WHO-Facts Sheet

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1. CORONAVIRUS NEVER BEFORE SEEN IN HUMANS IS THE CAUSE OF SARS

Unprecedented collaboration identifies new pathogen in record time

The World Health Organization announced that a new pathogen, a member of the coronavirus family never before seen in humans, is the cause of Severe Acute Respiratory Syndrome (SARS). The speed at which this virus was identified is the result of the close international collaboration of 13 laboratories from 10 countries. While many lines of evidence have found strong associations between this virus and the disease over the last weeks, final confirmation was arrived at on April 16, 2003.

"The pace of SARS research has been astounding," said Dr. David Heymann, Executive Director, WHO Communicable Diseases programmes. "Because of an extraordinary collaboration among laboratories from countries around the world, we now know with certainty what causes SARS."

The successful identification of the coronavirus means that scientists can now confidently turn to other SARS challenges. For example, various laboratories continue to work to unravel the genetic information of the SARS virus and compare the sequences obtained from viruses in different parts of the world.

Top laboratory researchers are collaborating with WHO to design the next steps, a strategy for transforming these basic research discoveries into diagnostic tools which will help to successfully control this disease. Now we can move away from methods like isolation and quarantines and move aggressively towards modern intervention strategies including specific treatments and eventually vaccination. With the establishment of the causative agent, we are a crucial step closer."

This collaboration has brought together leading scientific expertise, and was established after WHO issued a global alert on SARS on March 12, 2003. The priority has been to find the cause and to develop diagnostic tests. Two laboratories in China recently joined this network of laboratories from Canada, France, Germany, Hong Kong Special Administrative Region of China, Japan, the Netherlands, Singapore, the United Kingdom, and the United States of America.

"Today, the first part of the mission of our network has been fulfilled, as researchers have both detected a hitherto unknown virus and established it as the cause of SARS. The new coronavirus has been named by WHO and member laboratories as "SARS virus," said Dr Albert Osterhaus, the Director of Virology at Erasmus Medical Center in Rotterdam. Erasmus completed the work to definitely prove that the new coronavirus causes SARS.

Due to the urgency surrounding the worldwide threat to health of SARS and early indications this was a new member of the coronavirus family, research has proceeded under the assumption that SARS was caused by a new coronavirus.

Thirteen laboratories have been working on meeting Koch's postulates, necessary to prove disease causation. These postulates stipulate that to be the causal agent, a pathogen must meet four conditions: it must be found in all cases of the disease, it must be isolated from the host and grown in pure culture, it must reproduce the original disease when introduced into a susceptible host, and it must be found in the experimental host so infected.

Credit for the coronavirus findings, which definitively pinpoints the cause of SARS, is attributed to the 13 laboratories, working in conjunction with WHO.

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"The people in this network have put aside profit and prestige to work together to find the cause of this new disease and to find way new ways of fighting it," said Dr Klaus Stöhr, WHO virologist and the coordinator of the collaborative research network. "In this globalized world, such collaboration is the only way forward in tackling emerging diseases."

WHO and the network of laboratories dedicate their detection and characterization of the SARS virus to Dr Carlo Urbani, the WHO scientist who first alerted the world to the existence of SARS in Hanoi, Vietnam, and who died from the disease in Bangkok on March 29, 2003.

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2. LEPROSY: URGENT NEED TO END STIGMA AND ISOLATION

The world is making great progress towards the goal of eliminating leprosy as a public health problem. But serious concerns remain in several countries, including India, Nepal and Brazil.

This was the message delivered at the opening of the annual gathering at Yangon, Myanmar, on February 6, of leprosy endemic countries and partners sponsored by the World Health Organization (WHO).

Myanmar itself, despite many obstacles in terms of resources, security problems and geography, is close to meeting the target of leprosy elimination. The country has managed to bring down the number of cases from more than 53 per 10,000 population in 1987 to very slightly over one per 10,000 at the end of 2002. Elsewhere, however, a combination of lack of political commitment and social and organisational problems remain, holding back progress.

