# The link between your computer keyboard and healthcare associated infections. A systematic review, and preventative interventions.

**Why is Man & Machine so focused on computer keyboards and mice in healthcare settings?**

One of our goals is to provide clinicians, nurses, infection preventionists and hospital administrators with a critical component in the fight against healthcare associated infections (HAIs).

We know that the safety of your patients and staff is of the upmost importance to you. We also know the devastating effect that any HAI occurrence has on patient outcomes, employee safety, and the cost of providing quality healthcare.

**How serious is this problem? What is the scope and scale of this public health issue?**

A CDC report from 2022 estimates that on any given day, there are approximately 687,000 occurrences of HAIs in the US. Each day one in 31 US patients and 1 in 43 nursing home residents contracts at least one infection in association with their healthcare.[i] A 2002 study from the National Center for Biotechnology Information estimated that HAIs were responsible for over 98,000 deaths in the US.[ii]

**What are the costs related to HAIs?**

The economic burden of the direct medical costs of HAIs in the U.S. is estimated by the CDC to be at least $28.4 billion each year.[iii]

The Agency for Healthcare Research and Quality published a report in 2017 estimating the average costs of the most common HAIs.[iv]

- Central line-associated bloodstream infection (CLABSI): $36,441
- Surgical site infection (SSI): $25,546
- Ventilator-associated pneumonia (VAP): $9,969
- Catheter-associated urinary tract infection (CAUTI): $1,006

**What's the connection between computer keyboards, mice, and HAIs?**

Environmental hygiene is a primary concern in healthcare due to the high prevalence of bacteria and viruses on surfaces. Not only are surgical instruments, medical carts, bed rails, bathroom fixtures all surfaces that harbor harmful pathogens, the computer keyboards, and mice are some of the highest touch areas, often used by multiple healthcare workers.

Here's some scientific journal articles highlighting the link between HAIs and computer keyboards.

"Computer keyboards were among the hospital surfaces with the highest contamination levels of COVID-19. This may be explained by the frequent use of the computer keyboard, using the keyboard while wearing contaminated gloves, or the difficulty in its proper decontamination."

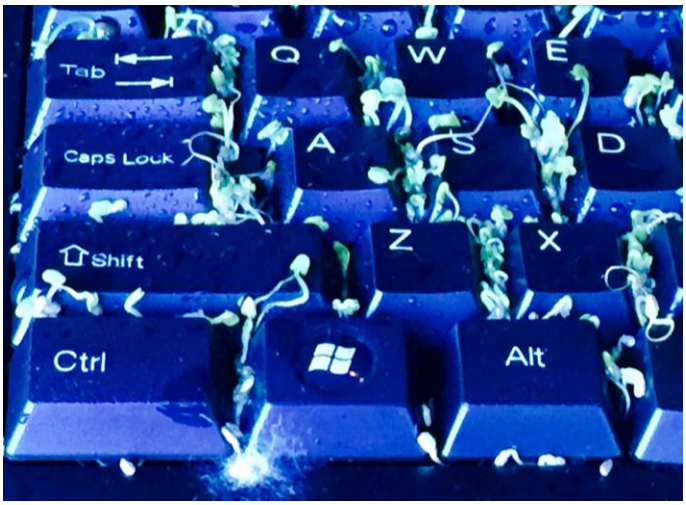
- Journal of Infection in Developing Countries, 2022 Sep 30; Vol. 16

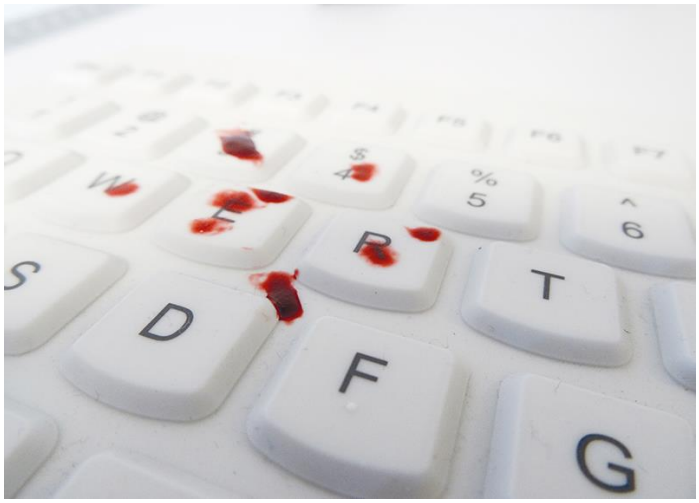
"The incidence of bacteria was detected on 96% of keyboards, contaminated usually by Staphylococcus and E. coli"

- International Journal of Environmental Research and Public Health, 2018

"Anesthetists use keyboards while still wearing dirty wet gloves. Keyboards become soiled by blood, and secretions. Some harmful bacteria can survive for more than 24 hours on computer keyboards. Most of the keyboards examined in this study were contaminated with MRSA."

- Journal of Hospital Infection, Volume 70, Issue 2, 2008, Pages 148-153




**What can I do to help fight healthcare associated infections?**

Research supports using sealed keyboards and mice that can be washed and disinfected as a simple, yet effective first line of defense against HAIs. The Journal of Environmental Research and Public Health found that of the keyboards sampled, each used by multiple people, they were contaminated with microorganisms like E. coli, and cleaning keyboards with disinfecting wipes every day is recommended.[v]

The British Medical Journal article *What's on Your Keyboard?* sums it up nicely: "Disinfection of environmental surfaces requires a strong program with training of personnel and monitoring of the disinfection adequacy".[vi]

Is it time for you to enhance your infection prevention protocols with a disinfectable keyboard and mouse from Man & Machine? Contact us now at 301.341.4900 and mention this whitepaper or visit our website (www.man-machine.com) for more information.

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[i] https://www.cdc.gov/hai/data/portal/progress-report.html

[ii] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1820440/

[iii] https://www.cdc.gov/policy/polaris/healthtopics/hai/

[iv] https://www.ahrq.gov/hai/pfp/haccost2017.html

[v] https://www.cleanlink.com/news/article/The-Seven-Germiest-Places-In-An-Office--23586\

[vi] Ide N, Frogner BK, LeRouge CM, et al. What's on your keyboard? A systematic review of the contamination of peripheral computer devices in healthcare settings. BMJ Open 2019;9:e026437. doi:10.1136/-*bmjopen-2018-026437