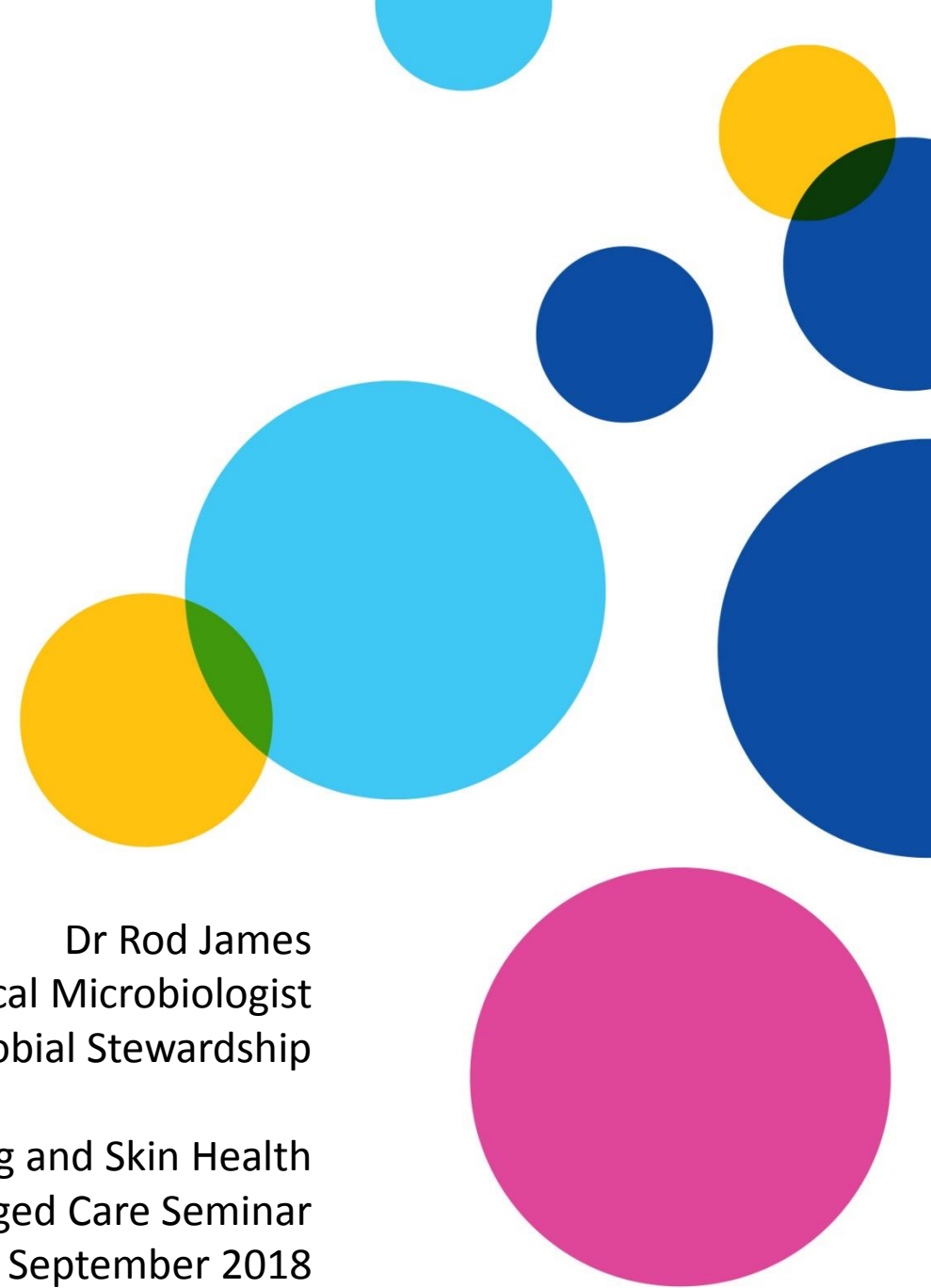


# Guidelines on microbiological wound swabbing

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Ageing and Skin Health  
Residential Aged Care Seminar  
25 September 2018