The global health community agreed in 1999 to create the Global Alliance to Eliminate Leprosy (GAEL) with a target of eliminating leprosy as a public health problem by the year 2005. Elimination has been defined as less than one case per 10,000 people. Much progress has already been made towards this goal, and almost all of the countries where leprosy was a major public health problem at the end of the 20th century are now on track to hit the elimination goal.

Among the 122 countries where the disease was considered endemic in 1985, 108 have now reached the goal of elimination at the country level. Today, 90% of cases are found in India, Brazil, Nepal, Madagascar, Mozambique and Myanmar (in order of importance).

GAEL brings together key partners working to detect and treat all persons affected by leprosy and thereby eliminate the disease from all countries by 2005. Key to reaching this goal is to diagnose and treat leprosy just like any other disease, without stigma or isolation.

"Diagnosing and treating leprosy through the public health system is vital if we are to avoid continuing stigma and prejudice against leprosy patients," says Dr David Heymann, Executive Director in charge of Communicable Disease Programmes at the World Health Organization. "Continuing to treat leprosy patients through expensive and separate programmes has been shown to be the wrong approach - for health systems and for the patients they look after."

In recent years access to leprosy diagnosis and treatment within general health services has been greatly improved. Mass media campaigns have also helped create awareness of the availability of free and effective treatment as well as to dispel fear about the disease.

The reasons why India and one or more other countries may miss the 2005 deadline are complex and include the delay in improving access to – and coverage of - leprosy treatment particularly in highly endemic areas. The continued existence of specialized leprosy services also tends to hinder the full integration of leprosy services into the primary health care system.

This conflict of interest has been encountered in many countries but is gradually being brought under control as more and more countries appreciate that, the only effective and sustainable way to diagnose and treat leprosy is using the staff and resources of the local primary health centers within the communities where it is found.

This is also a point of contention between several international non-governmental organizations (NGOs) and GAEL. Some of the NGOs do not believe that leprosy can be treated through the public health system, just like any other disease. GAEL says, however, that this approach does work and will continue to work.

Since 1995, leprosy patients in all countries have had access to free drug treatments, first through a donation by the Nippon Foundation and now through the Novartis Foundation for Sustainable Development. This highly effective multi-drug treatment has contributed greatly to the success of bringing down the rates of leprosy infection around the world. "Novartis is fully committed to ensuring that every leprosy patient in the world receives high quality drugs free of cost. We will continue our support to the programme as long as it is required,"

said Dr Daniel Vasella, Chairman and Chief Executive Officer of Novartis. The Nippon Foundation, which has been supporting the programme for the last 28 years, reaffirmed its commitment to support this global effort to eliminate leprosy at the meeting.

"The elimination of leprosy as a public health problem is only the first stage of humanity's fight against this age-old disease," said Mr. Yohei Sasakawa, President of The Nippon Foundation and Special Ambassador for the Global Alliance. "This is an honourable mission that calls for a united effort by all the stake-holders. We have reached the last mile of our 100-mile journey. But this last mile will be the most difficult to travel. We must keep moving and not falter."

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3. INFLUENZA

Overview

Influenza is caused by a virus that attacks mainly the upper respiratory tract - the nose, throat and bronchi and rarely also the lungs. The infection usually lasts for about a week: It is characterized by sudden onset of high fever, myalgia, headache and severe malaise, non-productive cough, sore throat, and rhinitis. Most people recover within 1 to 2 weeks without requiring any medical treatment. In the very young, the elderly and people suffering from medical conditions such as lung diseases, diabetes, cancer, kidney or heart problems, influenza poses a serious risk. In these people, the infection may lead to severe complications of underlying diseases, pneumonia and death.

Influenza rapidly spreads around the world in seasonal epidemics and imposes a considerable economic burden in the form of hospital and other health care costs and lost productivity. In the United States of America, for example, recent estimates put the cost of influenza epidemics to the economy at US$ 71-167 billion per year.

In annual influenza epidemics 5-15% of the population are affected with upper respiratory tract infections. Hospitalization and deaths mainly occur in high-risk groups (elderly, chronically ill). Although difficult to assess, these annual epidemics are thought to result in between 3 and 5 million cases of severe illness and between 250,000 and 500,000 deaths every year around the world. Most deaths currently associated with influenza in industrialized countries occur among the elderly over 65 years of age.

