


Practical Issues in Infection Prevention During a Pandemic

Dr. Fidelma Fitzpatrick, HSE-Health Protection Surveillance Centre, Dublin
A Webber Training Teleclass




Practical Issues in Infection Prevention During a Pandemic

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Hosted by Martin Kiernan
Southport and Ormskirk Hospital NHS Trust

www.webbertraining.com September 8, 2011

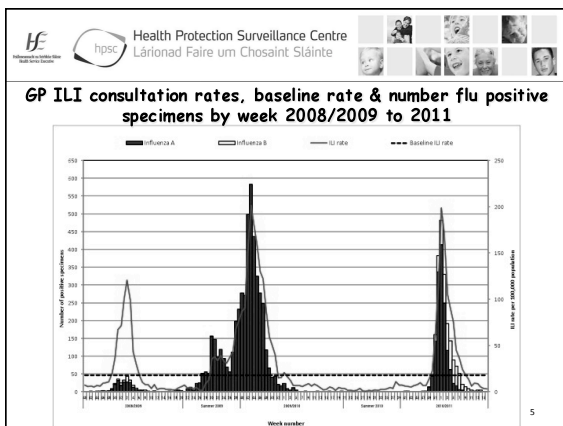
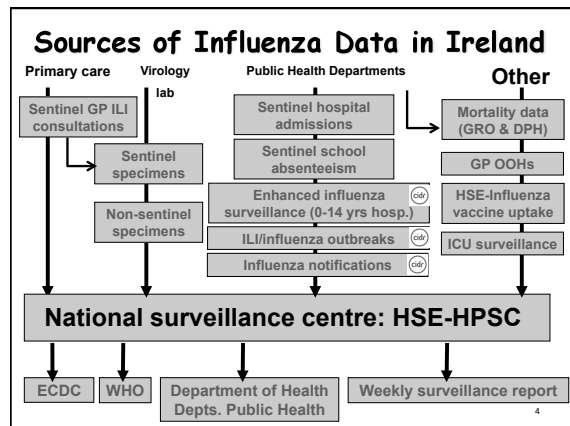
Republic of Ireland



- 4.2 million population (2006 census)
 - 1.3 million 25-45 years
 - 3.6 million Roman catholic
- Languages : English and Irish
- EU member

Healthcare In Ireland

- Mixed public (HSE) and private system
- Health Services Executive (HSE) run public healthcare
- 51 public hospitals
- External regulator = Health Information and Quality Authority (HIQA) produces standards and inspects healthcare facilities against them



Introduction

- Focus on healthcare settings – specifically hospital issues
- Hierarchy of risk controls
 - Review recent evidence: staff vaccination, influenza transmission, PPE
- Thoughts for the future

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Disclosures

- No commercial disclosure
- 2 hats!
 - Consultant microbiologist in Irish hospital:
A tertiary referral centre (Beaumont Hospital, Dublin)
 - National remit:
Prevention of healthcare-associated infection....co-opted onto Department of Health (RoI) Influenza Expert Group

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PRACTICAL ISSUE NO 1.....COPING!

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PANDEMIC

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PANDEMIC

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Practical aspects?

- Influenza = primarily community infection but impacts on healthcare settings
- Aim of infection prevention = prevent cross infection (staff and patients)
- Infection prevention has to cope in the real world:
 - patients don't come with clear cut presentations
 - compliance with infection control measures by staff never 100%!

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'Coping' with a new virus

- Lots of unknowns and panics – especially early on...
- What is the specific virus?
 - How is it transmitted?
 - Delay in diagnosis
 - Little, if any, native immunity
 - Vaccine not available immediately
 - Mortality??high.
 - Nearly everything will be in short supply feed by lots of panic, rumors etc
 - Infection control supplies (alcohol hand rubs, masks)
 - Anti-virals etc
 - Staff

Hospital does not stop admitting non-flu patients
= demands ++ on infection control resources

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Need 2 types of approaches

1. Early on when don't know much
2. Adapt as evidence/experience emerges

- How to get clear message out to everybody??
- Documentation overload!!
- Burnout

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**THIS APPROACH ALSO HELPS
OUTSIDE OF A PANDEMIC!**


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**PRACTICAL ISSUE NO 2..... IT IS NOT
ALL ABOUT MASKS!**

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Hierarchy of Risk Controls


- 1.Elimination**
- 2.Substitution**
- 3.Isolation / Engineering Controls**
- 4.Administrative Controls**
- 5.Personal Protective Equipment (PPE)**



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1. Elimination

= the most powerful control

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How to 'Eliminate' exposures?

