

Splash Basins – clean or contaminated

*A quantitative study on bacterial growth
in splash basins used to clean surgical
instruments perioperatively*

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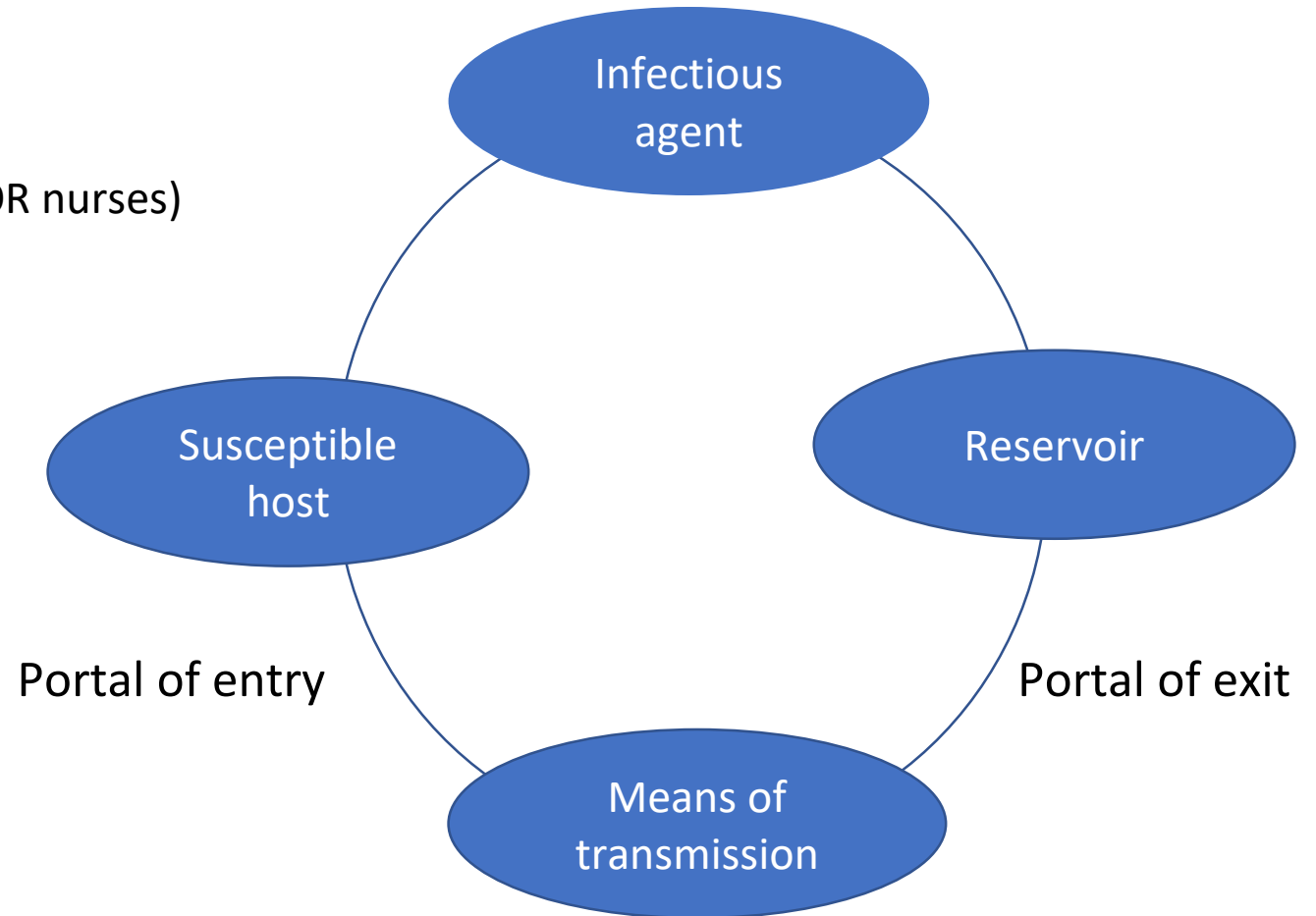
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Background

An important focus for Operating Room Nurses (OR nurses) is to prevent postoperative infections and promote patient safety.

