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Decontamination of reusable noncritical vessels used for patients in ward by small dish washer

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Abstract

Background: Among smaller hospitals in Japan, reusable small noncritical vessels are usually immersed in the hypochlorite solution for reuse. However, in most occasions residual air remains in the vessels, which is highly likely to lead to an ineffective decontamination. This study examines the cleaning effect of a domestic dish washer for the reusable noncritical vessels in word.

Methods: A small hot water dishwasher (NP-TR5®, Panasonic) was studied for the decontamination of the vessels. The temperature in the dishwasher (DW) was measured with a data logger with ten channels (GL220-UM-801®, Graphtec). Soil indicator plate (TOSI®, Nichion) and *Enterococcus faecalis* JCM5803 were used for the decontamination test. 10^7 CFUs of *E.faecalis* were loaded on each test vessels and recovered with phosphate buffer solution after reprocessing. And the solution was cultured on tryptic soy ager at 30℃ for 48hrs and then counted.

Results: The temperature in the dish washer exceeded 71℃ for over three minutes, which is recommended temperature and length of the disinfection in UK. And the results of the soil test with TOSI® demonstrated the sufficient effectiveness. The test strains on the vessels drastically decreased by more than 6 logs.

Conclusion: The small dishwasher examined in this study was proved to be an effective device to decontaminate reusable noncritical vessels in word. However, a further investigation is necessary to assure the effect on more intricately-shaped vessels by means of examining optimal wash program.

Figure 1.Dish washer(NP-TR5® Panasonic)

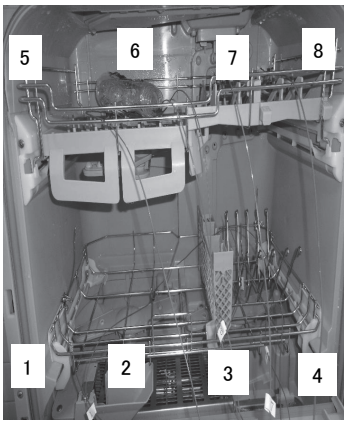

Figure 2. The Temperature of the Cleaning Process Inside the Dishwasher
Eight sensor tips were positioned on the different places.

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The Optimal Number of Beds Able to be Managed by One Infection Control Nurse or Doctor in Japan

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Abstract

Introduction: There are approximately 8600 hospitals in Japan of which 82% contain less than 300 beds.A Certified Nurse in Infection Control (CNIC) takes a full-time role in infection control in each hospital.The number of infection control nurses or doctors required according to the scale of the facility in Japan has not yet been evaluated. The number varies depending on background of each facility

Purpose: To evaluate the optimal number of the beds for an infection control nurse (ICN) or an infection control doctor (ICD).

Methods: Survey for ICNs Subjects: 1284 ICNs registered in the Japanese Nursing Association.Data: Questionnaires were sent to 1,284 ICNs registered in the Japanese Nursing Association. The survey items,such as "The Number of ICN," "Hospital Backgrounds" and "ICN activity time and additional time required", were investigated in three stages.

Survey for ICDs Subjects: 10 Experienced ICDs in infection control.Data: we examined the time per week required for infection control using the Delphi method for 10 ICDs.

Results: The number of responses from ICNs was 527 (41.0%) in the primary research, 266 (17.6%) in the second and 192 (15.0%) . The number of beds per an ICN was 335.3. The average actual working time of ICNs was 230.2 hours per month, and they were required 101.7 hours extra per month on average. The results of the Delphi method to find out the required time of ICDs on average was 50.3 hours per week supposedly for an acute hospital with 600 beds.

Discussion: The results revealed that the total average actual working time of ICNs was inadequately long: 230 hours per month. Also the fact that there are only 1595 ICNs in 8605 hospitals across Japan, the current situation of the lack of ICNs is a serious problem.The standard deviation in many of the responses from ICNs and ICDs was rather great, bringing a speculation that the activities in infection control may vary depending on each facility and/or organization. Further surveys are necessary in order to discover the optimal numbers of ICNs and ICDs. The structure of the facility, staff education, working environment and workplace relations and human qualities of ICNs/ICDs, such as their position, authority, problem-solving and interpersonal skills need to be

considered as well.These results could be a useful index to consider the optimal number of healthcare workers required for an infection control facility.

Conclusion: This study demonstrated an ICN is required for 191.7 beds and an ICD is required for 438.0 beds.

