Reviewer's report

Title: Evaluation of an automated ultraviolet radiation device for decontamination of Clostridium difficile and other healthcare-associated pathogens in hospital rooms

Version: 1 Date: 19 February 2010

Reviewer: John M. Boyce

Reviewer's report:

1) Major Compulsory Revisions: None

2) Minor Essential Revisions: Authors should state whether or not they think that paired statistical analyses are more appropriate for analyzing results obtained from the same surface before and after disinfection. (see comments below)

3) Discretionary Revisions: Consider citing additional unpublished study on the Tru-D system.

General comments:

4) The question posed by the authors is clearly stated.

5) The methods are described in sufficient detail to allow others to replicate the study if they wish to do so.

6) Strengths of this study include evaluation of the efficacy of the device in both a laboratory setting and in patient rooms, assessing efficacy in disinfecting surfaces at varying distances from the device, use of several strains of each marker organism, testing for potential impact of organic material [bovine serum albumin] on disinfection efficacy, monitoring effect on high-touch surfaces in patient rooms, and inoculation of surfaces of interest with S. warneri, and cultures before and after disinfection cycles using the UV-C device. The authors also tested the efficacy of the device at various doses of UV-C, and the ability of housekeeping staff to use the device and incorporate it into their routines.

7) The data are presented in a clear fashion, and appear sound.

8) On pages 8 and 9, when the proportion of specified surfaces contaminated before and after disinfection was performed, shouldn't paired analysis have been performed, since the same surfaces were cultured at the same sites? If so, McNemar's test and paired T tests would seem to be appropriate. Nonetheless, I doubt that a change in statistical methods would have altered the authors' conclusions.

9) On page 9, lines 190-191. Did the investigators or housekeepers notice any unusual odor in the rooms when the door was opened at the end of the disinfection cycle? If so, how did housekeepers react to any such odor?

10) The manuscript adheres to expected standards for reporting data.

11) Limitations of the work are clearly and adequately described.
12) Discussion of this type of area decontamination and other methodologies reported in the literature is appropriate. The authors might consider citing the unpublished study by WA Rutala, presented in June 2009, and incorporated in a Powerpoint presentation available on the DisinfectionandSterilization website/Martin S. Favero Lectureship:

13) The title and abstract are well-written and accurately convey the material presented in the paper.

14) This is a timely study, and should be of considerable interest to those interested in or responsible for improving cleaning and disinfection of environmental surfaces in healthcare facilities.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

Declaration of competing interests: JMB has served as a consultant to 3M Corporation, Clorox Corporation, Soap and Detergent Association, Bioquell PLC, Cardinal Health and Advanced Sterilization Products. Research support from 3M Corporation, Lumarier, Becton-Dickinson. Honoraria from Advanced Sterilization Products, Clorox Corporation.

No stocks or shares in related companies. No related patents.

No other financial or non-financial competing interests to report.