Chain of Infection



Splash Basins

Filled with sterile water, used to clean instruments during surgery.

This perioperative cleaning procedure can reduce the risk of corrosion and prolong the instrument's lifetime.

It also enhances further cleaning after surgery.



Why Splash Basins?

Do we really know what is in the splash basins?

Can it contain infectious agents?

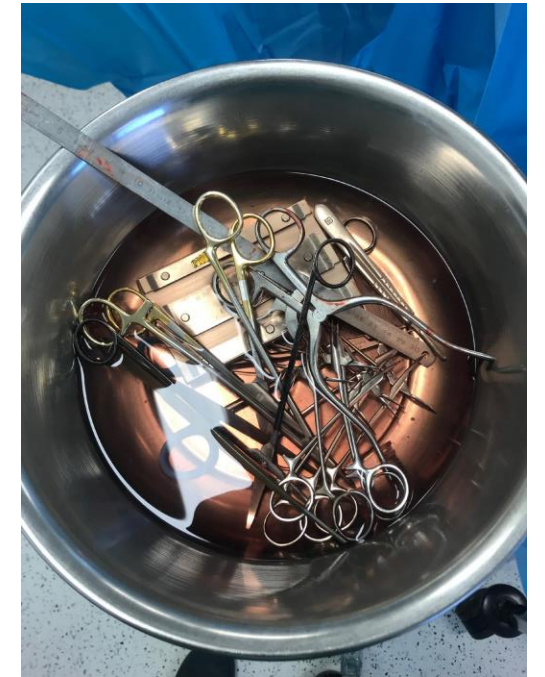
We find that the use of splash basins varies, and wonder...

What does the guidelines say?

.... we decide to investigate this topic further

Previous studies

- Danish guidelines
- Orthopedic surgery
- Older date
- No Norwegian studies



Methods



Quantitative

Prospective observational
study

Ethics

- The Regional Committee for Medical and Health Research Ethics (REK)
- Norwegian Centre for Research Data (NSD)
- Anonymous, no sensitive data
- Data collection forms



Aim

“Do splash basins used for cleaning instruments during surgery get contaminated with bacteria, and if so, what kind of bacteria is most present, and are they pathogenic?”

“Do ventilation systems, number of door openings, number of people in the operating room, and length of surgery affect contamination?”

Where do
we want to
investigate?

Two surgical departments with different
facilities and ventilation systems

Neurological surgery

Conventional overpressure
ventilation

Thoracic surgery

Laminar airflow ventilation (LAF)

Collecting data...

- **Water samples**
- **Data collection form**
 - length of surgery
 - number of people present (sterile/non sterile)
 - number of door openings
 - ventilation system