Patients with influenza-like illness (ILI)

- Telephone help lines
- Minimise outpatient visits (if low risk for complications)
- Postpone elective visits/procedures

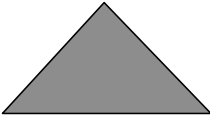
Visitor Management

- Don't visit a healthcare facility
- Limit visitors for patients in isolation
- Limit visitor movement (don't wander around!)
- Ensure visitors are not present during aerosol generating procedures

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Hierarchy of Risk Controls

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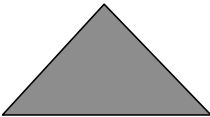
2. Substitution

-usually not an option.

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Hierarchy of Risk Controls

- 1.Elimination**
- 2.Substitution**
- 3.Isolation / Engineering Controls**
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- 5.Personal Protective Equipment (PPE)**



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3. Isolation/Engineering Controls

- **Isolation** = protection of others
 - patients with suspected or confirmed Influenza should be isolated in a single room
 -or cohorted.

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PRACTICAL ISSUE NO 3..... EASIER SAID THAN DONE

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- Clinical signs/symptoms nonspecific
- Delay in diagnosis (In my hospital – virology off site)
- Non-flu patients that need isolation

Need clear policies and procedures (24/7)

- ED, GP, Wards etc.
- Documented risk assessments
- Communication ++
- Document control (avoid too many versions of same document), easily accessible

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Engineering controls

- **Physical Barriers in Emergency Department**
Reduce or eliminate exposures by shielding staff and other patients from potentially infected patients:
 - physical barriers such as partitions
 - curtains drawn between patients in shared areas
- **Reduce exposures related to specific procedures**
e.g., closed suctioning systems for airways suction in ventilated patients
- **Air-handling systems**

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Hierarchy of Risk Controls

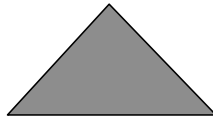
1. Elimination

2. Substitution

3. Isolation / Engineering Controls

4. Administrative Controls

5. Personal Protective Equipment (PPE)



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4. Administrative Controls

- **Consistent implementation**
- **Hospital management, staff & patients**
Standard and Transmission- based Precautions
 - HAND HYGIENE
 - Respiratory Hygiene
 - Cough Etiquette
 - Enforcing exclusion of ill HCW
 - Vaccination

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- **Let (symptomatic) patients know what to do when they arrive**

- Let staff know if ILI
- Where to sit
- When to use a facemask and hand hygiene

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Flu/Influenza

Please inform a member of staff immediately:

If you think you have a high temperature and any of the following:

- Cough
- Sore throat
- Headache
- Runny nose
- General body aches or pains
- Diarrhoea and vomiting



Further information: www.hse.ie or www.hpsc.ie

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- **Education on ILI, respiratory and hand hygiene**
 - Visual alerts *in appropriate languages*: on entry and in strategic places (waiting areas, coffee shop, etc)
 - Need to change frequently to avoid blending into background!
 - Respiratory and cough etiquette: How to use (facemasks or tissues when coughing or sneezing) + how to dispose
 - Hand hygiene: How and when to do

Follow these 3 steps and help stop the flu from spreading!

Symptoms include:

- Heavy nose
- Coughs
- Sore throat
- Headaches and body aches

 Further information is available at:

- www.hse.ie
- www.doh.gov.ie

 The HSE Helpline: Freephone 1800 04 11 00

Seasonal influenza (S10-S11) 09 January 2011

Frequently asked questions: Influenza (flu) information for patients

What are the symptoms of influenza?
The symptoms of flu include:

- Temperature over 37.5°C (101.5°F) that keeps returning and some of the following:
 - Sore throat
 - Runny nose
 - Head aches and pain
 - Body aches and fatigue
 - Hoarse voice and/or cough
 - Tiredness (not just being tired)

What are the differences between influenza and the common cold?
A flu is more severe than a cold. The symptoms of influenza come on rapidly and can be accompanied by severe aches and pains. The symptoms last for a week or more and are accompanied by a high fever and sweating. For a list of differences between influenza and the common cold, please see the table below.

