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School Health Against Triple Burden of Diseases:

Part 1 Communicable Disease

Schools need to step up measures to combat influenza outbreaks in the 21st Century (In response to outbreak of Swine Flu in 2009)

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Schools need to step up measures to combat influenza outbreaks in the 21st Century

Abstract

The outbreak of Novel Influenza A (H1N1) has caused a world panic of the threat of influenza pandemic. School setting is vulnerable as it is a communal area for large numbers of people and would act as reservoir for infectious agents. Closure of school would minimize the chance of cross infection but periodic closure of schools would seriously disrupt the intellectual and social development of students and also family life. Although there are national guidelines for schools, schools need translation of guidelines into school context and integrate into school curricular activities and school system to combat the infectious diseases at different stages from acute phase to long term preventive measures. Building on the past experience from SARS and Avian influenza, and within the global Health Promoting School movement, this paper summarizes this knowledge and put forward frameworks to minimize the spread of influenza, action during the epidemics and improvement of health literacy in infection control. Frameworks are evolved from concept of Health Promoting Schools that will protect the health of our schools in the rapid and ever-changing environment of the 21st Century.

Why the school setting is important?

In April, 2009, the outbreak of Novel Influenza A (H1N1) in Mexico with subsequently increasing cases in the USA and worldwide sparked the fear of a global influenza (Flu) pandemic.¹ On 27 April 2009, there were 40 confirmed cases in USA, 26 confirmed cases in Mexico with seven deaths, Canada and Spain reported 6 cases and 1 case respectively with no death. By 19 May, 2009, there were 9,830 confirmed cases in

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40 countries with 79 deaths (with 3,648 cases and 72 deaths in Mexico, and 5,123 cases in the U.S. with 5 deaths). As we have learned from the SARS experience, the biggest challenge for public health practice is that some of the most important public health measures could be taken outside the health sector by those with responsibility for influential economic and social policies, such as politicians, educators, industrialists and economists.² Therefore every setting of daily life could efficiently step up hygiene and preventive measures.³⁻⁴ The school setting is no exception, and it easily could become the focal point for clusters of outbreaks if the appropriate preventive measures are not taken. In USA, 20 Novel H1N1 cases were uncovered in April 2009 as result of testing and all were linked to the outbreak at the St Francis Preparatory School in the Queen' section of New York City. Indeed, the school setting is a communal area for students with large number of people (students, employees and sometimes parents) gathering together for considerable period of time in confined spaces. Schools easily become reservoirs for infectious diseases. Closing schools during the early phrase of epidemics could lessen the probability of cross infection. Based on this initial information, CDC recommended consideration of school closure as an option to lessen the risk of infection with this novel influenza virus in order to protect students, employees, parents and other caregivers from a potentially severe disease as well as limit spread into the community.⁵ However with outbreaks happen episodically, periodic closure of schools would seriously disrupt the development of students and also family life especially working parents need to make provision for child care at home. If not planned well, school closures could lead to other public health problems as numerous unsupervised children consequently experience unintentional injuries at home or in the community. Therefore one needs to strike a balance between two sides of the coins.

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U.S. CDC School Recommendations Revised on May 5, 2009

New information about disease severity and the extent of community spread caused CDC to revise its school closure guidance.⁵ Numerous disease clusters within many communities made individual school closure less effective as a control measure. Most U.S. cases have not been severe and are comparable in severity to seasonal influenza. Consequently, on May 5, 2009 CDC revised its school closure recommendations.⁵ At that time CDC recommended “. . . the primary means to reduce spread of influenza in schools [should] focus on early identification of ill students and staff, staying home when ill, and good cough and hand hygiene etiquette. Decisions about school closure should be at the discretion of local authorities based on local considerations, including public concern and the impact of school absenteeism and staffing shortages.” Appendix 1 lists out other CDC recommendations for school in response to the of the Novel Influenza A (H1N1) virus.

