Infectio®
A quarterly Magazine
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OBITUARY

Prof. Badar Jahan Farooqi Head of Microbiology, SIUT Karachi passed away on May 2016. She was affiliated with Infectio® since its launch and shared her expressive role for development of magazine. As a managing editor of the Infectio® she worked on different intellectual ideas and looked after microbiological issues from the beginning of Infectio®. We benefited from her immense knowledge and expertise as Clinical Microbiologist and she was always interested in transfer of knowledge to primary care physicians and junior doctors. From the management of SAMI Pharmaceuticals (Pvt.) Ltd., the Editorial board members of Infectio® and all the readers May! Allah rests the departed soul in eternal peace and enables us to continue her mission with the same confidence and passion.

Infectio®
A quarterly Magazine

Editorial Correspondence

Dr. Muhammad Salman
Email: infectio@samikhi.com

Introduction

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Message of the Chairman Infectio®

The launch of Infectio® Surgery magazine was encouraging. Over 9000 copies were distributed across Pakistan and 2000 responses were received from all over Pakistan. We look forward to provide you latest news and information about Infectious Diseases. In the Surgery issue, we focused surgical infections which are of primary interest for Post Graduates, Trainees of surgery and Allied Sciences students. Prof. Mumtaz Mehar and his team deserve appreciation for the hard work and the quality of presentation in the supplement.

The current issue contains the article by leading experts of diagnosis and management of diseases in Pakistan. The current edition highlights early detection and initial management in acute CNS infections at primary care level. This is very timely and important because early diagnosis is important for survival of the patient. The other articles provides information regarding Congo Haemorrhagic Fever, where the number of cases increase after recent Eid ul Azha. The article is a timely reminder for prevention, early detection and management of such diseases. Diarrheal diseases remain a problem and Cholera is still an important cause; hence the Information on Cholera has been updated. CDC recommendation for adult immunization issued in 2016; it is also being provided in this issue.

I would like to acknowledge SAMI Pharmaceuticals (Pvt.) Ltd. for their continuous support without any involvement in the content of the magazine. I would also like to appreciate the efforts of editorial board and Prof. Gaffar Biloo as Managing Editor for their help and contribution for Infectio Magazine

In last I congratulate all winners of last issue, and acknowledge all participants of quiz who read & obtained latest information on infectious diseases

Prof. Dr. Ejaz Ahmed Vohra
Chairman Editorial Board
Dean Post graduate clinical
Head, Department of Medicine
Dr. Ziauddin University Karachi

Early Detection and Initial Management of Acute CNS Infection at Primary Care Level

Dr. Saima Nazish (FCPS)
Consultant Neurologist
Dr. Ziauddin Hospital, Karachi

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CNS can be invaded by virtually any pathogenic microorganism. Infection can affect the function of central nervous system by damaging the brain or its linings. Clinically it can be presented in acute, sub-acute and chronic forms. Acute CNS infections if not diagnosed and managed timely are considered serious and life threatening within a narrow window period. Un due delay in the detection and identification can increase their morbidity and mortality. Proper and detailed pertinent history in presence of classic symptoms and signs at primary care level can help and guide for early management, relevant investigation and urgent referral.

Classic triad of fever, neck stiffness and altered mental status occurs in less than half of all patients. But 95% of patients have at least 2 to 4 symptoms of fever, neck stiffness, altered mental status and headache. other symptoms like nausea, vomiting, convulsive seizures are often an early symptom sometimes followed by focal neurological deficit .other important clues in history includes patient's Age ,history of vaccination against common organisms, immune state (alcoholic, steroid dependent ,splenectomy,)and other specific risk factors like epidemic exposure and recent dental or surgical procedures .Important clinical signs includes conjunctivitis, petechial or hemorrhagic skin rash which is common with meningococcal infection sometimes associated with circulatory shock in acute fulminatory cases. Typical kernig's and brudzinski's sign can be absent in children, elderly or comatose patients.

After initial clinical assessment emergency management includes general measures, initiation of high dose corticosteroids before antibiotic followed by urgent referral and transfer to tertiary care set up is mandatory for further relevant workup and management. Delay in antibiotic initiation cans worse the prognosis. Empiric antibiotic can be given even before CSF studies but after obtaining blood cultures. Empiric antibiotic therapy depends on Age, risk factors (head trauma or surgery, crowded living condition and underlying illness.

In conclusion proper early assessment, initial management and timely referral from primary care level to tertiary care unit can improve prognosis of these serious, disabling and life threatening infections.

Congo Haemorrhagic Fever

Dr. Afsheen Khan
Dow University of Health Sciences Karachi

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Key facts

- The Crimean-Congo haemorrhagic fever (CCHF) virus causes severe viral haemorrhagic fever outbreaks.
- CCHF outbreaks have a case fatality rate of up to 40%.
- The virus is primarily transmitted to people from ticks and livestock animals. Human-to-human transmission can occur resulting from close contact with the blood, secretions, organs or other bodily fluids of infected persons.
- CCHF is endemic in Africa, the Balkans, the Middle East and Asia, in countries south of the 50th parallel north.
- There is no vaccine available for either people or animals.

Crimean-Congo haemorrhagic fever (CCHF) is a widespread disease caused by a tick-borne virus (Nairovirus) of the Bunyaviridae family. The CCHF virus causes severe viral haemorrhagic fever outbreaks, with a case fatality rate of 10–40%.

CCHF is endemic in Africa, the Balkans, the Middle East and Asian countries south of the 50th parallel north – the geographical limit of the principal tick vector.

The Crimean-Congo haemorrhagic fever virus in animals and ticks

The hosts of the CCHF virus include a wide range of wild and domestic animals such as cattle, sheep and goats. Many birds are resistant to infection, but ostriches are susceptible and may show a high prevalence of infection in endemic areas, where they have been at the origin of human cases. For example, a former outbreak occurred at an ostrich abattoir in South Africa. There is no apparent disease in these animals.

Animals become infected by the bite of infected ticks and the virus remains in their bloodstream for about one week after infection, allowing the tick-animal-tick cycle to continue when another tick bites. Although a number of tick genera are capable of becoming infected with CCHF virus, ticks of the genus Hyalomma are the principal vector.

