

Introduction

As part of Alberta's contingency planning for a pandemic of influenza, a province-wide influenza self-care program was identified as a critical health services measure to assist regional health authorities (RHAs), long-term care (LTC) facilities and health-care providers overall in their ability to respond to an influenza pandemic (a time of scarce health-care resources).

Goals of influenza self-care are:

- to increase the confidence and ability of the public in using self-care measures to prevent and treat influenza and
- to educate the general public about when to access the health-care system.

Although the influenza self-care program was primarily identified as part of pandemic planning, it was anticipated that it would also be useful in the inter-pandemic period, during the annual influenza season. Each year, influenza affects the health of the population and places a strain on the health-care system. Instituting a self-care program in the inter-pandemic period could benefit individuals, health-care providers and the overall delivery of health services, as well as offer the opportunity to implement, test, and refine future pandemic influenza planning strategies.

Based on current literature (refer to Appendix A), an education program perceived to be supported by personally known sources (e.g. physician or employer) or one that is integrated into the health-care system, with support components, e.g. nurse counsellors, telephone help lines, was more likely to find reductions in health-service utilization rates.

The following information is intended to guide health-care providers while working with their clients/patients with a view to educating them about how to stay well and manage illness for themselves and their families during regular influenza season or a pandemic of influenza (Refer to Appendix B for pandemic influenza implications for self-care).

This document was prepared through extensive consultation with health-care providers and community members. The contents are grounded in literature and current research, and use key principles of adult learning and communications. Expert opinion was obtained where literature was lacking.

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Influenza: informing the public

1. Influenza

Influenza is an infection of the cells that line the respiratory system. In North America, it usually affects people during the winter (November – April). It is caused by one of three virus types:

- Influenza A can cause the most severe and the most widespread disease. It naturally infects mammals, including pigs and horses, as well as birds.
- Influenza B affects only humans. It is a milder illness and outbreaks tend to spread throughout a smaller area. It occurs commonly in children.
- Influenza C is quite rare, causes mild symptoms and has little impact on public health.

The influenza virus is defined by two different protein components (antigens) on its surface. The antigens are spike-like features called Haemagglutinin (H) and Neuraminidase (N) components. The H antigen attaches the virus to cells and affects how the virus multiplies, and the N antigen helps the virus release from infected cells. Influenza strains are named by the place and year in which the strain was first discovered and the identity of their H and N antigens. There are currently 15 different H and nine different N components.

The genetic makeup of the influenza virus allows it to undergo frequent minor changes in the H and to a lesser degree, the N proteins, which enables a new strain to emerge. This is called antigenic drift.

Once a person has had influenza, the body develops antibodies to the virus that caused it. This produces immunity or a reduced likelihood of getting influenza from that particular strain again. However, those antibodies don't protect the body from new strains of influenza.

Even though the virus may change slightly from year to year, most people will continue to have some protection against the slightly changed virus, since it is closely related to the previously circulating virus. As an increasing number of individuals in the community develop antibodies against the circulating strain, altered strains are likely to emerge. New strains emerge, circulate for a few years and then are replaced by the next emerging strain to which the population has limited immunity. Depending on the extent of variation from strain to strain, the new circulating virus may cause more or less severe outbreaks of disease. Epidemics, local outbreaks of influenza, can occur every two or more years because of antigenic drift.

Every year, various strains of influenza virus circulate throughout the world, often causing local outbreaks and regional epidemics. Although outbreaks in different regions generally vary in intensity and severity, the fact millions of people travel everyday means regional strains of influenza can show up anywhere.

2. Pandemic influenza

Three to four times each century, a radical change will occur in the genetic material of the influenza A virus, and a new subtype of the virus will suddenly appear with a completely new H or N component. This is called antigenic shift. Because it is a radically different strain, protection people have developed to influenza that occurs every year will not apply. Everyone is susceptible to infection with the new strain and will be at greater risk of developing severe complications of influenza infection, like pneumonia. In such a situation, the virus will spread rapidly around the world, and a global epidemic, called a pandemic, will occur. Only influenza A is capable of antigenic shift causing human pandemic of influenza.

A pandemic can occur at any time and potentially can cause serious illness, death and social and economic disruption throughout the world. Experts agree future influenza pandemics are inevitable, but the timing of the next pandemic cannot be predicted. The World Health Organization

(WHO) has a Global Influenza Surveillance Network, a partnership of 85 countries, which monitors the influenza viruses circulating in humans and rapidly identifies new strains. However, there may be little warning before a pandemic strikes.

Three influenza pandemics occurred during the twentieth century because of antigenic shift:

- The Spanish strain that emerged in 1918 – 19 was due to Type A (H1N1) and resulted in more than 20 million deaths worldwide.
- The Asian strain that appeared in 1957 – 58 was caused by Type A (H2N2).
- The Hong Kong strain of 1968 – 69 was caused by Type A (H3N2).

In 1997, 18 persons (including six deaths) in Hong Kong developed avian influenza Type A (H5N1), which had previously been found only in chickens. The virus re-emerged in 2004, eventually causing widespread poultry outbreaks in Japan, South Korea, Cambodia, Vietnam, Thailand, China, Indonesia and Laos. There were a number of human infections with an associated death rate of >70 per cent. Agricultural practices in some countries in this area of the world often bring humans, birds, and pigs into close contact. In this environment, influenza viruses from the different species can mix and produce new strains that infect humans. Infections in humans so far resulted from direct contact with infected birds with limited evidence of person-to-person spread. Aggressive surveillance and preventive measures have been used, and thus far the virus has not spread from human to human.

In 1997, the WHO and member countries, including Canada began to make pandemic contingency plans to minimize the devastating effects of future pandemics. Alberta Health and Wellness (AHW) and their health regions have influenza contingency plans based on the federal plan.

Projections regarding the effect of pandemic influenza include:

- 3.7 – 7.4 times as many outpatient visits due to influenza as occur in a non-pandemic year,
- 3.9 – 6.9 times as many hospitalizations due to influenza as occur in a non-pandemic year, and
- 8.2 – 20.3 times as many deaths due to influenza as occur in a non-pandemic year.

3. Influenza transmission

Influenza is very contagious. The influenza virus easily passes from person to person by droplets and small particles of respiratory fluid when an infected person coughs, sneezes, or talks. The airborne droplets of respiratory fluids can enter the body through the mucus membrane of the eyes, nose, or mouth.

The influenza virus contained in droplets can

- travel one to two metres in the air.
- live for one or two days on hard surfaces, eight to 12 hours on cloth, tissue or paper.
- live five minutes on hands.
- live longer outside the body in cool, dry places.

Therefore, people can become infected when they shake the contaminated hand of someone who is ill, touch objects an ill person has used (e.g., dishes, telephones, doorknobs, handrails) or touch a surface the virus has landed on, and then touch their own nose, mouth or eyes. It is especially easy for the virus to spread where there are crowds or where people live, work, or study close together.

A person can pass the virus on for up to seven days after the onset of illness; three to five days in adults and up to seven days in children. Individuals are most infectious during the 24 hours before the onset of symptoms and during the most symptomatic period (three to five days).

4. Symptoms of influenza

Symptoms of influenza develop within one to three days after becoming infected with the virus. The individual suddenly develops a fever and possibly chills, and may have a headache and aching muscles, especially in the back and legs. Usually an infected person has a dry cough, feels weak and tired. Some have a sore throat, and a runny or congested nose. Most have decreased appetite. In general people feel very sick and want to stay in bed. The fever usually resolves in three to five days, and the person begins to feel better. However, tiredness and a cough can sometimes continue for several weeks.

People often mistakenly refer to stomach upsets and colds as influenza. Influenza is quite different from both of these. It rarely causes vomiting and

diarrhea, but may do so in young children or elderly individuals. Unlike influenza, the common cold comes on gradually, rarely causes a fever, and is usually limited to a sore throat, coughing and sneezing, and a stuffy, runny nose. It is generally milder than influenza and people can carry on with their usual activities. Refer to Appendix C for a comparative chart.

5. How serious is influenza?

Most healthy people recover from influenza without any serious problems. However, certain groups of people are at risk for developing complications such as pneumonia, which may even result in death.

Groups include:

- children less than two years and seniors because they have weaker immune systems.
- individuals who have diseases or who are taking medications which affect the immune system, e.g. people on chemotherapy for cancer, those with HIV/AIDS, or who have received organ transplants, frequently develop complications.
- persons with chronic conditions such as heart disease, lung disease (cystic fibrosis, emphysema), kidney disease and diabetes. With these conditions it is easier for bacteria to invade the tissues already damaged by the influenza virus and cause other illnesses such as pneumonia. Influenza can also stress the body so that underlying chronic illness(es) may be worsened.
- Pregnant women, particularly those who are past the third month of pregnancy, have increased risks of developing complications.

6. Effect on the health-care system

Besides costs to individuals in terms of their health, the annual influenza season can have a large effect on the community, depending on how serious the outbreak is. The group with the highest reported rate of illness is school-aged children. School administrators need to be aware of the potential for increased rates of absenteeism at this time when planning important school events. Workplace absenteeism due to illness or providing care to family members reduces productivity. In addition, influenza-associated respiratory illnesses have a substantial effect on an already strained health-care system. Health-care service providers need to plan for increased utilization in all health-care settings during the influenza season.

Figure 1: Annual incidence of influenza like illness in Alberta, 1986 to 2003

In 'typical' years, influenza effects approximately 4 per cent of the population or 120,000 to 125,000 people. As the influenza season begins, physician's offices begin to see more individuals with influenza-like-illness (ILI). The number of individuals seeking care for ILI varies with the virulence of the circulating virus(es)

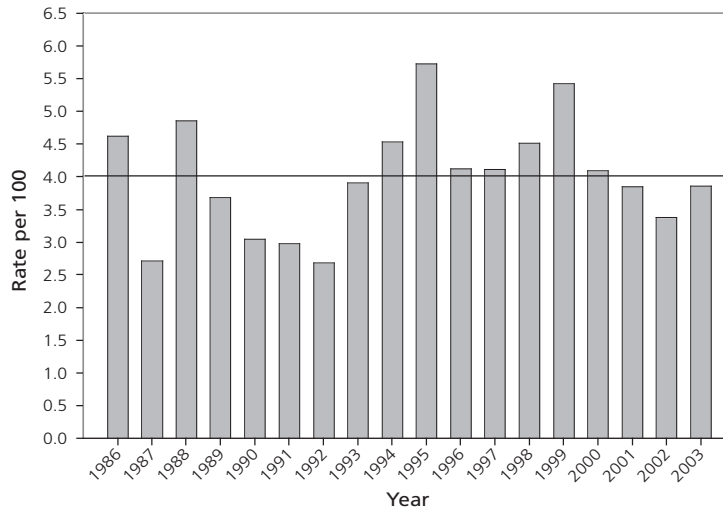


Figure 2: Age standardized mortality attributed to influenza, Alberta, 1986 – 2002

While influenza generally does not have a large effect on mortality, this can change depending on the virulence of the circulating strain. Also, influenza can contribute to other causes of death such as pneumonia.

Influenza attributed mortality rapidly increased above the historical norm during the 1998/1999 influenza season demonstrating the effect that can occur when a more virulent strain is circulating. In a pandemic situation, the mortality rate may be significantly higher.

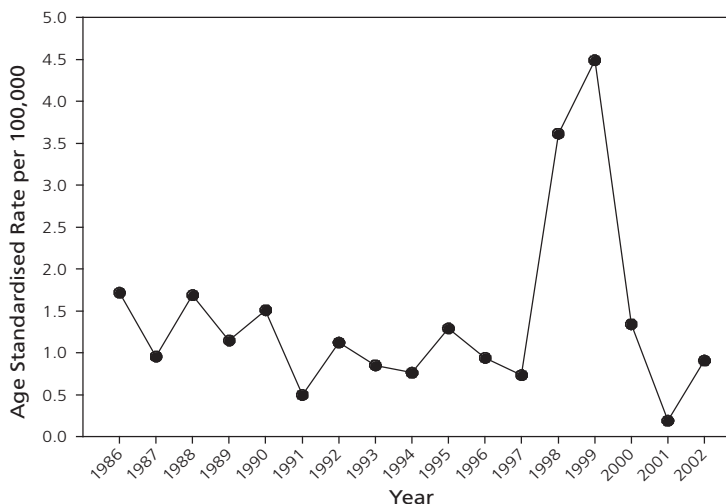


Figure 3: Age specific rate per 100,000 population of clinically diagnosed influenza in Alberta 2002 and 2003

In general, influenza affects the very young and the very old. However, this general bi-modal pattern can shift as seen in the differences in age distribution between 2002 and 2003. Young children (age < 2) are more likely to present to the emergency department.

Older individuals are more likely to be affected by influenza-like-illness (ILI), particularly if they are residents of nursing homes. As a result, the need to ensure high influenza vaccine coverage is clearly evident.

In pandemic periods, adults younger than 65 years have accounted for 50 per cent of the deaths. Influenza pandemic examples include:

- 1918 – 1919 (A/H1N1), nearly half of the influenza-related deaths occurred in the 20 – 40 year olds.
- 1968 – 1969 (A/H3N2), most of the deaths occurred in adults 45 – 65 years old (half of them were previously healthy and without any detectable co-morbid illness).
- 1957 – 1958 (A/H2N2), a large proportion of influenza-related deaths occurred among persons younger than 65 years.

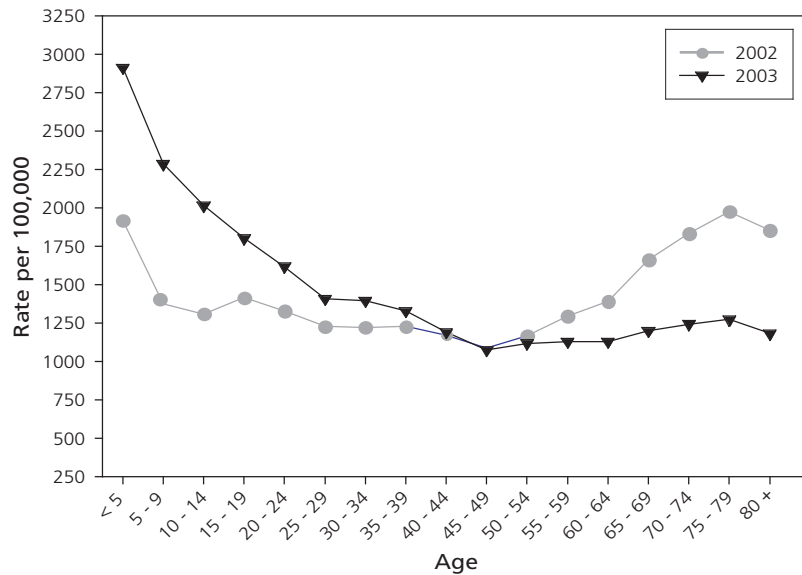
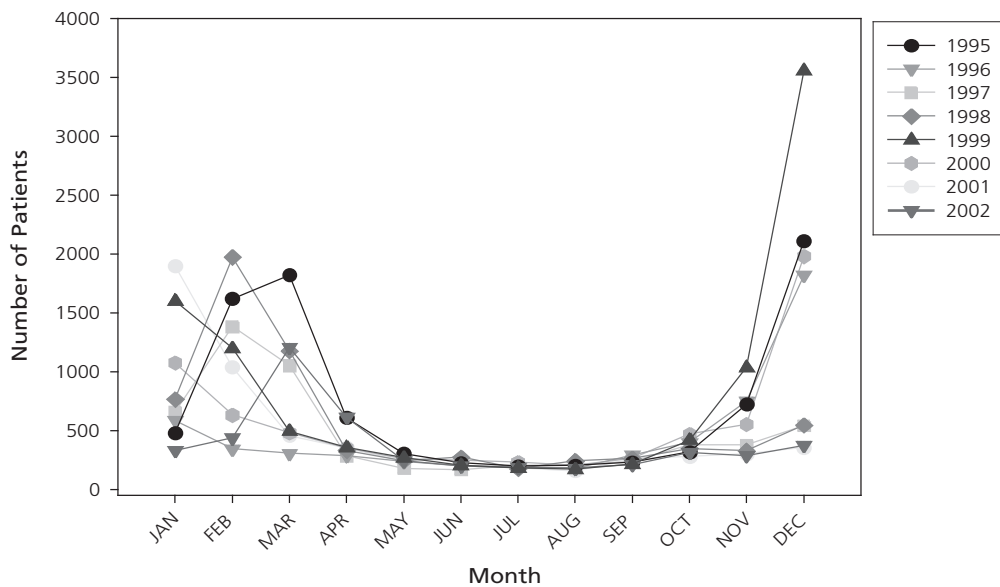


Figure 4: Number of patients seen in Alberta emergency departments by month 1995 – 2002

Each year, during influenza season, there are significant excess hospitalizations, physicians visits and emergency department visits rates (as in the graph below) for influenza associated respiratory illnesses, which have a substantial effect on an already strained system.



7. For more information

The following are good community resources for questions about influenza:

Health Link Alberta

Edmonton, call 408-LINK (5465)

Calgary, call 943-LINK (5465)

Or, outside the Edmonton and Calgary local calling areas, call toll-free 1-866-408-LINK (5465)

Public Health Centres (See Appendix D)

(Monday to Friday, daytime hours), or **physicians or pharmacists**

Serious influenza outbreak in a community

Refer to television and/or radio broadcasts, or visit: www.health.gov.ab.ca for current information.



INFLUENZA PREVENTION AND SELF-CARE

1. Annual immunization

Immunization is the best way to avoid contracting or to lessen the severity of influenza.

The influenza virus is always changing (antigenic drift); therefore, a new vaccine is needed each year. As well, effects of the vaccine begin to wear off after six months or even sooner in those with weaker immune systems. The WHO Global Influenza Surveillance Network monitors influenza viruses circulating in humans. Each year WHO recommends a vaccine that targets the three major viral subtypes; two influenza A and one influenza B, which scientists predict will be the likely strains to circulate in the next influenza season. Vaccines should be administered as outlined in the annual National Advisory Committee on Immunization (NACI) statement (refer to the Health Canada website www.hc-sc.gc.ca) and the Alberta Health and Wellness Program annual influenza statement (www.health.gov.ca)

The best time to be immunized is during October and the first half of November — just before the influenza season. This is because it takes about two weeks for the influenza vaccine to become fully effective. However, it is not too late to get the influenza vaccine once influenza has arrived in the community.

Influenza vaccine is 70 – 90 per cent effective in young, healthy people and protection lasts approximately six months. When a person’s immune system is weakened, the vaccine is not as effective and doesn’t last as long. However, if these people get immunized and become infected with the influenza virus, the illness will likely be less severe.

Since the strains of virus used in the vaccine are chosen six to nine months before a particular influenza season, there is a slight chance the circulating strain may change before the influenza season actually starts. The effectiveness of the vaccine depends on how closely the three strains in the vaccine match the strain(s) circulating in the community. The vaccine will not protect people against other respiratory illnesses.

1.1 Who should receive influenza vaccine?

It is most important that individuals at risk of developing serious complications from influenza get the influenza vaccine. Each year Alberta Health and Wellness, Provincial Health Office provides a statement on publicly funded influenza vaccine eligibility. Eligibility criteria may change based on clinical and epidemiological evidence/outcomes in each influenza season (refer to www.health.gov.ca or the regional public health program).

The following are generally people who are eligible for vaccination through the Government of Alberta annual immunization program.

a) People at high risk for influenza-related complications include:

- healthy children aged six to 23 months, since they are at increased risk of influenza-associated hospitalization compared to older children and young adults,
- adults and children with chronic pulmonary disorders and cardiac disorders severe enough to require regular hospital or medical care,
- people of any age who reside in nursing homes, lodges, or chronic care facilities,
- people 65 years of age and older,
- adults and children with chronic conditions such as:
 - diabetes mellitus and other metabolic diseases,
 - cancer,
 - renal disease,
 - anemia,
 - hemoglobinopathy,
 - immunodeficiency, immunosuppression, and

- HIV-positive (HIV-positive persons may receive the influenza vaccine without a specific recommendation from their physician. It is recognized that vaccine effectiveness may not be optimal, especially in persons with low CD4 and T-lymphocyte cell counts. There is evidence that a second dose of vaccine does not improve their immune response).
- pregnant women who are at high risk for influenza-related complications,
- children and adolescents (six months to 18 years) with chronic conditions treated for long periods with acetylsalicylic acid (ASA),
- individuals who are living in chronically disadvantaged situations (i.e. homeless shelters),
- people at high risk for influenza complications who are traveling to destinations where influenza is likely to be circulating. (Note: public health centres can be contacted for information on such destinations.), and
- workers in direct contact with poultry infected with avian influenza during culling operations.

b) People capable of transmitting influenza to those at high risk:

- Health-care workers (HCW) and other personnel who have significant contact with those at high risk including:
 - all employees of health-care facilities,
 - all staff in lodges, and
 - personnel in other settings providing health services to, and having significant contact with, individuals at high risk (e.g. home care personnel, speech therapists, public health nurses, physicians and their office staff).

HCWs involved in direct patient care should consider it their responsibility to provide the highest standard of care, which includes receiving influenza immunization annually. Not only does this immunization protect their patients, it protects them and their families.

- ALL household contacts of persons at high risk for influenza-related complications currently eligible for the influenza vaccine. Included in this group are household contacts of children less than 24 months of age.

- Pregnant women in their third trimester if they are expected to deliver during influenza season, as they will become household contacts of their newborn.
- Those providing **regular** childcare to children less than 24 months of age, whether in or out of the home.

The vaccine is not effective for children under the age of six months. Children nine years of age and under, who have never been immunized need two injections, four weeks apart, in order to build a strong immune response.

Not-at risk individuals can receive the vaccine for a fee. Some employers offer the vaccine to their staff. Health-care professionals in occupational health settings are encouraged to involve public health personnel in the workplace, advertise clinics, facilitate reimbursement and support influenza-related research.

