Project Title

Use of Stabilised Ozonated Water for Infection Control

Project Lead and Members

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Organisation(s) Involved

Khoo Teck Puat Hospital

Healthcare Family Group Involved in this Project

Ancillary Care, Healthcare Administration, Medical, Nursing

Applicable Specialty or Discipline

Peri-operative Services, Infection Control, Specialist Outpatient Clinic, Anaesthesiology, Operations

Aims

To look for an alternative solution that is safer and less toxic to clean the operating room (OR) procedure and patient transport trolleys in Major Operating Theatre (MOT).

Background

See poster appended/ below

Methods

See poster appended/ below

Results

See poster appended/ below

Conclusion

See poster appended/ below

Project Category

Care & Process Redesign

Quality Improvement, Lean Methodology, Workflow Redesign, Value Based Care, Productivity, Safe Care

Keywords

Disinfection, Ozonated Water

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Yishun Health

Background & Aims

Common cleansing agents used in our hospitals are effective in disinfection, however such chemicals can be **toxic**, **corrosive** and are **classified as poisons**.

- **Our study aims** to look for an alternative solution that is **safer and less toxic** to clean the operating room (OR) procedure and patient transport trolleys in Major Operating Theatre (MOT).
- A comparative efficacy study on the use of **Stabilized Ozonated Water / Aqueous (SOA)** (that is used widely in food industry) with current disinfectant (UltraClean®) was carried out in November 2018.

Method

We did literature reviews (see references), discussed and applied the **Plan-Do-Study-Act (PDSA) methodology**.

PLAN

- To **validate the effectiveness of SOA** for an **alternative safe disinfection solution**.

DO

- Use of **Adenosine Triphosphate (ATP) test readings** to study the efficacy of cleaning. The recommended pass rate of **100 RLU** was used.

ATP test is a process of **rapid measurement of active growing microorganisms** through detection of adenosine triphosphate.

STUDY

- Compare study results between use of **SOA** and **UltraClean® disinfectant** on procedure trolleys.

ACT

- Based on study results, we implemented the **use of SOA** to **wipe down our procedure trolleys at operating room premises** instead of the former practice of sending about 200 procedure trolleys down to CSSU for manual washing.

Results

Methodology	Microbial Reduction Achieved	Achieved ≤100 RLU (Recommended)	Achieved ≤20 RLU (Ultra Clean)
Wash with UltraClean® and copious water	90%	100%	90%
Spray with SOA and wipe	100%	80%	20%
Wipe with soaked SOA towel with a stipulated time of 10 minutes	80%	**100%**	90%

Analysis of Results

- Study results showed that cleaning of procedure trolleys with **SOA** is able to achieve **comparable microbial reduction** and **hygiene standard** as when UltraClean® was used. The results led us to implement the use of a **safer choice of disinfection** that is **non-toxic** to users.
- There was a total time **savings of 104 hours per year** due to the **significant reduction of steps** in processes and hassle. Cleaning of 200 procedure trolleys can be done **much faster** at the MOT premises instead of sending down to CSSU, resulting in more satisfied teams.
- Manpower **cost savings of $4,368 per year** was calculated based on the reduced number of staff required.
- **Increased productivity and happier teams** were achieved as MOT team can spend quality time to deliver **better patient care**.

SOA installed in Disposal Room @ OT

No hassle…
No toxicity…
Faster process…
Happy Lo!!!

- Findings also showed that the **process and methodology of cleaning of trolleys** is as **important** as the solutions used, as microbes grow on surfaces over time. The protocol to wipe down trolleys with Alcohol Wipes after use and between cases was strongly recommended for **better disinfection achievement**.
- Apart from the November 2018 studies, **100% of ATP results passed the recommended rate** throughout the year of 2020 after the trolleys were wiped down with soaked SOA towel with a stipulated time of 10 minutes after our implementation.

Sustainability & Follow-up

- We continue to **monitor the ATP tests weekly** after the cleaning process**.** The results were achieved consistently. This practice was **spread and implemented** in the Day Surgery Centre.
- We will share our project to **create awareness for scalability** in other healthcare facilities for a **better, faster, cheaper and safer infection control strategy**.

Conclusion

Our team concluded that **SAO** is **safe to be used** to clean trolleys and improve surface hygiene in healthcare environment. We recommended the **use of alcohol wipes** on trolleys before utilisation to further minimise microbial contamination.

This project is successful with collaboration across divisions of nursing, operations, infection control and clinicians with the great mentorship from OT Advisor and the strong support of perioperative team members in a collective quest in sourcing for a **better, faster, cheaper and safer** disinfection solution.

References

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