


Infection Prevention and Control A Foundation Course

2014

A TRADITION OF INDEPENDENT THINKING

UCC
University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

Outbreaks

Who are you going to call?

Practical management Acute Hospital setting

Joanne Crowley RGN, MPH, Dip QM
CNM2 Infection Prevention and Control
Mercy University Hospital, Cork
jncrowley@muh.ie

What is an Outbreak?

- 2 or more linked cases of the same illness/symptoms (cases had common exposure/contact)
- Observed numbers exceed usual expected range (surveillance)
- Single case of diseases from significant pathogen e.g. Legionnella, Viral haemorrhagic fever (e.g. Ebola)

Consider:

- *case numbers*
- *Pathogenicity*
- *Spread potential*

Most Common outbreaks – acute hospitals in Ireland

➢**Gastro-intestinal infections**:

- Viral – e.g. Norovirus (Winter vomiting)
- Bacterial – e.g. Clostridium difficile infection (CDI)

➢**Influenza/ILI**

➢Increased transmission of **antibiotic resistant organisms** e.g. MRSA, VRE, ESBL (Surveillance – quarterly reports/SPCC)
See www.hpsc.ie for weekly outbreak reports

Effects of hospital outbreaks

- **Bed closures** – disruption to services
- **Cancellation** of procedures/surgery
- **Costs** – treatment of affected patients, beds out of use
- **Patient effects:** Increased pain and suffering for patients
- Potential death
- **Visitor restrictions** – psychological effect on patient coupled with isolation
- **Staff shortages** - illness and absenteeism
- **Media –**Adverse attention/misinformation

Why do outbreaks occur?

(Identified from previous outbreak investigations)

- **Lack** of isolation facilities
- **Delays** in isolating patients – waiting for results, delays contacting IPCT
- **Limited knowledge/experience** of staff in dealing with outbreaks and correct use of PPE
- **Environment and equipment** in poor condition – dirty or difficult to clean e.g. cracked, chipped surface
- **Overcrowding** – insufficient space between patient beds ***(HPSC 2009 – IPC Building Guidelines for Acute hospitals)***
- **Lack of management support** – Infection control issues given a low priority
- **Inadequate staff numbers**

= Resource deficits

+Antibiotic Guidelines not always followed
(HPSC 2009 – *Guidelines for Antimicrobial stewardship in hospitals in Ireland*)

Early action essential!

- Outbreaks can start abruptly and spread quickly
- Early recognition and reporting - early control and halt further spread
- HIQA 2009 (PCHCAI) Std 10 – Outbreaks – aim to control in a:
  - **Timely**
  - **Efficient**
  - **Effective manner**

  in order to minimise impact on:

  - **Service users**
  - **Staff**
  - **General public**

  www.hiqa.ie

What needs to be in place?
(Baseline requirements)

- **Policies** - evidence based, up to date
- **Accessible** - to all staff at all times – paper and electronic
- **Contact details** –Infection Prevention and Control Nurse/Team (IPCN/IPCT)
- **Education of all staff** –e.g. hand hygiene and standard precautions, modes of transmission, relevant PPE use – induction and annual
- **Stock of PPE** available
- **Information** -Patient and visitor- leaflets/posters
- **Communication** network in the hospital to alert all promptly when necessary

Key elements for early control of outbreaks

- Early recognition and reporting
- Clear communication with all- Outbreak declared
- Good record keeping
- Appropriate specimens saved
- Prompt isolation/cohorting and treatment of cases – break the chain of infection – eliminate means of spread
- Standard and transmission based precautions
- Exclusion of ill staff – 48 hr rule
- Dedicated cohort of staff
- Minimise movement of staff between affected and unaffected areas
- Management of visiting/restrictions
- Outbreak over – inform all - outbreak review and report

Who should you call – communication cascade

- Notice increase rates/common symptoms among patients?
- Alert ward manager
- Make contact with IPCN – out of hours Senior nurse manager/clinical team on call
- IPCN will visit and collect relevant information
- IPCN will discuss with Consultant Microbiologist
- If outbreak declared or suspected – IPCD informs affected ward and relevant senior management
- Dept of Public Health is informed by either lab or clinical team for certain infections **(see www.hpsc.ie/Notifiable diseases)**
- Control Measures are advised by the Consultant Microbiologist and put in place in affected area and hospital in general

Ward staff – required information to inform decision making

- **Look at the big picture** :

what was patient admitted with?

is there a reason for symptoms e.g. patient on laxatives/underlying condition?

Seek advice early!!

- **Good record keeping essential!:**
  - ➢No. and location (bed/room no) of affected patient- census list v useful if have IPMS
  - ➢Accurate stool and fluid balance chart – record all episodes
  - ➢Ensure first and all episodes/times are recorded – relevant in calculating when patient can come out of isolation

PROMPT DECISIONS CAN BE MADE WITH ACCURATE INFORMATION

Communication

- **Outbreak declared** – by Consultant Microbiologist/Senior Clinician
- Advises on measures to put in place – possible OCT meeting convened
- IPCN liaises with key person on ward – re measures to put in place, case definition and case record sheet
- Affected Patients – team to inform them
- Hospital senior management and all depts must be promptly informed – IPCT – e mail and phone
- Notices posted at reception/ward entrance - IPCN
- Press office/ senior management spokesperson gives info to media only – no info over the phone- may be press

Sample Outbreak record sheet for ward

Outbreak Record Form

- Please complete during outbreak **daily** and when new cases occur

Name RID	Ward Room/ Bed No	Staff or Patient	Date of 1st symptoms/ Symptoms	Date symptoms stopped	Specimen sent – date	Lab result /date

Visitor restrictions: problems!!

