

# New Innovations in Disease Diagnosis: A Review

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## Review Article

Received: 15/11/2016  
Revised: 16/11/2016  
Accepted: 21/11/2016

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**Keywords:** Disease, Diagnosis,  
Deficiency diseases, HIV,  
Bacterial infections, Infectious  
diseases

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### ABSTRACT

A disease or medical and an abnormal condition happened to the body or mind. It causes pain, dull feeling and lastly death. It includes: parts of the body being hurt, not having the usual abilities, medical problems or organ malfunction, microbial infections, health issues, having pain or bad symptoms, unusual body shapes. The study of disease is called pathology. Disease can be described as a medical condition associated with particular symptoms and signs. It can be caused by external factors like pathogens, or caused by internal malfunctions mainly the immune system such as an immunodeficiency, or a hypersensitivity such as allergies and autoimmunity. Diseases are broadly classified to any abnormal condition that causes pain, dysfunction, distress, or death to the person affected with similar problems. It includes injuries, disabilities, disorders, syndromes, infections, isolated symptoms, deviant behaviours, and atypical variations of structure and its function and for others these may be considered as distinguishable categories. Diseases can affect people not only physically and mentally, as living with a disease will alter the affected person's thinking ability. Death caused by disease are often natural. Diseases are categorised into four main types: infectious diseases, deficiency diseases, genetic diseases and physiological diseases. Diseases can be classified as contagious and non-contagious. The fatal diseases in humans are HIV, Coronary Artery Disease, Chronic Obstructive Pulmonary Disease and cancer.

## INTRODUCTION TO DEATH CAUSING DISEASES

The human suffering and death caused by many bacteria called as microorganisms which establish the presence of infectious diseases. In spite of the outraging successes in control by improved sanitation, immunization and antimicrobial therapy, the infectious diseases continue to be a common and significant problem in disease diagnosis [1-20]. The most common disease is common cold and HIV leading to AIDS. The chronic neurological diseases that were thought degenerative have confirmed to be infectious. The future will continue to reveal the infectious diseases as a major medical issues. Clinicians use some terms that are not easy to define a particular disease. Infection can be defined as as a microbial growth with a host response including essential features. Human body surfaces that communicate with the external environment (e.g., skin, small intestine and trachea) support a normal flora and they usually do not cause disease. The microbial flora can invade and produce an infection under the right situations.

There are other medical terms which are commonly used in describing the infectious diseases. Pathology refers to the abnormality shown by a bacterial infection and pathogenesis are the events produced by the bacteria. A pathogenic microorganism is a microbe that leads to pathological symptoms and death lastly. The presence of pathological symptoms and an infectious disease is a disease caused by a microorganism [21-30]. Virulence refers to power of a microorganism to cause a disease in a host. For eg: a microorganism may be non-infectious for a normal host and highly virulent for an immunosuppressed host. Immunity refers to the degree of resistance of the host for a particular microbe. The occurrence of an infectious disease in humans is a motivating process that represents a host-parasite interaction. The parasite multiplies in number and host pursues to control. The physicians work is to recognize that process and to interrupt it which accounts for the patient's illness.

The infectious diseases are usually characterized by the involved organs or organ system. This is useful and acts as a device in infected patients. For eg. patients do not complain about pneumococcal pneumonia but complain about fever, cough and chest pain. The physician judges based on the occurrence of the disease, if it is to chest calls it as respiratory infection and then ensure to develop data proving pneumonia [30-40]. Based on the location we differentiate infections as follows: respiratory, gastrointestinal, genitourinary, nervous system, skin and

soft tissue, bone and joint, cardiovascular and generalized infections. The diagnosis, prevention, pathogenesis and treatment of the infectious diseases is a stimulating process.

