Journal Watch

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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.

The theme for this issue is definitely debate, all of the articles and studies featured remind us of the variety of issues, clinical, scientific, policy-related and academic that we in infection prevention and related specialties are discussing every day.

There has been much debate about the impact of targets and regulatory measures on infection prevention and control (IPC). The first study in this issue gives us some insight into the perceptions of this issue of healthcare workers and other colleagues:

Brewster L, Tarrant C and Dixon-Woods M. (2016) Qualitative study of views and experiences of performance management for healthcare-associated infections. *Journal of Hospital Infection*; DOI: 10.1016/j.jhin.2016.01.021.

This is a regular subject of discussion in IPC circles; what are the advantages and disadvantages of central performance management? The authors of this study describe the evolution of policy, directives, mandatory surveillance, target and financial rewards and penalties that colleagues in England in particular will be very familiar with. For those who are less familiar, it probably suffices to say that the paper lists 20 national policy events between 2001 and 2011, from the first mandatory surveillance of MRSA bacteraemia forwards. That's almost two per year. This study is a qualitative assessment of the views and experiences of healthcare staff and managers in England related to these various performance management approaches. The research uses in-depth interviews and qualitative analysis of data from two sources, one that consists of two whole hospitals and the other from a (parallel) study of 19 intensive care

units. In both cases the sampling was purposive to obtain responses from a multidisciplinary group of staff working in a variety of roles and settings. The sample included frontline workers, managers and infection prevention professionals. The results are divided into the positive and negative impacts of performance management and while they may not surprise, it is useful to have them backed up with good research. The positive aspects will sound familiar to many working in IPC in England; 'raising the profile of IPC' – for many in the speciality it may have been the first time they found the CEO's office door open. In a similar vein, the authors report 'formal structures and lines of accountability' as well as 'IPC as a collective responsibility'. To complete the 'good' side of these measures there is 'data to drive improvement'. There is, of course, an equally familiar flipside; negative aspects included 'tunnel vision' – while we were dealing with MRSA bacteraemia, what slipped under the radar? Another negative which is particularly toxic is a 'culture of fearfulness', interviewees use words like 'slap, whip, telling off and disciplinary'. Finally, and again, worrying is the finding of 'conflict and tension'; between nurses and doctors, clinical staff and IPC teams, and managers and clinicians. The findings are supported by illustrative quotes from those interviewed and many will resonate with you, when you read them. The section on financial penalties struck me; there was a very strong bewilderment among clinical staff about taking funding away from already struggling organisations and expecting them to improve...

We often come back to the importance of systematic reviews to inform practice. The second paper in this *Journal Watch*, again from the *Journal of Hospital Infection*, is a systematic review looking at another often debated topic. This examination of empowerment has a twist, it is about children and their parents.

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Bellissimo-Rodrigues F, Pires D, Zingg W and Pittet D. (2016) Role of parents in the promotion of hand hygiene in the paediatric setting: a systematic literature review. *Journal of Hospital Infection*. DOI: 10.1016/j.jhin.2016.02.001.

I'm tempted to ask the question, 'what happened to patient empowerment?' Is it a symptom of the underlying disquiet that many healthcare workers express about the issue that I have not heard much about it in recent months? Our IPS patron Prof. Pittet and colleagues have conducted a rigorous systematic review of the literature with regard to a niche area of empowerment, that of the parents (or guardians is implied I think) of children receiving healthcare. The authors note that, despite the misgivings of some, there is a body of evidence to support the use of empowerment in adults and this approach is recommended as part of the World Health Organization (WHO) multi-modal approach to hand hygiene. The WHO strategy further suggests that parental empowerment is also 'promising' as a strategy; hence the review. The authors have cast a fairly wide net, no date restrictions, multiple (albeit Western) languages and a range of relevant search terms. Not entirely surprisingly, the body of literature in this area is small; after exclusions, duplicates and selections, only 11 articles are actually reviewed. The 11 papers consist of three guidelines/position papers, seven questionnaires or interview based studies and one including direct observations. The authors used a quality assessment tool and identified that the papers were generally higher quality but some suffered from a risk of selection/sampling bias. The studies are very heterogeneous so the results are similarly varied but can be summarised in a few themes. Parents are generally aware of HCAI as a risk and are generally willing to engage in empowerment activity; more so if actively invited to do so. Once again healthcare workers have mixed views on the subject, with a high proportion uncomfortable with the challenge inherent in empowerment (though this was quite varied between studies so may be very contextual). Overall I think this review supports the WHO view that empowerment of parents and other family members is 'promising' but clearly more work is needed, especially the design and testing of interventions, which is lacking in the studies identified. The authors do not mention a role for children themselves, perhaps older children and adolescents could answer for themselves?