1.2 Who should **not** receive the influenza vaccine?

The following individuals should not received influenza vaccine:

- People who are **severely allergic to eggs**, as viruses used in making the vaccine are grown in eggs.
- People with severe allergies to a component of the vaccine.
- Individuals who have had a severe reaction to a previous influenza immunization.
- Children under six months of age.
- People with an acute febrile illness should not usually be immunized until their symptoms have abated.

1.3 Antiviral prophylaxis

If a person is at risk for serious complications from influenza and cannot be immunized, they may be prescribed an antiviral drug, amantadine (e.g. Symmetrel®) or oseltamivir (e.g. Tamiflu®), to give them some protection during the influenza season. Antiviral drugs can stop or slow the action of viruses. Consideration is given to the person's medical problems, medications, and possible side effects to the antiviral before it is prescribed. (For more information about antiviral medications, refer to the annual NACI statement by visiting: www.hc-sc.gc.ca)

Antiviral medication may also be prescribed for:

- a) people at high risk even though they were immunized, to provide extra protection,
- b) people at high risk who were immunized after the influenza virus was present in the community and may need to be protected for the two weeks required for a response to the vaccine,
- c) contacts of high risk people, who have not been immunized and
- d) people at high risk if there is an outbreak and the circulating strain proves to be different from the vaccine strains.

1.4 Influenza vaccine reactions

Some people believe they will contract influenza from the influenza vaccine. This is not possible because the virus in the vaccine has been killed.

The most common reaction to the influenza vaccine is some redness and soreness at the injection site. This usually resolves in two days. Some people may develop a fever, tiredness and aching after six or 12 hours. This may last for a day or two. More serious reactions are rare. The benefits and risks of this vaccine should be discussed with the vaccine provider (e.g. public health nurse, physician) as a part of the informed consent process.

Researchers are continually working to improve the effectiveness of influenza vaccines and to develop easier routes for its administration.

1.5 Pneumococcal vaccine

Pneumococcal polysaccharide vaccine is a vaccine protecting against 23 strains of bacteria that most often cause pneumonia following influenza. The Government of Alberta provides it free of charge to those people who are at risk. These include:

- a) persons 65 years and older;
- b) residents in long-term care facilities;
- c) children two years and older, and adults who have underlying diseases including:
 - heart failure,
 - chronic lung disease (not asthma),
 - kidney disease,

- diabetes,
- chronic liver disease,
- alcoholism,
- sickle cell disease,
- chronic cerebral spinal fluid leak,
- spleen problems,
- diseases that weaken the immune system such as cancer and HIV/AIDS,
- cochlear implants,
- nephrotic syndrome
- Hodgkin's disease, and
- lymphoma or anyone undergoing immunoablative therapy.

Most people need the pneumococcal vaccine only once. It can be given at the same time as the influenza vaccine.

It is recommended that people with debilitating heart disease, transplants, nephrotic syndrome, kidney failure, sickle cell disease, diseases or treatments that weaken the immune system, and people without a spleen have another immunization in five years if they are older than 10 years and in three years if they are 10 years old or under.

Beginning September 2002, pneumococcal conjugate vaccine, protecting against seven strains of streptococcal pneumoniae, was included in the routine immunization of infants.

1.6 Where to get influenza or pneumococcal vaccine

To receive influenza vaccine, which is required each fall, call one of the local public health centres to make an appointment (refer to Appendix D, or a regional health authority website for listings) or to find out if they are holding "influenza immunization drop-in clinics" in seniors' residences, etc. Pneumococcal vaccine, which is usually given to an individual one time, may be obtained at any time of the year.

Many physicians provide the influenza vaccine to their patients and some pharmacies provide it to their customers.

Everyone should be encouraged to keep a record of influenza and pneumococcal immunizations and take this information with them to medical and immunization appointments.

2. Hand washing

In addition to immunization, the single most important step to prevent influenza is frequent hand washing.

Frequent hand washing is very important, especially after being in contact with someone who has a respiratory infection, or with children, who are the major disseminators of the virus. Hands should be kept away from the eyes, nose and mouth as the virus enters the body through these mucus membranes.

Good hand hygiene techniques include washing hands with soap and water, or using an alcohol-based hand sanitizer (hand rub).

2.1 Proper hand-washing technique

- Wet hands with warm, running water and apply liquid or clean bar soap. Lather well.
- Rub hands vigorously together for at least 15 seconds.
- Scrub all surfaces, including the backs of the hands, wrists, between fingers and under fingernails.
- Rinse hands under running water.
- Dry hands with a clean or disposable towel.

If using a public restroom, leave the water running after rinsing then use a paper towel to turn off the faucet to avoid further contact with the taps.

Regular soap is fine. It is not necessary to use antibacterial soap.

Liquid hand-wash products should be stored in closed containers or containers that are washed and dried before filling. To prevent bacterial contamination, do not top-up partially empty containers.

Encourage parents and other adults (e.g. teachers, day-care providers, etc.) to get children into the habit of proper and frequent hand washing through teaching by example. Washing their hands with their children, supervising their hand washing, and placing hand-washing reminders at children's eye

level (e.g. a chart by the bathroom sink for children to mark every time they wash their hands), can assist the process.

2.2 Proper use of alcohol-based hand rub

Alcohol-based hand rubs — which do not require use of water — are an excellent alternative to hand washing, particularly when soap and water are not available. They can be purchased in a pharmacy in a variety of container sizes, including a purse-size. They are actually more effective than hand washing in killing bacteria and viruses. Commercially prepared hand rubs contain ingredients that help prevent skin dryness. In fact, use of these products can result in less skin dryness and irritation than hand-washing. However, not all hand rubs are created equal. Some “waterless” hand rubs don’t contain alcohol. **Only the alcohol-based products should be used.**

To effectively use an alcohol-based hand rub:

- read the label for dosing instructions; apply it to the palm of the hand. (Ensure enough product is used to cover all surfaces),
- rub the hands together, covering all surfaces, including fingers and wrists,
- rub into hands until dry (approximately 15 – 25 seconds), and
- if the hands are visibly dirty, wash with soap and water rather than a rub. **Hand rubs are not effective if hands are soiled.**

Older children and adolescents can use alcohol-based hand rubs. Younger children can use them, too — with an adult’s help. Caution adults to make sure the rub has completely dried before the child touches anything (to avoid ingestion of alcohol from hand-to-mouth contact), and to store the container safely away after use.

2.3 When to wash hands

BEFORE:

- preparing, handling, serving or eating food, and before feeding others.
- brushing or flossing teeth.
- inserting or removing contact lenses.
- and after treating wounds or cuts.

AFTER:

- contact with a person with influenza or their immediate environment.
- using the toilet, helping a child use the toilet, or changing a diaper.
- blowing nose or wiping a child’s nose.

- coughing or sneezing.
- handling garbage.
- playing with toys shared with other children.

Good hand hygiene is especially important for children who attend day care. Suggest that parents protect their children's health by:

- making sure their day-care provider promotes sound hygiene, including frequent hand washing or supervised use of alcohol-based hand rubs;
- asking whether the children are required to clean their hands several times a day — not just before meals;
- making sure the sink is low enough for children to use, or that it has a stool underneath so that children can reach it; and
- having soap and paper towels near the sink.

Refer to the *Do Bugs Need Drugs Program* (www.dobugsneeddrugs.org) for school-related teaching materials about hand washing.

3. Respiratory etiquette

- Use disposable tissues for wiping noses and dispose tissues promptly after use into a waste container.
- Cover nose and mouth when sneezing and coughing.
- Use hand washing/hand antiseptics after coughing, sneezing or using tissues.
- Keep hands away from the mucous membranes of the eyes, nose, and mouth.

4. Other ways to minimize influenza transmission

In addition to immunization, proper hand washing, and respiratory etiquette remind people to:

- avoid large crowds, if possible, when the influenza season is at its peak.
- not share eating utensils or drinks.
- avoid visiting people who have influenza unless it is absolutely necessary. If it is necessary, suggest standing one metre away from an infected person to avoid contact with droplets containing the influenza virus.

- keep personal items of someone with influenza, such as towels, separate from the rest of the family, and to clean surfaces around the ill person, such as bathroom/kitchen sinks, taps and counters, frequently, with a detergent cleaner.
- Try not to shake the bedding or other linens. Clothes and linens can be washed in the usual way. No special handling of garbage is needed.

5. Caring for oneself

The immune system can be strengthened through physical and emotional wellbeing. There are many examples of how this can be achieved. Encourage people to:

- drink plenty of water to keep the airways moist and able to cleanse the system of unwanted material, and
- refrain from smoking for general lung and airway health. Those who smoke should take steps to quit. For information about smoking cessation call, The Alberta Alcohol and Drug Abuse Commission (AADAC) Smoking Cessation Helpline: 1-866-332-2322 or www.aadac.com.

Chronic stress decreases the immune response following influenza immunization in older adults. However, a number of lifestyle factors are known to be associated with strengthening their immune system:

- regular, vigorous exercise,
- daily multivitamin intake,
- lower perceived stress,
- greater optimism, and
- social activity.

Influenza-like-illness (ILI) is most often reported by shift workers, compared to day-workers. Perceived job demands (stress) and to a lesser degree, sleep quality and fatigue increase the likelihood of shift workers getting influenza.

Those with chronic illness(es) face special challenges in caring for themselves. People with chronic condition(s) are their own principal caregivers and health-care professionals — both in primary and specialty

care — should be consultants in supporting them in this role. This partnership is facilitated by:

- health-care providers and individuals collaborating or making decisions together. The professionals are experts about disease, and individuals are experts about their own lives. Those with chronic illness should let their health-care providers know how they experience their situation and what they need. Similarly, health-care providers can encourage questions in this regard, and
- health-care providers helping those with chronic illness(es), to develop problem-solving skills. Education has shifted from a person's knowledge of the disease and its treatment to increasing their confidence and skills in managing their condition.

Science is constantly finding better ways for people to deal with chronic illnesses. Those with chronic illness can better care for themselves by learning about disease conditions from their health-care team, from recommended resources and from others living with similar conditions.

6. Planning ahead

Encourage each person to spend time thinking about what they would do and need if they contracted influenza.

This is particularly important for those who live alone, are single parents of young children, or are caring for others especially someone with a disability of a frail adult. Some areas to consider include:

- having enough fluids (juices, soups, etc.) on hand to last for one to two weeks.
- having enough basic household items (e.g., tissues) to last for one or two weeks.
- having acetaminophen (e.g., Tylenol®) or ibuprofen (e.g., Motrin®) and a thermometer in the medicine cabinet. It is also important to know how to use/read a thermometer correctly. Asking for help is encouraged.
- thinking of someone who could be called upon for help if the main care provider(s) became very ill with influenza. Prepare these people in advance by discussing these possibilities.
- thinking of someone who could be called upon to care for children if their school or daycare was closed because of a serious outbreak of influenza, and the care provider(s) was/were required to work. Prepare

these people in advance by discussing these possibilities. If no one is readily evident, the local public health centre or family/social services may be consulted regarding what is available in the community to help with these difficulties (refer to Appendix D, or a regional health authority website for listings). Employers may also be approached about alternate work arrangements.

Health-care professionals working in community or occupational settings should encourage employers to develop contingency plans for dealing with high rates of illness that will support employees while still maintaining services (e.g. working at home, flexible work hours).



MANAGING THE ILLNESS: MESSAGES FOR ADULTS

1. Is it influenza?

The most prominent characteristics of influenza are:

- sudden appearance of a fever 38°C* (100.4°F) or more,
- dry cough,
- aching in the body, especially in the head and lower back and legs, and
- feeling extremely weak and tired, and not wanting to get out of bed.

Other symptoms can be:

- chills,
- aching behind the eyes,
- loss of appetite,
- a sore throat, and
- a runny, stuffy nose.

Refer to Appendix C for a comparative chart.

- * For people older than 75 years, the temperature may be lower e.g. 37.2°C (99°F). Older adults may also experience vomiting, diarrhea or abdominal pain.

If an individual has influenza, they can expect:

- Day 1– 3: Sudden appearance of fever, headache, muscle pain and weakness. They may also have dry cough, sore throat and a stuffed nose but the first symptoms are usually more severe.
- Day 4: Fever and muscle aches decrease. Hoarseness, dry or sore throat, cough and possible mild chest discomfort become more noticeable.
- Day 8: Symptoms decrease. Cough and tiredness may last one to two weeks or more.

People can spread the virus for up to five days or more, beginning from the day before they have the first symptoms of the illness.

2. Self-care recommendations

2.1 General measures

- **Rest** — feeling of weakness and tiredness will probably continue until the body's temperature returns to normal (approximately three days). Resting provides comfort and allows the body to use its energy to fight the infection. Avoid contact with others while the infection is contagious (five days after the first symptom appears), if possible.
- **Drink plenty of fluids** — extra fluids are needed to replace those lost because of the fever (sweating). If the urine is dark, increase fluid consumption. Liquids, especially warm ones like chicken soup or hot lemonade, help loosen mucus, soothe sore throats, and break up coughing spells. Recommend drinking a glass of juice/water or an equal amount of some other fluid (preferably without caffeine) every hour while awake.
- **Gargle** — with a glass of warm water containing half a teaspoon of salt several times a day to ease a sore throat. Sugarless, hard candy also helps.
- **Use salt water (saline) or warm tap water nose drops**— (one to two drops) or spray that contains saline but no medication, three to four times a day to help soothe nasal passages or clear nasal congestion. Discourage excessively hard nose blowing when it is congested, as this can contribute to the development of ear infections. Using disposable tissues and putting them in the garbage immediately, helps to prevent the spread of infection. Petroleum jelly under the nose can protect it from irritation. **Frequent hand washing is encouraged.**

Homemade Saline Nose Drops: Add ½ tsp. salt to 8 oz. boiled, cooled water, in a clean bottle/container. Use a clean dropper and make a fresh solution everyday.

Salinex® is a commercial saline nose drop product. Lubricating nasal mist or gels have also been particularly effective for soothing nasal passages (e.g. Secaris®, Rhinaris®).

- **Use a humidifier or steam** — to help loosen secretions and keep mucus membranes from drying out. Cool mist is preferred over warm as it is safer (no scalds from spills). However, there is no research to support one as more effective than the other.

Ensure the humidifier is cleaned daily to minimize mold blowing in the air. For specific cleaning instructions, consult the product information. General instructions: clean with hot water (add one part bleach to 10 parts water), and scrub the surface with a cloth or bottlebrush to get into tight corners. Rinse well with hot water.

- **Do not smoke/avoid second-hand smoke.**
- **Use a hot water bottle or heating pad** — to help relieve muscle pain as long as the fever is under control. Epsom salts (one cup) in a warm bath may also be soothing.
- **Call someone for assistance** — especially those who are struggling with illness while living alone, are single parents of young children, or are caring for others such as a frail or disabled adult.
- **Address fear and anxiety** — managing illness can be stressful. Individuals expressing concern or anxiety should be encouraged to talk about their feelings with friends and family. Connecting with others by phone or email may help reduce loneliness. Refer to Appendix F: *Dealing with Stress or Feelings of Fear Because of Influenza*.

2.2 Over-the-counter (non-prescription) medications

Studies show most people buy over-the-counter (OTC) medications to treat their symptoms when they have influenza. They usually buy an OTC medication that contains several active ingredients. People should be encouraged to consult their pharmacist regarding self-care product selection, dosing questions, potential contraindications or side effects, if they have not already discussed this with their physician.

Note: Older people may become much more sensitive to medications in general and may experience more side effects, especially to the nervous system (e.g. confusion). Recommend limiting the number of medications taken at one time. This includes both prescription and OTC drugs.

2.2.1 Guidelines for the use of over-the-counter medications

- It is better to buy a remedy that treats only one symptom. This prevents taking in substances that are doing nothing, or that may trigger an adverse reaction. Read the label to be sure the ingredient treats the symptom present and/or consult with the pharmacist.
- If taking more than one medicine at a time, check the labels to be sure there is no doubling of ingredients e.g., unknowingly taking two medicines that both contain acetaminophen.
- Extra strength remedies contain a higher dose of the ingredient. Try the regular strength product first (it may work fine and not have the same risk of side effects).
- It is important to follow dosing instructions on the label. Do not take more than the recommended dose or use the medicine for more than the recommended time. Note any possible side effects or interactions with other drugs or health conditions. Check the container for an expiration date and take outdated medications to a pharmacy for disposal.
- Consult a physician or pharmacist regarding possible interactions with chronic conditions or other medications being taken.
- Keep all medications out of the reach of children.

2.2.2 Treating specific symptoms with over-the-counter medications

- **Muscle pain and fever** — Take acetaminophen (e.g., Tylenol® regular strength), one or two tablets every four to six hours to a maximum of five doses per day to bring down fever and ease muscle pain (recommended for older adults). An alternative medication for pain and fever is ibuprofen (e.g., Motrin®) every six to eight hours to a maximum of four doses a day (unless otherwise advised by a doctor).

CHILDREN UNDER 18 YEARS OF AGE SHOULD NOT TAKE ACETYLSALICYLIC ACID (ASA) OR ANY PRODUCTS CONTAINING ASA (e.g., Aspirin®). The combination of influenza and ASA in this age group has been known to cause Reye's syndrome, a very serious condition affecting the nervous system and liver.

Pain relievers may provide some relief, but they won't make the symptoms go away and they may have side effects e.g., ibuprofen can irritate the stomach, and acetaminophen, if taken for a long time or in high doses, can affect the liver and kidneys.

- **Cough** — can be helpful if it gets rid of mucus. However, if a dry cough prevents sleep/rest, or causes chest discomfort, a cough medication containing dextromethorphan (DM), is safe and effective. Delsym® and Benlyn — Dry Cough® are two products that contain DM without other ingredients.
- **Nasal congestion** — decongestants help shrink swollen blood vessels in the nose. There are two kinds — oral medications and nose drops/sprays. Nose drops/sprays act in minutes and have fewer side effects than oral medications. However, after two or three days, the body can adjust to them and rebound congestion can occur, making symptoms worse. Oxymetazoline, phenylephrine and xylometazoline are nose drops/sprays. If nasal congestion persists after three days, consider switching to an oral medication such as pseudoephedrine as an oral decongestant. These take a half hour to work. Decongestants may cause dry mouth, sleep disturbances, rapid heartbeat and other side effects. They should not be taken by individuals with chronic health problems and/or those who are taking other medications, without first consulting a health-care provider.
- **Sore throat** — some medications work by numbing the throat. Of these, dyclonine (e.g. Sucrets®) works the best. Others are benzocaine, hexylreorcinol, menthol and phenol. These are lozenges or throat sprays. Other lozenges act by soothing the throat. They may contain honey, herbs or pectin.

2.2.3 Complementary medicines

Many Canadians use some form of complementary medicine to support their health. Research has been conducted on some of these therapies and the influenza virus.

The following complementary medicines may help decrease the length and/or severity of influenza illness:

- Vitamins E and C,
- COLD-fX®, a ginseng-based remedy developed in Edmonton,
- An Echinacea compound herbal tea preparation (Echinacea Plus®),
- A standardized extract of elderberry (Sambucol®),
- Quercetin, a bioflavflavenoid, which occurs naturally in fruits, vegetables, nuts, seeds, red wine, tea and flowers,

- Bifidobacterium breve, bacteria which occur naturally in the intestinal tract and in yogurt,
- Homeopathic Oscilloccinum,
- Gingyo-San, a traditional Chinese herbal medicine, and
- Kan Jang (standardized extract of Andrographis paniculata).

The same precautions taken with OTC medication should be taken with complementary medicines. Health-care providers should be informed about all complementary medications patients/clients are taking, and should advise on potential disease/drug interactions, contraindications and adverse effects with these products. (Refer to Appendix E).

3. When to seek medical care for an adult

Generally, people begin to feel better after their temperature returns to normal (approximately three days), and are ready to return to their normal activities/work in about a week. It is common for tiredness and a cough to linger for several more weeks. However, suffering with influenza may necessitate consultation with a physician.

The primary concerns in adults with influenza are:

- Compromised respiratory function,
- Dehydration,
- Sepsis: bacteria in the blood system, which can lead to circulatory or neurological compromise.

These complications are more likely in adults with chronic health problems requiring regular medical attention such as respiratory or cardiac conditions, diabetes, or who are immunosuppressed due to advanced age, medications or other illnesses.

If an adult is suffering with influenza, they should be advised to seek medical care if they have:

- a heart or lung disease,
- any other chronic condition (e.g. diabetes) that requires regular medical attention,
- an illness, or are on treatments or medications affecting the immune system, or
- if they are frail.

These people may require changes to their usual medical management routine, and/or extra help in treating influenza, and/or preventing complications e.g. antiviral medications.

Antiviral medications must be administered within 48 hours of the first symptoms; therefore, a person should be counselled to call a physician as soon as possible.

If an adult is suffering with influenza, they should be advised to seek IMMEDIATE MEDICAL ATTENTION IF THEY EXPERIENCE ANY ONE OF THE FOLLOWING SYMPTOMS:

- shortness of breath while resting or doing very little,
- difficult or painful breathing,
- coughing up bloody sputum,
- wheezing,
- chest pain,
- a fever persisting for three or four days with no improvement or worsening,
- starting to feel better, then suddenly developing a high fever and starting to feel sick again,
- noticing extreme drowsiness and difficulty being woken, or if disoriented or confused,
- extreme ear pain,
- being newly unable to function (if an independent elderly person) and
- persistent vomiting, if elderly (two to three times in 24 hours)

Under the above circumstances, calling a doctor as soon as possible is important in order to prevent worsening of conditions.

3.1 Prescribed medications

3.1.1 Antibiotics

Antibiotics are not prescribed for uncomplicated influenza, as they have no benefit for viral infections. However, antibiotics may be prescribed for complications of influenza such as pneumonia or ear infections.

