The Mask in Infection Control – Understanding the Issues for Appropriate Practice
Prof. W.H. Seto, Hong Kong
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The Mask in Infection Control
– understanding the issues for appropriate practice

WH Seto, Hong Kong

Hosted by Jane Barnett
New Zealand National Division of Infection Control Nurses
www.infectioncontrol.co.nz

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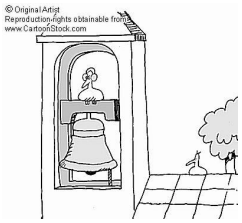
www.webbertraining.com August 17, 2011

Definition of PPE

Any device or appliance designed to be worn or held by an individual for protection against one or more health and safety hazards



Rationale of PPE usage

- Risk assessment
- Level of resources
- Early confirmation of diagnosis

Limitations of PPE

- Short term protection
- Protect only the individuals with PPE
- Burden to users
- Need supervision, training and maintenance
- High running costs

- Not 100% guaranteed protection

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Modes of transmission

	General	Specific – isolation rooms
Airborne	• Barrier precautions when needed • Meticulous hand hygiene • Good environmental hygiene	Ventilation Management with –ve pressure rooms N95 mask
Droplets		Good surgical masks – 3'
Contact		Gowning & gloves on contact
Bloodborne		Prevention of needle stick

Standard Precautions

Transmission Based Precaution

Airborne	**Nuclei of < 5µm**	**Pulm. TB** **Measles** **VZV**
Droplet	**Nuclei of > 5µm**	**Influenza** **Meningococcal** **Pertussis** **SARS**
Contact	**Transmission by direct or indirect contact**	**MR organisms** **Enteric RSV** **SARS**

Droplet Precautions

> 5µ

surgical mask within 3 feet

Airborne Precaution

< 5µ

Aerosol generating procedure
N95 Respirator

CDC isolation guideline, 1996

Is Influenza Airborne?
- a controversy in the recent H1N1 pandemic

Transmission of influenza A in human beings

Brankston et al. **Lancet ID 2007(7):257-65**

Search of 2012 citations

"We are able to conclude that transmission occurs at close range rather then over long distance, suggesting that airborne transmission, traditional defined, is unlikely to be of significance in most clinical setting."

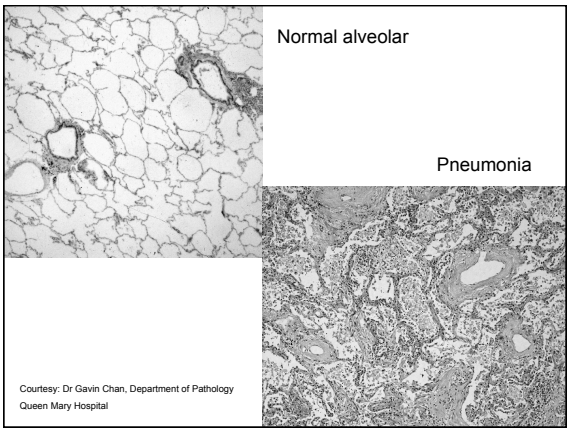
Bacteria That Cause Airborne Nosocomial Infections

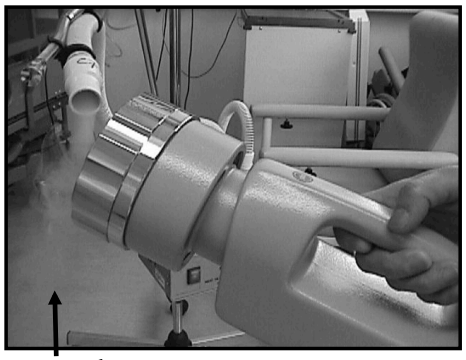
- Group A Streptococcus
- Staph. aureus
- Neisseria meningitidis
- Bordetella pertusis
- MTB
- Acinetobacter
- Legionellae
- Clostridia
- Pseudomonas
- Nocardia

Viruses Implicated in Airborne Nosocomial Infections

- Rinoviruses
- Influenza and
- Parainfluenza viruses
- Respiratory Syncytial Virus
- Adenovirus
- Varicella Zoster Virus
- Measles
- Rubella
- Smallpox
- Certain enteroviruses

Adapted from Schaal, 1985



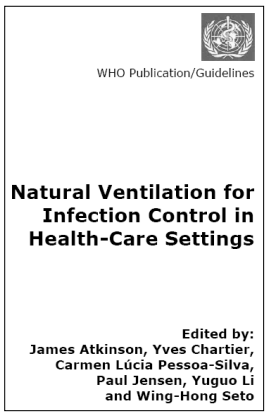


Recent classification for airborne transmission

Obligate airborne: initiate solely through aerosols: TB

Preferential airborne: initiate through multiple routes but predominately by aerosols: Chicken pox and measles

