COPPER IN HOSPITALS: PROGRESS

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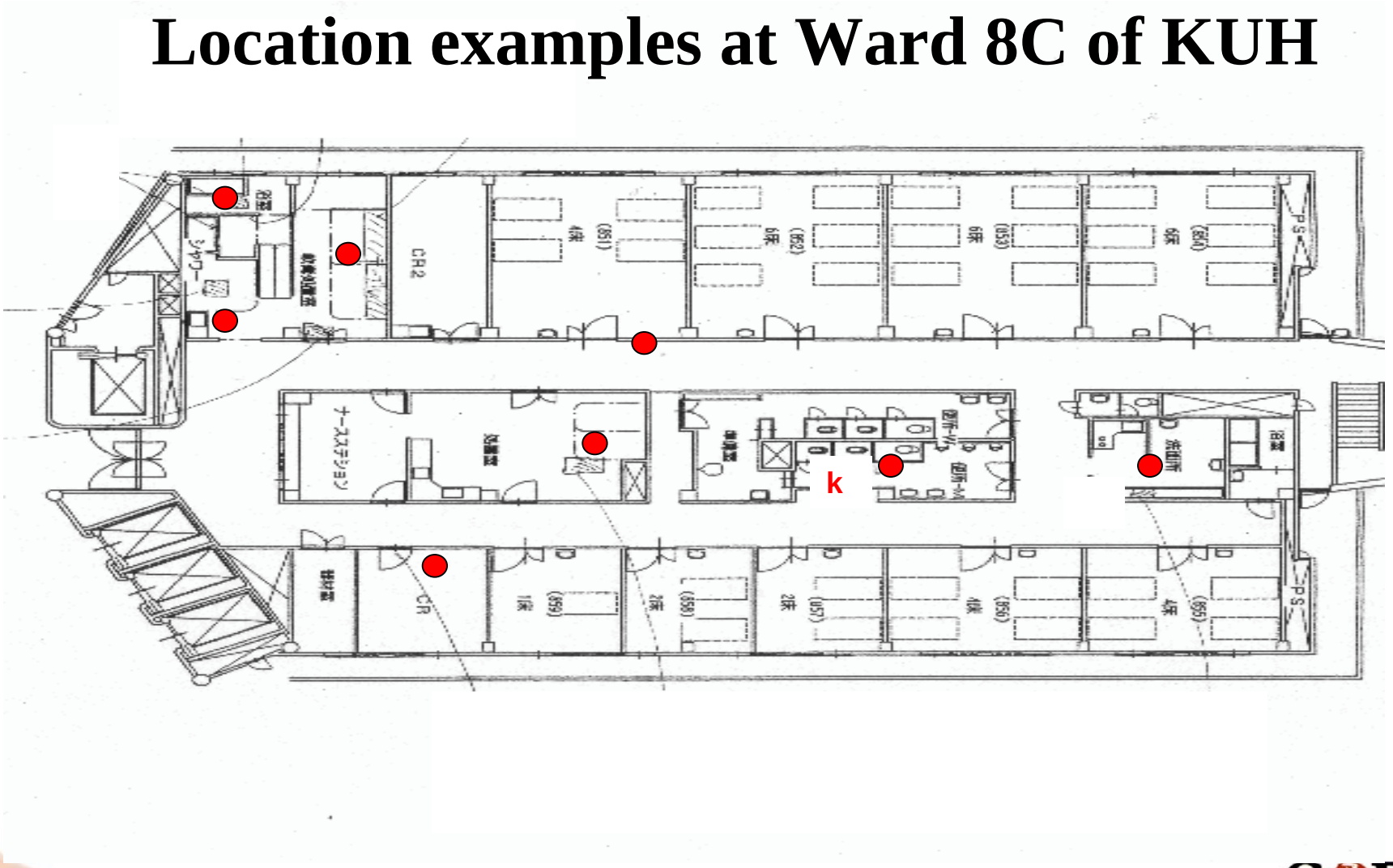
AIM OF CURRENT STUDY

- **Evaluate bactericidal activity of copper and brass**
  - **Kitasato University Hospital, Tokyo, Japan (KHU)**
    - **Different sites in dermatology ward**
- **Evaluate stamp and swab methods for quantifying bacterial levels**
- **Testing conducted 15 June – 27 July, 2005**

