INFECTION PREVENTION AND CONTROL

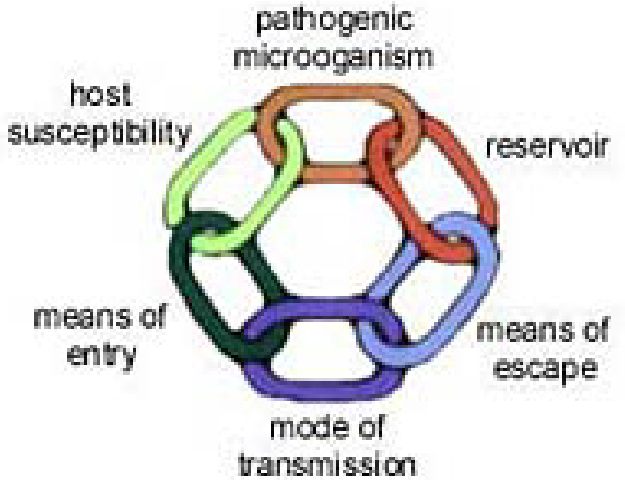
INTRODUCTION

- Basic principles
- Standard precautions
- Specific infections
- Infection surveillance
- Infection prevention group
- Audit

CHAIN OF INFECTION

- **Source - m**icro-organism, e.g. bacteria, virus, fungi
- **Reservoir -** where source lives e.g. humans, environment, soil
- **Means of escape -** e.g. coughing, vomiting, air currents, contaminated equipment
- **Mode of transmission - d**irect (person to person), indirect (person to object to person)
- **Means of entry - w**ay in which organism enters a host, e.g. ingestion, inhalation,

  injection, break in skin



WHAT MAKES SOMEONE SUSCEPTIBLE TO INFECTION?

- Lowered immunity
- Age – very young or old
- Poor physical / psychological well-being
- Underlying disease e.g. diabetes
- Poor nutrition
- Stress
- Medical intervention: drug therapies, e.g. chemotherapy, steroids & antibiotics and presence of invasive devices, e.g. urinary catheters, intravenous infusions etc.
- Anyone can be susceptible if exposed to blood borne viruses

INFECTION PREVENTION MANUAL

- Provides:
  - Guidance to minimise risk of infection
  - Information on specific infections
  - Action to take in event of an outbreak
  - Results of infection surveillance
  - Minutes from IPC team meetings
- Can be found on both wards (hard copy) or on computer system O/H drive

STANDARD PRECAUTIONS

underpin routine safe practice protecting patients and staff

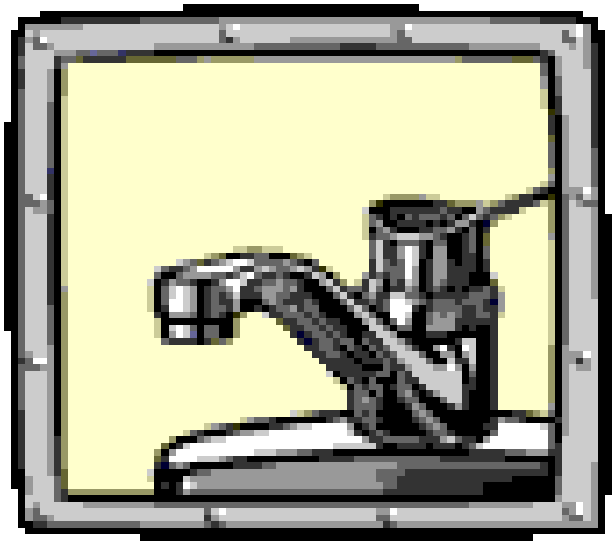
STANDARD PRECAUTIONS INCLUDE:

- Achieving optimum hand hygiene
- Appropriate use of clinical personal protective equipment
- Safe handling and disposal of sharps
- Safe handling and disposal of clinical waste
- Managing blood and bodily fluids
- Decontaminating equipment
- Achieving and maintaining a clean environment
- Appropriate use of indwelling devices
- Managing accidents
- Good communication
- Training/education

HAND HYGIENE

- Infections (including MRSA) most commonly spread via hands of healthcare workers in hospital and other health care settings
- **SINGLE MOST IMPORTANT ACTIVITY IN REDUCTION OF SPREAD OF INFECTION AND PREVENT PATIENTS ACQUIRING INFECTION IN HOSPITAL**
- Hands must be cleaned before and after patient contact and after any task with a risk of hand contamination
- Hands may be decontaminated by hand-washing or use of alcohol hand rub
- In addition clinical staff should:
  - Keep nails short, clean and polish free
  - Avoid wearing jewellery or wristwatches especially rings with ridges or stones
  - Not wear artificial nails