Journal Watch keeps returning to Carbapenem-resistant organisms; for good reason, they are a dramatic threat to our healthcare facilities. The next study explores environmental decontamination for these problematic organisms.

Garvey MI, Bradley C and Jumaa P. (2016) Environmental decontamination following occupancy of a burns patient with multiple carbapenemase-producing organisms. *Journal of Hospital Infection*. DOI: 10.1016/j.jhin.2016.01.006.

I came across this publication through its authors, Mark Garvey and Craig Bradley, who are both active members of IPS. We are happy to see members actively involved in research and publishing it. This paper is based on work which they did at the (huge) 100-bedded ICU within the Queen Elizabeth Hospital in Birmingham. I found this study interesting as it addresses a practical side of the daily headache for several of us: Carbapenemase-producing organisms (CPOs). They report their experience of decontaminating an isolation room of a patient brought over from Romania after suffering 50% burns in an accident. The patient was later found to have been infected with Carbapenem-resistant *Pseudomonas aeruginosa* and Carbapenemase-producing *Klebsiella pneumoniae* (OXA 48). The patient died after spending a mere 14 h in the room. Following a standard terminal clean with 1000 ppm hypochlorite/detergent and a 6% HPV fumigation, environmental samples using sponges were taken from several high touch surfaces in the patient's room. Sponges were used to collect samples as they allow sampling of larger surface areas. All but one of the surface areas in the vicinity of the patient grew a CPO. Following a second clean using a detergent/disinfectant, steam-cleaning, double-strength hypochlorite solution (2000 ppm) and HPV at 12% concentration, environmental sampling revealed no CPOs. There are few reports in the literature outlining the exact methods for decontamination of the environment when CPO patients are discharged, hence the importance of this paper. Wilson et al. (2016) suggest terminal cleaning with hypochlorite and HPV considered as an adjunctive measure. This study, however, shows that a different approach to cleaning may be required to ensure that isolation rooms are free of CPOs, as the persistence of these organisms in the environment can cause onward transmission via poor practice. Indeed, it has been documented elsewhere (Mitchell et al., 2015) that patients admitted to rooms previously occupied by infected patients may be at risk of nosocomial transmission. Although this paper is limited in that it only reports data from one room decontamination, it raises questions about current disinfection methods used to disinfect high-risk clinical areas housing CPO-infected patients and points towards a better focus on cleaning, including routine assessment of cleaning by methods other than visual assessment.

CRO/CPE (etc!) may be a strong argument for 'prevention is better than cure'. Prevention in this case is antimicrobial stewardship. So, are we getting it right in our higher education institutions? This study from *PLoS One* gives us some insight.

Castro-Sánchez E, Drumright LN, Gharbi M, Farrell S and Holmes AH. (2016) Mapping antimicrobial stewardship in undergraduate medical, dental, pharmacy, nursing and veterinary education in the United Kingdom. *PLoS One* 11: e0150056. DOI: 10.1371/journal.pone.0150056.