MATERIALS AND METHODS

Location examples at Ward 8C of KUH



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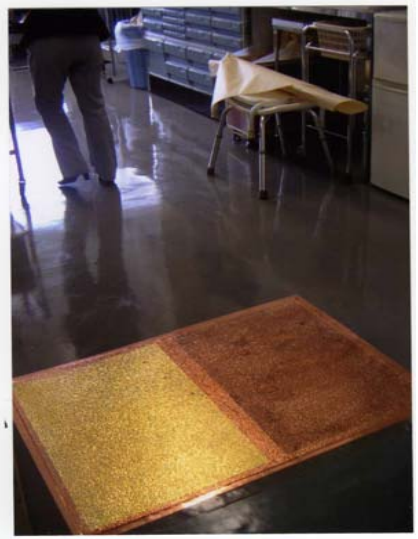
TEST SITES

A. Isolation space room	Floor
B. Room for treatment with ointment	Floor
C. Medical treatment room	Floor
D. Equipment carts	Surfaces
E. Lavatory	Sink
F. Shower or tub	Floor of washing space
G. Conference room	Push plates
H. Corridor	Corridor handrails
I. Restroom for healthcare workers	Doorknobs
J. Lavatory	Faucet handles, handrails, paper dispenser cover

TEST SITES

Lavatory Handrail,
Paper Dispenser Cover



Isolation Space Room Floor

Conference Room Push Plate

Restroom Doorknob

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MATERIALS AND METHODS

Bacteria tested for:

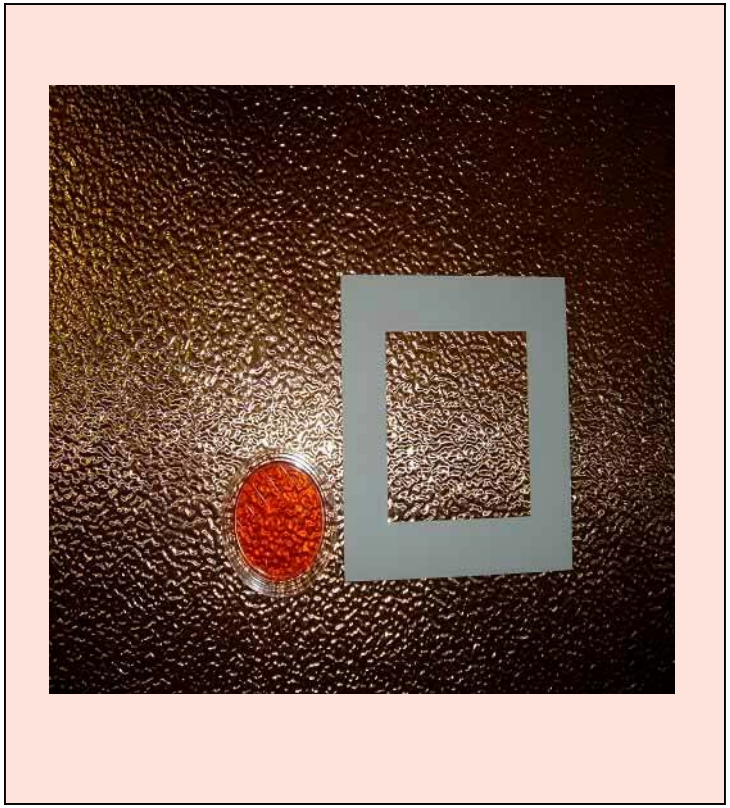
- ***Escherichia coli***
- ***Pseudomonas aeruginosa***
- ***Staphylococcus aureus***
- **General Bacteria**

MATERIALS AND METHODS

- Copper plates - JIS C1220R (~ 99.9% Cu)
- Brass plates - JIS C2680RH (~ 66% Cu, ~ 34% Zn)
- Thin copper foil tape
- Placed copper and brass plates, and copper foil at various sites throughout ward
- Copper foil tape used on staff restroom doorknobs, lavatory faucet handles, hand rails, paper dispensers
- Plates used at all other settings

