Ten things you need to know about pandemic influenza

1. Pandemic influenza is different from avian influenza.

Avian influenza refers to a large group of different influenza viruses that primarily affect birds. On rare occasions, these bird viruses can infect other species, including pigs and humans. The vast majority of avian influenza viruses do not infect humans. An influenza pandemic happens when a new subtype emerges that has not previously circulated in humans. For this reason, avian H5N1 is a strain with pandemic potential, since it might ultimately adapt into a strain that is contagious among humans. Once this adaptation occurs, it will no longer be a bird virus—it will be a human influenza virus. Influenza pandemics are caused by new influenza viruses that have adapted to humans.

2. Influenza pandemics are recurring events.

An influenza pandemic is a rare but recurrent event. Three pandemics occurred in the previous century: “Spanish influenza” in 1918, “Asian influenza” in 1957, and “Hong Kong influenza” in 1968. The 1918 pandemic killed an estimated 40–50 million people worldwide. That pandemic, which was exceptional, is considered one of the deadliest disease events in human history. Subsequent pandemics were much milder, with an estimated 2 million deaths in 1957 and 1 million deaths in 1968.

A pandemic occurs when a new influenza virus emerges and starts spreading as easily as normal influenza – by coughing and sneezing. Because the virus is new, the human immune system will have no pre-existing immunity. This makes it likely that people who contract pandemic influenza will experience more serious disease than that caused by normal influenza.

3. The world may be on the brink of another pandemic.

Health experts have been monitoring a new and extremely severe influenza virus – the H5N1 strain – for almost eight years. The H5N1 strain first infected humans in Hong Kong in 1997, causing 18 cases, including six deaths. Since mid-2003, this virus has caused the largest and most severe outbreaks in poultry on record. In December 2003, infections in people exposed to sick birds were identified.

Since then, over 100 human cases have been laboratory confirmed in four Asian countries (Cambodia, Indonesia,
Thailand, and Viet Nam), and more than half of these people have died. Most cases have occurred in previously healthy children and young adults. Fortunately, the virus does not jump easily from birds to humans or spread readily and sustainably among humans. Should H5N1 evolve to a form as contagious as normal influenza, a pandemic could begin.

4. All countries will be affected.
Once a fully contagious virus emerges, its global spread is considered inevitable. Countries might, through measures such as border closures and travel restrictions, delay arrival of the virus, but cannot stop it. The pandemics of the previous century encircled the globe in 6 to 9 months, even when most international travel was by ship. Given the speed and volume of international air travel today, the virus could spread more rapidly, possibly reaching all continents in less than 3 months.

5. Widespread illness will occur.
Because most people will have no immunity to the pandemic virus, infection and illness rates are expected to be higher than during seasonal epidemics of normal influenza. Current projections for the next pandemic estimate that a substantial percentage of the world’s population will require some form of medical care. Few countries have the staff, facilities, equipment, and hospital beds needed to cope with large numbers of people who suddenly fall ill.

6. Medical supplies will be inadequate.
Supplies of vaccines and antiviral drugs – the two most important medical interventions for reducing illness and deaths during a pandemic – will be inadequate in all countries at the start of a pandemic and for many months thereafter. Inadequate supplies of vaccines are of particular concern, as vaccines are considered the first line of defence for protecting populations. On present trends, many developing countries will have no access to vaccines throughout the duration of a pandemic.

7. Large numbers of deaths will occur.
Historically, the number of deaths during a pandemic has varied greatly. Death rates are largely determined by four factors: the number of people who become infected, the virulence of the virus, the underlying characteristics and vulnerability of affected populations, and the effectiveness of preventive measures. Accurate predictions of mortality cannot be made before the pandemic virus emerges and begins to spread. All estimates of the number of deaths are purely speculative.
WHO has used a relatively conservative estimate – from 2 million to 7.4 million deaths – because it provides a useful and plausible planning target. This estimate is based on the comparatively mild 1957 pandemic. Estimates based on a more virulent virus, closer to the one seen in 1918, have been made and are much higher. However, the 1918 pandemic was considered exceptional.

8. Economic and social disruption will be great.
High rates of illness and worker absenteeism are expected, and these will contribute to social and economic disruption. Past pandemics have spread globally in two and sometimes three waves. Not all parts of the world or of a single country are expected to be severely affected at the same time. Social and economic disruptions could be temporary, but may be amplified in today’s closely interrelated and interdependent systems of trade and commerce. Social disruption may be greatest when rates of absenteeism impair essential services, such as power, transportation, and communications.