3.1.2 Antiviral medications

Antiviral medication for influenza must be started within 48 hours of the first symptoms — the sooner, the better.

Amantadine (e.g., Symmetrel®), the oldest antiviral, works by stopping the virus from multiplying and releasing infectious material, and can lessen the length of time a person has influenza, and its severity. Amantadine only works against influenza A viruses. It comes in capsule or syrup form and is usually given for five days. Unfortunately, some viruses have become resistant to amantadine. As well, it cannot be given with certain medications (triamterene and/or hydrochlorothiazide, quinine, quinidine and trimethoprim-sulfamethoxazole; caution with CNS stimulants and anticholinergics) or to people with certain health problems (e.g. renal insufficiency, seizure disorders, some psychiatric illnesses). Possible side effects that may go away during treatment include nausea, blurred vision, dizziness or lightheadedness, difficulty sleeping, decreased appetite, anxiety, confusion, dry mouth, headache or constipation. It must be used cautiously in older people because it can cause more serious side effects, especially on the nervous system. It can be given to children over the age of one year.

Oseltamivir (e.g., Tamiflu®) and zanamivir (e.g., Relenza®), two newer drugs, block the enzyme that allows the virus to be released from infected cells. These are effective against both influenza A and influenza B. Zanamivir, which is inhaled, is used infrequently. Oseltamivir comes in capsule and suspension form and is usually given for five days. It can cause nausea, vomiting and dizziness, but these side effects may be lessened if taken with food. Oseltamivir can be given to children over the age of one year, for treating influenza.

4. Protecting others

Individuals with influenza should be encouraged to stay home from work/school/day care and away from public areas while infectious (five days from onset of symptoms), if possible. Those who must go to work, or leave home for medical care or other reasons, should be advised to protect others from being infected with the virus by practicing respiratory etiquette (refer to Section II.3).

IV.

MANAGING THE ILLNESS: MESSAGES RELATED TO CHILDREN

Influenza is more severe in children under five years. The highest rate of influenza-related serious illness in children occurs in the six to 12 months group (after the mother's antibodies have waned). Although uncomplicated influenza in children may be similar to the disease in adults, there are some age related differences in infants and toddlers:

1. Unexplained fever can be the only symptom of the disease in infants.
2. A variety of central nervous system symptoms, such as seizures, may appear in as many as 20 per cent of infants. Children may also have symptoms suggestive of meningitis, e.g. headache, vomiting, irritability and photophobia.
3. Young children usually develop higher temperatures, frequently over 39.5°C (103.1°F).
4. Symptoms such as nausea, vomiting, diarrhea and abdominal pain are found in 40 to 50 per cent of children, mainly those three years old or younger.
5. Influenza viruses are an important precursor of croup, pneumonia and bronchitis in young children.
6. Otitis media and non-purulent conjunctivitis are more frequent in young ages.
7. Myositis is a frequent complication in young children, especially after infection with influenza B.

Note: Very young children and infants probably have symptoms similar to older children and adults, but do not know how to tell caregivers they have sore muscles or a headache. These children may be irritable and eat poorly. They sometimes develop a hoarse cry and barking cough (croup).

Children over five years and adolescents have the same symptoms as adults, the most common being fever, cough, headache, chills, and myalgia. The fever is usually between 38 °C (100.4 °F) – 40 °C (104 °F), and a second peak, without bacterial super-infection, may occur around the fourth day of illness. Backache, sore throat, conjunctival burning with watery eyes and epistaxis may be present, but gastrointestinal symptoms are infrequent.

1. Caring for children

Treat symptoms, if necessary:

- **Acetaminophen** 10 – 15 mg/kg every four to six hours up to five times a day is the preferred medication to treat fever and muscle pain (unless otherwise advised by a doctor). Advise taking the child's temperature before giving them medication for fever. (Refer to Appendix F: *How to Take a Temperature*.) A fever usually comes down one to two degrees in one and one half to two hours. Acetaminophen is effective for three and one half to four hours. Once it wears off the fever is expected to return.

Ibuprofen 5 – 10 mg/kg every six to eight hours up to four times a day is a reasonable alternative to acetaminophen. It should not be used if a child is under four months of age, has a known decrease in kidney function, or is dehydrated. It is not necessary to wake a child to give him/her a medication for fever unless directed by a physician.

CHILDREN UNDER 18 YEARS OF AGE SHOULD NOT TAKE ACETYLSALICYLIC ACID (ASA) OR ANY PRODUCTS CONTAINING ASA (e.g., Aspirin®). The combination of influenza and ASA in this age group has been known to cause Reye's syndrome, a very serious condition affecting the nervous system and liver. A pharmacist can provide advice on appropriate OTC medications for treating fever in children. Note: A fever is part of the normal process of fighting an infection. The temperature reading of a fever does not indicate the severity of the illness; the child's behaviour and overall appearance is generally the most important factor.

- **Dress the child in lightweight clothing** and keep the room temperature at 20 °C. Removing extra blankets and clothing allows heat to leave the child's body. However, if the child becomes too cold, he/she will start shivering, which will produce more body heat.

- **Offer fluids** such as water or juice frequently, when the child is awake. Cool fluids or popsicles are helpful when the child has a fever. Warm, clear fluids such as chicken soup or hot lemonade will help the nose to drain, relax the airways, and soothe the throat. Chicken broth is not recommended for children less than 12 months because of the high sodium content in commercial products. Encourage more frequent breastfeeding.

Although sponging with lukewarm water may help reduce the fever, it can make the child uncomfortable. Cool baths and alcohol baths and rubs are not recommended.

- **Allow the child to rest and stay at home** if possible for five days after the onset of symptoms, to assist in healing and to prevent the virus from spreading to other children.
- **Use salt-water (saline) nose drops** to treat nasal congestion and cough, especially for infants and toddlers, before eating or sleeping. Position the child with the head slightly back. Use a medicine dropper to put one to two drops in each nostril. Repeat four to five times per day. Throw away tissues as soon as the child's nose is wiped. Older children and teens can splash warm water into the nose while bending over a sink, wait one minute and then blow nose gently; blowing too hard can lead to earaches and nosebleeds. Repeat as necessary to clear nasal passages until breathing is easier. Apply small amount of petroleum jelly to the skin under the nose to protect from irritation. Teach the child to cover their mouth when coughing or sneezing and then to throw away the tissue. Wash hands often and teach children to do so as well.
- **Use a humidifier** to help loosen secretions and keep mucus membranes from drying out. Ensure that the humidifier is cleaned daily to minimize mold blowing in the air (refer to Section III. 2.2.1). Note: Humidifiers should not be used with asthmatic children.
- **Elevating the head of the child's bed**, reducing stimulation and involving the child in quiet activities may decrease coughing.
- **Cough suppressants** containing dextromethorphan (DM) may help a child over two years of age. Use only if the cough is painful or interrupting sleep. Cough suppressants should not be given to a child with a moist, productive cough, or to a child with asthma.
- **Decongestant sprays** may be used in children older than six months, and oral decongestants may be helpful with older children, if necessary. They may thicken secretions, and cause restlessness or a rapid heartbeat. Ask a pharmacist for help in selecting the right one.

- **Throat lozenges**, for children six years of age and older, may relieve a sore throat. They should not be given to younger children because of the risk of choking. Older children can gargle warm salt water. Gargle for 10 seconds, spit out the salt water, and repeat. This may be done four to five times/day.

2. When to seek medical care for a child

The primary concerns for children with influenza are:

- Respiratory compromise
- Dehydration
- Secondary bacterial infection
- Neurological complications

These complications are more common in very young infants and children with underlying chronic diseases (particular cardiac, respiratory, neurological or metabolic) or immunocompromise.

Because almost 100 per cent of children with influenza have fever, the presence or absence of fever as a sign of severe influenza is not helpful.

Parents/caregivers are advised to seek medical care for a child if they have the following symptoms of influenza — rapid onset of fever, cough, malaise, reduced appetite with or without vomiting AND ANY ONE OF THE FOLLOWING:

- are less than three months old,
- have a heart or lung disease, or any chronic illness requiring regular medical care; have a disease, or take drugs or treatments that affect the immune system; take acetylsalicylic acid (ASA) e.g., Aspirin® regularly for a medical condition,
- have a change in respiratory pattern with an increase in the respiratory rate and show signs of labored breathing,
- are very listless, with a loss of interest in most things (playing, watching TV, eating and drinking),
- are excessively irritable and inconsolable; i.e. he/she won't calm down with bottle or nursing, being held or rocked,
- have significantly reduced urine output (i.e. voiding less often than every six hours while awake; have a dry diaper more than three hours if younger than six months, or longer than six hours if six – 23 months old).
- look very ill and the parent/caregiver is worried.

3. When to take a child to hospital emergency and/or all 911

Parents/caregivers are advised to take a child to hospital emergency and/or call 911 if they:

- have severe trouble breathing (not caused by nasal congestion),
- have blue lips or hands, sudden pallor, or have cold legs up to their knees,
- have a full or sunken fontanel,
- are limp or unable to move,
- are excessively sleepy to the point of being difficult to arouse, or unresponsive,
- show signs of pain: headache and/or stiff neck especially if combined with fever and listlessness/photophobia,
- seem confused, and,
- have a seizure (convulsion/fit).

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Acknowledgements

Alberta Pandemic Influenza Working Group (original members)

Dr. Karen Grimsrud, Deputy Provincial Health Officer, Alberta Health and Wellness (Chair)

Joan Berezanski, Health Care Consultant, Office of Provincial Medical Care Consultant, Alberta Health and Wellness

Dr. Brent Friesen, Medical Officer of Health, Calgary Health Region

Dr. Jim Howell, Department of Public Health Sciences, University of Alberta

Dr. Marcia Johnson, Medical Officer of Health, Capital Health

Donna Koch, Director Regional Community Health Services, Peace Country Health

Jane Manning, Vice President, Regional Health Services, Peace Country Health

Wayne Marr, Federal Project Officer, Emergency Management Alberta

Elaine McFadden, Director, Corporate Communications and Community Relations, David Thompson Health Region

Pearl Morrison, Director, Emergency Health Services, Program Services, Alberta Health and Wellness

John Tuckwell, Public Affairs Officer, Communications, Alberta Health and Wellness

Marilyn Wakaruk, Assistant Director, Communications, Alberta Health and Wellness

Alberta Pandemic Influenza Health Services Subcommittee (2001)

Joan Berezanski, Health Care Consultant, Office of Provincial Medical Care Consultant, Alberta Health and Wellness (Co-chair)

Dr. Tom Marrie, Chief of Service — Medicine, University of Alberta (Co-chair)

Dr. David Dawson, Medical Director, David Thompson Regional Health Authority

Carol Gray, Executive Director, Peter Lougheed Centre, Calgary

Dee Hampel, Senior Manager, Peace Country Health

Wendy Hill, Chief Operating Officer, Sturgeon Hospital, Capital Health

Dr. Jim Kellner, Alberta Children's Hospital, Calgary Regional Health

Irene Mazurenko, Project Coordinator — Alberta Pandemic Contingency Plan Project, Alberta Health and Wellness

Carolynne Ross, Disaster Health Specialist, Alberta Municipal Affairs

Jean Sandham, Executive Director, Alberta Ambulance Operators Association

Dr. Ernst Schuster, Acting Regional Program Clinical Director, Family Health; Medical Director, Community Health; Acting Chief of Family Medicine, University of Alberta Hospital, Capital Health

Ann Semotiuk, Acting Director of Operations, Capital Health Home Care

Diane Shanks, Program Director, Emergency and Critical Care, Chinook Regional Health Authority

Diane Spillett, Project Consultant to Alberta Health and Wellness

Dr. Brian Stewart, Executive Director, Calgary Health Region

Alberta Pandemic Influenza Self-Care Working Group (2004/05)

Michele Zielinski, Pandemic Influenza Project Lead, Alberta Health and Wellness (Co-chair)

Donna Koch, Director Regional Community Health Services, Peace Country Health (Co-chair)

Cecilia Blasetti, Manager Boyle McCauley Health Centre, Capital Health

Mike Deising, Information Officer, Communications, Alberta Health and Wellness

Lisa Devos, Pharmacist — Special Projects, Alberta College of Pharmacists

Anne Dow-Clarke, Occupational Health Centre Team Leader, Syncrude

Lorna Eady, Community Member (target group representative — senior)

Theresa Garvin, Community Member (target group representative — parent of young children)

Agnes Honish, Operational Policy Senior Team Lead, Alberta Health and Wellness*

Dr. Lorraine Hosford, Community Physician

Dr. Paddy Quail, Medical Leader Regional Home Care Program, Long Term Care Physician/
Geriatrician

Ruth Richardson, Regional Communicable Disease Control Nurse Manager, First Nations and Inuit
Health Branch — Alberta Region, Health Canada*

Dr. Paul Schnee, Medical Officer of Health, Palliser Health Region

Carol Shemanchuk, Manager, Health Link Alberta, Capital Health

Edi Skoropad, Information Officer, Communications, Alberta Health and Wellness

Diane Spillett, Project Consultant to Alberta Health and Wellness

John Tuckwell, Public Affairs Officer, Communications, Alberta Health and Wellness

Dr. Wendy Vaudry, Pediatric Infectious Diseases, University of Alberta

Dr. Sunita Vohra, Director of the CARE (Complementary and Alternative Research and Education)
Program, Stollery Children's Hospital and Associate Professor of Pediatrics, University of
Alberta (ad hoc member)

*Community and Hospital Infection Control Association (CHICA) - Northern Alberta Chapter member.

A.

APPENDIX A Alberta pandemic influenza self-care literature review

May, 2004

1. Introduction

This document is part of the Alberta Pandemic Influenza contingency planning process to guide the response to an influenza pandemic. It is part of the ongoing development of the self-care strategy for health-care professionals and the public during regular influenza season and pandemic.

This document provides:

- A review of the literature related to influenza self-care and methods of delivering influenza-related health-care services to guide continued planning.

2. Literature review

A preliminary search of English literature was conducted between November 2003 and January 2004, employing the following health literature databases:

- Medline 1975 — January 2004
- Healthstar/Ovid Healthstar 1975 — January 2004
- CINAHL 1982 — January 2004

The following search terms were used: "Influenza," "Influenza and Self-Care," "Self-Care," "Mental Health and Epidemic," "Mental Health and Pandemic" and "Mental Health and Disaster."

A. The need for an influenza self-care strategy — the public

Literature indicates self-care is the treatment of choice for influenza, and most individuals use the health-care system appropriately.

Although self-care is the norm, great variations exist among individuals. Analysis of the Ontario Health Survey (1994) found low-income respondents reported more health problems and more physician visits. However, there were people with no reported health problems at all income levels, who make frequent visits to the physician. The literature review for the survey notes that one health maintenance organization study found frequent mis-users were younger, reported more symptoms, had a greater belief in their own responsibility for their health, were more concerned about psychological symptoms which they rated as more serious and believed less in the physician's control of their health. Another study of 78 families in an urban medical emergency clinic found family stress related to morbidity and treatment response¹.

Literature pertaining to predictors of general health care utilization showed mixed and often contradictory findings, depending on the research design and instruments used. Generally, female gender, depression, positive attitude toward consultation and perceived poor health status have been associated with greater health care utilization, while marital status, education, employment status, knowledge about illness and self-care, and physical health have shown contradictory results. Literature on age suggests children and seniors use the health-care system the most.²

Literature indicates there are areas in which public understanding of influenza and its care could be enhanced:

- Most people use self-prescribed, multiple action over-the-counter (OTC) drugs.³ Multiple action OTC medications are not recommended. Two deaths were reported in Scotland related to OTC medication use in the 1999-2000 influenza epidemic: one from haemorrhagic duodenitis induced by OTC ibuprofen, and another from the consequences of exceeding the recommended doses of paracetamol by combining doses of the generic product with proprietary flu-remedies to treat symptoms.

These occurred following a highly successful campaign to help reduce the stress on general practitioner and hospital services. Advice given was to take regular OTC analgesia, fluids and to stay home from work.⁴

- In an Ontario study of self-care knowledge and practices related to colds and influenza (1994), only 51.9 per cent of subjects knew viruses cause influenza and 35.7 per cent believed antibiotics cured influenza. Most (89 per cent) thought more people should know how to treat themselves, and 89 per cent would be satisfied if the physician gave advice instead of a prescription³.
- A study of community dwelling adults aged 65 years and older in the United States found most subjects did not identify potential hazards associated with influenza. Researchers also suggested that identification of symptoms associated with influenza may be problematic for elders since symptoms of chronic illness, e.g. fatigue, may mask symptoms of other illnesses⁵.
- A 1993 U.S. study of university undergraduates' knowledge of colds and influenza indicated that regardless of age, sex or year in school, these students were misinformed about key aspects of the diagnosis, treatment and prevention of upper respiratory infections⁶.
- A parental survey of children, who presented to the emergency department of the Children's Hospital of Eastern Ontario following the launch of a publicly funded influenza immunization program for all residents of Ontario over the age of six months (2001), suggested education campaigns need to address parent's gaps in knowledge such as the belief that influenza manifests as gastrointestinal upset and children are not at risk of disease⁷.
- A 1986 study of the treatment of minor illnesses, by university undergraduates in the United States, in which influenza was the third most commonly reported illness, indicated that when analyzed by illness, differences seem to lie in symptom and illness definition, not treatment. Researchers recommend education related to common illnesses at school and via the media with attention paid to diagnosis by laypersons who will either be treating themselves or dispensing advice to others. Symptoms of each illness would be discussed with particular attention paid to what constitutes a "serious" versus "non-serious" symptom.⁸
- Following a study in Israel (1994), regarding the use of health services for influenza-like symptoms, researchers suggested family physicians

need to address symptoms during patient examinations and reduce patient anxiety by discussing their significance⁹.

- The National Advisory Committee on Immunization (NACI) *Statement on Influenza Vaccination for the 2003 – 2004 Season*, states that low rates of influenza immunization are due both to failure of the health-care system to offer the vaccine and to refusal by people who fear adverse reactions or mistakenly believe the vaccine is either ineffective or unnecessary, and educational efforts aimed at health-care workers and the public should address common concerns¹⁰.
- Hand-washing education and practice have shown potential for decreasing rates of school absenteeism from influenza-like illness in lower grades. These efforts need to be regularly reinforced, and are most effective when incorporated into daily routine¹¹.
- An American study (1999) indicated only 40 per cent of patients with influenza sought consultations in a time frame appropriate for the administration of antiviral medications¹².
- In a study (1999) of Canadian children with respiratory tract infections, researchers suggest that educating parents to distinguish between important sentinel symptoms and unimportant signs and symptoms and the clinical courses that may occur with an illness, may diminish the frequency of inappropriate consultations and address parental concern. Increasing education related to fever was also recommended.¹
- A 1997 survey of parents of children attending a pediatric clinic in the United Kingdom indicated parents perceive fever as being dangerous. They have a poor understanding of normal body temperature and fever. Temperature is not assessed accurately, and there is wide variation in the way fever is managed. Researchers conclude there is a need to provide education to change perceptions related to fever.¹⁴
- A study (1992) in Minneapolis, which was conducted to answer questions regarding the role of lay advisors in assisting elderly people with symptom evaluation, found that more than half consulted with a friend or family member about one or more of their symptoms, a response second only to taking medications. The researchers suggest strategies might be developed to assist people in evaluating which symptoms require professional treatment and what types of self-treatments are appropriate, and it may be especially appropriate for these strategies to target women.¹⁵

- Statistics Canada reported at least 3.3 million Canadians spent more than \$1 billion in 1995 on some form of complementary or alternative medicine not covered by a health plan. In particular, women have been documented as frequent users of complementary or alternative therapies. In 2 separate studies, more than 50 per cent of general practitioners in Canada were shown to have referred their patients for complementary or alternate therapies¹⁶. Research is being conducted on the use of complementary medicines (e.g. Quercetin¹⁷, Echinacea¹⁸, Elderberry Extract¹⁹, Cold Fx — a ginseng based cold remedy developed in Edmonton²⁰, Bifidobacterium breve²¹, Homeopathic Oscillococcinum²², Gingyo-San²³, Kan Jang²⁴) in decreasing the severity and duration of influenza.

B. The need for an influenza self-care strategy — the health-care system

Influenza associated respiratory illnesses have a substantial effect, annually, on an already strained health-care system. For example, a study to track health care use and mortality over four influenza seasons (1995 – 96 to 1998 – 99) in Winnipeg, Manitoba, showed significant excess hospitalization, physician visit, and emergency room visit rates emerged for pneumonia, acute respiratory diseases and chronic lung disease, especially among children and adults aged 65 and older. Considerable excess mortality due to influenza and pneumonia and chronic lung disease among individuals aged 65 and over also emerged, particularly among nursing home residents. Researchers suggest efforts be made to increase immunization rates and health-care-services providers plan for increased health services utilization rates during influenza seasons.²⁵

Health-care services utilization data, related to influenza in Alberta, are provided in the *Health-Care Provider Reference*, including:

- annual incidence (1986 – 2003),
- mortality rates (1986 – 2002),
- age specific rates per 100,000 population (2002 – 2003),
- emergency room visits (1995 – 2002) and
- pandemic influenza projections.

Influenza immunization, as a self-care measure, is important in the inter-pandemic period. A study of Alberta seniors, utilizing administrative data from April 1, 1999 to March 31, 2001 revealed an inverse relationship between utilization of influenza vaccination and community-acquired pneumonia. The per capita vaccination cost (about \$10) was small in relation to the per capita cost of care for pneumonia (about \$100).²⁶

During the 2002-2003 influenza season in Alberta, 66.26 per cent of individuals 65 years of age and older were immunized against influenza. In long-term care settings, 90.2 per cent of the residents and 69.3 per cent of health-care workers received influenza immunization.