EQUIPMENT



- Conveniently situated hand basins
- Wrist, elbow or automatic taps
- Plentiful supply of paper towels in dispensers that allow easy access
- Liquid soap and hand lotion in disposable cartridges
- Alcohol hand rub in each patients' room

HAND HYGIENE METHODS

The two favoured hand hygiene methods are soap and water and alcohol based hand rubs

Advantages of soap and water

- Better at removal of debris – preferred option when hands are visibly soiled
- Removal of clostridium difficile spores - alcohol based hand rubs are less effective at removing spores than soap and water

Advantages of alcohol hand rub

- Faster and easily accessible
- Less time needed
- Less hand irritation – compared to repeated use of soap and water
- Less risk of re-contamination
- Increased usage – several studies have reported increased rates of hand hygiene compliance after introduction of alcohol based systems

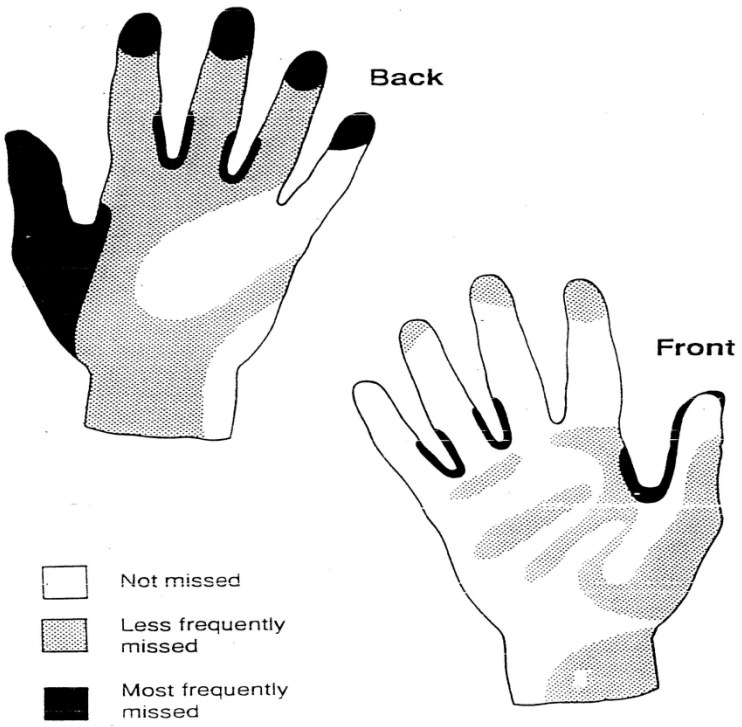
HAND WASHING PROCEDURE

- Roll up sleeves
- Run water till hand hot, direct flow away from plughole and run at a rate that does not splash
- Wet wrists and hands with running water
- Apply liquid soap to all surfaces of hands and wrists
- Lather surface for 10-15 secs
- Pay attention to nails, finger pads, thumbs and between fingers
- Do not use a nail brush
- Rinse hands under running water
- Hold hands downwards to drain water from fingertips
- Turn off taps using elbow or paper towels
- Dry hand thoroughly with paper towel
- Dispose in foot operated bin

PROCEDURE FOR USE OF ALCOHOL RUB

- Do not wet hands
- Dispense requires amount into palm of hand
- Spread thoroughly over both hands and wrists
- Pay attention to nails, finger pads, thumbs and between fingers
- Rub vigorously till dry

AREAS COMMONLY MISSED FOLLOWING HAND CLEANING



HAND DECONTAMINATION:

Before:

- Performing invasive procedures
- Contact with a patient
- Preparing, handling or eating food
- Dispensing medicines
- Starting a shift

HAND DECONTAMINATION

After:

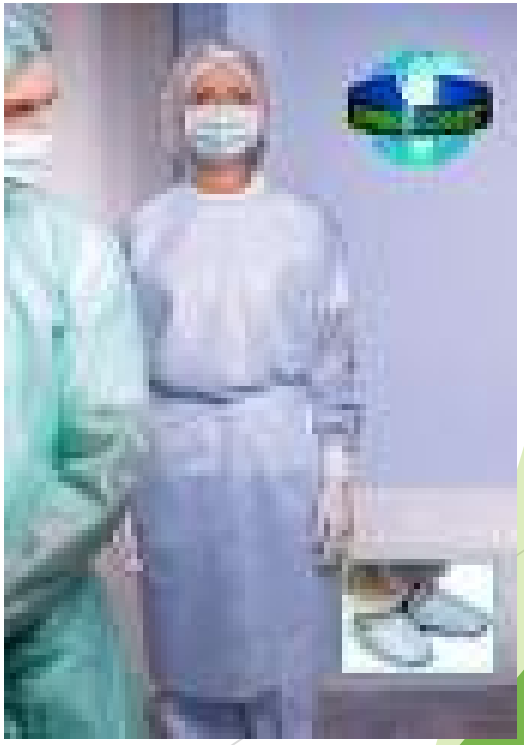
- Contamination
- Removal of gloves
- Contact with a patient
- Using the toilet or toileting others
- Bed-making and handling laundry
- Handling contaminated waste
- Finishing a shift

LOOK AFTER YOUR HANDS!!!

