

**Preparedness of Pandemic Novel
Influenza in Taiwan
: from strategy to operation**

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Introduction

- The SARS epidemic of Taiwan in 2003
- 347 casualties.
- 70 % are nosocomial related.
- 30% are health care workers.

Traffic control bundle

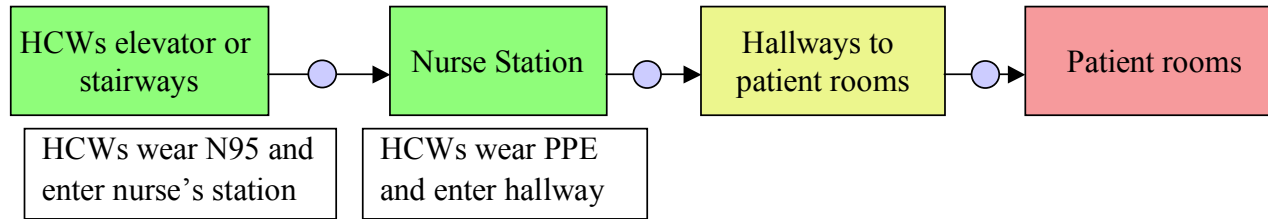
- An integrated infection control strategic bundle which includes
 - triage of patients into hospital
 - zones of risks
 - installation of alcohol dispensers at checkpoint for glove-on hand rubbing.

Factors Protecting HCW from SARS nosocomial infection

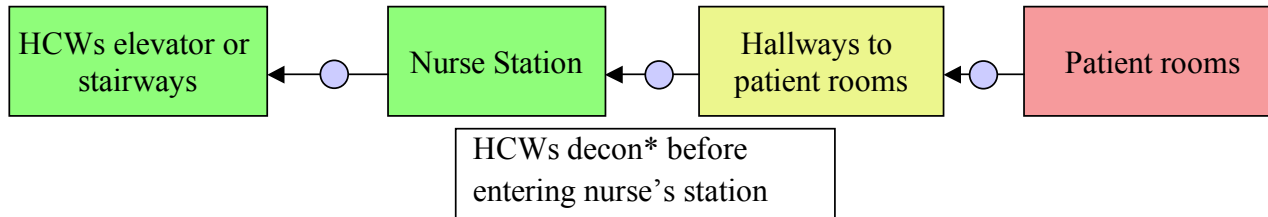
- **31 H** w/o & **19 H** w/c HCW SARS
 - Leadership (p<0.01)
 - Fever screening stations (p<0.01)
 - checkpoint alcohol dispensers for glove-on hand rubbing between zones of risk (p<0.001)

HCW entering patient room (follow the arrow)

↓ patient



HCW leaving the patient room (follow the arrow)