- **Make sure enough supplies**
 - Facemasks
 - Hand hygiene products and/or sinks
 - upon arrival (e.g., at entrances, waiting rooms, at patient check-in)
 - In ED, radiology, phlebotomy etc
- **Need method to identify symptomatic patients**
 - At registration: inquire re ILI, and if present, provide instructions of what to do
 - Triage : rapid screening of patients for ILI and separation from other patients.

- **Infrastructure:**
 - Enough space (?)
 - Patients with ILI to sit as far away from others as possible.... separate waiting area (not always practical)

- ### What about ill healthcare workers?
- Clear policies and good communication
 - Infection control, occupational health, management, staff
 - Don't come in
 - If in:
 - stop patient-care activities, don a facemask, and promptly notify supervisor and infection control / occupational health before leaving work.

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- Need to convince healthcare workers that they are protecting patients better by not coming in!

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PRACTICAL ISSUE NO 4..... WHEN VACCINE BECOMES AVAILABLE HOW TO GET STAFF TO TAKE IT

.....NEVER MIND THE LOGISTICS!

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Vaccination

- In pandemic availability delayed – know from seasonal flu uptake in HCW poor
- Why so poor when we know we should?
 - HCW=higher risk for acquiring influenza
 - HCW can get flu in the community (no PPE!)
 - Critical HCW don't go off sick to keep show on road
 - **Poor response to vaccine in many patients = importance of staff**
 - Asymptomatic infection common – up to 66% of all cases

Loeb JAMA 2009; 302:1885-1871 Williams CJ: BMC Infect Dis 2010; 10.8 39

So why so poor?

- Lack of knowledge 'can get flu from the vaccine'
- Safety concerns
- Belief that low risk for getting flu/complications
- Inconvenient to get the vaccine
- Doubts regarding vaccine efficacy
- Belief that will not help protect patients
- Misinformation re risk of asymptomatic infection to patients
- *Conversely increased patient contact, belief of being at high risk of infection, concerns re transmitting flu to patients = willingness to get vaccinated*

Carlson A. Curr opin Infect Dis 2010;23:293-299 40

The screenshot shows the HSE website header with navigation tabs for 'About HSPSC', 'Topics A-Z', 'Notifiable Diseases', 'CIDR', 'Publications', 'EPI Insight', and 'Press'. The main content area is titled 'Influenza Vaccine for Health Care Workers: Common Myths' and lists three myths with corresponding facts. Myth 1: 'The flu vaccine can give me the flu'. Fact: Influenza vaccine only contains dead virus and cannot give you influenza. Myth 2: 'The flu vaccine does not work'. Fact: For most influenza seasons the vaccine provides good protection for 70-90% of people who get it. Myth 3: 'Side effects from the vaccine are worse than getting the flu'. Fact: Most people do not get any side effects from the vaccine. Side effects, when they do occur, are usually minor and only last for one or two days, unlike influenza where symptoms are often severe and can last up to seven days.

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So what can be done?

- Electronic database to keep track
- Education
- Local 'champions'
- Marketing campaigns
- Incentives –raffles /chocolate!!
- Screen savers with local 'champions'
- Providing vaccines on the wards/units
- Declination statements
- Make it mandatory

Talbot TR. Clin Infect Dis 2009;49:773-779
Babcock HM. Clin Infect Dis 2010;50:459-464
Rakita Infect Control Hosp Epidemiol 2010;31:881-888 42

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Declination statement?

- Those who refuse vaccination
- Understand the rationale for vaccine and the risks involved with refusal
- Data on efficacy mixed – generates paperwork
- Many exemption requests reflected misinformation (e.g., cited chemotherapy or immunosuppression as reason not to get it)
- One US study – mandatory vaccination - fewer HCW sought exemptions than had signed declination statements the previous year

Talbot T, Clin Infect Dis 2009; 49:773-9
Babcock H, Clin Infect Dis 2010;50:459-64 43

The case for mandatory vaccination -1?

