents

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LIST OF ACRONYMS

BSL3	Bio Safety Level 3
BSTI	Bangladesh Standards and Testing Institution
CDC, DGHS	Communicable Disease Control, Directorate General of Health Services
DGHS	Directorate General of Health Services
DRRT	District Rapid Response Team
HEB	Health Education Bureau
HSIA	Hazrat Shahjalal International Airport
Icddr,b	International Center for Diarrheal Disease Research, Bangladesh
IEDCR	Institute of Epidemiology, Disease Control and Research
IHR	International Health Regulation 2005
IHR NFP	National Focal Point for International Health Regulation 2005 (Director, DC, DGHS)
IPC	Infection Prevention and Control
IPH	Institute of Public Health
IPHN	Institute of Public Health Nutrition
LD CDC	Line Director, Communicable Disease Control
NIPSOM	National Institute of Preventive and Social Medicine
NNS	National Nutrition Services
NRRT	National Rapid Response Team
OIE	Office International des Epizooties (World Organization for Animal Health)
PHEIC	Public Health Emergency of International Concern
PoE	Port of Entry
RRT	Rapid Response Team
SOP	Standard Operating Procedure
URRT	Upazila Rapid Response Team
UNICEF	United Nations Children's Fund
WHO	World Health Organization
WHA	World Health Assembly
ZIKAV	Zika Virus

Executive Summary

Influenza, also called flu or grippe, an acute viral infection of the upper or lower respiratory tract that is marked by fever, chills, and a generalized feeling of weakness and pain in the muscles, together with varying degrees of soreness in the head and abdomen.

Classification of influenza viruses

Influenza is caused by any of several closely related viruses in the family Orthomyxoviridae (a group of RNA viruses). Influenza viruses are categorized as types A, B, C, and D. These major types generally produce similar symptoms but are completely unrelated antigenically, so that infection with one type confers no immunity against the others. The A viruses cause the great influenza epidemics, and the B viruses cause smaller localized outbreaks. The C viruses cause only mild respiratory illness in humans. Influenza D viruses are not known to infect humans and have been observed only in pigs and cattle.

Influenza A viruses are classified into subtypes, and both influenza B and subtypes of influenza A are further divided into strains. Subtypes of influenza A are differentiated mainly on the basis of two surface antigens (foreign proteins)—hemagglutinin (H) and neuraminidase (N). Examples of influenza A subtypes include H1N1, H5N1, and H3N2. Influenza B viruses are subdivided into two major lineages, B/Yamagata and B/Victoria. Strains of influenza B and strains of influenza A subtypes are further distinguished by variations in genetic sequence.

Evolution and virulence of influenza viruses

Between worldwide outbreaks, known as pandemics, influenza viruses undergo constant, rapid evolution (a process called antigenic drift), which is driven by mutations in the genes encoding antigen proteins. Periodically, the viruses undergo major evolutionary change by acquiring a new genome segment from another influenza virus (antigenic shift), effectively becoming a new subtype. Viral evolution is facilitated by animals such as pigs and birds, which serve as reservoirs of influenza viruses. When a pig is simultaneously infected with different influenza A viruses, such as human, swine, and avian strains, genetic reassortment can occur. This process gives rise to new strains of influenza A.

Newly emerged influenza viruses tend to be initially highly infectious and virulent in humans because they possess novel antigens to which the human body has no prepared immune defense (i.e., existing antibodies). Once a significant proportion of a population develops

immunity through the production of antibodies capable of neutralizing the new virus, the infectiousness and virulence of the virus decreases. Although outbreaks of influenza viruses are generally most fatal to young children and the elderly, the fatality rate in people between ages 20 and 40 is sometimes unexpectedly high, even though the patients receive treatment. This phenomenon is believed to be due to hyper-reaction of the immune system to new strains of influenza virus. Such reaction results from the overproduction of inflammatory substances called cytokines. The release of excessive amounts of these molecules causes severe inflammation, particularly in the epithelial cells of the lungs. Individuals whose immune systems are not fully developed (such as infants) or are weakened (such as the elderly) cannot generate such a lethal immune response.

Pandemics and Epidemics

influenza pandemic of 1918–19: temporary hospital

Influenza pandemics are estimated to occur on average once every 50 years. Epidemics happen much more frequently, and seasonal influenza appears annually in most parts of the world, sometimes in epidemic proportions. Influenza type A virus is the most frequent cause of seasonal influenza. When an influenza A virus undergoes an antigenic shift, a pandemic affecting most of the world can occur within a matter of months. The influenza pandemic of 1918–19, the most destructive influenza outbreak in history and one of the most severe disease pandemics ever encountered, was caused by a subtype of influenza A known as H1N1. During this pandemic an estimated 50 million persons throughout the world died of the so-called Spanish flu, which was first widely reported in Spain but originated in the U.S. state of Kansas.

Subsequent pandemics of influenza have been less severe. For example, influenza A subtype H2N2, or 1957 flu pandemic, apparently began in East Asia early in 1957, and by midyear it had circled the globe. The outbreak lasted on a pandemic level until about the middle of 1958 and caused an estimated one million to two million deaths worldwide. After 10 years of evolution that produced annual epidemics, the 1957 flu disappeared in 1968, only to be replaced by a new influenza A subtype, H3N2. This virus is still in circulation. The flu outbreak of 1968 was the third influenza pandemic of the 20th century and resulted in an estimated one million to four million deaths.

In 1997 a type of avian influenza, or bird flu, virus broke out among domesticated poultry in Hong Kong and then infected a small number of people, killing some of them. This same virus, H5N1, reappeared among chicken flocks in Southeast Asia during the winter of 2003–04, again infecting some people fatally, and it has reappeared periodically since, primarily in wild birds, domestic poultry, and humans. Several other subtypes of bird flu viruses are known, including H7N2, H7N3, and H9N2. Though these subtypes rarely cause infection in humans, they are recognized as having epidemic and pandemic potential.

An outbreak of a previously unknown strain of H1N1 occurred in 2009. Originally called swine flu because the virus was suspected to have been transmitted to humans from pigs, the illness first broke out in Mexico and then spread to the United States. The H1N1 virus that caused the outbreak was discovered to possess genetic material from human, avian, and two different swine influenza viruses. The 2009 H1N1 outbreak was not nearly as deadly as the pandemic of 1918–19. However, the virus was highly contagious and spread rapidly. The pandemic potential of the new H1N1 virus was made clear to the international community by the World Health Organization (WHO), which declared a level 5 pandemic alert on April 29, 2009. This prompted the rapid implementation of mitigation procedures, including the distribution of drugs to treatment facilities, in countries worldwide. Despite these measures, the virus continued to spread globally. On June 11, 2009, following an increase in cases in Chile, Australia, and the United Kingdom, WHO raised the H1N1 alert level from 5 to 6, meaning that the outbreak was officially declared a pandemic. By mid-January 2010 the outbreak had affected people in more than 209 countries worldwide. It was the first influenza pandemic of the 21st century. In the United States the high levels of flu-like illness observed during the 2009 H1N1 pandemic were not observed again until 2018.

Research has indicated that each of the four historic influenza pandemics was preceded by a La Niña event—a change in global weather conditions associated with cool sea surface temperatures in the Pacific Ocean—which, some scientists speculate, may have altered the migratory patterns of birds, possibly increasing their interactions with domestic animals and enabling genetic reassortment and the rise of new pandemic strains of influenza viruses.

Influenza pandemic preparedness

Because influenza epidemics and pandemics can devastate large regions of the world very quickly, WHO constantly monitors influenza disease activity on a global scale. This monitoring is useful for gathering information that can be used to prepare vaccines and that can be disseminated to health centres in countries where seasonal influenza outbreaks are likely to occur. Monitoring by WHO also plays an important role in preventing and preparing for potential epidemics and pandemics.

In the event that a potentially pandemic influenza virus emerges, WHO adheres to its influenza pandemic preparedness plan. This plan consists of six phases of pandemic alert. Phases 1–3, which are the early stages in pandemic preparedness, are designed to prevent or contain small outbreaks. In these early phases, isolated incidences of animal-to-human transmission of an influenza virus are observed and provide warning that a virus has pandemic potential. Later, small outbreaks of disease may occur, generally resulting from multiple cases of animal-to-human transmission. Phase 3 signals to affected countries that the implementation of efforts to control the outbreak is needed to prevent a pandemic. Phases 4 and 5 are characterized by increasing urgency in mitigating the outbreak. Confirmed human-to-human viral transmission, with sustained disease in human communities which subsequently spread so that disease transmission between humans occurred in two countries, indicates that a pandemic is imminent. Phase 6, the highest level of pandemic alert, is characterized by widespread disease and sustained transmission of the virus between humans. Influenza pandemics sometimes occur in waves. Thus, a post-pandemic phase, when disease activity decreases, may be followed by another period of high prevalence of disease. As a result, influenza pandemics may last for a period of months (see pandemic).

Transmission and symptoms

The flu may affect individuals of all ages, though the highest incidence of the disease is

among children and young adults. Influenza is generally more frequent during the colder months of the year. Infection is transmitted from person to person through the respiratory tract, by such means as inhalation of infected droplets resulting from coughing and sneezing. As the virus particles gain entrance to the body, they selectively attack and destroy the ciliated epithelial cells that line the upper respiratory tract, bronchial tubes, and trachea. The incubation period of the disease is one to two days, after which the onset of symptoms is abrupt, with sudden and distinct chills, fatigue, and muscle aches. The temperature rises rapidly to 38–40 °C (101–104 °F). A diffuse headache and severe muscular aches throughout the body are experienced, often accompanied by irritation or a sense of rawness in the throat. In three to four days the temperature begins to fall, and the person begins to recover. Symptoms associated with respiratory tract infection, such as coughing and nasal discharge, become more prominent and may be accompanied by lingering feelings of weakness. Death may occur, usually among older people already weakened by other debilitating disorders, and is caused in most of those cases by complications such as pneumonia or bronchitis.

Treatment and prevention

The antiviral drugs amantadine and rimantadine have beneficial effects on cases of influenza involving the type A virus. However, viral resistance to these agents has been observed, thereby reducing their effectiveness. A newer category of drugs, the neuraminidase inhibitors, which includes oseltamivir (Tamiflu) and zanamivir (Relenza), was introduced in the late 1990s; these drugs inhibit both the influenza A and B viruses. Other than this, the standard treatment remains bed rest, ingestion of fluids, and the use of analgesics to control fever. It is recommended that children and teenagers with the flu not be given aspirin, as treatment of viral infections with aspirin is associated with Reye syndrome, a very serious illness.

Individual protection against the flu may be bolstered by injection of a vaccine containing two or more circulating influenza viruses. These viruses are produced in chick embryos and rendered noninfective; standard commercial preparations ordinarily include the type B influenza virus and several of the A subtypes. Protection from one vaccination seldom lasts more than a year, and yearly vaccination may be recommended, particularly for those individuals who are unusually susceptible to influenza or whose weak condition could lead to serious complications in case of infection. However, routine immunization in healthy people is also recommended. Advances in scientific understanding of influenza and vaccine technologies enabled the development of a so-called universal influenza

vaccine, capable of protecting individuals against a broad range of different influenza subtypes; the vaccine was scheduled for initial testing in clinical trials involving human subjects in 2019.

In order to prevent human-infecting bird flu viruses from mutating into more dangerous subtypes, public health authorities try to limit the viral "reservoir" where antigenic shift may take place by ordering the destruction of infected poultry flocks.

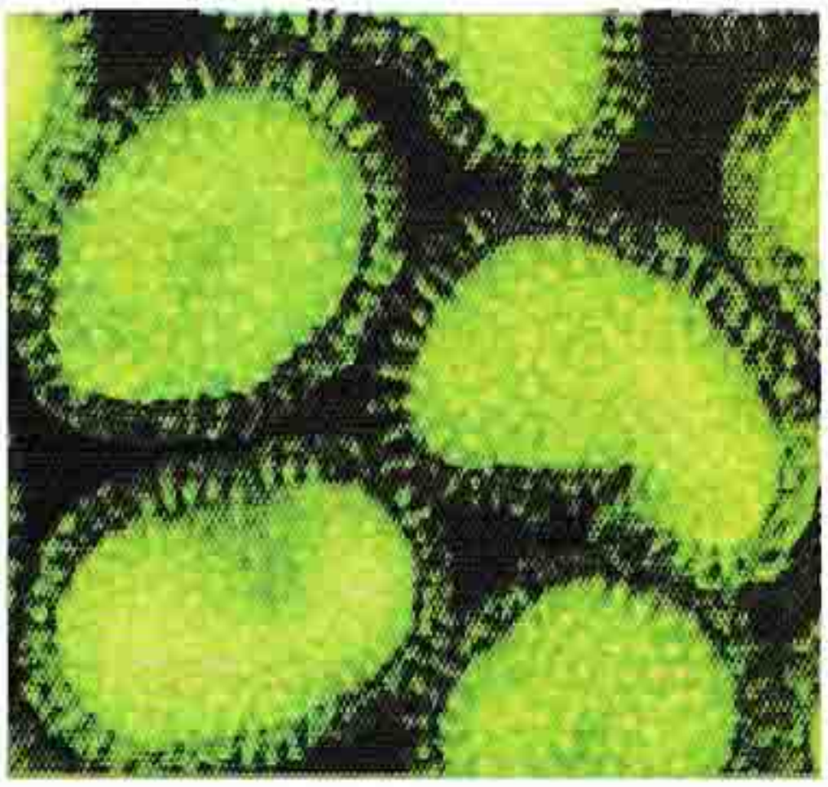
Influenza : Overview and Updates

OVERVIEW :Topics

- Influenza
- Seasonal Influenza
- Avian Influenza
- Animal Influenza
- Pandemic Influenza
- Pandemic Threat
- Prevention and Control

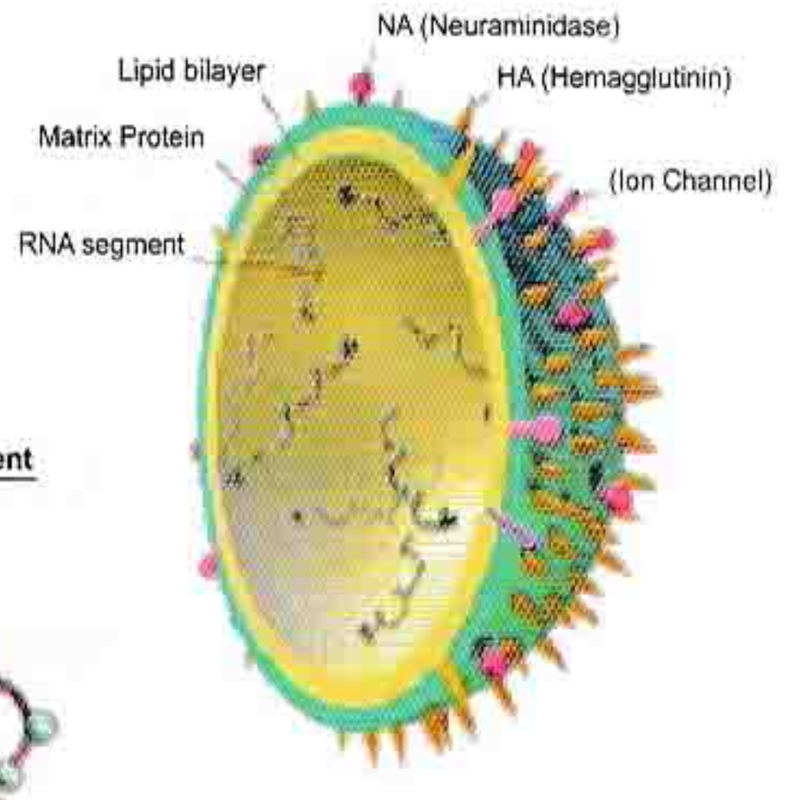
Key Characteristics: Influenza Virus

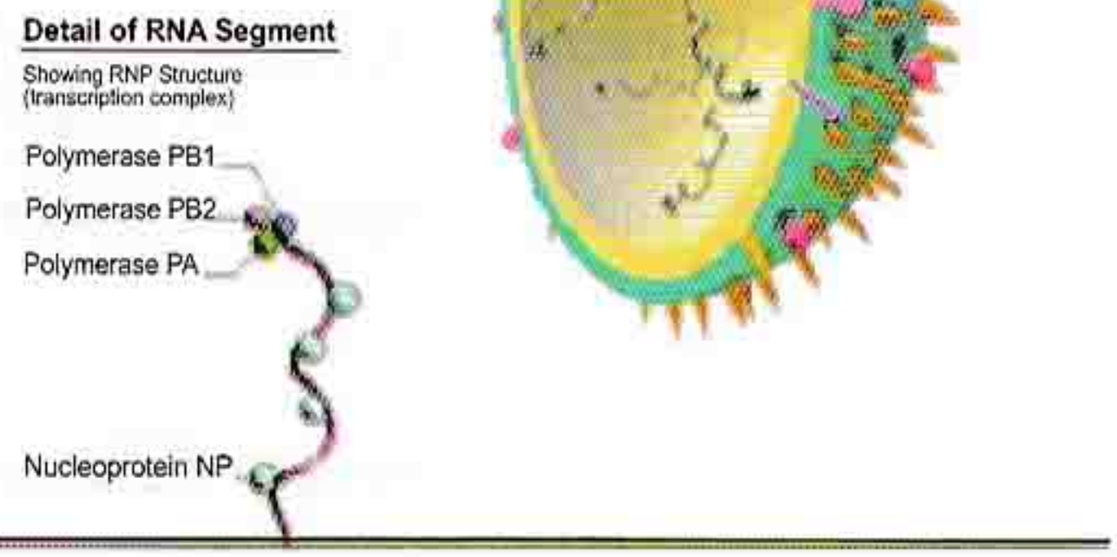
- Member of the Orthomyxovirus family, which consists of the genera:
  - Influenza A: Human, Bird and Animal
  - Influenza B: Only Human
  - Influenza C: Only Human
- In humans, only influenza A virus are of epidemiological interest.