- Damaged skin does not provide a barrier to infection and may become colonised
- Keep your skin in good condition by using hand lotion regularly

PERSONAL PROTECTIVE EQUIPMENT

- Used to protect patients and staff from risks of cross infection
- Includes:
  - Gloves
  - Aprons
  - Goggles



DISPOSABLE GLOVES

- Used when carrying out tasks with a risk of exposure to blood or bodily fluids or aseptic procedures
- Effectiveness depends on correct and appropriate use
- Single use item -put on immediately before contact , remove immediately afterwards
- Must be changed between patients and between different care or treatment activities for same patient
- Inappropriate use of gloves can result in cross contamination from one part of a patient's body to another and in some cases lead to serious infection
- Gloves are hazardous waste - dispose in tiger bins.
- Always wash your hands on removal of gloves

PLASTIC APRONS

- Worn to prevent contamination of clothing:
  - Direct patient care
  - Bed-making
  - Decontaminating equipment
  - Waste disposal
- Discard as soon as task complete and wash hands
- Store safely to prevent dust accumulating

GOGGLES

- Should be worn during procedures where there is a risk of splashing
- Masks may be necessary if there is a risk of airborne infection e.g. multi drug resistant Tuberculosis (TB), SARS

SAFE HANDLING AND DISPOSAL OF SHARPS

- Main hazards are hepatitis and HIV
- 2nd only to back injury as a cause of occupational injuries in health care workers
- Safe use and disposal vital in reducing risk

WE ARE ALL RESPONSIBLE TO ENSURE THAT THE SHARPS BIN CAN BE SAFELY USED, PERMANENTLY SECURED AND TRANSPORTED FOR DISPOSAL WITHOUT FEAR OF SPILLAGE

SHARPS AWARENESS

Lock when 2/3rds full

Close temporary closure when not in use

Assemble it correctly. Snap lid on all round

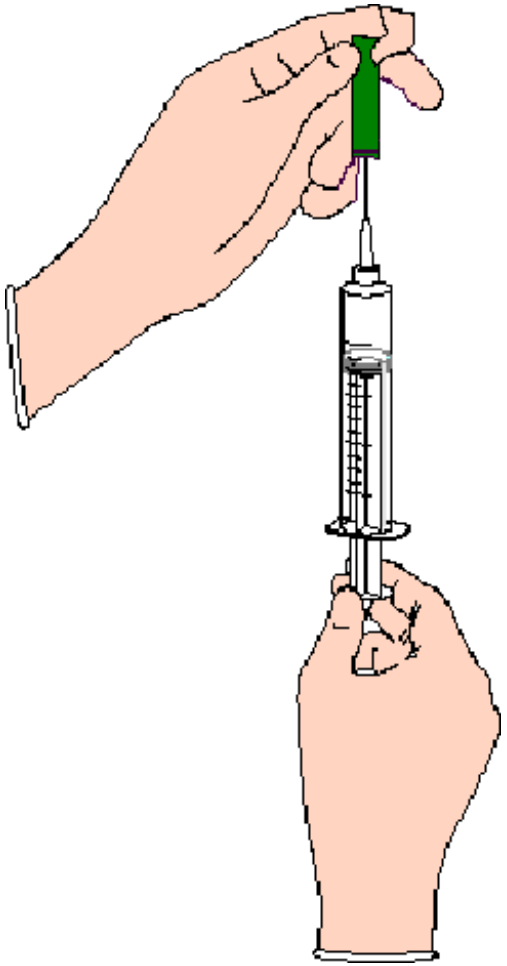
YOUR RESPONSIBILITIES

WHAT IS THE CONSEQUENCE OF THIS ACTION?

IF YOU DON'T GET THE POINT SOMEONE ELSE WILL!