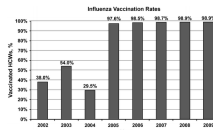
HCW autonomy V patient safety

- US healthcare group (11 hospitals, 3 LTCF, day care etc)
Reasonable baseline (previous year 71%)
- Flu vaccine mandatory (condition of employment + patient safety initiative)
 - 98% (n=25,980)vaccination rate .
 - Exemptions = religious (0.3%) or medical (1.2%)
- Pregnancy was permitted as an exemption!*
- Employees not vaccinated/exempted by particular date – employment terminated (n=8)!

Babcock H, Clin Infect Dis 2010;50:459-64 44

The case for mandatory vaccination -2?

- 5 year US study of mandatory vaccination of all HCW
- <0.7% exempted (religious/medical) + required to wear mask when patient contact



- Also had
 - Good infrastructure (IT, storage, staff)
 - Involved ethicist from start
 - Strong leadership + 'champions'
 - Lots of education (meetings, e learning, one-to-one)
 - Parties (local football team), quizzes, prizes
 - Mobile carts, peer vaccinators, extended OH hours – free coffee

Rakita R. ICHE 2010; 31(9) 881-888 45

- Unionized employees (inpatient nurses) filed a grievance - any new requirement had to be negotiated as part of their collective bargaining agreement.
 - Arbitrator found in their favor - decision upheld on appeal.
 - Inpatient nurses who belong to the union not required to be vaccinated.
 - **Despite this 85.9% vaccinated in 2005–2006 ...95.8% in 2009–2010**

Rakita R. ICHE 2010; 31(9) 881-888 46

So what works?

- Misconceptions + lack of knowledge = persistent barriers but education alone does not work
- Successful programmes = multiple tools
 - Leadership
 - Infrastructure (clear and timely communication, education, program implementation)
 - Incentives
 - Accountability
- ? Pick a target (90%) and if nothing else works make it mandatory.....??

Pavia A, Clin Infect Dis 2010;50:465-467 47

2010 SHEA Position Statement

- Universal staff vaccination = cornerstone to a comprehensive national effort to prevent the spread of influenza
- Support staff influenza vaccination as a condition of employment, unpaid service, and/or receipt of professional privileges and support declination of influenza vaccination only if medically contraindicated.

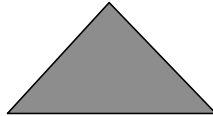
Revised SHEA Position Paper: Influenza Vaccination of Healthcare Personnel • Infection Control and Hospital Epidemiology Vol. 31, No. 10 (October 2010), pp. 987-995 48

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Hierarchy of Risk Controls

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5. Personal Protective Equipment (PPE)



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5. Personal protective equipment

- The 'last resort' since it is only as effective as the training, supervision and compliance with which it is used!
- Level of protection chosen should be appropriate to the hazard and informed by risk assessment.

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....this is the bit everybody gets hung up about.....

- Mode of transmission will influence this and talk about masks usually dominates!
 1. Contact (direct and indirect)
 2. Droplet
 3. Airborne

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....this is the bit everybody gets hung up about.....

- Mode of transmission will influence this and talk about masks usually dominates!
 1. Contact (direct and indirect)
 2. Droplet

Airborne

Role of airborne transmission in the spread of influenza has generated much debate

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1. ?Need for Contact Precautions

- Can survive on surfaces
 - 24-48 hours: hard, nonporous surfaces (stainless steel and plastic)
 - less than 8-12 hours: cloth, paper, and tissues
- Transferred from surfaces to hands (stainless steel 24 hr /tissues up to 15 min)
- Survives on hands for up to 5 min after transfer from environmental surfaces.

Bean B *et al.* Survival of influenza viruses on environmental surfaces. J Infect Dis 1982;146:47-51

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- Transmission *is* possible via contact - self inoculation

....does Hand Hygiene not address this?

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Pandemic H1N1 2009

- ‘Gastrointestinal symptoms (including nausea, vomiting, and diarrhoea) occur more commonly than in seasonal influenza, especially in adults’

Rol: Included contact precautions....

N Engl J Med 2010; 362:1708-1719

Droplet or Airborne?

The line between them is blurred.....
Frequently a mixture of the 2.....