Transmission

The CCHF virus is transmitted to people either by tick bites or through contact with infected animal blood or tissues during and immediately after slaughter. The majority of cases have occurred in people involved in the livestock industry, such as agricultural workers, slaughterhouse workers and veterinarians.

Human-to-human transmission can occur resulting from close contact with the blood, secretions, organs or other bodily fluids of infected persons. Hospital-acquired infections can also occur due to improper sterilization of medical equipment, reuse of needles and contamination of medical supplies.

Signs and symptoms

The length of the incubation period depends on the mode of acquisition of the virus. Following infection by a tick bite, the incubation period is usually one to three days, with a maximum of nine days. The incubation period following contact with infected blood or tissues is usually five to six days, with a documented maximum of 13 days.

Onset of symptoms is sudden, with fever, myalgia, (muscle ache), dizziness, neck pain and stiffness, backache, headache, sore eyes and photophobia (sensitivity to light). There may be nausea, vomiting, diarrhoea, abdominal pain and sore throat early on, followed by sharp mood swings and confusion. After two to four days, the agitation may be replaced by sleepiness, depression and lassitude, and the abdominal pain may localize to the upper right quadrant, with detectable hepatomegaly (liver enlargement).

Other clinical signs include tachycardia (fast heart rate), lymphadenopathy (enlarged lymph nodes), and a petechial rash (a rash caused by bleeding into the skin) on internal mucosal surfaces, such as in the mouth and throat, and on the skin. The petechiae may give way to larger rashes called ecchymoses, and other haemorrhagic phenomena. There is usually evidence of hepatitis, and severely ill patients may experience rapid kidney deterioration, sudden liver failure or pulmonary failure after the fifth day of illness.

The mortality rate from CCHF is approximately 30%, with death occurring in the second week of illness. In patients who recover, improvement generally begins on the ninth or tenth day after the onset of illness.

Diagnosis

CCHF virus infection can be diagnosed by several different laboratory tests:

- enzyme-linked immunosorbent assay (ELISA) ;
- antigen detection;
- serum neutralization;
- reverse transcriptase polymerase chain reaction (RT-PCR) assay; and
- Virus isolation by cell culture.

Patients with fatal disease, as well as in patients in the first few days of illness, do not usually develop a measurable antibody response and so diagnosis in these individuals is achieved by virus or RNA detection in blood or tissue samples.

Tests on patient samples present an extreme biohazard risk and should only be conducted under maximum biological containment conditions. However, if samples have been inactivated (e.g. flower pots or tyres, so that places where mosquitoes can with virucides, gamma rays, formaldehyde, heat, etc.), they can be manipulated in a basic biosafety environment.

Treatment

General supportive care with treatment of symptoms is the main approach to managing CCHF in people.

The antiviral drug ribavirin has been used to treat CCHF infection with apparent benefit. Both oral and intravenous formulations seem to be effective.

Prevention and control

Controlling CCHF in animals and ticks

Ticks of the genus Hyalomma are the principal vector of Crimean-Congo haemorrhagic fever (Female is on top and male is below)

Robert Swanepoel/NICD South Africa

It is difficult to prevent or control CCHF infection in animals and ticks as the tick-animal-tick cycle usually goes unnoticed and the infection in domestic animals is usually not apparent. Furthermore, the tick vectors are numerous and widespread, so tick control with acaricides (chemicals intended to kill ticks) is only a realistic option for well-managed livestock production facilities.

For example, following an outbreak at an ostrich abattoir in South Africa (noted above), measures were taken to ensure that ostriches remained tick free for 14 days in a quarantine station before slaughter. This decreased the risk for the animal to be infected during its slaughtering and prevented human infection for those in contact with the livestock.

There are no vaccines available for use in animals.

Reducing the risk of infection in people

Although an inactivated, mouse brain-derived vaccine against CCHF has been developed and used on a small scale in eastern Europe, there is currently no safe and effective vaccine widely available for human use.

In the absence of a vaccine, the only way to reduce infection in people is by raising awareness of the risk factors and educating people about the measures they can take to reduce exposure to the virus.

Public health advice should focus on several aspects.

- *Reducing the risk of tick-to-human transmission:*
  - wear protective clothing (long sleeves, long trousers);
  - wear light coloured clothing to allow easy detection of ticks on the clothes;
  - use approved acaricides (chemicals intended to kill ticks) on clothing;
  - use approved repellent on the skin and clothing;
  - regularly examine clothing and skin for ticks; if found, remove them safely;
  - seek to eliminate or control tick infestations on animals or in stables and barns; and
  - Avoid areas where ticks are abundant and seasons when they are most active.
- *Reducing the risk of animal-to-human transmission:*
  - wear gloves and other protective clothing while

handling animals or their tissues in endemic areas, notably during slaughtering, butchering and culling procedures in slaughterhouses or at home;

- quarantine animals before they enter slaughterhouses or routinely treat animals with pesticides two weeks prior to slaughter.

- *Reducing the risk of animal-to-human transmission:*
  - avoid close physical contact with CCHF-infected people;
  - wear gloves and protective equipment when taking care of ill people;
  - wash hands regularly after caring for or visiting ill people.

Controlling infection in health-care settings

Health-care workers caring for patients with suspected or confirmed CCHF, or handling specimens from them, should implement standard infection control precautions. These include basic hand hygiene, use of personal protective equipment, safe injection practices and safe burial practices.

As a precautionary measure, health-care workers caring for patients immediately outside the CCHF outbreak area should also implement standard infection control precautions.

Samples taken from people with suspected CCHF should be handled by trained staff working in suitably equipped laboratories.

Recommendations for infection control while providing care to patients with suspected or confirmed Crimean-Congo haemorrhagic fever should follow those developed by WHO for Ebola and Marburg haemorrhagic fever.

