



Infection prevention and control



Infection Control and Prevention is Everyone's business

- First aider
- Ambulance aider
- Paramedic
- Doctor
- Nurse
- Patient
- Family and carers



Current Climate

Patients enter superbug lottery

MRSA risk to patients depends on where they are treated

500,000 DAYS LOST TO SUPERBUGS
To halve it would clear waiting lists: study

The risk of contracting MRSA in hospitals across Scotland, and raises new concerns about their hygiene standards.

The number of patients struck down by MRSA - a particularly virulent antibiotic-resistant bacterium - soared in the past year to almost 16,000. It is estimated that 400 a year are killed by superbug hospital infections.

Hospital flouts fatal bug rules

Mark Meehan



Average risk of contracting MRSA during a 10-day hospital stay



show, show a marked variation between NHS trusts in the risks of... '400 people a year are killed by some m of hospital' 'irred patients'

NEW KILLER SUPERBUG INFECTS 41 PATIENTS
Hospitals on alert as victim dies

- Public Concern
- Media/Celebs
- Politics
- HFR Concern
- Quality Issues
- Published data
- Patient Choice
- Cost to patients
- ££££££££££s



Infection control

Infection Prevention and Control Lead (IPCL) is Hester

Volunteers must ensure that they:

- Undertake their annual mandatory training on infection prevention and control.
- Carry and use the appropriate personal protective equipment, to protect them from any hazards they may encounter.
- Wash their hands before and after contact with patients. In preference with soap and hot/cold running water. If soap and water are not available, single-use towelettes (with detergent) may be used before an alcoholic handrub. Hands should then be washed with soap and running water at the first opportunity.
- Carefully check any equipment before and after use for any soiling, or damage and report it as soon as possible to the IPCL.
- Clean equipment appropriately after personal contact where relevant.



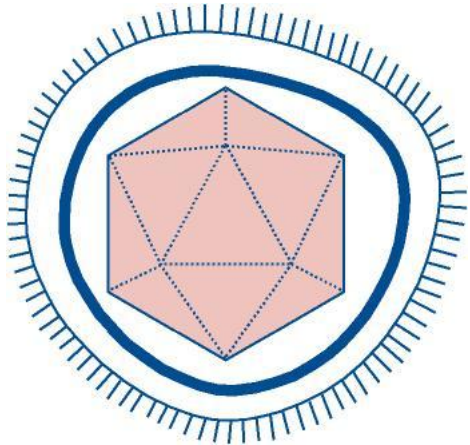
Infection control

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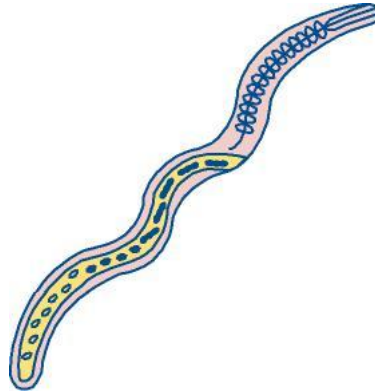
- Comply with “**Bare Below the Elbows**” as set out in the HFR policy
- Use modified aseptic (clean) technique as appropriate
- Communicate with patients in an appropriate manner that ensures understanding and discussion of infectious issues and allows the sharing of relevant information to other healthcare providers when necessary.
- Dispose of clinical waste in an appropriate manner, according to local health and safety regulations.
- Ensure their **Hepatitis B** vaccinations are up-to-date and that the HFR Exec. has an accurate record of this.
- Ensure that if they are part of the first crew of the month, they undertake the monthly ambulance dusting and complete the check-list.
- **Remember: "If its wet and not yours, don't touch it!"**