Pandemic influenza may have a different clinical presentation and course, depending on the nature of the virus. During a pandemic, influenza vaccine may be unavailable or in limited supply. Antiviral medication will not be available in sufficient quantities. Specific strategies to deal with supply and distribution of influenza vaccine and antiviral medications during a pandemic influenza have been developed by the Vaccine and Antiviral Subcommittees. Health Canada antiviral recommendations are undergoing change.

A Pittsburg study examined changes in patient perceptions of the influenza vaccine during the 2000/2001 influenza season, when there was an unprecedented, widespread and highly publicized delay in distribution of the vaccine. The delay in vaccine distribution had three consequences, modest in degree: 1) decreased immunization rates; 2) increased patient concerns about vaccine safety and 3) increased patient concerns about vaccine efficacy. Even among adults with good access to vaccine supplies, this suggests the need for clear messages regarding vaccine safety and efficacy along with availability reports during a pandemic influenza.²⁷

Learning from SARS: Renewal of Public Health in Canada, a report of the National Advisory Committee on SARS and Public Health (2003), noted media should not downplay the risk of an infectious disease outbreak to public and stated the U.S. Centre for Disease Control "has a comprehensive crisis communications training program that bears close study and early adaptation by Canadian governments and institutions." The report indicated many respondents also discussed the significant psychosocial implications of Severe Acute Respiratory Syndrome (SARS) and relayed stories that illustrated the palpable fear among both health-care providers and public. Many who participated in interviews and focus groups suggested fear was engendered both by sensationalism of media coverage

and inconsistent information coming from the provincial and municipal public health officials²⁸. Mental Health Support Network of Canada developed information on dealing with stress or fear you might feel because of SARS, which could be adapted for use during a pandemic influenza²⁹ (See Appendix H).

C. Delivering influenza self-care

1. Effectiveness of community-based influenza and other self-care interventions

A study was conducted in 1994 to evaluate an Ontario Ministry of Health cold/influenza self-care public education campaign to reduce unnecessary patient visits to doctors. The campaign consisted of an information booklet delivered to every household in London, Ontario, newspaper ads and radio spots. The program ran during January – March 1994. Evaluation consisted of:

- Telephone surveys in London (experimental area) and Windsor (comparison area), before and during the campaign,
- telephone survey of London family practitioners during the campaign.

In addition, data was collected on the incidence of cold/influenza visits to three hospital emergency departments and a sample of family physicians' offices.¹

The campaign evaluation showed limited effect. Message penetration was low. Only one-third of intervention site residents knew of the campaign or read the booklet, and readers had mixed interpretations of the message. Only two of ten questions showed increases in knowledge. Those that increased knowledge asked whether antibiotics cure colds and influenza. No changes were found for beliefs, attitudes, acquisition of new health practices or self-reported visits to the doctor¹. There was a decrease in billings for visits because of cold and influenza symptoms in the two months after the campaign was introduced in the intervention site. However, the effect of the campaign on billings could not be determined with certainty, because of limitations with the study.² The researchers observed:

- There was not strong evidence of a large number of inappropriate visits to physicians for the common cold/influenza prior to the campaign.
- Given most respondents practiced self-care, there would be little room for shifts in health practices.

- Where respondents in the intervention site had the correct information, the primary source was their physician, not the booklet.
- Surveys suggested the campaign missed the mark in not knowing the public's knowledge and health practices and in not involving the physicians to "buy into" the program.
- The campaign did not reflect state of the art health education models, which emphasize the "personalized approach".
- Utilization is lowest for family physicians and emergency rooms (20 per cent) compared to walk-in clinics and after-hour services (40 per cent). In the literature review, specifically targeted cold/influenza programs have shown success.
- Educational programs may need to be more selective and work more with health educators to ensure the at risk groups seek appropriate treatment.
- Attempts to change health practices of the minority of "worried well," which one study reports accounts for 17 per cent of the population (but represent 43 per cent of inappropriate doctors' visits), will be a challenge.¹

The literature review for previously described Ontario research indicated providing information can produce new understanding. It suggests an education program should be perceived to be supported by a source personally known to the patient (e.g. physician or employer).² Mass communication campaigns in the form of electronic messages or print material have shown limited effectiveness in changing health practices. Self-care projects integrated into the health-care system and including support components, e.g. nurse counselors, telephone help lines, monthly newsletters, personalized health-risk appraisals, were more likely to find reductions in health service utilization rates. On the other hand, there is evidence it is patient response to the general philosophy and intention of reducing patient visits (Hawthorne effect), not educational materials, that affect the utilization rate. Algorithms in self-care materials may actually promote patient visits.¹

The general self-care literature indicates self-care interventions have the intended effects at least some of the time. However, factors associated with achieving desired outcomes are less clear.³⁰

Methodologies for evaluation of community health education studies are still evolving. There is an increased probability of an overall false negative

finding. An important limiting factor for community intervention studies has been underestimating secular change (e.g. increased use of computers) occurring in comparison communities, leaving trials with insufficient power to detect changes beyond secular trends. Secondly, it is inherently difficult to measure differences in variables characterized by non-normal distributions or large variances such as utilization data. There are no “normal” patterns, and people do not use physicians’ services evenly across time.³⁰

Self-care education has been considered primarily as another means of cost containment. Some researchers conclude that supporting consumer decisions with timely and accurate information has potential to enhance quality of care, appropriateness of care and health outcomes. Unfortunately, these outcomes are typically not examined in most self-care information interventions.³¹

A study was conducted to assess effects of the Healthwise Communities Project (HCP), aimed at residents of four Idaho counties from May 1996 through December 1998. The intervention included distribution of the Healthwise Handbook, provision of a telephone advice line and a website. All of these products use a symptom-based approach. These self-care products provide decision support about how to handle a symptom or problem, delineate when it is appropriate to seek care or engage in self-care, and if self-care is called for, give instructions on the self-care measures to take. Preventive information is also included along with more general information, such as how to work in partnership with the physician.

Findings indicate community intervention increased use of self-care resources. Evidence suggests media campaigns and health-care practitioner endorsement significantly increased use of the manual. The most widely reported effect of using all self-care resources was to reduce worry. Users believe these products help them make better decisions regarding when to seek care and how to self-treat problems. Most believe using the self-care resources saved them from seeking unnecessary care. The HCP was associated with no changes in overall self-report utilization among adults and small decreases in overall reported utilization among children.³⁰

In all three communities, the self-care resource most frequently used was self-care books, followed by telephone advice nurse and computers. Self-care resources were more often consulted for children’s symptoms³². Older adults were much less likely to use a telephone advice nurse than younger adults³³. The researchers suggest parents may be the most receptive to new self-care resources, and using strategies that do not rely on computers and

reading, such as telephone advice lines, may be more effective for reaching low-education and low-literacy populations. Future studies should attempt to address barriers for rural areas.³²

As web-based information sources grow, consumers need some assurance about legitimacy of the sponsor and accuracy and completeness of information. Endorsement of particular information sources from medical providers and reinforcing messages from media will likely enhance usage.³⁰

Other community based studies:

- Brochures were developed on the seven self-limiting conditions (including influenza) representing the highest utilization in an ambulatory setting in a health maintenance organization in Minneapolis. The brochures outlined self-care remedies that could be used at home, special advice dealing with children's symptoms and information about when to call the doctor. The study showed minimal intervention, such as brochure distribution, can have a favourable, albeit minimal effect on medical services. For those symptoms where differences were found, the effect appeared to be short term. It is likely utilization reduction effects require ongoing and repetitive educational messages. Of those surveyed, 80 per cent reported they "liked" or "strongly liked" receiving the information and 75 per cent reported they kept them in a place where they could find them in their homes. Whether or not the brochures had a positive effect on the majority of those who stay home to deal with sickness, was not addressed.³¹
- Info-Sante, the Quebec telenursing service, is a telephone health line nursing service implemented in 1995 in every local community service center in 15 regional health authorities in Quebec. It was initiated to provide public with rapid access to health resources in the health-care system and thus limit recourse to inappropriate and more expensive services. It operates 24 hours a day, seven days a week. In 1997, a province-wide survey of the services, found most respondents were highly satisfied with the service; they followed nurses' advice and carried out self-care measures as recommended. Nursing intervention helped respondents feel self-reliant, that they could solve the same or similar problems should they occur in the future. The vast majority of respondents felt the call to Info-Sante was useful in finding a solution to their problems and claimed they would call again should another problem arise. The majority reported they would have turned to another type of resource if Info-Sante had not existed; one half would have used

emergency departments and one third would have consulted a doctor in private practice. Eighty percent of subjects reported they saved on average five hours of time, and 33 per cent reported they saved three hours in child-care costs. Sixty percent of those surveyed reported they avoided using transportation and 25 per cent reported avoiding losing time on the job. One third of subjects said they would have had to be accompanied to another resource.³⁴

2. Effective influenza vaccine delivery

Most research on delivery of influenza related health services involves the provision of influenza vaccine.

Evidence related to delivery methods of immunization was first comprehensively summarized in 1994, and integrated into a document, *Immunization Delivery Methods: Practice Recommendations*³⁵, providing a base for public health policy development and assisting in the planning of resource allocation. It indicated that while significant improvements in influenza immunization coverage rates can result from many types of interventions, the greatest effects resulted from interventions aimed at hospitalized populations. Significant improvements in coverage levels also resulted from instituting a policy of standing orders in hospitals and clinics (system-oriented intervention). The only strong client oriented intervention study found intervention initiated by a physician (personal reminder) or a nurse (phone call) had double the coverage rate of a mailed letter. Evidence from studies of community-dwelling clinic-registered eligible individuals suggested that response is greatest when personalized mailed reminders or health-care practitioner-initiated telephone calls are used.³⁶

Studies of pneumococcal vaccine delivery strategies also indicated high vaccination coverage rates can be reached when a client-or system-oriented intervention is targeted to hospitalized high-risk patients.³⁶

A meta-analysis of effectiveness of interventions to increase influenza immunization rates among high-risk population groups was undertaken in 1998 to:

- 1) Analyze interventions effectiveness studies of immunization interventions designed to increase coverage levels in non-institutionalized elderly populations. Interventions were grouped as patient-focused, provider-focused and mixed models (patient, provider or delivery-system focused).

2) Assess the possibility of a “ceiling effect” in immunization programs.³⁷

Analysis indicated the “best” intervention strategy will depend in large part on existing immunization rates in the target population. It provides some evidence that as rates increase, single strategy patient-focused interventions are likely to become less effective. Traditional provider reminder systems that have demonstrated effectiveness in low-coverage populations, may need to be enhanced. Mixed strategies, that combine changes in provider behaviors with organizational changes to increase the probability of patient-provider contact, during influenza season are likely to be more effective, especially in high coverage populations. Outreach is essential to reach clients who do not routinely visit a health clinic during influenza immunization season. Provider incentives and/or enhanced patient access through walk-in clinics, free vaccinations, satellite vaccination sites and scheduling of annual physician visits during the influenza season are possible strategies for increasing patient-provider contact.³⁷

Some examples of current influenza immunization delivery research studies include:

- In 1999, Health Authority #5, Three Hills, Alberta, conducted a provider audit and feedback study (mixed-methods intervention) which increased influenza vaccine coverage for individuals 65 years of age and older to 65.6 per cent from 59.5 per cent in 1998.³⁸
- A parental survey of children who presented to the emergency department of the Children’s Hospital of Eastern Ontario following the launch of a publicly funded influenza immunization program for all residents of Ontario over the age of six months (2001), indicated that overall, 27 per cent of children had been immunized. Parents with children who were not immunized were more likely to believe influenza-like-illness was a side-effect of immunization, side-effects of immunization were worse than the illness itself, and influenza immunization would weaken the immune system. The primary reason for deciding against immunization was the belief their child was not at risk. Having a chronic illness and discussing immunization with a physician significantly influenced parental decisions to have their children immunized.⁷
- A study in Philadelphia in 1996, demonstrated a mailed educational brochure (addressing demonstrated reasons for immunization refusal) is more effective than a simple reminder in increasing immunization rates among inner city elderly patients.³⁹

- A randomized, controlled trial of a senior-centre based program to increase influenza and pneumococcal immunization rates was conducted in 1996 in Seattle's ethnically diverse, low-income central area. The intervention group received educational brochures mailed with postage-paid reply cards to report immunization status, phone calls from senior volunteers to participants who are not immunized and computerized immunization tracking. Overall, the pneumococcal immunization rates increased from 41.7 per cent to 66.5 per cent among the intervention group and from 40.5 per cent to 50.9 per cent among the control group. Influenza immunization rate in the intervention group increased from 78.3 per cent to 88.2 per cent and decreased in the control group, from 83.0 per cent to 81.7 per cent.⁴⁰
- A U.K. study, in a rural area in 2000, concluded that combining home-based, over-75 health checks with influenza immunization can improve uptake among older clients. However, this intervention is likely to be costly and its effect on immunization rates is modest. The difference in uptake is greater among those who do not routinely come forward for immunization. A more viable option may be to target these people.⁴¹

The *NACI Statement on Influenza Vaccination for the 2003 – 2004 Season* notes advice of a health-care provider is often a very important factor affecting whether a person is immunized or not. Most people at high risk are already under medical care and should be vaccinated during regular fall visits. The *Statement* outlines strategies to improve coverage.¹⁰

D. Educational materials for public

A 1997 study in Chicago examining patients' information needs from their own perspective found:

- Patients want more information than they typically receive during physician visits. After an outpatient visit, patients sought information from a variety of sources including friends, relatives, pharmacies, public libraries, and the Internet. The more information the patient understood, the more he/she felt in control. Patients also used the information to explain the outcome to their family members and friends.
- Patients would like information tailored to their own situation, e.g. lab results: how abnormal they are, what consequences are and how they can take steps to favorably affect results.

- Patients seek answers to questions at the time they formulate their questions, which was generally not during the encounter where they focus on processing the information they were being told.
- Although there are a variety of sources from which to get information, patients prefer to receive material their physician has endorsed as credible and applicable to their specific problem.
- Patients would like their physicians to recommend other sources of information e.g. journal articles, URL addresses or resource telephone numbers. Patients also seek ways of learning from other patients with similar medical conditions, such as through support groups or Internet-based-discussion groups.
- Patients would like to accumulate as much information as possible about their own medical and health problems.⁴²

Desired characteristics of patient education materials include:

- Custom-tailored to the patient's situation.
- Well-organized, concise and practical.
- Printed so the patient can take the materials with them.
- Personal health data is included as a record of their health.
- Information that helps the patient formulate relevant questions.
- References for more information.⁴²

Patients would like the physician to review the materials with them.⁴²

Based on this research, the health-care group designed custom tailored patient hand-outs from their computer-based-patient-record system (EpicCare® by Epic Systems®). At the end of each encounter, the system prints an After Visit Summary document. (Clinicians felt accessing materials should be easy and seamless with the process of care.⁴²)

Research related to public education:

- A group of patient education studies focused on patient perceptions of the diagnosis or event and the education related to it found that knowledge received by patients was not fully satisfactory because it lacked areas of importance to the learner. Literature review for this article indicated educational programs must be culturally sensitive, economically focused and adjusted for the literacy level of diversified populations.⁴³

- Researchers suggest there is a subgroup of young adults willing to use computer-assisted self-care as a first step in obtaining advice about upper respiratory infections (URIs). Early evaluations of health education using computers indicate they were generally well accepted by patients in community health centers. Computer-assisted, self-care on colds and influenza may be especially appropriate for a college age population as URIs are the second most common reason for visits to student health centres and this population is more familiar with computers than older cohorts. Weighing against acceptance of computer assisted self-care is students' reliance on their personal networks for health information and their unfamiliarity with the concepts of self-care.⁶
- A study (1996) conducted in Idaho found older consumers were much more involved in the purchase of OTC medications than young adults. The older group preferred an easy opening, non-child-resistant package. They were more concerned about print size on the package label, read labels completely, considered counselling by pharmacists more important, were more concerned about side effects, and purchased the majority of their medications from the pharmacy. Young adults were more concerned about child-resistant packaging, package size and generic availability. They predominantly purchased medications from the grocery store.⁴⁴
- A study of patient package inserts (PPIs) for medications showed both readability and design need improvement.⁴⁵
- One of the applications developed within the European Union funded projects TESEMED and TESEMED-II is a program for the information and continuous training of community pharmacists, with the aim to empower them as advisors of the citizens about self-medication topics. "Colds and Flu" is one of the programs. Each program includes three modules: a text version of the protocol and interactive scheme, plus an educational Encounter Simulator that provides protocol training for the pharmacist by means of simulated pharmacist-customer interactions.⁴⁶
- In 1999, a literature review was conducted to examine the concept of video modeling, a technique that involves demonstration of desired behaviors, outcomes and attitudes through active visual representations. Three major uses were identified in clinical practice, one of which was teaching self-care practices. With self-care practices, several of the studies found there was an increase in desired behaviors in people whose educational programs included video modeling. There was no significant

effect on outcomes of care. The effect on long-term behavior changes was not investigated.⁴⁷

- Written educational materials provide patients and families with information on how to manage symptoms and when to call for professional help. For people who cannot read, written materials are not useful. The United Nations reports that 16 per cent of people in Canada have low literacy skills. This situation is more prevalent among minority, low income and low education populations.⁴⁸

Simplification of language has been the principal technique used by health educators to make written materials understandable and useful for people with low literacy skills. Illustrations have also been used to increase interest and meaningfulness of written information. These are important and useful techniques, but they assume some ability to read and therefore cannot help those with very limited or no reading skills. Video and audiotapes are effective in communicating information to people with very low literacy skills, but listeners must remember the messages if they are to be used. This limits their usefulness to simple, important ideas. There is substantial literature showing the recall of oral medical instructions is often poor (29 – 72 per cent). The more information given orally, the poorer the recall.⁴⁸

An American study (1999) indicated people with low literacy skills can, with the help of pictograph, recall large amounts of medical information for significant periods of time. Subjects were 21 adult clients of an inner city job-training program who had less than fifth grade reading skills. The subjects had problems often associated with low literacy such as drug use, short attention spans, negative attitudes towards authority and limited mental abilities. Fever was one of the six symptoms addressed. The effect of pictographs on symptom management and patient quality of life remains to be studied.⁴⁸

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Alberta Health and Wellness – Influenza and Influenza Vaccine Statement
www.health.gov.ab.ca

American Botanical Council
www.herbalgram.org

Ask NOAH About: Alternative (Complementary) Medicine:
www.noah-health.org

Do Bugs Need Drugs Program
www.dobugsneeddrugs.org

Health Link Alberta – for information and advice on health topics
www.healthlinkalberta.ca

The National Center for Complementary and Alternative Medicine (NCCAM) – general CAM information, ongoing NIH clinical trial, funding opportunities and CAM workshops.
www.nccam.nih.gov

B.

APPENDIX B Self-care during pandemic influenza in Alberta

During a pandemic, the need for health services will exceed available resources like facilities, human resources and supplies/equipment. Alberta Health and Wellness, and each regional health authority have emergency response plans in place should a pandemic of influenza occur. Guidelines for self-care are considered an important component of health services contingency planning.

It is anticipated that implementation of the Self-Care Strategy, during inter-pandemic influenza seasons, will prepare the public to better cope during a pandemic. **Self-care messages during a pandemic may differ from inter-pandemic messages**, depending upon the nature of the new virus, how quickly it spreads and its effect on Alberta communities/health services. The need to manage stress along with feelings of fear for the public and health-care workers will be critical. Timely revisions to the self-care message may be required as influenza pandemic unfolds. For example:

- Symptoms and resulting illness management may be different depending on the nature of the pandemic influenza virus. For example, non-respiratory symptoms may be more common, the clinical course could be altered or a specific age group may be more affected.

- Influenza vaccine may initially be unavailable or may be in limited supply, and available only to priority groups. Public will need to know who is eligible to receive vaccine and on what basis priority groups have been chosen.
- Antiviral medication will not be available for all members of the public. Public will need to know who is eligible to receive antiviral medication, how priority groups have been chosen, how those who are eligible can access the medication and how it will be administered.
- Public may seek information on alternate means of boosting their immune system, defending themselves against the pandemic influenza virus.
- Public will need to know and understand what infection control and public health measures are being instituted throughout the community e.g. cancellation of public gatherings.
- As an influenza pandemic progresses, health-care services may be reorganized to meet the challenge. Messages may be needed regarding information lines, locations of triage sites and field hospitals, infection control measures at health service sites etc.
- Public will likely become anxious, fearful or panic as the influenza pandemic begins to take its toll on the health and well being of the community. Messages on caring for the mental health of oneself and family/friends will become paramount (refer to Appendix H: Mental Health During Pandemic Influenza in Alberta).



APPENDIX C Influenza facts¹

Is it influenza, a cold or stomach flu?

SYMPTOMS/ DESCRIPTION	INFLUENZA	COMMON COLD	STOMACH FLU
Fever	Usually high	Sometimes	Rare
Chills, aches, pain	Frequent	Slight	Common
Loss of appetite	Sometimes	Sometimes	Common
Cough	Usual	Sometimes	Rare
Sore throat	Sometimes	Sometimes	Rare
Sniffles or sneezes	Sometimes	Common	Rare
Involves whole body	Often	Never	Stomach/bowel only
Symptoms appear quickly	Always	More gradual	Fairly quickly
Extreme tiredness	Common	Rare	Sometimes
Complications	Pneumonia — can be life threatening	Sinus infection Ear infection	Dehydration

1. Adaptation from Capital Health *Information Sheet for persons immunized against influenza* (Revised 08 2003)

D.

APPENDIX D
**Regional public health
centres contacts**

E.

APPENDIX E Influenza: Complementary medicine

1. Introduction

Statistics Canada reported at least 3.3 million Canadians spent more than \$1 billion in 1995 on some form of complementary or alternative medicine not covered by a health plan. In particular, women have been documented as frequent users of complementary or alternative therapies. In 1996, nearly 60 per cent of Canadian women believed herbal remedies were helpful in preventing and treating illness.

