Journal Watch

Neil Wigglesworth¹ and Deborah Xuereb²

Journal of Infection Prevention
2016, Vol. 17(1) 34–36
DOI: 10.1177/1757177415617243
© The Author(s) 2016
Reprints and permissions:
sagepub.co.uk/journalsPermissions.nav
jip.sagepub.com

The journal watch feature is provided as a service to our readers. The intention is to highlight new research and other developments in infection prevention and control and related fields, published elsewhere. A brief description of each article and its main findings is given here; readers are encouraged to refer to the full published article for the details of the work. The authors and the editorial management group would welcome feedback and recommendations for articles to feature in this column; for comments and recommendations please contact neil.wigglesworth@gmail.com or editor@ips.uk.net.

This issue of Journal Watch has a very varied collection of content. If there is a theme, it's 'seeing the bigger picture'. We all need to look outside of our everyday practice every now and then. To quote that highly reputable academic source Ferris Bueller: 'Life moves pretty fast. If you don't stop and look around once in a while, you could miss it.' So, some of these articles are an opportunity to look around a little. To start with, one of the authors gets to indulge a hobby horse; 100% single rooms in hospitals, are they necessary or even a good thing?

Maben J, Griffiths P, Penfold C et al. (2015) One size fits all? Mixed methods evaluation of the impact of 100% single-room accommodation on staff and patient experience, safety and costs. *BMJ Quality and Safety*: Online First; DOI: 10.1136/bmjqs-2015-004265.

First, this isn't an infection prevention and control (IPC) article although healthcare-associated infections (HCAI) are an outcome measure for the study. This is perfectly reasonable, IPC is not the only consideration when designing hospitals, although it should be an important one. The authors of this work have taken the opportunity to examine the impacts, on both patients and staff, of moving from a traditional UK hospital to a new build with 100% of its accommodation in single rooms. This is a mixed-methods approach using both quantitative and qualitative information and including some comparisons with control hospitals and some analysis of costs. The range of outcomes included patient and staff experience gathered through interviews, analysis of working patterns and activities and safety outcomes, including some HCAI but also falls, pressure ulcers and medication errors. The results that are unrelated to HCAI are relatively unsurprising but

interesting: a majority of patients expressed a preference for single-room accommodation on the whole, for reasons of comfort, dignity and privacy. Conversely, some patients had limited interaction with other patients and experienced some feelings of loneliness despite 'intentional rounding' by the staff. Staff on the whole preferred a mixed provision of bays and single rooms, citing patient visibility, teamwork and working patterns among their reasons. In addition, using pedometers, the authors found a significant increase in staff walking distances post move. There was very little evidence of an impact on patient safety, a temporary increase in falls and medication errors in one area resolved over the duration of the study and no other safety issues were identified. The information on HCAI is sadly quite limited. The study design includes measurement of 'hospital acquired infections – methicillin (sic) resistant *Staphylococcus aureus* (MRSA) and *Clostridium difficile*'. However only *C. difficile* is reported with no significant difference noted overall. MRSA results are not given and this isn't explained, possibly they were only looking at bacteraemia (they don't specify) and the numbers were inadequate. This study is interesting to read nonetheless, but it would have been fascinating to have more HCAI outcome data.

From rooms to the surfaces within them, systematic reviews give us the current state of the science and this 'hot off the press' review from the *Journal of Hospital Infection* does just that regarding the sometimes controversial issue of antimicrobial surfaces in healthcare.

Muller MP, MacDougall C, Lim M et al. (2015) Antimicrobial surfaces to prevent healthcare-associated infections: a systematic review. *Journal of Hospital Infection* DOI: <http://dx.doi.org/10.1016/j.jhin.2015.09.008>.

¹Infection Prevention and Control, Guy's and St Thomas' NHS Foundation Trust, London, UK

²Infection Control Unit, Mater Dei Hospital, Malta, UK

Corresponding author:

Neil Wigglesworth, Deputy Director, Infection Prevention and Control, Guy's and St Thomas' NHS Foundation Trust, Westminster Bridge Road, London, SE1 7EH, UK.
Email: neil.wigglesworth@gstt.nhs.uk

