Infection control in the OR

Group discussion
How to use this discussion?

• Divide the group into smaller groups.
• The first part of the presentation is a short interactive lecture. Do not spend more than 10’ on this presentation.
• The second part is the actual discussion in which video sequences are used to open the discussion.
• Note that these videos are suggestions only. The same procedure can be carried out in different ways. It is important that different techniques are discussed. Focus also on principles of sterility, disinfection, etc. Make this clear to your participants.
Learning outcomes

• Define and list reasons for infection
• Discuss recommended practice(s) for perioperative nursing
• List actions for cases in which sterility is compromised

At the end of this session the learner will be able to:
• Define and list reasons for infection.
• Discuss recommended practice(s) for perioperative nursing.
• List actions for cases in which sterility is compromised.
1. Infections in orthopedic trauma

Why is this so important in orthopedic trauma?
Definitions and examples of:

• An infection
• A hospital-acquired infection
• A surgical site infection

In the next slides you will discuss together with the audience the definitions of:

• an infection
• a hospital-acquired infection (HAI) also known as a healthcare-associated infection or in medical literature described as a nosocomial infection.
• a surgical site infection.
The participants also come up with examples.
Infection

• What is an infection?
• Give examples.

Discuss with audience.
Infection

• Definition:
• Invasion by and multiplication of pathogenic microorganisms
• In body tissues or a part of the body
• Produces injury and disease
• Through a variety of cellular or toxic mechanisms
• Examples:
• Flu, cold
• All type of wound infections, etc

An infection is an invasion by and multiplication of pathogenic microorganisms in body tissues or a part of the body which produces injury and disease through a variety of cellular or toxic mechanisms. Examples are flu, a cold, or wound infections.
Hospital-acquired infection (HAI)

- What is a hospital-acquired infection?
- Give examples.

Discuss with the audience.

HAI stands for hospital-acquired infection, also known as healthcare-associated Infection. In medical literature known as nosocomial infection.
Hospital-acquired infection (HAI)

- Definition:
- An infection acquired in the hospital
- Examples:
- Urinary catheterization
- Hospital-acquired wound infection, etc

A HAI is an infection whose development is favored by a hospital environment. Such as the patient acquiring an infection during a hospital visit or an infection that is developing among hospital staff. Such infections include fungal and bacterial infections and are benefitted by the reduced resistance of individual patients.
Surgical site infection (SSI)

- What is a surgical site infection?
- Give examples.

Discuss with audience.
Surgical site infection (SSI)

- Definition
- Microorganisms enter through the surgical skin incision
- Examples
- Entrance points of external fixator, infected surgical wound, etc

A surgical site infection is a hospital-acquired infection where the microorganisms enter the skin incision made in order to carry out the operation.

These infections can be developed at any time starting from two to three days after surgery until the wound has completely healed (usually two to three weeks after the operation).
Microorganisms...

...cause infections associated with fracture devices:

<table>
<thead>
<tr>
<th>Microorganism</th>
<th>Freq in %</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staphylococcus aureus</td>
<td>30</td>
<td>MRSA</td>
</tr>
<tr>
<td>Coagulase-negative staphylococci</td>
<td>22</td>
<td>S epidermidis</td>
</tr>
<tr>
<td>Gram-negative bacilli</td>
<td>10</td>
<td>Pseudomonas</td>
</tr>
<tr>
<td>Anaerobes</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Enterococci</td>
<td>3</td>
<td>VRE</td>
</tr>
<tr>
<td>Polymicrobial (more than one</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>microorganism)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

Information for faculty: Show this slide only if you wish.

Commonly identified microorganisms causing infections associated with fracture devices (implants) are… (see table)

Abbreviations:
- MRSA: Methicillin-resistant staphylococcus aureus
- VRE: Vancomycin-resistant enterococcus
- S epidermidis: Staphylococcus epidermidis

Pseudomonas: This is usually pseudomonas aeruginosa. It is one member of the gram-negative bacilli. Others would be e. coli, for example. It is important but on its own, it would have quite a low frequency. Once combined with all the other gram-negative bacilli, one can see their importance more clearly.
Facts

- 4–16% of all hospital-acquired infections are SSI
- 38% of hospital-acquired infections in surgical patients are SSI

Information for faculty:
- Adapt the figures to your country, if possible.
- Show this slide only if you wish.