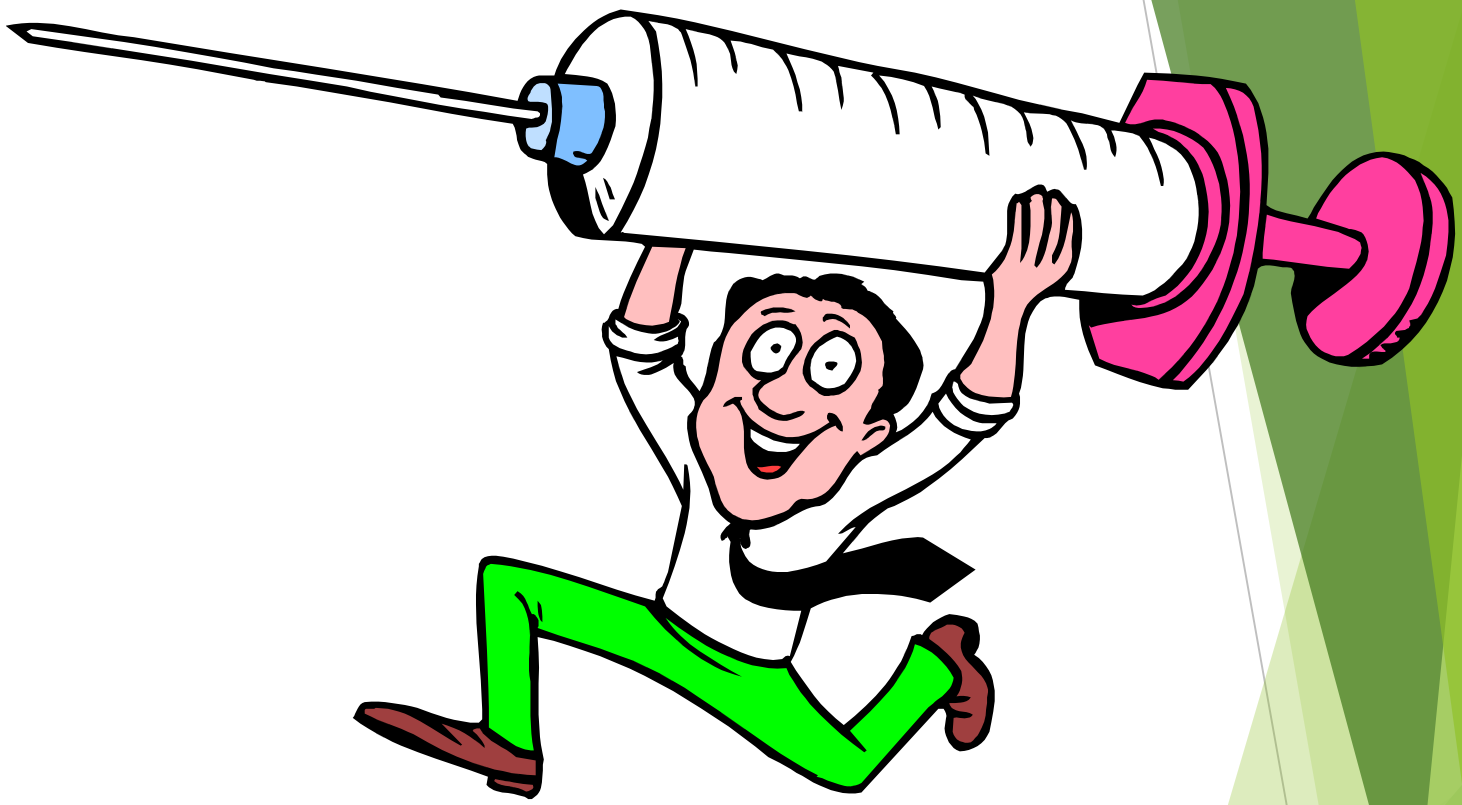
SO……

DISPOSE OF SHARPS INTO DESIGNATED SHARPS BIN

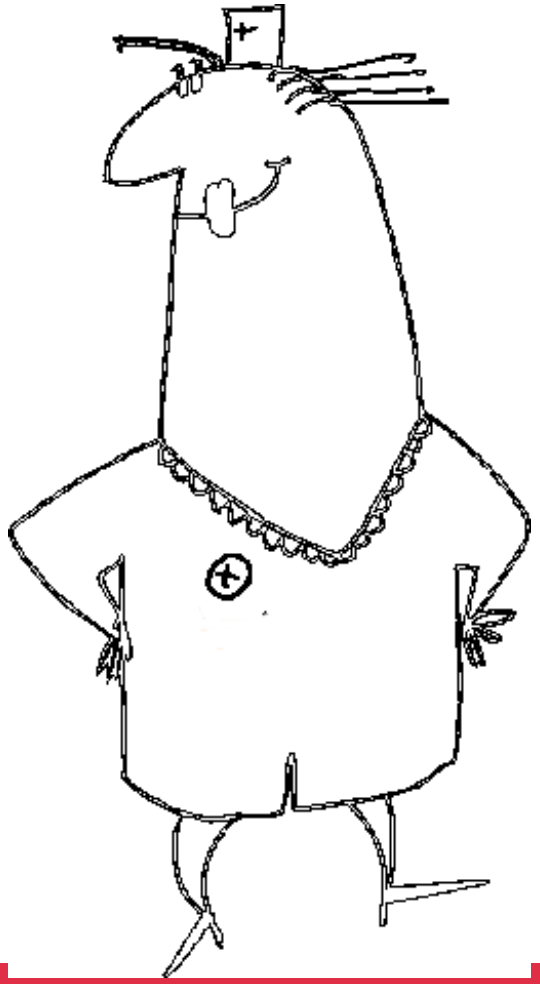


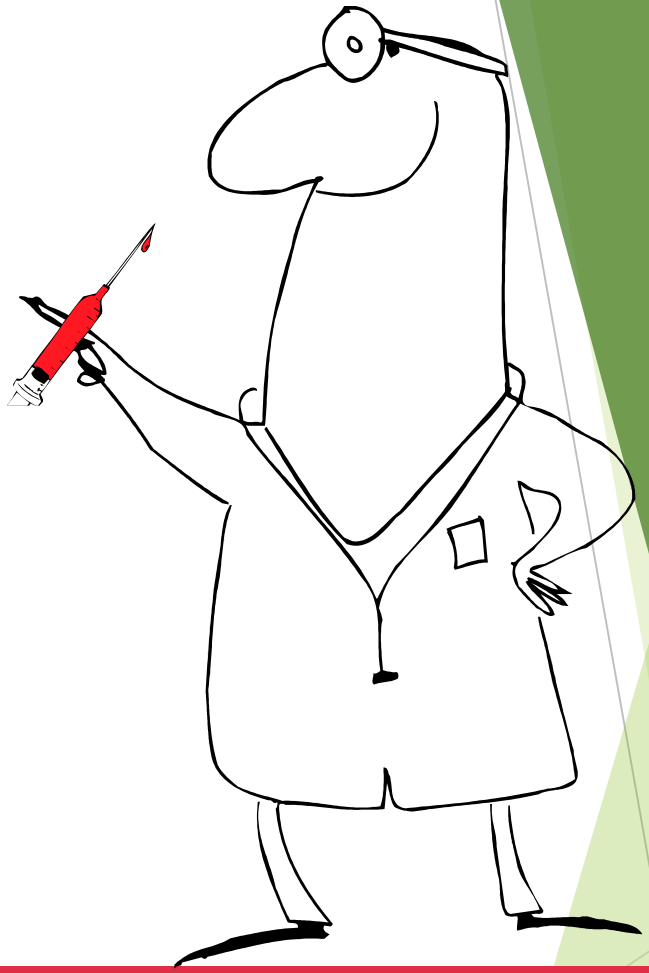
NO

DO NOT RE-SHEATH NEEDLES

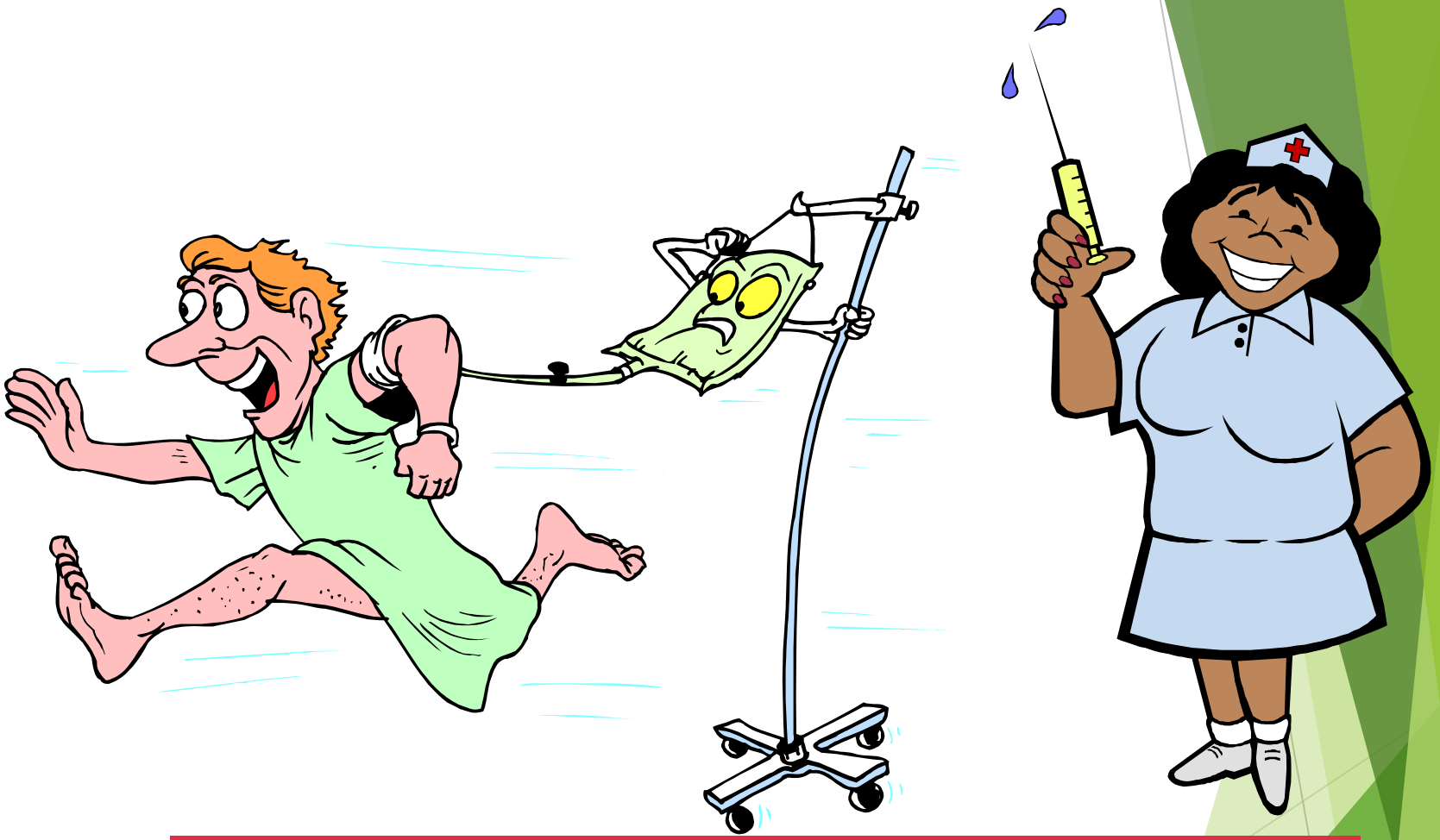


DON’T CARRY SHARPS UNNECESSARILY





ALWAYS DISPOSE OF YOUR OWN SHARPS



NON CO-OPERATIVE PATIENT?
GET HELP

SHARPS INJURY

BLEED IT

WASH IT

REPORT IT

Sharps Injury

- Consult with the Senior Nurse on duty for further advice
- The patient involved in the sharps injury to be screened for infection status
- Report to HR, you might need to be referred to the Occupational Health Nurse

THIS IS YOUR RESPONSIBILITY

MANAGEMENT OF BODY FLUID SPILLAGE

- Use personal protective clothing
- Keep visitors and patients away from spill area
- Body fluids e.g. urine & faeces, NOT visibly blood stained, clean using hot water and detergent
- For blood spillages to hard surfaces use sodium hypochlorite solution. Contact time at least 2mins. Clean spill area with hot water and detergent
- Contact housekeeping for deep cleaning

DECONTAMINATING EQUIPMENT

- Outbreaks associated with dirty equipment