<h3>2. Droplet</h3> <ul style="list-style-type: none"> • Large - cannot reach lower airways - do not stay suspended in air to travel distances • Propelled a short distance • Come into contact with conjunctiva or mucous membranes 	<h3>3. Airborne</h3> <ul style="list-style-type: none"> • Production of smaller infectious “droplet nuclei” • Can remain suspended in air and travel over distance • Can maintain infectivity over longer distances and can reach lower airways
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PRACTICAL ISSUE NO 5: MASKS OR RESPIRATORS?

Facemask or Respirator?

Facemask

- Loose-fitting, disposable device
- Designed to trap respiratory secretions expelled by the wearer and prevent disease transmission to others
- Block large-particle droplets, splashes, sprays or splatter
- Not designed to prevent inhalation of airborne particles....ability to protect staff from disease acquisition varies.

Facemask or Respirator?

<h3>Facemask</h3> <ul style="list-style-type: none"> • Loose-fitting, disposable device • Designed to trap respiratory secretions expelled by the wearer and prevent disease transmission to others • Block large-particle droplets, splashes, sprays or splatter • Not designed to prevent inhalation of airborne particles....ability to protect staff from disease acquisition varies. 	<h3>Respirator</h3> <ul style="list-style-type: none"> • Designed to reduce exposure to airborne contaminants- efficient filtration of airborne particles • Still blocks splashes, sprays and large droplets • Designed to achieve a very close facial fit • Can be difficult to tolerate – more expensive
---	---

RESPIRATORS ONLY PROVIDE HIGH LEVELS OF PROTECTION AGAINST AIRBORNE PARTICLES IF THEY ARE PROPERLY FITTED TO THE FACE TO PROVIDE A TIGHT SEAL

- Choice of respirator has to be guided by rigorous fit, not comfort or price
- Programme of fit testing
 - Australian fit testing programme (n-6160 HCW)
 - Quant respirator fit tester (TSI Portacount) + temp employed nurses as fit testers
 - Facial characteristics (width of nose bridge) important in fit testing
 - Training and experience of fit tester = NNB
- Ensure staff know how to fit check

Vera McCullough N. Infect Control Hosp Epidemiol 1999;20:136-144
Wilkinson J. Infect Control Hosp Epidemiol 2010;31:916-925

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1102010 Version 1.7
Personal Protective Equipment (PPE)
 Adapted for Pandemic (H1N1) 2009 and Seasonal Influenza

Correct sequence for putting on and removing PPE to prevent contamination of the face, mucous membranes and clothing.

Putting on PPE

1. Decontaminate hands
2. Put on disposable apron/gown
3. Put on mask (Surgical or FFP2 or FFP3)

For FFP2 or FFP3 masks

Fit Check

- A. Place mask over nose, mouth and chin
- B. Fit Reseal nose piece over nose bridge
- C. Secure on head with elastic
- D. Adjust to fit
- E. Inhale - mask should collapse
- F. Exhale - check for leakage around face

4. Put on goggles if required

5. Put on gloves

Removing PPE

1. Remove gloves (avoid touching the outside of the gloves)
2. Decontaminate hands
3. Remove goggles
4. Remove gown or apron (avoid touching the front of the gown/apron)
5. Remove mask by breaking the ties. If ties are elastic grasp and lift ties from behind your head and pull off mask away from your face. Avoid touching the front of the mask & use ties to discard
6. Discard all masks (& gloves/aprons/gowns/goggles contaminated with blood or body fluids) as healthcare risk waste
7. Decontaminate your hands

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SO WHAT IS THE EVIDENCE?

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Droplet? – thought to be predominant mode of transmission

1. **Active surveillance**
Lack of time-space clusters of cases of nosocomial flu over 15 years with use of droplet precautions and private, but not negative pressure rooms
2. **Plane (US-Hong Kong)**
 - tourist (completed flight US-Hong Kong) became symptomatic on plane and then spent 3 days on tour bus with ~ 30 others
 - 9 secondary cases = 8 tour group members + 1 airplane passenger
 - All cases within 2 rows of index case and a secondary case
 - All infected tour members talked to case patient (Increased risk with increased duration of conversation)
 - No cases in tour members who had not talked to index case + No other airline cases
3. **Plane (Mexico –New Zealand)**
 - 9 students with symptoms on the flight
 - only 2 other passengers, both seated within 2 rows of infected passengers developed H1N1 after the flight

Lancet Infect Dis 2002;2:145-55, Han et al. EID, Oct 2009, Baker et al. BMJ 2010; 340: c2424

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The virus can survive as an aerosol...