Clean zone

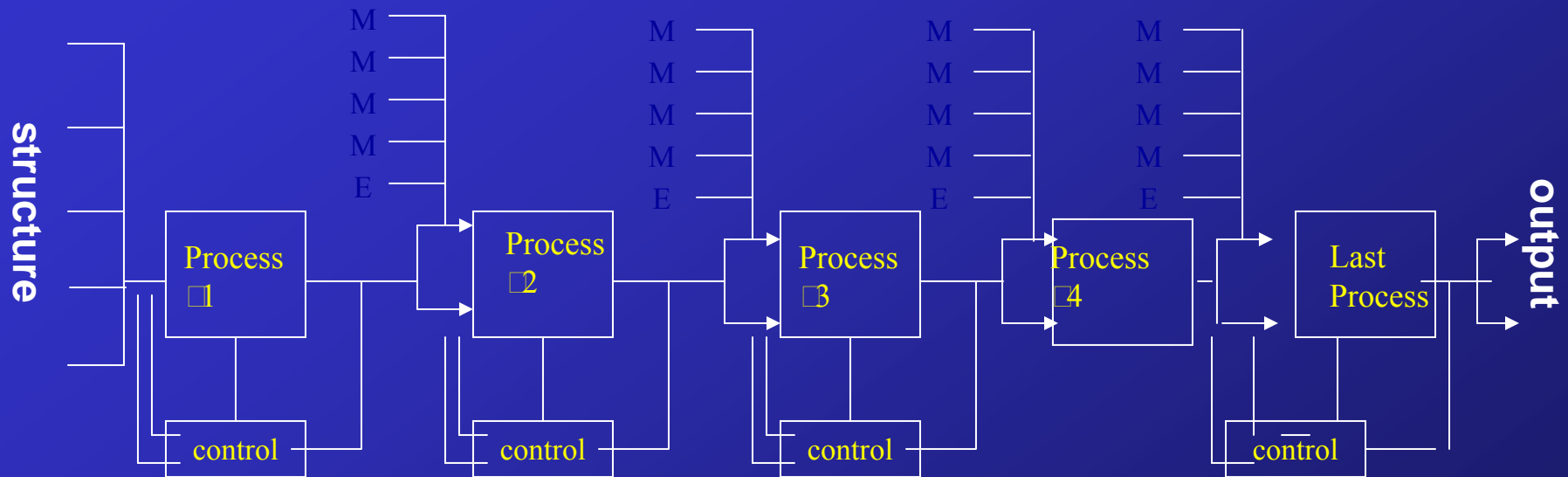
Intermediate zone

Contamination zone

○ Checkpoint: hand washing

* decon: decontamination using 0.5% bleach solution

Conceptual framework of Six Sigma



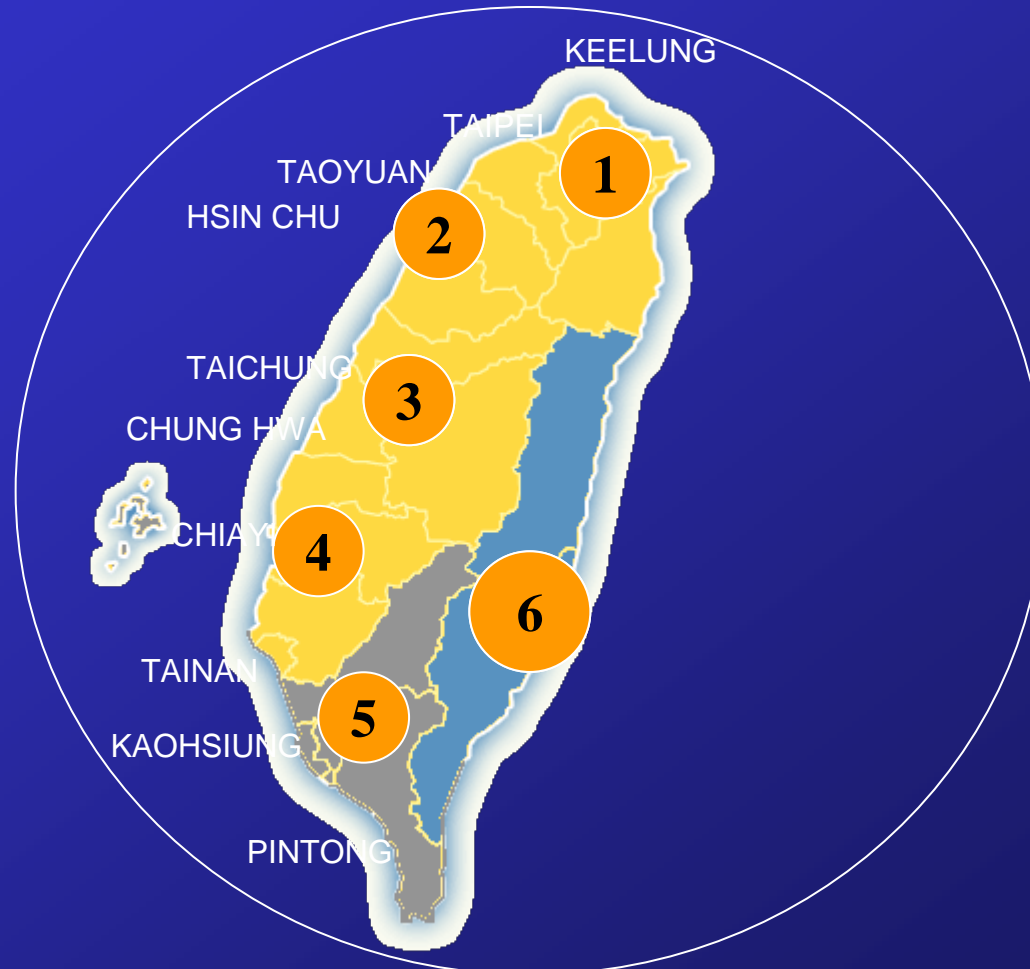
Processes



- Henry Ford -

Nothing is particularly hard if you divide it into small jobs.

Nationwide educational and supporting network for infection control



Communicable Disease Control Medical Network

Infection Control Network

- Compilation of infection control guidelines.
- Inspection of hospital infection control
- Educational and supporting system for quality improvement (outbreak).
- Surveillance of nosocomial infection (TNIS)
- Promotion of Hand Hygiene.

Inspection and audit for hospital infection control, Taiwan CDC

	2005	2006	2007
Initial Inspection			
No. of Hospitals Inspected	522	524	507
No. of Hospitals Failed	89	25	20
Passing Rate	82.95%	95.23%	96.06%
Year-End Inspection			
No. of Hospitals Inspected	535	521	507
No. of Hospitals Failed	39	7	3
Passing Rate	92.71%	98.66%	99.41%

hand hygiene campaign



Communicable Disease Control Medical Network

- Combine medical and public health systems
- 6 sub-network nationwide
- Experts from Hospital, public health, infection control, local health department, CDC
- 25 responding hospitals as special isolation hospitals.
- **Medical director** to streamline the commanding and information flow with efficient communications.
- Coordination for inter-city surge capacity, education program and drill/exercise.

Process Management (time axis)

- Levels of alertness
- **0** preparedness
- **A** surveillance
- **B** containment
- **C** impact reduction

Process Management (time axis)

- **0** **preparedness**
 - surveillance
 - surge capacity
 - exercise/drills
- **A** surveillance
- **B** containment
- **C** impact reduction

Transforming schools into pre-designed ACS as part of preparedness plan for pandemic H5N1 influenza.