Opportunistic airborne: typically through other routes but by aerosols in favorable conditions (as high-risk procedures such as intubation): Influenza and SARS



WHO systemic review - 2008

Table 1. The scope and definitions of three transmission models

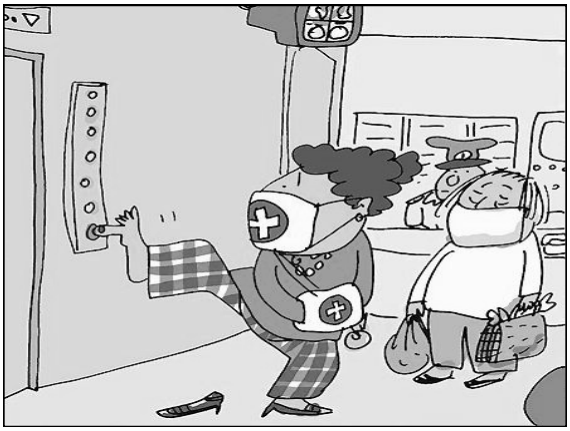
Mode of transmission	Definition	Examples of the agents
Airborne	Transmission of disease caused by dissemination of droplet nuclei that remain infectious when suspended in air over long distance (> 1m) and time. Airborne transmission can be further categorized into obligate or preferential airborne transmission. • ***Obligate airborne*** *transmission* refers to pathogens that are transmitted only by deposition of droplet nuclei under natural conditions. • *Preferential airborne transmission* refers to pathogens that can initiate infection by multiple routes, but are predominantly transmitted by droplet nuclei.	pulmonary tuberculosis measles chickenpox

Opportunistic airborne	Transmission of droplet nuclei at short range during special circumstances, such as the performance of aerosol-generating procedures associated with pathogen transmission.	SARS CoV Influenza
Droplet	Droplets are generated from an infected (source) person primarily during coughing, sneezing, and talking. Transmission occurs when these droplets containing microorganisms are propelled a short distance (usually ≤ 1m) through the air and deposited on the conjunctivae, mouth, nasal, throat or pharynx mucosa of another person.	Adenovirus Respiratory Syncytial Virus Influenza SARS CoV

WHO – 29th April 2009

"Human-to-human transmission of the pandemic (H1N1) 2009 virus appears to be primarily through droplets. "

What isolation precautions is needed for nH1N1?



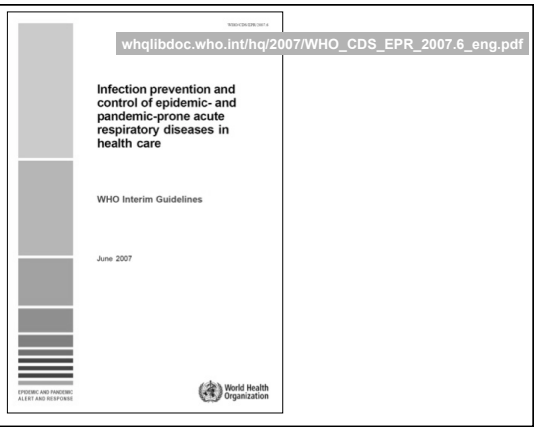


Table 1. Infection control precautions for HCWs and caregivers providing care for patients with ARDs according to a sample of pathogens