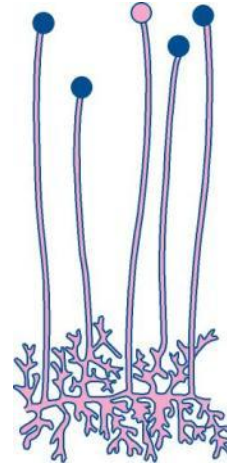
Types of Micro-organisms



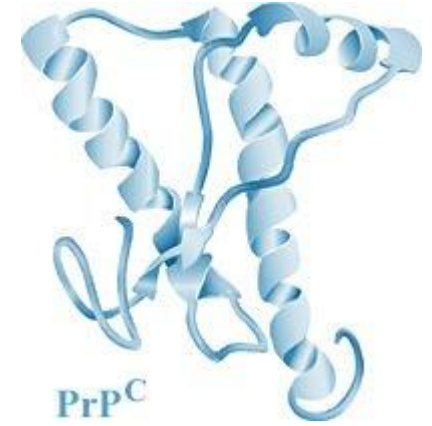
Virus



Helminths



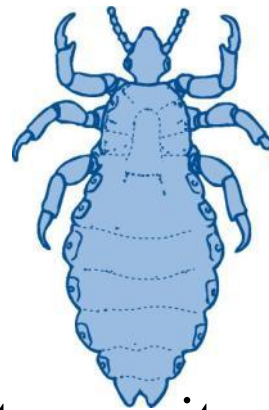
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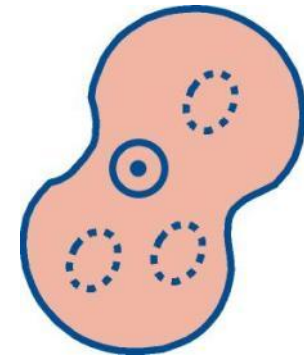
Prions



Bacteria



Ectoparasites



Protozoa



Viruses

Common cold
Chicken pox
Measles
Rubella
HIV
Mumps
Hep A,B and C
Noro virus

- Attack both plants and animals
- 27 nm in diameter
- Only visible using an electron microscope
- Can only multiply in other living cells (host cell)
- The **host cell dies** after the virus has replicated itself



Bacteria

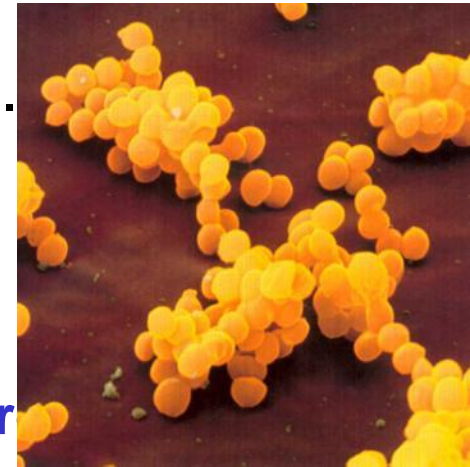
Clostridium difficile
MRSA
Salmonella
Streptococci
Escherichia coli

- Commonly found in food and water
- 1000 nm
- Can be seen with a microscope
- Found in the gut, skin, throat and mouth
- Reproduce asexually, known as **binary fission**
- Replication usually takes approximately every 20 minutes



MRSA - Methicillin Resistant Staphylococcus Aureus

- Staphylococcus aureus is a gram positive organism which lives harmlessly on the skin and in the nostrils and is present in 30% of the population
- It can be an effective pathogen causing particular problems in hospital
- MRSA is a strain of Staphylococcus aureus which is resistant to methicillin (flucloxacillin) and some other antibiotics
- MRSA can still be treated with antibiotics but these can be expensive and have side-effects.
- MRSA also affects dogs, cats and horses





MRSA Transmission

- Contact transmission- the most important route of cross infection is direct contact (poor hand washing)
- Exfoliating skin conditions e.g. eczema, psoriasis. Skin scales
- Ease of transmission is due to its viability for long periods in dust and on hard surfaces.
- Equipment
- Sputum, wounds



Clostridium difficile

- Healthcare-associated infection (HCAI)
- A major cause of diarrhoea affecting patients in Healthcare establishments eg hospitals
- Usually caused by antibiotic use
- Spreads by environmental contamination
- Can be fatal – toxins from the bacteria kill the gut



C. diff Key facts

- Is associated with antibiotics or a cocktail of antibiotics.
- Laxatives, enemas, antacids and bowel surgery are risk factors
- It is an anaerobic bacterium
- It produces spores.
- Spores are resistant to many disinfectants and can survive in the environment for a long time.
- The bacteria may also produce toxins which cause the symptoms.
- Spore are resistant to alcohol gel.