- Decontamination ensures re-usable items are safe
- Combination of cleaning; disinfection and sterilisation

RISK ASSESSMENT

	Equipment	**Level of cleaning**	**Examples**
HIGH RISK	Equipment that: Enters a sterile body cavity Penetrates skin Touches a break in the skin	Equipment must be fully cleaned and sterilised after each patient use.	Surgical instruments
MEDIUM RISK	Equipment that touches intact skin or mucous membranes	Equipment does not need to be sterile at the point of use but needs to be cleaned and sterilised between each patient	Bedpans Urinals
LOW RISK	Equipment that does not touch broken skin or mucous membranes or is not in contact with patients	Equipment must be cleaned and/or disinfected after use	Ophthalmoscope Bed cradle

Waste Management

Correct use of bins

- White – house waste
- Yellow – Offensive non hazardous waste
- Orange – Hazardous clinical waste

Correct use of buckets – transport from patient's room to soiled holding

- White – Incontinence waste
- Grey/blue – unsoiled bed linens/ clothes Any soiled items go to RED BAG

Correct use of laundry bags

- Green – unsoiled items
- Red – soiled items

SINGLE USE EQUIPMENT

- Single use – used on a single occasion then discarded

- Single patient use – used on multiple occasions on sa
  patient then discarded e.g. suction tubing

SINGLE USE EQUIPMENT

- Prior to use:
  - Check properly sealed
  - Check within expiry date
  - Check correct item

ACHIEVING AND MAINTAINING A CLEAN ENVIRONMENT

- Bacteria can survive for long periods in the environment
- Can live quite happily in dust
- High standards of cleanliness helps reduce infection risks and increases public confidence
- Detergent and water is suitable for most purposes
- Cleaning clothes used for specific purposes and areas
- Buckets and mops stored clean and dry
- Operational standards document

APPROPRIATE USE OF INDWELLING DEVICES

- Urinary catheters
- Enteral feeding tubes
- Tracheostomy tubes
- Correct techniques vital to prevent acquired infections
- General guidance in Clinical and IPC manuals
- Information related to specific patients in relevant section of care plan

URINARY CATHETERS

- Increased risk of UTI in catheterised patients (UTI commonest cause of bacteraemia in patients in long term care)
- Assess need
- Look at alternatives
- Review regularly
- Remove ASAP
- Care plan