A Broader Perspective for Schools to Reduce Infectious Disease Transmission

Experience from SARS has taught us many ways that schools might function to reduce transmission of emerging, re-emerging, and intentionally emerging infectious diseases.⁶ Although there are national guidelines for schools, schools need translation of those guidelines into school context and integrate into school curricular activities and school system to combat the infectious at different stages. Schools need to act quickly and efficiently alerting the public health officials and medical care personnel about the possibility of potential outbreaks during Flu epidemics. School personnel need to be trained to employ basic skills in handling suspected cases in school. The school setting also needs to implement preventive measures to minimize the transmission of infectious

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agents during epidemics. This would constitute the ‘acute phrase’ of management. However prevention should not stop after epidemics. One would argue that it is more important to have a sustainable action plan to maintain the healthy school environment to control of spread of infectious diseases such as Novel H1N1, Avian Flu, or SARS. Well co-ordinated school health programmes must be given greater priority because it can provide existing ecological frameworks to address the complex interaction of personal, environmental and organizational factors that significantly would reduce transmission of infectious agents.⁷

Acute phrase management of epidemics of influenza at school

Figure 1 provides a summary of different possible actions to improve infection control during the epidemics of influenza. There are some specific measures worth taking such as recording flu like symptoms (cough, sore throat, headache, body aches) with degree of severity (affecting usual student and employee activities or consider taking medication for symptomatic relief). This would prompt early alertness of possible suspected cases and allow early diagnostic work ups. More rigorous procedures also need to be in place to investigate and follow up those absentees so close contacts with confirmed cases can be traced speedily. Students, parents, health care personnel, public health agencies and school administrators need to be co-operative in providing recent history of contact and travelling. Special precautions should be taken for anyone returning from high risk area even they are symptoms free. School environments needs to be modified, and potentially sanitized, to minimize the chance of cross infection.

Insert Figure 1

Figure 2 is a flowchart that would facilitate schools to take necessary steps for different possible scenarios. Close contact with the local health authority is absolutely essential for latest information, advice and action.

Insert Figure 2

Building a sustainable model for ongoing preventive measures

A successful school health program especially infection control must comprises the best effort of individuals and agencies purposefully working together in helping each other to improve the interdependent health and education of students.⁸ Kolbe (2005) has devised a framework to help building an effective school health programme in the 21st century, which should address contexts, components, goals, organization, and administration.⁸ During the period of SARS, the concept of health promotion through a settings approach such as a Health Promoting School (HPS) was raised as one strategy to face new public health and related educational challenges.⁶ The HPS framework was found to improve personal hygiene practice, knowledge on health and hygiene, as well as access to health information of the students.⁹ Schools were also reported to have better school health policy, higher degrees of community participation, and better hygienic environment.⁹

Capacity building for effective management of infectious disease needs the correct education approach for health. This will include the following:

- Educate about prevention and control of old and new infectious diseases
- Help school students and employees to develop correct behaviours to assure health and prevent infectious disease. Examples include washing hands before meals and after going to the toilets, or when are dirtied by respiratory secretions; not sharing towels, disposable towels and tissues; covering nose and mouth when sneezing or

coughing, and managing respiratory secretions with proper attention and techniques to avoid spreading infectious agents.

- Train students and school personnel to maintain good environmental hygiene at school such as not littering, which may help to decrease the spread of disease
- Strengthen body immunity through balanced diet and adequate fluid intake, regular exercise and adequate sleep, reducing stress and avoid smoking, alcohol, and other drugs
- When students, teachers or staffs are suspected to suffer from respiratory tract infections, they should be advised to seek early medical treatment and rest at home whenever necessary
- Increase the availability and transparency of all facilities for preventing and controlling infectious diseases at school to enable students to obtain a thorough understanding and encouragement to use such facilities
- Promote education of parents and obtain their cooperation from

The whole approach would be regarded as improvement of health literacy about infectious diseases, since such literacy builds the personal, cognitive and social skills required for individuals to gain access to, understand and use information to promote and maintain good health.¹⁰ Figure 3 shows how the six key areas of HPS would lead to improvement of health literacy in relationship with infectious diseases at school level.