Norovirus /Norwalk

- A group of viruses that are a major cause of non-bacterial gastroenteritis
- Also called “winter vomiting virus”
- Spreads rapidly
- Affects all age groups (young and elderly being the most vulnerable)
- Immunity following infection is not life long
- Can have a major effect on staffing levels



How does Norovirus spread?

- Faecal-oral route:
 - Person to person
 - hands of carers, patients
 - contaminated objects/surfaces
- Aerosol spread - Vomiting
- Food/water borne transmission via food chain



Norovirus Clinical Features

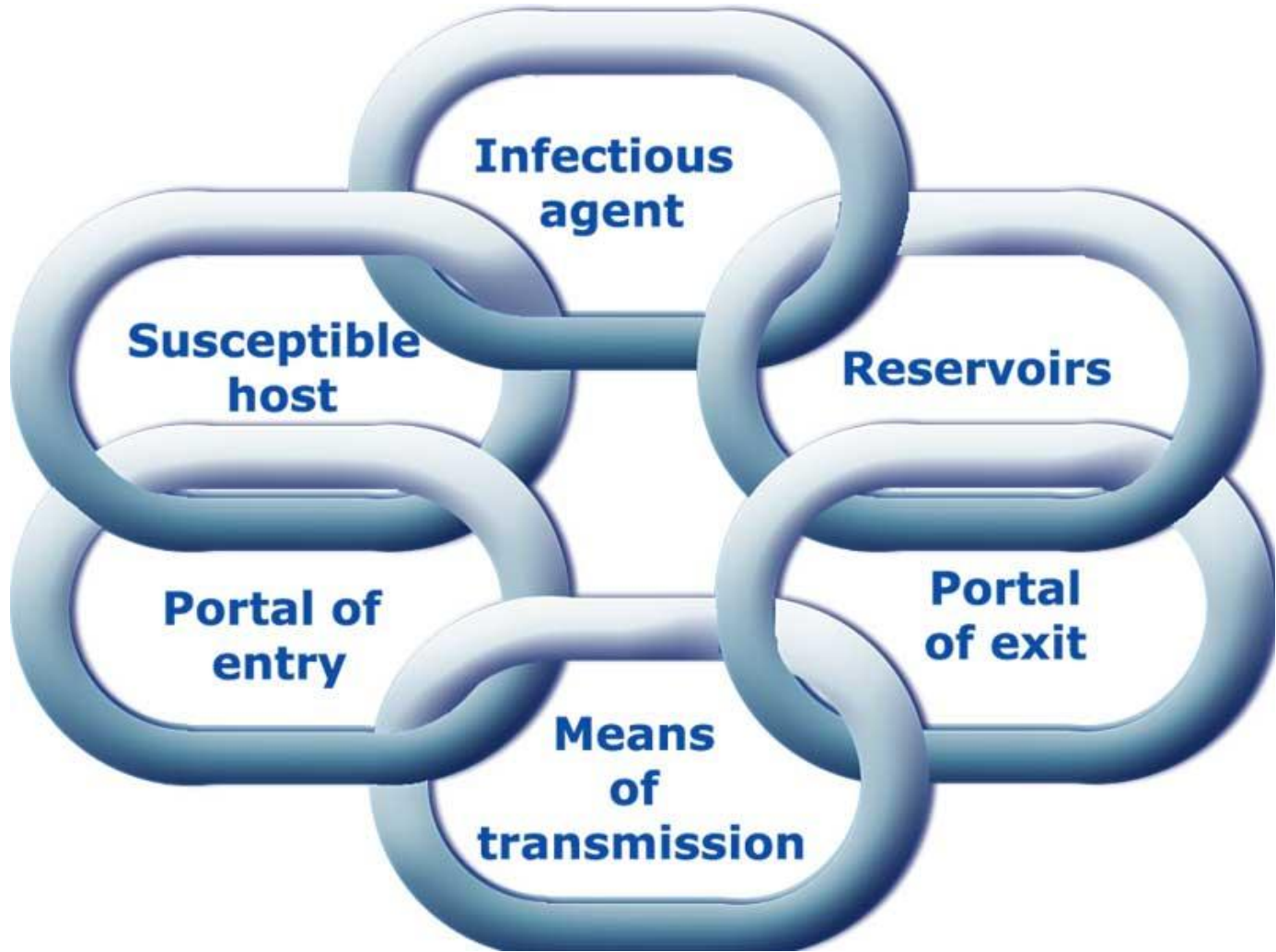
- Incubation period 12 – 48 hrs
- Symptomatic 24 – 60 hrs
- Do not return to work until symptom free for 48 hours