As an IPCN I always wondered how effective antimicrobial surfaces are in preventing HCAI, especially in acute care settings. Silver use to reduce bacterial contamination actually goes back to the times of the Phoenicians and nowadays it's been shown that surfaces such as copper, silver and metal alloys have persistent antimicrobial properties. These surfaces potentially help delay recontamination in a more sustained manner than can be achieved with periodic cleaning and disinfection alone. This systematic review from Canada helps us answer our queries on the utility of antimicrobial surfaces in clinical settings. The authors sought to determine whether antimicrobial surfaces prevent HCAs, transmission of multidrug resistant organisms (MDROs) or microbial contamination in patient rooms in hospitals or long-term care facilities. The review included 11 studies that looked at the effect of using an antimicrobial metal on hard surfaces such as bed rails and also on textiles, such as sheets and curtains. Copper was by far the most frequently studied surface; only one study looked at silver while another two studied organosilane (silicon-based products). No data were found which assessed the impact of a non-copper antimicrobial surfaces on clinically significant outcomes such as HCAI or MDROs. However, one study of copper surfaces in an ICU and one study of copper textiles in chronic care showed a reduction in HCAI incidence; however, both these studies had a high risk of bias. This review confirms that copper surfaces harbour less bacteria than non-copper surfaces in the clinical environment (a modest $<1 \log_{10}$ reduction in cfu when compared to other clinical surfaces). The available evidence, however, is still very weak to confirm that antimicrobial surfaces actually do have an impact on HCAs or MDRO transmission. The quality of evidence is low mostly due to the poor study design of the available studies such as inappropriate randomisation and lack of blinding. As expected, the authors conclude that more studies with more robust methodology are required in this area. This is a good example of an area where clinical IPC teams can collaborate with corporate bodies to assess the effectiveness of innovative products.

The approach of this next article provides an alternative to systematic reviews where extensive guidance already exists. These authors have done a review and comparison of existing guidance documents regarding what is perhaps the most pressing current IPC threat, multi-resistant Gram negative bacteria.

Otter JA, Muters NT, Tacconelli E et al. (2015) Controversies in guidelines for the control of multidrug resistant Gram negative bacteria in EU countries. *Clinical Microbiology and Infection* DOI: 10.1016/j.cmi.2015.09.021. [Epub ahead of print]

With a plethora of guidelines and studies on multidrug resistant Gram negatives (MDR-GN), this paper from Jon

Otter and colleagues is a welcome summary, as it brings together five key European guidelines on multidrug resistant Gram negatives: ESCMID, ECDC, PHE, HPS (Scotland) and Irish MDRO (see article for full organization names); and compares them for similarities and variations with regards to key infection prevention and control issues. All five publications are recent (2013–2014) and between them address Carbapenemase Producing Enterobacteriaceae (CRE), ESBL producers and the MDR-GN non-fermenters *A. baumannii* and *P. aeruginosa*. All guidelines agree (thankfully!) on the infection prevention (IP) basics such as hand hygiene, contact precautions (CP), single room, flagging of patient notes and also suggest 'targeted approach' types of interventions. There is also agreement on screening of previous MDR-GN positive patients on re-admission using rectal, peri-rectal or stool specimens yet the authors point out that guidelines seem to vary most on their recommendations on the details around patient screening. Although most guidelines suggest enhanced cleaning during an MDR-GN outbreak, none of the guidelines suggest switching to a chlorine (bleach) disinfectant. One issue on which there seems to be controversy among the guidelines is isolation and CP for high-risk patients and discontinuation of isolation for MDR-GN patients. None of the guidelines make a positive recommendation for the use of antibiotics for decolonisation of MDR-GN carriers. Some of the variations noted between the guidelines relate to the setting (all, endemic or outbreak situations) in which the recommendation is suggested. Indeed the use of active surveillance cultures in endemic settings is one main issue on which there is most variation. It seems that the ESCMID guidelines are most comprehensive on cleaning disinfection and patient screening and the authors included a summary of these in their publication. As the authors conclude, the main variations between these guidelines revolve around issues where the evidence base is still weak, such as chlorhexidine bathing and screening of healthcare workers to name just two, and thus the authors call for further large scale research to better understand transmission dynamics of these epidemiologically important bacteria. This is a neat paper that could be handy when reviewing local policies on management of MDR-GN. We predict that this paper will also inform future research on the subject through the gaps/controversies identified. This publication only focuses on published European guidelines and leaves one wondering how other international guidelines such as from the Centers for Disease Control and Prevention (CDC) compare with the five reviewed here.