RNA virus

Influenza Virus





Surface glycoproteins:

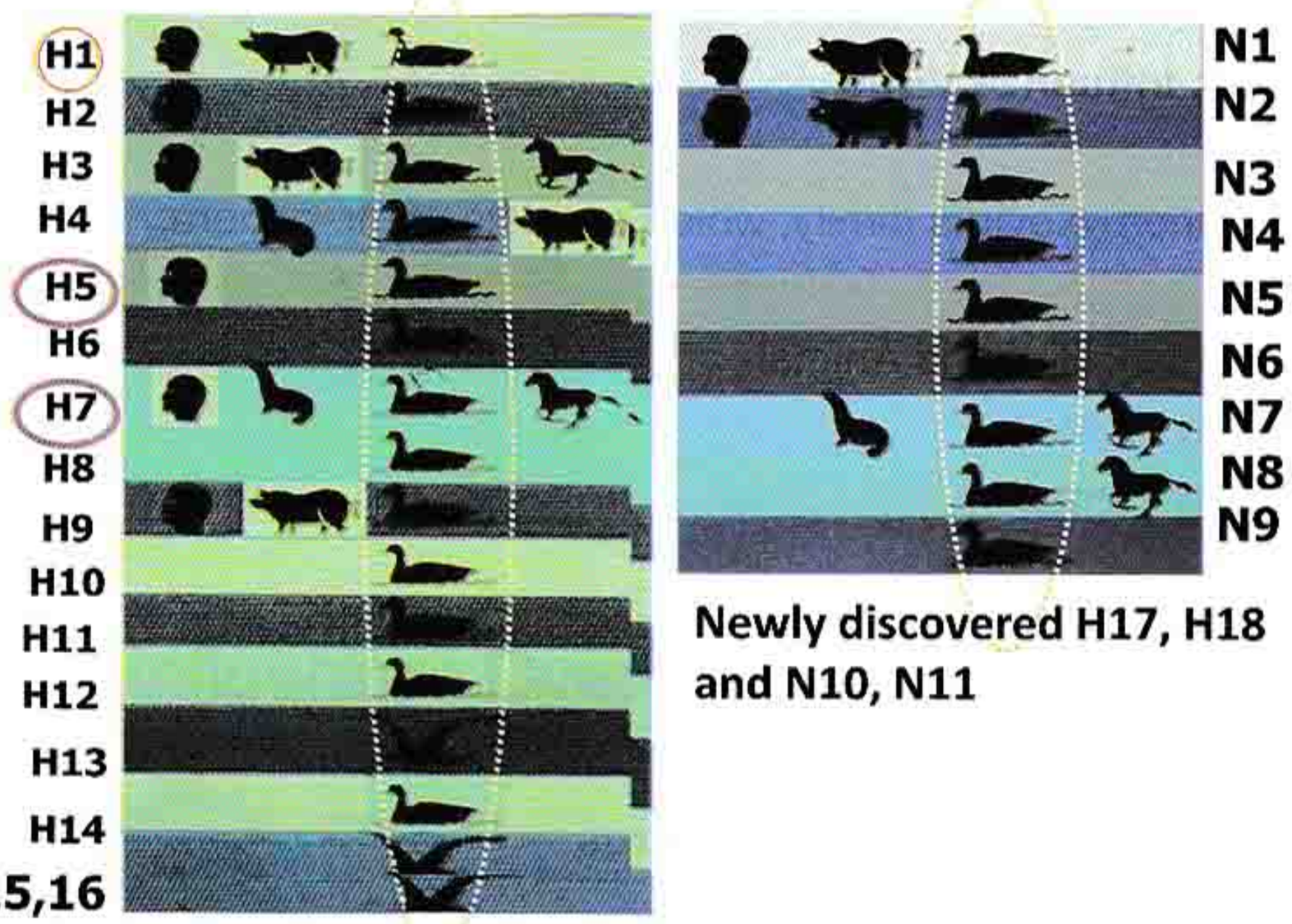
H / HA- haemagglutinin

N / NA - Neuraminidase

Subtypes of Influenza A

- Combination of surface proteins determines Subtypes of Influenza A
- H _N
- Hemagglutinin (18 known types)
- Neuraminidase (11 known types)

Species Infected by Influenza A,
HA and NA Subtypes



Influenza Virus - Characteristics

■ Antigenic "drift" – minor changes in the antigenic composition constantly occurring – able to elude host defences

■ Antigenic "shift" – ability to swap or "re-assort" genetic materials and merge resulting in a novel subtype different from both parent viruses

Mixing (Reassortment) of Influenza Virus

Virus from Animal/Bird/Poultry

Two viruses infecting same person

Virus from Human

Substituted segment

New Virus in another human

Mixing in Human

Key Characteristics: Influenza Virus

Influenza viruses are:

Enveloped

Segmented

RNA virus

Average diameter : 120 nm

Mortality Impact of Past Pandemics

- **1918-19 Spanish Flu (H1N1)**
  - ~ 50 million deaths worldwide
- **1957-58 Asian Flu (H2N2)**
  - ~ 1 - 2 million deaths worldwide
- **1968-69 Hong Kong Flu (H3N2)**
  ~ 700,000 deaths worldwide
- **2009-H1N1 Pandemic 2009**
  ~ 18300+ deaths worldwide

Seasonal Influenza and Deaths

- Annual Deaths in USA: 36000-40000
- No annual data from India
- No annual data from Bangladesh
- Deaths usually from complications:
    - People with asthma/COPD
    - People with diabetes
    - People with heart disease and those who have had a stroke
    - Adults 65 and older
    - Pregnant women
    - People who have HIV or AIDS
    - People who have cancer
    - Children younger than 5, but especially children younger than 2 years old

Bangladesh Situation

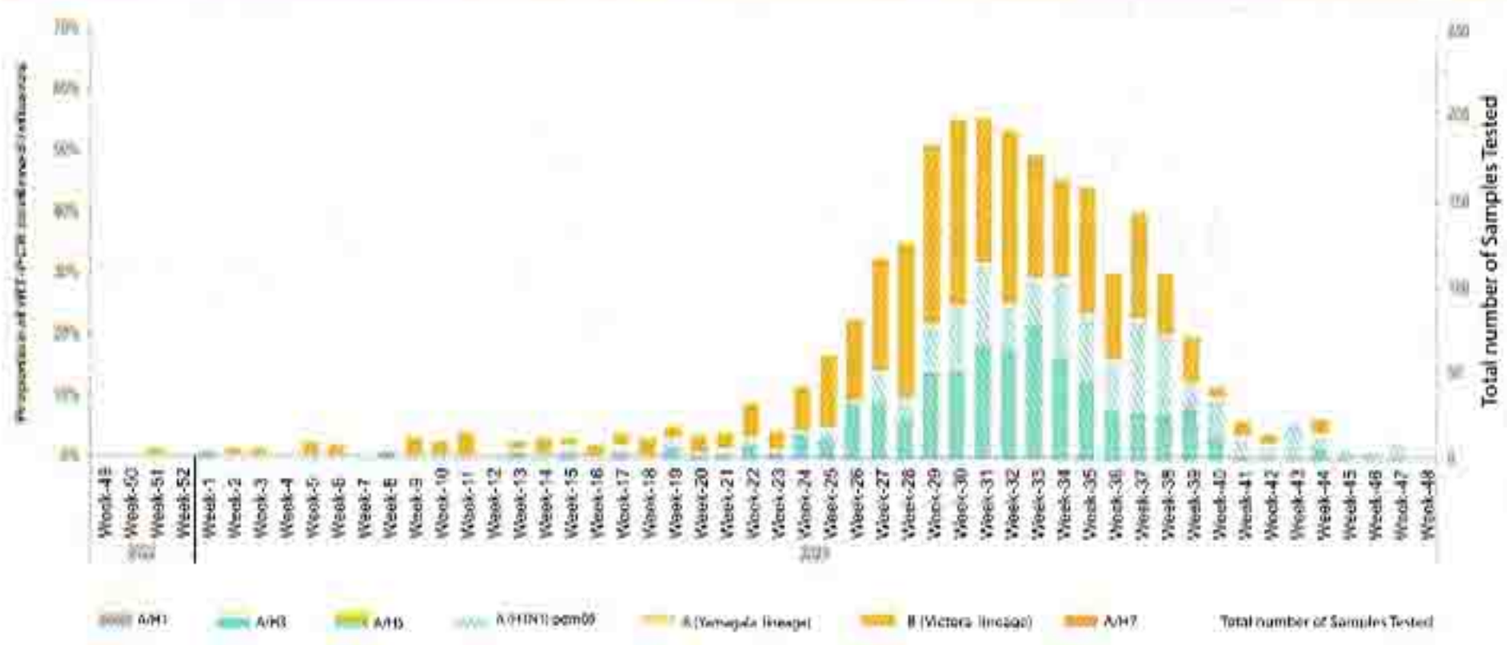
- Season starts in April
- 2 cases of A(H1N1)pdm09 identified
    - Both travel to India
- One case identified from a surveillance site (Dinajpur Medical College)
- All are mild cases
- IEDCR/NIC/icddrb have 25 surveillance sites of influenza to monitor the situation

Seasonal Influenza in Circulation

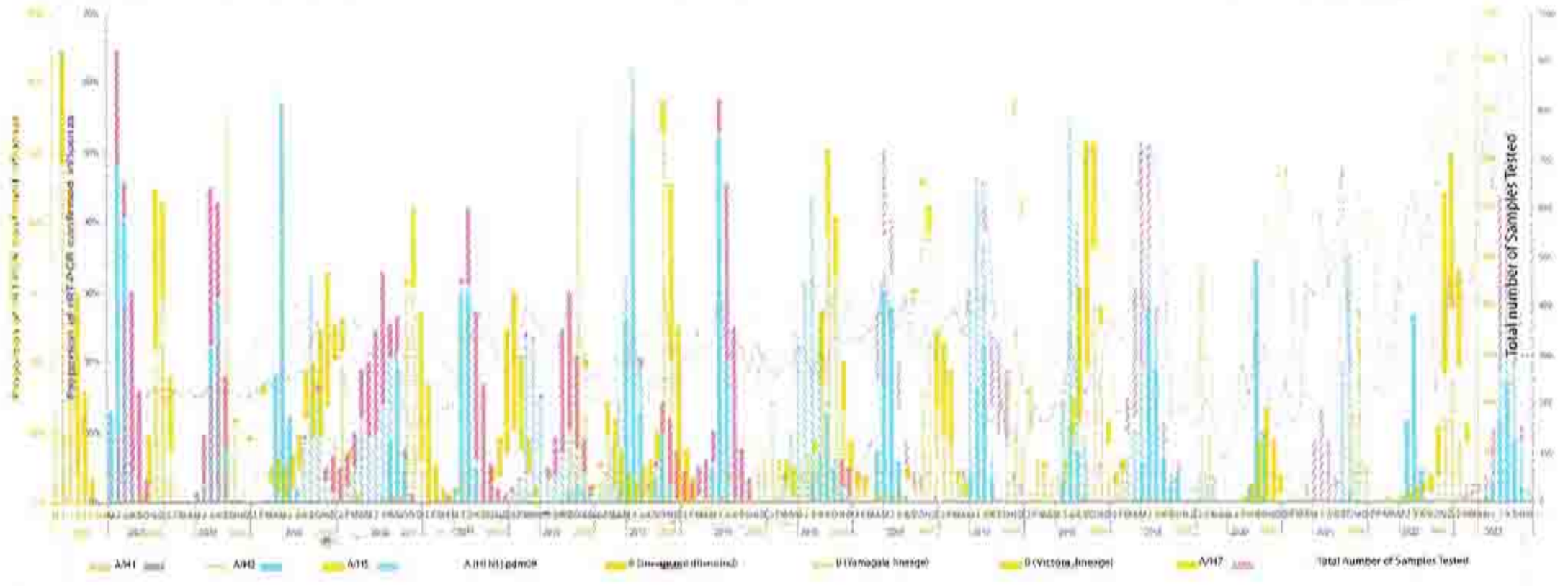
- A/H3N2 (After 1968-69 pandemic)
- A/H1N1pdm09 (known as Swine flu) after H1N1 Pandemic 2009
- Influenza B

Bangladesh Situation: Flu net

Hospital based influenza surveillance Influenza seasonality graph Week 49 of 2022 to week 48 of 2023



Hospital based influenza surveillance Influenza seasonality graph May 2007 - November 2023



Note: Influenza B lineages initiated on January 2016

ransmission

- Seasonal human influenza viruses are spread from person to person primarily through large-particle respiratory droplet transmission (e.g., when an infected person coughs or sneezes near a susceptible person).
- Transmission via large-particle droplets requires close contact between source and recipient persons, because droplets do not remain suspended in the air and generally travel only a short distance (<1 meter) through the air.
- Contact with respiratory-droplet contaminated surfaces is another possible source of transmission.
- The potential for ocular, conjunctival, or gastrointestinal infection .
- Transmission from infected persons to close contacts might be common.
- All respiratory secretions and bodily fluids (diarrheal stool) of Seasonal Influenza cases should be considered potentially infectious.

omplications of Seasonal Influenza

- Clinicians should expect complications to be similar to seasonal influenza:
- exacerbation of underlying chronic medical conditions,
- upper respiratory tract disease (sinusitis, otitis media, croup)
- lower respiratory tract disease (pneumonia, bronchiolitis, status asthmaticus),
- cardiac (myocarditis, pericarditis),

- musculoskeletal (myositis, rhabdomyolysis),
- neurologic (acute and post-infectious encephalopathy, encephalitis, febrile seizures, status epilepticus),
- toxic shock syndrome, and
- secondary bacterial pneumonia with or without sepsis.

Antiviral for treatment of Seasonal Influenza

Agent, group	Treatment

Zanamivir

Adults	Two 5-mg inhalations (10 mg total) twice per day
Children	Two 5-mg inhalations (10 mg total) twice per day (age, 7 years or older)

Seasonal Influenza Vaccines

Composition

- A/H3N2
- A/H1N1pdm09 (known as Swine flu) after H1N1 Pandemic 2009
- Influenza B

Why should I get the flu vaccine?

- There are lots of reasons to get a flu vaccine each year.
- Flu vaccination can keep you from getting sick from flu. Protecting yourself from flu also protects the people around you who are more vulnerable to serious flu illness.
- Flu vaccination can help protect people who are at greater risk of getting seriously ill from flu, like older adults, people with chronic health conditions and young children (especially infants younger than 6 months old who are too young to get vaccinated).
- Flu vaccination also may make your illness milder if you do get sick (Belshe, 1998).
- Flu vaccination can reduce the risk of more serious flu outcomes, like hospitalizations and deaths.

Preparation of Bangladesh

- Emergency Meeting chaired by Honorable Health Minister at Airport
- Training of the health personnel at all level
- Limited stockpile of Tamiflu (WHO)
- Check post and medical teams at all POEs (Point of entry)
- Anyone coming from India with fever should contact with NIC/IEDCR
- Precautionary messages to go to Newspapers and other medial (Health Education)
- National Pandemic preparedness plan should be updated
- Director CDC and Director IEDCR will work as spokespersons
- DGHS/CDC/IEDCR asked to take preparation
- Stockpiling Drugs/PPE
- Vaccines
- Diagnostics facilities

Laboratory Facilities

- Bangladesh is well capable of diagnosis of Influenza A H1N1/H3N2/H5N1/H9N2/H7N9 at Laboratory of IEDCR and ICDDRB with Realtime RT-PCR to provide confirmatory results within 24 hours
- IEDCR is National Influenza Center (NIC), Bangladesh nominated by WHO
- Arrangements have been made with CDC (USA) and WHO for further analysis of the viruses
- BSL 3 labs of IEDCR and ICDDRB are functioning

Wash hands thoroughly with soap frequently

Cover coughs and sneezes

Wear a mask if symptomatic

Don't spit!

Clinical Feature and Management of Influenza

Learning objectives

- Clinical features
- Diagnosis
- Management

General

The influenza A and B viruses that routinely spread in people are responsible for seasonal flu epidemics each year. Over the course of a flu season (which typically occurs between April and September), different types of influenza are passed from person-to-person, causing illness.

A novel influenza virus is an influenza A virus with a subtype that is different from the flu viruses that usually spread in people (H3N2 and H1N1). Some examples include H7N9, and H5N1.