- **The virus can survive in air and humidity appears to have a role**
 - up to 24 (low humidity) and for up to 60 min (higher humidity)
- **Different strains have different survival characteristics**
 - the rate of decay of aerosolised virus is higher in human and swine strains than in avian strains
- **Animal studies ? Aerosol transmission**
 - Infected ferrets transmit to other ferrets in a separate cage connected by a tube with directional airflow (similar study in mice in different cages)
 - Long range transmission between cages 80-107cm apart (seasonal flu – guinea pigs)
 - PH1N1
 - Transmission of pH1N1 equally effective between guinea pigs in adjacent cages without contact as those in same cage (but did not look specifically droplet V airborne)...also ferrets

Lancet Infect Dis 2007 J Infect Dis 2009;199:858-865 J Virol 2010;84:21-26
 Science 2009;325(5939):481-483. Science 2009;325(5939):484-487.

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Airborne?

- ?? Data from planes
 - H3N2 symptomatic passenger sitting near lavatory.
 - Plane delayed for 4.5 hours and ventilation is off for 2-3 hours.
 - 72% of the 49 passengers and 5 crew developed flu-like illness within 72 hours of the flight.
 - 91% tested positive

J Infect Dis. 1986;154(4):709-711. Proc Soc Exp Biol Med. 1943;53:205-206. Am J Epidemiol 1979;110:1-6

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Any evidence about masks?

- **Observational study - No increase in acquisition of pH1N1 by HCW using surgical masks V N95 in Singapore hospital**

MacIntyre CR. Emerg Infect Dis 2009; 15: 233-241 Ang B. Clin Infect Dis 2010;50:1011-1014

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Any evidence about masks - 2?

- Multicentre randomised trial
- Surgical mask V N95 respirator
- Protection of health care workers V influenza during 2008-2009 season in 8 tertiary care hospitals
- Participants = 446 nurses caring patients with febrile respiratory illness while working in ED or inpatient medical or pediatric units.
 - instructed to use mask or N95 when caring for patients with febrile respiratory illness
 - Glove and gown use required for all such encounters
 - No change in respiratory protection for aerosol-generating procedures

Loeb M et al. *JAMA*. 2009; 302(17):1865-1871.

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- Follow-up (Jan-April 2009)
 - twice-weekly assessment for signs /symptoms,
 - laboratory testing of nasal specimens from participants with ILI
- Comparable:
 - Influenza-vaccination status between the nurses using surgical masks and those using N95 respirators (30.2% and 28.1%)
 - Rates of exposure to spouses/roommates (22.4% and 25.9%) or children (22.6% and 20.5%) with ILI.

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Results

- The incidence of laboratory-confirmed influenza was similar between groups (23.6% and 22.9%).
- No significant between-group differences were noted in the incidence of ILI or infections with respiratory viruses

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Conclusions

- Surgical masks appeared to be no worse than N95 respirators in preventing influenza. The fact that attack rates were similar may suggest that small aerosols did not dominate transmission.

“In routine health care settings, particularly where the availability of N95 respirators is limited, surgical masks appear to be non-inferior to N95 respirators for protecting health care workers against influenza.”

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Physical Interventions & Spread of Respiratory Viruses

- Respiratory virus spread = prevented by hygienic measures, such as hand washing, especially around younger children.
- Implementing barriers to transmission, isolation, and hygienic measures are effective at containing respiratory virus epidemics.
- Limited evidence that N95 respirators superior to simple surgical masks, but were more expensive, uncomfortable, and caused skin irritation.