Much less is known about the impact of influenza in the developing world. However, influenza outbreaks in the tropics where viral transmission normally continues year-round tend to have high attack and case-fatality rates. For example, during an influenza outbreak in Madagascar in 2002, more than 27,000 cases were reported within 3 months and 800 deaths occurred despite rapid intervention. An investigation of this outbreak, coordinated by WHO, found that there were severe health consequences in poorly nourished populations with limited access to adequate health care (see "Outbreak of influenza, Madagascar, July-August 2002", Weekly Epidemiological Record, http://www.who.int/wer/pdf/2002/wer7746.pd. It is not possible to extrapolate the exact annual burden of influenza in the tropics from data from such occasional and severe outbreaks.

The virus

The currently circulating influenza viruses that cause human disease are divided into two groups: A and B. Influenza A has 2 subtypes which are important for humans: A(H3N2) and A(H1N1), of which the former is currently associated with most deaths. Influenza viruses are defined by 2 different protein components, known as antigens, on the surface of the virus. They are spike-like features called haemagglutinin (H) and neuraminidase (N) components.

The genetic makeup of influenza viruses allows frequent minor genetic changes, known as antigenic drift, and these changes require annual reformulation of influenza vaccines.

Pandemic influenza

Three times in the last century, the influenza A viruses have undergone major genetic changes mainly in their H-component, resulting in global pandemics and large tolls in terms of both disease and deaths. The most infamous pandemic was "Spanish Flu" which affected large parts of the world population and is thought to have killed at least 40 million people in 1918-1919. More recently, two other influenza A pandemics occurred in 1957 ("Asian influenza") and 1968 ("Hong Kong influenza") and caused significant morbidity and mortality globally. In contrast to current influenza epidemics, these pandemics were associated with severe outcomes also among healthy younger persons, albeit not on such a dramatic scale as the "Spanish flu" where the death rate was highest among healthy young adults.

Most recently, limited outbreaks of a new influenza subtype A(H5N1) directly transmitted from birds to humans have occurred in Hong Kong, SARS China in 1997 and 2003.

Transmission

The virus is easily passed from person to person through the air by droplets and small particles when infected individuals cough or sneeze. The influenza virus enters the body through the nose or throat. It then takes between 1 and 4 days for the person to develop symptoms. Someone suffering from influenza can be infectious from the day before they develop symptoms until 7 days afterwards.

Disease spreads very quickly among the population especially in crowded circumstances. Cold and dry weather enable the virus to survive longer outside the body than in other conditions and, as a consequence, seasonal epidemics in temperate areas appear in winter.

Diagnosis

Respiratory illness caused by influenza is difficult to distinguish from illness caused by other respiratory pathogens on the basis of symptoms alone. However, during laboratory-confirmed influenza outbreaks, the majority of persons seeking medical advice for upper respiratory tract infections are likely to be infected by influenza. Laboratory confirmation will be required between annual influenza epidemics. Rapid diagnostic tests have recently become available that can be used to detect influenza viruses within 30 minutes.

Despite the availability of rapid diagnostic tests, the collection of clinical specimens for viral culture remains critical to provide information regarding circulating influenza subtypes and strains. This is needed to guide decisions regarding influenza treatment and chemoprophylaxis and to formulate vaccine for the coming year.

Prevention: Influenza vaccines

Vaccination is the principal measure for preventing influenza and reducing the impact of epidemics. Various types of influenza vaccines have been available and used for more than 60 years. They are safe and effective in preventing both mild and severe outcomes of influenza (see WHO position paper, "Influenza vaccines", Weekly Epidemiological Record, http://www.who.int/wer/pdf/2002/wer7728.pdf).