Insert Figure 3

The way forward

In this century, the world will face the challenge of serious emerging and re-emerging infectious diseases with global impact. Students spend at least one third of their time at school, making school an important setting for preventing infectious

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diseases. School needs a comprehensive school health framework to combat the threat of infectious diseases, into which they can integrate guidelines about what to do, especially in the acute phase of global pandemics. The frameworks illustrated by figures 1 to 3 are built on the experience from Novel H1N1, SARS, and Avian influenza – and within the global HPS movement. This paper summarizes this knowledge and suggests that nations and schools systematically develop an action framework to develop Health Promoting Schools that will protect our schools and students in the rapid and ever-changing environment of the 21st Century.

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Appendix 1; CDC Guidance for schools in response of the Novel Influenza A

(H1N1) virus⁵

- School closure is not advised for a suspected or confirmed case of novel influenza A (H1N1) and, in general, is not advised unless there is a magnitude of faculty or student absenteeism that interferes with the school's ability to function.
- Schools that were closed based on previous interim CDC guidance related to this outbreak may reopen.
- Students, faculty or staff with influenza-like illness (fever with a cough or sore throat) should stay home and not attend school or go into the community except to seek medical care for at least 7 days even if symptoms resolve sooner.
- Students, faculty and staff who are still sick 7 days after they become ill should continue to stay home from school until at least 24 hours after symptoms have resolved.
- Students, faculty and staff who appear to have an influenza-like illness at arrival or become ill during the school day should be isolated promptly in a room separate from other students and sent home.
- Parents and guardians should monitor their school-aged children, and faculty and staff should self-monitor every morning for symptoms of influenza-like illness.
- Ill students should not attend alternative child care or congregate in settings other than school.
- School administrators should communicate regularly with local public health officials to obtain guidance about reporting of influenza-like illnesses in the school.
- Schools can help serve as a focus for educational activities aimed at promoting ways to reduce the spread of influenza, including hand hygiene and cough

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etiquette.

- Students, faculty and staff should stringently follow sanitary measures to reduce the spread of influenza, including covering their nose and mouth with a tissue when coughing or sneezing (or coughing or sneezing into their sleeve if a tissue isn't available), frequently washing hands with soap and water, or using hand sanitizer if hand washing with soap and water is not possible.

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Appendix 2: Carry out disinfections at school during the outbreak of infectious diseases

The purpose of disinfecting is to kill off the pathogen. Through incineration, boiling, ultra-violet light or other chemical methods to handle excretions and discharges which can possibly spread the diseases. School can carry out the following disinfecting tasks during an outbreak of infectious diseases:

- Use household bleach diluted 99 times (mix a portion of bleach with 99 portions of water) to disinfect furniture, floors and lavatories. Wash with water and wipe the objects dry after 30 minutes
- Used paper towels should be handled properly. Used paper towels should be disposed of immediately and be put in rubbish bin with lid. Used towels should be immersed into household bleach diluted 99 times for 30 minutes before washing with water.
- Surfaces contaminated with vomit, excretions, discharges or blood should be wiped with towels that have been soaked with household bleach diluted 49 times and be washed with water after 30 minutes (at best, towers should be disposed of immediately after use).
- **Use household bleach diluted 49 times to disinfect toilet and toilet seat. Wash with water after 30 minutes.**