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Influence of different guidelines on actual practices for SSI prevention in hospitals

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Abstract

Introduction: Guidelines for the prevention of surgical site infection (SSI) have played an important role in decreasing the incidence of SSI. Three guidelines are currently available in Japan, and hospitals can adopt any types of practices recommended by these different guidelines, which may influence the incidence of SSI in each hospital. This study examined the influence of guideline recommendations on the actual practices carried out in hospitals.

Methods: We conducted a questionnaire survey of actual perioperative practice for SSI prevention in 905 hospitals with more than 250 beds. Each hospital received two identical questionnaire forms, for the person in charge of the OR department and the person in charge of the surgical ward. The questionnaire contained questions about the type of practice for SSI prevention carried out in each department, as well as knowledge of the guidelines. In the questionnaire, 40 of 63 practices in surgical wards, while 81 of 130 in OR departments, were recommended in the guidelines.

Results: A total of 713 answered questionnaires were collected from 312 surgical wards, 388 OR departments and 13 unidentified departments of 453 hospitals (50.0%). The actual practices adhered to the guidelines in the surgical wards of 169 hospitals (54.1%) and in the OR departments of 257 hospitals (66.2%). Multivariate analysis indicated that the degree of recognition of the guidelines was a significant factor influencing the present situation of SSI prevention practices.

Discussion: Our results demonstrate that promotion of the recognition of the guidelines, as well as refinement of the guidelines, may be effective to improve the incidence of SSI.

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The Influence of Hydrogen Peroxide Sterilisation on Plastic Surface

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Abstract

Background: The results of our previous studies (Yoshida & Kobayashi, 2013) revealed various problems concerning to hydrogen peroxide (HP) gas sterilisation, such as problems of environmental exposure of higher concentration, residual HP on sterilised items, deterioration of the items, false reaction of the chemical indicator (CI), and residual hydrogen peroxide on plastic materials after sterilisation. In addition to these problems, this present study will examine the suspected structural influence of plastic materials.

Objective: To examine plastic surfaces after HP gas sterilisation.

Methods: The influence of two kinds of hydrogen peroxide sterilisations (STERRAD® NX® and AMSCO® V-PRO® maX) on the surface of plastic materials (eleven plastic panels) was evaluated by scanning electron microscope (SEM). The Plastic panels tested were polyetherimide, polyethylene, polytetrafluoroethylene, nylon 6, nylon 66, polyethyleneterephthalate, polyetheretherketone, thermoplastic polyurethane, polymethylmethacrylate, polypropylene and polycarbonate. 10×10×6mm block was cut from each 100×100×6mm plastic panel, and evaluated by SEM. When the influence of sterilisation on the surface was apparent, other one or two blocks were cut and re-evaluated to confirm the influence.

Results: HP gas sterilisations induced crack, crackle, or bumpy, rugged or lumpy change on the most of plastic surfaces, though no changes were found on the surfaces before sterilisation procedures.

Conclusion: Both HP sterilisations induced the structural changes of the surfaces of plastic materials. However, the cause has not been identified yet. A further study is required to identify the cause.

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Duration time for hand rub based on the hand hygiene behavior of healthcare workers in hospital wards

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Abstract

The duration time for hand rub is not clearly described on the CDC Guideline for Hand Hygiene in Health-Care Settings 2002 and is about 20-30 seconds as stated by the WHO Guidelines on Hand Hygiene in Health Care. In Japan, the hand rub duration is explained that "within 15 seconds using sufficient hand disinfectants (~3 mL) so as not to dry" . Thus, there is no consensus for duration time for hand rub, and it is less than 15 seconds in many cases at hospital wards.

In this study, the duration time for hand hygiene of health care workers in a clinical setting was observed. Based on the result, the duration time and an amount of alcohol-based hand rub were set, and those bactericidal effects were examined.

The results of direct observation of duration time for hand rub of 31 nurses in a clinical setting, the mean(± standard deviation) duration time was 6.55±2.16 seconds. Based on this result, the durations time was set as 3, 7, and 15 seconds. Hands of 5 volunteers were artificially contaminated with *Serratia marcescens* and rubbed the hand for each set time using alcohol-based hand rub. The reduction factor (RF) was calculated and a regression line was depicted to investigate the relationship between RF and the hand rub time. According to the regression line, two-log reduction duration corresponded to 10.8 seconds.

These results indicates that 10.8 seconds of duration time for hand rub will be effective and necessary in hospital wards. ICT should encourage the ward nurses to rub their hands approximately 1.7 times longer.