-Yen MY, *J Formos Med Assoc*,2008;107(9):673-676.-

Accessibility
Availability
Safety
Expandability

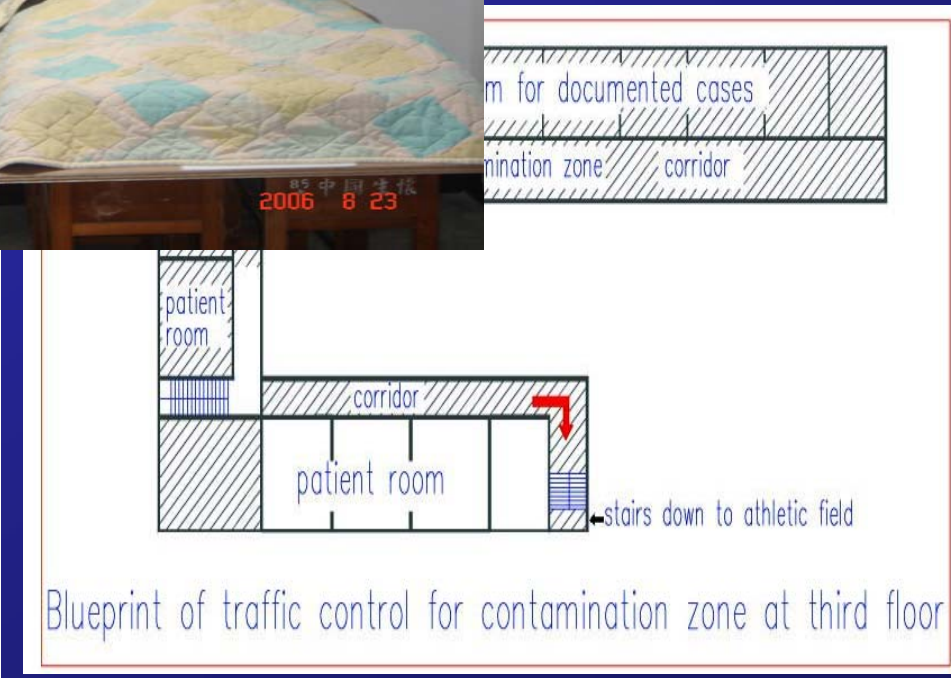
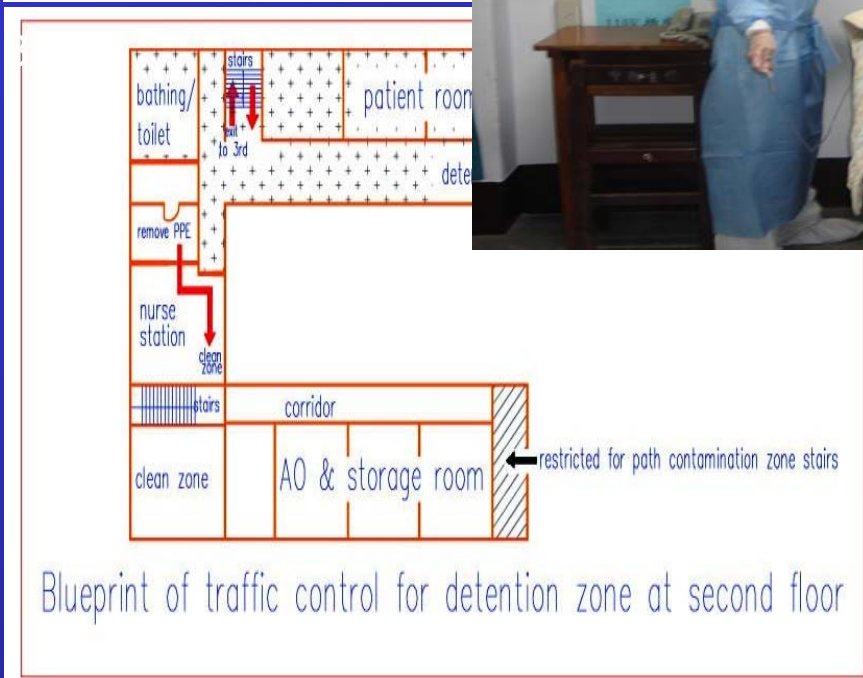
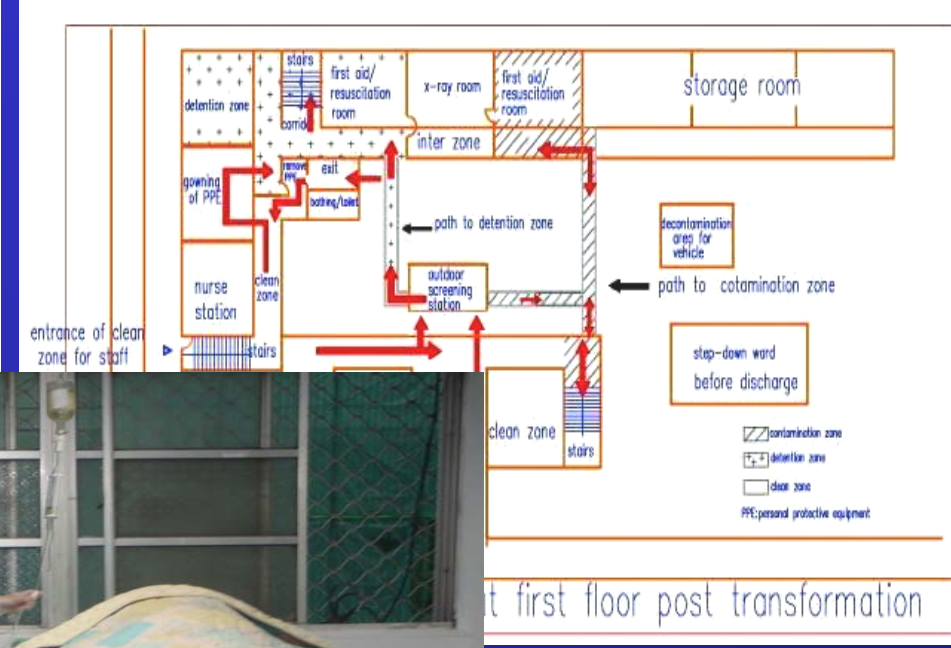
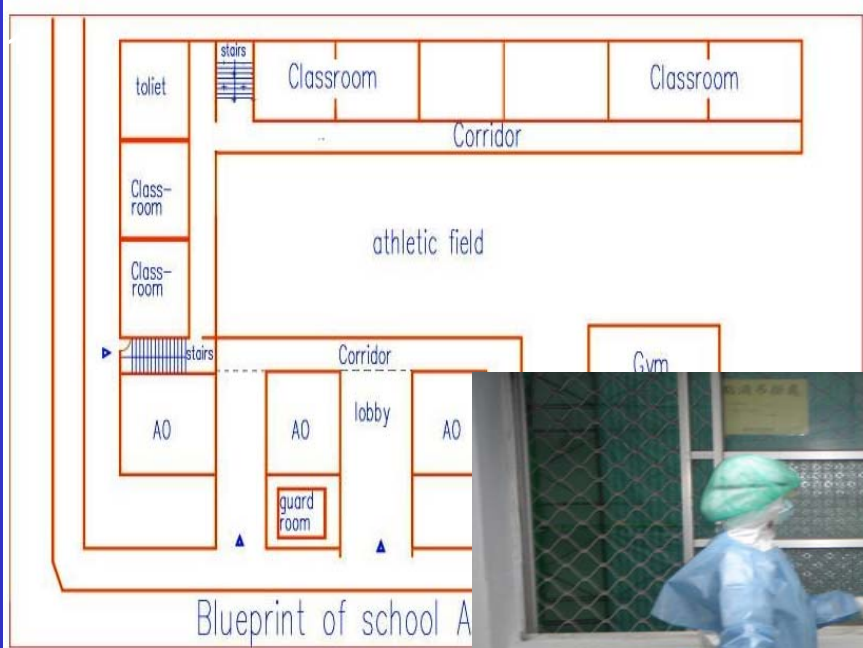