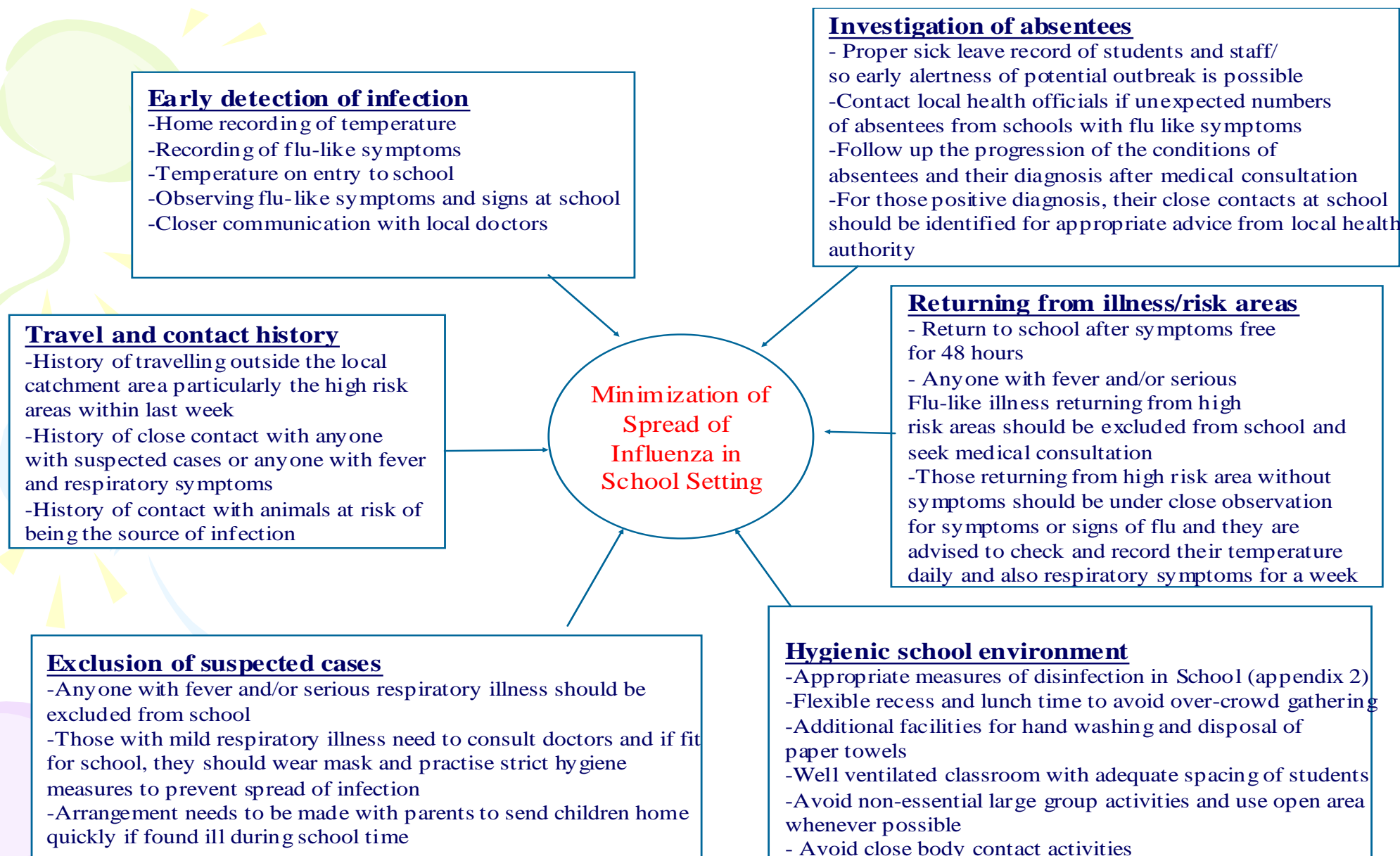