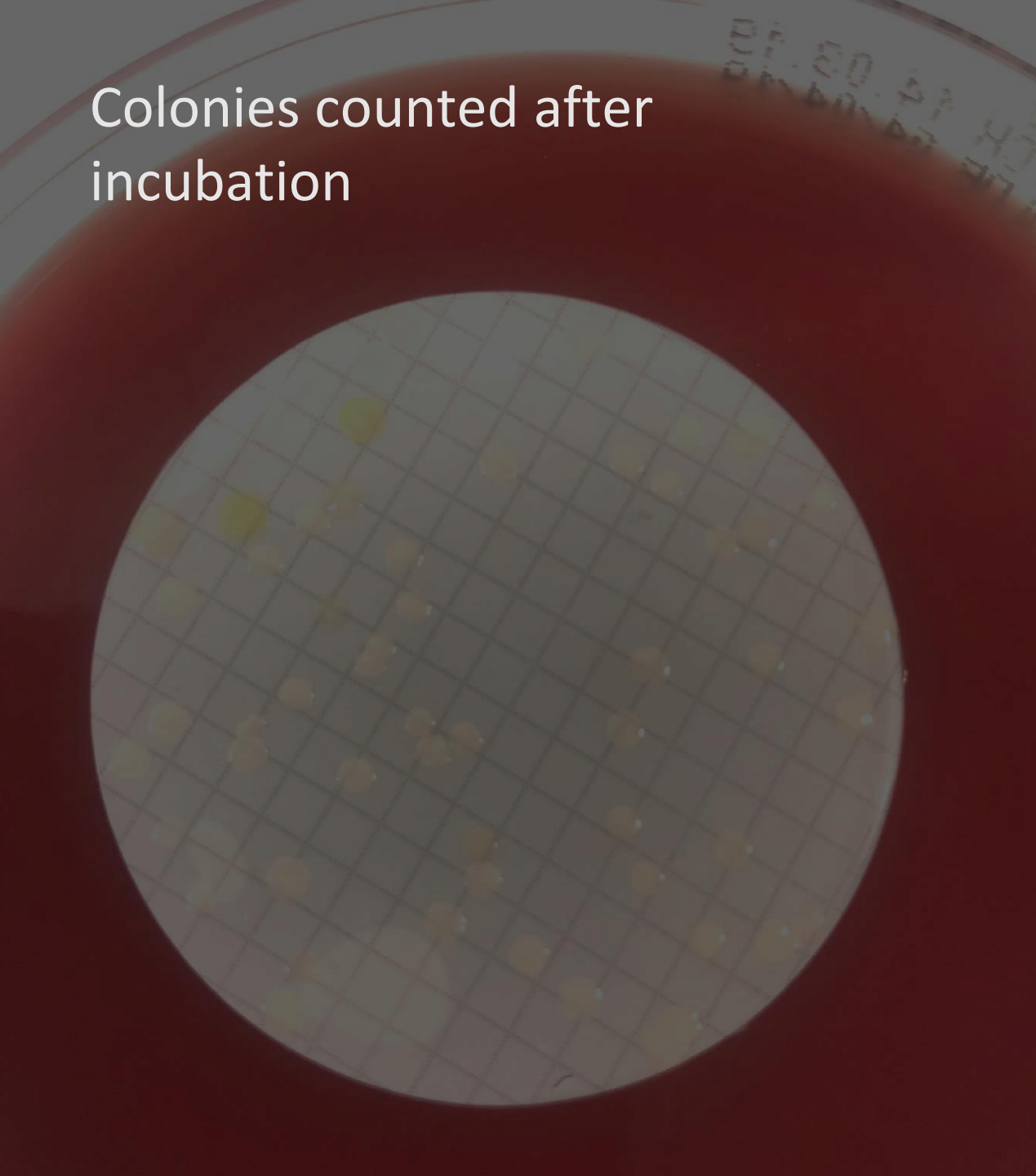


At the laboratory...

- 100 ml taken from each splash basin were filtered through sterile cups
- Incubation on blood agar for approximately 48 hours
- Type of bacteria were identified by MALDI-TOF technique