Difference between Human and Avian influenza

	Human influenza	Avian influenza
Affected age group	• All ages affected • Highest attack rate in children < 5 •Most complications in elderly >60 years	• Children<5 years • Healthy young adults • Adolescent
Estimated incubation period	• Mean: 2 days • Range: 1 – 3 days	• Mean: 2 – 3 days • Range: 2 – 8 days

A. Clinical Sign and symptoms Avian influenza virus H5N1

Type of infection	Lower respiratory
Symptoms	Fever, cough, Headache, coryza Sore throat, myalgia. shortness of breathe
Severe cases Hospitalized patients	Respiratory distress, Hypoxia Pneumonia, ARDS

Epidemiological Criteria

B. Epidemiological linkage

- A patient has had contact with one or more persons who either have or had the disease AND
- Transmission of the agent the usual mode of transmission is plausible. OR
- A case may be considered epidemiologically linked to a lab confirmed case if at least one case in the chain of transmission is lab confirmed.

C. Laboratory Findings

Commonly associated with avian influenza H5N1:

– Drop in white blood cell count

– Mild to moderate drop in blood platelet

– Increased aminotransferase

Case Definitions

All patients of seasonal influenza and influenza caused by avian influenza virus- H5N1, H7N9 or other novel viruses will be managed by following the clinical case definition for influenza.

The epidemiological case definition will be used for epidemiological purpose along with outbreak investigation and response for Human Avian Influenza.

Epidemiological Case Definitions

Epidemiological Case definitions for Human Avian influenza caused by H5N1, H7N9 and other novel virus

Human avian influenza is categorized in to following three types

Suspected case

Probable case

Confirmed case

Suspected case

A person presenting with acute lower respiratory illness with fever (>38 ºC)

AND

One or more of the following exposures in the 7 days prior to onset of symptoms:

Contact:

Close contact (within 1 meter) with a person who is a suspected, probable, or confirmed Human Avian Influenza case.

Exposure (e.g. handling, slaughtering, de feathering, butchering, preparation for consumption) to poultry or wild birds or to environments contaminated by their faeces or consumption of raw or undercooked poultry products in an area where H5N1 or other novel avian influenza virus infections in animals or humans have been suspected or confirmed in the last month.

Close contact with a suspected H5N1 or other novel avian influenza virus infected animal other than poultry or wild birds (e.g. cat / pig / horse).

Handling laboratory specimen samples suspected of containing H5N1 or other novel avian influenza virus.

Criteria

Probable case

A person meeting the criteria for a suspected case

AND

One of the following additional criteria:

- Radiological evidence of pneumonia plus evidence of respiratory failure, OR
- Positive laboratory confirmation of an influenza A infection (RDIT) but insufficient laboratory evidence for H5N1 or other novel avian influenza virus infection. OR
- A person dying of an unexplained acute respiratory illness who is considered to be epidemiologically linked by time, place, and exposure to a probable or confirmed H5N1 or other novel avian influenza virus case.

Tests

Confirmed case

A person meeting the criteria for a suspected or probable case
AND

One of the following tests should be positive (conducted in a national, regional or international influenza laboratory whose H5N1 test results are accepted by WHO as confirmatory):-

- Isolation of an H5N1, H7N9 virus
- Positive H5 PCR results from tests using two different PCR targets, e.g. primers specific for influenza A and H5 HA
- A fourfold or greater rise in neutralization antibody titer for H5N1 based on testing of an acute serum specimen (collected 7 days or less after symptom onset) and a convalescent serum specimen. The convalescent neutralizing antibody titer must also be 1:80 or higher
- A microneutralization antibody titer for H5N1 of 1:80 or greater in a single serum specimen collected at day 14 or later after symptom onset and a positive result using a different serological assay.

Clinical Case Definition of human Influenza

Clinically Influenza is categorized as three types:

- Uncomplicated influenza without risk factors
- Uncomplicated influenza with Risk factors
- Complicated or severe influenza

Patient presenting with

Uncomplicated Influenza without risk factors:

- Influenza-like illness (ILI) symptoms include:

  1.Fever, cough, sore throat
  2. rhinorrhea / nasal congestion or
  3. headache, muscle pain, and malaise
  4. no shortness of breath or dyspnoea

Patients may present with some or all of these symptoms.

- Gastrointestinal symptoms, such as diarrhoea and/or vomiting, may also be present
- specially in children, but without evidence of dehydration.
- Some patients with uncomplicated illness may experience atypical symptoms and may not have fever.

Risk factors are

.Uncomplicated influenza with Risk factors

A person meeting the criteria for uncomplicated influenza.
AND
Presence of at least one of the following risk factors.

- Infants and children <2 years
- Pregnant women
- Persons with chronic pulmonary disease (e.g. asthma, COPD)
- Persons with diabetes mellitus, congestive cardiac failure
- Persons with chronic disease such as; renal, hepatic, neuromuscular, neurocognitive and seizure disorders.
- Immune suppression due to disease such as; cancer, HIV or drugs.
- Hemoglobinopathies
- Persons aged 65 years and older
- Person with morbid obesity, BMI > 40
- Children receiving long term aspirin therapy

CRITERIA

Complicated or severe influenza/ Severe Acute Respiratory Illness (SARI)	• Presenting with shortness of breath, tachypnoea, hypoxia, cyanosis. • and/or radiological signs of lower respiratory tract disease (e.g. pneumonia), • Central nervous System involvement (e.g. encephalopathy, encephalitis), • Severe dehydration • Developing secondary complications, such as renal failure, multiorgan failure, septic shock, rhabdomyolysis or myocarditis. • Exacerbation of underlying chronic disease, including asthma, chronic obstructive • pulmonary disease (COPD), chronic hepatic or renal insufficiency, diabetes, or congestive cardiac failure.
A person meeting the criteria for influenza with risk factor AND Presence of at least One of the following criteria:	Presence of any of the Danger Signs listed below - • Symptoms and signs suggesting respiratory failure • Symptoms and signs suggesting CNS complications such as; convulsion, impaired consciousness, severe weakness or paralysis. • Evidence of secondary bacterial infection • Severe dehydration

2. Diagnosis of influenza

Let us look for the diagnosis of avian influenza

Clinical Specimens for Testing Influenza A (H5N1)

- Lower Respiratory Tract*
  - Broncheoalveolar lavage
  - Tracheal aspirate
  - Pleural fluid tap
  - Sputum– Spontaneous/ induced
- Upper Respiratory Tract
  - Nasopharyngeal swab/aspirate
  - oropharyngeal swabs*
  - Nasal Swab

* Preferred specimens

Clinical Specimens for Testing.....

Serology:

- Acute and convalescent serum specimens:
  Acute collected within 1 week of symptom onset
  Convalescent collected 2-4 weeks after symptom onset

- Other infections or concurrent illness:
  Specimens should be collected within 3 days of symptom onset
  Collect all possible specimens, serial collection

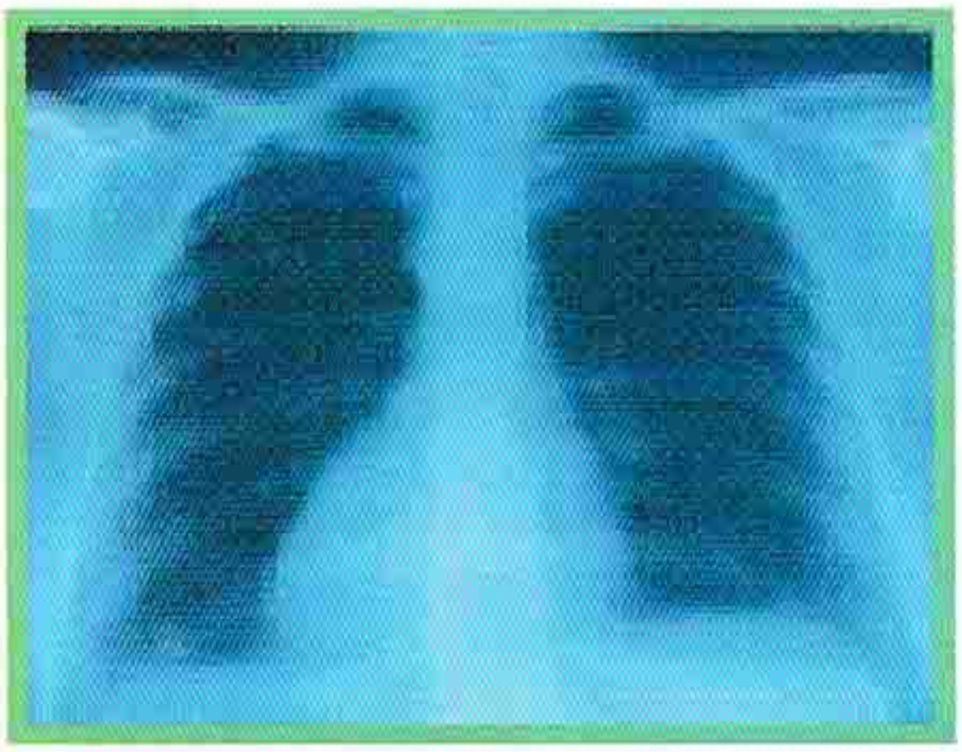
Laboratory diagnostic tests

- Isolation of virus
- Serology
  a) CFT
  b) Haemagglutination inhibition

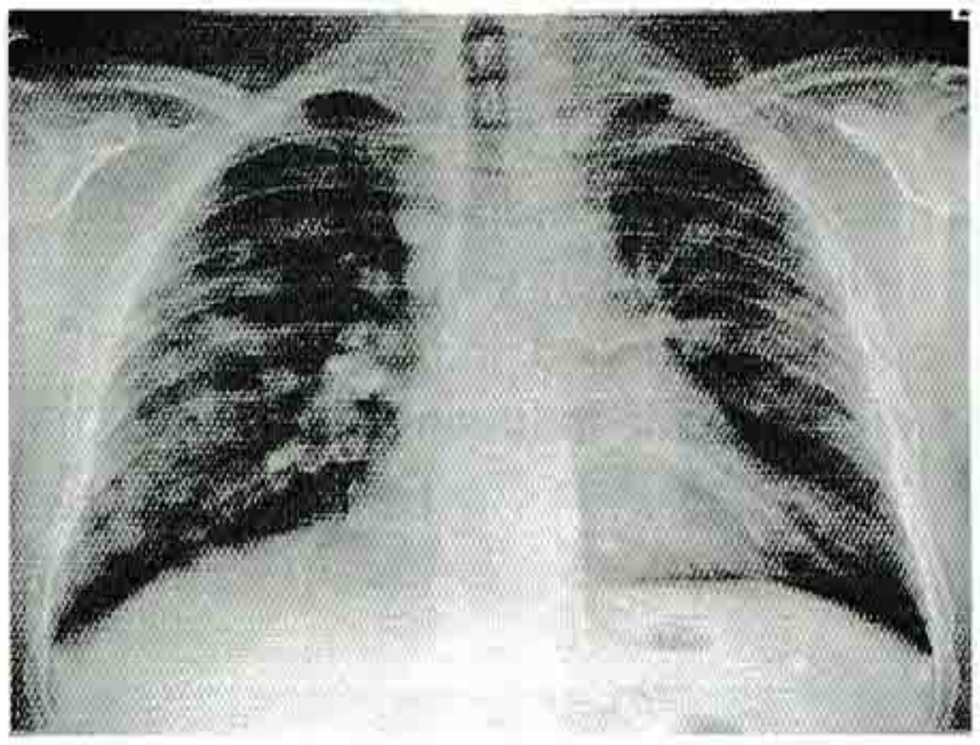
- Rapid Diagnosis technique –
  a) PCR-- Throat swab, secretion, stool.
  b) Gene amplification
  c) ELISA

IMAGING

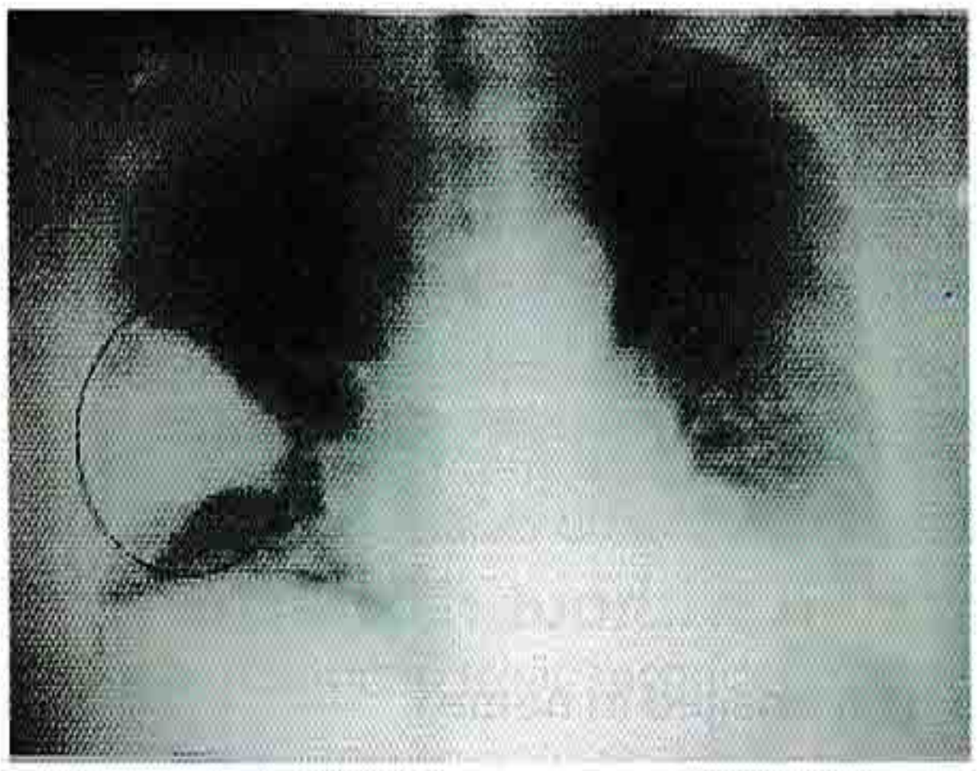
Chest x-ray of an avian influenza H5N1 patient, shown by day of illness



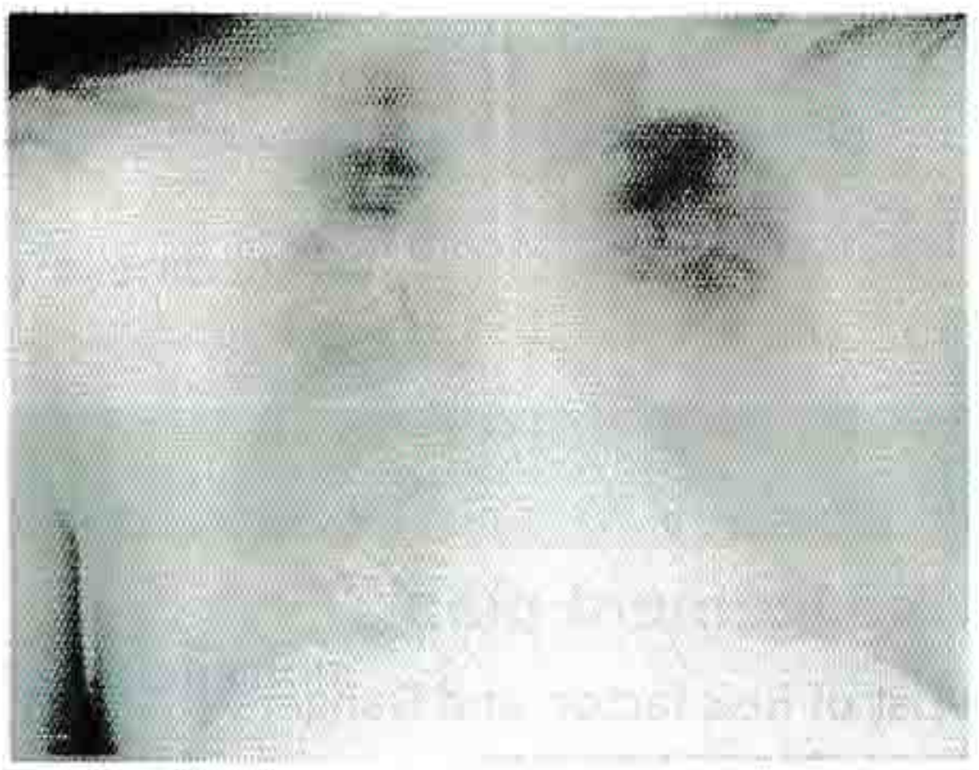
Day 5



Day 7



Day 10



3. Management of Influenza

Let us have some conception about the management of influenza

Management plan for Influenza

Uncomplicated patients with or without risk factors can be managed at home and complicated patients with SARI should be managed in hospital according to the following plan:

Uncomplicated without risk factors:

- Patient should be managed in home
- Home isolation and social distancing till symptoms resolve (about 7 days).
- Adequate fluid and nutrition.
- Supportive care (rest, adequate nutrition and oral fluid)
- Paracetamol as required (Do not use Aspirin /NSAID)
- Antihistamine if needed
- Respiratory etiquette
- No antiviral (Oseltamivir) is recommended for seasonal influenza.
- Health care personnel with ILI should be treated with Oseltamivir during an outbreak of influenza.
- Cases suspected to be infected by H5N1, H7N9 or other novel virus should be immediately treated with Oseltamivir.