Figure 1. blueprint of school transformed into alternative care site with traffic control bundle.

Task force of special isolation hospital groups

Special Isolation Hospital



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graph TD; A((Special Isolation Hospital)) --- B(( )); A --- C(( )); A --- D(( )); A --- E(( )); E --- F((Screen station from community))
```

School as shelter

Screen station from community

Surge capacity of staff

Mobilization and education/training of human resources

- Prompt response epidemiological team
- Obligatory military services for decontamination.
- Volunteer Taxi Driver to support EMS

- Medical personnel
- **Linking nurse**



Process Management (time axis)

- Levels of alertness: WHO phase 4
- **0** preparedness
- **A** **surveillance**
- **B** containment
- **C** impact reduction

The Front-line checkpoint for surveillance

- Airport fever screening station
- Community surveillance (GP, Rx, ER)

TOCC

- **T**ransport history
- **O**ccupational/**C**ontact history
- **C**luster

Strategy of Responsiveness in level A & B

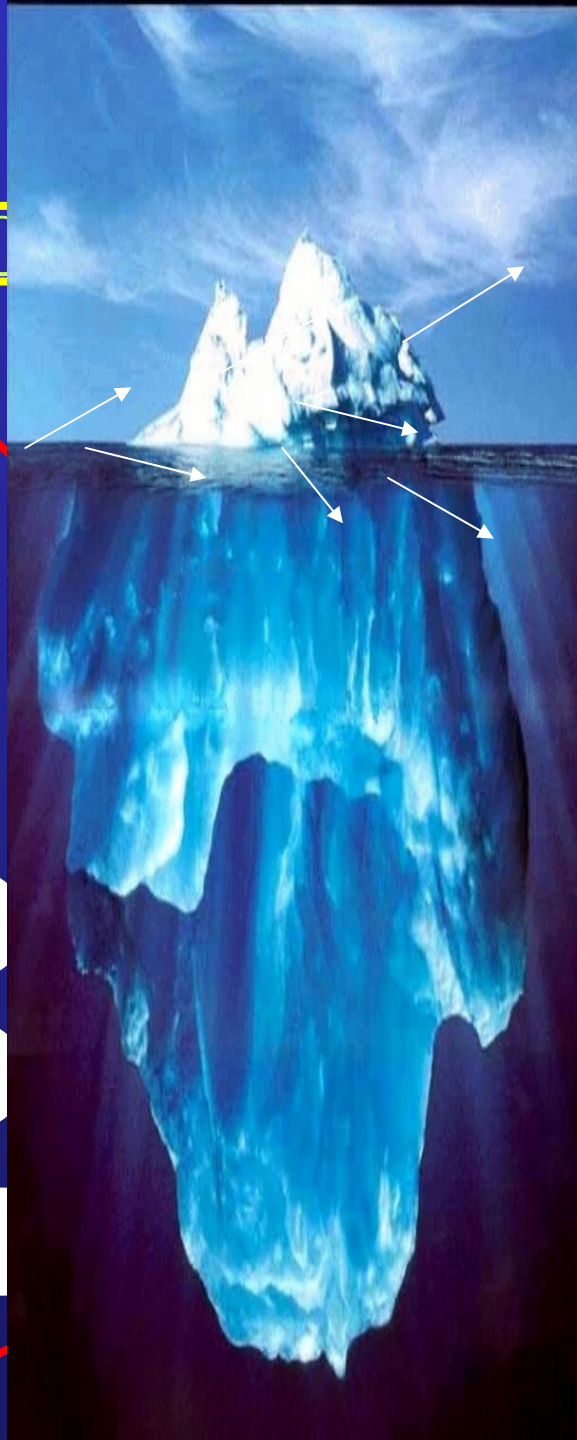
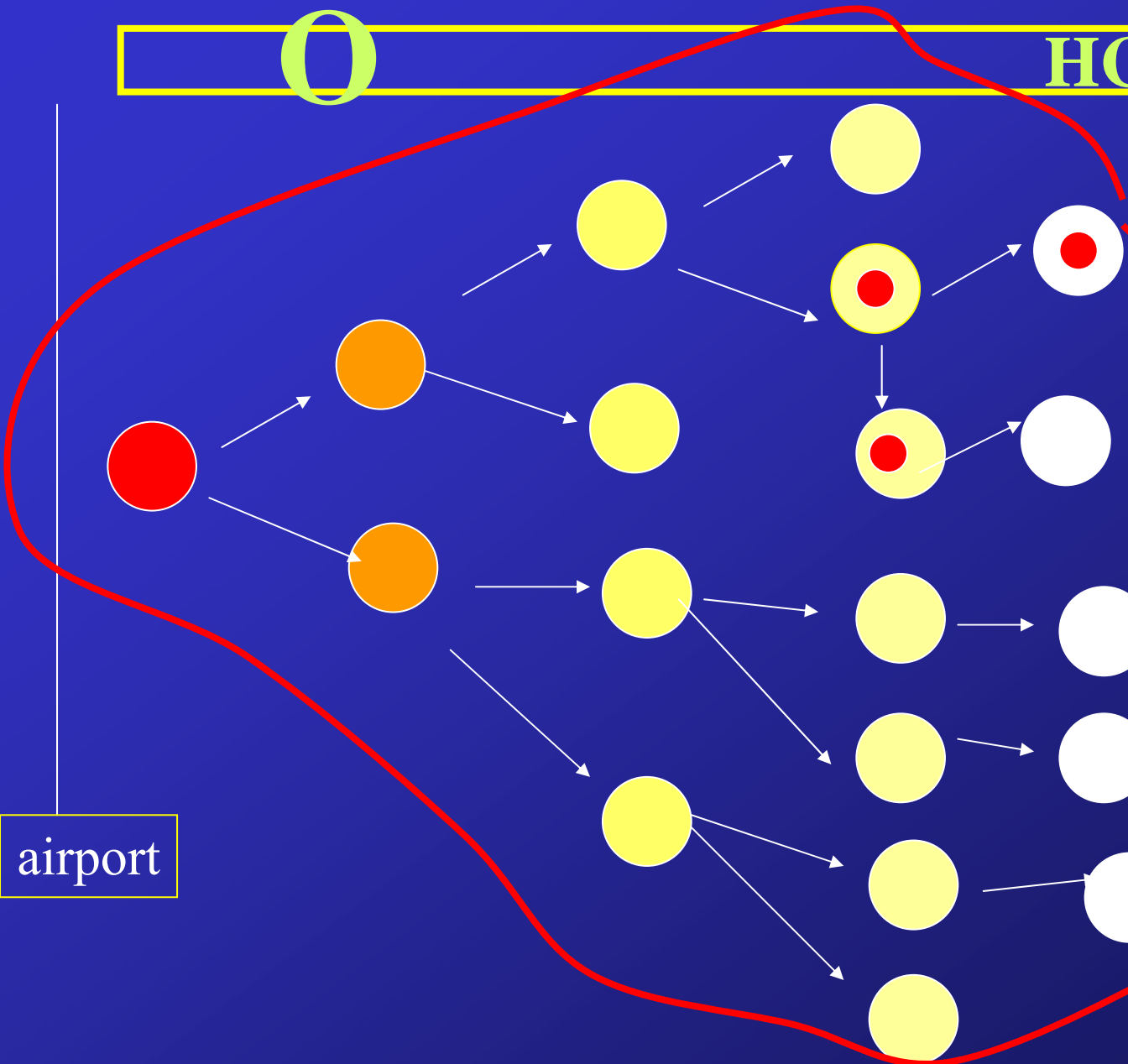
- **First case finding through active surveillance**
- **Containment**
 - **Epi. Investigation & Contact tracing**
 - **quarantine, isolation and containment**

Process Management : algorithm

- Levels of alertness
- **0** preparedness
- **A** surveillance