Signs & Symptoms

- Vomiting
- Diarrhoea
- Pyrexia
- * Nausea
- * Headache
- * Abdo pain
- * Myalgia
- * Dehydration



Chain of Infection





Breaking the Chain of Infection

All healthcare workers must ensure that they are not responsible for the spread of infectious disease. Many in healthcare are also responsible for teaching others how to stop an infection before it starts.

What can HFR do?

- **Infectious Agent:** Identify agent via assessment eg patient history/clinical details
- **Reservoir:** protective wear, volunteer Health, environmental hygiene – cleaning, using sterile single use equipment
- **Portal of exit:** protective wear, safe management of secretions /excretions, safe management of clinical waste & used linen.
- **Mode of transport:** Sharps Disposal & management of sharps injury, hand washing.
- **Portal of Entry:** Management of Invasive Devices, Universal Precautions and Principles of Asepsis.



How is Infection Spread?

- Droplets, aerosol e.g. respiratory droplets.
- Direct Contact e.g. kissing.
- Inoculation e.g. needle stick injury.
- Indirect Contact e.g. Healthcare workers hands.
- Vertical transmission from mother to baby.



Standard Precautions

- Hand Hygiene
- Bare Below Elbows
- Protective clothing
- Accidental exposure to blood/body fluids
- Sharps safety
- Managing spillages
- Waste
- Specimens
- Laundry



Hand Hygiene

- There are two types of bacteria on our hands:
 - transient
 - resident
- Transient skin bacteria
 - Patient's skin and immediate environment is colonized with transient (moveable) bacteria.
- Resident skin bacteria – deep seated, usually *S. epidermidis* or diphtheroids. Not *usually* associated with infection.



When should we wash our hands?

- Entering/leaving a clinical environment
- Preparing, handling or eating food
- Contact with patient or patient's environment
- Before/after barrier nursing
- Before applying/removing gloves
- Before and after wound care
- Before/after handling invasive devices or systems eg IV Catheters, urinary catheters
- Before/after bed making
- After personal contamination eg nose blowing, after visiting the toilet
- After handling specimens
- After leaving the dirty utility room



How to clean hands

- Wet hands first (cold water is fine)
- Apply (liquid) soap
- Rub all surfaces of the hands for 15-20 seconds
- Rinse thoroughly
- Dry thoroughly (using paper towels)
- Do not contaminate hands when disposing of towels



Correct Hand Wash Technique



Palm to palm.



Right palm over left dorsum and left palm over right dorsum.



Palm to palm fingers interlaced.



Backs of fingers to opposing palms with fingers interlocked.



Rotational rubbing of right thumb clasped in left palm and vice versa.



Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa.



How to clean hands with alcohol gel

- Use Correct amount of product
- Rub in thoroughly (in same manner as hand washing)
- Cover all surfaces of the hands
- Allow to dry naturally
- Do not use paper towels
- DO NOT USE IF HANDS ARE VISIBLY DIRTY
- DO NOT USE IF THE PATIENT HAS *CLOSTRIDIUM DIFFICILE*



Frequently Missed Areas

FRONT



BACK



- Least frequently missed
- Less frequently missed
- Most frequently missed

Linda Taylor (1978)

Registered Charity 1092333

www.hartfirstresponse.org.uk



Bare below the elbows (BBE)

Volunteers must:

- Roll up or pull back sleeves to treat patients
- Roll up or pull back sleeves to wash hands
- Remove jewellery on hands and wrists (with the exception of a plain wedding band)
- Ensure that fingernails are short and free of nail varnish/gel/false nails



BBE Matters!