Increasingly IPC is being seen as part of the wider umbrella of patient safety and rightly so. To that end it behoves IPC teams to develop an understanding of patient safety and quality work. This next piece from Hessels and Larson crosses that bridge effectively (again, hot off the presses).

Hessels AJ and Larson E. (2015) Review: Relationship between patient safety climate and standard precaution adherence: a systematic review of the literature. *Journal of Hospital Infection* DOI: <http://dx.doi.org/10.1016/j.jhin.2015.08.023>.

It's a surprise, but a pleasing one, that there is enough literature out there to conduct this systematic review. It suggests that the IPC community are taking seriously the need to engage in the wider safety and quality agenda. Hessels and Lawson have explored the relationship between patient safety climate (PSC) and adherence to standard precautions (SP) using a recognised systematic review method (PRISMA). Using such methods increases the readers' confidence in the findings of the review. In addition to looking at adherence, the study had a secondary outcome of both HCAI and healthcare worker exposures (where these were measured in the primary studies). The paper starts with a nice potted history of both universal/standard precautions and the measurement of safety culture/climate. The authors note that existing research has already demonstrated that a good safety climate is a good predictor of 'safe work behaviours' and that adherence to SP correlates with both of these phenomena. This, however, is the first time this relationship has been subjected to systematic review. The authors threw their initial search net wide and consequently got over 2 million 'hits'. So, although they ended up with only seven articles, I think we can be confident that they didn't miss anything. The studies were heterogeneous in settings and aspects of SP as well as outcomes so combining the results wasn't possible, i.e. through meta-analysis but the studies were formally assessed for quality and all scored between 7 and 10 out of 10 using the STROBE tool (see the article for details). The results tell quite a compelling story; each of the seven studies demonstrated a statistically significant relationship between features of a patient safety climate and adherence to SP. Of note is that there appears to be a gap in the results, although the paper states that three studies considered healthcare worker exposures as an outcome, the actual results for this aren't given. The article is in the proofs stage so perhaps the final version will have this information. The authors note that none of the studies considered HCAI as an outcome.

Finally in this issue, one in an occasional and ad-hoc series that we might call 'methodology corner'. Hopefully this is useful whether you are planning a study, or critiquing the published literature. The subject of this particular paper is the Hawthorne Effect.

Chen LF, Vander Weg MW, Hofmann DA et al. (2015) The Hawthorne Effect in infection prevention and epidemiology. *Infection Control and Hospital Epidemiology* DOI: <http://dx.doi.org/10.1017/ice.2015.216>.

I'll admit to using the term 'The Hawthorne Effect' loosely and lazily and I suspect many of us do. Most people who read the literature will be familiar with the term and will have a working understanding of it. From reading this narrative review article I realise that the term deserves to be used accurately and with a little thought. The authors deal with this issue, but also identify how it impacts on IPC studies and discuss approaches to managing those effects. In case you weren't aware, Hawthorne wasn't a person but a place (an industrial plant) where the phenomenon was first identified. Although the original studies have been criticised, indeed the authors cite experts calling them 'a glorified anecdote', the effect is real enough. In psychology it is called 'reactivity' – the alteration of behaviour with awareness of being observed. The paper then goes on to clearly and straightforwardly explain why the Hawthorne Effect is not the same as observer bias, the placebo effect or self-selection bias. If you need these explanations that's reason enough to read the paper. Another reason is that it's well written and enjoyable to read. The authors then give some key characteristics of the effect; it follows a time-dependent curve once awareness exists (it increases quickly when observed and diminishes after a period of time). It also has a ceiling, it will only go so far in increasing performance and it only requires awareness of being observed not necessarily a visual cue. The psychological basis of the effect is explored too. It may be the novelty of special attention, may affect a person's appreciation of their own behaviour and may increase social desirability bias. Examples of the Hawthorne Effect in IPC include the obvious – hand hygiene audits and other audit processes, as well as the less obvious including outbreak investigations. Finally the review looks at how to handle the effect as reader and researcher. As a reader you will want to see a consideration of the effect in the discussion of the study where observation is involved. As a researcher you may look to the timing of your observations and to consider covert observation, though this brings its own issues. This is one of those articles that I strongly urge you to read in full as you won't be disappointed.

Does this look around the literature meet your needs? Is there an area of study that you think this column could feature more of? We aim to give the reader both the useful and the interesting, the routine and the more unusual from the diverse literature that we look at. Please let us know whether we succeed or not. Suggestions always welcome!

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.