- When to collect a wound swab
- How to collect a wound swab
- How to interpret a microbiology wound report
- When to commence antimicrobials

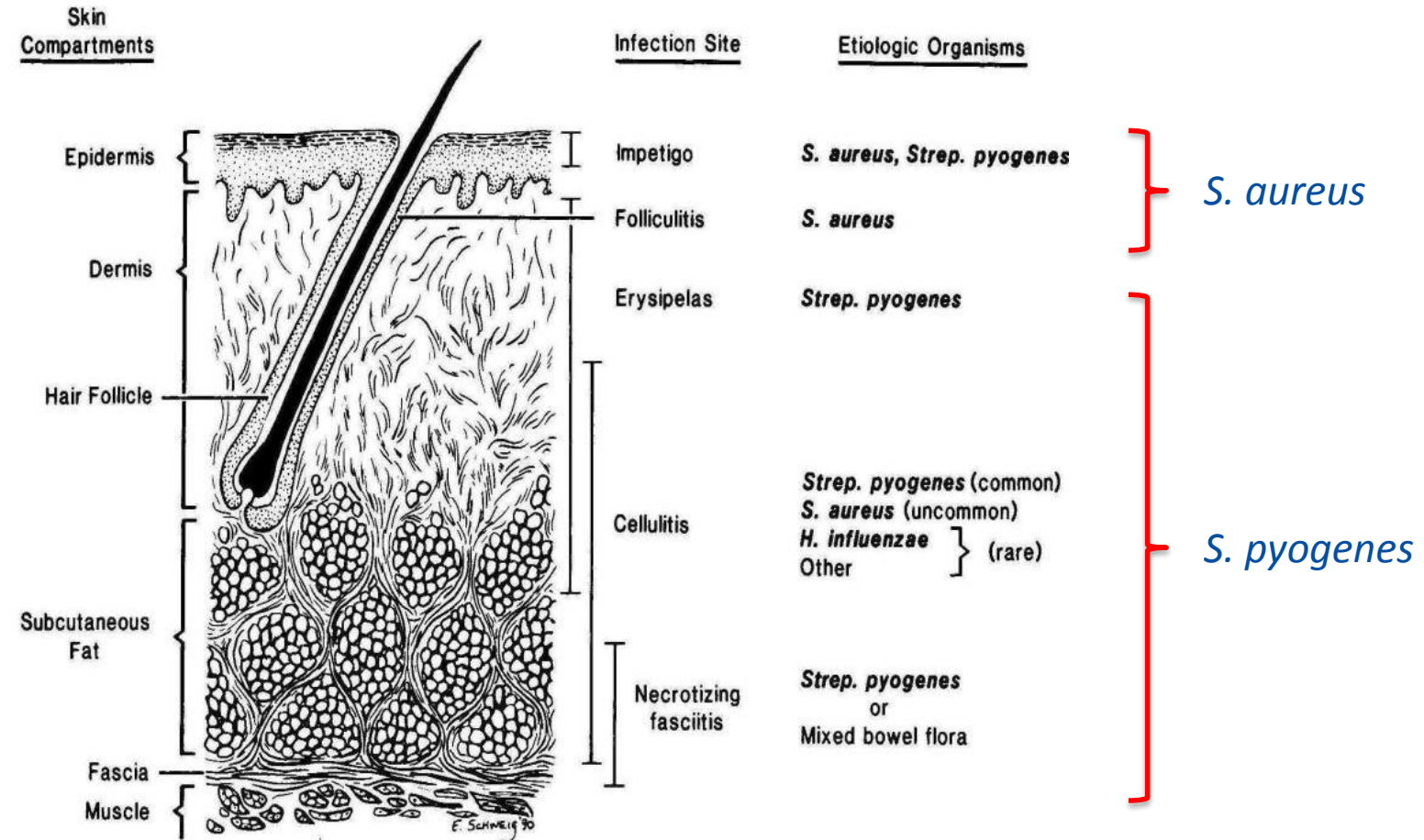


When to collect a  
wound swab

# When to collect a wound swab

- Wound swab microscopy, culture and sensitivity (MC&S) is usually **unnecessary** for skin and soft tissue infections
  - as particular organisms are often **typically associated** with specific clinical conditions
  - correct treatment choice is usually **predicted** by the suggested **empirical antimicrobial choice**
    - e.g. *Therapeutic Guidelines: Antibiotic*
  - superficial swabs in the **absence** of a skin break are usually **unrewarding**

