

IN EUROPE
4.5 MILLION
HAIs RESULT IN
37,000
DEATHS

Contaminated Curtains kill patients

Hospital surfaces are rapidly contaminated with harmful bacteria

Environmental contamination is the root cause of infection transmission. More action needs to be taken to protect patients from unnecessary infections, continue maximising our healthcare resources, and conserve our limited antibiotic arsenal.

Up to 60% of surfaces in the patient care zone are contaminated with HAI-causing pathogens.¹ *C. diff*, MRSA and VRE persist for months on surfaces² which serve as transmission points between healthcare workers and patients. [Organisms on curtains, including MRSA and C. diff, have been shown to transfer to healthcare worker hands.](#)¹⁶

"Healthcare workers and patients frequently touch privacy curtains before, during and after care encounters. This may promote transfer of bacteria to curtains. Indeed, studies have found that curtains are frequently contaminated with potentially pathogenic bacteria, including VRE and MRSA... Yet, the curtain often stays from one sick patient to the next, to the next, to the next"³ - [despite curtains being the sixth most touched surface in the patient environment.](#)¹⁷

Linen curtains harbour pathogens

Linen hospital curtains are a proven source of microbial contamination.⁴ They are readily colonised by pathogens: in one study, [92% of curtains showed contamination within one week of hanging.](#)⁵ These high frequency touchpoints serve as vectors for HAI transmission and are a proven source of infection.⁶

Curtains were found to be the major source of infection in an outbreak of Carbapenem-resistant *Acinetobacter*.⁶ and were also identified as a key factor in a GAS outbreak.¹⁵ To improve standards of patient care, a more hygienic alternative to linen curtains must be considered.

Patients admitted to rooms previously occupied by infected patients have substantially greater risk of acquiring the same infection.¹⁸

Antimicrobial curtains: a best practice solution

Regular cleaning of linen hospital curtains is logistically challenging.⁸ Laundered linens are also at risk from contaminants found in the laundry process itself.⁹

Disposable Hygenica IPC curtains make laundering unnecessary. They also provide clearer labelling, improved stock management, and faster change outs of entire hospitals.

Only Hygenica IPC Curtains are coated in Fantex[®], an antimicrobial agent that provides the rapid Log3 antimicrobial activity necessary to significantly reduce the risk of touchpoint surface cross-contamination. They also improve compliance, labour and service efficiencies resulting in a better organised programme.

"We need to address the growing problem of drug-resistant infections as the medicine cabinet is becoming increasingly bare... preventing infections is key"

- Professor Dame Sally Davies,
Chief Medical Officer



92% of curtains became contaminated after just 1 week of hanging



45% of hands acquired MRSA after touching an MRSA-contaminated curtain



100% of hands picked up *C. difficile* after touching a *C. difficile* compromised curtain

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Reference 1

"30% to 60% of surfaces in the patient zone of individuals colonized or infected with *C. difficile*, VRE, or MRSA are contaminated with these organisms."

"2003 CDC recommendation to 'implement procedures that ensure consistent cleaning and disinfection of surfaces closely approximated to the patient and likely to be touched by the patient and health care workers.'"

Reference 2

"Pathogens such as MRSA, VRE and *C. difficile* have the ability to remain viable on dry surfaces for days, weeks or even months."

"An increasing body of evidence suggests that enhanced cleaning/ disinfection of environmental surfaces can reduce transmission of these pathogens."

"The proportion of hospital surfaces contaminated with MRSA has varied considerably in published reports, ranging from 1% to 27% of surfaces in patient rooms on regular hospital ward."

Reference 3

"First, healthcare workers and patients frequently touch privacy curtains before, during and after care encounters. This may promote transfer of bacteria to curtains. Indeed, studies have found that curtains are frequently contaminated with potentially pathogenic bacteria, including VRE and MRSA."

"In 2005, there were an estimated 94,000 cases and 18,650 deaths due to MRSA. Yet, the curtain often stays from one sick patient to the next, to the next, to the next..."

"The cost of treating an HAI varies study to

study. In one report the cost per patient is \$13,973 on average with a cost to treat MRSA soaring to \$35,367."

Reference 4

"Patient, privacy curtains are a source of microbial contamination. Results suggest increased contamination rates with higher room occupancy and that curtains should be removed, cleaned and sanitized after approximately five weeks of use".

Reference 5

"Twelve of 13 curtains (92%) placed during the study showed contamination within 1 week."

Reference 6

"Multiple-antibiotic-resistant *Acinetobacter baumannii*, ... was first isolated from a patient in the general intensive care unit of a... teaching hospital in Birmingham in December 1998."

"The major source appeared to be the curtains surrounding patients' beds."

Reference 7

"Alternative curtains showed activity against many hospital pathogens in vitro."

"Cost to hospital of standard curtains per year is an estimated \$199,406.00; the cost of antimicrobial curtains was predicted to be \$148,794.00".

"Alternative curtains may provide an opportunity to avert costs related to curtain changing and laundering, and to improve patient care by removing curtains as a potential source of infection."

Reference 8

"Infection control teams have long assumed that, as with other fabrics, hospital curtains may be an

important reservoir for nosocomial pathogens"

"Regular provision of clean hospital curtains is, however, logistically difficult. Reference 9

"82% felt that hospital curtains are a potential source of transmission of health care associated infections."