Precaution		No pathogen identified, no risk factor for ARD of potential concern (e.g. influenza-like illness without risk factor for ARD of potential concern)	Pathogen: Bacterial ARD[a]	Parainfluenza RSV & adenovirus	Influenza virus with sustained human-to-human transmission (e.g. seasonal influenza, pandemic influenza)	New influenza virus with no sustained human-to-human transmission (e.g. avian influenza)	SARS	Novel organisms causing ARD[b]
Hand hygiene[c]		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gloves		Risk assessment[d]	Risk assessment[d]	Yes	Risk assessment[d]	Yes	Yes	Yes
Gown[e]		Risk assessment[d]	Risk assessment[d]	Yes	Risk assessment[d]	Yes	Yes	Yes
Eye protection		Risk assessment[f]	Risk assessment[f]	Risk assessment[f]	Risk assessment[f]	Yes	Yes	Yes
Medical mask on HCWs and caregivers		Yes	Risk assessment[g]	Yes	Yes	Yes[g]	Yes[h]	Not routinely[h]
Particulate respirator on HCWs and caregivers	for room entry	No	No	No	No	Not routinely[g]	Not routinely[h]	Yes
	within 1m of patient	No	No	No	No	Not routinely[g]	Not routinely[h]	Yes
	for aerosol-generating procedures[i]	Yes	Not routinely[j]	Not routinely[j]	Yes	Yes	Yes	Yes
Medical mask on patient when outside isolation area[k]		Yes	Yes	Yes[j]	Yes	Yes	Yes	Yes
Single room		Yes, if available[m]	No	Yes, if available[m]	Yes, if available[m]	Yes	Yes	Not routinely[h]
Airborne Precaution room[n]		No	No	No	No	Not routinely[g]	Not routinely[h]	Yes
Summary of infection control precautions for routine patient care, excluding aerosol-generating procedures[i]		Standard plus Droplet Precautions	Standard Precautions	Standard plus Droplet plus Contact Precautions	Standard plus Droplet Precautions	Standard plus Droplet plus Contact Precautions	Standard plus Droplet plus Contact Precautions	Standard plus Airborne plus Contact Precautions

The USA position

SHEA recommendations

"At the start of the 2009 outbreak, there was uncertainty regarding the transmission dynamics of the novel H1N1 virus. While seasonal influenza is spread by large respiratory droplets, a concern at the onset of any potential influenza pandemic is whether the pathogen will have a different dynamics or methods of spread."

13th May – CDC recommends N95 to be used in all situations

SHEA recommendations (10th June 2009)

Mode of transmission

"available data and clinical experiences suggest that H1N1 transmission occurs like seasonal influenza via droplets spread".

"SHEA endorses **implementing the same practices recommended to prevent the transmission of seasonal influenza for the novel H1N1".**

Isolation Measures:

"Negative pressure rooms are not needed for the routine care of such patients." "The N95 is *not* recommended as part of standard precautions". This applies even for "preventing seasonal influenza transmission."

High risk aerosol-generating procedures:

Enhance respiratory protection including the N95 is recommended for such procedures. The procedures should include

"**open suctioning of airway secretions, resuscitation involving emergency incubation or cardiac pulmonary resuscitation and endotracheal intubation".**

However the following should ***not*** be included:

"collection of nasopharyngeal specimens, close suctioning of airway secretions and administration of nebulized medications".

	Medical Masks	Gloves	Gowns	Eye Protection	N95
Droplets all cases	Yes	-	-	-	-
Standard Precautions	Yes	Yes	Yes	Yes	-
Aerosol Generating		Yes	Yes	Yes	Yes
Resp swabs	Yes	Yes	Yes	Yes	-
Collecting blood	Yes	Yes	-	-	-
CDC (13th May) Standard & Contact	-	Yes	Yes	Yes	Yes
Enter Isolation room - all HCWs					Yes

CDC

23rd July 2009

(http://www.cdc.gov/ncidod/dhqp/hicpac_transcript-07-23.html).

Healthcare Infection Control Practices Advisory Committee (HICPAC)

"No studies to date have demonstrated human infection occurring from naturally aerosolized influenza or human infection occurring by inhalation of artificially aerosolized influenza in ambient rather then directed air."

"**confirm the presence of airborne influenza virus in various clinic locations**"
Blachere et al (CID 2009 48 (4):438)

Finally a recent study focused on air sampling in a busy hospital emergency room during influenza's seasonal activity ….. detected in the air fraction was in small particles 1 to 4 micrometers in size.
PCR detection, rather then viral culture and assessment of viability, was utilized in this study, so the significance of these findings needs further investigation.

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CDC website

HICPIC advisory committee
23rd July to vote on the latest recommendation

(http://www.cdc.gov/ncidod/dhqp/hicpac_transcript-07-23.html).

"endorse the use of surgical masks for the routine care of patients with confirmed or suspected, novel influenza A (H1N1)"

"it is appropriate at this time to recommend the use of N95 or higher respiratory protection for procedures that are likely to generate small particle aerosols." The procedures are then listed to include "bronchoscopy, intubation under controlled or emergent situations, cardiopulmonary resuscitation, open airway suctioning and airway induction."

Comment on Blachere et al: PCR positive is not the same as culture positive

Aerosol generating procedures

SHEA
"**open suctioning of airway secretions, resuscitation involving emergency incubation cardiac pulmonary resuscitation endotracheal intubation**".