# When to collect a wound swab



# When to collect a wound swab

- Wound swabs **may** be helpful in the detection an infection and aid in treatment choice
  - when wound or infection is **not resolving** as expected or with **adequate** empiric antimicrobial therapy
  - if **atypical** infections are suspected
    - e.g. Mycobacterial, fungal, viral infections
- Cultures may be undertaken to enable **sensitivity** testing
  - to ensure **optimal** treatment regimens, e.g. MRSA

# When to collect a wound swab

- Wounds should only be cultured when **signs and symptoms** of a deep infection are present
- If an **open wound** or broken skin
  - swabs can be taken from the infected area
- If a **closed wound** or abscess present
  - pus in syringe is preferable to a swab



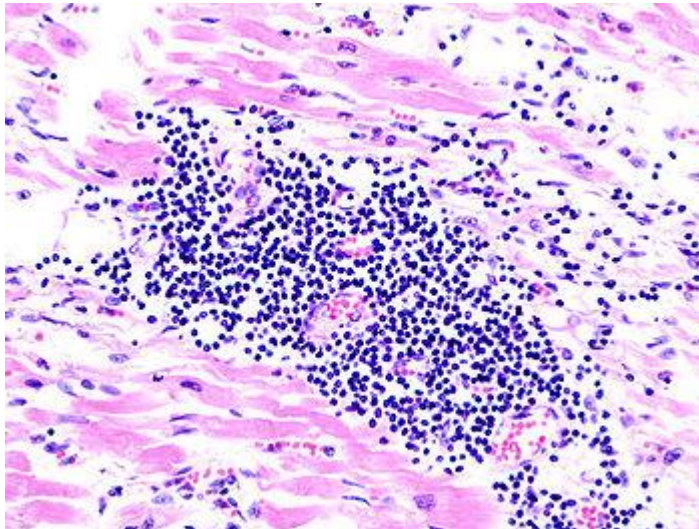
# When to collect a wound swab



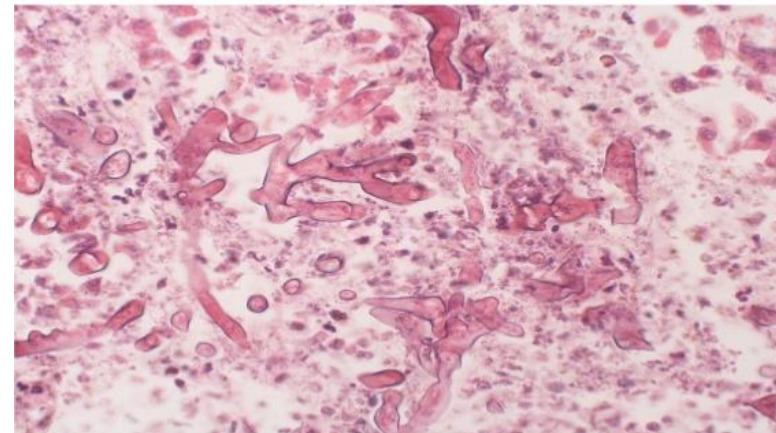


# When to collect a wound swab

- Many conditions are best diagnosed by a **skin biopsy** for culture and histopathological examination



mucormycosis



# How to collect a wound swab

# If a swab is absolutely necessary

- Explain the procedure to the patient and seek consent
- Put on apron
- Wash hands
- Assemble equipment
- Advise the patient to assume appropriate position
  - ensure patient comfortable
  - assist if necessary
- Put on gloves
- Open swab packet as far as will enable removing the swab without contaminating it
  - remove top from transport container
- Take swab appropriately for type to be obtained
  - check directions or with pathology provider
- Put swab in transport container, ensure securely placed
- Remove gloves and apron
- Wash hands
- Label swab container
- Complete request form
- Document in notes
- Send swab and form to laboratory