Reference
www.who.int/mediacentre/

Zika virus can live for hours on hard, non-porous surfaces

Source:
American Association of Pharmaceutical Scientists

The Zika virus is most commonly transmitted in humans as the result of a bite from an infected mosquito or from an infected human to another human. What is not well known is that the virus also can be transmitted via the environment if an individual is pricked with an infected needle or has an open cut and comes in contact with the live virus. While there are no known cases to date of the general public being infected with the Zika virus through the environment, there has been at least one documented case of laboratory acquired Zika virus infection

Diseases Conveyed by Ingestion
Cholera

Prof. Abdul Gaffar Billoo (Sitar-e-Imtiaz)
The Aga Khan University Hospital Karachi

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Key facts

- Cholera is an acute diarrhoeal disease that can kill within hours if left untreated.
- There are an estimated 3–5 million cholera cases and 100 000–120 000 deaths due to cholera every year.
- Up to 80% of cases can be successfully treated with oral rehydration salts.
- Effective control measures rely on prevention, preparedness and response.
- Provision of safe water and sanitation is critical in reducing the impact of cholera and other waterborne diseases.
- Oral cholera vaccines are considered an additional means to control cholera, but should not replace conventional control measures.

INTRODUCTION

Cholera is an acute diarrhoeal infection caused by ingestion of food or water contaminated with the bacterium Vibrio cholerae. Every year, there are an estimated 3–5 million cholera cases and 100 000–120 000 deaths due to cholera. The short incubation period of two hours to five days, enhances the potentially explosive pattern of outbreaks.

History

During the 19th century, cholera spread across the world from its original reservoir in the Ganges delta in India. Six subsequent pandemics killed millions of people across all continents. The current (seventh) pandemic started in South Asia in 1961, and reached Africa in 1971 and the Americas in 1991. Cholera is now endemic in many countries.

Vibrio cholerae strains

Two serogroups of V. cholerae – O1 and O139 – cause outbreaks. V. cholerae O1 causes the majority of outbreaks, while O139 – first identified in Bangladesh in 1992 – is confined to South-East Asia.

Non-O1 and non-O139 V. cholerae can cause mild diarrhoea but do not generate epidemics.

Recently, new variant strains have been detected in several parts of Asia and Africa. Observations suggest that these strains cause more severe cholera with higher case fatality rates. Careful epidemiological monitoring of circulating strains is recommended.

The main reservoirs of V. cholerae are people and aquatic sources such as brackish water and estuaries, often associated with algal blooms. Recent studies indicate that global warming creates a favorable environment for the bacteria

Risk factors and disease burden

Cholera transmission is closely linked to inadequate environmental management. Typical at-risk areas include peri-urban slums, where basic infrastructure is not available, as well as camps for internally displaced people or refugees, where minimum requirements of clean water and sanitation are not met.

The consequences of a disaster – such as disruption of water and sanitation systems, or the displacement of populations to inadequate and overcrowded camps – can increase the risk of cholera transmission should the bacteria be present or introduced. Epidemics have never arisen from dead bodies.

Cholera remains a global threat to public health and a key indicator of lack of social development. Recently, the re-emergence of cholera has been noted in parallel with the ever-increasing size of vulnerable populations living in unsanitary conditions.

The number of cholera cases reported to WHO continues to rise. For 2011 alone, a total of 589 854 cases were notified from 58 countries, including 7816 deaths. Many more cases were unaccounted for due to limitations in surveillance systems and fear of trade and travel sanctions. The true burden of the disease is estimated to be 3–5 million cases and 100 000–120 000 deaths annually.

CLINICAL FEATURES

Cholera is an extremely virulent disease. It affects both children and adults and can kill within hours.

About 75% of people infected with V. cholerae do not develop any symptoms, although the bacteria are present in their faeces for 7–14 days after infection and are shed back into the environment, potentially infecting other people.

Among people who develop symptoms, 80% have mild or moderate symptoms, while around 20% develop acute watery diarrhoea with severe dehydration. This can lead to death if untreated.

People with low immunity – such as malnourished children

or people living with HIV – are at a greater risk of death if infected.

Treatment

Cholera is an easily treatable disease. Up to 80% of people can be treated successfully through prompt administration of oral rehydration salts (WHO/UNICEF ORS standard sachet). Very severely dehydrated patients require administration of intravenous fluids. Such patients also require appropriate antibiotics to diminish the duration of diarrhoea, reduce the volume of rehydration fluids needed, and shorten the duration of V. cholerae excretion. Mass administration of antibiotics is not recommended, as it has no effect on the spread of cholera and contributes to increasing antimicrobial resistance.

In order to ensure timely access to treatment, cholera treatment centres (CTCs) should be set up among the affected populations. With proper treatment, the case fatality rate should remain below 1%.

Prevention and control

A multidisciplinary approach based on prevention, preparedness and response, along with an efficient surveillance system, is key for mitigating cholera outbreaks, controlling cholera in endemic areas and reducing deaths.

Outbreak response

Once an outbreak is detected, the usual intervention strategy is to reduce deaths by ensuring prompt access to treatment, and to control the spread of the disease by providing safe water, proper sanitation and health education for improved hygiene and safe food handling practices by the community. The provision of safe water and sanitation is a formidable challenge but remains the critical factor in reducing the impact of cholera.

Oral cholera vaccines

There are two types of safe and effective oral cholera vaccines currently available on the market. Both are whole-cell killed vaccines, one with a recombinant B-sub unit, the other without. Both have sustained protection of over 50% lasting for two years in endemic settings.

Both vaccines are WHO-prequalified and licensed in over 60 countries. Dukoral has been shown to provide short-term protection of 85–90% against V. cholerae O1 among all age groups at 4–6 months following immunization.

The other vaccine (Shanchol) provides longer-term protection against V. cholerae O1 and O139 in children under five years of age.

Both vaccines are administered in two doses given between seven days and six weeks apart. The vaccine with the B-subunit (Dukoral) is given in 150 ml of safe water.

WHO recommends that immunization with currently available cholera vaccines be used in conjunction with the usually recommended control measures in areas where cholera is endemic as well as in areas at risk of outbreaks. Vaccines provide a short term effect while longer term activities like improving water and sanitation are put in place.

When used, vaccination should target vulnerable populations living in high risk areas and should not disrupt the provision of other interventions to control or prevent cholera epidemics. The WHO 3-step decision making tool aims at guiding health authorities in deciding whether to use cholera vaccines in complex emergency settings.