- Ensure reception/switch aware /may need security assistance –IPCN
- Signage on ward doors – **keep doors closed**
- Next of kin/essential visits only in affected area
- **No children** should visit during outbreak
- Visitors with history of symptoms in past 2-3 days should not visit (notices)
- Single ward closed - ward staff may have to ring NOK to inform of restricted visiting due to outbreak
- Hospital closed –hospital press office informs media – radio/news announcements made
- Always involves repetition – where visitors insist on visit despite advice – own responsibility/document

Specimens

- **Do not wait for results to isolate/contact IPC**
- Send stools for bacterial culture and virology
- Ring lab for advice if not sure
- Ensure all details are clearly filled on request form + indication for test
- C diff result may be available same day
- Viral – depends on hospital – may only be sent to VRL Dublin on Consultants advice – can take 5-7 days to get results
- Influenza – not done in MUH – 5-7 days delay in results from VRL
- Positive results confirms cases, justifies actions and useful for outbreak review
- Important point: **Treat/isolate based on history of exposure and symptoms**

Admissions, transfers and discharges

- Affected bays/wards – **closed to admissions**
- **No transfers** into or out of affected areas
- **Discharge** –clinical team decision if patient well enough
- Where urgent investigations are required – clinical team decides if test is needed urgently or can be postponed, e.g. CT, PFA
- Is patient symptomatic? - Relevant dept **must** be informed and advised of precautions to take
- Respiratory precautions – patient may wear mask if able while transferring between departments

Prompt isolation/cohort of patients

- **Isolation sign** on door of room or bay
- Door to be kept **closed**
- Appropriate precautions – see below
- **No fans** to be used in ward/room
- **PPE** – available outside door
- Single room isolation – ensuite or dedicated commode
- Ensure bed pan washer/macerator is working correctly
- Essential items in room only – use disposables if possible, minimal stock as all will have to be discarded at end
- Patient charts – keep **outside** room
- Strict **hand hygiene** on removal of PPE
- **Gloves are not a substitute for hand hygiene**
- Waste disposal – risk waste bins
- Linen – alginate bags/red bag- foul infected linen

Transmission based precautions- in addition to Standard precautions

Category of precautions	PPE to use
Contact: **e.g. MRSA, VRE, ESBL, C Diff/ Norovirus**	**Gloves and aprons** **Remove before leaving room/bedside, bin and hand hygiene – isolate until 3 screens neg off antibiotics/no diarrhoea or vomiting for 48 hours**
Airborne: **Open TB, VZV**	**FFP2/FFP3 mask/gloves/apron** **Ensure correct mask fit NB** **Remove mask *outside closed* room door- Perform hand hygiene – isolate until clinical team say**
Droplet: **Influenza, bacterial Meningitis**	**Surgical mask**/gloves/apron **Remove before leaving room, bin and hand hygiene- isolate until clinical team say/ > 24 hrs on antibiotics (meningococcal)**

Cleaning/disinfection points

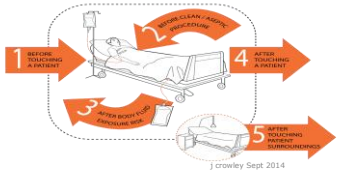
- Immediate cleaning/disinfection of spillages of body fluids/blood
- Appropriate PPE
- Mop up with paper towels – risk waste disposal
- Combined detergent/disinfectant – Chlorine based (1000ppm available chlorine for body fluids/ 10,000 ppm for blood)
- If not - clean with detergent first and then disinfect area-Chlorine based
- Increased cleaning may be needed during outbreaks or where control not achieved – communication with cleaners on advice of IPCT
- Terminal clean – discard all disposables, change curtains, clean/disinfect all equipment and bed space/room before use for other patients – plan/liaise with cleaners – weekends etc

Management of staff

- Signage on door - restrictions
- PPE at ward entrance/bay/room
- Only essential staff to enter
- Minimise movement of staff between affected/unaffected areas- Phlebotomy, physio etc
- Dedicated staff for affected patients if possible
- Cleaning and Catering duties must be done by separate staff
- Ensure cleaning staff are briefed on affected rooms – planning and management of service
- Ensure adequate hand hygiene facilities
- Exclude ill staff until at least 48 hours after last symptoms
- Keep records of staff numbers affected- outbreak report/review at end
- Keep Occupational Health Dept updated –IPCT and individual staff