# How to collect a wound swab



# How to collect a wound swab

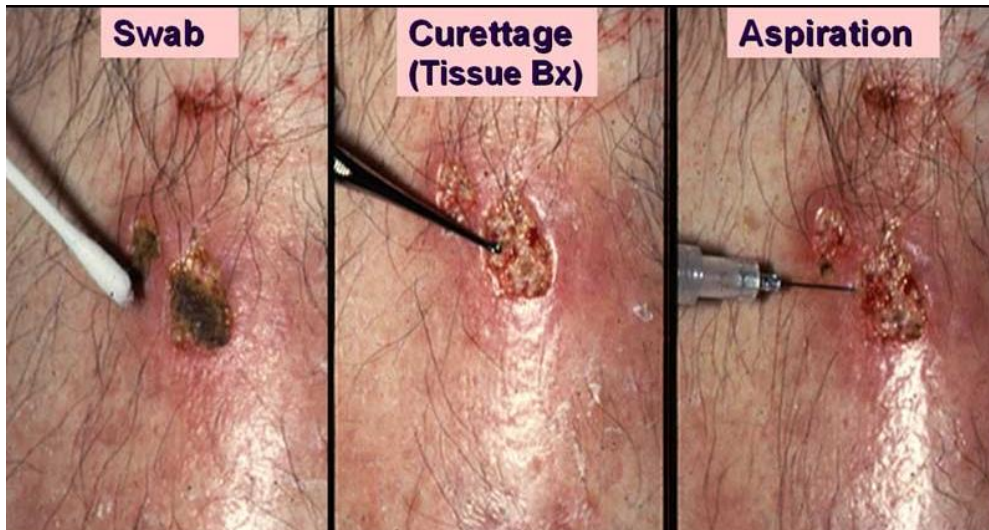
- If an **open wound or ulcer**, sample a representative part of the lesion
  - swabbing dry crusted areas is unlikely to yield the causative pathogen
  - any debris or surface exudate should be removed and the ulcer should be cleaned with sterile saline
  - pass swab deep into lesion and firmly sample lesions advancing edge
  - a biopsy or a needle aspiration of the edge of the wound should be taken if able





# How to collect a wound swab

- If a **closed wound or abscess** present
  - aspirate material with needle and syringe is preferred
  - the area should be decontaminated as much as possible before the material is aspirated



# How to collect a wound swab

- Collect specimens **before** starting therapy if possible
- If **atypical organism** culture is required
  - this information should be provided on the request form
- Swabs for bacterial (aerobic or anaerobic), viral and fungal cultures should then be placed in **appropriate transport medium**





# How to interpret a microbiology wound report

# How to interpret a report

- Normal skin and therefore skin wounds, have a mixture of different bacteria, this is called **colonisation**
  - which are often **harmless**
  - **do not** require treatment
- When the skin is broken as a result of trauma, burns, bites or surgical procedures
  - **colonisation** with a range of these bacteria may occur

# How to interpret a report

- It is important to think carefully about the **likely significance** of the results of cultures from wound swabs
  - to avoid **over-treating** patients with antibiotics
    - you **do not** have to treat everything that is cultured
    - pure growth of a single organism **increases the likelihood** that it is the pathogen

# How to interpret a report



**Collected:** 01/01/2018 - 12:00 AM  
**Reported:** 13/01/2018

**Notified by:** on 00/00/0000  
**Message:**

=====  
Report data as at: 14:34:14 03 Jan 2018 For REQUEST on 01 Jan 2018  
-----

## MICROBIOLOGY REPORT

REPORT STATUS: **FINAL**

SPECIMEN: Swab

SITE: Right forearm skin

## GRAM STAIN:

White blood cells : few

Epithelial cells : +++

Gram positive cocci : ++

Gram negative cocci :