Management plan

- List of Risk factor and Danger sign has been described previous section

Uncomplicated without risk factors:

- Patient should be managed in home
- Home isolation and social distancing till symptoms resolve (about 7 days).
- Adequate fluid and nutrition.
- Supportive care (rest, adequate nutrition and oral fluid)
- Paracetamol as required (Do not use Aspirin /NSAID)
- Antihistamine if needed
- Respiratory etiquette
- Watch for danger sign, if appear hospitalize the patient.
- Antiviral (Oseltamivir) is recommended.

Complicated or severe influenza (SARI)

- The patient should be managed in hospital in isolation unit.
- Antiviral drug (Oseltamivir) should be started as early as possible
- Antibiotics should be started empherically sending specimen for sensitivity test.
- Other supportive management should be ensured
- Some patients may need critical care in ICU/HDU setting.
- **Complicated or severe influenza and Uncomplicated Influenza with risk factors if develop danger sign should be admitted in hospital.**

Management of Influenza in Hospital
(Preferably in Isolation Unit)

1. Supportive treatment

Oxygen if necessary

Opening of IV channel and maintenance of nutrition/hydration

Nebulization with bronchodilator if necessary

Antipyretics & antihistamine (Avoid NSAIDs)

2. Antibiotics

Use antibiotic to treat secondary/ super added bacterial infections .

Choose antibiotic by taking into consideration the likely pathogens and local susceptibility measure

Do culture and sensitivity of blood and sputum if required.

3. Steroids

Do not use systemic steroid for managing influenza case unless it is indicated for particular reason.

There is no clear benefit in treating influenza associated pneumonia or ARDS with corticosteroid.

Criteria for shifting patient to ICU

- Respiratory rate:30/min,
- Hypotension- SBP <90mmH or drop of SBP by 40mmHg
- Blood urea: 7mmol/L.
- PaO2 <88-90% with Fio2 at 60%
- PaCO2 >55mmHg.
- Features of Exhaustion and presence of drowsiness
- Evidence of other organ failure requiring support

If any two of the above conditions are met transfer the patient to ICU

Antiviral drug :

1) Amantadine/Rimantadine

a) It inhibits all sub type of influenza A virus

b) No or little action against influenza B or C virus

c) Can be used as prophylaxis & treatment.

2) Neuroaminidase (Oseltamivir / Zanamivir/ Relenza)

a) Prevents virus escaping from host cell.

b) Oseltamivir – For prophylaxis & treatment

c) Zanamivir/Peramivir -- For treatment only

- Both the drugs are chemically neuraminidase inhibitors that have activity against both influenza A and B viruses.
- Oseltamivir is available as 75-mg oral capsules. As oral powder is unavailable, 1 capsule content can be dissolved in 6 ml of water constituting approx. 12mg/ml of oseltamivir.
- Treatment should not wait for laboratory confirmation of influenza.

Dosage of Oseltamivir:

Adult dose

Treatment for acute illness:

- 75 mg orally bid for 5 days .
- Higher doses, 150 mg twice daily for 10 days should be considered in complicated or severe influenza
- and also in influenza caused by H5N1, H7N9 or other novel virus.

Pediatric dose

Treatment for children age <1 year

Age < 14 days : 3mg/kg/dose once daily

Age < 14 days : 3mg/kg/dose bid

Treatment for children age >1 year

< 15 kg : 30 mg orally bid for 5 days

15-23 kg : 45 mg orally bid for 5 days

23-40 kg: 60 mg orally bid for 5 day·

> 40 kg: 75 mg administer as in adults

Dose in special situations:

Pregnancy and lactating mother:

Oseltamivir is considered safe and there is no need of dose or duration adjustment.

Renal Impairment

Dose adjustment is recommended for adults with

Cr. Clearance	dose for Rx
> 60 (ml/min)	75 mg twice daily
> 30 to 60 (ml/m	30 mg (suspension or capsules) twice daily
> 10 to 30 (ml/min)	30 mg (suspension or capsules) once daily
10 (ml/min)	Not recommended (no data available)

Hemodialysis patients- 30 mg after each hemodialysis session

Peritoneal dialysis patients- 30 mg (suspension or capsules) single dose

Side effects of Oseltamivir

- Oseltamivir is usually well tolerated.
- Occasional adverse effects are seen such as- Nausea, vomiting, abdominal pain, dyspepsia, diarrhea, headache, fatigue, insomnia, dizziness, conjunctivitis, epistaxis, rash etc.
- Rarely hypersensitivity reaction and very rarely acute hepatitis and Steven Johnson Syndrome may occur.

Case Management of Suspected Avian Influenza H5N1 Infection During a Poultry Outbreak.

Question 1 – Based on this information, what illness would you suspect this patient has?

Suggested answer – The patient could have a number of illnesses, but viral respiratory infection is likely.

Question 2 – Do you think the patient has influenza (human or avian)?

Suggested answer – Although she is now presenting with respiratory symptoms and other symptoms of influenza, you would probably not suspect the patient has avian influenza infection. The symptoms are not specific for influenza (human or avian) and may represent other respiratory illnesses.

Question 3 – Dr. Zaber asks you, "Could this be avian influenza H5N1?" What is your reply? Why or why not? What other information would you like to know?

Suggested answer – Based on her signs and symptoms, and the possibility that H5N1 influenza could have spread from epidemic area, it cannot be ruled out.

However, you need to know if she had any potential exposures within 10 days of her symptom onset.

Other information you may want to know includes, "Was she in any area with known or suspected H5N1 activity?" "What is her occupation?"and "Did she have contact with birds?" and "Did she travel before she became sick?

A patient

- **You are in your hospital when you receive a phone call from Dr. Zaber at Community Hospital. A 39-year old female named Mrs Ayesha begum has just been admitted. She first visited her primary care physician on 8th February. Her symptoms began on 7th February and included a fever (38 C/100.4 F), nausea, and cough. Her white blood cell count was low as well as her lymphocyte count.**
- **The platelet count was normal. Amoxicillin was prescribed.**

Additional Background

- **Dr. Zaber continues. He tells you on February 11, Ayesha went back to her primary care physician as she began to have shortness of breath. Her physician recommended her to be admitted to local hospital.**
- **A chest x-ray was performed. She had patchy infiltration in the lower region of both of her lungs. Treatment with ceftriaxone and azithromycin was given.**

Question 4– To date, do any symptoms indicate human influenza infection?

Which symptoms might indicate avian influenza H5N1 infection?

Suggested answer –

⊠⊠ Symptoms that might indicate seasonal influenza: fever, cough

⊠⊠ Symptoms that might indicate avian influenza: fever, diarrhea, vomiting, and nausea. Ayesha also has respiratory symptoms of cough and shortness of breath. Her respiratory rate is high, her x-rays indicate respiratory distress, and her arterial blood oxygen level is low.

Laboratory profile: drop in lymphocyte count also common in avian influenza

Infection

Ayesha`s Current Condition

Shortly before Dr. Zaber contacted you, he checked Ayesha`s status again:

- **She had a fever of 102.9F / 39.4C and a high respiratory rate of 44 breaths per minute. Her heart rate was also high at 140 beats per minute. Her blood pressure was 110/80 mm Hg. A follow up chest x-ray shows diffuse bilateral infiltrates, and her ABG shows Pao2- 48 mmHg.**
- **Dr. Zaber decided to intubate her. Laboratory tests on her blood found a drop in lymphocyte count. Platelet count was normal. The clinical profile indicated she was developing acute respiratory distress syndrome. Dr. Zaber gave her imipenem, azithromycin, and doxycycline. Before that Dr. send the blood for C/S and viral serology. He thinks she may have had poultry exposure but this history was not taken.**

EXPOSURE

- You ask Dr.Zaber if he knows anything more about Ayesha, such as where she lives, her occupation, and if any household contacts are ill. Dr Zaber spoke with Ayesha's husband .
- They live in a rural area.. They have two children living at home, ages 2 and 7. No one else in the family is ill. Ayesha is employed in a Farm where she is a farm hand manager. Her husband noted that a few days before Ayesha became ill, she had come home late one night.
- She had worked overtime- because the farm was seeing more deaths than normal in the flock- assisting in separating sick and dead poultry from apparently healthy poultry.

EXPOSURE

Question 5 – Do you think Ayesha`s is at risk for avian influenza H5N1 infection? If yes, what kind of exposures could she have had?

Suggested answer 5 – It is reasonable to think that the patient is at risk for avian influenza H5N1 infection, pending lab results from the farm. Ayesa could have been exposed to poultry, poultry blood, or feces if a lapse in biosecurity occurred on the farm

Question 6 – What clinical and epidemiological evidence do you have that Ayesha may have avian influenza H5N1 infection? What are the differential diagnoses?

Suggested answer 6– The patient has a number of symptoms that indicate avian influenza H5N1 infection: fever, nausea, cough, shortness of breath, high respiratory rate, and patchy infiltrates in the lungs consistent with respiratory distress, and low arterial blood oxygen. You know that this is not enough evidence to confirm H5N1 infection because the symptoms can also be caused by other illness. However, you know that she may have been exposed to sick or dead poultry through her job. Given all of this information, you suspect avian influenza infection H5N1. Whether the birds at Farm have H5N1 is unknown. Differential diagnoses could include seasonal influenza, bacterial pneumonia, respiratory distress due to primary cardiac problems, ARDS, and other viral pneumonia

Question 7 – Would you recommend testing Ayesha for avian influenza H5N1?Why or why not? If yes, what specimens would you advise Dr. Zaber collect?

Suggested answer 7– Although Ayesha has received a number of antibiotics, testing for avian influenza H5N1 is still possible as viruses are not affected by antibiotics. If possible, collection of oropharyngeal swabs or any specimens from the lower respiratory tract (broncheoalveolar lavage, tracheal aspirate, pleural fluid tap or sputum) is preferred as these have the highest yield.

Question 8 – Would you recommend treating Ayesha for avian influenza H5N1 infection at this point? Why or why not? If you would not recommend treatment, what information would you want before you recommend treatment?

Suggested answer 8– If you would not recommend treatment, you probably are waiting for laboratory confirmation on either the farm or Ayesha. You have assessed that Ayesha has symptoms compatible with avian influenza H5N1 and has had a possible exposure to H5N1. Although there is no laboratory confirmation of H5N1 in poultry in your area, H5N1 activity has been detected in a neighboring area. Therefore it is quite possible that Farm has H5N1 activity. Treatment with antivirals must be done as soon as possible after symptom onset and waiting for laboratory confirmation means a delay in treatment for Ayesha.

Weighing these two issues, it would be best for Ayesha to begin treatment with antivirals immediately, preferably the neuraminidase inhibitor Oseltamivir. If this is not possible, Zanamivir should be given. However, before beginning treatment with either drug, be sure to confirm her pregnancy and nursing status. Pregnant and nursing females should not be given treatment with a neuraminidase inhibitor, but this should be weighed in light of her condition. For Zanamivir, be sure Ayesha has no chronic respiratory conditions as this is a contraindication.

THANK YOU

Reporting Laboratory Investigations and sample/ specimen collection and transport

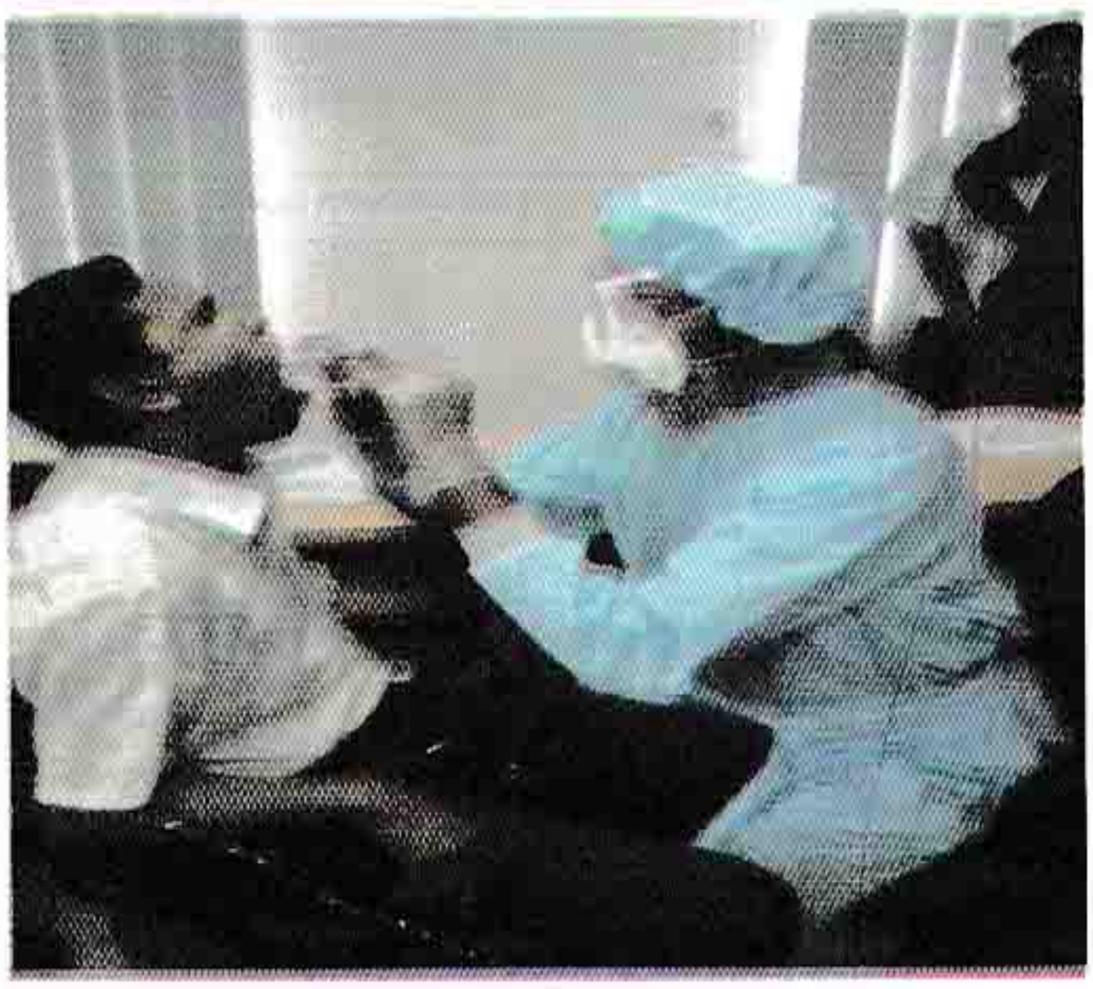
Sample collection:

Type of specimen

1. nasal swab
2. Throat swab
3. Sputum

Sample should be collected in VTM

Precaution during sample collection and aliquot

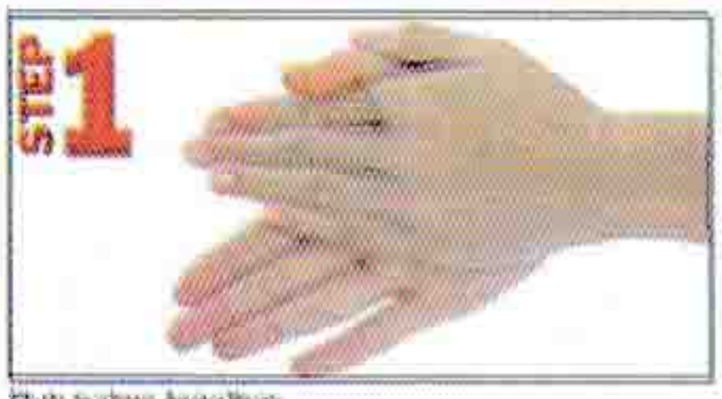


Sample collection

Sample aliquot

Specialized Laboratory Capacity: BSL2

After sample collection



Rub palms together.

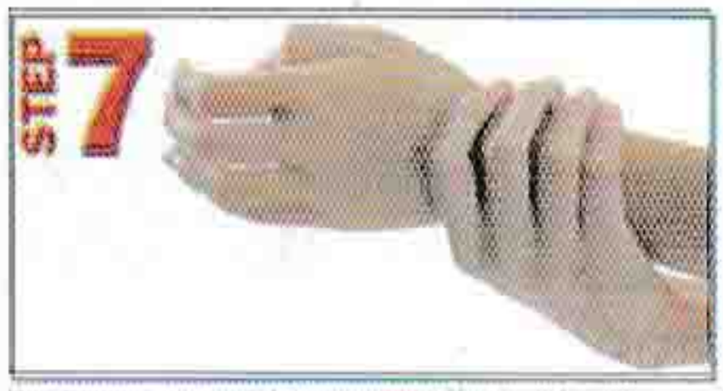
Rub the back of both hands.

Interlace fingers and rub hands together.

Interlock fingers and rub the back of fingers of both hands

Rub thumb in a rotating manner followed by the area between index finger and thumb for both hands.

Rub fingertips on palm for both hands.