**The 10 fatal diseases currently running in the world are:**

1. Heart disease
2. Brain stroke
3. Chronic Obstructive Pulmonary Disease
4. Human Immunodeficiency virus/ Acquired Immunodeficiency Syndrome
5. Prenatal deaths of newborns
6. Respiratory diseases
7. Organ Cancers (Trachea, Bronchus and Lung)
8. Water borne diseases (Diarrhea)
9. Diabetes
10. Airborne disease (Tuberculosis)

## SOME DISEASES AND THEIR DIAGNOSIS

### HEART DISEASE

Heart disease is also called as coronary artery disease (CAD) or ischemic heart disease (IHD) that occurs due to narrowed blood vessels. The diagnosis of CAD can be done in many ways: Echocardiography, Electrocardiogram (EKG), Stress testing, Chest X Ray, Coronary Angiography and Cardiac Catheterization. It is a simple, painless test which detects and records the heart's electrical activity. This detect and show the heart beat whether it is in rhythm i.e. normal or abnormal. An EKG also records the strength and timing of electrical signals as they pass through the heart. It reveals heart damage due to CHD and reminds of previous and current heart symptoms. About 599,000 people die of heart disease every year in the United States. The major risk factors are high blood pressure, high cholesterol and smoking. Regular exercise, good nutrition and diet can help to decrease this risk.

### BRAIN STROKE

Brain stroke occurs when a brain artery is blocked. Oxygen-deprived brain cells die within 4 minutes. Risk factors for stroke are similar for CAD and good health can lower this risk. The main symptoms of this are: speaking and understanding trouble, paralysis or numbness of the external organs, sight trouble, Headache, walking trouble. It is also called as haemorrhagic brain stroke <sup>[41-60]</sup>. Stroke is a medical emergency. Rapid treatment will save your life and enhance your chances of recovery.

### CHRONIC OBSTRUCTIVE PULMONARY DISEASE

COPD is a chronic and progressive lung disease that makes problem in breathing. Chronic bronchitis and emphysema are COPD types. According to WHO, approximately 3.1 million deaths occurred due to COPD in USA. That represents about 5.6 % of death rate is found since 2000. In 2004, about 64 million people around the world were living with COPD <sup>[61-80]</sup>. The main cause agent of COPD is smoking. The other factor is by both indoor and outdoor air pollution. COPD affects men and women at the same rate. There is no cure for COPD but its movement can be decreased with medication.

### HUMAN IMMUNODEFICIENCY VIRUS/ ACQUIRED IMMUNODEFICIENCY SYNDROME (HIV/AIDS)

HIV is a short form of human immunodeficiency virus. A virus that attacks and disturbs the immune system from top to bottom. HIV is the main causative agent of AIDS. AIDS is a chronic and life-threatening condition leading to death. According to the Foundation for AIDS Research, almost 39 million people have died due to HIV/AIDS. About 1.5 million people lost their lives suffering from AIDS. That's about 2.7 % of deaths worldwide. 35.3 million people around the world were infected with HIV by the end of 2012. About 5,700 more become infected every day. Rates vary dramatically by geographical location. HIV started in sub-Saharan Africa where almost one in 20 adults is suffering from AIDS. The region is home to 70 % of all people who have HIV. It is also home to 91 % of the HIV-positive children all over the world.

## PRENATAL DEATHS OF NEWBORNS

It is the most common cause of perinatal mortality leading to almost 30 % of neonatal deaths. Infant respiratory distress syndrome is the leading cause of death in 1% of preterm infants. Birth defects cause about 21 % of neonatal death. According to WHO, as many as 1.1 million deaths were due to prematurity and low birth weight complications [81-100]. Three quarters of deaths happen within the first week of life. Lack of skilled medical care makes huge problem in developing countries. Many deaths can be avoided with good prenatal and postnatal care.

## CONCLUSION

In spite of scientists and doctors having tremendous progress in disease diagnoses by using different sources like Echocardiography, Electrocardiogram, Coronary angiography, etc and have discovered many treatment methods still many of the disease need full cure. All of the above diagnosis methods are successfully used till now but some advanced techniques must come in future to cure the other deadliest diseases. Investigations should be limited to simple laboratory testing unless the clinical picture suggests some other diagnosis. Effective disease management, inventing new diagnostic methods and usage of certain drugs will bring a change in disease diagnosis in the coming future.

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