Reference 10

"37% (of hospitals) clean curtains 'only when visibly soiled', 13% clean curtains 'every month', 13% clean curtains 'every 3 months', 13% clean curtains 'once per year.'"

Reference 12

"Most gram-positive bacteria, such as MRSA can survive for months on dry surfaces."

"Many gram-negative species, such as *Acinetobacter* can also survive for months."

"Mycobacteria, and spore-forming bacteria, including *Clostridium difficile*, can also survive for months on surfaces."

Reference 13

"More needs to be done to address environmental contamination in hospitals to deliver the safest possible health care."

Reference 14

"There is now compelling evidence that contaminated surfaces make an important contribution to the epidemic and endemic transmission of *C. difficile*, VRE, MRSA, *A. baumannii*, and *P. aeruginosa* (Tables 2 and 3) and to the epidemic transmission of norovirus."

Reference 15

"Based on this report, we recommend that during an outbreak of GAS infection all patient curtains should be changed as part of the enhanced decontamination procedures."

Reference 1

Carling, P. (2013). Methods for assessing the adequacy of practice and improving room disinfection. *American Journal of Infection Control*, 41(5), pp.S20-S25.

Reference 2

Boyce, J. (2007). Environmental contamination makes an important contribution to hospital infection. *Journal of Hospital Infection*, 65, pp.50-54.

Reference 3

<http://darrelhicks.com/?s=fear+the+curtain>

Darrel Hicks, Author of 'Infection Control for Dummies' and Healthcare service management specialist.

Reference 4

Bushey, M., Lowdermilk, N., Schwartz, K., Taylor, J., Flack, L., Whiteman, E. and Wienczek, M. (2015). Pay Attention to the Microbe Behind the Curtain. *American Journal of Infection Control*, 43(6), pp.S41-S42.

Reference 5

Ohl, M., Schweizer, M., Graham, M., Heilmann, K., Boyken, L. and Diekema, D. (2012). Hospital privacy curtains are frequently and rapidly contaminated with potentially pathogenic bacteria. *American Journal of Infection Control*, 40(10), pp.904-906.

Reference 6

Das, I., Lambert, P., Hill, D., Noy, M., Bion, J., Elliott, T. (2002). Carbapenem-resistant *Acinetobacter* and role of curtains in an outbreak in intensive care units. *Journal of Hospital Infection*, 50(2), pp.110-114.

Reference 7

Rinck, G. (2010). Comparison of Antimicrobial and Standard Privacy Curtains: Efficacy and Cost Analysis. *American Journal of Infection Control*, 38(5), p.e14.

Reference 8

Klalus, J., Vaughan, N. and Boswell, T. (2008). Meticillin-resistant *Staphylococcus aureus* contamination of hospital curtains. *Journal of Hospital Infection*, 68(2), pp.189-190.

Reference 9

DeAngelis, D. and Khakoo, R. (2013). Hospital Privacy Curtains: Cleaning and Changing Policies - Are We Doing Enough?. *American Journal of Infection Control*, 41(6), p.S33.

Reference 10

DeAngelis, Dianne L.; Hospital Privacy curtains: Cleaning and Changing Policies - Are we doing Enough? Presentation number 2-252; *AJIC* 41 (2013) S25-S145.

Reference 11

Barrie, D., Hoffman, P., Wilson, J. and Kramer, J. (1994). Contamination of hospital linen by *Bacillus cereus*. *Epidemiology and Infection*, 113(02), pp.297-306.

Reference 12

Kramer, A., Schwabke, I. and Kampf, G. (2006). How long do nosocomial pathogens persist on inanimate surfaces? A systematic review. *BMC Infectious Diseases*, 6(1).

Reference 13

Otter, J., Yezli, S., Salkeld, J. and French, G. (2013). Evidence that contaminated surfaces contribute to the transmission of hospital pathogens and an overview of strategies to address contaminated surfaces in hospital settings. *American Journal of Infection Control*, 41(5), pp.S6-S11.

Reference 14

Otter, J., Yezli, S. and French, G. (2011). The Role Played by Contaminated Surfaces in the Transmission of Nosocomial Pathogens. *Infection Control & Hospital Epidemiology*, 32(07), pp.687-699.

Reference 15

Mahida, N., Beal, A., Trigg, D., Vaughan, N. and Boswell, T. (2014). Outbreak of invasive group A streptococcus infection: contaminated patient curtains and cross-infection on an ear, nose and throat ward. *Journal of Hospital Infection*, 87(3), pp.141-144.

Reference 16

Trillis, F., Eckstein, E., Budavich, R., Pultz, M. and Donsky, C. (2008). Contamination of Hospital Curtains With Healthcare-Associated Pathogens. *Infection Control & Hospital Epidemiology*, 29(11), pp.1074-1076.

Reference 17

Cheng, V., Chau, P., Lee, W., Ho, S., Lee, D., So, S., Wong, S., Tai, J. and Yuen, K. (2015). Hand-touch contact assessment of high-touch and mutual-touch surfaces among healthcare workers, patients, and visitors. *Journal of Hospital Infection*, 90(3), pp.220-225