Physician interventions to interrupt or reduce the spread of respiratory viruses.
Jefferson T, et al. *Cochrane Database Syst Rev*. 2011 Jul 6;(7):CD006207

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...Conclusion

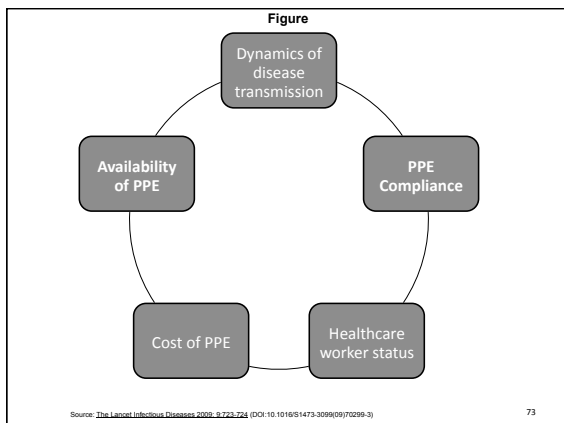
- ‘ Many simple and probably low-cost interventions would be useful for reducing the transmission of epidemic respiratory viruses.
- Routine long-term implementation of some of the measures assessed might be difficult without the threat of a looming epidemic. ‘

Physician interventions to interrupt or reduce the spread of respiratory viruses.
Jefferson T, et al. *Cochrane Database Syst Rev*. 2011 Jul 6;(7):CD006207

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'What is missing in some of the debate about the respiratory protection of health-care workers is the **importance of source control**.

- Placing a surgical mask on a coughing patient infected with influenza stops the detection of the virus 20 cm away.
- As with TB, masking the infected patient, when tolerated, should be the foundation of infection control.

Finally, health-care workers can wear powered air purifying respirators, eye protection, gowns, and gloves when exposed to patients with influenza, but even if they properly remove their protective equipment, they can become infected from colleagues who work with influenza-like symptoms'

Source: *The Lancet Infectious Diseases* 2009; 9:723-724 (DOI:10.1016/S1473-3099(09)70299-3) 74

PRACTICAL ISSUE NO 6: SUPPLIES

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Supplies (or lack of them)

- SHEA member survey
 - 26% had difficulty obtaining N95
 - 5% difficulty obtaining surgical masks
 - 2.5% difficulty obtaining alcohol hand rub

Lautenbach E. *Clin Infect Dis* 2010; 50:523-7

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- Canada: Impact of H1N1 on facial protective equipment use and hospital employee absenteeism in 3 hospitals, June – Dec 2009
 - 865 patients admitted patients with ILI : 149 (17.2%) had laboratory-confirmed H1N1 influenza infection.
- 1. Facial protective equipment use doubled**
 - 134,281 masks and 173,145 N95
 - = double the weekly use of both items, compared with the previous influenza season.
 - = A significant proportion used while managing suspected cases.
 - 2. Use of disposable eyewear doubled.**
 - 3. Absenteeism mirrored the community epidemiologic curve, with a 260% increase in sick calls at the epidemic peak, compared with the nadir.**

CONCLUSION:

Planners should prepare for at least a doubling in mask and respirator use, and a 3.6-fold increase in staff sick calls.

Infect Control Hosp Epidemiol. 2010 Dec 31;110(10):1011-6.
Facial protective equipment, personnel, and pandemic: impact of the pandemic (H1N1) 2009 virus on personnel and use of facial protective equipment 77

PRACTICAL ISSUE NO 7: WHAT DO YOU DO WHEN GUIDELINES DIFFER?

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Practical Issues in Infection Prevention During a Pandemic

Dr. Fidelma Fitzpatrick, HSE-Health Protection Surveillance Centre, Dublin
A Webber Training Teleclass

What do you do when international guidelines differ???

	CDC	WHO, HICPAC
Aerosol generating procedures	N95 Gowns Goggles	N95 Gowns Goggles
Routine clinical procedures	N95 Gowns Goggles	Surgical mask

In September 2009, the Institute of Medicine supported the use of N95 respirators during the care of patients infected with H1N1 influenza, *although this group was instructed not to consider the available supply or comfort of N95 respirators in their decision.*

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The 'retrospective-scope' is easy

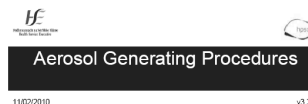
- CDC guidelines, Sept 2010:
 - 'multi-faceted approach':
 - clear administrative policies and organisational leadership
 - *influenza vaccine*
 - *respiratory hygiene and cough etiquette*
 - *appropriate management of ill HCW*
 - *Droplet except for aerosol-generating procedures*
 - *environmental and engineering infection control measures*
- 'The mechanisms of person-to-person transmission of the 2009 H1N1 virus appear to be similar to those of seasonal influenza, but the relative contributions of small-particle aerosols, large droplets, and fomites are uncertain'
 - N Engl J Med 2010; 362:1708-1719

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So what did we do?