- **B** **containment**
- **C** harm reduction

T O C C

HO



Lesson learnt in 2009, phase I

- Action plans against Influenza A H1N1 in early 2009 had also provided a platform to access and improve our current system in mitigation for future pandemic influenza.

Chain of command & Risk communications

Epidemic Command Center

(central government)

Strategy, SOP



Video conference, Telephone conference
inter-city/ inter sub-network coordination



Sub-division of Communicable Disease Control Medical Network
Branch office of CDC
Local Epidemic Command Center

Execution/ channel



Mass gathering events

- Computex Taipei, Jun 2-6, 2009
- Deaflympics Taipei, Sep. 5-15, 2009
- Hotels and Institutes as checkpoint
 - Letters to the guest
 - Respiratory hygiene & cough etiquette
 - HH after cough/sneeze/ **surfaces**
 - Reporting and surveillance

Dear **Deaflympics** athletes and guests:

Welcome to Taiwan for participating the 21st Summer Deaflympics Taipei 2009.

We would like to congratulate for the excellent performance in the days to come.

Regarding the global novel H1N1 influenza pandemic, we have taken the measures of disease prevention for protecting your health:

Taipei City Government has been developed a preparedness plan for a possible novel H1N1 influenza pandemic. All relevant employees and staffs have received training for against H1N1 influenza and others communicable diseases.