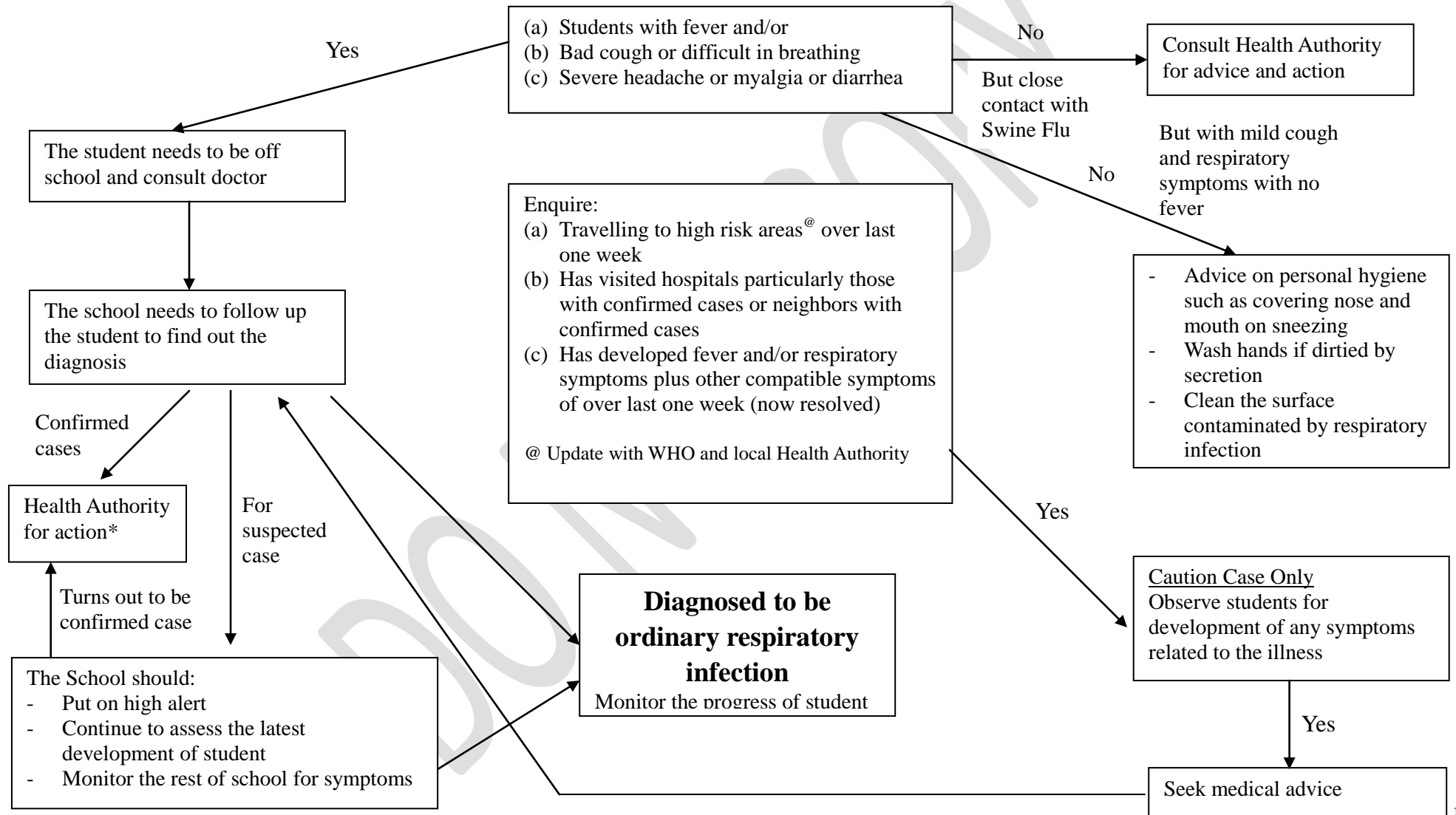


