

# SILVER IMPLANTS

Mike Reed  
MD FRCS(T&O)



# IMPLANTS



- Ionic silver is not the same as metallic silver.
- An ion of silver is an atom of silver with one electron missing in its outer layer.
- Metallic silver is not soluble in water and is barely bacteriocidal.

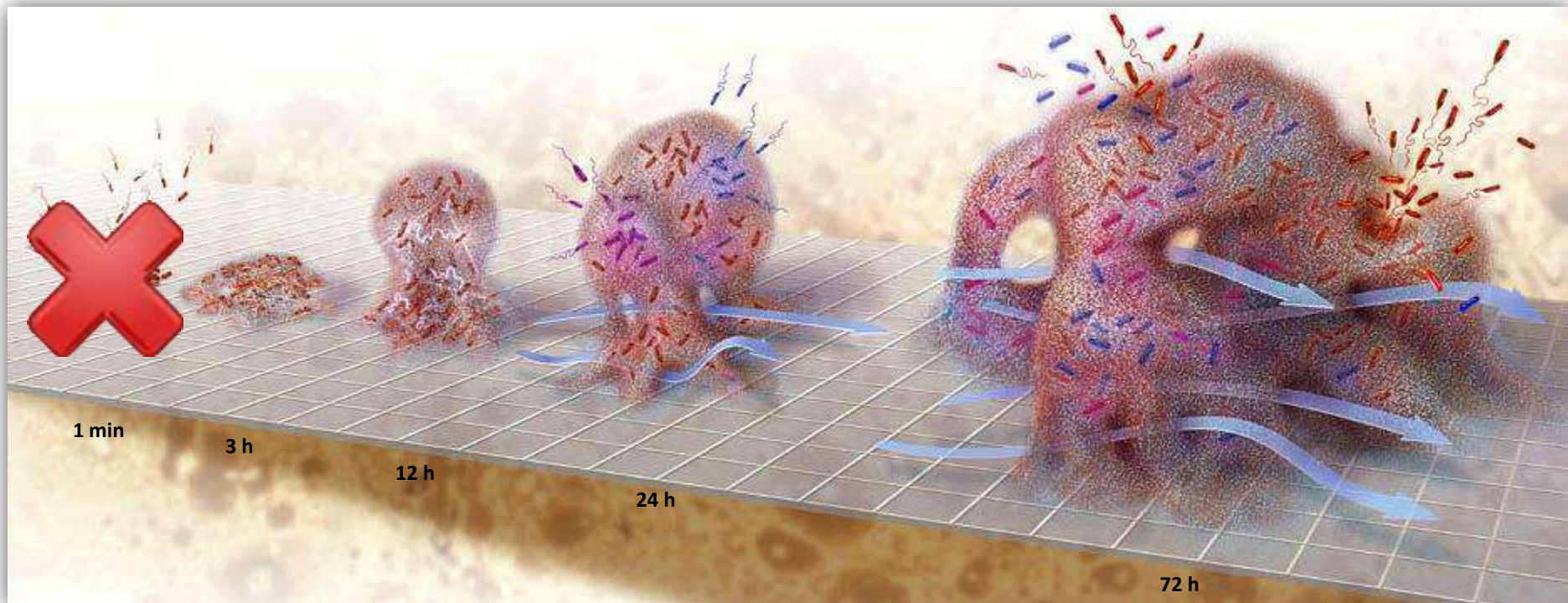
# Silver prostheses

- Implantcast
  - MUTARS
- Agluna
  - Zimmer (Bactisure Ag)
  - Stanmore
- PorAg
  - Link

# Lab stuff

	Ti Disc with Silver	Aquacel Ag +ve Control	Ti Disc -ve Control
<i>Escherichia coli</i>	Cidal	No effect	No effect
<i>Enterococcus faecalis (VRE)</i>	Static	Static	No effect
<i>Staphylococcus epidermidis</i>	Cidal	Cidal	No effect
<i>Staphylococcus epidermidis (MRSE)</i>	Cidal	Cidal	No effect
<i>Staphylococcus aureus (MRSA)</i>	Static	Static	No effect
<i>Streptococcus pyogenes</i>	Cidal	Static	No effect

# How Bactisure AG works



**Bactisure AG** is intended to interrupt the PJI process at the beginning, before the formation of Biofilms, where bugs attach to the implant surface

# The clinical paper on Agluna

- Lee Jeys – Royal Orthopaedic
- Now published in BJJ
- 85 Silver / 85 Controls – case matched
  - Anatomical location
  - Type of surgery
- **Infection rates**
  - **Silver implants:  $10/85 = 11.8\%$**
  - **Control implants:  $19/85 = 22.4\%$   $p < 0.01$**

# DAIR more successful

- Silver implants: 7/10 – 70%
- Control implants: 6/19 – 32%

# Persistent infection rates

- Removal, amputation, suppression
- Silver 3/85 – 3.5%
- Control 13/85 – 15.3%

# Complications



# Argyria following the use of silver-coated megaprostheses

No association between the development of local argyria and elevated silver levels



## Implantcast, Germany

23% developed local argyria after a median of 25.7 months



# Should we use it?

Needs a trial

Power calc

- To reduce infection rate from 25% to 20%
- 1134 per group

**Thank you**

**mike.reed@nhs.net**