## CULTURE:

**Staphylococcus aureus ++**

## SENSITIVITIES:

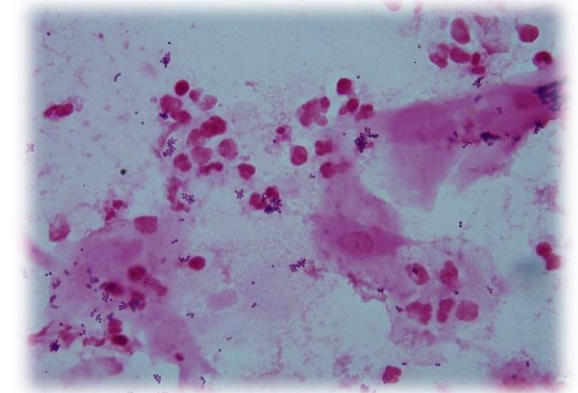
Penicillin R

Flucloxacillin S

Erythromycin R

# How to interpret a report

- If there is a high *white cell*, *polymorph* or *pus cell* count, ++ or +++
  - this **suggests** a wound infection may be present
- If ++ or +++ Gram negative or Gram positive bacteria are seen on **microscopy**,
  - this is more likely to be a **true infection**



# How to interpret a report

- If there is a **colony count** of  $>10^6/\text{L}$ , ++ or +++ of a bacteria
  - this is more likely to be a **true infection**
- Growth of more than one bacteria species suggests
  - possible **contamination / colonisation**



# How to interpret a report

- Common **colonisers** and **contaminants**
  - alpha haemolytic streptococci
  - coagulase negative Staph.
  - Corynebacterium spp.
  - Propionibacterium spp.
  - Bacillus spp.



# How to interpret a report

- Common **pathogenic** organisms
  - *Streptococcus pyogenes*
  - *Staphylococcus aureus*
  - Enterococcus spp.
  - *Clostridium perfringens*
  - *Pseudomonas aeruginosa*
  - Enterobacteriaceae, e.g. *E.coli*, Klebsiella spp.
  - Fungi (*Candida albicans*)

# How to interpret a report

- If the patient is receiving an antimicrobial that is reported as ***resistant (R)*** or ***intermediate (I)***
  - this may need to be changed to one that is reported as ***susceptible (S)***
- If there is **more than one** that is ***susceptible (S)***
  - the patient should be prescribed the one with the **narrowest spectrum**
    - prudent use of antimicrobials according to local and national protocols is recommended

# How to interpret a report



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**Staphylococcus aureus ++**

## SENSITIVITIES:

Penicillin R Flucloxacillin S Erythromycin R



When to  
commence  
antimicrobials

# When to commence antimicrobials

- All **chronic wounds** are colonised by bacteria
  - wound healing occurs in the **presence** of bacteria
  - certain bacteria appear to **aid wound healing**
- It is not the presence of organisms but their **interaction** with the patient that determines their influence on wound healing

# When to commence antimicrobials

- After about 4 weeks
  - facultative anaerobic Gram negative rods will **colonise** the wound
    - e.g. *Proteus*, *E. coli*, and *Klebsiella*
  - organisms like *Pseudomonas* are **not very** invasive
    - unless the patient is highly **compromised**
  - as the wound **deteriorates** deeper structures are affected
    - anaerobes become more common
    - infections become polymicrobial

# When to commence antimicrobials

- The decision to treat a wound infection should be made on **clinical grounds**
  - **not** based on the results of a wound swab
- Antibiotic treatment may be appropriate for infection which is **spreading**
  - especially where **systemic toxicity** is present
  - for less serious infection, simple **cleaning or drainage** may be sufficient



# When to commence antimicrobials

- Systemic **signs and symptoms** of infection:
  - fever
  - feeling unwell, nausea
  - purulent discharge
  - increasing or continual pain
  - redness or tracking around the area
  - swelling around the area
  - heat around the area
  - loss of function or movement
- Systemic factors that **increase** chances of infection:
  - vascular disease
  - oedema
  - malnutrition
  - diabetes
  - alcoholism
  - prior surgery or radiation
  - corticosteroids
  - inherited neutrophil defects

# Summary

- Wound swabs are **rarely indicated**
  - even in the presence of infection the are **often unhelpful**
  - **clinical review** and **empirical guidelines** are more helpful
    - follow *Therapeutic Guidelines: Antibiotic* or local wound care manuals
- Wound swab reports need to be **interpreted correctly**
  - **do not** treat all organisms isolated
  - **clinical review** needs be included for interpretation

Thank you