SAMPLING METHODS

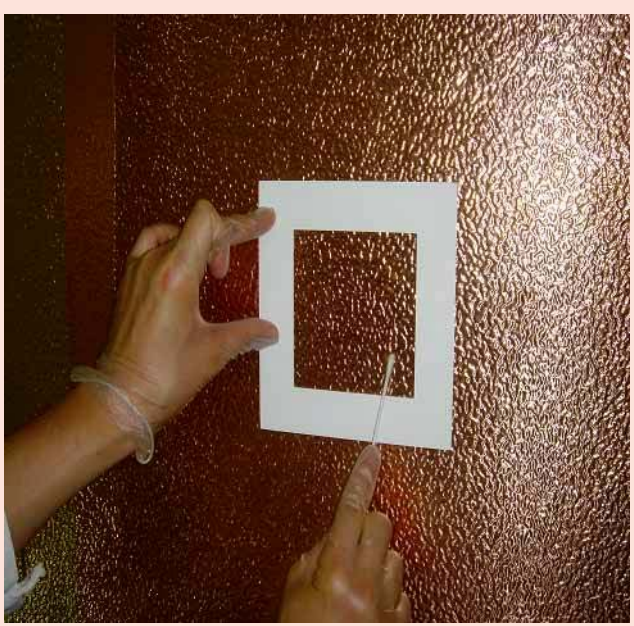
– **Stamp: 25 cm^2 area pressed with food-stamp plates**



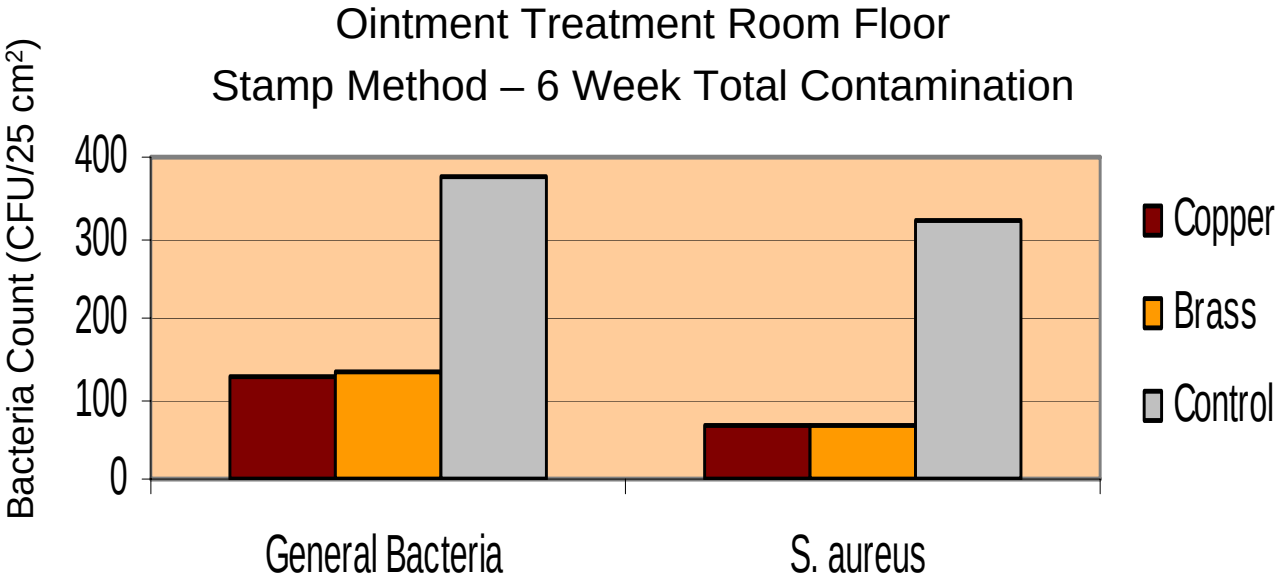
SAMPLING METHODS

– **Swab**

- **100 cm^2 areas swabbed with 3M quick swab**
- **Shaken severely in Letheen broth for 10 seconds**
- **Diluted 10-fold**
- **Plated and incubated 48 hours at 37ºC**