In two separate studies, more than 50 per cent of general practitioners in Canada were shown to have referred patients for complementary or alternate therapies¹.

This paper summarizes:

- Research related to the use of complementary therapies in the treatment and prevention of influenza.
- A study conducted in Vancouver B.C. (2001) on complementary medicine as informed decision-making.

- An American study (1999) which examined medical records of each participant in a family practice who reported using some form of alternate pharmacotherapy, to determine whether there was discussion of this use with the physician and recommended complementary medicine guidelines for medical practitioners.

2. Research related to the use of complementary therapies in the treatment and prevention of influenza

A. Vitamin E and infectious diseases in the elderly²

Incidence of infectious diseases, particularly respiratory disease, increases with age. Age-associated decline in immune function contributes to the increased susceptibility of the aged to infections. Vitamin E supplementation has been shown to improve aspects of immune function in aged animals and human subjects. The protective effect of vitamin E against viral or bacterial infections in young animals has been reported. Researchers investigated the effects of supplementation with vitamin E and other antioxidants on resistance to influenza infection in young and old animals. While young mice supplemented with vitamin E showed only a modest reduction in lung viral titre, old mice supplemented with vitamin E exhibited a highly significant ($P < 0.05$) reduction in viral lung titre.

This publication reports on results of researchers' studies on the mechanism of vitamin E-induced reduction of influenza viral titre as well as studies reported by other investigators on the relationship between vitamin E and infectious diseases. Note: There are no controlled studies, which have investigated the effect of vitamin E on infectious diseases in human subjects. Chandra (1992) gave 96 healthy elders a multivitamin supplement for 12 months. The supplemented group had higher antibody response to influenza vaccine and less infection-related illness than the placebo group. Girodon et al. (1996) conducted a double-blind placebo-controlled study in which 81 elders in a geriatric center were supplemented with trace elements (zinc 20 mg. and selenium 100 mcg.) and vitamins (vitamin C 120 mg. B-carotene 6 mg. and vitamin E 15 mg.) or a combination of trace elements and vitamins for two years. Subjects who received trace elements alone or in combination with the vitamins had significantly fewer infectious events. The authors are currently conducting a randomized, double-blind placebo-controlled study to determine the effect of one year of supplementation with vitamin E on the incidence of respiratory infection in elderly nursing home residents.

B. Effect of vitamin E and C combination on experimental influenza virus infection³

Successful antioxidant treatment of “free radical diseases” has been reported in the literature. This study examined the preventive effect of vitamin E and C, alone and in combination, on damage caused by influenza virus infection in male mice. The preventive effect of vitamin E was stronger than the effect of vitamin C, but the combination (vitamin E + C) had the strongest effect.

C. Effect of Quercetin on lipid peroxidation and changes in lung morphology in experimental influenza virus infection⁴

Studies have shown treatment with anti-oxidant enzymes and vitamin E reduces free radical formation and decreases the pathogenicity of the influenza virus. The mechanisms behind the protective action of anti-oxidants and their possible use in the prevention and treatment of influenza virus infection are currently areas of interest for researchers.

A study published in 2003, investigated the histopathological changes in the lungs of influenza virus-infected mice, with and without oral supplementation with Quercetin, a bioflavonoid. Quercetin resulted in a significant decrease in the levels of oxidative stress. There was also a significant decrease in the number of infiltrating cells, and a mild to moderate protective effect was observed in lung morphology. Thus, Quercetin may be useful as a drug in reducing the oxidative stress induced by influenza virus infection in the lung, and protect it from the toxic effects of free radicals. Quercetin occurs naturally in fruits, vegetables, nuts, seeds, red wine, tea and flowers.

D. The efficacy of Echinacea-compound-herbal-tea preparation on the severity and duration of upper respiratory and flu symptoms: A randomized, double-blind placebo-controlled study⁵

A study involving 95 employees of a 167-bed nursing and rehabilitation center in York Pennsylvania, was conducted between January 1, 1999 and March 30, 1999, to determine the efficacy of an Echinacea-compound-herbal-tea preparation (Echinacea Plus) given at early onset of cold or flu symptoms in a random assignment double-blind placebo-controlled study. Subjects, with early symptoms of cold or influenza, were randomly

assigned to receive Echinacea Plus tea, five to six cups per day, titrating to one over five days or placebo tea bags in a double-blind situation. Each participant completed a questionnaire 14 days after beginning the program. Efficacy, number of days symptoms lasted, and number of days for change were measured with a self-scoring questionnaire. There was a significant difference between the experimental group and control group for all three questions. There were no negative effects reported by any of the subjects in either group.

Note: This publication provides a detailed history of medicinal use of Echinacea and results of studies conducted to evaluate its effectiveness. Liquid preparations are noted to be more effective than tablets.

E. Echinacea⁶

Consumer Reports (February 2004) indicate Echinacea is the top-selling herb in the United States, and reviews 19 Echinacea pill supplements.

It found:

- Overall, the amount of Echinacea varied substantially from product to product, even from bottle to bottle of the same product.
- Two products contained little or none of the Echinacea species listed on the label.
- Only three supplements carried adequate warnings for individuals who should avoid Echinacea as well as for children, who should at least take reduced doses. None advised that only brief use is appropriate.
- There is little or no reliable evidence on optimum daily dose, value of additional herbs in several remedies; relative worth of the various Echinacea species, plant parts and preparations.

Echinacea is unsafe for people with autoimmune disease, including Type 1 diabetes, rheumatoid arthritis and multiple sclerosis; deliberately suppressed immunity and allergy to flowers in the aster family (daisies, chrysanthemums, sunflowers and a number of common weeds including ragweed and mugwort). Another risk of Echinacea includes that of exacerbation of atopic illness, including asthma.

Studies so far have found no adverse effects except a slight chance of rashes in children and, possibly, a slight chance of gastrointestinal upset.

The following two products were found to supply phenol, and thus Echinacea, at the lowest costs for any given dose:

- Spring Valley Echinacea
- Origin Echinacea

Note: Health Canada has introduced Natural Health Products Regulations, which began Jan. 4, 2004 with transition periods ranging from two years for site licensing and six years for product licensing⁷.

F. A strategic call to utilize Echinacea-garlic in flu-cold seasons⁸.

An editorial in the Journal of the National Medical Association, January 2000, provides background information related to a potential pandemic influenza and suggests influenza planning include evaluating practical measures people can do at the onset of such an outbreak such as using certain vitamins, foods and herbs and alternate lifestyles for their medicinal value. The research on Echinacea and garlic as immune modulator is reviewed to provide examples.

G. Motherisk update: Can herbal products be used safely during pregnancy? Focus on Echinacea¹.

Motherisk, a column in the journal Canadian Family Physician, conducted a study that showed 98 per cent of surveyed physicians reported patients routinely discussed complementary or alternate medicine with them even though 74 per cent of the physicians were unsure about the safety of herbal products during pregnancy. Although MEDLINE citations on alternative medicine are growing at twice the annual rate of the overall medical literature, few of these articles describe controlled studies and even fewer address safety of these medicinals during pregnancy.

A Motherisk article on Echinacea use during pregnancy presented this information:

Question: "Many of my patients are now using herbal medicines; some even use them during pregnancy. As we enter the "cold and flu" season, many are inquiring about use of the herb Echinacea to prevent these ailments. Is there any evidence to suggest use of Echinacea during pregnancy is safe?"

Answer: Although herbal products have been used in the past during pregnancy and delivery, there is little evidence showing they are safe. Many authoritative reviews of Echinacea report its safety for use during pregnancy has not been established. A recent Motherisk study showed use of Echinacea during first trimester of pregnancy was not associated with increased risk of major malformations.

H. Scientific basis of folk remedies for colds and flu⁹.

An editorial in the journal "Chest" in October 2000, reviewed scientific basis of folk remedies for colds and flu: rest; stay warm; drink plenty of fluids and eat chicken soup.

- **Rest** — Relaxation is thought to decrease risk of aspirating virus from the upper airways into the lungs.
- **Stay warm** — Influenza virus grows best at 34-35C and poorly if at all, at temperatures >37C. Staying in a warm environment will keep the airways at a higher temperature.
- **Drink plenty of fluids** — Proper hydration loosens secretions.
- **Chicken soup** — Eating involves "sitting" (resting); inhaling warm steam may raise the temperature of the airways, and consuming liquid aids hydration. Extracts of chicken soup have been shown in one study to significantly inhibit neutrophil chemotaxis (migration) in a standard in vitro assay. Neutrophils may be responsible for some of the local symptoms. This potential mechanism for the beneficial effect of chicken soup needs to be counterbalanced by concern that the inhibition of chemotaxis may contribute to increased bacterial superinfection. More importantly, this is an in vitro study, and whether there are physiologically significant changes in neutrophil chemotaxis has not been demonstrated.

I. Elderberry extract speeds flu recovery¹⁰

A standardized extract of elderberry extract — Sambucol (SAM) contains a high concentration of three flavonoids known to have antiviral activity. A multi-institution study in Israel tested this extract for its antiviral properties in cell cultures infected by four Type A and three Type B human strains, and three Type A animal strains that could infect humans as well. In addition, its ability to reduce the duration of illness was tested in a double-blind, randomized, placebo-controlled study in normally healthy people, not previously vaccinated against influenza. Prior to the study, SAM, four tbsp.

daily for three days, the standard adult dose; and twice the standard child's dose was tested for side effects on 35 healthy adults and none were reported.

In the laboratory, SAM reduced hemagglutination and inhibited replication of all strains tested. The clinical trial involved 27 people in a kibbutz in southern Israel, in 1993, who reported to the dispensary at the start of influenza symptoms (Influenza B Panama). In the treatment group, 93.3 per cent experienced a significant improvement of influenza symptoms — including fever — within two days, but it took at least six days for 91.6 per cent of the control group to reach this point. Convalescent-phase serologies showed higher influenza B antibody titre in the treated group. Additional studies are required on a variety of populations.

J. Local cold remedy proves effective against flu in U.S. clinical trial¹¹

Cold-FX, a ginseng-based cold remedy developed in Edmonton, was given to 198 seniors in nursing homes in Virginia in 2000. Seniors taking Cold-FX had 90 per cent fewer cases of influenza (one case) than a control group taking a placebo (nine cases). There were few side effects. (Note: The incidence of influenza was low in 2000).

Capital Health conducted a double-blind placebo-controlled study of 323 adults aged 18 to 65 years, in 2004, which indicated that Cold-FX cut the duration of colds nearly in half and significantly reduced their severity. The ability of Cold-FX to strengthen the immune system was also investigated. Participants who took the product showed an increase in the number of T-lymphocytes and helper T-lymphocytes and natural killer cells, all key in fighting off viral infections.¹²

K. Protection against influenza virus infection in mice fed Bifidobacterium breve YIT4064¹³

In healthy breast-fed (but not formula-fed) infants, numerous bifidobacteria inhabit the intestines. These bacteria are thought to play a role in the resistance to infection in humans and animals. Intestines of adults have fewer of these organisms, and some people replace them with yogurt and bifidobacteria cultures.

A study found that mice fed Bifidobacterium breve YIT4064 and immunized orally with influenza virus were more strongly protected against influenza virus infection of the lower respiratory tract than ones immunized with

influenza virus alone. The number of mice with enhanced anti-influenza virus immunoglobulin G (IgG) in serum upon oral administration of B. breve YIT4064 and oral immunization with influenza virus was significantly greater than that upon oral immunization with influenza virus only. (In several studies, the degree of protection against influenza virus infection was found to be correlated with levels of mucosal immunoglobulin A (IgA) in the respiratory tract, and serum (IgG)).

L. Homoeopathic Oscillococcinum for preventing and treating influenza and influenza-like syndromes¹⁴

Oscillococcinum is a patented, commercially available homoeopathic medicine. The rationale for its use in influenza comes from the homeopathic principle of “let like be cured by like.” The medicine is manufactured from wild duck heart and liver, a well-known reservoir for influenza viruses. To determine whether homoeopathic Oscillococcinum or similar medicines are more effective than placebo, in the prevention and treatment of influenza and influenza-like syndromes, the registry of randomized trials for the Cochrane Complementary Medicine Field was searched in Feb. 2001. The manufacturers of Oscillococcinum were contacted for information about other trials, and the Cochrane Acute Respiratory Infections Groups’s Register of Trials was searched in Mar. 2001 for placebo-controlled trials of Oscillococcinum or homeopathically-prepared influenza virus, influenza vaccine or avian liver in the prevention and treatment of influenza and influenza-like syndromes.

Seven studies, three prevention trials (n=2265) and four treatment trials (n=1194), were located. Only for two studies was there sufficient information to complete data extraction fully. Two reviewers extracted data and assessed methodological quality independently.

Reviewers concluded Oscillococcinum probably reduces the duration of illness in patients presenting with influenza symptoms. Though promising, data are not strong enough to make a general recommendation to use Oscillococcinum for first-line treatment of influenza and influenza-like syndrome. Further research is warranted but required sample sizes are large. Current evidence does not support a preventative effect of homeopathy in influenza and influenza-like syndromes.

M. Antiviral effect of Gingyo-san, a traditional Chinese herbal medicine, on influenza A2 virus infection in mice¹⁵

Gingyo-san is a crude drug containing extracts from seven medicinal plants and fermented soybeans in a specific ratio. It has been used clinically in China as a therapeutic agent of the common cold. Rather than attacking invading pathogens, the underlying principle in treatment with traditional Chinese herbal medicines is to improve resistance of patients through action of these compounds to restore patients to a normal physiological state.

Gingyo-san and its components in varying doses, were administered orally to mice one day before, then one and four days after the inhalation of a mouse-adopted strain of influenza A2(H2N2) virus. The antiviral effects of Gingyo-san were evaluated on the basis of:

1. Survival rate: After infection with the virus, 100 per cent of mice treated with ten mg./kg. of the agent survived as compared with a 0 per cent survival of control mice treated with saline;
2. Mean survival time in days: increased in treated mice as compared with those of control mice; and
3. Lung consolidation scores: decreased in treated mice as compared with those of control mice.

N. Randomized, controlled study of Kan Jang versus amantadine in the treatment of influenza in Volgograd¹⁶

Two randomized, parallel-group clinical studies with a verum and a control group were performed to investigate the effect of a standardized extract (SHA-10) of *Andrographis paniculata* (N.) fixed combination Kan Jang in the treatment of diagnosed influenza viral infection.

The control group was given a conventional treatment comprising of antiviral agent (amantadine), paracetamol, and ascorbic acid.

These studies of the efficacy of the Kan Jang preparation were conducted in Volgograd, Sweden during the two influenza epidemics in February 1999 (pilot) and January-February 2000. The pilot study was performed in 540 patients (age 19 to 63 years) with 71 Kan Jang-treated patients, and the second study was performed in 66 patients (35 Kan Jang-treated). The patients were examined during the first visit to the physician and again four to five days later. Symptoms

were recorded during each examination. In the second study, swabs from the throat and nose were tested in all patients and analyzed for identification of virus using an immunofluorescent method allowing rapid diagnosis of influenza. Kan Jang therapy significantly reduced clinical symptoms and sped up recovery of patients, and significantly ($P < 0.001$) decreased the number of days off work and number of cases with post-influenza complications. Influenza complications were found in 30.1 per cent and 31.43 per cent of Kan Jang-treated patients and in 67.8 per cent and 70.97 per cent of controls in the pilot study and the second study, respectively ($p < 0.01$). Kan Jang was well tolerated by patients.

3. Complementary/alternative medicine in chronic illness as informed self-care decision making¹⁷.

A. Introduction

While there is a tradition of extensive research into patient decision making in relation to discrete health decisions, the field of everyday self-care decision making in chronic illness remains unexplored. The way in which millions of individuals with chronic illness make decisions, related to the self-management of their diseases on an ongoing basis, is highly relevant to our understanding of how health-care services for chronic illness ought to be structured and coordinated.

The term complementary and/or alternative medicine (CAM) involves all therapeutic modalities originating from theoretical and scientific traditions distinct from western biomedical science. Since the conventional health-care system has been dominated by logic and traditions of western biomedicine, and advancements in health care have been guided by rules of evidence associated with biomedical tradition, popular enthusiasm for therapeutics external to that system, has created considerable conflict and confusion among mainstream health-care providers.

Recent polls indicate a majority of mainstream citizens are now using CAM therapeutics. This is especially true among people with chronic illness, for whom the conventional medical care system does not produce a “cure” and who are therefore challenged with the ongoing process of self-care management so they can live their lives as well as possible.

* Included because chronic illness is a major influenza “at risk” category, and efforts by individuals to attain and maintain their best possible health in the face of chronic illness also address the challenge of influenza

There is a beginning body of knowledge that suggests complex self-care decision making explains the prevalence of CAM participation among chronically ill much more effectively than do unitary interpretations (such as unrealistic hope, or unsophisticated scientific analysis) that are common in medical literature.

A study in Vancouver B.C., explored reasoning underlying complementary and alternative therapy use by 21 individuals; seven each with HIV/AIDS, multiple sclerosis and Type 2 diabetes. The study is a qualitative secondary analysis of a large data set comprised of 63 individual interviews, 42 think-aloud tape recordings, and three focus groups.

All 21 subjects used conventional health care services and all but three also made regular use of one or more CAM approaches. For three individuals, CAM practice was restricted to active positive thinking and prayer; however, the majority experimented with or relied heavily upon various therapies and practices to complement their biomedical care. CAM represents a critical component of their self-care and contributes importantly to optimum well-being.

B. Reconciling contradictions

Subjects were interested in benefiting from both conventional and unconventional therapies. They searched for strategies to address their particular health priorities and improve their overall quality of life. Because conventional medicine was insufficient for these larger objectives, most participants experimented over time with a variety of CAM options.

For some, CAM was a strategy to support the physical body so it might deal better with disease symptoms or with side effects of prescribed medical regimens e.g. bodywork modalities such as massage for foot pain associated with neuropathy; nutritional supplements to strengthen the body's natural ability to cope with disease processes and to heal or cope with the toxic effects of some conventional therapies.

All participants were convinced of the value of cognitive or attitudinal approaches to promoting wellness. Various forms of spiritual practice were reported as ways to optimize health. Spiritual approaches were an important element in addressing emotional effects of having a chronic disease. They served as a stabilizing force in daily life and as a way of making sense of the world when faced with the challenge of chronic illness. Some linked spirituality to healing processes, recognizing that healing the body was

only one part of the complex process of re-framing life to accommodate a chronic disease.

C. Becoming knowledgeable

Once individuals with chronic illness have moved beyond initial phases of passive compliance with medical orders, their decisions to try any new treatment or remedy often involved collecting information from various sources and weighing the available evidence. They valued inputs from a variety of sources and sought information to make the most informed choices possible. Participants valued both scientific and anecdotal reports, recognizing each represented a substantially different perspective.

Another information source that was particularly relevant to many of these individuals was obtained from listening to and interpreting cues their own body provided. This was the context for considering information from other sources.

D. Assuming personal responsibility

Subjects believed they were primarily responsible for their health. This is in keeping with values expressed about becoming knowledgeable and listening to their body. Although health-care practitioners may have specialized mechanisms to check and monitor a person's physiological status, it was ultimately up to the individual to integrate available information and make treatment decisions. If something was not working in the body, it was up to the person to decide what to do and where to turn. The physician was only one among many health-care team workers from whom the individuals might seek advice. It was a sense of personal responsibility that led subjects to explore CAM options when no conventional therapies were being offered, or to supplement the effects of conventional treatment.

In the Canadian health-care system, most individuals obtain considerable support for medically prescribed pharmaceuticals and services, while few CAM approaches are reimbursed by health insurance. Many participants considered the cost of CAM to be an important impediment to their responsible approach toward optimal health.

E. Evaluating the effect

Participants articulated a variety of outcome measures they considered relevant to their conclusions about effectiveness and overall value of the CAM approaches they used. These markers included general well-being or energy levels, specific biologic markers and messages they obtained from body listening.

Relevance of energy levels was mentioned by subjects in all three groups. Both conventional and CAM treatments were understood to involve energy expenditures, including physical energy required to attend appointments, as well as emotional and mental energy to engage in treatment. While specific threats to energy levels resulting from toxic treatments might be tolerated for limited periods of time, most subjects reconsidered their course of treatment if fatigue was excessive or continuing. CAM strategies, which reduced fatigue effects of conventional treatments or increased energy levels in general, were considered to be beneficial.

When motivation for CAM experimentation was symptom management, specific effects on the focal symptom were the primary mechanism for evaluating effect.

Many participants were concerned about more abstract problems such as immune system function and the body's natural ability to heal. Such concerns often reflected an orientation to countering unintended effects of medical treatment.

For many, living with a chronic illness had challenged them to rethink their stances with regard to the value of bodily function and mobility in living well, and to re-examine their values about such issues as the balance between quality of life and longevity.

F. Facilitating dialogue

Participants valued ongoing dialogue with their conventional health-care providers to monitor their condition and discuss the effects of their combined management approaches. Many participants expressed a desire to engage their health-care provider in helping them access and interpret their decisions related to CAM approaches. Conflicting attitudes did little to discourage subject's exploration of alternatives, but forced them into coordinating them in a more covert manner.

Researchers conclude that if our collective intent is to assist persons with chronic disease to live as well as possible within the constraints of their

conditions, then a reasoned and realistic approach to integrating CAM and conventional medicine seems necessary. Because chronic illnesses are, by definition, those conditions for which biomedicine has not found a cure, the role of CAM in ameliorating symptoms, promoting health and enhancing healing seems particularly relevant. The voices of persons affected by chronic illness offer an important contribution to the public debate on the role of CAM in an effective health care delivery system.