Engagement Ring



False Nails



Watch

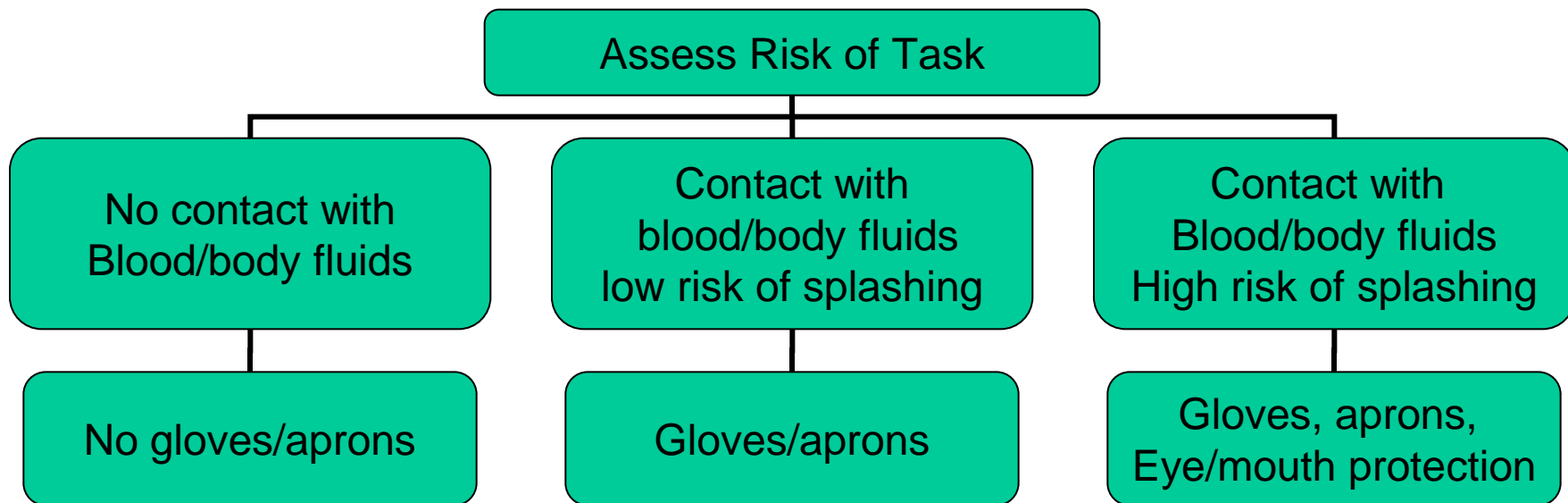


Long Nails





Protective Clothing





When to wear Gloves

- Risk of contact with blood and/ or body fluids
- when sharp or contaminated instruments are being handled
- if there is likely to be contact with non-intact skin or mucous membranes during general care
- Only put gloves on immediately before patient contact



When NOT to wear Gloves

- When driving to and from a scene
- For longer than necessary
- For contact with visibly non-broken skin



Gloves should:

- only be put on immediately before patient contact
- be put on clean hands
- be changed between each patient task
- be changed between caring for different patients
- be changed as soon as they are contaminated
- be discarded as clinical waste



Uniform

- Change out of your uniform promptly at the end of a shift
- Presume some degree of contamination, even on clothing which is not visibly soiled
- Wash used clothing at 40 deg C and dry thoroughly before use.
- Grossly contaminated clothing will be packaged and disposed of as clinical waste.



Routine Vaccinations

- Volunteers should be up to date with their routine immunisations, e.g. tetanus, diphtheria, polio and MMR.
- MMR vaccine is especially important in the context of the ability of volunteers to transmit measles or rubella infections to vulnerable groups.