Prevention and control

Today, no country requires proof of cholera vaccination as a condition for entry. Past experience shows that quarantine measures and embargoes on the movement of people and goods are unnecessary. Isolated cases of cholera related to imported food have been associated with food in the possession of individual travelers. Consequently, import restrictions on food produced under good manufacturing practices, based on the sole fact that cholera is epidemic or endemic in a country, are not justified.

Countries neighboring cholera-affected areas are encouraged to strengthen disease surveillance and national preparedness to rapidly detect and respond to outbreaks should cholera spread across borders. Further, information should be provided to travelers and the community on the potential risks and symptoms of cholera, together with precautions to avoid cholera, and when and where to report cases.

Recommended Adult Immunization Schedule - 2016

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Note: These recommendations must be read with the footnotes that follow containing number of doses, intervals between doses, and other important information.

VACCINE / AGE GROUP	19-21 years	22-26 years	27-49 years	50-59 years	60-64 years	≥ 65 years
Influenza*[2]	1 dose annually					
Tetanus, diphtheria, pertussis (Td/Tdap)*[3]	Substitute Tdap for Td once, then Td booster every 10 yrs					
Varicella*[4]	2 doses					
Human papillomavirus (HPV) Female*[5]	3 doses					
Human papillomavirus (HPV) Male*[5]	3 doses					
Zoster[6]					1 dose	
Measles, mumps, rubella (MMR)*[7]	1 or 2 doses depending on indication					
Pneumococcal 13-valent conjugate (PCV13)*[8]	1 dose					
Pneumococcal 23-valent polysaccharide (PPSV23)[8]	1 or 2 doses depending on indication					1 dose
Hepatitis A*[9]	2 or 3 doses depending on vaccine					
Hepatitis B*[10]	3 doses					
Meningococcal 4-valent conjugate (MenACWY) or polysaccharide (MPSV4)*[11]	1 or more doses depending on indication					
Meningococcal B (MenB)[11]	2 or 3 doses depending on vaccine					
Haemophilus influenzae type b (Hib)*[12]	1 or 3 doses depending on indication					

*Covered by the Vaccine Injury Compensation Program

Recommended for all persons who meet the age requirement, lack documentation of vaccination, or lack evidence of past infection; zoster vaccine is recommended regardless of past episode of zoster

Recommended for persons with a risk factor (medical, occupational, lifestyle, or other indication)

No recommendation

The recommendations in this schedule were approved by the Centers for Disease Control and Prevention's (CDC) Advisory Committee on Immunization Practices (ACIP), the American Academy of Family Physicians (AAFP), the America College of Physicians (ACP), the American College of Obstetricians and Gynecologists (ACOG) and the American College of Nurse-Midwives (ACNM).

VACCINE / INDICATION	Pregnancy	Immuno-compromising conditions (excluding HIV infection)[4,6,7,8,13]	HIV infection CD4+ count (cells/μL)[4,6,7,8,13] < 200	HIV infection CD4+ count (cells/μL)[4,6,7,8,13] ≥ 200	Men who have sex with men (MSM)	Kidney failure, end-stage renal disease, on hemodialysis	Heart disease, chronic lung disease, chronic alcoholism	Asplenia and persistent complement component deficiencies[8,11,12]	Chronic liver disease	Diabetes	Healthcare personnel
Influenza*[2]	1 dose annually										
Tetanus, diphtheria, pertussis (Td/Tdap)*[3]	1 dose Tdap each pregnancy	Substitute Tdap for Td once, then Td booster every 10 yrs									
Varicella*[4]	Contraindicated			2 doses							
Human papillomavirus (HPV) Female*[5]		3 doses through age 26 yrs				3 doses through age 26 yrs					
Human papillomavirus (HPV) Male*[5]		3 doses through age 26 yrs				3 doses through age 21 yrs					
Zoster[6]	Contraindicated				1 dose						
Measles, mumps, rubella (MMR)*[7]	Contraindicated			1 or 2 doses depending on indication							
Pneumococcal 13-valent conjugate (PCV13)*[8]		1 dose									
Pneumococcal polysaccharide (PPSV23)[8]		1, 2, or 3 doses depending on indication									
Hepatitis A*[9]		2 or 3 doses depending on vaccine									
Hepatitis B*[10]		3 doses									
Meningococcal 4-valent conjugate (MenACWY) or polysaccharide (MPSV4)*[11]		1 or more doses depending on indication									
Meningococcal B (MenB)[11]		2 or 3 doses depending on vaccine									
Haemophilus influenzae type b (Hib)*[12]		3 doses post-HSCT recipients only		1 dose							

*Covered by the Vaccine Injury Compensation Program

Recommended for all persons who meet the age requirement, lack documentation of vaccination, or lack evidence of past infection; zoster vaccine is recommended regardless of past episode of zoster

Recommended for persons with a risk factor (medical, occupational, lifestyle, or other indication)

No recommendation

Contraindicated

Recommended Adult Immunization Schedule - 2016

Footnotes — Recommended Immunization-2016 Schedule for Adults Aged 19 Years and Older

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1. Additional information

- Additional guidance for the use of the vaccines described in this supplement is available at www.cdc.gov/vaccines/hcp/acip-recs/index.html.
- Information on vaccination recommendations when vaccination status is unknown and other general immunization information can be found in the General Recommendations on Immunization at www.cdc.gov/mmwr/preview/mmwrhtml/rr6002a1.htm.
- Information on travel vaccine requirements and recommendations (e.g., for hepatitis A and B, meningococcal, and other vaccines) is available at wwwnc.cdc.gov/travel/destinations/list.
- Additional information and resources regarding vaccination of pregnant women can be found at www.cdc.gov/vaccines/adults/rec-vac/pregnant.html.

