Coating the Ward Environment with Visible Light Activated Photocatalyst Can reduce the Hospital Acquired Infection Rate

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Introduction:
Is there room for improvement in our current infection control strategy?
- At any time, 6-10% in-patient suffered from hospital acquired infection.
- Current infection control relies on index case isolation and vector control (hand hygiene).
- Compliance is not optimal (and will hardly be perfect).
- Little attention is paid to a cleaner and safer environment.

Is the ward environment safe?
- Ward environment is known to serve as a secondary reservoir for pathogen.
- No bed fulfil microbiological hygiene standard under routine housekeeping.
- Even decontamination procedure cannot guarantee disinfection.

What if?
- A material that is safe to patient but lethalth to microbial, long lasting and inexpensive, can be used to spray coat the ward environment.

Visible light activated photocatalyst
- Commercial product with good safety profile.
- It decomposes all organic material if illuminated by visible light.
- >99% bactericidal rate for wide spectrum of bacteria and virus.
- Recommended by Japan and Malaysian government for infection control in the community.

Methodology:

Study group:
- Patients admitted to the 2 coated cubicles of the male orthopaedic rehabilitation ward in Sandy Bay.
- Coated area included wall, door, handle, furniture, and mattress.

Control group:
- Patients admitted to 2 uncoated cubicles of the same ward.

Outcome:
- Environmental cleanliness was monitored by Hygiena SystemSure Plus ATP luminometer.
- Clinical outcome included surgical site infection (SSI) rate, influenza like infection (ILI) rate, pneumonia, urinary tract infection (UTI) rate.
- Episodes of fever and use of antibiotics were also recorded.

Study period:
- From August-2010 to March-2011.

Result:
106 patients were recruited in the study, contributing a total of 1589 bed-day. The mean age was 78.6 year-old, of no significant difference between the groups.

Conclusion:
Visible light photocatalyst can reduce 94.2% of the total microbial load of ward environment.
A 53.2% reduction in hospital acquired infection rate is noted in patient admitted to the visible light photocatalyst coated cubicles.

Reference:

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