These are US statistics.
Facts

• 40–60% of SSI are preventable
• 2–5% of operated patients will develop SSI
• SSI increases length of stay in hospital by ca 7 days

Information for faculty:
• Adapt the figures to your country if possible.
• Show this slide only if you wish.

These are US statistics.
Consequences

Ask participants what the consequences of SSI are.
Consequences

- Discomfort and pain
- Increased antibiotic usage
- Prolonged hospitalization and readmission
- Increased costs
- Increased mortality

The consequences are:
- Discomfort and pain
- Increased antibiotic usage
- Prolonged hospitalization and readmission
- Increased costs
- Increased mortality
Sources

- Exogenous:
  - Contamination of wound through bacteria from environment:
  - Surgical team
  - Operating room environment
  - Instruments, material
- Endogenous:
  - Contamination of wound through the patient’s own bacterial skin flora

There are two types of sources:
Exogenous sources (the first source) are less common in comparison to endogenous sources (the second source).
2. Exogenous sources

- Surgical team
- Operating room environment
- Instruments and equipment

During this discussion exogenous sources of an infection will be discussed such as:

- The surgical team
- OR environment
- Instruments and material
Information for faculty

• Small video fragments are provided for the following section.
• All videos are:
  • Educational videos which show slow and clear movements allowing to visualize the techniques well
  • Simulations
  • Silent videos
• Select only a few of the videos for your discussion. Also parts of a video can be shown.
• Written outlines of each technique are available in the FSP. These can be provided to the participants after the discussions.
Information for faculty

• There are a few links to other slides in the presentation.
• Please check if the links work correctly.
• Restore the links, if necessary, or move through the presentation manually.
• The presentation and the videos must be downloaded separately.
• You can create links from the slides to the respective videos.
• You can also open the videos manually.

Important: Always check at the course location (on the course computer):
• If the links work properly
• If you can run the videos
Information for faculty

• When starting a video the following message might show:
• Click OK to open the file.
The moderator can decide upon the topic or they can give the choice to the participants.
Topics

7. Changing gloves intraoperative (2'59’’)
8. Skin preparation for osteosynthesis of an open tibia fracture (10’08’’)
9. Draping of hip: vertical drape (2’49’’)
10. Draping of image intensifier: 3-drapes technique (2’14’’)
11. Draping of image intensifier: 1-drape technique (2’32’’)

The moderator can decide upon the topic or they can give the choice to the participants.
Preoperative hair removal

• Watch the video fragment and discuss in group which handlings:
  • You carry out in your hospital.
  • You do differently.
  • You would try to change in your hospital.
Application of tourniquet

• Watch the video fragment and discuss in group which handlings:

  • You carry out in your hospital.
  • You do differently.
  • You would try to change in your hospital.
Skin preparation for osteosynthesis of a closed tibia fracture

• Watch the video fragment and discuss in group which handlings:

• You carry out in your hospital.
• You do differently.
• You would try to change in your hospital.
Draping of tibia: extremity drape

• Watch the video fragment and discuss in group which handlings:

  • You carry out in your hospital.
  • You do differently.
  • You would try to change in your hospital.
Draping of tibia: sandwich technique

- Watch the **video fragment** and discuss in group which handlings:
  - You carry out in your hospital.
  - You do differently.
  - You would try to change in your hospital.
Draping of forearm

- Watch the **video fragment** and discuss in group which handlings:
  - You carry out in your hospital.
  - You do differently.
  - You would try to change in your hospital.
Changing gloves intraoperative

• Watch the video fragment and discuss in group which handlings:
  
  • You carry out in your hospital.
  • You do differently.
  • You would try to change in your hospital.
Skin preparation for osteosynthesis of an open tibia fracture

- Watch the **video fragment** and discuss in group which handlings:
  - You carry out in your hospital.
  - You do differently.
  - You would try to change in your hospital.
Draping of hip: vertical drape

• Watch the video fragment and discuss in group which handlings:

  • You carry out in your hospital.
  • You do differently.
  • You would try to change in your hospital.
Draping of image intensifier: 3-drapes technique

- Watch the video fragment and discuss in group which handlings:
  - You carry out in your hospital.
  - You do differently.
  - You would try to change in your hospital.
Draping of image intensifier: 1-drape technique

- Watch the **video fragment** and discuss in group which handlings:
  - You carry out in your hospital.
  - You do differently.
  - You would try to change in your hospital.
Summary

You should now be able to:
• Define and list reasons for infection.
• Discuss recommended practice(s) for perioperative nursing.
• List actions for cases, in which sterility is compromised.