CDC \ HICPIC
bronchoscopy,
intubation under controlled or emergent situations,
cardiopulmonary resuscitation,
open airway suctioning and airway induction

WHO ARD
Intubation
Cardiopulmonary resuscitation + manual ventilation suction
Bronchoscopy
Autopsy/surgery

1st September 2009

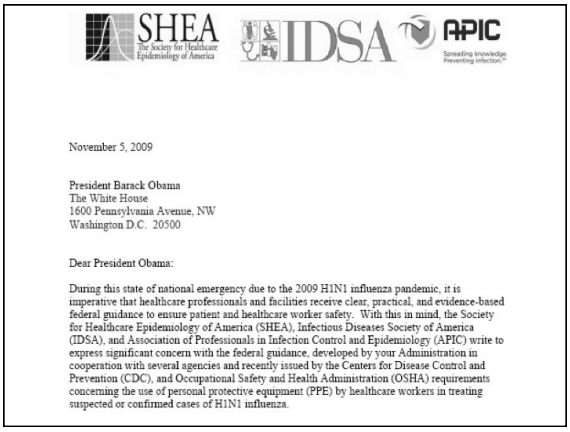
Institute of Medicine

- HCWs (including non-hospital settings) in close contact with individuals with nH1N1 or ILIs should use fit-tested N95 respirators.
- Endorse current CDC guidelines.

Page 17 : "confirm the presence of airborne influenza virus in various clinic locations"
Blachere et al (CID 2009 48 (4):438)

Also based on the Macinthyre study done in China

	Medical Masks	Gloves	Gowns	Eye Protection	N95
Droplets all cases	Yes	-	-	-	-
Standard Precautions	Yes	Yes	Yes	Yes	-
Aerosol Generating		Yes	Yes	Yes	Yes
Resp swabs	Yes	Yes	Yes	Yes	-
Collecting blood	Yes	Yes	-	-	-
CDC (13th May) Standard & Contact + IOM	-	Yes	Yes	Yes	Yes
Enter Isolation room - all HCWs					Yes



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CDC change in June 2010.

"In a change from previous pandemic H1N1 recommendations, the CDC advises that healthcare workers wear face masks [ie. the surgical masks] when entering the room of a patient who has confirmed or suspected flu. Earlier recommendations suggested that staff wear N-95 respirators during all contact with flu patients; however, the new guidance recommends N-95s or higher levels of protection during risky procedures such as aerosol-generating procedures."

Other controversies regarding the use of the N95 respirator

Who Makes Decisions About Healthcare Worker Respiratory Protection In the United States?

Occupational Safety and Health Administration (OSHA)

National Institute for Occupational Health and Safety (NIOSH), CDC

Division of Healthcare Quality Promotion (DHQP), CDC

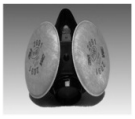
TWO RESPIRATOR TYPES

- Air purifying - Removes contaminates before reaching breathing zone
- Atmosphere supplying - Provides fresh air from an external source

High Efficiency Particulate Air Filter (HEPA)

Filter that is at least 99.97% efficient in removing mono-disperse particles of 0.3 micrometers in diameter.

Equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.



Negative Pressure Respirator

A respirator in which the air pressure inside the face-piece is negative during inhalation with respect to the ambient air pressure outside the respirator.

Filtering Face-piece
(Dust Mask – N95)

A negative pressure particulate respirator with a filter as an integral part of the face-piece or with the entire face-piece composed of the filtering medium.

Powered Air-Purifying Respirator
(PAPR)

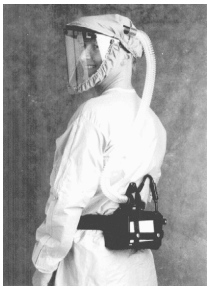
An air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

Respiratory Protection

- Airborne precautions
  - Particles < 5 μM
  - Remain suspended in air, can be dispersed by air currents
- Recommendation: fitted respirators meeting NIOSH N95 or better
- Source: CDC/APIC, 1999

More Protective Respirators

- Some hospitals recommend PAPR
- Advantages
  - more protective
    - NIOSH APF: Hooded: 25, Tight-fitting: 50
    - ANSI APF: 1000 for both
  - cooling
- Disadvantages
  - cost
  - weight
  - battery dependence
  - noise
- Need?



Respirator Program Elements

1. Selection
2. Medical evaluation
3. Fit testing
4. Use
5. Maintenance and care
6. Breathing air quality and use
7. Training
8. Program evaluation

Fit Testing

Before an employee uses any respirator with a **negative or positive pressure tight-fitting face-piece**, the employee must be fit tested with the same make, model, style, and size of respirator that will be used (using OSHA accepted protocol).