9. Every country must be prepared.
WHO has issued a series of recommended strategic actions for responding to the influenza pandemic threat. The actions are designed to provide different layers of defence that reflect the complexity of the evolving situation. Recommended actions are different for the present phase of pandemic alert, the emergence of a pandemic virus, and the declaration of a pandemic and its subsequent international spread.

10. WHO will alert the world when the pandemic threat increases.
WHO works closely with ministries of health and various public health organizations to support countries’ surveillance of circulating influenza strains. A sensitive surveillance system that can detect emerging influenza strains is essential for the rapid detection of a pandemic virus. Six distinct phases have been defined to facilitate pandemic preparedness planning, with roles defined for governments, industry, and WHO. The present situation is categorized as phase 3: a virus new to humans is causing infections, but does not spread easily from one person to another.

Source: The World Health Organization

Public-Private Partnerships and Tuberculosis Control
Partnerships in the health sector have been described by the WHO as “a process of bringing together a set of actors for the common goal of improving the health of population based on mutual agreed roles and principles”[1]. “The essence of the partnership is a relationship based upon agreement, reflecting mutual responsibilities in the improvement of shared interests. It entails the need to specify reciprocal rights and obligations and establish clear objectives that are beneficial to both parties”[2].

2
In most countries, health care services are provided by two sectors: public and private. The public sector is managed by the government, whereas the private sector is composed of a variety of individuals and institutions outside the government/public sector, including non-government organizations (NGOs), private general practitioners, private hospitals and private pharmacies [3,4,5]. There are a number of international organizations also involved in public-private partnership projects for TB control, including development of education and training materials for the partnership: The Educational Resource Centre (ERC), Initiatives of Public-Private Partnership in Health (IPPPH), Population Service International (PSI), the International Union against TB and Lung Diseases (IUATLD) and Myanmar Medical Association (MMA).

In Myanmar, guidelines for a public-private partnerships in TB control were developed by the National TB Programme (NTP) according to the WHO concept in 2003 and established in 2005 [6,7]. It spells out the roles and functions of private general practitioners (GPs) in TB control and describes the three schemes that require the involvement of private GPs [7] (see Table 1. for summary of three schemes).

<table>
<thead>
<tr>
<th>Scheme</th>
<th>Health Education</th>
<th>Referral</th>
<th>Diagnosis</th>
<th>Providing DOTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>III</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

**Table 1. Schemes for involvement of private practitioners in the NTP, Myanmar**

The disease nature of TB is complex. Many social factors play an important role in contracting and transmitting the disease and severe clinical manifestations of the disease require hospital care. Therefore, a multifaceted approach to combat the disease is mandatory. Not only the partnership between public and private sectors but also collaboration among public sectors (public - public partnership) and coordination among private sectors, for instance, international and national NGOs, (private - private partnership) are crucial for the success of TB control.

**References:**
1. WHO, TB programmes in Member Countries of WHO's South-East Asia Region. World TB day, Myanmar, Yangon, 2001.

Dr. Saw Saw
Health Systems Research Division, DM R (LM)

**Grandma’s Diet and Your Good Health**

A study from Australia has shown that a mother’s diet during pregnancy may change the behaviour of genes in her children and her grandchildren. Under-nourished pregnant mother are more likely to have children who develop diabetes, stroke and cardiovascular disease, says Dr Jennifer Cropley of the Victor Change Cardiac Research Institute and one of the study’s authors. “The Mystery has been what mechanism could account for disease appearing 50 or 60 years later.” The team’s study of mice offers some clues. Mice fed a special diet during pregnancy tended to silence a gene for light fur in their pups. Even though their pups followed a regular diet, this light-fur gene remained suppressed in their offspring. “We not only inherit our genes from our parents and grandparents, we may also inherit the information telling the body whether or not the genes are switched on,” says Cropley. “We have not yet seen diet switch human genes on and off,” she says. But I think it is entirely likely.”