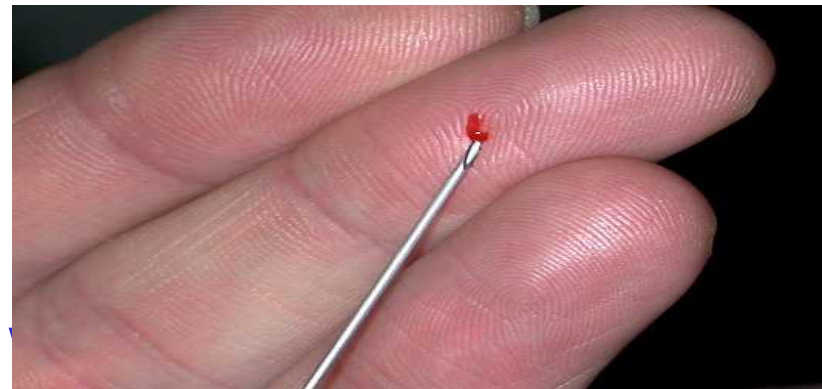
Hepatitis B

- Hepatitis B is relatively easily caught from body fluids, and is entirely preventable by vaccination
- All first aiders should undergo a course of Hepatitis B vaccinations and keep their immunisation up-to-date
- Antibody levels for hepatitis B should be checked one to four months after the completion of a primary course of vaccine and then again after 3 years
- Ensuring Hepatitis B immunity is the responsibility of the individual and must be reported to the HFR Hon. Sec. so that it can be logged on the database
- If necessary HFR will pay for the vaccination.



Needle stick injury

- Every needle stick-type injury must be reported to the ICO and an incident report form completed.
- The object should be placed as soon as possible carefully into a sharps box.
- The wound should be encouraged to bleed by gentle pressure around it.
- The wound should be cleaned with soap and water, and a medi-wipe and covered with a plaster.
- Where possible we should obtain name, address and contact number of patient whose body fluid is on any sharp involved in a needle stick injury.
- The patient should seek medical advice at the first available opportunity.
- The sharps box should be disposed of as clinical waste as soon as possible after use.





Infectious Clinical Waste

Includes: blood, semen, vaginal, cerebrospinal, synovial, pleural, peritoneal, pericardial, amniotic fluids, soiled surgical dressings, human tissue, used swabs and mediwipes, and used gloves, blood bags, blood preserves and body parts or other recognisable anatomical items.

Actions:

- Wear gloves and apron when handling such waste.
- Decontaminate hands after removing protective clothing.
- Place waste directly into a orange clinical waste sack conforming to UN 3291.
- Handle orange sacks by the neck – wear appropriate protective clothing including gloves, apron/overalls
- For suction or other fluid products spillage granules / gelling agent must be used for each sack.
- Remove sack daily (or more frequently when $\frac{3}{4}$ full).
- Seal with a plastic tag.
- Place in the labelled waste box which must be kept secure.



Sharps Clinical Waste

Includes: syringe needles (found discarded or in association with patients), contaminated broken glass (including shards taken from wounds), diabetic blood testing sticks, adrenaline pens, venflons and other needles used to administer fluids, other disposable sharp instruments or items, and other sharp debris found in wounds.

- If at all possible, waste of this type will be passed to the Healthcare professional /patient for them to dispose of.

Actions

- Handle with care - using disposable forceps.
- Do not pick up using fingers.
- Drop into the yellow sharps bin (UN 3291) using a single handed technique.
- Do not hold or get anyone else to hold the sharps bin.
- Ensure an appropriate sharps bin is nearby.
- It is advisable that a sharps bin be at the point of use.
- Do not re-sheath.
- Avoid disassembling needles and syringes.
- Do not place sharp debris removed from wound onto hand for inspection



Spillages of Blood and body Fluids

- Should be dealt with as soon as possible
- Wear PPE – gloves, aprons, face mask
- Must be decontaminated with 10,000ppm sodium hypochlorite or NaDCC
- Follow manufacturers instructions
- Caution required for vomit or urine
- Do not use disinfectant on soft furnishings





Waste Segregation

- Hazardous waste EWC code 18 01 02 (Cat A consigned) - Yellow lidded
- Hazardous/infectious waste EWC code 18 01 03* (Cat B consigned) - Orange lidded
- Cytotoxic/cytostatic waste (consigned) EWC code 18 01 03* (Cat A) 18 01 08* - Purple lidded
- **Offensive** Waste (Tiger – yellow/black bag)
- Domestic/general waste (Black bag)



Equipment

- All equipment used for patient treatment – for example monitors, carry chairs, longboards, scoop stretchers and all other items used for the movement of patients – should be cleaned using detergent wipes or soap and water then either air-dried or wiped with clean paper towels after every patient use.
- Single-use equipment (disposables) must **ONLY** be used on one patient



You and Infection Control

- Do not come to HFR training or events if you have had any vomiting and diarrhoea until you are free of symptoms for 48 hours.



Acknowledgements

- Bradford and Airedale PCT Infection Prevention Control Mandatory Training face to face session 2008



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