FIT TESTING

- Respirators rely on face-to-mask seal
- Fit testing determines which device will best fit and seal
- Stubble, beard, hairlines, glasses, and goggles will negatively affect fit
- Corrective lenses may be mounted inside the facepiece

Fit Testing

- Employees using tight-fitting face-piece respirators must pass an appropriate qualitative fit test (QLFT) or quantitative fit test (QNFT):
  - before initial use,
  - whenever a different respirator face-piece (size, style, model or make) is used, and
  - at least annually thereafter
- Must conduct an additional fit test whenever there are changes in the employee's physical condition (e.g., facial scarring, dental changes, cosmetic surgery, or obvious change in body weight) that could affect respirator fit

TYPES OF FIT TESTING

- Qualitative (QLFT) – A challenge agent, vapor, or aerosol released
- Fit is inadequate if a presence of the agent is detected (irritation, taste, or odor)
- Quantitative (QNFT) - Measures actual level of agent both inside and outside the respirator

Fit Testing (cont'd)

- The fit test must be administered using an OSHA-accepted QLFT or QNFT protocol.
  - **QLFT Protocols**:
    - Isoamyl acetate
    - Saccharin
    - Bitrex
    - Irritant smoke
  - **QNFT Protocols**:
    - Generated Aerosol (corn oil, salt, DEHP)
    - Condensation Nuclei Counter (PortaCount)
    - Controlled Negative Pressure (Dynatech FitTester 3000)

Qualitative Fit Test (QLFT)

A pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

Quantitative Fit Test (QNFT)

An assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

Is N95 Fit Testing Required?

•Most elements of the NIOSH respirator program (i.e., fit factor, protection estimates, etc.) are theoretical using mathematical models and have not been confirmed in practical work situations.

•In one NIOSH study, fit testing respirator assignment errors were as high as 20%.

From Bill Jarvis, CDC

Quantitative Fit Testing Does Not Ensure Health Care Worker Respiratory Protection

M Lee, S Takaya, R Long, M Joffe
SHEA Abstract - Apr 2005

- 58 HCW never fit-tested
- 25/58 (43%) passed initial fit-test
  - 19 passed with instruction = 76% total passes
- 3 months later, 49/58 re-tested
  - 47% recalled respirator type and passed fit-test
  - Passing at 3 months did not correlated with passing at initial fit-test or receipt of instruction

No, fit testing is not needed.

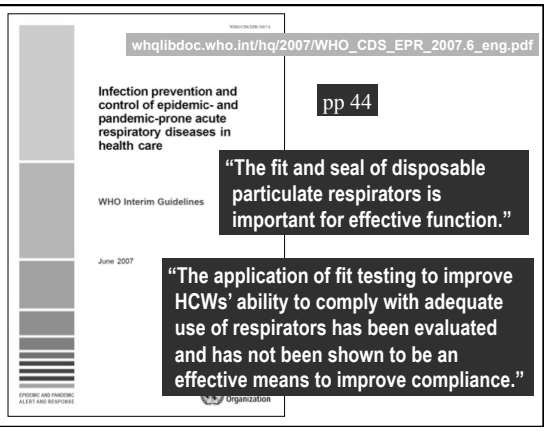
- **No added value to adequate training:**

TABLE 2
RESULTS OF QUALITATIVE FIT TESTING OF PARTICIPANTS IN GROUP A (INDIVIDUALLY TRAINED AND FIT TESTED), GROUP B (TRAINED BY CLASSROOM DEMONSTRATION AND NOT FIT TESTED), AND GROUP C (NO PRIOR TRAINING), STRATIFIED BY PREVIOUS EXPERIENCE USING RESPIRATORS

	Group A	Group B	Group C
Used respirators			
Passed	35	33	19
Failed	1	5	3
Never used respirators			
Passed	14	25	31
Failed	2	1	10
Passed/ participants (%)	49/52 (94)	58/64 (91)	50/63 (79)*

*Stratified Mantel-Haenszel chi-square: Group A versus Group B, P=.7, odds ratio (OR)=1.65 ; 95% confidence interval (CI_{95}), 0.4 to 6.6).
Group A versus Group C, P=.16, OR=3.0 (CI_{95}, 0.8 to 11.6).
Group B versus Group C, P=.15, OR=2.6 (CI_{95}, 0.9 to 7.9).
Group (A+B) versus Group C, P=.05, OR=2.9 (CI_{95}, 1.1 to 7.6).