All of the Deaflympics venues and accommodations are increasing the frequency of cleaning and sanitizing public areas. Alcohol-based hand sanitizers are placed at all public area.

The well-being of all athletes and guests is our highest concern. In order to protect your health, we would also like to ask for your full cooperation as following:

If you experience **flu-like symptoms** such as fever, coughing, sore throat, runny nose, headache, muscle aches, diarrhea etc., please put on a gauze mask and contact with staff members immediately. Subsequently medical arrangements will be assisted.

During the period of Deaflympics, facial masks are available upon request from our volunteers and staff members at the first aid of sporting venues and accommodations.

When entering sporting venues, hotel lobbies, restaurant, café and other public areas or touching door handles etc., please be sure to use **alcohol-based hand sanitizer for hand disinfection**. Also please cover your nose and mouth when you *cough* or sneeze.

We thank you for your cooperation with great earnestness.

Traffic Control bundle

- Triage into Hospital
- Zone of Risk
- **Checkpoint hand washing**





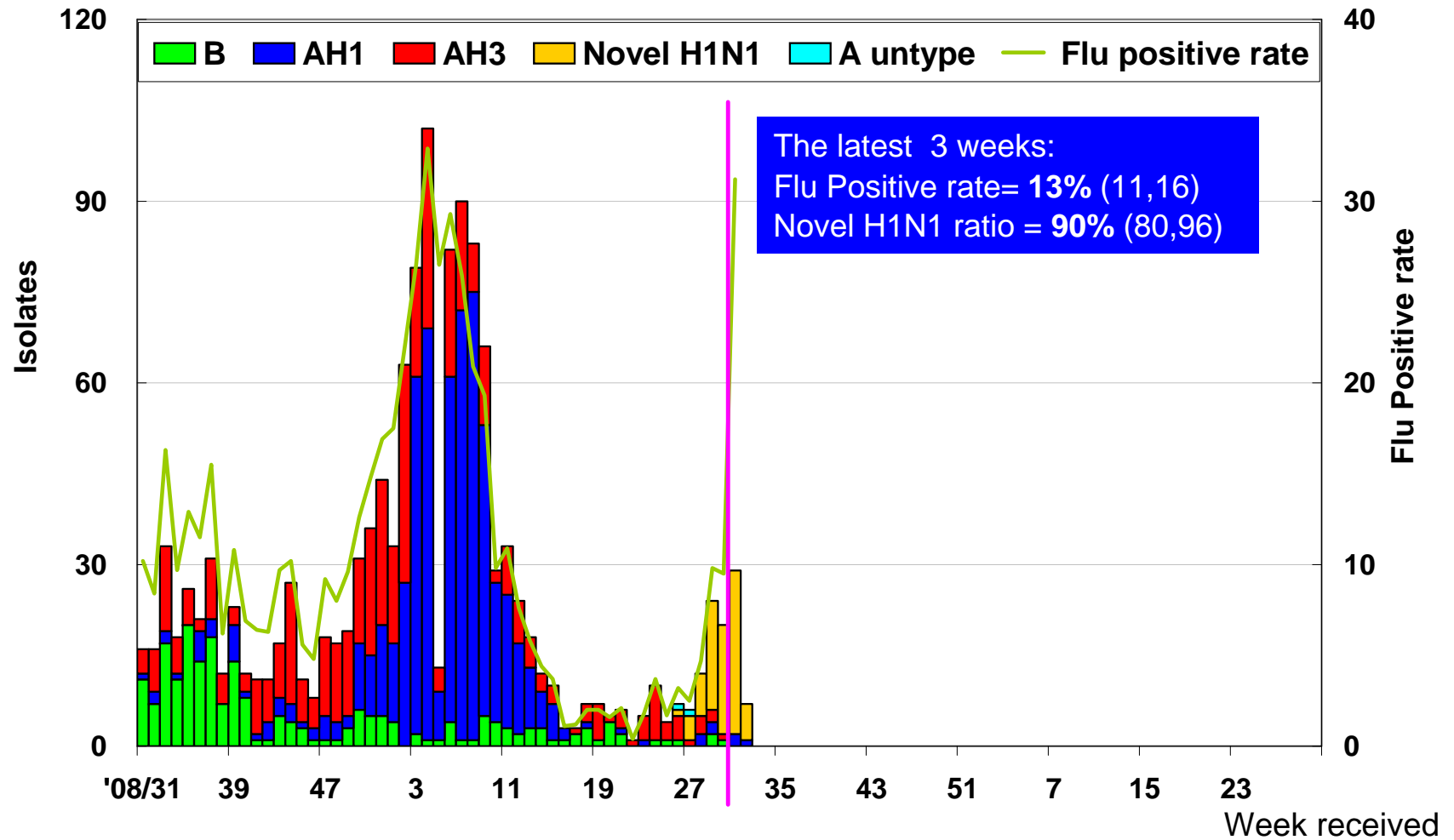
Identified so H1N1 influenza A

À Æ ç ðè	H1N1	Investigated			Sentinel surveillance		
	² Ö p	(+)	(-)	0	(+)	(-)	(?)
— e B ½	701	13	688	0			
X ù Æ ç Ç	661	48	613	0	89	0	88
» @ Æ è	227	13	214	0	1	0	1