2. Influenza vaccination

- Annual vaccination against influenza is recommended for all persons aged ≥6 months. A list of currently available influenza vaccines can be found at http://www.cdc.gov/flu/protect/vaccine/vaccines.htm.
- Persons aged ≥6 months, including pregnant women, can receive the inactivated influenza vaccine (IIV). An age-appropriate IIV formulation should be used.
- Intradermal IIV is an option for persons aged 18 through 64 years.
- High-dose IIV is an option for persons aged ≥65 years.
- Live attenuated influenza vaccine (LAIV [FluMist]) is an option for healthy, non-pregnant persons aged 2 through 49 years.
- Recombinant influenza vaccine (RIV [Flublok]) is approved for persons aged ≥18 years.
- RIV, which does not contain any egg protein, may be administered to persons aged ≥18 years with egg allergy of any severity; IIV may be used with additional safety measures for persons with hives-only allergy to eggs.
- Health care personnel who care for severely immunocompromised persons who require care in a protected environment should receive IIV or RIV; health care personnel who receive LAIV should avoid providing care for severely immunosuppressed persons for 7 days after vaccination.

3. Tetanus, diphtheria, and acellular pertussis (Td/Tdap) vaccination

- Administer 1 dose of Tdap vaccine to pregnant women during each pregnancy (preferably during 27–36 weeks' gestation) regardless of interval since prior Td or Tdap vaccination.
- Persons aged ≥11 years who have not received Tdap vaccine or for whom vaccine status is unknown should receive a dose of Tdap followed by tetanus and diphtheria toxoids (Td) booster doses every 10 years thereafter. Tdap can be administered regardless of interval since the most recent tetanus or diphtheria-toxoid-containing vaccine.
- Adults with an unknown or incomplete history of completing a 3-dose primary vaccination series with Td-containing vaccines should begin or complete a primary vaccination series including a Tdap dose.
- For unvaccinated adults, administer the first 2 doses at least 4 weeks apart and the third dose 6–12 months after the second.
- For incompletely vaccinated (i.e., less than 3 doses) adults, administer remaining doses.
- Refer to the ACIP statement for recommendations for administering Td/Tdap as prophylaxis in wound management (see footnote 1).

4. Varicella vaccination

- All adults without evidence of immunity to varicella (as defined below) should receive 2 doses of single-antigen varicella vaccine or a second dose if they have received only 1 dose.
- Vaccination should be emphasized for those who have close contact with persons at high risk for severe disease (e.g., health care personnel and family contacts of persons with immunocompromising conditions) or are at high risk for exposure or transmission (e.g., teachers; child care employees; residents and staff members of institutional settings, including correctional institutions; college students; military personnel; adolescents and adults living in households with children; nonpregnant women of childbearing age; and international travelers).
- Pregnant women should be assessed for evidence of varicella immunity. Women who do not have evidence of immunity should receive the first dose of varicella vaccine upon completion or termination of pregnancy and before discharge from the health care facility. The second dose should be administered 4–8 weeks after the first dose.
- Evidence of immunity to varicella in adults includes any of the following:
  - documentation of 2 doses of varicella vaccine at least 4 weeks apart;
  - U.S.-born before 1980, except health care personnel and pregnant women;
  - history of varicella based on diagnosis or verification of varicella disease by a health care provider;
  - history of herpes zoster based on diagnosis or verification of herpes zoster disease by a health care provider; or
  - laboratory evidence of immunity or laboratory confirmation of disease.

5. Human papillomavirus (HPV) vaccination

- Three HPV vaccines are licensed for use in females (bivalent HPV vaccine [2vHPV], quadrivalent HPV vaccine [4vHPV], and 9-valent HPV vaccine [9vHPV]) and two HPV vaccines are licensed for use in males (4vHPV and 9vHPV).
- For females, 2vHPV, 4vHPV, or 9vHPV is recommended in a 3-dose series for routine vaccination at age 11 or 12 years and for those aged 13 through 26 years, if not previously vaccinated.

- For males, 4vHPV or 9vHPV is recommended in a 3-dose series for routine vaccination at age 11 or 12 years and for those aged 13 through 21 years, if not previously vaccinated. Males aged 22 through 26 years may be vaccinated.
- HPV vaccination is recommended for men who have sex with men through age 26 years who did not get any or all doses when they were younger.
- Vaccination is recommended for immunocompromised persons (including those with HIV infection) through age 26 years who did not get any or all doses when they were younger.
- A complete HPV vaccination series consists of 3 doses. The second dose should be administered 4–8 weeks (minimum interval of 4 weeks) after the first dose; the third dose should be administered 24 weeks after the first dose and 16 weeks after the second dose (minimum interval of 12 weeks).
- HPV vaccines are not recommended for use in pregnant women. However, pregnancy testing is not needed before vaccination. If a woman is found to be pregnant after initiating the vaccination series, no intervention is needed; the remainder of the 3-dose series should be delayed until completion or termination of pregnancy.

6. Zoster vaccination

- A single dose of zoster vaccine is recommended for adults aged ≥60 years regardless of whether they report a prior episode of herpes zoster. Although the vaccine is licensed by the U.S. Food and Drug Administration for use among and can be administered to persons aged ≥50 years, ACIP recommends that vaccination begin at age 60 years.
- Persons aged ≥60 years with chronic medical conditions may be vaccinated unless their condition constitutes a contraindication, such as pregnancy or severe immunodeficiency.

7. Measles, mumps, rubella (MMR) vaccination

- Adults born before 1957 are generally considered immune to measles and mumps. All adults born in 1957 or later should have documentation of 1 or more doses of MMR vaccine unless they have a medical contraindication to the vaccine or laboratory evidence of immunity to each of the three diseases. Documentation of provider-diagnosed disease is not considered acceptable evidence of immunity for measles, mumps, or rubella.

Measles component:

- A routine second dose of MMR vaccine, administered a minimum of 28 days after the first dose, is recommended for adults who:
  - are students in postsecondary educational institutions,
  - work in a health care facility, or
  - plan to travel internationally.
- Persons who received inactivated (killed) measles vaccine or measles vaccine of unknown type during 1963–1967 should be revaccinated with 2 doses of MMR vaccine.

Mumps component:

- A routine second dose of MMR vaccine, administered a minimum of 28 days after the first dose, is recommended for adults who:
  - are students in a postsecondary educational institution,
  - work in a health care facility, or
  - plan to travel internationally.
- Persons vaccinated before 1979 with either killed mumps vaccine or mumps vaccine of unknown type who are at high risk for mumps infection (e.g., persons who are working in a health care facility) should be considered for revaccination with 2 doses of MMR vaccine.