Hannum D, et al. The effect of respirator training on the ability of healthcare workers to pass a qualitative fit test. Infect Control Hosp Epidemiol 1996;17:636-40



IDSA
Infectious Diseases Society of America

Infectious Diseases Society of America (IDSA) letter to CDC February 4, 2005

However, we disagree with the next sentence, which is inherently contradictory, "However, HCWs should undergo initial and periodic fit testing." There is no sound evidence to support initial and periodic fit testing.

Conclusion

- Fit testing of N95 respirators in required in the United States because of legal requirements not scientific data.
- Dust-mist and dust-mist fume (~N-95) respirators protected healthcare workers from M. tuberculosis, without fit testing.
- There are no data that healthcare workers are at greater risk of infection if they wear a respirator properly that has not been fit tested.
- Data show that healthcare workers were protected from SARS-CoV by N-95 respirators, without fit testing.
- No study has been done to document either the added protection or the cost-efficacy of fit testing in the respiratory protection of healthcare workers from infectious pathogens.

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BRIEF REPORT

Clinical and Nonclinical Health Care Workers Faced a Similar Risk of Acquiring 2009 Pandemic H1N1 Infection

Wing-Hong Seto,[1] Benjamin J. Cowling,[2] Kung-Sure Lau,[1] Patricia Y. S. Ching,[1] Wai-Lan Yu,[1] and Elaine Price[3]

[1]Hospital Authority Infection Control Task Force, Hong Kong Special Administrative Region, China; [2]World Health Organization Collaborating Centre for Infectious Disease Epidemiology and Control, School of Public Health, The University of Hong Kong, Hong Kong Special Administrative Region, China; [3]Infection Control Program, University of Geneva Hospitals and Faculty of Medicine, and [4]World Health Organization Collaborating Centre on Patient Safety, University of Geneva Hospitals, Geneva, Switzerland

(See the editorial commentary by Drumright and Holmes, on pages 204–206.)

Reporting of confirmed pandemic influenza A virus (pH1N1) 2009 infection was mandatory among health care workers in Hong Kong. Among 1158 confirmed infections, there was no significant difference in incidence among clinical versus nonclinical staff (relative risk, 0.98; 95% confidence interval, 0.78–1.20). Reported community exposure to pH1N1 was common and was similar in both groups.

Since the emergence of the 2009 pandemic influenza A virus (pH1N1), its epidemiology and transmission characteristics have been studied in detail [1–5]. However, relatively limited data are available on the epidemiology of pH1N1 in health care settings, particularly regarding the risk of nosocomial acquisition among health care workers (HCWs). In an early report of 48 HCWs with confirmed pH1N1 infection, information on health care exposure was available for only 26 individuals [4].

In Hong Kong, the government-funded Hospital Authority (HA) manages 38 hospitals, representing over 90% of hospital beds in the territory, and oversees 74 outpatient departments, including 16 clinics designated for pH1N1 cases and established especially for the pandemic. The HA implemented mandatory reporting for HCWs with confirmed pH1N1 infection after the first case of local transmission was identified, making it possible to collect detailed information on incidence and risk factors for confirmed pH1N1 among HCWs.

METHODS

Under the mandatory reporting conditions, all HCWs with influenza-like illness had to present themselves to staff clinics. Laboratory testing was free of charge, and specimens were tested for pH1N1 by reverse-transcription polymerase chain reaction and viral culture [5]. A confirmed case of pH1N1 was defined as present in a patient with a positive result on either test.

HCWs with confirmed pH1N1 infection were required to report through their working unit to the HA Major Incident Control Centre, which was responsible for providing daily reports of all confirmed cases to the chief infection control officer (CICO). The CICO office then contacted the infection control nurse (ICN) responsible for the hospital or clinic for follow-up and further investigation of any infected HCW. A standard questionnaire administered through personal interview by an ICN was used to obtain information on each confirmed case and to assess clinical presentation and the nature of exposure. Clinical staff were defined as HCWs involved in direct patient care as part of their regular routine, and nonclinical staff were defined as those not involved in patient care and with no opportunity for patient contact during their regular work routine. The CICO office tracked all cases until the questionnaire was returned, ensuring a 100% response rate.

Mandatory reporting of both clinical and nonclinical staff began on 17 June 2009 and continued until 31 August 2009. From 1 September 2009, reporting and investigation was only mandatory for clinical staff. Reporting of confirmed cases among clinical staff continued until 31 May 2010, when the pandemic alert level was downgraded by the Hong Kong government. Compliance with mandatory reporting was likely to be close to 100%, because all staff with influenza-like illness could easily be identified by their supervisors, and the 7 days leave for confirmed cases could only be obtained through this procedure.