x T Á Á è	77	7	70	0	5	0	5
° E P @ Á è	197	22	175	0	8	0	8
x & Æ Æ Æ Ç	26	0	26	0	0	0	0
¥ x & Æ`	43	0	43	0	8	0	8
¹ E Eò p E è	25	3	22	0	23	0	22
x j X ù Æ ç Ç	26	1	25	0	4	0	4
° E ò Æ`	24	2	22	0	12	0	12
° E Á Æ ç ç Ç ð Æ è	12	0	12	0	12	0	12
· E ù Æ ç Ç	4	0	4	0	16	0	16
@ ¥ Æ ç J	0	0	0	0	0	0	0
Á ÷ p	1362	61	1301	0	89	0	88

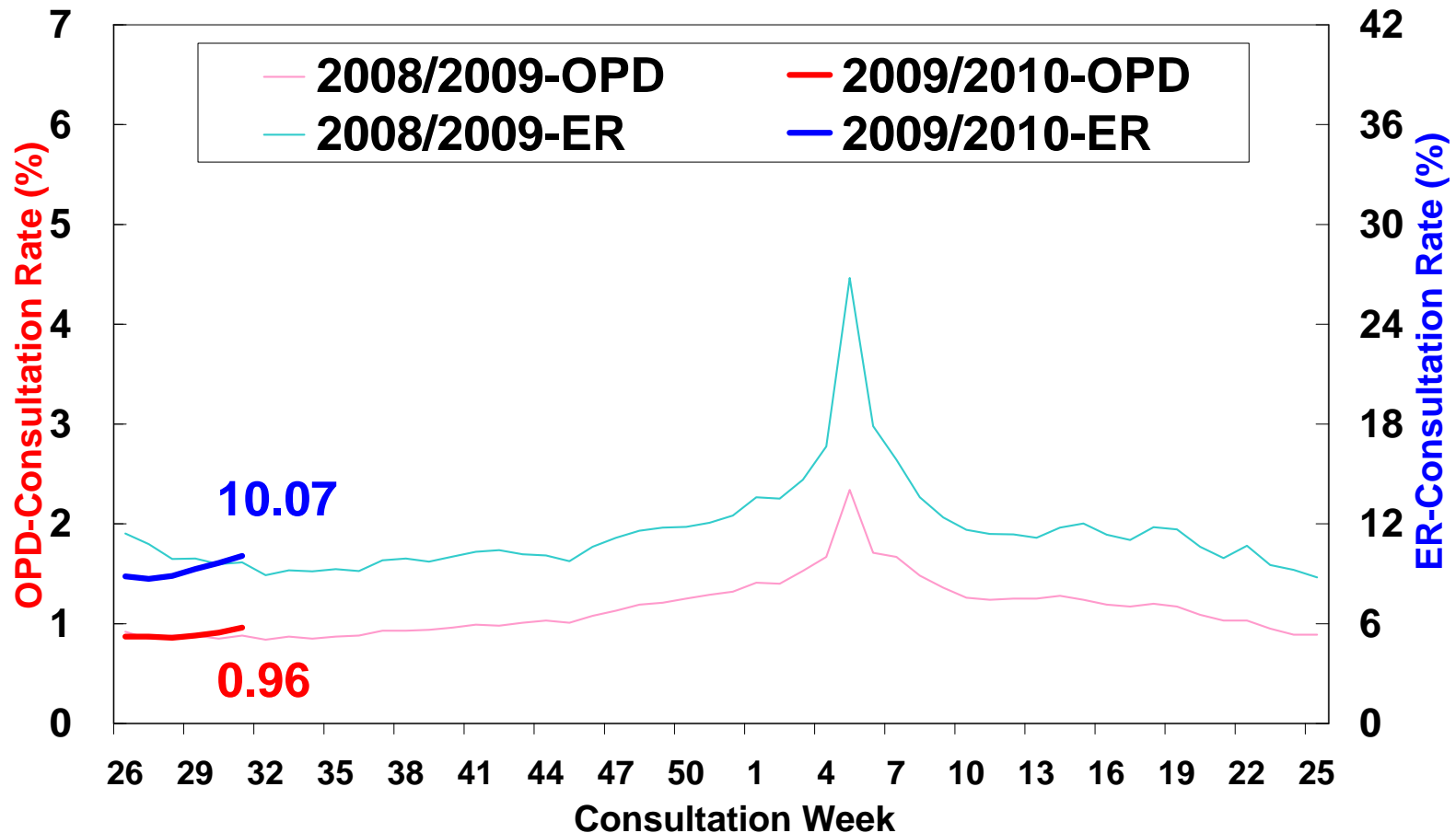
Class I notifiable disease down grade to Class IV

- Report only complicated influenza
- **0** preparedness
- **A** surveillance
- **B** containment
- **C** **Impact reduction**
(**mitigation**)

Taiwan laboratory weekly report on influenza virus activities



Rate of outpatient and ER visits for influenza-like illness



- Estimated weekly new cases of H1N1: 4000-6000 cases
- Cumulated complicated influenza cases: 39
- Mortality: 2

Pandemic (H1N1) 2009 clusters

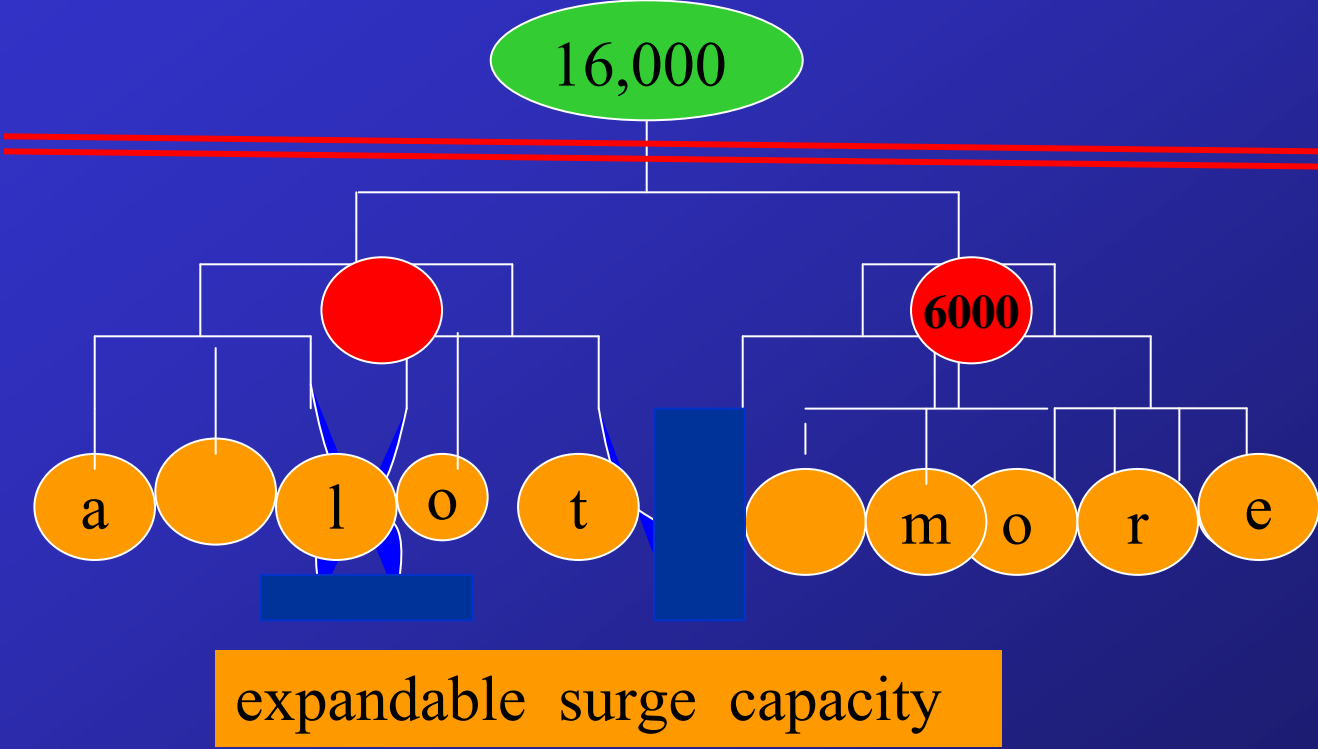
- Cumulative number since July 1, 2009 was 36.

• schools	19	(53%)
• workshops	5	(14%)
• military camps	5	(14%)
• hospitals	3	(8%)
• long-term care facilities	2	(6%)
• workplaces	1	(3%)
• imported	1	(3%)

Medical surge - Impact Reduction

- maintaining social order and integrity of the healthcare system
- The concept of traffic control bundle has now been implemented in our design of medical surge for pandemic influenza preparedness.
- Triage patient into hospital:
 - outdoor screening station.
- Zone of risk
 - Clean Hospitals: traffic control