Rub both wrists in a rotating manner. Rinse and dry thoroughly.

Hand washing with soap and water

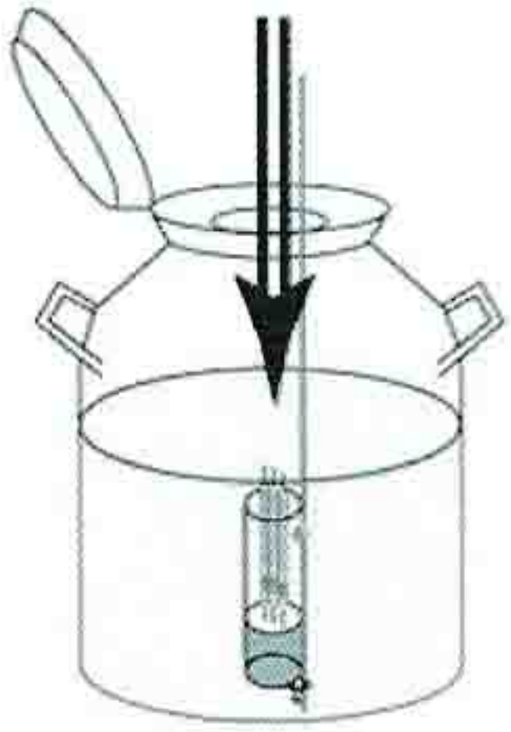
HAND HYGIENE: Using an Alcohol Based Rub

Squirt product into the palm of one hand.

Rub hands together covering all surfaces including fingernails, web spaces, thumbs and palms.

The product will dry in 15-20 seconds; ensure hands are dry before performing another task.

Transportation of Sample



Specimen storage

For short time (< 72 hrs) – 2-8°C
For long time (> 72 hrs) – (-) 70°C
For shipping – dry ice

Waste Disposal Bag / Container

Identification of pathogens in in the laboratory by real time PCR

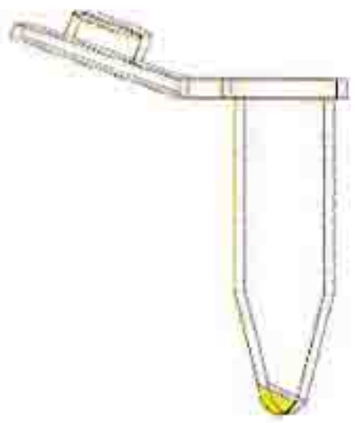
Protocol for real time PCR (RNA virus)