RESULTS

A total of 1158 confirmed pH1N1 infections were reported among HA staff. Most cases were mild, and only 38 (3.6%) required hospital admission, with no mortality reported. During the period

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1058-4838/2011/5302-0001$14.00/0

DOI: 10.1093/cid/cir375

ICHE 2010;31 (10):1004

Epidemiology of H1N1 (2009) Influenza among Healthcare Workers in a Tertiary Care Center in Saudi Arabia: A 6-Month Surveillance Study

Hanan H. Balkhy, MD; Aiman El-Saed, MD, PhD; Mahmoud Sallah, MD

Does good infection control practices work?

Clinical vs nonclinical HCWs : 6.0% vs 4.3% p<0.001
n = 526 HCWs in Saudi Arabia

"Infection control personnel were overstretched throughout the study"

Transmission of Pandemic (H1N1) 2009 Influenza to Healthcare Personnel in the United States

Matthew E. Wise,[1] Marie De Perio,[2] John Halpin,[2] Michael Jhung,[2] Shelley Magill,[1] Stephanie R. Black,[2] Susan I. Gerber,[2] Kathleen Harriman,[3] Jon Rosenberg,[3] Gwen Borlaug,[3] Lyn Finelli,[3] Sonja J. Olsen,[4] David L. Swerdlow,[5] and Alexander J. Kallen[1]

CID 2011:52 (Suppl 1)

CDC – 70 self infected HCWs and majority (80%) are clinical
"HCP may be at risk for occupational pH1N1"

"The total number of infected HCP is likely underreported"
Only 20% reported using mask during all encounters

http://www.who.int/csr/resources/publications/cp150_2009_1612_ipc_interim_guidance_h1n1.pdf

World Health Organization

Infection prevention and control during health care for confirmed, probable, or suspected cases of pandemic (H1N1) 2009 virus infection and influenza-like illnesses

Updated guidance

16 December 2009

I. Background

Since the first recorded cases in April 2009, the pandemic influenza A (H1N1) 2009 virus has spread rapidly across the globe resulting in sustained community transmission worldwide. Health-care facilities continue to face the challenge of providing care for patients infected with the pandemic virus. In order to minimize transmission during health care, it is crucial that health-care workers (HCWs), other care-givers, including attendants, patients, and visitors, follow appropriate infection prevention and control (IPC) precautions. Although some of these precautions are generic and should be followed by everyone, the nature of work performed by

This guidance replaces guidance documents issued on 29th April and 25th June 2009 and remains **valid until 30th June 2010,**

Reporting of pH1N1 cases among HKHA staff

Mandatory reporting within HA for all staff –
mid June to end of August – all staff

Testing is provided without charge at staff clinics

Testing done by RT – PCR and viral culture

Survey by ICN on all staff reported – demographic information
clinical presentation
nature of exposure

Comparison of Non-clinical and Clinical Staff Infected by pH1N1

	Non-clinical	Clinical	Statistical significance (p)
Total number of staff (n)	18759	40511	
Number infected			
A. During mandatory reporting for all staff	119 (0.63%)	249 (0.62%)	0.82 RR: 0.98 (95% CI 0.78-1.2)
B. Data during the entire pandemic period	NA	1039 (2.6%)	

HK – 3.6% for same age group
(Cowling et al – accepted CID)

Exposures to pH1N1 in the community

Contact history with confirmed case in community	Non-clinical (n=119)	Clinical (n=1039)	p
Family	16 (12.6%)	178 (17.1%)	0.74
Friend	8 (6.7%)	35 (3.4%)	0.11
Others - Public transportation	0	2 (0.2%)*	-
No perceived community contact	96 (80.7%)	824 (79.3%)	0.82

* 2 cases of ILIs – not confirmed case

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Exposures to pH1N1 in the hospital		Non-clinical (n=119)	Clinical (n = 1039)	p
Unprotected exposure to confirmed case in healthcare facility	Colleague	10 (7.6%)	93 (8.4%)	0.97
	Patient	0	9 (0.87%)	0.6
Protected exposure to patients		0	52 (5.1%)	
Infection perceived as due to patient care		0	26 (2.5%)	0.12

The greatest risk in the health care setting in Hong Kong is non-protected exposures to an unknown infected colleagues – but it should be the same all over the city