 - Contamination zones: special isolation hospital groups.
- Alcohol dispensers for hand disinfection at checkpoint

General Hospitals / Medical Centers
to preserve fundamental social security



Task force of special isolation hospital groups

Infection Control against H1N1 for General Hospitals

- In addition to strict infection control programs.
- Outdoor screening station
 - Cough, flu, fever, ILI, diarrhea, DOA
- Traffic control, wearing mask
- Detention ward, fever ward
- Checkpoint hand washing

6

6
訪客專用
For visitors Only
7至9樓不停
Non-Stop
(7th-9th Floors)



無障礙電梯

訪客電梯
5、6、7、8樓

6

7
訪客專用
For visitors Only
2至5樓不停
Non-Stop
(2nd-5th Floors)

訪客專用


無障礙電梯

7



JUN 8 2003

Surge capacity, anti-viral agents

- Stockpile: 17% (4,183,000 people)
 - Oseltamivir (Tamiflu) 2,214,000
 - Raw material  1,000,000
 - zanzmivir (Relenza) 969,000
- Anti-virals included in the National Health Insurance coverage for ILI with confirmation by rapid diagnostic test to ensure prompt treatment. Since Aug. 15, 2009.

Surge capacity, pandemic H1N1 vaccination

- Adimmune Corporation, (Kuo Kwang Biotech. Co.)
- Funding from DOH to build up a state-of-the-art cGMP level manufacturing plant for vaccine production business.
- capable of providing H1N1 vaccines for 10,000,000 doses
- Priority list of receiving the pandemic flu vaccination.

Hoping for the best

Prepare for the worst

Thanks for Your Attentions