It is recommended that elderly persons, and persons of any age who are considered at “high risk” for influenza-related complications due to underlying health conditions, should be vaccinated. Among the elderly, vaccination is thought to reduce influenza-related morbidity by 60% and influenza-related mortality by 70-80%. Among healthy adults the vaccine is very effective (70-90%) in terms of reducing influenza morbidity, and vaccination has been shown to have substantial health-related and economic benefits in this age group. The effectiveness of influenza vaccine depends primarily on the age and immunocompetence of the vaccine recipient and the degree of similarity between the viruses in the vaccine and those in circulation. Influenza vaccination can reduce both health-care costs and productivity losses associated with influenza illness. (see “Recommendations for the use of inactivated influenza vaccines and other preventive measures", Weekly Epidemiological Record.
http://www.who.int/wer/pdf/2000/wer7535.pdf

All current inactivated influenza vaccines contain trace levels of egg protein and should not be used by individuals with egg protein allergies.

Constant genetic changes in influenza viruses mean that the vaccines’ virus composition must be adjusted annually to include the most recent circulating influenza A(H3N2), A(H1N1) and influenza B viruses.

The World Health Organization's Global Influenza Surveillance Network writes the annual vaccine recipe. The network, a partnership of 112 National Influenza Centres in 83 countries, is responsible for monitoring the influenza viruses circulating in humans and rapidly identifying new strains. Based on information collected by the Network, WHO recommends annually a vaccine that targets the 3 most virulent strains in circulation.

Treatment and prophylaxis: Antiviral agents

For most people influenza is an upper respiratory tract infection that lasts several days and requires symptomatic treatment only. Within days, the person's body will eliminate the virus. Antibiotics, such as penicillin, which are designed to kill bacteria, cannot attack the virus. Therefore antibiotics have no role in treating influenza in otherwise healthy people although they are used to treat complications.

Antiviral drugs for influenza are an important adjunct to influenza vaccine for the treatment and prevention of influenza. However, they are not a substitute for vaccination. For several years, four antiviral drugs that act by preventing influenza virus replication have been available. They differ in terms of their pharmacokinetics, side effects, routes of administration, target age groups, dosages, and costs.

When taken before infection or during early stage of the disease (within 2 days of illness onset), antivirals may help prevent infection, and if infection has already taken hold, their early administration may reduce the duration of symptoms by 1-2 days.

For several years, amantadine and rimantadine were the only antiviral drugs. However, whilst relatively inexpensive, these drugs are effective

only against type A influenza, and may be associated with severe adverse effects (including delirium and seizures that occur mostly in elderly persons on higher doses). When used for prophylaxis of pandemic influenza at lower doses, such adverse events are far less likely. In addition, the virus tends to develop resistance to these drugs.

A new class of antivirals, the neuraminidase inhibitors, has been developed. Such drugs, zanamivir and oseltamivir, have fewer adverse side effects (although zanamivir may exacerbate asthma or other chronic lung diseases) and the virus less often develops resistance. However, these drugs are expensive and currently not available for use in many countries.

In severe influenza, admission to hospital, intensive care, antibiotic therapy to prevent secondary infection and breathing support may be required.

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4. FEEDING HOPE: NUTRITION PLAYS KEY ROLE IN HIV/AIDS CARE

Agood diet is one of the simplest means of helping people live with HIV / AIDS and may even help delay the progression of the deadly virus, two UN agencies said today. A new manual published jointly by the Food and Agriculture Organization (FAO) and the World Health Organization (WHO) recognizes the relationship between infection and nutrition and offers simple dietary suggestions for the estimated 42 million people living with HIV / AIDS. (It offers practical solutions for people trying to balance their diets in settings around the world)

By bolstering the immune system and boosting energy levels, balanced nutrition can help the body fight back against the ravages of the disease and by maintaining body weight it can support drug treatments and prevent malnutrition.

"The relationship between HIV / AIDS and malnutrition is a particularly extreme example of the vicious cycle of immune dysfunction, infectious disease and malnutrition," said Dr David Nabarro, WHO Executive Director for Sustainable Development and Healthy Environments.

"The nutritional aspect of HIV / AIDS has been ignored for a long time. The attention was always focused on drugs," said William Clay of FAO's Food and Nutrition division, "The message was always: "Take two tablets after meals'. But they forgot about the meals."

Almost 95 percent of people with HIV / AIDS live in developing countries where healthcare, resources and drugs are scarce. For them a balanced diet is a positive way of responding to the illness. "Food isn't a magic bullet. It won't stop people dying of AIDS," Clay said, "But it can help them live longer, more comfortable and more productive lives."