Colonies counted after incubation



Smear of different bacteria before MALDI-TOF identification



Results

Bacterial growth at the end of surgery

Thoracic LAF ventilation	Neuro Conventional ventilation	Total%
41 %	47 %	44 %

Bacterial colonies

Number of colonies on agar

Thoracic

1+1+1+1+1+2+55

LAF ventilation

Neuro

1+1+1+2+4+7+ uncountable

Conventional

overpressure

ventilation

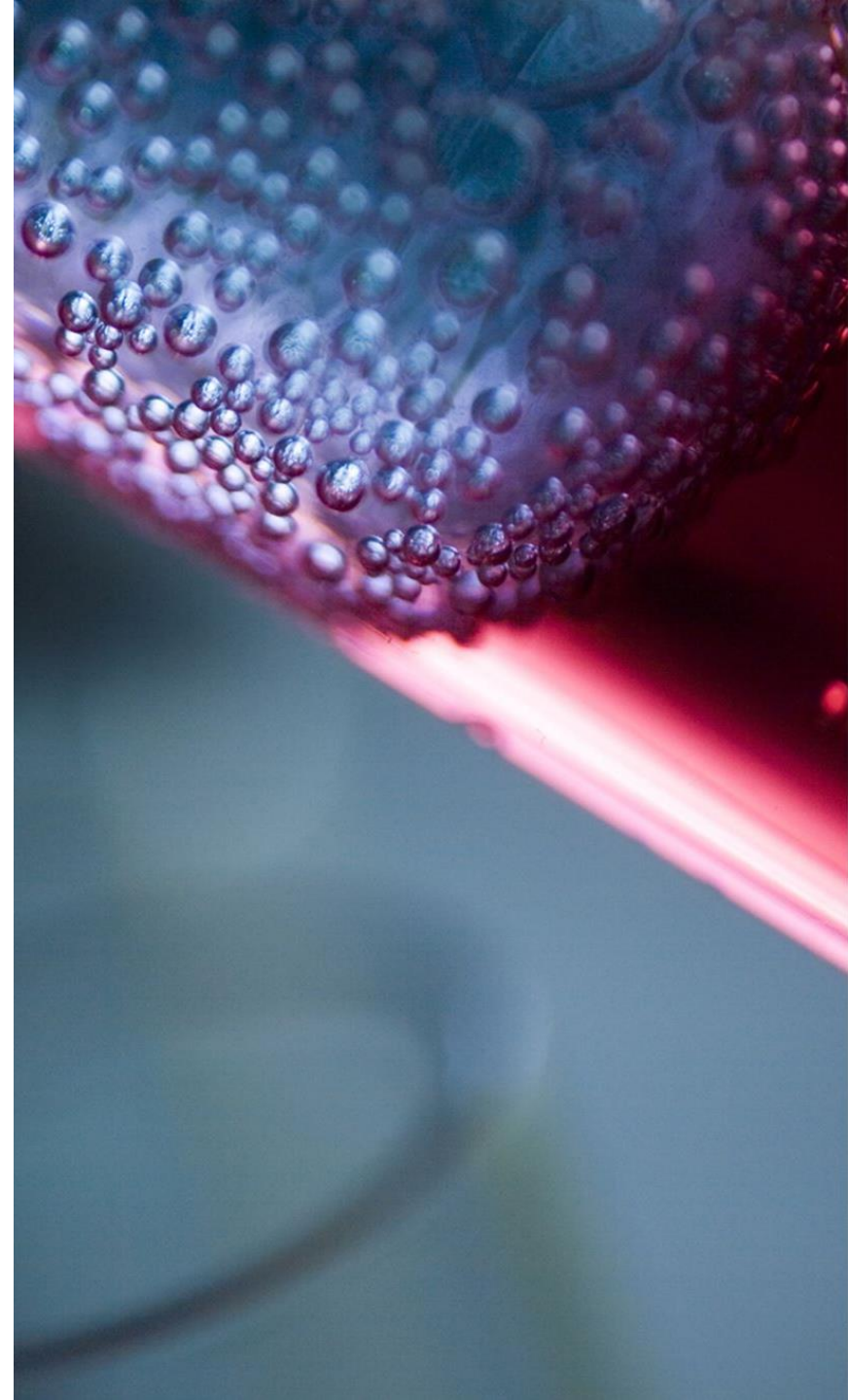
Which infectious agents did we find?



Bacteria	Start samples	Final samples
<i>Staphylococcus epidermidis</i>		7
<i>Staphylococcus hominis</i>	1	1
<i>Micrococcus luteus</i>	2	5
<i>Staphylococcus capitis</i>		4
<i>Staphylococcus haemolyticus</i>		1
<i>Bacillus thuringiensis/cereus/ Bacillus species</i>		1
<i>Corynebacterium lipophiloflavum/ /aftermants/ Corynebacterium species</i>	1	1
<i>no peaks found</i>	1	2

Conclusion

- **Total contamination rate of 44 % !!**
- No correlation
- No significant difference between departments/ventilation systems
- Corresponds with previous studies
- High risk of contamination



Practical implications



We need to further discuss the use of splash basins perioperatively



Continued research on this topic, and on alternative practices of cleaning instruments during surgery, is recommended.



*“Were there none who
were discontented with
what they have, the world
would never reach anything
better”*

- Florence Nightingale



Thank
you!