Figure 1. School Health framework to improve infection control for influenza

Figure 2. Management Flowchart for School during epidemics of Swine Flu (new H1N1 Influenza)



*The school might need to be closed for a certain period according to advice by local health authorities and staff and students will be under surveillance. School will be disinfected.

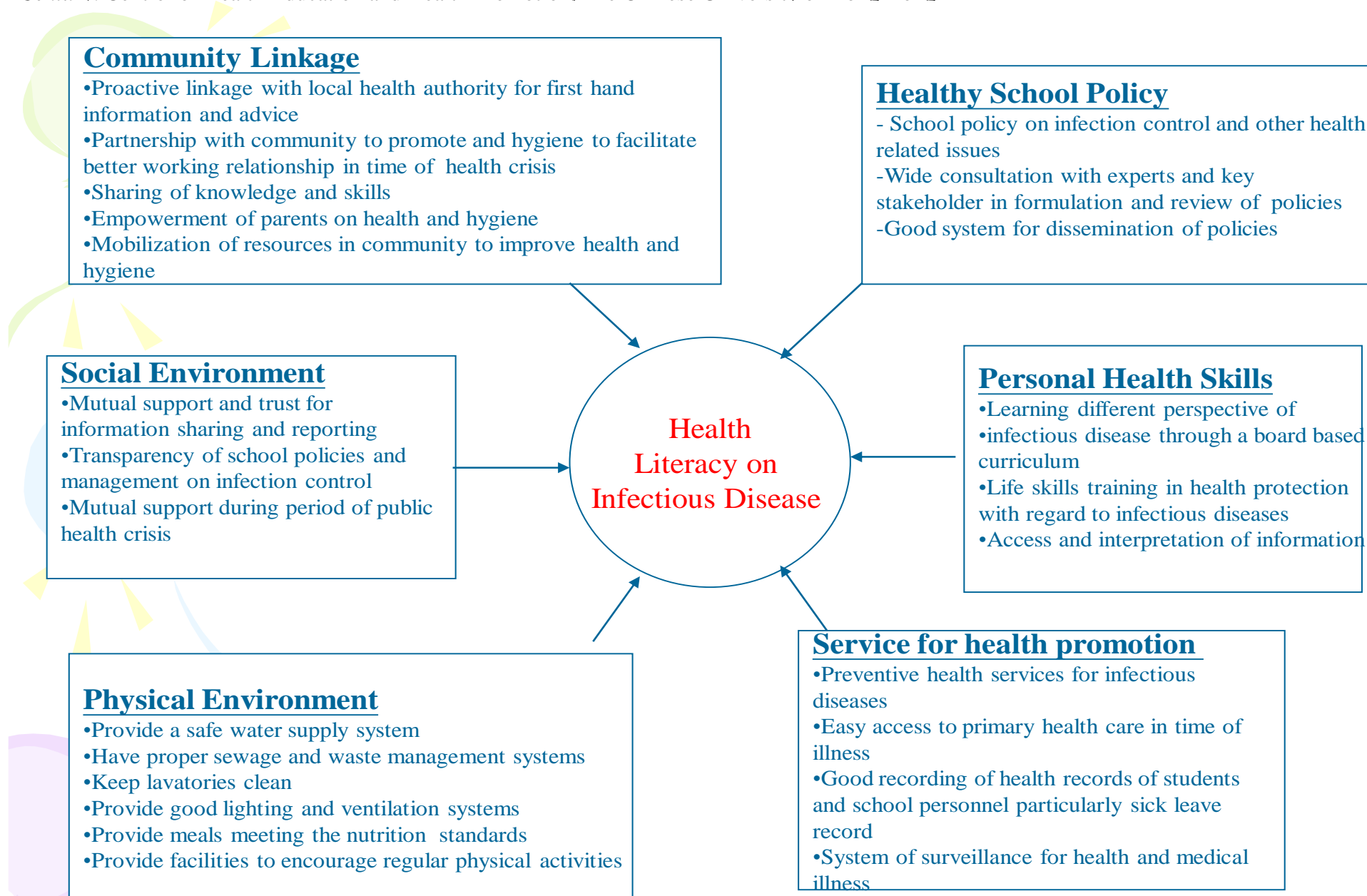


Figure 3. Using HPS framework to improve health literacy on infectious disease