Dr Graeme Clugston, Director of WHO's Department for Nutrition in health and Development, confirmed the need to pay special attention to the role of nutrition on HIV / AIDS and HIV / AIDS on nutrition: "The effect of HIV on nutrition begins early in the course of the disease, even before an individual may be aware that he or she is infected with the virus."

The Aids Equation

Widespread AIDS often occurs when a whole range of social and economic circumstances - hunger, food insecurity, desperate poverty and social breakdown - collide with the presence of the human immunity suppressing virus (HIV) in the population. Such circumstances may force people, especially young men and women, into high-risk activities like prostitution in order to feed themselves and their families.

When HIV / AIDS strikes a family member the effect ricochets through the lives of the entire household. With the food-producer ill, the family may become malnourished and therefore more susceptible to infection.

AIDS has a devastating effect on a person's nutritional well-being:

- nutrient absorption is reduced;
- appetite and metabolism are disrupted;
- muscles, organs and other tissues waste away;
- secondary infections and other stresses increase demands for energy and nutrients.

Despite blunt appetites and difficulties in eating, people living with HIV / AIDS should eat considerably more food to fight the illness and make up for weight loss. As part of a balanced diet someone affected by HIV / AIDS needs more protein to rebuild muscle tissue, more energy-rich foods for weight gain, immune system-boosting vitamins and minerals and water to combat dehydration.

Food to Care

The FAO / WHO manual offers households caring for a family member with AIDS inexpensive, locally available remedies for the symptoms linked to the disease. Herbs and spices can stimulate a sluggish appetite or digestion and may have other beneficial effects. Cinnamon can be brewed into a tea to calm chesty coughs, for example, and mint leaves can be used as a gargle. By encouraging good nutritional habits, FAO and WHO hope the

manual will improve the diet, health and resistance to infection of the entire family. Designed to be used by carers, health-workers, community groups and non-governmental organizations, the manual includes:

- forms to monitor weight loss and food intake;
- fact-sheets outlining the principles of a healthy diet;
- tips on how to ensure good hygiene when preparing food;
- recipes with immune system-boosting micro-nutrients like vitamins and minerals.

It focuses on ways of easing the symptoms of HIV / AIDS - lack of appetite, tiredness, soreness of mouth - by suggesting recipes for soups, teas and stews using fruit and vegetables - guava, papaya and baobab for example - that grow in the rural areas of the developing world hardest hit by the AIDS epidemic.

"We hope this guide will be a building block, that it will be adapted by AIDS-affected communities and that it will make people aware of the vital role played by nutrition for someone living with HIV or AIDS," said Clay.

Spreading the Word

To ensure that the benefits which can be derived from proper nutrition reach people living with HIV / AIDS, FAO and WHO are also developing training courses and educational materials for health workers and care providers. This week, the first field-testing of this course is occurring in South Africa and it is envisaged that the course will be published as a complete package with overheads and trainers' and participants' guide in May 2003.

"Nutrition counseling and support is an essential component of care for the HIV-infected person and it is particularly important in resource-constrained settings where malnutrition and food insecurity are endemic," said Ms Randa Saadeh, the WHO Technical Officer responsible for the training and educational programmes.

Concurrently, WHO is also developing norms and standards for nutritional intake for people living with HIV / AIDS. The relationship between HIV / AIDS and malnutrition presents a classic example of the vicious cycle of immune dysfunction, infectious disease and malnutrition. However, current knowledge is limited. WHO is therefore organizing an expert consultation to review and provide guidance on nutrient and dietary requirements for PLWHA, and to develop a research agenda to determine the impact of improved nutrition on HIV prevention and rate of progression from HIV to AIDS, and the frequency and severity of opportunistic infections; and to develop / promote food technologies which can benefit HIV-affected populations.

"We hope that, with this new information, we can assist governments and organizations in drafting guidelines on nutritional care and support for PLWHA and in developing food / nutrition interventions for HIV-affected populations," added Saadeh.

The Manual on Nutritional Care and Support for People Living with HIV / AIDS (PLWHA) entitled Living Well with HIV / AIDS is available from FAO.

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