



Lowbury lecture

# Can intersectional innovations reduce hospital infection?

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## SUMMARY

Preventing healthcare-associated infection remains an international priority given the clinical and economic consequences of this largely preventable patient safety harm. Whereas important strides have been made in preventing hospital infections over the past several decades, thorny issues remain, including how to consistently improve hand hygiene rates and further reduce device-related complications such as catheter-associated urinary tract infection. Rather than relying solely on directional innovations – incremental changes that continue to serve as the bedrock of scientific advancement – perhaps we should also search for ‘intersectional innovations’, which represent breakthrough discoveries that emanate from the intersection of often widely divergent disciplines. Several intersectional innovations that have the potential to greatly impact infection prevention efforts include human factors engineering, sociology, and engaging the senses. Indeed, Professor Edward Joseph Lister Lowbury, the namesake of this lecture, exemplified intersectional thinking in his own life, having been both an accomplished bacteriologist and poet. By incorporating approaches outside of traditional biomedical science we may hope to provide patients with the safe care they expect and deserve.

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## Introduction

Louis Pasteur, the noted scientist whose work supported the germ theory of disease, taught his students: ‘Chance rewards the prepared mind.’

An example of a chance encounter that changed the course of the art world occurred in mid-nineteenth century Japan and Europe. From 1603 to 1858, the Japanese had been largely isolated from the rest of the world under the rule of the Tokugawa shogunate. However, they were still able to export

their high-quality lacquerware and porcelain to Rotterdam. In order to prevent breakage of these delicate objects, each one was wrapped in decorative woodblock print paper known as ukiyo-e, or ‘pictures of the floating world’. These prints depicted the lives of Japanese kabuki actors, courtesans, and landscapes. As described by *Time* magazine, this story became interesting in 1871: ‘One day ... a French artist named Claude Monet walked into a food shop in Amsterdam ... There he spotted some Japanese prints being used as wrapping paper. He was so taken by the engravings that he bought one on the spot. The purchase changed his life – and the history of Western Art.’<sup>1</sup> These prints became a key source of inspiration for Monet’s future works – and those of the European Impressionist painters (Figure 1).

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**Figure 1.** (A) *Bathtime (Gyōzui)* by Kitagawa Utamaro, c.1801. Metropolitan Museum of Art, New York; H. O. Havemeyer Collection, bequest of Mrs. H. O. Havemeyer, 1929. (B) *The bath* by Mary Cassatt, 1890–91. Metropolitan Museum of Art, New York; gift of Paul J. Sachs, 1916.

Theodore Duret, an art critic who promoted impressionism, wrote: ‘The appearance among us of Japanese albums and prints completed the transformation by initiating us into an absolutely new colour system. Without the techniques revealed to us by the Japanese, a whole methodology would have remained unknown to us ....’<sup>2</sup> The introduction of Japanese woodblock prints into the French art scene in the mid-nineteenth century is an example of an ‘intersectional innovation’.

Many of the greatest breakthroughs in human history happened – and continue to happen – as a result of intersectional innovations. Intersectional innovations are the combining, or intersecting, of two radically different concepts to create an original, creative, and profoundly useful concept. Frans Johansson, author of *The Medici effect*, asserts that many of the world’s most important and groundbreaking ideas were products of intersectional innovations, when a person or group of people stepped into the ‘intersection’.<sup>3</sup> These ideas are often born from people who possess a diverse background that allows them to see things in unexpected, open-minded ways. In short, intersectional innovations involve taking the concept of one field into a vastly different one to achieve a remarkable result. An ‘Aha’ moment, if you will.

Examples of intersectional innovations exist throughout human history. One of the most well known is the result of a Florentine banking family in fifteenth-century Italy known as the Medicis. They offered funding to creators from many different disciplines, including not just sculptors and painters, but architects, scientists, philosophers, and writers, to come up with new ideas and approaches to tackling problems. This resulted in a melting pot of people from different disciplines working together and learning from one another in ways never seen before. And it generated an unprecedented creative explosion known as the Renaissance, with Florence, Italy, as its hub. The key characteristics of intersectional innovations are listed in [Box 1](#).

#### Box 1

Key characteristics of intersectional innovations (adapted from *The Medici effect*)<sup>3</sup>

<p>Surprising and fascinating Go in novel directions and open up entirely new fields Provides a source of directional innovation for years Generates followers with the creators becoming leaders Can affect the world in unprecedented way</p>
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Can we apply the concept of intersectional innovation to healthcare, in general, and preventing hospital infection, in particular? I believe we can.

### The hospital infection problem

For years, healthcare professionals have known that certain practices and safeguards can prevent many healthcare-associated infections. One of the best examples is the work on preventing central line-associated bloodstream infection (CLABSI). In 2006, Pronovost and colleagues found that

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