Source: Reader Digest, February 2007

**Lifting Weights? Remember to Breathe**

Take note: weightlifting may increase the risk of developing glaucoma, an eye disease that can lead to blindness, according to a study by the Catholic University of Brasilia. Scientists performed two tests on a group of men aged 18 to 40 who lifted weights on a bench press. In the first test, the men performed four repetitions, exhaling when lifting and inhaling when lowering, but held their breath instead of exhaling on the last repetition. In the second test, they exhaled as normal on the final repetition. Intraocular
pressure (IOP)- pressure inside the eye-increased in 90 percent of men in the first test and in 62 percent of men in the second test. The extra pressure created when air is held in the lungs may explain the higher IOP in the first repetitions. Says Dr. Geraldo Vieira, the study’s lead author, “If you’re thinking of taking up weights, get and eye check first.”And remember to breathe. (Source: Reader Digest, February 2007)

Highlights on Useful Research Findings Applicable to Health

Snakebite (by Dr. Tun Pe)

Venom neutralising efficacy of mono specific cloudy liquid Russell’s viper antivenom

Antivenom is the mainstay in management of snakebite victims. If it is stored at recommended temperature, it maintains the potency more than its shelf life. However, if liquid antivenom is stored at room temperature (37°C), it became cloudy after 6 months of the storage and precipitates out by the end of a year. Cloudiness or opacity signifies loss of potency and it is not recommended for injecting into human [1]. While conducting research at township hospitals we came across snakebite victims happened to be given cloudy antivenom which was stored at room temperature and it was our interest to study its efficacy in neutralizing circulating venom in snakebite victims.

Venom neutralizing efficacy of a batch of enzyme refined equine mono-specific cloudy liquid Russell’s viper antivenom (H 93723 expiry 8-9-97) manufactured by Myanmar Pharmaceutical Factory was assessed retrospectively on seven systemic envenomed Russell’sviper (Daboia russellii siamensis) bite cases in 1996 [2]. Each received 40 mls (4 ampoules) of the antivenom which included one to four ampoules of cloudy antivenom. Venom antigen and antivenom levels before and after antivenom administration were followed up to 72 hrs by enzyme immunoassay technique. Results indicated that in severe envenomed cases (n=4) (venom level > 80 ng/ml), venom antigen was detectable up to 8 to 12 hrs after antivenom therapy and antivenom was not detected until 4 to 10 hrs (12-20 hrs in 2 cases) after the antivenom. Dose related neutralizing efficacy of cloudy antivenom was observed. Five out of 7 patients were fatal. Use of cloudy or precipitated antivenom which gives a false sense of security should be discouraged. Moreover it is unethical to give cloudy antivenom to the victims. Proper storage of expensive liquid antivenom at recommended temperature should be carried out.

References:

Malaria (by Dr. Myat Phone Kyaw)

Safety dosage of primaquine in malaria treatment

Primaquine (8-amino quinoline) is known to be a very potent gametocidal drug and is active in tissue phase during incubation period and in the latent tissue phase of P. vivax and P. ovale. It is the only drug capable of eliminating persistent liver forms. Acute intravascular hemolysis is the most serious toxic hazard due to primaquine, especially in people with erythrocytic glucose – 6 - phosphate dehydrogenase (G6PD) deficiency. It has been reported in Myanmar that the prevalence of G6PD deficiency in males is 4-14% in various ethnic groups [1] and 15-17% in populations living in malarious areas [2]. Because of the increasing incidence of P. vivax infection in Myanmar [3] and the occurrence of chloroquine resistant P. vivax [4], patients with vivax malaria need special attention for radical cure and reduction of transmission. Although the Myanmar National Drug formulary had recommended a 45 mg single dose for gametocytocidal effect and 45 mg weekly x 8 weeks dose for radical cure of vivax malaria, most medical personnel are reluctant to use primaquine, because of the high incidence of G6PD deficiency.

Therefore, the study was carried out to see whether primaquine 45 mg weekly dose is less harmful than the previous use of 15 mg daily (7.5mg BD) for 14 days in patients with vivax malaria and severe G6PD deficiency [5]. Thirty- two subjects with Plasmodium falciparum gametocytes, and 31 cases with Plasmodium vivax infection from two military hospitals (Lashio and Mandalay) were treated with quinine 600 mg three times a day for 7 days followed by primaquine 45mg single dose for gametocytes and 45 mg weekly x 8 weeks for vivax malaria. No case of acute hemolysis was observed in all 22 G6PD deficient patients. In conclusion, the findings confirm that it is safe to use 45 mg primaquine (weekly for 8 weeks) in patients with P. vivax infection and a 45 mg single dose in patients infected with P. falciparum gametocytes in Myanmar without measuring the level of G6PD deficiency.
Main recommendations of WHO/SEARO guidelines for the clinical management of snakebites in the Southeast Asian region (by Prof. DA Warrell)

1. The true scale of mortality and acute and chronic morbidity from snake bite remains uncertain because of inadequate reporting in almost every part of the region.