Rubella component:

- For women of childbearing age, regardless of birth year, rubella immunity should be determined. If there is no evidence of immunity, women who are not pregnant should be vaccinated. Pregnant women who do not have evidence of immunity should receive MMR vaccine upon completion or termination of pregnancy and before discharge from the health care facility.

Health care personnel born before 1957:

- For unvaccinated health care personnel born before 1957 who lack laboratory evidence of measles, mumps, and/or rubella immunity or laboratory confirmation of disease, health care facilities should consider vaccinating personnel with 2 doses of MMR vaccine at the appropriate interval for measles and mumps or 1 dose of MMR vaccine for rubella.

8. Pneumococcal conjugate (PCV13) vaccination

- General information
  - Adults are recommended to receive 1 dose of 13-valent pneumococcal conjugate vaccine (PCV13) and 1, 2, or 3 doses (depending on indication) of 23-valent pneumococcal polysaccharide vaccine (PPSV23).
  - PCV13 should be administered at least 1 year after PPSV23.
  - PPSV23 should be administered at least 1 year after PCV13, except among adults with immunocompromising conditions, anatomical or functional asplenia, cerebrospinal fluid leak, or cochlear implant, for whom the interval should be at least 8 weeks; the interval between PPSV23 doses should be at least 5 years.
  - No additional dose of PPSV23 is indicated for adults vaccinated with PPSV23 at age ≥65 years.
  - When both PCV13 and PPSV23 are indicated, PCV13 should be administered first; PCV13 and PPSV23 should not be administered during the same visit.
  - When indicated, PCV13 and PPSV23 should be administered to adults whose pneumococcal vaccination history is incomplete or unknown.
- Adults aged ≥65 years (immunocompetent) who:
  - have not received PCV13 or PPSV23: administer PCV13 followed by PPSV23 at least 1 year after PCV13.
  - have not received PCV13 but have received a dose of PPSV23 at age ≥65 years: administer PCV13 at least 1 year after PPSV23.
  - have not received PCV13 but have received 1 or more doses of PPSV23 at age <65 years: administer PCV13 at least 1 year after the most recent dose of PPSV23. Administer a dose of PPSV23 at least 1 year after PCV13

and at least 5 years after the most recent dose of PPSV23.

- have received PCV13 but not PPSV23 at age <65 years: administer PPSV23 at least 1 year after PCV13.
- have received PCV13 and 1 or more doses of PPSV23 at age <65 years: administer PPSV23 at least 1 year after PCV13 and at least 5 years after the most recent dose of PPSV23.

- Adults aged ≥19 years with immunocompromising conditions or anatomical or functional asplenia (defined below) who:
  - have not received PCV13 or PPSV23: administer PCV13 followed by PPSV23 at least 8 weeks after PCV13. Administer a second dose of PPSV23 at least 5 years after the first dose of PPSV23.
  - have not received PCV13 but have received 1 dose of PPSV23: administer PCV13 at least 1 year after the PPSV23. Administer a second dose of PPSV23 at least 8 weeks after PCV13 and at least 5 years after the first dose of PPSV23.
  - have not received PCV13 but have received 2 doses of PPSV23: administer PCV13 at least 1 year after the most recent dose of PPSV23.
  - have received PCV13 but not PPSV23: administer PPSV23 at least 8 weeks after PCV13. Administer a second dose of PPSV23 at least 5 years after the first dose of PPSV23.
  - have received PCV13 and 1 dose of PPSV23: administer a second dose of PPSV23 at least 8 weeks after PCV13 and at least 5 years after the first dose of PPSV23.
  - If the most recent dose of PPSV23 was administered at age <65 years, at age ≥65 years, administer a dose of PPSV23 at least 8 weeks after PCV13 and at least 5 years after the last dose of PPSV23.
  - Immunocompromising conditions that are indications for pneumococcal vaccination are: congenital or acquired immunodeficiency (including B- or T-lymphocyte deficiency, complement deficiencies, and phagocytic disorders excluding chronic granulomatous disease), HIV infection, chronic renal failure, nephrotic syndrome, leukemia, lymphoma, Hodgkin disease, generalized malignancy, multiple myeloma, solid organ transplant, and iatrogenic immunosuppression (including long-term systemic corticosteroids and radiation therapy).
  - Anatomical or functional asplenia that are indications for pneumococcal vaccination are: sickle cell disease and other hemoglobinopathies, congenital or acquired asplenia, splenic dysfunction, and splenectomy. Administer pneumococcal vaccines at least 2 weeks before immunosuppressive therapy or an elective splenectomy, and as soon as possible to adults who are newly diagnosed with asymptomatic or symptomatic HIV infection.

  Adults aged ≥19 years with cerebrospinal fluid leaks or cochlear implants: administer PCV13 followed by PPSV23 at least 8 weeks after PCV13; no additional dose of PPSV23 is indicated if aged <65 years. If PPSV23 was administered at age <65 years, at age ≥65 years, administer another dose of PPSV23 at least 5 years after the last dose of PPSV23.

- Adults aged 19 through 64 years with chronic heart disease (including congestive heart failure and cardiomyopathies, excluding hypertension), chronic lung disease (including chronic obstructive lung disease, emphysema, and asthma), chronic liver disease (including cirrhosis), alcoholism, or diabetes mellitus, or who smoke cigarettes: administer PPSV23. At age ≥65 years, administer PCV13 at least 1 year after PPSV23, followed by another dose of PPSV23 at least 1 year after PCV13 and at least 5 years after the last dose of PPSV23.

  Routine pneumococcal vaccination is not recommended for American Indian/Alaska Native or other adults unless they have an indication as above; however, public health authorities may consider recommending the use of pneumococcal vaccines for American Indians/Alaska Natives or other adults who live in areas with increased risk for invasive pneumococcal disease.