RNA extraction by using RNA extraction kit

Master mix preparation

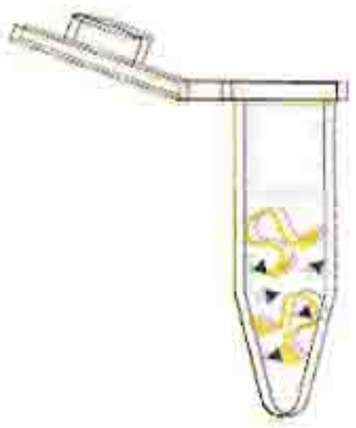
PCR

RNA extraction procedure

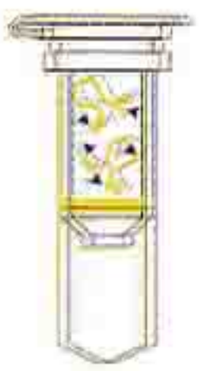


Specimen + proteinase K + lysis buffer

Cell lysis

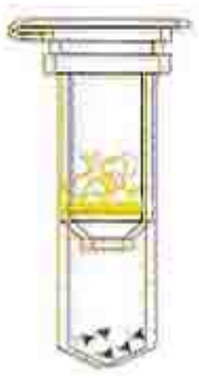


Add ethanol to form RNA ppt



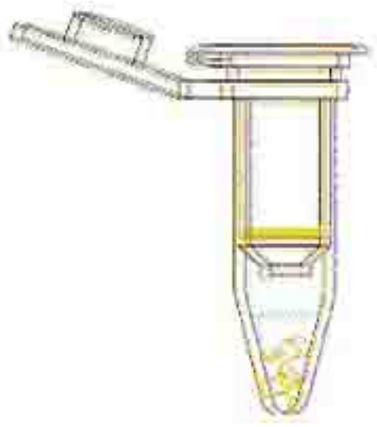
RNA Binding

RNA binding column



Wash

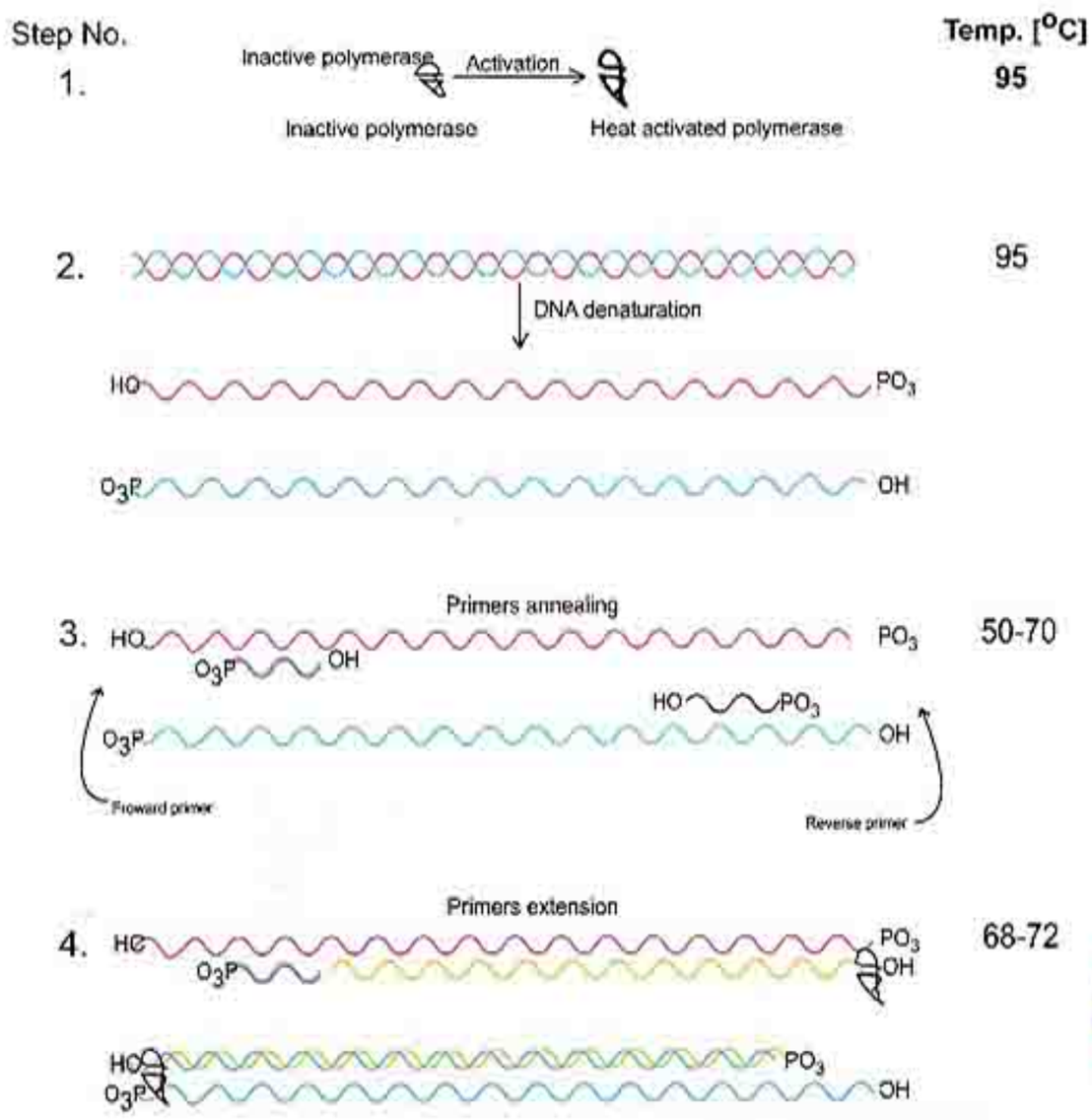
Twice wash buffer

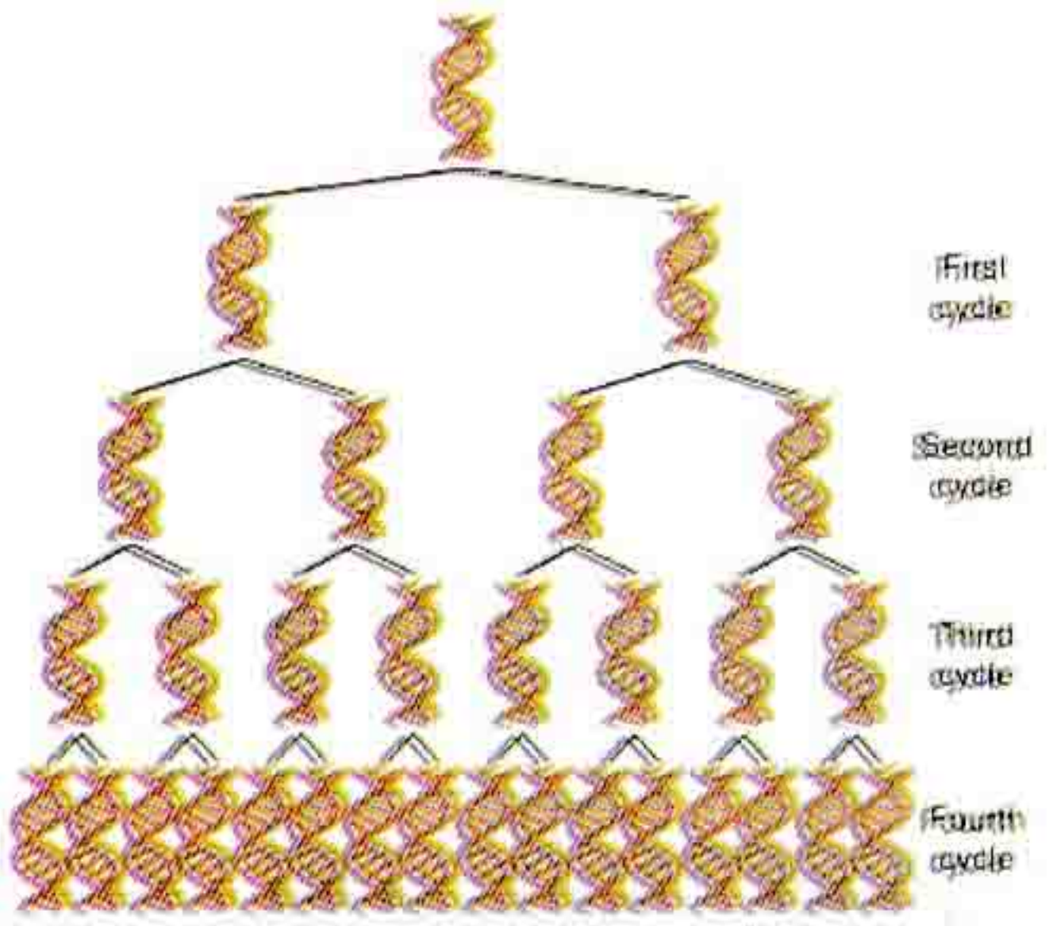


Elution

Elute by nuclease free water

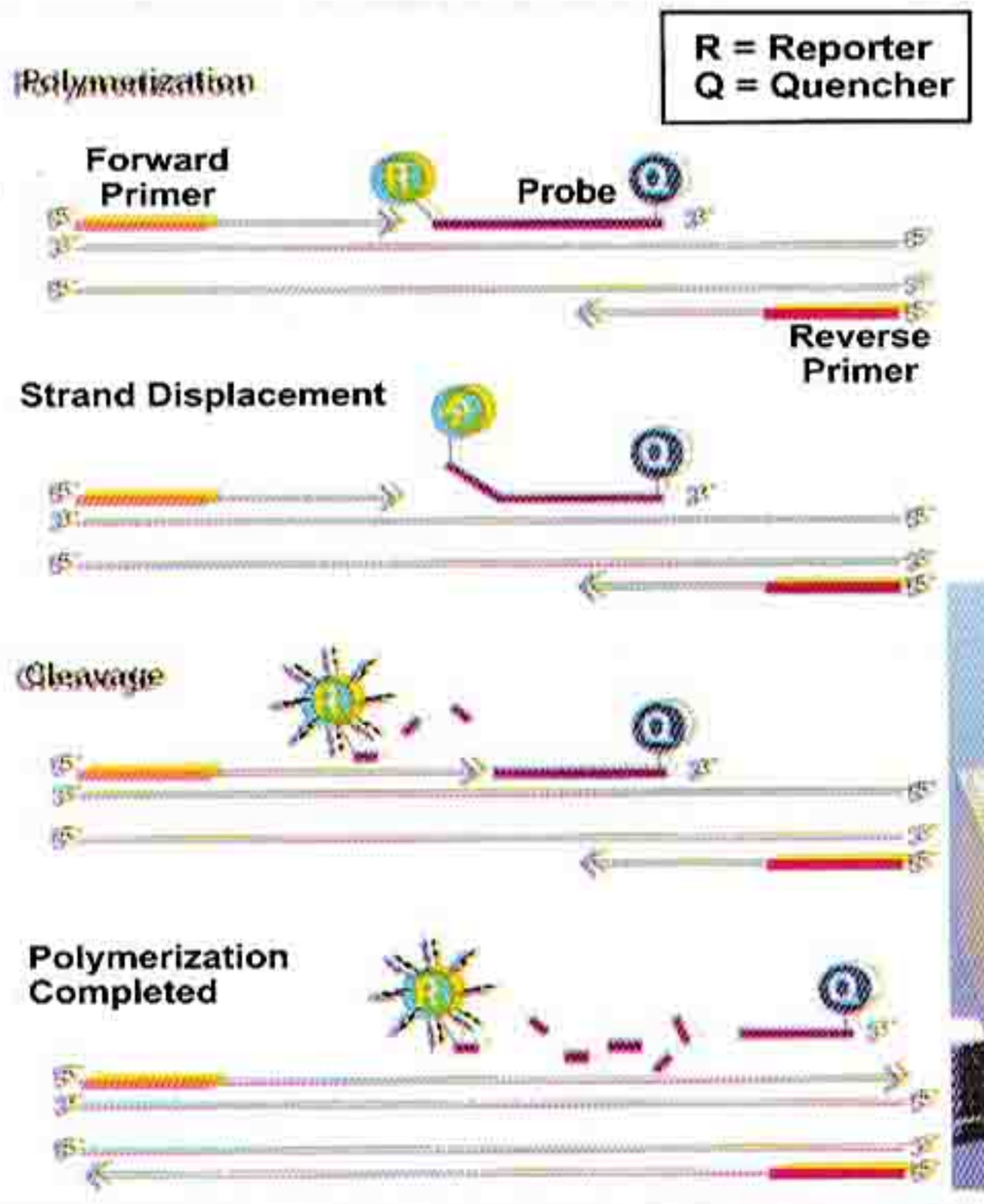
Principle of PCR

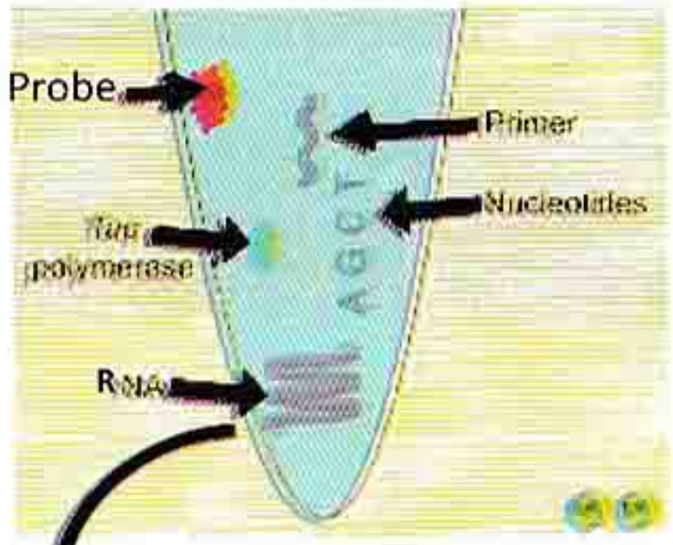


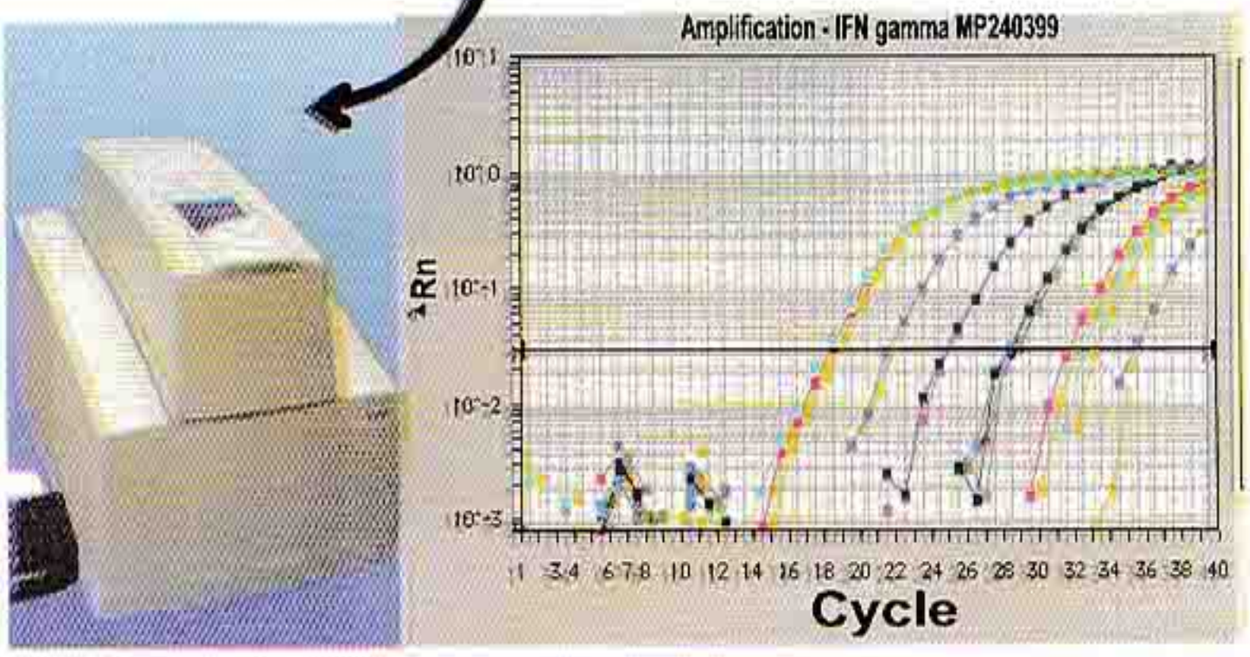


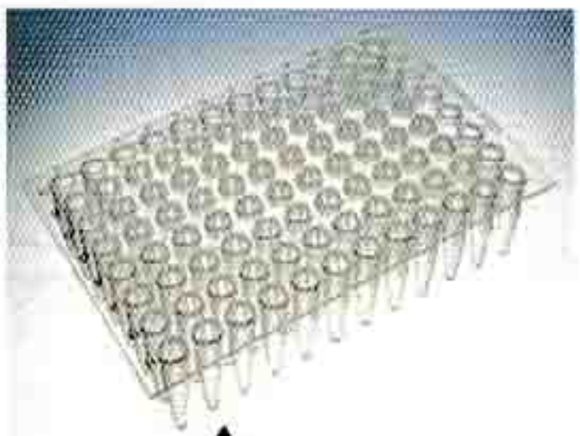
Detection of Influenza H7N9 and MERS-CoV RNA in laboratory

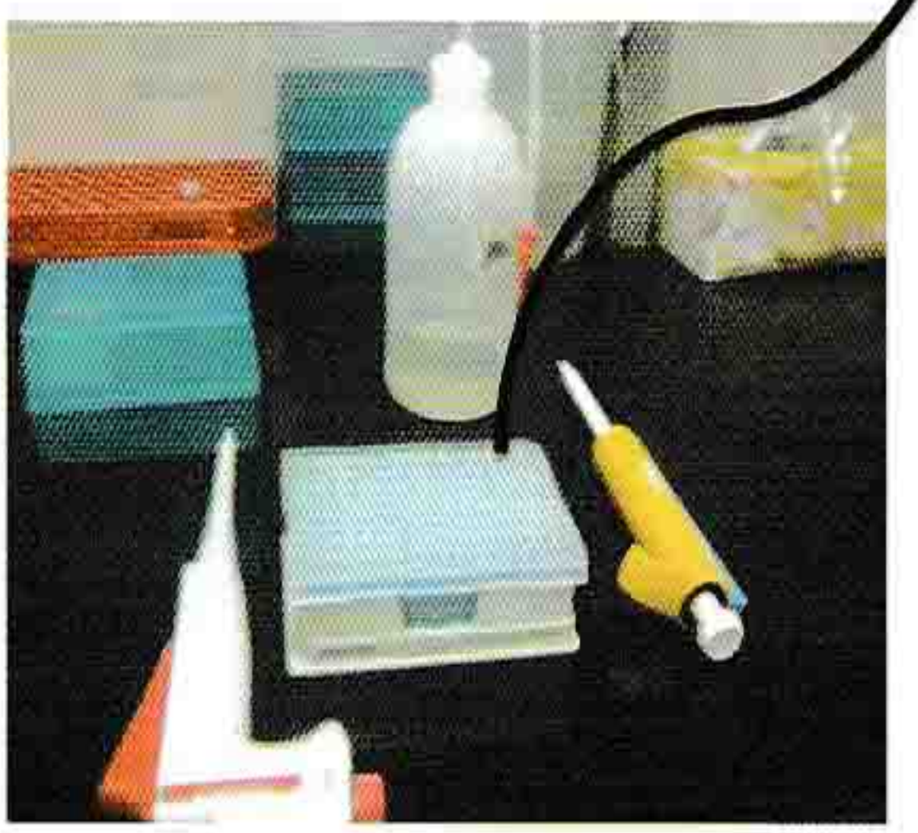
- **Extraction RNA from specimen**
- **Real time PCR**







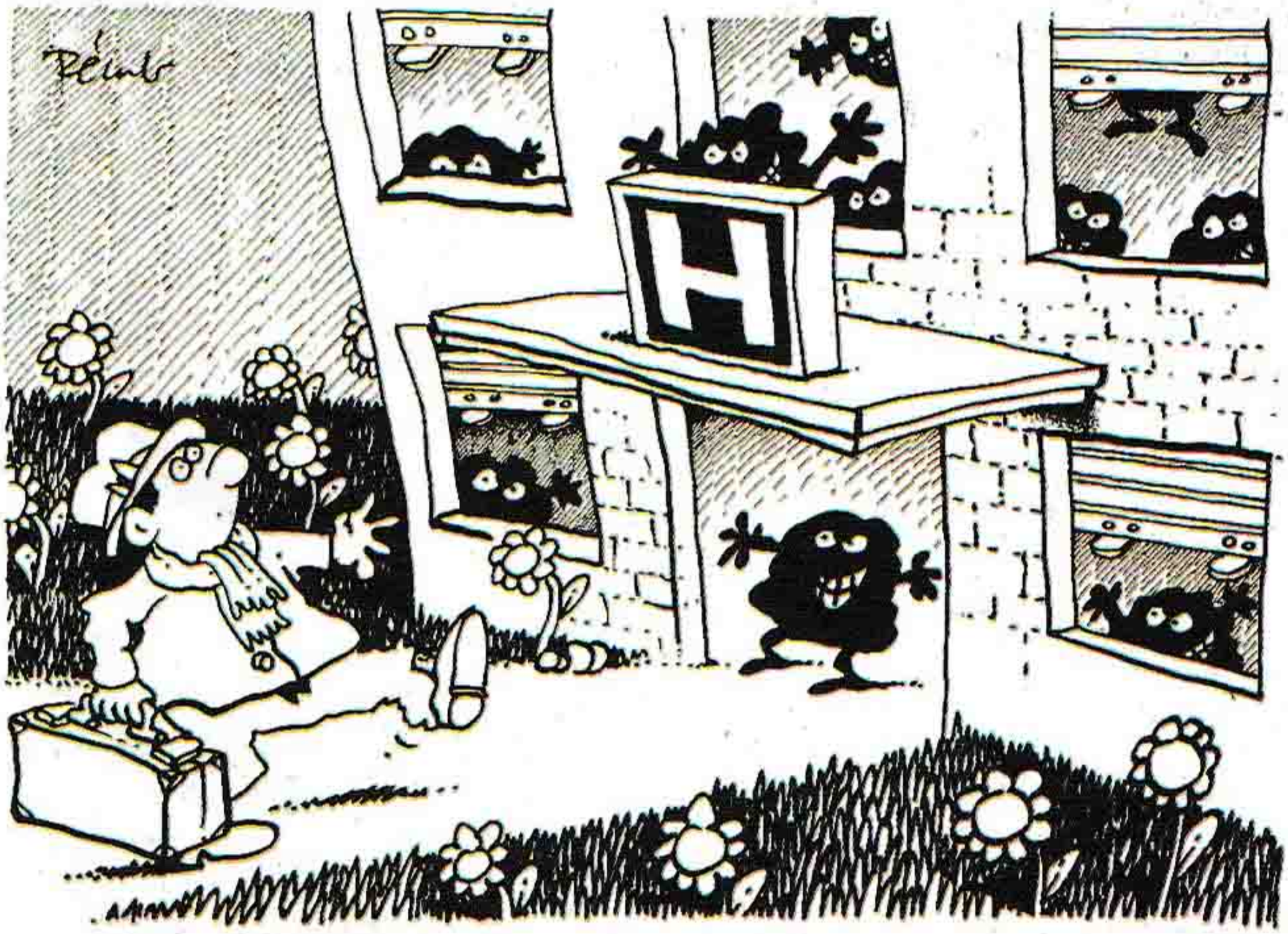




PCR plate

Real time PCR machine

Infection Prevention & Control (IPC)

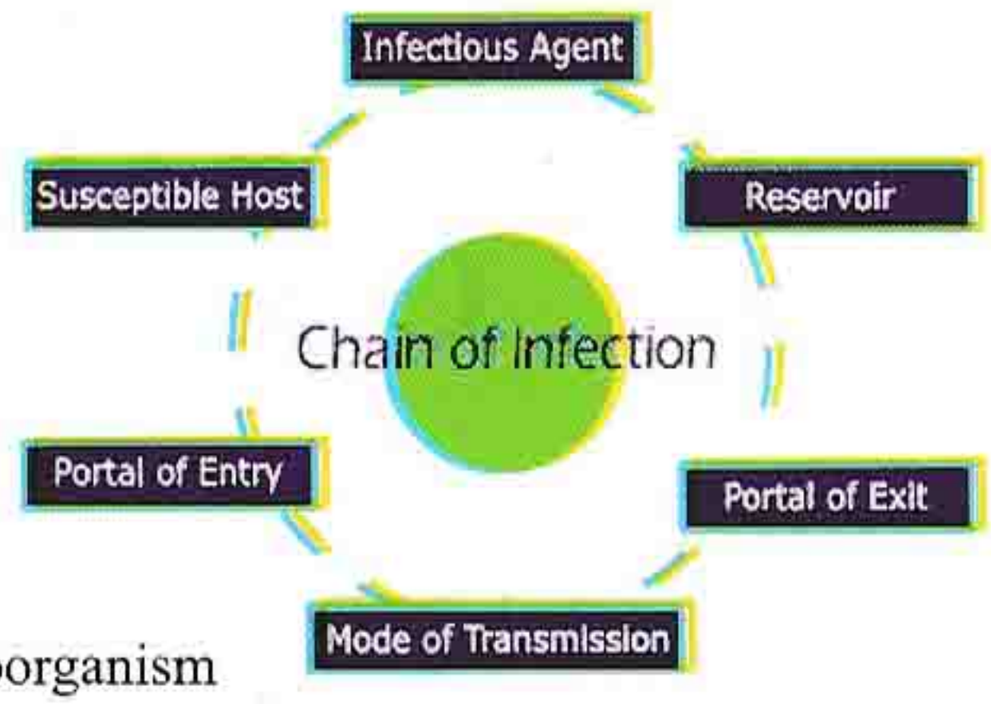


It may seem a strange principle
to enunciate as the very first requirement of a hospital
that it do the sick no harm.

Florence Nightingale, Notes on Hospitals, 1863

CHAIN OF INFECTION

Infectious agent or pathogen
Reservoir
Portal of exit
Mode of transmission
Portal of entry
Susceptible host



LINK 1

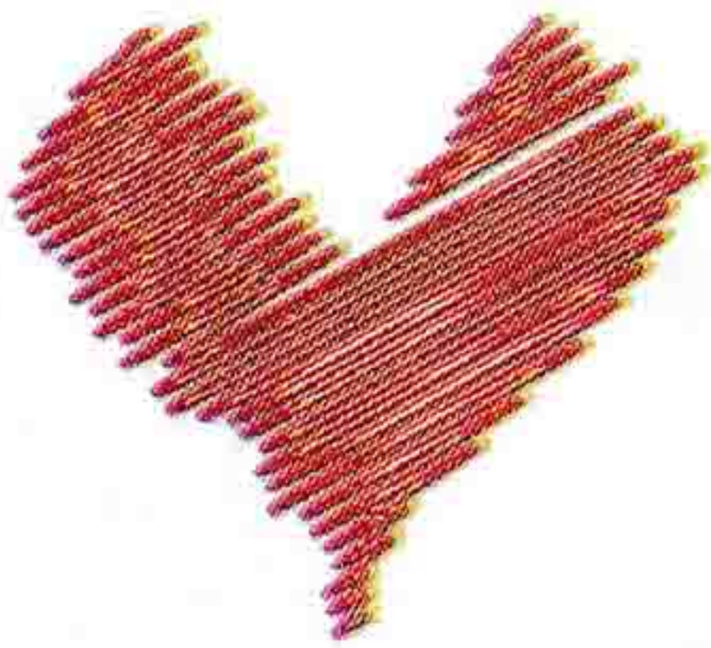
Causative agent – pathogen or infectious microorganism

- Bacteria
- Viruses
- Mold
- Fungi

LINK 2

Reservoir – Place where pathogen lives

- Lungs
- Blood
- Digestive Tract
- ETC



LINK 3

- Portal of Exit – Any body opening on infected person
- Nose
- Mouth
- Eyes
- Cut in Skin
- Urethra/Anus

LINK 4

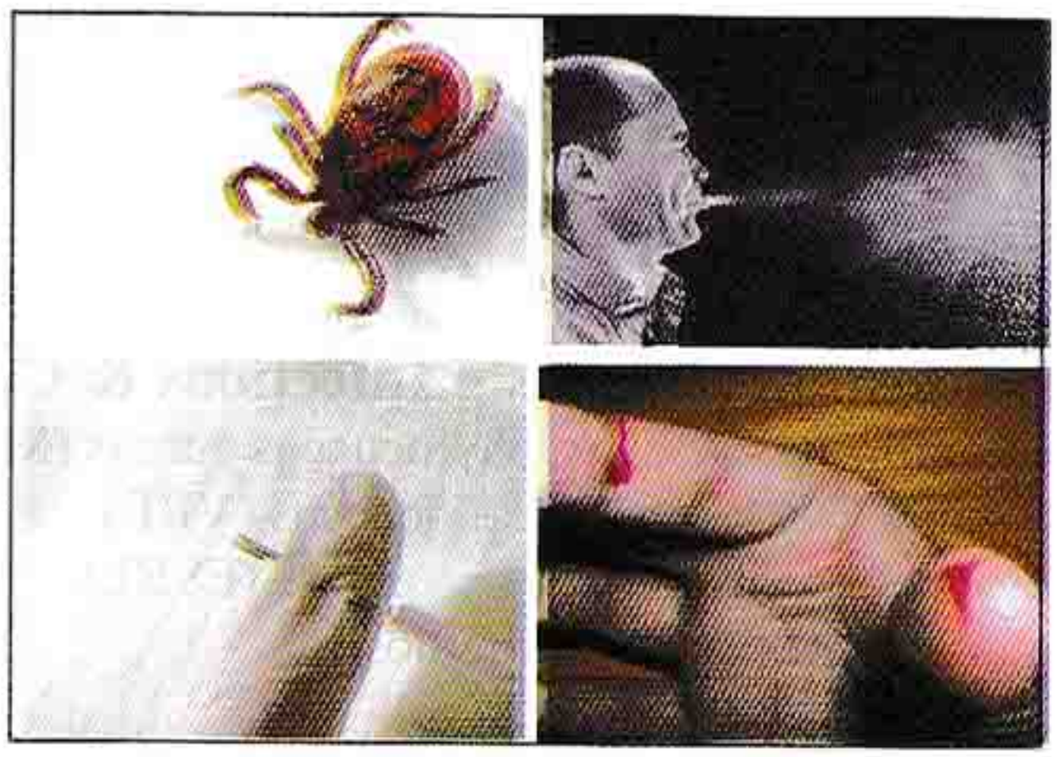
Mode of Transmission – How the Pathogen travels from one person to the next

- Air
- Hands
- Other Surfaces

Modes of Transmission

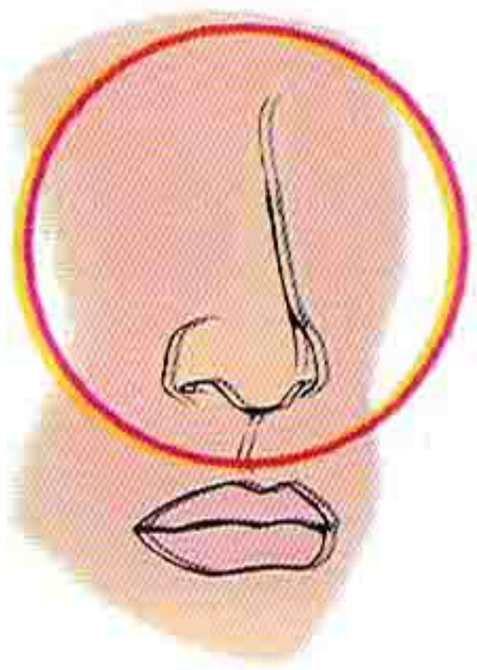
Contact (Direct & Indirect)