URINARY CATHETERS -Drainage options

- Intermittent catheterisation
- Smallest gauge catheter
- Sterile closed drainage system – do not break connection unless changing bag
- Bags positioned below bladder level – not too low on leg and definitely not on floor
- Empty bags frequently

ENTERAL FEEDING

- Minimal handling
- Pre- packaged feeds used
- Administration system compatible with tube – changed weekly
- Feeds stored according to manufacturer's recommendations
- Keep stoma site clean
- Dressings not necessary
- Tubes changed according to manufacturer's recommendations
- Tubes flushed with fresh tap water unless otherwise indicated

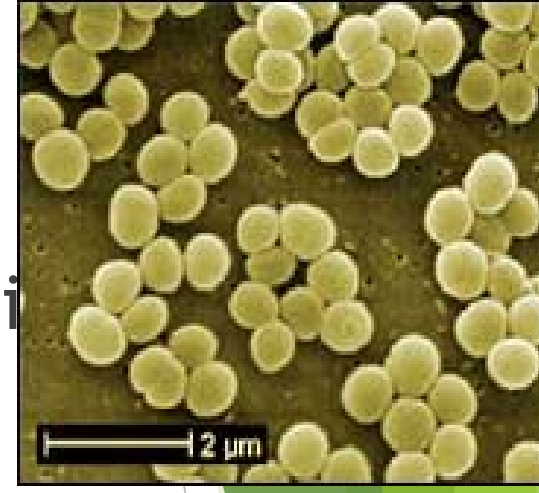
TRACHEOSTOMY

- Keep area clean and dry
- Clean with normal saline
- Frequency of dressing changes depends on secretions
- Suctioning as required by individual patients
- Tracheostomy tubes changed 4 weekly
- Inner tubes at least every 4 hours
- Inner tubes cleaned with warm water and cleaning swab, dried and stored in plastic sealed container
- ‘Swedish noses’ changed as required
- Piped and portable suction unit

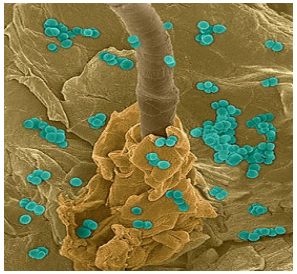
Specific Infections

- MRSA
- Gastroenteritis
- Clostridium Difficile
- Influenza

MRSA



- Staphlococcus resistant to Methicilli and some other antibiotics but remains treatable
- Staphlococcus aureus found on 30-40% of population, has been around for decades
- MRSA carried by 2% of population with no symptoms or ill effects
- Only becomes a problem when normal body defences compromised e.g. by surgery or trauma
- Infections (including MRSA) can be treated with a number of antibiotics



MRSA

Colonisation:

- No symptoms
- Swabs or samples will grow the bacteria
- Can be colonised in:
  - moist areas
  - rough or damaged skin
  - chronic wounds

Infection:

- Pain & fever
- Redness & swelling
- Unpleasant discharge
- Wound breakdown
- Can be life threatening if bacteria gets into deep tissues or blood stream

WHAT TO DO

- Routine screening not necessary
- Treat colonisation only if patient undergoing invasive procedure i.e. surgery
- No need to re- screen unless clinical indication e.g. admission for surgery
- Prevention better than cure - standard precautions/good hand decontamination
- No need to isolate unless bacteria can not be contained
- Can have visitors and go out
- Laundry does not need to be segregated – wash on hottest temperature, personal items 40°C

GASTROENTERITIS

- Infection of GI tract
- Affects approx 1 in 5 of population each year
- Symptoms caused by toxins produced by virus or bacteria irritating the GI tract causing excess fluid production
- Usually symptoms subside without specific treatment

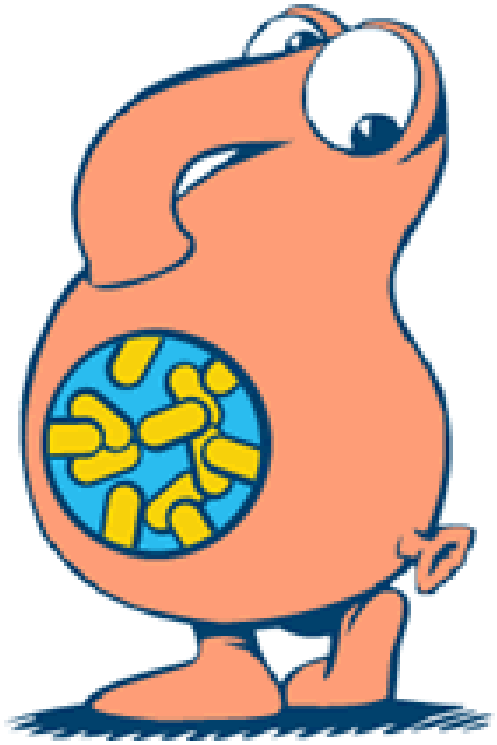
GASTROENTERITIS - symptoms

- Incubation period (time between catching infection and beginning of symptoms) can range from a few hours to weeks
- Symptoms may include:
  - Diarrhoea
  - Nausea
  - Vomiting
  - Abdominal pain or cramps
  - Feeling bloated
  - High temperature
- Seek medical advice if symptoms persist