9. Hepatitis A vaccination

- Vaccinate any person seeking protection from hepatitis A virus (HAV) infection and persons with any of the following indications:
  - men who have sex with men;
  - persons who use injection or noninjection illicit drugs;
  - persons working with HAV-infected primates or with HAV in a research laboratory setting;
  - persons with chronic liver disease and persons who receive clotting factor concentrates;
  - persons traveling to or working in countries that have high or intermediate endemicity of hepatitis A (see footnote 1); and
  - unvaccinated persons who anticipate close personal contact (e.g., household or regular babysitting) with an international adoptee during the first 60 days after arrival in the United States from a country with high or intermediate endemicity of hepatitis A (see footnote 1). The first dose of the 2-dose hepatitis A vaccine series should be administered as soon as adoption is planned, ideally 2 or more weeks before the arrival of the adoptee.
- Single-antigen vaccine formulations should be administered in a 2-dose schedule at either 0 and 6–12 months (Havrix), or 0 and 6–18 months (Vaqta). If the combined hepatitis A and hepatitis B vaccine (Twinrix) is used, administer 3 doses at 0, 1, and 6 months; alternatively, a 4-dose schedule may be used, administered on days 0, 7, and 21–30 followed by a booster dose at 12 months.

10. Hepatitis B vaccination

- Vaccinate any person seeking protection from hepatitis B virus (HBV) infection and persons with any of the following indications:
  - sexually active persons who are not in a long-term, mutually monogamous relationship (e.g., persons with more than 1 sex partner during the previous 6 months); persons seeking evaluation or treatment for a sexually transmitted disease (STD); current or recent injection drug users; and men who have sex with men;

- health care personnel and public safety workers who are potentially exposed to blood or other infectious body fluids;
- persons who are aged <60 years with diabetes as soon as feasible after diagnosis; persons with diabetes who are aged ≥60 years at the discretion of the treating clinician based on the likelihood of acquiring HBV infection, including the risk posed by an increased need for assisted blood glucose monitoring in long-term care facilities, the likelihood of experiencing chronic sequelae if infected with HBV, and the likelihood of immune response to vaccination;
- persons with end-stage renal disease (including patients receiving hemodialysis), persons with HIV infection, and persons with chronic liver disease;
- household contacts and sex partners of hepatitis B surface antigen–positive persons, clients and staff members of institutions for persons with developmental disabilities, and international travelers to regions with high or intermediate levels of endemic HBV infection (see footnote 1); and
- all adults in the following settings: STD treatment facilities, HIV testing and treatment facilities, facilities providing drug abuse treatment and prevention services, health care settings targeting services to injection drug users or men who have sex with men, correctional facilities, end-stage renal disease programs and facilities for chronic hemodialysis patients, and institutions and nonresidential day care facilities for persons with developmental disabilities.

- Administer missing doses to complete a 3-dose series of hepatitis B vaccine to those persons not vaccinated or not completely vaccinated. The second dose should be administered at least 1 month after the first dose; the third dose should be administered at least 2 months after the second dose (and at least 4 months after the first dose). If the combined hepatitis A and hepatitis B vaccine (Twinrix) is used, give 3 doses at 0, 1, and 6 months; alternatively, a 4-dose Twinrix schedule may be used, administered on days 0, 7, and 21–30, followed by a booster dose at 12 months.
- Adult patients receiving hemodialysis or with other immunocompromising conditions should receive 1 dose of 40 mcg/mL (Recombivax HB) administered on a 3-dose schedule at 0, 1, and 6 months or 2 doses of 20 mcg/mL (Engerix-B) administered simultaneously on a 4-dose schedule at 0, 1, 2, and 6 months.

11. Meningococcal vaccination

- General information
  - Serogroup A, C, W, and Y meningococcal vaccine is available as a conjugate (MenACWY [Menactra, Menveo]) or a polysaccharide (MPSV4 [Menomune]) vaccine.
  - Serogroup B meningococcal (MenB) vaccine is available as a 2-dose series of MenB-4C vaccine (Bexsero) administered at least 1 month apart or a 3-dose series of MenB-FHbp (Trumenba) vaccine administered at 0, 2, and 6 months; the two MenB vaccines are not interchangeable, i.e., the same MenB vaccine product must be used for all doses.
  - MenACWY vaccine is preferred for adults with serogroup A, C, W, and Y meningococcal vaccine indications who are aged ≤55 years, and for adults aged ≥56 years: 1) who were vaccinated previously with MenACWY vaccine and are recommended for revaccination or 2) for whom multiple doses of vaccine are anticipated; MPSV4 vaccine is preferred for adults aged ≥56 years who have not received MenACWY vaccine previously and who require a single dose only (e.g., persons at risk because of an outbreak).
  - Revaccination with MenACWY vaccine every 5 years is recommended for adults previously vaccinated with MenACWY or MPSV4 vaccine who remain at increased risk for infection (e.g., adults with anatomical or functional asplenia or persistent complement component deficiencies, or microbiologists who are routinely exposed to isolates of Neisseria meningitidis).
  - MenB vaccine is approved for use in persons aged 10 through 25 years; however, because there is no theoretical difference in safety for persons aged >25 years compared to those aged 10 through 25 years, MenB vaccine is recommended for routine use in persons aged >10 years who are at increased risk for serogroup B meningococcal disease.
  - There is no recommendation for MenB revaccination at this time.
  - MenB vaccine may be administered concomitantly with MenACWY vaccine but at a different anatomic site, if feasible.
  - HIV infection is not an indication for routine vaccination with MenACWY or MenB vaccine; if an HIV-infected person of any age is to be vaccinated, administer 2 doses of MenACWY vaccine at least 2 months apart.
- Adults with anatomical or functional asplenia or persistent complement component deficiencies: administer 2 doses of MenACWY vaccine at least 2 months apart and revaccinate every 5 years. Also administer a series of MenB vaccine.
- Microbiologists who are routinely exposed to isolates of Neisseria meningitidis: administer a single dose of MenACWY vaccine; revaccinate with MenACWY vaccine every 5 years if remain at increased risk for infection. Also administer a series of MenB vaccine.
- Persons at risk because of a meningococcal disease outbreak: if the outbreak is attributable to serogroup A, C, W, or Y, administer a single dose of MenACWY vaccine; if the outbreak is attributable to serogroup B, administer a series of MenB vaccine.
- Persons who travel to or live in countries in which meningococcal disease is hyperendemic or epidemic: administer a single dose of MenACWY vaccine and revaccinate with MenACWY vaccine every 5 years if the increased risk for infection remains (see footnote 1); MenB vaccine is not recommended because meningococcal disease in these countries is generally not caused by serogroup B.
- Military recruits: administer a single dose of MenACWY vaccine.
- First-year college students aged ≤21 years who live in residence halls: administer a single dose of MenACWY

vaccine if they have not received a dose on or after their 16th birthday.