4. Alternative pharmacotherapy: suggested guidelines for medical practitioners¹⁸

Use of alternative medicine is increasing rapidly. The most common form of alternative treatment is self-medication with herbs (botanicals or phytomedicines), vitamins or other pharmacologic or biologic substance. Some herbal products can cause adverse effects, have the potential to interact with or potentiate prescription medications and may contain contaminants. Chemical analysis has shown some herbal preparations do not contain some of the desired chemicals they advertise. Although these products have shown promise as treatments, more clinical information is warranted.

A study in Augusta, Georgia conducted between June 1999 and August 1999, recorded data from structured interviews of 178 patients in an academic family practice. It examined medical records of each participant who reported using some form of alternate pharmacotherapy to determine whether there was discussion of this use with the physician.

Approximately one third of patients reported using some form of alternate pharmacotherapy for one year or less, learning about alternative medications mostly from the media and being generally satisfied with the results. Eighty-four per cent of subjects reported not having been asked by their physician about their use of these drugs on the day of their office visit and interview, and more than one half (59 per cent) reported never having been asked about them on any of their office visits. Medical record reviews indicated that for the most part physicians did not document having discussed or making recommendations about the use of alternative pharmacotherapies at any point in their relationship with the patient.

- Physicians should include questions about alternative medication and dosages on intake and history forms.

- Nursing staff can routinely ask about herbs, vitamins or natural remedy use.
- Signs in examination rooms prompting conversation about alternative treatments may also be helpful.
- Physicians should incorporate inquiry and documentation into standard practice.
- Use of a physicians' resource such as *The Physicians Desk Reference for Herbal Medicines* is suggested and familiarity with a few reputable websites (Refer to Section VI — Websites)
- Patient education information covering benefits and risks associated with popular substances should be made available. Medical students or residents should also be encouraged to familiarize themselves with these materials and discuss a patient's use of alternative medications with the attending physician.

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2. American Botanical Council
www.herbalgram.org
3. Ask NOAH About: Alternative (Complementary) Medicine
www.noah-health.org
4. CATWalk – Critically Appraised Topic
www.library.ualberta.ca/subject/healthsciences/catwalk/
5. Cochrane Complementary Medicine Field - a production and collection of systematic reviews in CAM and registry of controlled trials.
www.compmed.umm.edu/Cochrane/index.html
6. Combined Health Information Database (CHID) compiled by US Federal health-related agencies - a complementary and Alternative Medicine sub-file with descriptions of health databases.
www.chid.nih.gov
7. EMBASE - indexes in alternative medicine; covers European sources that may not be indexed elsewhere.
www.embase.com
8. HerbMed & HerbMedPro Herbmed - an herbal database that provides scientific data underlying the use of herbs for health, organized by Latin names. Contains 125 evidence-based reviews of herbal therapies.
www.herbmed.org
9. Hom-Inform - British Homoeopathic Library
www.hom-inform.org
10. International Bibliographic Information on Dietary Supplements Database (IBIDS) – Contains bibliographic records, including abstracts, on the topic of dietary supplements, which includes vitamins, minerals and herbal and botanical supplements.
<http://dietary-supplements.info.nih.gov/index.aspx>
11. National Center for Complementary and Alternative Medicine (NCCAM) – general CAM information, ongoing NIH clinical trials, funding opportunities and CAM workshops.
www.nccam.nih.gov

12. Natural Health Products Directorate Houses Health Canada - regulations, advisories and research and educational programs related to natural health products.
www.nccam.nih.gov
13. Natural Standard - comprehensive, high quality, evidence-based information about complementary and alternative therapies.
www.naturalstandard.com
14. PubMed Complementary Medicine Subset - a comprehensive CAM search strategy. Accessible in the limits section.
www.nlm.nih.gov/nccam/camonpubmed.html
15. Rosenthal Centre - Contains lists of CAM professional and research resources.
www.rosenthal.hs.columbia.edu

F.

APPENDIX F Health-care provider and public resources

G.

APPENDIX G Influenza self-care algorithms

- ADULT: Do you have influenza?
- BIRTH TO SIX YEARS: Does your child have influenza?
- SIX YEARS TO ADOLESCENCE: Does your child have influenza?

ADULT: Do you have influenza?

START

Is your temperature 38°C* (100.4°F) or higher.

Yes →

Do you have a dry cough and any :

- aching muscles
- headache
- extreme tiredness
- sore throat
- runny/stuffy nose
- vomiting, diarrhea or abdominal pain, if an older adult.

Yes →

Do you have:

- chronic heart or lung disease requiring regular medical attention.
- a chronic condition such as diabetes, cancer, for which you are receiving treatment, diseases or treatments that affect the immune system e.g. HIV/AIDS, kidney disease.
- difficulty getting around/doing daily activities because of general weakness/frailty.

Yes →

Call a doctor now.

Do you have a sore throat, stuffy or runny nose.

No ↓

Yes ↓

Possible cause: Uncomplicated cold.

* For people older than 75 years, the temperature may be lower e.g. 37.2°C.

If your symptoms do not match the ones in this chart and you are concerned call your doctor/Health Link Alberta.

No ↓

Are you:

- short of breath while resting or doing very little.
- finding breathing difficult or painful.
- wheezing.
- feeling very drowsy and others have difficulty waking you up or note you seem confused/disoriented.

Yes →

Immediately see a doctor.

No ↓

Possible cause: Uncomplicated Influenza

What you can do for yourself:

- rest — you will probably feel very weak until temperature returns to normal.
- take fluids — extra fluids are needed to replace those lost in sweating. If your urine is dark, you need more to drink. Warm fluids help loosen mucus.
- take acetaminophen (e.g. Tylenol® plain) 1 or 2 tablets every 4 – 6 hours up to 5 times a day, or ibuprofen (e.g. Motrin®) every 6 – 8 hours up to 4 times a day as recommended on the package for fever and muscle pain. Children under 18 years of age should not take acetylsalicylic acid (ASA) e.g. Aspirin® or any products containing ASA. Antibiotics won't help.

ADULT: Do you have influenza?

Continued from previous page

What you can do for yourself continued ...

- treat your symptoms if necessary e.g. humidifier, saline nose drops, cough suppressant if dry cough is causing discomfort or keeping you awake, decongestant, throat lozenges.
- stay home from work/school for 5 days (while you are contagious) if possible, or until you are feeling better.
- ask for help from family/friends if you live alone, are a single parent with small children etc. and are having a hard time taking care of your own/your family's needs.
- deal with fear and anxiety — talk about your feelings with family and friends.

What to expect:

- Day 1 – 3: Sudden appearance of fever, headache, muscle pain and weakness — also dry cough, sore throat and stuffed nose (but overshadowed by previous symptoms).
- Day 4: Fever and muscle aches decrease. Hoarse, dry or sore throat, cough and possible mild chest discomfort become more noticeable.
- Day 8: Symptoms decrease. Cough and tiredness may last 1 – 2 weeks or more.

During influenza, CALL YOUR DOCTOR OR GO TO EMERGENCY AT A HOSPITAL IF YOU:

- are short of breath even while resting.
- have pain in your chest when you breathe.
- have heart disease and develop chest pain.
- are coughing up bloody sputum.
- are wheezing.
- still have a fever and are not feeling better after 3 – 5 days.
- are feeling better and suddenly you develop a fever.
- are extremely drowsy or are confused/disoriented or others notice these symptoms.
- have new inability to function if an independent older person.
- have persistent vomiting, if elderly (2 – 3 times in 24 hours).

BIRTH TO SIX YEARS: Does your child have influenza?

START

Is the child's temperature 38°C (100.4°F) or higher by armpit.

Yes 

Does the child have any one of the following:

- severe trouble breathing not caused by a stuffy nose.
- blue lips, sudden pallor, cold to knees.
- limp or unable to move.
- excessively sleepy, to the point of being difficult to arouse or unresponsive.
- full or sunken fontanel (soft spot).
- signs of pain; headache and/or stiff neck; eyes sensitive to light.
- seems confused.
- a seizure (fit).

Yes 

Immediately, go to the hospital emergency or call 911.

No 

If the child has symptoms or behavior not on this chart and you are concerned, call a doctor or Health Link Alberta for advice.

No 

Does the child have any one of the following:

- change in respiratory pattern with an increased respiratory rate and signs of labored breathing.
- excessive irritability and is inconsolable.
- listless with a loss of interest in most things e.g. playing, watching TV, eating/drinking.
- significantly reduced urine output i.e. voiding less often than every 6 hours while awake or have a dry diaper longer than 3 hours if under 6 months, or longer than 6 hours if 6 – 23 months.
- Look very ill and the caregiver is worried

Yes 

Take the child to a doctor.

No 

Is the child 3 months of age or under?

Yes 

Call a doctor or Health Link Alberta for advice.

No 

Continued on next page

BIRTH TO SIX YEARS: Does your child have influenza?

Continued from previous page

No 

Does the child have:

- chronic heart or lung disease requiring regular medical care.
- chronic illness such as diabetes, kidney disease, cancer and is receiving treatment, diseases /treatments that affect the immune system e.g. HIV/AIDS.
- a condition requiring regular use of ASA (e.g. Aspirin®)

Yes 

Take the child to a doctor

No 

Does the child have any :

- irritability.
- loss of appetite.
- hoarse cry.
- barking cough.
- diarrhea or vomiting.
- stomach pain.

Yes 

No 

If the child has symptoms/behavior not on this chart and you are concerned, call a doctor or Health Link Alberta for advice.

Possible cause: Uncomplicated influenza*

To assist the child:

- Give acetaminophen or ibuprofen in the dose recommended for children on the package until the child's temperature comes down, unless your doctor says otherwise. Do not give ASA. Antibiotics will not help.
 - Dress in light-weight clothing and keep room at 20°C.
 - Offer cool fluids/breast feed frequently while awake.
 - Avoid cool baths/alcohol rubs.
 - Allow to rest. Keep home for 5 days so the virus is not spread.
 - Use salt water nose drops (e.g. Salinex®) and a humidifier (unless asthmatic) to treat a stuffy nose. Teach the child to cover their mouth when they cough and then to throw the tissue away. Wash your hands often and teach the child to do so as well.
 - Elevate head of bed and decrease excitement to help ease cough.
 - Treat symptoms if necessary: e.g. cough suppressant for dry cough for children >2 years , only if interrupting sleep (not for asthmatics); decongestant sprays if over 6 mo.
- *Usually symptoms start to clear up in 5 to 7 days.

SIX YEARS TO ADOLESCENCE: Does your child have influenza?

START

Is the child's temperature 38°C (100.4°F) or higher.

No 

Does the child have a sore throat, stuffy or runny nose.

No 

Possible cause:
Uncomplicated cold.

Yes 

Is the child:

- short of breath while resting or doing very little.
- finding breathing difficult or painful.
- wheezing.
- hard to wake up, unusually quiet or unresponsive.

No 

Does the child have:

- chronic heart or lung disease requiring regular medical care.
- a chronic illness such as diabetes, kidney disease, cancer and is receiving treatment, diseases/treatments that affect the immune system e.g. HIV/AIDS.
- a condition requiring regular use of ASA (e.g. Aspirin®).

No 

- Does the child have a dry cough and any :
- aching muscles.
 - headache.
 - extreme tiredness.
 - sore throat.
 - runny/stuffy nose, nose bleeds.
 - burning eyes.

No 

If the child's symptoms do not match the ones on this chart and you are concerned, call a doctor or Health Link Alberta for advice.

Yes 

Immediately take your child to be seen by a doctor.

Yes 

Call a doctor now.

Possible cause: Uncomplicated Influenza*

What you can do for the child:

- allow the child to rest. The child will probably feel very weak until their temperature returns to normal.
- offer fluids frequently while awake — extra fluids are needed to replace those lost in sweating. If the child's urine is dark, they need more to drink.
- give the child acetaminophen (e.g. Tyleno® plain) every 4 – 6 hours up to 5 times a day, or ibuprofen (e.g. Motrin®) every 6 – 8 hours up to 4 times a day as recommended on the package for fever and muscle pain. Children under 18 years of age should not take ASA or any products containing ASA. Antibiotics won't help.
- treat the child's symptoms if necessary e.g. cough suppressant, only if dry cough is causing discomfort or interrupting sleep (not for asthmatics), salt water nose drops (e.g. Salinex®), humidity (unless asthmatic), throat lozenges, decongestant. Teach the child to cover their mouth when they cough and then throw the tissue away. Wash your hands often and teach the child to do so as well.

SIX YEARS TO ADOLESCENCE: Does your child have influenza?

Continued from previous page

What you can do for the child continued ...

- Keep your child home from school for 5 days (while they are contagious), or until they are feeling better.

What to expect:

- Day 1–3: Sudden appearance of fever, headache, muscle pain and weakness — also dry cough, sore throat and stuffed nose (but overshadowed by previous symptoms).
- Day 4: Fever and muscle aches decrease. Hoarse, dry or sore throat, cough and possible mild chest discomfort become more noticeable.
- Day 8: Symptoms decrease. Cough and tiredness may last 1–2 weeks or more.

During influenza, IMMEDIATELY TAKE YOUR CHILD TO SEE A DOCTOR OR GO TO EMERGENCY AT A HOSPITAL, if the child:

- is short of breath even while resting.
- is experiencing pain in their chest when they breathe.
- is coughing up bloody sputum.
- is wheezing.
- continues to have a fever and is not feeling better after 3 – 5 days.
- is feeling better and suddenly develops a fever.
- is hard to wake up, unusually sleepy or unresponsive.

H.

APPENDIX H: Mental health during pandemic influenza

Lessons learned from Severe Acute Respiratory Syndrom (SARS)

A. Introduction

Emerging new infections exert a significant psychological impact on health-care workers (HCWs) and the community at large, which in some instances requires flexible and appropriate interventions. Compared with available literature on the biology of infectious disease, there have been considerably fewer published reports on the psychosocial impact of disease outbreaks. A search of the literature related to mental health during the Severe Acute Respiratory Syndrome (SARS) outbreak (document attached) revealed information on sources of and responses to stress made by HCWs; individuals who contracted SARS, their families and contacts, and general public which may be useful in planning a response to pandemic influenza.

B. Health-care workers

Primary sources of stress for HCWs during the SARS outbreak were:

- Persistent uncertainty related to the speed new cases occurred and knowledge was acquired leading to rapidly changing public health and infection control practices, as well as not knowing when the crisis would end.
- Additional personal risk felt by everyone in hospitals especially those with family at home, who worried about infecting loved ones.
- Health-care workers treating their friends and colleagues as patients, which greatly increased the emotional complexity of the caring relationship.
- Psychological effect of extraordinary infection control measures required within the workplace (primarily feelings of isolation), feeling scrutinized, redeployment to unfamiliar tasks and increased workload.
- Negative public reaction e.g. being asked not to take their children to day care.

Particularly vulnerable to stress were: nurses, those having contact with SARS patients, HCWs with children (especially single parents), part-time employees, younger staff members, those whose lifestyle was affected by the SARS outbreak, HCWs whose ability to do their job was affected by precautionary measures and individuals who had difficulty sharing thoughts and feelings.

Restorative sleep may be the first casualty of such an outbreak for all concerned. Bad dreams, fatigue, pre-occupation with personal health, strained family relations and changes in weight were other indications of stress. For most staff, the most significant stress came with the second wave of cases.

The SARS experience showed HCWs are a very resilient group of professionals, who can perform well in a difficult situation if they:

- are well informed. The need to reduce meeting in groups necessitated alternate modes of communication e.g. email, intranet, phone-in lines, conference calls. Daily emails to staff provided new information about the virus, rationale for infection control measures, training about those precautions, updates on the number of SARS cases, etc.
- feel safe and protected.

- feel well supported practically e.g. reassurance that their livelihood was not at risk if they were not able to work owing to illness or infection control precautions; shortened work hours and adequate training and supplies. Providing accommodation would benefit those who are afraid of infecting loved ones.
- feel well supported emotionally e.g. establishing healthy working relationships prior to the crisis; sensitivity to individual responses to stress; mitigating the psychological impact of infection control procedures, especially interpersonal isolation. Support services for staff need to be flexible, collegial, varied and unintrusive. Some of these services should include stress management programs, critical incident stress management and peer support programs. Education about the impairment that results from sleep deprivation and how to treat insomnia is essential.
- feel listened to and respected. Expert responses to questions from staff were included in daily all-staff emails. Managers communicated with staff and relayed their concerns back to senior management. Senior management visited units to answer staff questions at critical times.

Hospital's response required clear communication, collaboration between disciplines, authoritative leadership and provision of relevant support. Effective risk communication is a priority early in an outbreak. HCWs may have a role in influencing patterns of media coverage that increase or decrease morale.

C. Individuals infected with SARS and their contacts

Emotional responses of patients with SARS included:

- Insomnia as a result of medications, anxiety, physical discomfort and hospital routines.
- Fear, anxiety and discouragement related to elevated body temperature.
- Guilt, anger and fear for the welfare of friends and family with whom they were in contact.
- Loneliness, sadness and boredom from isolation, which meant that outside communication was available only by phone and sometimes email.
- Concern around child-care issues for single parents with SARS who had children in quarantine.

- Worsening of pre-existing marital tensions.
- Concern by HCW patients about infectious risk to staff caring for them.

Family members found it difficult that they could not provide direct support to sick relative by visiting.

Health care interventions included:

- emphasizing a wide range of emotional responses is to be expected in the face of such an extraordinary situation. Concerns and feelings expressed were interpreted as expected, normal responses.
- pharmacological and behavioural interventions to treat insomnia.
- supportive psychotherapy, when indicated and desired, aimed to balance expression of feeling with pragmatic attention to particulars of the patients' external reality (e.g. shopping assistance, measures to decrease social isolation such as access to Internet, newspapers etc.).
- attention to issues of powerlessness and the conflicting responsibilities of roles for the patients who were both parents and HCWs.
- identifying families needs, offering an opportunity to express feelings, and supporting effective coping strategies to enhance the families' sense of competence and control.

In situations requiring specialist assistance, psychiatric staff provided face-to-face consultation with the patient and the medical team provided ongoing monitoring. All patients with an adjustment disorder received telephone contact from psychiatry, followed by liaison with the treatment team and family. Telephone counselling aimed at giving patients skills to alleviate symptoms of distress and teaching the family ways to convey support.

Palliative care service staff noted that isolation procedures meant the patient suffered a loss of self-esteem (feeling treated as a prisoner) and a loss of autonomy (could not decide where he died or who would be present). Family was not allowed to visit unless the patient was deemed seriously ill, then they had to don protective equipment, touching was not permitted and they could only visit one at a time. Good comfort care and psychosocial support/advocacy were difficult with limited touching, communicating through masks etc. As the nature of the disease was uncertain, prognostication was inaccurate. This created difficulties in helping patients and their families prepare for death. The process of bereavement was disrupted as traditional death rituals could not be performed by the family.

HCWs suffered the same anxieties, fears and grief as the patients, if their own relatives and friends were ill or died.

HCWs were concerned about the psychosocial impact on children and families of wearing masks in stressful situations (nonverbal communication is impaired and lip-reading is impossible). This can be particularly significant for people for whom English is a second language and those who are hearing impaired.

Hospital in-patients without SARS were concerned about becoming infected. Restrictions on transfer to other institutions, cancelled procedures, the need for quarantine upon discharge or delayed discharge were common frustrations. Patients deprived of family visits experienced insomnia, anxiety and interpersonal friction with staff. Limited access to external resources resulted in difficulty obtaining items that would usually provide comfort such as books and music. Asian patients reported stigmatization in the community, because the outbreak was thought to have originated in China.

The hospitals developed patient and visitor letters, posters and information sheets. They concluded that there was a need to make greater use of the intranet and Internet for communicating with staff, patients and public. There was also a need to find more effective ways to engage physicians and their assistants as communicators, especially when there are changes in normal practices such as patient screening and restrictions placed on visitors. Finally, there was a need for more emphasis on effective use of signage — too many signs lose their impact.

Preliminary evidence suggests patients have difficulties resuming activities of daily living after discharge because of fatigue and residual symptoms and that they may be at risk of stress-related anxiety and depressive disorders. In Hong Kong, approximately 20 per cent of rehabilitated patients showed some negative psychological effects such as insomnia and depression. Some patients could not rid themselves of the memories of fighting SARS and these memories disrupted their daily activities. Persons who took ribavirin and corticosteroids had hair loss, major memory loss, impaired concentration and depression.

In addition to SARS patients, an estimated 50 per cent of family members of SARS patients had psychological problems including feelings of depression or stigmatization. They had difficulties sleeping, and some children who had lost parents cried continuously. Some children also felt embarrassed to be a member of a SARS family. The loss of parents who were SARS patients also impaired the growth of their children.

Quarantine may create heavy psychological and financial problems for some persons. To be effective, quarantine requires at risk persons be isolated and they follow appropriate infection control measures. A survey of individuals quarantined in Toronto indicated stress increased with longer durations of quarantine, acquaintance with or direct exposure to someone with a diagnosis of SARS and a low combined annual income of the household.

All quarantined individuals described a sense of isolation. Lack of physical contact with family members was particularly difficult and not being able to shop for necessities of everyday life was a concern. Infection control measures imposed physical discomfort of having to wear a mask and in some, self-monitoring of temperature provoked considerable anxiety. Following quarantine, 51 per cent had experiences that made them feel people were reacting differently to them.

As many as 50 per cent of respondents felt they had not received adequate information regarding at least one aspect of home infection control and not all respondents adhered to recommendations. A combination of a lack of knowledge, an incomplete understanding of the rationale for these measures and a lack of reinforcement from an overwhelmed public health system were likely contributors to this problem. Strictly adhering to infection control measures, including wearing masks more frequently than recommended, was associated with increased levels of distress.

D. General public

Learning more about public concern, knowledge, attitudes and behaviour during an outbreak of infectious disease can be crucial to improving communication efforts by public health officials and clinicians in response to such outbreaks.