GASTROENTERITIS - causes

- Infection occurs after eating or drinking contaminated food, contact with infected person or with contaminated surfaces or equipment
- Virus
- Bacteria
- Parasites

CLOSTRIDIUM DIFFICILE



- Spore forming bacteria, present as one of the normal gut bacteria in 3% of adults
- Causes illness when normal balance is disturbed by antibiotics
- Another reason to use antibiotics carefully
- 80% of reported case are >65 yrs
- Can be carried without symptoms
- Symptoms develop when C Diff multiplies and produces toxins
- Laboratory testing to confirm diagnosis then treatment with antibiotics

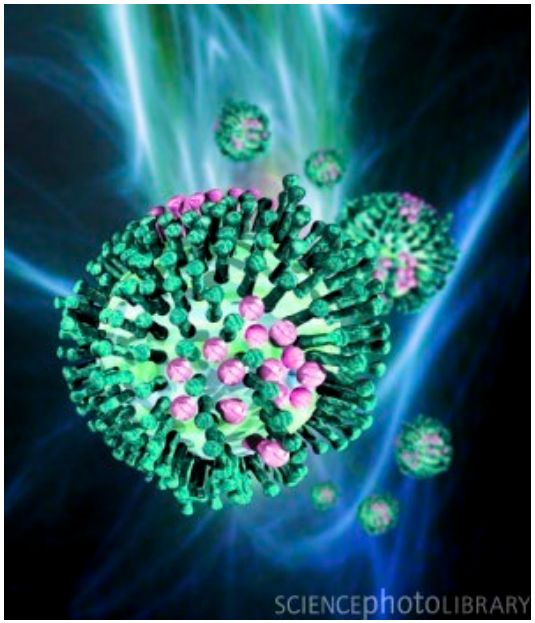
SPREAD OF C DIFF

- Can spread from person to person as the sufferer sheds spores in their faeces
- Spores can live a long time on surfaces
- Can be transported in the air e.g. when making beds
- Can be transported on the hands after contact with infected persons or surfaces

ACTION

- Good communication
- Isolate with own toilet or commode until formed stool for 48hrs
- Gloves and aprons for all care – remember to change gloves for each care task
- Keep linen separate – wash on hot cycle
- Increased environmental cleanliness
- Stool sample for testing

INFLUENZA



INFLUENZA - TYPES

- **Type A**
  - Found in animals and humans
  - 2 surface proteins – haemagglutinin (H) neuraminidase (N) used to classify into subtypes e.g. H1N1 etc.
  - Natural reservoir aquatic birds, all subtypes are found in them, only some are found in mammals
- **Type B**
  - Similar symptoms to type A, but not as serious.
- **Type C**
  - The mildest type, symptoms similar to a cold

TRANSMISSION

- Incubation period up to 5 days
- Virus is shed in secretions from respiratory tract
- Spread by droplets produced by coughing and sneezing

PREVENTION - vaccination

- Recommended for:
  - Specific groups of patients e.g. elderly, pregnant women, chronic respiratory or other diseases, diabetics
  - All health care workers with direct patient contact
- Provided by Occupational Health Nurse at Holy Cross
- Cost effective for target groups
- **DOES NOT** cause flu – usually given in coughs and colds season so often blamed

SYMPTOMS

- Acute illness lasts 3-5 days full recovery takes much longer, symptoms may include:
  - High temperature
  - Feeling unwell
  - Headache
  - Muscle and joint pain
  - Dry cough
  - Sore throat
- Treatment is usually to treat symptoms
- Anti-virals can be given to high risk groups or during pandemics

Infection Surveillance

- Infection notification
- Use of antibiotics
- Local lab – Frimley Park Hospital
- Infection records

Infection Prevention Group

- Committee members
- Meeting bimonthly
- Standard/objectives
- Meeting minutes
- Audit planner/tool/report
- Action plans

AUDIT

- Audits undertaken every year to:
  - Check policies and guidelines are effective
  - Ensure training and communication is effective
  - Identify training needs

ANNUAL IPC AUDITS

- Hand hygiene
- PPE –clinical
- Equipment cleanliness
- Waste disposal
- Ward kitchen
- Management of blood and bodily fluid spillage and/ or contamination
- Prevention and management of sharp injuries, bites and splashes
- Specimen handling
- Decontamination of equipment
- Catheter management (CG)
- Enteral feeding management (CG)
- Tracheostomy management (CG)

FOR LISTENING

ANY QUESTIONS