These last few years have seen an increase in publications on antimicrobial stewardship, several from Alison Holmes' group at Imperial College in London. This is one of their most recent papers, which looks at the content and quality of teaching of antimicrobial stewardship in undergraduate university programmes for professionals who prescribe, administer or review antibiotics across the UK. Antimicrobial stewardship (AS), is a multidisciplinary approach that includes the selection of appropriate drugs, enhanced surveillance of prescribing and use, implementation of prescribing guidelines and policies, inclusion of infection prevention and control strategies, and increased efforts on audit and education. It is promoted as a way to stop the rise of antimicrobial resistance. Using a cross-sectional survey design, the researchers explored how key antimicrobial stewardship principles were delivered in 109 UK universities, the AS principles included in the curriculum, the pedagogies utilised, and the background of those providing education, with a view to identify areas for improvement. This study showed that of the various disciplines, nursing schools offered the least training on AS principles, highlighting the fact that the role of the nurse in AS is underrated, possibly misunderstood. Also very few of the schools across disciplines included *all* the recommended AS principles in their curricula thus concluding that not enough emphasis is placed on antimicrobial prescribing and stewardship in healthcare educational degree programmes. The study also found that where offered, AS programmes tended to include more practical elements of AS such as obtaining suitable microbiological samples and the use of adequate infection prevention and control measures, rather than executive decision-making skills. Steps such as reviewing broad-spectrum antibiotic agents once microbiological results are reported back or considering oral instead of IV administration route were not being addressed in the training. This is the first published study exploring AS provided by universities in the UK and shows several gaps and variations in the education which students following undergraduate training courses are receiving. As the authors suggest, standardisation of curricula and improvement in the content of the training would help boost the quality of AS education, which future healthcare professionals receive. A good read especially for those of us involved in shaping infection prevention and AS teaching programmes in human health and veterinary undergraduate courses.

We started with performance management, some will argue that the impressive reductions in *C. difficile* seen in recent years are a result of that; but it has not gone away. The final piece in this issue considers healthcare worker hand contamination related to the 'recently recovered' from *C. difficile* patients.

Shrestha SK, Sunkesula VCK, Kundrapu S, Tomas ME, Nerandzic MM and Donskey CJ. (2016) Acquisition of *Clostridium difficile* on hands of healthcare personnel

caring for patients with resolved *C. difficile* infection. *Infection Control & Hospital Epidemiology* 37: 475–477.

Our final debate of the issue is 'what is the role of asymptomatic patients in the spread of *C. difficile*?' This is an increasingly hotly debated topic and this brief report in *ICHE* adds some grist to the mill of those who feel we are missing a trick with this. The authors note that patients who recover from active *C. difficile* infection (CDI) continue to shed spores for a number of weeks after recovery and ask what implications this has for control. They conducted a simple experiment in which they sampled the hands of healthcare workers before and just after caring for a patient who had 'recovered' from CDI as well as patients with active CDI. They sampled the hands after removal of gloves (where worn) but before hand hygiene. The researchers also noted how long the contact had been and the elapsed time from CDI recovery, categorising this as 'recent' and 'remote' (over 6 weeks). They also sampled controls with no CDI history. The results provide some food for thought; from 93 encounters with 53 patients, there was some evidence of contamination in the 'before' samples (rather worrying but perhaps indicative of a high burden of CDI). In the samples taken after, there is some evidence of hand acquisition from contact with recently recovered patients. They describe the amount of acquisition from recent CDI cases as 'the same' as from active cases; however, there is a clear difference and the study is obviously underpowered (12% vs. 21%; $P = 0.20$). The results in 'remote' and no CDI are much closer (5% and 3%, respectively). There was also a correlation between duration of contact and risk of acquisition (Spearman's $Rho = 0.39$; $P = 0.0001$). It seems to be a pity that they did not take the experiment one step further and measure post hand hygiene (though no direct comparison would be possible as it would require one hand for each sample). Doing so would help answer the 'so what?' question. Nevertheless, this small study is interesting; as the authors point out, as soon as the patient is 'clear' staff go back to using alcohol-based hand rubs. This is an area that merits further study and if we see it, we'll feature it in *Journal Watch*.

Debate is an intrinsic part of academic and clinical practice; this small selection demonstrates the range of issues that we do not yet fully understand. While ever the debates rage we will keep featuring them. Send us your favourite hobby horse and we will set it galloping...

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