Available online at www.sciencedirect.com
Journal of Hospital Infection
journal homepage: www.elsevierhealth.com/journals/jhin

Seroprevalence of antibody to pandemic influenza A (H1N1) 2009 among healthcare workers after the first wave in Hong Kong

Y. Zhou [a], D.M.W. Ng [a], W.-H. Seto [b], D.K.M. Ip [a], H.K.H. Kwok [b], E.S.K. Ma [c], S. Ng [a], L.L.H. Lau [a], J.T. Wu [a], J.S.M. Peiris [c,d], B.J. Cowling [a,*]

85% not vaccinated Feb – March 2010	Non-clinical	Clinical	p
Total cases (n)	147	439	
Positive serology titre ≥ 1:40 (Viral microneutralization)	20 (14%)	54 (12%)	0.79

"There was no statistically significant difference between HCWs and community population in March 2010 in the proportion with antibody titer ≥1:40"

Hand Hygiene compliance – Feb 2010

Jobs Category	Total no		% compliance
	Complied	Observed	
Nurse	13579	19056	71.3%
Doctor	2322	4378	53.0%
HCA & supporting	6248	9127	68.5%
Others	2328	3399	68.5%
Total	24477	35690	68.8%*

*Range : 30-96% by hospitals

"Infection control guidelines for the pandemic were issued very early on 29 April 2009 stipulating droplet precautions as recommended by the World Health Organization. Educational sessions conducted organization-wide have more than 39,000 staff in attendance."

Seto et al, CID♪

The routine use of PPE when on duty

Routine PPE when on duty	Non-clinical	Clinical
Surgical mask	70 (59%)	999 (96.2%)
N95	0	1 (0.1%)
Face shield	1 (0.8%)	30 (2.9%)
Eye shield	0	3 (0.3%)
Gloves	1 (0.8%)	1 (0.1%)
Gown	0	2 (0.2%)

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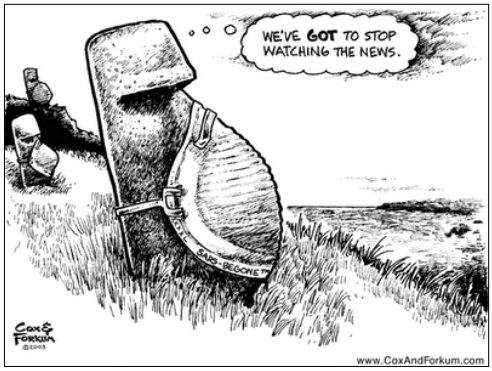
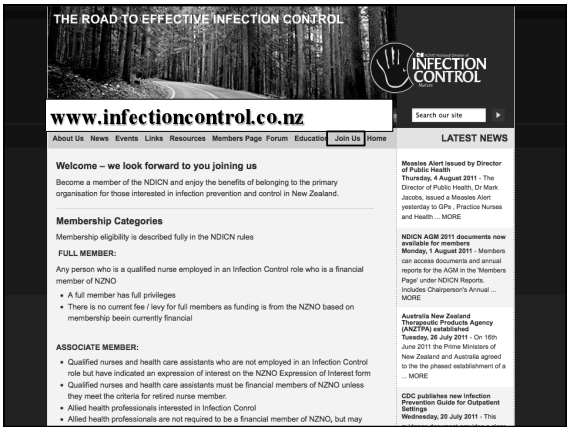


Thank You



COMING SOON …

31 August 11	(Free WHO Teleclass) **Latest Update on *Clostridium difficile* Control** Speaker: Dr. Andreas Widmer, University Hospital of Basel, Switzerland Sponsor: World Health Organization First Global Patient Safety Challenge: Clean Care is Safer Care (www.who.int/gpsc/en)
07 September 11	(Free WHO Teleclass) **Highlights and Results from May 5, 2011 Initiatives Around the World** Speaker: Claire Kilpatrick and Benedetta Allegranzi, WHO Patient Safety Challenge Sponsor: World Health Organization First Global Patient Safety Challenge: Clean Care is Safer Care (www.who.int/gpsc/en)
08 September 11	**Practical Aspects of Hospital Infection Control for Influenza** Speaker: Dr. Fidelma Fitzpatrick, HPSC and Beaumont Hospital, Ireland
19 September 11	(Free British Teleclass, Broadcast Live from the Infection Prevention Society Conference – www.ips.uk.net) **Stronger Together** Speaker: Anne Bialachowski, Past President, CHICA-Canada Sponsored by: GOJO Industries – Europe Ltd (www.gojo.com)

www.webbertraining.com/schedulep1.php

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