Prior research has shown that anxiety and misperception, at the extreme, can cause instances of panic flight from the outbreak area or refusal to comply with quarantine efforts. Public reaction to past outbreaks has also had other negative consequences, including unnecessary or overwhelming demand for health-care services; inordinate or erroneous precautionary behaviour; avoidance of places and activities that bear a low risk of infection, with resulting negative effect on the community and its economy; inappropriate refusal or demand for vaccination, stemming from misinformation about the safety and effectiveness of vaccines; and avoidance of hospitals and health-care facilities out of fear of becoming

infected by others. Another problem associated with the fear of becoming infected has been discrimination against groups of people perceived to be “at-risk” even if few people in those groups are actually contagious. Studies have shown that in times of perceived epidemic threat, public places its greatest trust in clinicians.

If people are to respond appropriately during an outbreak of infectious disease, they need to have some basic knowledge of how the disease is spread and whether there is a vaccine against the disease or an effective medical treatment once someone contracts the disease. Individuals in Hong Kong did not recognize that infection could be transmitted through contact with contaminated objects. Respondents with higher risk perceptions and a moderate level of anxiety were most likely to take comprehensive precautionary measures against the infection, as were older individuals, females, more educated people and those with a positive contact history and SARS-like symptoms. Continuing public education about preventive measures should be targeted at the identified groups with low current uptake of precautions (i.e. younger, less educated males). Perhaps targeting health promotion messages through intermediaries of female significant others (e.g. mothers, wives or girlfriends) would be worth exploring. Sustained interventions towards changing social norms yield the most effective results.

Mortality was very high (over 50 per cent) for older people infected with SARS in Hong Kong. In addition, older people often suffered from chronic physical illness, necessitating visits to hospitals and outpatient clinics, where there was a higher chance of contracting SARS. Many older persons defaulted treatment and follow-up with negative consequences. A negative image and stigma was imparted to older persons by the SARS epidemic. Most elderly nursing home residents knew little regarding SARS and prevention strategies, despite access to outside news by TV, radio and visitors. Tailored education programs to promote awareness and prevention of SARS for the elderly are needed. More in-service training and support are indicated for staff to promote disease prevention and improve quality of care.

In an ideal world, news media would be more effective at conveying the level of risk and the relative need for precautions in high-risk vs. low-risk areas. In future, one way to do this would be to work with local broadcast journalists in advance of a threat to ensure they know who to contact for up-to-date, credible information.

In Edmonton, Alberta, a telephone information service staffed by nurses, Health Link, proved to be an invaluable service in responding to questions about SARS. Residents and community physicians were regularly advised through media and other communication channels that Health Link was their first contact if they suspected an individual had SARS. The intent was to avoid having people enter emergency departments or physicians' offices and potentially infect other people. This helped address staff concerns and manage any internal issues around safety. Health Link also proved to be an excellent tool for gauging public concern about SARS.

Through Health Link the Edmonton region was able to deal with cultural and language differences e.g. setting up a special line for residents who speak Cantonese and advertising it in the Chinese community. Signs were posted at hospitals as well as at the airport, outlining necessary steps to take if people had certain SARS-like symptoms. Physicians, with large numbers of patients from high-risk groups also received copies of the protocol, printed in a variety of languages. Work with media was coordinated through the region's Public Affairs Office, under the leadership of the medical officer of health to ensure consistent messages were sent out.

In a situation like SARS, the circle of who needs to receive communication outside of the health-care system should be broadly defined e.g. the education system had questions around accepting foreign students and school trips planned to regions with SARS and other major organizations and large employer groups started to seek information.

Public health strategies require a delicate balance between protecting the public's health and initiating exclusionary practices and treatments that can lead to fear and stigmatization of, and discrimination against certain populations. Mitigating fear and discrimination directed toward persons infected with and affected by infectious disease can be important in controlling transmission. Persons who are feared and stigmatized may delay seeking care and remain in the community undetected. Such fear can increase stigmatization when cases are identified at a later date. Stigmatization has social and economic ramifications that intensify feelings of fear.

Containing fear is best accomplished by a behavioural strategy that addresses the needs of the population at risk of being stigmatized, as a complement to a larger public health education and communication campaign. Communication techniques for the general public most frequently involve television sound bites, press conferences with dignitaries

and health officials, and targeted release of information to mass media outlets such as newspapers and internet sites. Although these risk communication strategies are critical for keeping public informed during an outbreak, they can fail to meet the personal needs of general public and the affected population.

A multidisciplinary Community Outreach initiative was undertaken in the United States to rapidly assess, monitor and address fears associated with the SARS epidemic, in which Asian-American communities were particularly affected. The team monitored stigmatization ideas and behaviours in the general population and the media toward Asian Americans. Situational assessment included facilitating group discussions (teleconferences) with national, state and local influential leaders within the Asian community in the U.S.; monitoring the Public Response Service data; monitoring Asian-language newspapers Internet sites; conducting community visits, panel discussions and media interviews; soliciting information from regional minority health liaisons nation-wide; developing ongoing relationships with Asian American communities, particularly in metropolitan areas etc.

The team response included:

- working with Asian American communities to develop a culturally tailored intervention that promoted communication and understanding of the facts related to the transmission and prevention of SARS (Asian-language materials, web-based information, educational hot line messages);
- conducting community visits, panel discussions and media interviews to provide evidence-based information and act as a catalyst for bringing together a broad spectrum of organizations and persons in the community to create local networks to build community resiliency and capacity to mitigate fear;
- encouraging appropriate health-seeking behaviours for those who may have been exposed to SARS.

The team also worked to keep general public better informed, prevent discrimination against SARS-affected communities and provide guidance for organizations hosting international visitors from SARS-affected countries and other SARS emergency response teams on how to minimize the risks of stigmatizing groups.

E. Future directions

The report of Canada's National Advisory Committee on SARS and Public Health urges that the psychological well-being of health care workers who deal with disease outbreaks, the responses of public and outcomes of intervention programs need to be set as priority areas of research. Three elements are needed in future psychosocial research on the effect of infectious disease.

- A systemic perspective. It is important to determine the effects of disease on often unseen populations such as family members, non-medical staff, medical colleagues in the community and public, as well as patients and HCWs.
- Prospective research. Because psychological effect may persist or evolve over time, longitudinal studies will allow an assessment of the important determinants of psychological distress as well as protective effects of certain coping strategies, with potential application in early identification of cases requiring more intervention.
- Evaluation of outcomes of psychosocial interventions.

Enhancing psychological well-being of HCWS, their families and community is a crucial tool in the continuing vigilance and fight against emerging infectious disease.

*The literature review, *Mental Health During the Severe Acute Respiratory Syndrome Outbreak: Stress and Coping and Lessons Learned (April 2005)* and the fact sheet: *Dealing with Stress of Feelings of Fear Because of Pandemic Influenza* are attached.

ATTACHMENT:

Mental health during Severe Acute Respiratory Syndrome (SARS)

Stress, coping and lessons learned

A. Introduction

Emerging new infections such as Severe Acute Respiratory Syndrome (SARS) exert a significant psychological effect on health-care workers (HCWs) and the community at large, which in some instances requires flexible and appropriate interventions. Compared with available literature on the biology of infectious disease, there have been considerably fewer published reports on the psychosocial impact of disease outbreaks. A preliminary search of English literature was conducted in October 2004 employing PubMed health literature database and using the search term SARS, to determine if there was any literature related to mental health during the SARS outbreak. This document reviews findings of observations made during and following the SARS outbreak on sources of and responses to stress made by HCWs; individuals who contracted SARS, their families and contacts, and general public. These observations may be useful in planning a response to other infectious outbreaks, such as pandemic influenza.

B. Health-care workers

There was little precedent in medical literature by which to anticipate and respond to psychological effects of the infection within SARS-affected hospitals. Although psychological stress caused by large-scale events such as natural disasters and hostile acts has been described, there were features of the SARS outbreak that make it unlike other stressors. It was known from a study of an outbreak of vancomycin-resistant enterococci within a hospital in Australia, that nurses could be substantially burdened, and factors contributing to the burden included feeling inadequately supported, blamed for the outbreak and resentful of the increased workload. Feelings of alienation and isolation were also noted. Beyond those clues, efforts to deal with psychological stress of HCWs in the SARS-affected hospitals were, of necessity, guided by general principals of stress response and adaptation, availability of local resources and flexible responsiveness to emerging patterns of psychological resilience and vulnerability. The severity of psychological burden that SARS would place on HCWs, was not clear at the onset of the outbreak¹.

1. Canada (Toronto)

a. Mount Sinai Hospital¹

In Mount Sinai Hospital, a large teaching hospital in Toronto, during the peak of the first SARS outbreak (April 2003), almost two thirds of staff surveyed reported increased levels of concern for personal and family health, and almost one third of a subset tested had scores indicating emotional distress. A discussion of “stress” implies an event and a response to that event. The 2003 SARS outbreak was an extraordinary event in the life of Toronto hospitals and in the lives of HCWs because of:

- The speed new cases occurred and knowledge was acquired leading to rapidly changing public health and infection control practices (for which the rationale was not always readily apparent) created persistent uncertainty, which is always a source of stress.
- Additional personal risk felt by everyone in hospitals (visitors, patients, volunteers, staff), especially those with family at home, who worried about infecting loved ones as well as becoming ill themselves.
- Health-care workers treating their friends and colleagues as patients, which greatly increased emotional complexity of the caring relationship.

- Psychological effect of extraordinary measures required within the workplace e.g. workers felt highly scrutinized by hospital screening, self-monitoring, media attention; some workers were quarantined with attendant feelings of isolation and others were redeployed to unfamiliar tasks in special SARS units.
- Negative public reaction e.g. being asked not to attend family functions, take their children to day care, or show up for haircut or dental appointments.

Stress felt by staff was often intense as noted in anecdotes of poor sleep, bad dreams, pre-occupation with personal health, strained family relations and changes in weight. Not knowing when the crisis would end brought with it a sense of frustration and fatigue that went beyond immediate effects of the task at hand. For many staff, the most significant stress came not with the first occurrence of the outbreak, when adrenalin was high, but with the resurgence of the second wave of cases. It appears stress was put in its place once the crisis passed, but further study of the effects of SARS on burnout, staff turnover, and recruitment for front-line and critical care positions is needed.

The SARS experience showed HCWs are a very resilient group of professionals, who can perform well in a difficult situation if given the best support available:

- People perform better and feel more secure if they are well informed. Daily emails to staff provided new information about the virus, rationale for infection control measures, training about those precautions, updates on the number of SARS cases, status and means of virus transmission etc.
- Professionals are better able to do their jobs when they feel safe and protected. This was a particular challenge with an uncharacterized pathogen.
- People face challenges more effectively if they feel well supported practically and emotionally e.g. providing adequate supplies of gowns and masks and short screening lineups, as well as establishing healthy working relationships prior to the crisis.
- Communication is vital. The need to reduce meeting in groups necessitated alternate modes of communication — email, intranet, phone-in lines, conference calls — to keep staff feeling informed and included.

- People perform better and feel less stress if they feel listened to and respected. Expert responses to questions from staff were included in daily all-staff emails. Managers communicated with staff and relayed concerns back to senior management. Senior management visited units to answer staff questions at critical times.
- Professionals are good at what they do and feel most confident if they are provided with an environment in which they can effectively do the jobs at which they are most expert e.g. lack of adequate supplies and re-deployment to unfamiliar areas will contribute to stress.

The Mount Sinai experience suggests psychiatry may have a special role to play in supporting institutional leadership during an outbreak, especially through assessment of special staff and patient needs, and the organization of a supportive institutional response. The paramount importance of a few frequently recurrent clinical themes were apparent in the early days of the outbreak:

- Restorative sleep may be the first casualty of such an outbreak for all concerned. It merits aggressive attempts to educate staff and patients about the impairment that results from sleep deprivation and how to treat insomnia.
- Most people cope very well in their own way and benefit a great deal from a relatively small quotient of shared concern, good information and support. When facing such a crisis, it is crucial to feel one is not alone.

The hospital's response required clear communication, sensitivity to individual responses to stress, collaboration between disciplines, authoritative leadership and provision of relevant support. Support services for staff need to be flexible, collegial and unintrusive. There is an opportunity for leadership by example, when leaders advocate and use peer support.

b. Survey of three Toronto hospitals²

A survey of 1,557 HCWs from three Toronto hospitals in May and June 2003 estimated a high degree of stress was experienced by 36 per cent of hospital workers. Three categories of contributory factors were identified:

- Contextual factors (impact on particular groups of HCWs)
 - being a nurse
 - having contact with SARS patients

- having children (worry about passing on infection, stigma that might be experienced by family members and how children would be cared for if the HCW-parent was hospitalized or quarantined.) Concern was even greater for single parents.
- experiencing mediating attitudes and coping factors
 - job stress (e.g. being assigned to unfamiliar tasks, increases in workload and overtime, financial concerns for those no longer permitted to work at more than one hospital)
 - perceiving stigmatization (perception that they or their families were being avoided by others e.g. by cancelling appointments or social engagements)
 - coping by avoiding crowds and colleagues (HCWs were isolated from their peers, families and communities e.g. access to hospital was restricted, cafeteria closed, meetings with colleagues in and outside of hospitals discouraged, handshaking was not allowed, conversation was through protective equipment, one metre distance was maintained between individuals.)
 - feeling scrutinized (by hospital screening, own hyper-vigilance, media.)
- pre-existing trait factors
 - attachment insecurity (dependence on their partner and difficulty sharing thoughts and feelings.)

While uncertainty and fear are probably inherent in any large-scale stressor, what may be more peculiar to the stressful effect of an emerging infectious disease is the interpersonal isolation that results from the nature of the threat itself (i.e. stigma and avoidance of contact) and from the nature of efforts to contain the threat (i.e. isolation precautions). Social support is known to be one of the most effective buffers against adverse effects of life stress and so the isolating effects of SARS may have been its most potently provocative feature.

Lessons learned from the outbreak include:

- Effort is needed to mitigate psychological effect of infection control procedures, especially the interpersonal isolation that these procedures promote.
- Effective risk communication is a priority early in an outbreak.

- HCWs may have a role in influencing patterns of media coverage that increase or decrease morale.
- HCWs benefit from resources that facilitate reflection on effects of extraordinary stressors.
- HCWs benefit from practical interventions that demonstrate tangible support from institutions e.g. reassurance their livelihood is not at risk if they are not able to work owing to illness or infection control precautions, adequate training and supplies.

c. Sunnybrook and Women's College Health Sciences Centre³

In a survey of 2001 employees of Sunnybrook and Women's College Health Sciences Centre, a large tertiary care center, April 2003, two thirds of respondents reported concern for their own or their family's health and 29 per cent of scores indicated probable emotional distress (rate among nurses was 45 per cent). Masks were reported to be the most bothersome infection control precaution (physical discomfort most sited).

Four factors were significantly associated with increased levels of concern for personal or family health: perception of greater risk of death from SARS; living with children; personal or family lifestyle affected by SARS outbreak (e.g. avoiding public spaces, and avoiding interaction with family and friends) and being treated differently by people because of working in a hospital.

Four factors were significantly associated with emotional distress: being a nurse; part-time employment status; lifestyle affected by SARS outbreak and ability to do one's job affected by precautionary factors.

Positive effects reported by over half of respondents included an increased awareness of disease control, finding the SARS outbreak to be a learning experience and an increased sense of togetherness and cooperation. Other positive effects included being less busy than usual and feeling a greater appreciation of life and work.

Three factors were associated with decreased levels of concern: working in a management position, belief that the precautionary measures in the workplace were sufficient and being 50 years of age or older.

d) University of Toronto⁴

Students were feeling frustration about suspension of their education and research activities as the University of Toronto cancelled some activities involving students in the health sciences at its affiliated teaching hospitals.

2. Hong Kong⁵

During April and May 2003, a survey of 271 HCWs from SARS units and 342 healthy control subjects was conducted in Hong Kong. Stress levels were raised in both groups, but not relatively increased in HCWs. HCWs appeared to be protected from stress, with significantly more positive psychological effects than were observed in control subjects (positive responses included awareness of hygiene, focus on current affairs, unity and awareness of danger). Negative sequelae included tiredness, worry about health and fearing social contact. HCWs confident about infection control had lower stress levels and lower negative effects.

3. Singapore

A cross-sectional survey was conducted on 91 doctors and 186 nurses working within a public, primary health-care setting in Singapore in July 2003 to determine the level of psychological effect and coping styles. Psychiatric morbidity and post traumatic morbidity were found in 20.6 per cent and 9.4 per cent respectively. Psychiatric morbidity was associated with post traumatic morbidity and denial, whereas post traumatic morbidity was associated with younger age, being married, psychiatric morbidity, self-distraction, behavioural disengagement, religion, less venting, less humour and less acceptance. Direct exposure to SARS was not associated with psychiatric morbidity. Some major concerns were dread of losing control of the spread of SARS, fear of catching SARS, fear of passing it to loved ones and fear of death. Major sources of help included provision of SARS-related information, infection control guidelines and their implementation as well as support from family and friends. Researchers suggest that findings support directing the focus of SARS-related psychological support efforts toward education about its psychological effects, facilitation of peer support groups, and enhancement of more adaptive personal coping styles, especially in younger and married staff. Research is needed on unseen populations such as families of HCWs.⁶

A survey was undertaken to describe psychological effect of SARS on doctors and nurses in a medium sized regional hospital in Singapore, two months

post-outbreak. Twenty seven percent of 661 participants had psychiatric symptoms. There was no significant difference between those who were not exposed to SARS patients and those working in high-risk areas or in general wards. Single HCWs and doctors were at higher risk. Those who felt work had become more important as well as those who agreed that support from supervisors/colleagues and clear communication of directives/precautionary measures helped them to cope better, were less likely to develop psychiatric symptoms. Twenty per cent had scores indicating post-traumatic stress disorder (PTSD). Those who perceived they were obtaining support from supervisor/colleagues were least likely to have PTSD. Respondents noted their own health and their relationship with their families, relationship with friends and colleagues, their work and their religious beliefs had become more important. Current research has signaled the importance of stress in the context of the organization where job tasks and job roles, patterns of communication and cultural norms are key factors in reducing worker stress. Researchers conclude support services are essential if HCWs' stress and needs are to be addressed. These should be flexible, collegial and varied in form. Some of these services should include stress management programs, critical incident stress management and peer support programs.⁷

4. Taiwan⁸

A study of stress reactions among 338 staff members in a 2,500 bed psychiatric teaching hospital in Taiwan indicated 5 per cent suffered from an acute stress disorder, for which quarantine was the most related factor; 20 per cent felt stigmatized and rejected in their neighbourhood; 15 per cent did not go home after work during the outbreak for fear of infecting their family and 9 per cent reported reluctance to work or had considered resignation. In contrast to administrative personnel, HCWs experienced significantly more insomnia, exhaustion and uncertainty about frequent modifications to infection control procedures. Findings suggest there is a role for providing accurate and timely SARS information to HCWs and the public to reduce uncertainty and minimize stigmatization of HCWs. Providing suitable accommodation to HCWs would benefit those who are afraid of infecting loved ones. Results highlight the value of shortened work hours to decrease stress and the value of unambiguous information. There was clearly a need for more psychological support and follow-up programs for HCWs. Organizations need to develop and integrate administrative and psychological responses to occupational and psychological challenges caused by future outbreaks of this nature.

C. Individuals infected with SARS and their contacts

1. Canada

a. Mount Sinai Hospital⁹

Unstructured interviews and informal observations of patients with SARS at Mount Sinai Hospital were made during the first four weeks of the SARS outbreak. Generally, more psychosocial support was required for patients with mild-to-moderate symptoms, and these patients were in the majority. Shortly after admission, recent contacts who required quarantine were identified, resulting in feelings of guilt, anger and fear for the welfare of friends and family. Patients with SARS often had to spend several hours alone between brief contacts with staff. Outside communication was available by phone and sometimes email. As a result, patients with mild symptoms complained of boredom and loneliness.

The most common symptoms of SARS were fever, myalgia, cough and fatigue. Medication (ribavirin) caused uncomfortable side effects, especially nausea. Insomnia was common as a result of treatment with corticosteroids, anxiety, physical discomfort and hospital routines. Each patient's temperature was monitored carefully by staff and patients to indicate disease progression. Several patients who experienced waxing and waning anxiety throughout their hospitalization, reported peaks of anxiety coincided with feeling feverish or learning of an elevated temperature. Other patients reported feeling discouraged and frightened by the return of fever after an a-febrile period.

Most patients expressed sadness about missing loved ones. HCW patients expressed concern about infectious risk to staff caring for them. Fear of potential lethality of the illness and anger because their risk of infectious exposure had not been recognized earlier, were voiced less often than other concerns.

Family members at home found it difficult that they could not provide direct support to their sick relative by visiting. Child-care issues for single parents with SARS who had children in quarantine, and management of pre-existing marital tensions were recurrent difficulties.

Patients with SARS received an initial visit from the psychiatric clinical nurse specialist, consultation-liaison psychiatrist and/or social worker. In these screening assessment interviews, it was emphasized that a wide range of

emotional responses is to be expected in the face of such an extraordinary situation. Concerns and feelings expressed were interpreted as expected, normal responses. Immediate concerns were reviewed, especially the patient's family situation, relationships with people on his or her "contact list," expectations and fears about their own medical condition and current symptoms.

When indicated and desired, subsequent supportive psychotherapy aimed to balance a permissive approach to expression of feeling with pragmatic attention to particulars of the patients' external reality (e.g. shopping assistance, measures to decrease social isolation such as access to Internet, newspapers etc.). For patients who were both parents and HCWs, particular attention was given to issues of powerlessness and conflicting responsibilities of these two roles.

Identifying families needs, offering an opportunity to express feelings, and supporting effective coping strategies helped enhance the families' sense of competence and control.

Pharmacological and behavioural interventions to treat insomnia were used extensively.