BACTERIAL CONTAMINATION ON OINTMENT TREATMENT ROOM FLOOR



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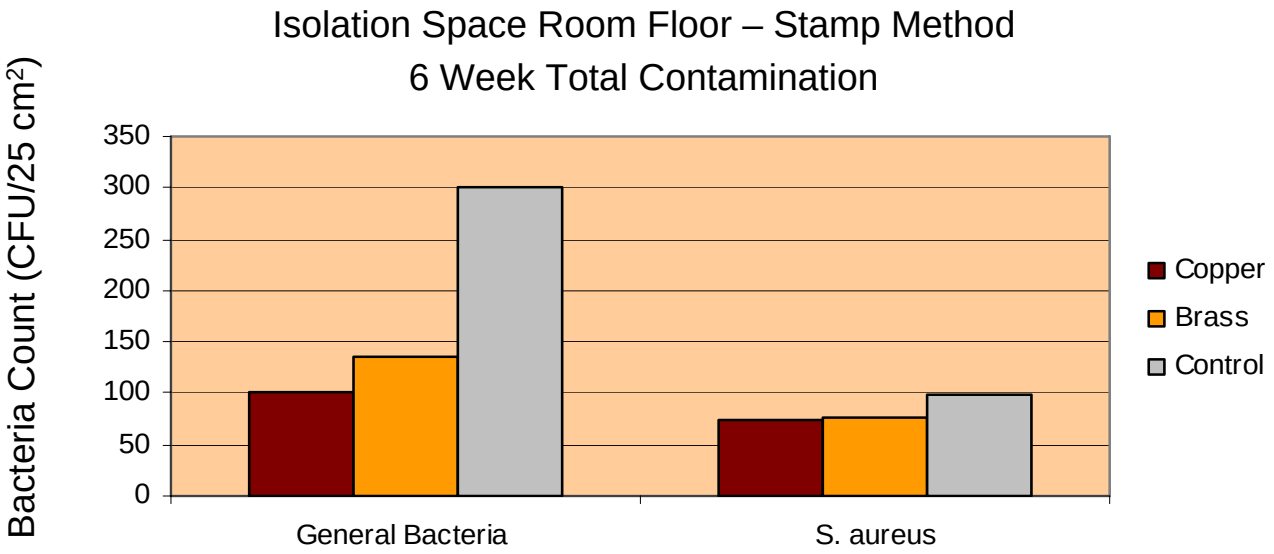
BACTERIAL CONTAMINATION ON ISOLATION SPACE ROOM FLOOR



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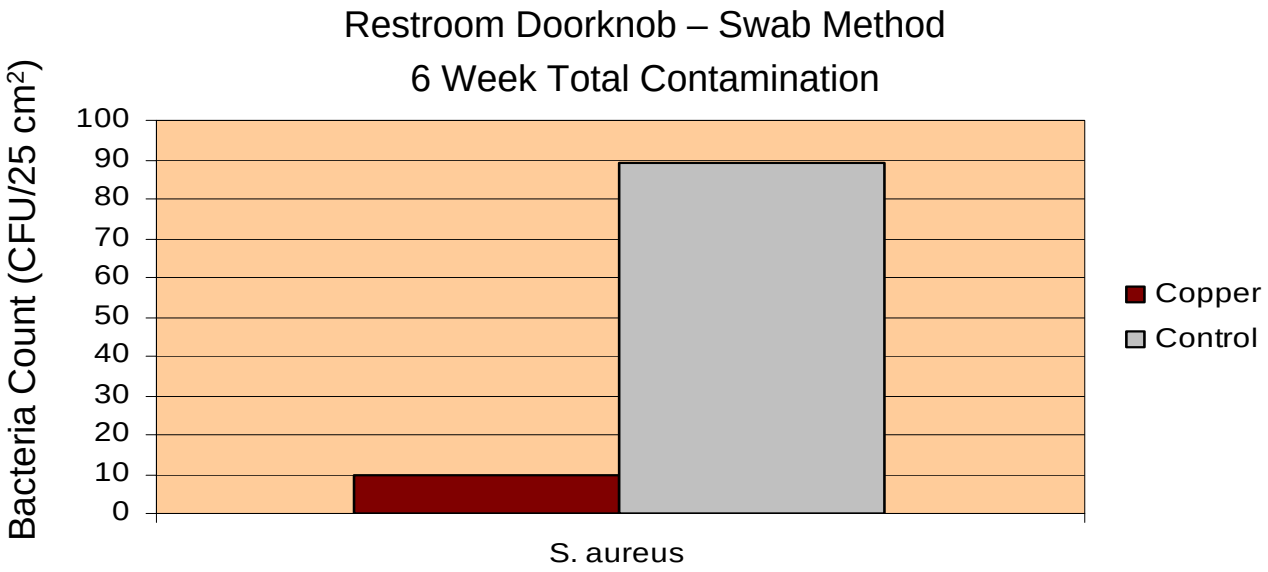
BACTERIAL CONTAMINATION ON RESTROOM DOORKNOB



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CONCLUSION

- **Copper alloys exhibited bactericidal effects at several sites in the KHU dermatology ward when compared with control material**
- **Brass samples displayed a slightly stronger bactericidal effect than copper alloy sample in tested sites**
- **Stamp method is more effective at quantifying bacteria on flat surfaces; swab method is more effective for round surfaces**
- **Further studies underway**