- Droplet
- Airborne
- Vehicles
- Vectors



LINK 5

- Portal of Entry – Any body opening on uninfected person
- Skin and Mucous Membranes
- Respiratory Tract
- Urinary Tract
- Gastrointestinal tract
- Reproductive Tract
- Blood



The Nose

LINK 6

- Susceptible Host – an uninfected person

STOP THE BUGS

- Cleansing
- Disinfecting
- Sterilizing
- No Sharing
- Bag Hazardous Waste
- Linen Handling

HEALTH CARE ASSOCIATED INFECTION (NOSOCOMIAL)

Infections that are a result of health care delivery, not present at admission

- EXOGENOUS
- ENDOGENOUS
- IATROGENIC

Refer to Potter & Perry Table 34-2 Pg. 648 (Sites for Causes of HAI's)

Common Health-Care Associated Infections

- Urinary Tract Infection
- Surgical/Traumatic Wound Infection
- Respiratory Tract
- Bloodstream

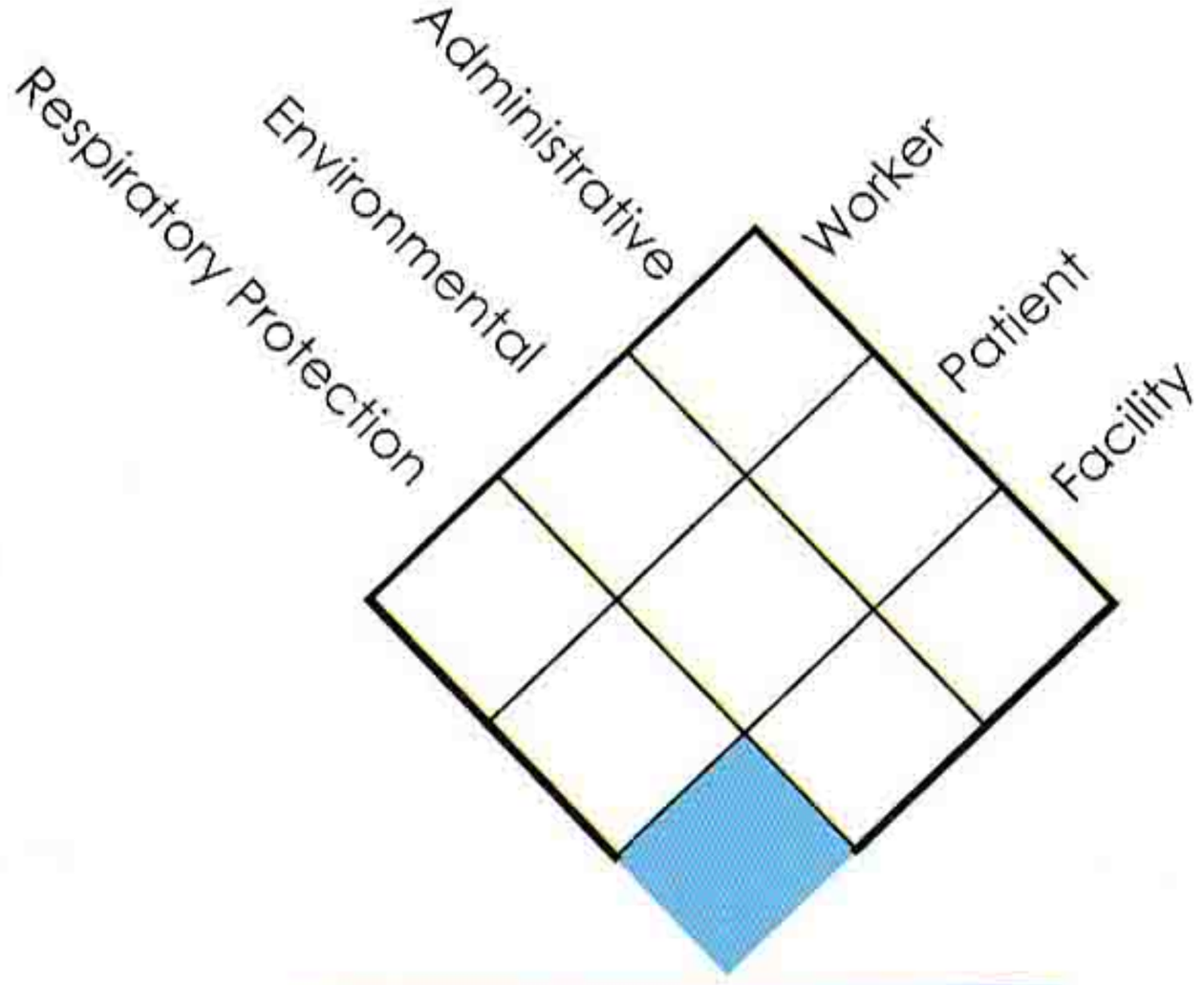
Drug Resistant Organism Infections & Colonizations

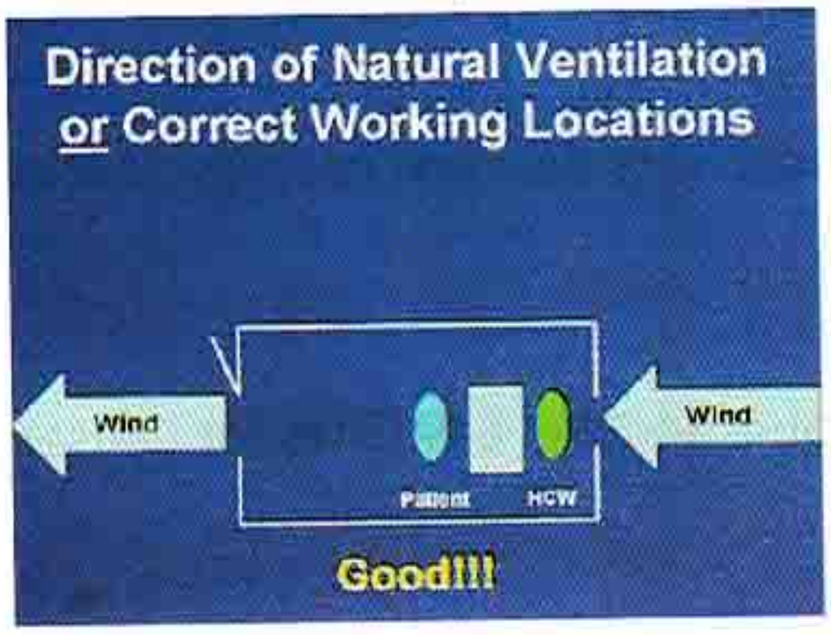
- Methicillin-Resistant Staphylocuccus aureus (MRSA)
- Vancomycin-Resistant Enterococcus (VRE)
- Extended-Spectrum Beta Lactamase (ESBL)
- Multi-drug Resistant Tuberculosis

Hierarchy of Infection Control

- Administrative controls to reduce risk of exposure, infection and disease thru policy and practice;
- Environmental (engineering) controls to reduce concentration of infectious bacilli in air in areas where air contamination is likely; and
- Personal protection to protect personnel who work in hospital.

Hierarchy of Infection Controls





Personal Protective Equipment

- Gowns
- Respiratory Masks
- Eye Protection
- Gloves
- Bagging Trash & Linen
- Transporting Patients

Fate of Droplets

Organisms Liberated

Talking	0-200
Coughing	0-3500
Sneezing	4500-1,000,000

Droplets can remain suspended in the air for hours.

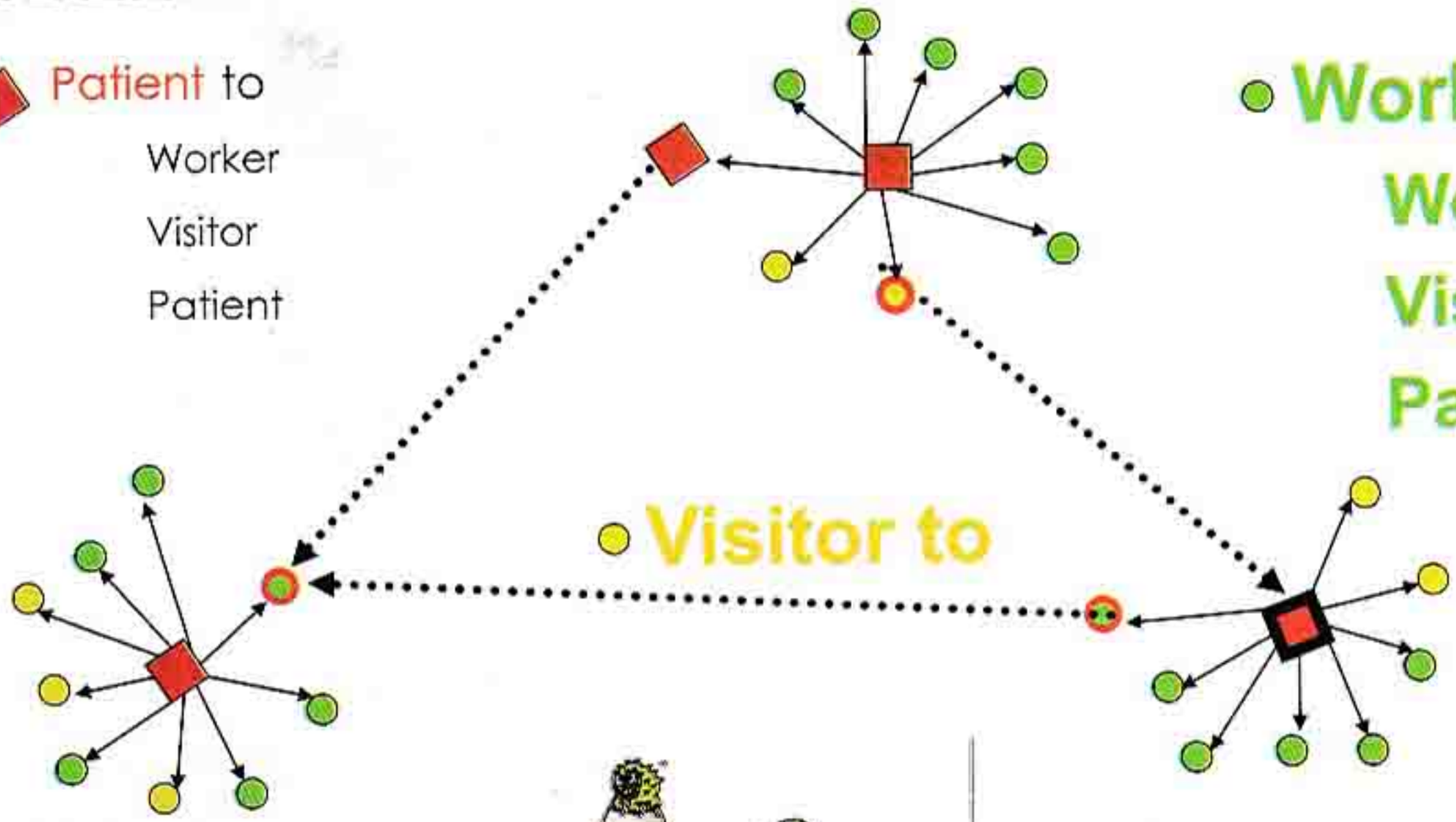
Cough Etiquette

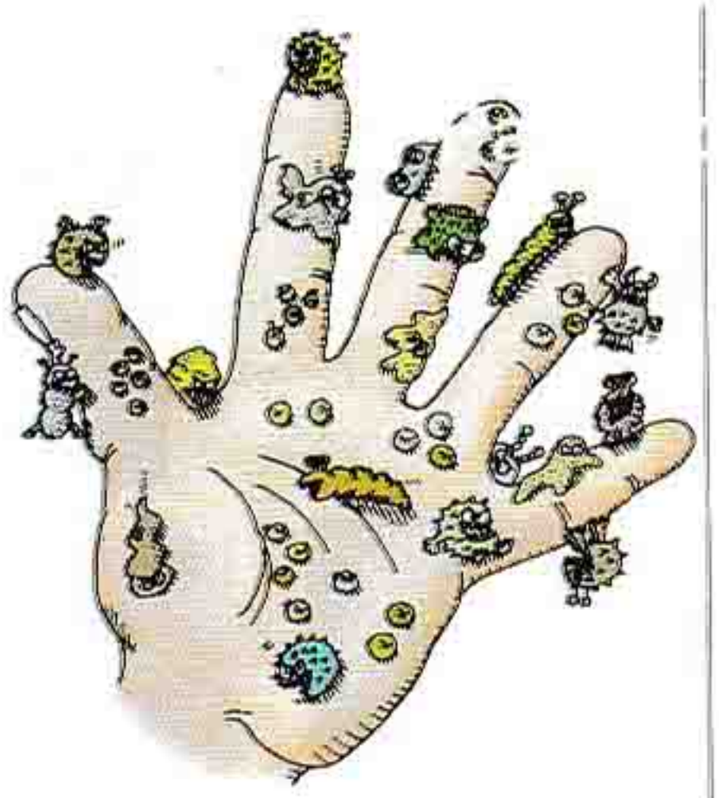
LINEN HANDLING

- Bag at the point of use
- Minimum agitation
- Do not sort or pre-rinse in resident care areas
- Use PPE when sorting
- No damp linen left overnight
- Hot water above 160°for 25 minutes

What is Infection Control?

- Patient to
  - Worker
  - Visitor
  - Patient
- Worker to
  - Worker
  - Visitor
  - Patient
- Visitor to



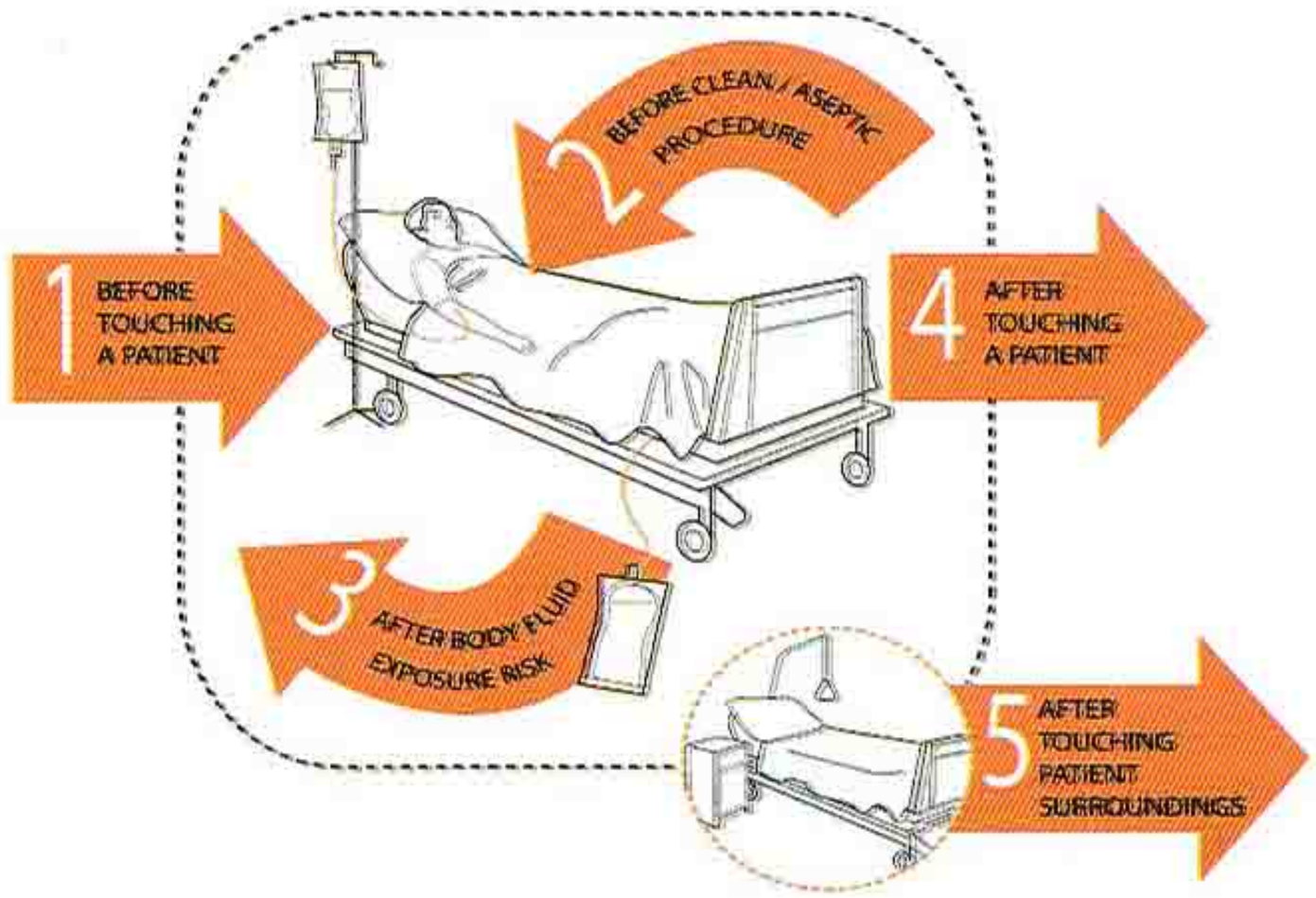


HAND HYGIENE:

When to Wash

- When coming on duty
- Before and after direct resident contact
- Before and after performing any invasive procedure
- Before and after entering isolation precaution settings
- Before and after assisting with personal care
- Before and after handling peripheral vascular catheters and other invasive devices
- Before and after inserting indwelling catheters
- Before and after changing a dressing
- Upon and after coming in contact with a resident's intact skin
- After blowing or wiping nose
- After handling soiled linen
- After handling soiled equipment or utensils
- After removing gloves or aprons
- After completing duty

"My 5 Moments for Hand Hygiene"



Sax H, Allegranzi B, Uçkay I, Larson E, Boyce J, Pittet D. J Hosp Infect 2007;67:9-21

HAND HYGIENE: Use Soap and Water

- When hands are visibly soiled
- Before and after eating or handling food
- Before and after assisting a resident with meals
- After personal use of the toilet
- After contact with a resident with infectious diarrhea
- After performing your personal hygiene

HAND HYGIENE: How to wash

- Wet hands first with clean, running warm water
- Apply the amount of product recommended by the manufacturer to hands
- Rub hands together vigorously for a t least 15 seconds covering all surfaces of the hands and fingers
- Rinse hands with water
- Dry with disposable paper towel
- Turn off the faucet with disposable paper towel.