Hospital in-patients without SARS were concerned about becoming infected. Restrictions on transfer to other institutions, cancelled procedures, need for quarantine upon discharge or delayed discharge were common frustrations. Patients deprived of family visits experienced insomnia, anxiety and interpersonal friction with staff. Limited access to external resources resulted in difficulty obtaining items that usually provide comfort such as books, music and toiletries. Asian patients reported stigmatization and racist reactions in the community, because the outbreak was thought to have originated in China.

The hospital utilized patient and visitor letters. It concluded there was a need to make greater use of intranet and Internet for communicating with staff, patients and public. There was also a need to find more effective ways to engage physicians and their assistants as communicators, especially when there are changes in normal practices such as patient screening and restrictions placed on visitors. Finally, there was a need for more emphasis on effective use of signage — too many signs lose their impact.¹⁰

b. The Hospital for Sick Children — Toronto¹¹

In Toronto, staff at The Hospital for Sick Children, were concerned about psychosocial effect on children and families of wearing masks in stressful situations (nonverbal communication is impaired and lip-reading is impossible. This can be particularly significant for people for whom English is a second language and for those who are hearing impaired). Staff wore N95 masks as did patients at high risk. Most patients and families wore surgical masks. There were concerns about miscommunications and perceptions of inequality based upon types of masks worn. Posters and information sheets were used that explained the benefit of wearing masks, web-based communication was used to share information with families and a psychosocial team was established to address needs of staff and patients. Note: a “Tip Sheet” on wearing masks for staff and one for families is included in the article.

c. Community Quarantine (Toronto)¹²

For the greater public good, quarantine may create heavy psychological, emotional and financial problems for some persons. To be effective, quarantine demands at risk persons be isolated and they follow appropriate infection control measures within their place of quarantine. One hundred twenty nine quarantined persons who responded to a web-based survey in Toronto, exhibited a high prevalence of psychological distress. Symptoms of PTSD and depression were observed in 28.9 per cent and 31.2 per cent of respondents respectively. Longer durations of quarantine were associated with an increased prevalence of PTSD symptoms. Acquaintance with or direct exposure to someone with a diagnosis of SARS was also associated with PTSD and depressive symptoms. There was a trend toward increasing symptoms of PTSD and depression as the combined annual income of the household fell.

All respondents described a sense of isolation. The mandated lack of social and physical contact with family members (especially the latter) were identified as particularly difficult. Confinement within the home or between work and home, not being able to see friends, not being able to shop for necessities of everyday life, and not being able to purchase thermometers and prescribed medications enhanced their feeling of distance from the outside world. Infection control measures imposed not only the physical discomfort of having to wear a mask but also significantly contributed to the feeling of isolation. In some, self-monitoring of temperature provoked considerable anxiety. While most quarantined persons (60 per cent) did not

believe they would contract SARS, 59 per cent were concerned they would infect their family members. In contrast, only 28 per cent were concerned a quarantined family member would infect someone else in the home. Following quarantine, 51 per cent had experiences that made them feel people were reacting differently to them.

As many as 50 per cent of respondents felt they had not received adequate information regarding at least one aspect of home infection control (e.g. inadequate information on SARS, with whom they could have contact, when to change masks, use and disinfection of personal items such as toothbrush, cutlery, phone) and not all respondents adhered to recommendations. A combination of lack of knowledge, an incomplete understanding of the rationale for these measures and lack of reinforcement from an overwhelmed public health system were likely contributors to this problem. Of interest, strictly adhering to infection control measures, including wearing masks more frequently than recommended, was associated with increased levels of distress.

Public health officials, infection control practitioners and mental health workers must work to define factors which influence success of infection control practice for both disease containment and community recovery and must be prepared to offer additional support to persons who are at increased risk for adverse psychological and social consequences of quarantine.

2. Hong Kong

Seventy-nine SARS patients were recruited from two major hospitals in Hong Kong during April and May 2003 and compared with 145 healthy controls.¹³ Both groups demonstrated increased stress levels with both positive (awareness of hygiene, focus on current affairs, awareness of physical state, civic mindedness, caring for others, being fortunate and willing to help) and negative (worry about health, finances, stigmatization) responses. General stress and negative psychological effects were increased in SARS patients, particularly among infected HCWs. Patients reported fatigue, poor sleep, weepiness, loneliness, boredom, poor concentration, depressed mood, nightmares and impaired judgment. Stress increased with age in healthy controls.

Researchers suggest there is a need for public education as most perceived the risk and transmissibility of SARS to be unduly high. Preliminary

evidence suggests patients have difficulties resuming activities of daily living after discharge because of fatigue and residual symptoms and they may be at risk of stress-related anxiety and depressive disorders. HCWs need access to psychological services.

During the SARS outbreak in Hong Kong, 10 SARS patients with psychiatric complications were referred to the Consultation and Liaison Psychiatry Team for assessment and management¹⁴. Both direct and indirect effects of SARS such as symptom severity, total isolation and administration of steroid were probable causes of psychiatric complications. Behavioural disturbances and psychotic symptoms can lead to non-compliance with infection control procedures. Clinicians were wary about non-essential personnel (including psychiatrists and psychologists) visiting the bedside unless it was absolutely necessary. When psychiatric treatment and medication were required, face-to-face consultation with the patient was provided with close monitoring of symptoms by the medical team. All patients with an adjustment disorder received telephone contact followed by liaison with the treating physicians and nurses and family. Telephone counselling aimed at giving patients skills to alleviate symptoms of distress and at teaching the family ways to convey support. Patients with steroid-induced psychiatric disturbances were prescribed a low dose of neuroleptic medication (haloperidol) and symptoms subsided in three to four days.

Evidence suggests persons infected with SARS recovered physically, but SARS is associated with social and psychological problems poorly understood by the scientific community. A survey of a convalescent hospital in Hong Kong¹⁵ showed approximately 50 per cent of SARS patients showed anxiety and approximately 20 per cent were fearful. Approximately 20 per cent of the rehabilitated patients showed some negative psychological effects such as insomnia and depression. Some patients could not rid themselves of memories of fighting SARS and these memories disrupted their daily activities. These psychological problems may be due to complications of SARS medications, such as ribavirin and corticosteroids. Persons who took these drugs had hair loss, major memory loss, impaired concentration and depression.

In addition to SARS patients, an estimated 50 per cent of family members of SARS patients had psychological problems including feelings of depression or stigmatization. They had difficulties sleeping, and some children who had lost parents cried continuously. Some children also felt embarrassed to be a member of a SARS family. The loss of parents who were SARS

patients also impaired the growth of their children. A study conducted in China reported that negative SARS-related information increased a person's perception of their risk and led to irrational nervousness or fear.

3. Singapore

A qualitative study using semi-structured interviews was undertaken by palliative care service staff at Tan Tock Seng Hospital¹⁶(the hospital designated to manage all SARS cases in Singapore) to determine the spiritual and psychosocial effect of SARS on patients, their families and HCWs. The study indicated the following:

- Disease containment strategies resulted in isolation, where isolation meant disruption of connectedness:
 - in the patient e.g. loss of self-esteem (feeling treated as a prisoner) and a loss of autonomy (couldn't decide where or who will be present should death occur).
 - between patient and family e.g. family was not allowed to visit unless the patient was deemed seriously ill, then they had to don protective equipment and touching was not permitted.
 - within the family e.g. family could only visit one at a time and not support each other during grief.
 - between patient and HCW e.g. good comfort care and psychosocial support/advocacy were difficult with limited touching, communicating through masks etc.
 - between patient and society e.g. some were stigmatized, or could not return to former occupations.
 - between HCWs.
- As the nature of the disease was uncertain, prognostication was inaccurate. This created difficulties in helping patients and their families prepare for death.
- The bereavement process was disrupted as traditional death rituals could not be performed by the family.
- HCWs suffered the same anxieties, fears and grief as the patients if their own relatives and friends were ill or died.

D. General public

Learning more about public concern, knowledge, attitudes and behaviour during an outbreak of infectious disease can be crucial to improving communication efforts by public health officials and clinicians in response to such outbreaks.

Prior research has shown that anxiety and misperception, at the extreme, can cause instances of panic flight from the outbreak area or refusal to comply with quarantine efforts. Public reaction to past outbreaks has also had other negative consequences, including unnecessary or overwhelming demand for health-care services, inordinate or erroneous precautionary behaviour, avoidance of places and activities that bear a low risk of infection, with resulting negative effect on the community and its economy; inappropriate refusal or demand for vaccination, stemming from misinformation about the safety and effectiveness of vaccines; and avoidance of hospitals and health-care facilities out of fear of becoming infected by others. Another problem associated with the fear of becoming infected has been discrimination against groups of people perceived to be “at-risk” even if few people in those groups are actually contagious. Studies have shown that in times of perceived epidemic threat, public places its greatest trust in clinicians¹⁷.

1. North America

a. **Ontario (specifically Toronto), the other Canadian provinces and the United States¹⁷**

Data from 13 randomly-selected public telephone surveys, comparing the public’s response to SARS in Ontario (specifically Toronto), other Canadian provinces and the United States, suggest that even at a relatively low level of spread among the population, the outbreak had a significant psychological and economic effect. They also suggest that the success of efforts to educate the public about the risk of SARS and appropriate precautions was mixed. Some of the community-wide problems with SARS might have been avoided with better communication by public health officials and clinicians.

In early April 2003, 69 per cent of adults surveyed in Ontario, 57 per cent of Canadians surveyed outside of Ontario and 32 per cent of adults surveyed in the United States (U.S.) said they were concerned about contracting SARS. Concern declined during the course of the outbreak. When the U.S. public

was told that people in Asia and Canada had died from SARS, portions of the population who described themselves as concerned increased.

In the Toronto areas (and Ontario as a whole), a larger proportion of households took various precautions against SARS than in the other Canadian provinces or the U.S. A number of Toronto-area households were taking precautions that could have a negative effect on the regions economy, including avoiding Asian restaurants or stores, public events and international air travel. Thirty five percent of U.S. adults surveyed believed SARS had made it unsafe to travel to Canada. Similarly, Ontario households were significantly more likely than the rest of Canada to report taking precautions against SARS. During the outbreak, a share of Toronto households and Ontario residents wanted to limit their contact with people they thought had been in Asia. In addition, 66 per cent of Ontario residents surveyed supported the idea that people arriving from areas of Asia that were experiencing outbreaks of SARS, should be quarantined or not allowed into Canada and Canadians should not be allowed to travel to those areas.

More than one in five residents of the Toronto area said they themselves, a friend or a family member had been quarantined due to SARS exposure. Among this “experienced” group, approximately one fourth said being quarantined had been a major problem. The two most frequently cited “major” problems related to quarantine were emotional difficulties related to the confinement and not being paid because they had to miss work.

If people are to respond appropriately during an outbreak of infectious disease, they need to have some basic knowledge of how the disease is spread and whether there is a vaccine against the disease or an effective medical treatment once someone contracts the disease. The level of public knowledge about SARS was similar in the Toronto area and the U.S. Although approximately nine in 10 individuals surveyed knew SARS was contagious and there was no vaccine against SARS. Only approximately one half knew there was no effective treatment. A majority of those surveyed in each region knew it was possible to contract SARS in each of five ways. Significantly more Toronto area residents than U.S. residents knew that one could contract SARS by touching objects or surfaces that had been in contact with someone with SARS. Approximately one half of those surveyed know SARS could be contracted through blood transfusions.

Public health officials and clinicians might have been more effective in reducing the number of people who took unwarranted precautions that could have a negative economic effect. In Canadian provinces outside of

Ontario and the U.S., where there were few cases of SARS, one would ideally have wanted to see fewer people expressing concern about contracting the disease and taking unnecessary precautions. Public health officials and clinicians need to examine how, in future, they might alleviate some problems experienced by people who are actually quarantined.

In an ideal world, news media would be more effective at conveying the level of risk and relative need for precautions in high-risk vs. low-risk areas. In future, one way to do this would be to work with local broadcast journalists in advance of a threat to ensure they know who to contact for up-to-date, credible information.

b. Edmonton, Alberta¹⁸

In Edmonton, Alberta, Capital Health Link proved to be an invaluable service in responding to questions about SARS. Residents and community physicians were regularly advised through media and other communication channels that Health Link was their first contact if they suspected an individual had SARS. The intent was to avoid having people enter emergency departments or physicians' offices and potentially infect other people. Such actions helped address staff concerns and manage any internal issues around safety. Through Health Link the region was able to deal with cultural and language differences. A special line was set up for residents who speak Cantonese and it was advertised in the Chinese community. Signs were posted at hospitals as well as the Edmonton International Airport, outlining necessary steps to take if people had certain SARS-like symptoms. Physicians with large numbers of patients from high-risk groups also received copies of the protocol, printed in English, French, Vietnamese and Cantonese. Templates for signs were sent to other health regions in Alberta. Work with media was coordinated through Capital Health Public Affairs, under the leadership of the medical officer of health's office to ensure consistent messages were sent out.

In a situation like SARS, the circle of who needs to receive communication outside of the health care system should be broadly defined. The region's education system started to pose questions around accepting foreign students and school trips planned to regions with SARS. Other major organizations and large employer groups started to contact Capital Health directly for clarification on SARS.

Monitoring the anxiety level of both internal and external stakeholders is invaluable. Capital Health Link proved to be an excellent tool for gauging public concern about SARS.

c. United States¹⁹

Because of their evolving nature and inherent scientific uncertainties, outbreaks of emerging infectious diseases can be associated with considerable fear in the general public or in specific communities, especially when illness and deaths are substantial. Public health strategies require a delicate balance between protecting the public's health and initiating exclusionary practices and treatments that can lead to fear and stigmatization of, and discrimination against certain populations. Mitigating fear and discrimination directed toward persons infected with and affected by infectious disease can be important in controlling transmission. Persons who are feared and stigmatized may delay seeking care and remain in the community undetected. Such fear can increase stigmatization when cases are identified at a later date. Stigmatization has social and economic ramifications that intensify feelings of fear.

Containing fear, which is integral to the public health management of a new disease such as SARS, is best accomplished by a behavioural strategy that addresses needs of the population at risk of being stigmatized. This strategy works best as a complement to a larger public health education and communication campaign. Communication techniques for the general public most frequently involve television sound bites, press conferences with dignitaries and health officials, and targeted release of information to mass media outlets such as newspapers and Internet sites. Although these risk communication strategies are critical for keeping public informed during an outbreak, they can fail to meet personal needs of the general public and the affected population.

A multidisciplinary Community Outreach initiative was undertaken in the United States by the National Centre for Infectious Diseases (NCID) and the Centres for Disease Control and Prevention (CDC) in April 2003 to rapidly assess, monitor and address fears associated with the SARS epidemic, in which Asian-American communities were particularly affected.

The team monitored stigmatization ideas and behaviours in the general population and media toward Asian Americans, who

were disproportionately reporting stigmatization. Situational assessment included:

- Facilitating group discussions (teleconferences) with national, state and local influential leaders within the Asian community in the U.S. Leaders had five recommendations:
 - develop simple, tailored SARS prevention messages;
 - develop SARS information materials in various Asian languages;
 - disseminate SARS information through multiple and culturally appropriate channels, including (but not limited to) community visits, town hall meetings, and health education and communication channels to complement mass media messages);
 - establish partnerships with local Asian-American community-based organizations to educate the community;
 - ensure CDC continue to provide leadership and coordination in preventing and controlling SARS.
- Collecting and monitoring CDC Public Response Service data. (This also helped the team develop specific answers to frequently asked questions).
- Collecting and monitoring Asian-language newspapers and Internet sites. Information received from Asian communities was often inconsistent with coverage in the U.S. creating suspicion that the U.S. government was not telling the truth.
- Reviewing polling data.
- Conducting community visits, panel discussions and media interviews.
- Soliciting information from regional minority health liaisons nation-wide.
- Developing ongoing relationships with Asian American communities, particularly in metropolitan areas.
- Determining new data gathering strategies as needed.

Team response included:

- Working with Asian American communities to develop a culturally tailored intervention that promoted communication and understanding of facts related to transmission and prevention of SARS (Asian language materials, web-based information, educational hot line messages).

- Conducting community visits, panel discussions and media interviews (i.e. interpersonal connections) to:
 - provide evidence-based information and dispel misconceptions, myths and rumors.
 - act as a catalyst for bringing together a broad spectrum of organizations and persons in the community to create local networks to build community resiliency and capacity to mitigate fear (of note, more stigmatization occurred within the community than in the general population).
- Encouraging appropriate health-seeking behaviours for those who may have been exposed to SARS.

The team also worked to dispel myths, keep the general public better informed, prevent discrimination against SARS-affected communities and provide guidance for organizations hosting international visitors from SARS-affected countries. It advised other SARS emergency response teams on how to minimize risks of stigmatizing groups in their own communications.

2. Hong Kong

A random digit dialing survey of 1,115 Chinese adults in Hong Kong during March and April 2003 was undertaken to examine the public's knowledge and perception of SARS, and extent to which various precautionary measures were adopted²⁰.

The survey revealed substantial misinformation and false beliefs among respondents. Forty percent did not recognize infection could be transmitted through contact with contaminated objects and 55.1 per cent believed the infection could be transmitted by airborne route. A large proportion (30.1 per cent) believed they were very likely or somewhat likely to contract SARS while only one quarter believed they were very likely to survive if they contracted the disease (actual statistics — fatality rate of 2.8 per cent at the time of the survey and 15-20 per cent according to current best estimates). Precautions were practiced against droplet spread, but precautions involving contaminated objects were not practiced as frequently. Respondents with higher risk perceptions and a moderate level of anxiety were most likely to take comprehensive precautionary measures against infection, as were older individuals, females, more educated people and those with a positive contact history and SARS-like symptoms. The presence of symptoms was the only predictor for higher health services use.

Researchers suggest protective health practices, to interrupt transmission of the virus in the community, must take into account background perceptions of risk and anxiety levels of the public at large. Public health messages need to strike a delicate balance between being overly reassuring and unnecessarily alarmist. Continuing public education about preventive measures should be targeted at the identified groups with low current uptake of precautions (i.e. younger less educated males). Perhaps targeting health promotion messages through intermediaries of female significant others (e.g. mothers, wives or girlfriends) would be worth exploring. Sustained interventions towards changing social norms yield the most effective results.

For older persons in Hong Kong, the effect of SARS was overwhelming.²¹ Many had become pessimistic and fearful, as mortality was very high (over 50 per cent) for older people infected with SARS. In addition, older people often suffered from chronic physical illness, necessitating visits to hospitals and outpatient clinics, where there was a higher chance of contracting SARS. A local survey among residents of nursing homes showed that over 70 per cent of elderly with SARS had acquired the infection from hospitals. Many older persons defaulted treatment and follow-up with negative consequences (e.g. patients with mental health problems suffering psychotic relapse and suicide). Furthermore, a nursing home resident was 3.6 times more likely than the general population to contract SARS. Another undesirable feature was the negative image and stigma imparted to older persons by the SARS epidemic. Older persons were often portrayed as “litter bugs” with poor personal hygiene, or “invisible SARS patients” spreading infection to HCWs because of their atypical clinical picture.

Interviews of 27 HCWs and 40 residents in a nursing home in Hong Kong were conducted to investigate their level of knowledge of SARS and its prevention.²² Most elderly residents knew little regarding SARS and prevention strategies, despite access to outside news by TV, radio and visitors. Also, the worry and fear of an outbreak among staff was considered to be high. Tailored education programs to promote awareness and prevention of SARS for elderly are needed. Care must be taken to ensure constructive concerns do not become destructive fears. Also, more in-service training, channels for communication, support and counselling are strongly indicated for staff to promote disease prevention and improve quality of care.

3. Singapore

Telephone interviews with a representative sample of 1,201 adults 21 years of age and older in Singapore during the first three months of the SARS outbreak, looked at four public health issues: prevention measures, self-health evaluation, SARS knowledge and appraisal of crisis management²³. Gender (women), age (35 years and older) and attitude (anxiety and perception of open communication with authorities) were associated with using preventive measures. Recommended preventive measures were not practiced uniformly. The most practiced measures were using soap when washing hands (81 per cent) and washing hands after sneezing, coughing or clearing the nose (72 per cent). The least practiced measure was wearing a mask over the mouth (4 per cent). The respondent's perception of their health was generally positive and they answered an average of 1.7 out of three questions on the transmission of SARS correctly.

4. Taiwan

A study was undertaken to assess the effect of the SARS epidemic on medical service utilization in Taiwan, using interrupted time-series analysis and National Health Insurance data between January 2000 and August 2003²⁴. At the peak of the SARS epidemic, significant reductions in ambulatory care (23.9 per cent), inpatient care (35.2 per cent) and dental care (16.7 per cent) were observed. People's fears of SARS appear to have had strong effects on access to care. Adverse health outcomes resulting from accessibility barriers posed by the fear of SARS should not be overlooked.

E. Future directions

The report of Canada's National Advisory Committee on SARS and Public Health urges that the psychological well-being of health-care workers who deal with disease outbreaks, the responses of public and outcomes of intervention programs need to be set as priority areas of research²⁵. Three elements are needed in future psychosocial research on the effect of infectious disease.

- A systemic perspective. It is important to determine the effects of the disease on often unseen populations such as family members, non-medical staff, medical colleagues in the community and public, as well as patients and HCWs for comprehensive and balanced planning to alleviate psychosocial burden or mitigate its onset.

- Prospective research. Because the psychological effect may persist or evolve over time, longitudinal studies will allow an assessment of the important determinants of psychological distress as well as protective effects of certain coping strategies, with potential application in early identification of cases requiring more intervention.
- Evaluation of outcomes of psychosocial interventions. This includes assessment of both individual and group-based interventions and of other measures such as staff education sessions, public education and responsive communication of new information updates. A clearer understanding of these beneficial or therapeutic elements will facilitate implementation of strategic mental health responses for people at risk.

Enhancing psychological well-being of HCWS, their families and community is a crucial tool in the continuing vigilance and fight against emerging infectious disease.

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