Hand Hygiene – Main points

- Single most important measure -All staff/visitors
- Ensure facilities readily available
- Signage/technique posters in place
- **NB – Alcohol gels not effective against gastro-intestinal infections**
- Soap and water – rubbing, rinsing and drying actions remove spores etc
- **5 Moments for hand hygiene** (WHO 2009 – www.who.int)



Declaring Outbreak over

- No new cases
- Cases recovered
- Consultant Micro decision- all depts informed
- Full terminal clean/disinfection- all affected areas/bed spaces even if patients still present on ward
- Restrictions lifted, return to normal activity
- IPCT reviews outbreak (RCA) – report written and distributed to relevant persons
- Lessons learned – how can we prevent future outbreaks – share results with all involved

Specific Infections- Norovirus

- Infectious dose very low – 12-48 hr incubation
- Multiple routes of transmission
- Various strains- no immunity to other strains
- Immunity following infection – short lived
- High attack rate among those exposed
- Norovirus can survive for days on any surface including food!
- Can be infectious before and after resolution of symptoms
- Starts quickly – no warning –projectile vomiting
- Standard cleaning ineffective against Norovirus
- Does the patient really need admission – could they be managed at home? Clinical decision
- Don't transfer between wards if infectious cause suspected
- Healthcare workers must not remain on duty with symptoms
- Symptomatic visitors should not enter hospital

Is it a Norovirus Outbreak?

- **Norovirus markers: *if 2 or more* of the following are present:**

1. Symptom onset sudden
2. Projectile vomit – no cause
3. Diarrhoea watery and not blood stained – no cause
4. No laxatives/enema in the past 48 hours
5. Stools negative for bacterial cause – don't wait for results –

Carry out the following:

- ✓ **Alert IPCT**
- ✓ **Isolate patient – contact precautions**
- ✓ **Send spec to lab request viral/bacterial analysis**
- ✓ **Start Norovirus Outbreak Data record – all symptomatic cases- stool chart/FBC NB**

Example of cascade of closures for Norovirus

- **Always directed by Consultant Microbiologist** but gives an example of possible management of suspected cases:
- Patient symptomatic in a 3-6 bed bay? – isolate patient asap in single room
- Once isolated vacated bed space must be cleaned/disinfected (Chlorine based), curtains changed etc
- If patient can't be isolated then no new patient should be admitted to this bay until cleared by Consultant
- If 2nd patient in same bay has symptoms and was exposed – close bay to admissions and transfers – team may discharge anyone well enough
- Every effort should be made to isolate the patient in their own ward – limit spread to other wards
- If a second bay in the same ward has symptomatic patients – close the whole ward to admissions/visitor restrictions
- Where more than one ward has symptomatic patients – closure of hospital to visitors should be considered – if many cases – >2 wards –? may close hospital to admissions
- **Isolate until 48 hours after last symptom – full terminal clean 48 hours after last case has symptoms**

Influenza - points

- Early identification and reporting – take viral swab nasal/throat (contact lab)- 3-5 day turnaround for results
- Treatment of patients with antivirals - directed by Microbiologist/ID Consultant – e.g.Tamiflu
- Standard and transmission based precautions (droplet and contact)
- Surgical face mask for seasonal flu (gloves/aprons) – patient may wear same if needs to go out of room/isolation
- FFP2/3 mask/goggles for aerosol generating procedures/intubation etc. avoid nebulisation in communal areas
- Cough etiquette – tissues, hand hygiene and waste bins to hand – Educate all!
- Precautions may need to be in place for up to 7 days
- Staff vaccination available OCC Health
- Chemoprophylaxis of at risk contacts – Microbiologist advice
- Single rooms or cohort
- Exclude symptomatic staff
- See hpsc website A-Z for Influenza information

Clostridium difficile

Most at risk:

1. On or had recent antibiotics
2. Advanced age > 60
3. Contact in hospital with infected patient
4. Recent bowel op
5. Immunosuppressive therapy
6. Enteral feed – Proton Pump Inhibitors e.g. Losec

Diarrhoea (>3 in 24 hours) – no Hx laxatives/other cause e.g. inflammatory bowel condition

Suspect infectious cause
Use "SIGHT"

(http://www.gov.uk/phe @PHE_uk - Updated guidance on the management and treatment of C Difficile infection)

"SIGHT"

- **S** – Suspect Infective case in absence of any other cause
- **I** – Isolate within 2 hours – ensuite/dedicated commode – door closed
- **G** – Gloves and aprons – all contact with patient
- **H** – Hand washing – alcohol gel not effective against spores
- **T** – Test stool for C difficile – must be diarrhoeal stool/takes shape of container

✓If +, isolate until 48 hrs diarrhoea free/normal stool
✓Team informs patient/information leaflet
✓Treat patient – Flagyl 1st episode (Consultant)
✓Do not send test for cure

- Ensure all relevant departments aware if patient transferring- limit movement in acute phase (active diarrhoea)

3 Key messages

Suspect symptoms? -
No identifiable cause?

1. **Contact** IPCT promptly /Don't wait for results
2. ***Break the chain of infection*** -Early isolation/cohort with appropriate precautions
3. **Accurate records** to inform decisions

Always err on the side of caution!!!
Don't be afraid to ask for help

Thank you