To remedy this deficiency, it is strongly recommended that snake bite should be made a specific notifiable disease in all countries in the Southeast Asian region.

2. Snakebite is an occupational disease of farmers, plantation workers, herdsmen, fishermen and other food producers. It is therefore a medical problem that has important implications for the nutrition and economy of the countries where it occurs commonly.

It is recommended that snake bite should be recognized formally as an important occupational disease in the Southeast Asian region.

3. It is recommended that governments, academic institutions, pharmaceutical, agricultural and other industries and other funding bodies, should actively encourage and sponsor properly designed clinical studies of all aspects of snake bite.

4. It is recommended that education and training on snake bite should be included in the curriculum of medical schools and should be addressed specifically through the organisation of special training courses and other educational events.

Community education about venomous snakes and snake bite is strongly recommended as the method most likely to succeed in preventing bites.

5. Most of the familiar methods for first-aid treatment of snake bite, both western and “traditional/herbal”, have been found to result in more harm (risk) than good (benefit). Their use should be discouraged and they should never be allowed to delay the movement of the patient to medical care at the hospital or dispensary.

Recommended first-aid methods emphasise reassurance, immobilization of the bitten limb and movement of the patient to a place where they can receive medical care as soon as possible.

6. Diagnosis of the species of snake responsible for the bite is important for optimal clinical management. This may be achieved by identifying the dead snake or by inference from the “clinical syndrome” of envenoming.

A syndromic approach should be developed for diagnosing the species responsible for snake bites in different parts of the region.

To be continued
News Related to Medical Research Activities in Myanmar

Research Grant to DMR (LM)

<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Division</th>
<th>Principal Investigator</th>
<th>Funding Agency</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Development of new traditional medicine formulation for non-communicable disease (Diabetes mellitus)</td>
<td>Pharmacology Research Division</td>
<td>Dr. May Aye Than Deputy Director / Head</td>
<td>WHO/APW</td>
<td>2006-2007</td>
</tr>
</tbody>
</table>

1. Lecture Guide on Research Methodology
2. Guidelines on Poison Prevention, Control and Management
6. Guideline for Submission of Application to Ethical Review Committee, Department of Medical Research (Lower Myanmar) October, 2006
7. Aq :olawo eCollarOxat nmjrefryj fhGF 0, f ESHywó ObmN kftw mobsEhypré fms
   t rfvf(5) ZDu v rf' *Séf, f? &ef jkfl (, 251508, 251509, 251510)
8. u efrahjEFjrefrbq /
9. Aq :olawo eCollarOxat nolawq ejyKvvwfwik maq rmjrefwbfjSi faq ;zkSp
10. Q ESHy su fu ySdrang: alm jfnf du mShpm

aq :t q gyf amy rék f (Poisoning) ESHywb 6 nhw wi f csi f v u fsn o t I & yQf
    aq :olawo eCollarOxat (at nmjrefryj fhSP f t rbfmt q gyk dfjXSp, (zef-379480) o bl' [ lwf
    a' gu fnm f f (zef-09 992 1845) o bl' & 6 G ffq GEHyjgp n f

aq :olawo eCollarOxat (at nmjrefryj fh 1 u no G ffq ;EHSnigSazSaq ;cef wGF blyb nh f
    prfo yfppaq ;nstryk kft u lo ayjci f v blyb v f mwm njfj frsEHyu no G ffq ;x IEHyjci fhbf laq rfsG f
    ay/aeyp n f

0 bl

-------------------------------------------------------------------------------------------------------------------------------------
-------------------------------------------------------------------------------------------------------------------------------------
-------------------------------------------------------------------------------------------------------------------------------------

u efrahjEF DkrsSt f rsI t mjzél0ay;gySdrwrbyCEHyjgp n f