- FFP2/3 initially – WHO guidance then = Droplet precautions *except* for aerosol generating procedures
- Lots of Issues
 - Supplies + quality of facemasks
 - Training, education re respirators
 - Too much focus on masks
 - Lots of documentation

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Definition
Aerosol-generating procedures (AGP) are procedures that stimulate coughing and promote the generation of aerosols.⁽¹⁾

Infection Prevention and Control for AGPs

1. Adhere to Standard, Droplet and Contact precautions
2. Place patient in a well ventilated single room (e.g. mechanical ventilated with 6-12 air changes per hour or naturally ventilated room).⁽²⁾
3. To avoid unnecessary exposures, only those healthcare workers or caregivers needed to perform the procedure should be present in the room at the time the AGP is being carried out.
4. In the healthcare setting the following PPE should be worn by all staff during an AGP and by those remaining in or entering the patients' room within one hour of cessation of the procedure.
 - a. Long sleeved gowns
 - b. FFP2 or FFP3 respirator masks
 - c. Eye protection (e.g. goggles)
 - d. Gloves (sterile gloves may be required for some procedures)

Refer to donning and removal of PPE document

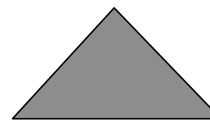
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SUMMARY

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Hierarchy of Risk Controls

- 1. Elimination**
- 2. Substitution**
- 3. Isolation / Engineering Controls**
- 4. Administrative Controls**
- 5. Personal Protective Equipment (PPE)**



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Summary - ?practical points

1. Its not all about masks - PPE should be considered the 'last line of defence' in a hierarchy of infection control measures

- A single JAMA study will not end the debate over influenza respiratory protection for HCW
- Focusing on masks distracted attention from the critical importance of implementing other strategies known to prevent the transmission of influenza in health care settings.

2. Speaking of masks..need to prioritise use

- Supply issues
- Delays in diagnosis
- HCW education
- Fit testing/checking so staff wear them correctly

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3. Need to make sure enough respirators remain available for situations where respiratory protection is most important:

- Aerosol-generating procedures on patients with suspected or confirmed influenza
- Patients with other diseases e.g.,TB.

4. Education = NNB in terms of Standard Precautions and appropriate PPE (audits of PPE /hand hygiene)

5. How to improve

- HCW vaccine uptake, hand hygiene, communication, document control...burnout!!

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Lessons for the future – SHEA members survey

- 50.9% - other important infection prevention activities neglected
- Shortages: antivirals (30.7%), N95 (26%)
- 39% reported personal stockpiling of antivirals + 51% actions taken in hospitals to prevent this
- 77.7% agree with mandatory flu vaccine
- Vaccine development, health care worker education, and revisions of pandemic influenza plans were identified as the most important future initiatives.

Lautenbach E. Clin Infect Dis 2010; 50:523-7

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COMING SOON ...

- | | |
|-----------------|--|
| 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) |
| 21 September 11 | (Free British Teleclass, Broadcast Live from the Infection Prevention Society Conference – www.ips.uk.net)
Current and Emerging Global Issues
Speaker: Sir Liam Donaldson, World Health Organization Patient Safety
Sponsored by: GOJO Industries – Europe Ltd (www.gojo.com) |
| 27 September 11 | (Free Teleclass) Voices of CHICA, Part 2
Speaker: Community and Hospital Infection Control Association Board and Guests |
| 29 September 11 | Nosocomial Transmission of Influenza and Healthcare Worker Vaccination
Speaker: Dr. Helena Maltezou, Hellenic Center for Disease Control and Prevention, Greece |
| 04 October 11 | (Free WHO Teleclass) MRSA – Is Search & Destroy the Way to Go?
Speaker: Prof. Andreas Voss, Nijmegen University Medical Center, Netherlands |

www.webbertraining.com/schedule1.php