STANDARD PRECAUTIONS

✓ Use with everybody
✓ Wear gloves
✓ Handle used equipment with care
✓ Dispose of needles properly
✓ Wear face mask & eye protection when necessary

Principle of infection prevention

At least 35-50% of all healthcare-associated infections are associated with only 5 patient care practices:

- Use and care of urinary catheters
- Use and care of vascular access lines
- Therapy and support of pulmonary functions
- Surveillance of surgical procedures
- Hand hygiene and standard precautions

Prevention of Catheter-Associated Urinary Tract Infection (CA-UTI)

Two main principles

Avoid unnecessary catheterization

Limit the duration of catheterization

Catheter insertion and maintenance

- Practice hand hygiene
- before insertion of the catheter
- before and after any manipulation of the catheter site

http://www.who.int/gpsc/tools/en/

Sources of the catheter associated bloodstream infection

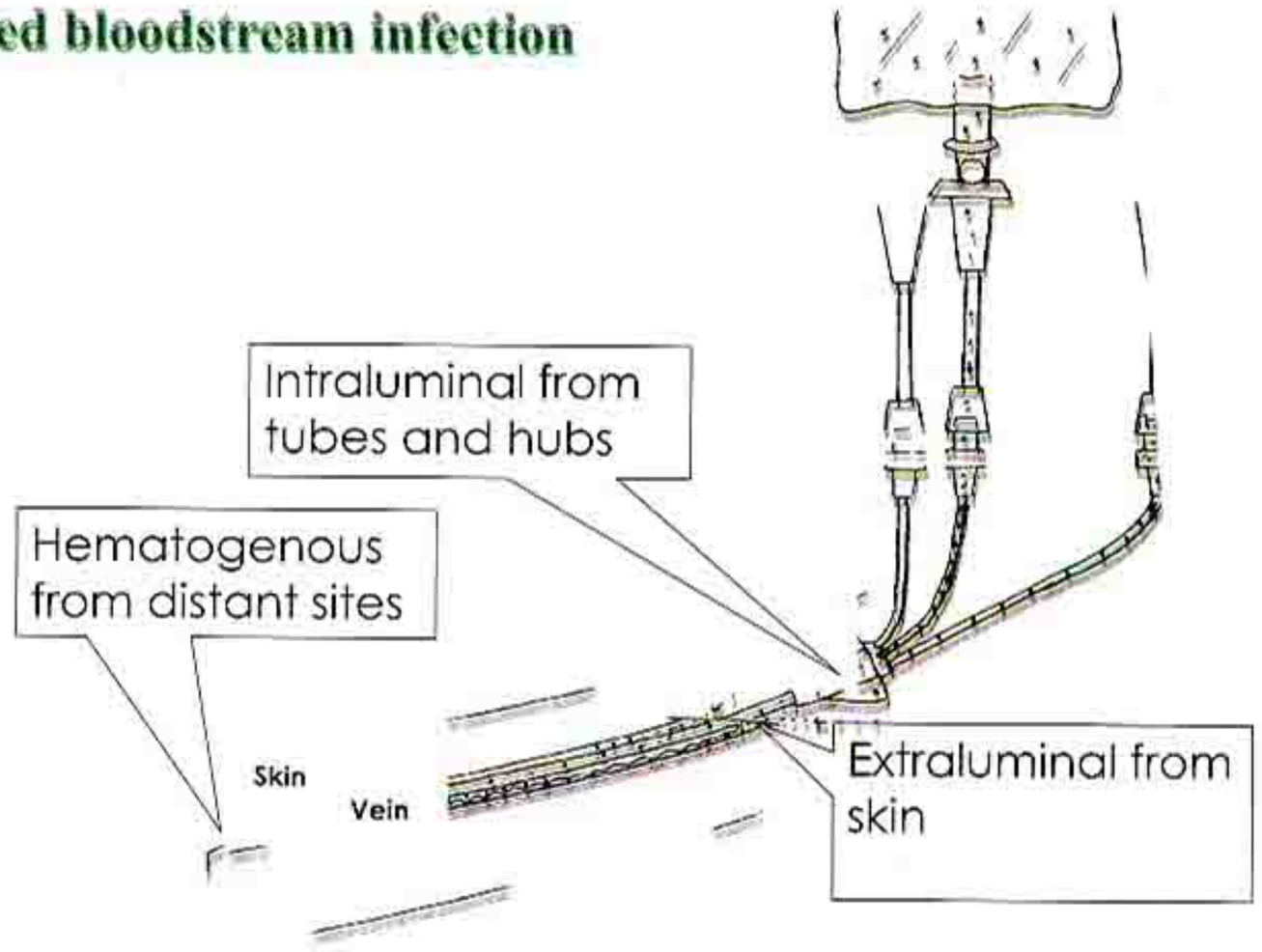
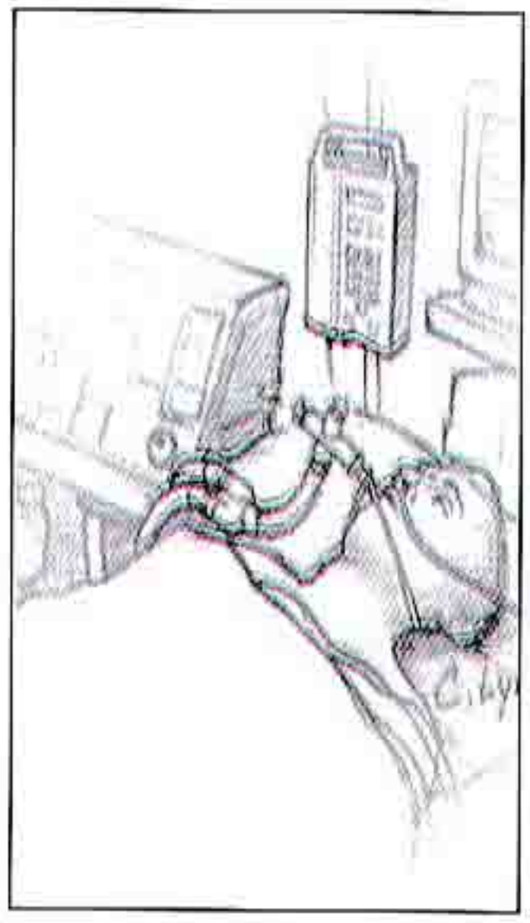


Figure. Source of intravascular catheter-related infections

Risk factors for Ventilator-Associated Pneumonia (VAP)

Patient	Devices
Age	Invasive ventilation
Burns	Duration of invasive ventilation
Coma	Reintubation
Lung disease	Medication
Immunosuppression	Prior antiobiotic treatment
Malnutrition	Sedation
Blunt trauma	



General precautions

- Staff education, hand hygiene, isolation precautions (I)
- Surveillance of infection and resistance with timely feedback (II)
- Adequate staffing levels (II)

Intubation and ventilation

- Avoid intubation and reintubation - I
- Prefer non-invasive ventilation - I
- Prefer orotracheal intubation & orogastric tubes - II
- Continous subglottic aspiration - I
- Cuff pressure > 20 cm H2O - II
- Avoid entering of contaminate consendate into tube/nebulizer - II
- Use sedation and weaning protocols to reduce duration – II
- Use daily interruption of sedation and avoid paralytic agents - II

Procedure-related risk factors

- Hair removal technique
- Preoperative infections
- Surgical scrub
- Skin preparation
- Antimicrobial prophylaxis
- Surgeon skill/technique
- Asepsis
- Operative time
- Operating room characteristics

Risk Communication And Outbreak Commucation

What is Communication?

Two-way process of reaching mutual understanding in which participants not only exchange (encode-decode) information, news, ideas and feelings but also create and share meaning.
In general communication is a means of connecting people or places

Risk Communication

"Communication intended to supply laypeople with the information they need to make informed, independent judgments about risks to health, safety, and the environment."
- Morgan, et. al. 2002

Risk Communication Terms

Risk
Defined as the chance something bad will happen, and the associated outcome of the possible event.

Risk = Likelihood x Consequence.

Risk Communication Terms

Hazards
Events or physical conditions that have the potential to cause fatalities, property damage, infrastructure damage, agricultural loss, damage to the environment, interruption of business, or other negative consequences.
- FEMA, 1997

HAZARD???
RISK????
HAZARD + RISK =

PANIC

Building Better Foundation to Communicate Risk

- Risk communication has been defined as an interactive process on exchange of information and opinion among individuals, groups, and institutions. It involves multiple messages about the nature of risk and other messages.
- Risk communication comes from an agency that is involved in and responding to a public health emergency. As the health crisis unfolds, the agency informs the public and other audiences about the response measures being taken.

The reasons we do risk communication for:

- So that people will prepare themselves emotionally and logistically
- So that people will support prevention and control activities at their homes, schools, business and other institutional levels
- So that (if a pandemic begins) people who had the time to get used to the idea are likely to understand their risks; take active roles to protect themselves and practice correct health behaviours following official advice

Building Better Foundation to Communicate Risk

Some emotional factors we deal with:

❖ Communication in crisis is different as all affected people:
✓ take in information differently,
✓ process information differently and
✓ act on information differently

The Risk Communication Planning Implications at the Fields
There are no easy recipes! However, experts who have participated in debates have the following principles for guiding risk communication strategies and planning.

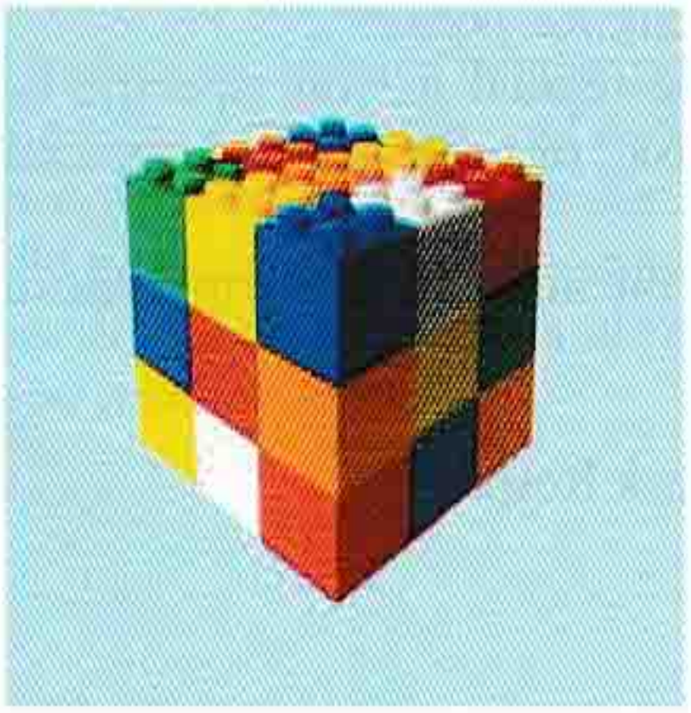
Generate a discussion:
1. Accept the public as a legitimate partner for creating a baseline
2. Build Trust and Confidence
3. Give People Things to Do:

Characteristics of information during an emergency

High demand for information	Urgent time frame	Requires rapid and effective dissemination
Use preferred channels of key audiences	Existing information sharing networks	New Media Non-traditional media
Rumours	Misinformation	

Facts are NOT enough: Trust and perception are everything

Risk and crisis communication building blocks:



Values	Expression Of Caring
Technical Information	Credibility

Trust
in individuals and organizations is by far the greatest factor

Building Better Foundation to Communicate Risk

The Risk Communication Planning Implications at the Fields

The ways we communicate during crisis

- PRECAUTION ADVOCACY ("Watch out")- How to alert people to serious hazards
- OUTRAGE MANAGEMENT (" Calm down")- How to reassure people when they may be upset or over-reacting
- CRISIS COMMUNICATION ("We will get through this") – How to guide people through serious hazards when they are fearful (and may even be in denial).

Building Better Foundation to Communicate Risk

Take away message/key points to remember for the health manager and the health worker are Focused Areas :

- Pre-Pandemic Phase:
  - to reduce the risk of animal to animal transmission
  - Focus area: raising awareness
- Pandemic alert phase-
  - To reduce the risk of animal to human transmission-
  - Improve hygiene to limit spread of seasonal human influenza-
  - Focus area: address rumours, reinforce awareness on self-protection and prevention of spread, updating public on situation and outbreak response, and action being taken
- Pandemic phase-
  - To contain an emerging human (pandemic) virus
  - Survive a pandemic –
  - Focus area: strengthen pre-alert stage activities and address public anxiety and discomfort

Outbreak Communication Communication During Outbreak Situation

Planning and Management of Outbreak ResponseBase your strategy and message as you gather information on the following three elements:

- ❖ Person
- ❖ Place
- ❖ Time

Communication During Outbreak Situation

Planning and Management of Outbreak Response

- Once you have the person, place, and time information related to your specific outbreak investigation, you can determine the extent, risk of spread, and potential for human-to-human transmission.
- The message that you develop and deliver will depend on the immediate control measures that need to be put in place.

Planning and Management of Outbreak Response

- These may include:
- ❖ The use of personal protective equipment;

- ❖ The implementation of isolation and quarantine measures of either people or poultry;
- ❖ The use of community health interventions, such as increased surveillance, public health
- ❖ education, or putting hospitals on alert; or
- ❖ Animal health interventions such as vaccination, culling, or halting the import or export of poultry

Considering the following factors will support your actions:

- ❖ Understanding What the Public Seeks from Your Communication
- ❖ What the Public Will Ask First (What does this mean to me?)
- ❖ What the Media Will Ask First

Communication During Outbreak Situation

Considering the following factors will support your actions:

- Key Elements to Build Trust
- Communication Failures That Kill Operational Success
- Communication Steps That Boost Operational Success

Learning the Steps for Outbreak Communication During the Alert and Pandemic stage

- As a District Rapid Response Team Member you have been asked for recommendation by the DC how to communicate with the public about this situation.

- Take clue from :
  - how people deal with risk emotionally,
  - the ways we communicate risk,
  - guiding principles

Learning the Steps for Outbreak Communication During the Alert and Pandemic stage

- We are especially interested to see the use of person, time, place elements and the strategy to adopt in this situation, roles of field- based health workers and Managers, messages you want to communicate, your choice of channels and team.

Communication During Outbreak Situation

Take away message/key points to remember for the health manager and the health worker are the key planning factors :

- Person

— How many people are ill?
— How many people have been exposed?
— What are the gender, age, and occupation of those affected?
— Are people affected or only birds?
— Are the birds domestic or migratory
— Occupation of the infected or at risk people
— General reaction/emotion

Take away message/key points to remember for the health manager and the health worker are the key planning factors :

- Place
  - Where is the outbreak for example name of the village/district
  - Is the site of the disease is remote or have fairly easy accessibility, located near other known population centres or relevant geographic features, such as a river, in chor/hawor, jungle, hilly region
  - What are the population characteristics in this area
  - What public health and health care facilities are available at the place of the outbreak
  - Are there some groups who may be more vulnerable or hard to reach
  - Local customs and language/population characteristics/ethnicity

Building Better Foundation to Communicate Risk

Take away message/key points to remember for the health manager and the health worker are the key planning factors :

- Time:
  - Determine the date and first identified case (s)
  - Identify any presumed exposure (1 meter radius of infected people or in case of infected bird within 1 km radius and also the incubation period. The aim is to bring patients under treatment win 48 hrs of showing symptoms.)
  - How has the disease spread over time
  - Is there anything significant about the timing of the spread such as community celebrating or other gathering

Thank you

DGHS.MOH&FW
BANGLADESH

IEDCR

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World Health Organization