- Young adults aged 16 through 23 years (preferred age range is 16 through 18 years): may be vaccinated with a series of MenB vaccine to provide short-term protection against most strains of serogroup B meningococcal disease.

12. Haemophilus influenzae type b (Hib) vaccination

- One dose of Hib vaccine should be administered to persons who have anatomical or functional asplenia or sickle cell disease or are undergoing elective splenectomy if they have not previously received Hib vaccine. Hib vaccination 14 or more days before splenectomy is suggested.
- Recipients of a hematopoietic stem cell transplant (HSCT) should be vaccinated with a 3-dose regimen 6–12 months after a successful transplant, regardless of vaccination history; at least 4 weeks should separate doses.
- Hib vaccine is not recommended for adults with HIV infection since their risk for Hib infection is low.

13. Immunocompromising conditions

- Inactivated vaccines (e.g., pneumococcal, meningococcal, and inactivated influenza vaccines) generally are acceptable and live vaccines generally should be avoided in persons with immune deficiencies or immunocompromising conditions. Information on specific conditions is available at www.cdc.gov/vaccines/ hcp/ acip-recs/index.html.

A Tribute to Professor Badar Jahan Farooqi (Late)

Sumerized by: Dr. Muhammad Salman

Infectio®

"A good doctor's comforting and reassuring words are sometimes more powerful than medicine"

In this issue of Infectio, we would like to present the biography of Prof. Badar Jahan. She was affiliated with us since the inception of Infectio® Magazine. We feel grieved on her death and would like to pay the tribute for her services towards medical fraternity. This issue is dedicated to Prof. Badar Jahan Farooqi, Following is her biography in this face to face segment

Dr. Badar Jahan was born on October 5, 1938 in India. After partition her family shifted to Karachi Pakistan. She passed the matriculation & intermediate examination from Karachi. Later she attended the Liaquat Medical College, where, she completed her medical education.

She worked as a demonstrator in the department of Pathology at Dow Medical College Karachi for 8 years. She went to UK in 1971 and worked in Pathology/Microbiology Departments of various hospitals of London. Her last job was at "Hospital for sick children at Great Ormond Street London."While being in UK she was awarded D. Path Clinical Pathology from The Royal College of Surgeons of England and The Royal College of Physicians of London. She did her M.Sc. in Medical Microbiology from London University. She left UK in 1985 and joined Department of Microbiology at Aga Khan University Karachi in the same year. She did her Ph.D. in the subject of Bacterial Genetics as well as FCPS Microbiology in the year 1996. After working for almost 16 years at Aga Khan University Hospital, she joined Ziauddin University Hospital in 2001. After working for almost 15 years at Ziauddin University Hospital; she left Ziauddin University and joined SIUT as Head of Microbiology and Chairperson Infection Control in SIUT. She remained affiliated with SIUT till her death

Prof. Badar Jahan was also associated with various medical journals of significant importance which include; Infectio, Annals of Abbasi Shahed Hospital, Journal of College of Physician and Surgeon of Pakistan and Journal of Pakistan Medical Association.

Our deepest condolence go to her family, friends, and the people of the medical community; specially the field of microbiology

Choose the correct answer

A 4-year old child has an acute illness of coryza, barky cough hoarseness and inspiratory stridor. These is low grade fever no lower respiratory tract finding. The most likely etiology is:

a) Influenza virus
b) Para-influenza virus
c) Respiratory syncytial virus
d) Calic virus
e) Adenovirus

Winners of Lucky Draw

The editorial board of *Infectio*® magazine is pleased to announce the names of winners for quiz from the fourth special issue. The lucky draw was held in a clinical meeting at Dr. Ziauddin University hospital, Karachi on **6th October 2016**. Following are the names of lucky draw winners drawn at randomly by Prof. Ejaz Ahmed Vohra and his team.

We congratulate the winners and once again thank all contestants for their participation in quiz

1. **Dr. Khalil Ahmed, Senior Registrar, GMMMC, Sukkur**
2. **Dr. Farzana Nawaz, Pediatric Physician, Federal Govt. Polyclinic Hospital, Islamabad**
3. **Dr. Tariq Saeed, Assistant Professor Pediatrics, Holy Family Hospital, Rawalpindi**
4. **Dr. Jamil Akhtar, Consultant Pediatrician, Halim Hospital, Karachi**
5. **Dr. Shamsul Arfeen, Child Specialist, Hanif Hospital, Karachi**
6. **Dr. Mazhr Rasool, Pediatrician, DHQ Hospital, Muridke**
7. **Dr. Waqar Hussain, TMO Pediatrics, Lady Reading Hospital, Peshawar**
8. **Dr. Nadeem Haider, THQ Hospital, Shujabad**
9. **Dr. Umair Khalid, DHQ Hospital, Faisalabad**
10. **Dr. Sanaullha, Pediatrician, Civil Hospital, Quetta**

Ask The Experts

Infectious diseases kill more people worldwide than any other single cause. Diagnosis of infectious diseases are nearly always initiated by medical history and physical examination followed by laboratory reports

Some infectious diseases can spread from person to person; some are transmitted by insects' bites or animals while other are acquired by ingesting contaminated food or water or being exposed to organisms in the environment. Timely identification of a disease ensures proper treatment and avoidance of any kind of complications associated with the disease

It has been observed that doctors face different types of complex cases on daily basis. In order to help them we have taken an initiative to introduce **Ask The Experts** service in which you can enquire any type of case (communicable or non-communicable) faced during the daily practice. Editorial Board will respond to all queries but only selected cases will be published in the next edition of *Infectio*® which will serve to be beneficial for the medical community

Dr. Name	
Contact Number	
Email	
Clinic Address	
City	

Note: Selection of case will totally depend upon the editorial board. Kindly fill the form and hand it over to the representative of SAMI Pharmaceuticals.