EPH219

Desk-Sharing in Workplaces: Economic Analysis of Targeted Hygiene (TH) Intervention in Reducing Risk of Common EPH Infections

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OBJECTIVES

- Current work environments commonly use shared workspaces, known as hot-desking.
- Shared spaces increase the transmission of common pathogenic microorganisms, through hand to surface spread, increasing the risk of infection[1].
- Approximately 19% of workers in the UK will require time away from work when they have a respiratory infection (RI) or gastrointestinal infection (GI), with an average absence of 3 days per episode[2].
- Common infections, such RIs and GIs place a burden on healthcare systems and employers.
- Targeted Hygiene Interventions (THI) have been shown to reduce the risk of developing workplace-acquired infections[3].
- This research estimated the economic impact of implementing THI in shared workspaces from both an employer (reduced productivity and performance) and healthcare system perspective (direct health care costs).

METHODS

- A budget impact model (BIM) was developed to estimate the economic consequences of THI in UK offices with shared workspaces, over a five-year time horizon.
- The BIM considered both the UK healthcare system (direct healthcare cost of treating workplace acquired infections) and employer (absenteeism and presenteeism related productivity losses) perspective (Figure 1).
- The model was set-up to estimate results for the following hypothetic scenario: 1,000 shared desks with 80-100% daily occupancy over 232 office days per year (to account for weekends and minimum holiday entitlement) and 100% uptake of the THI
- The BIM utilised data from a Quantitative Microbial Risk Assessment modelling (QMRA), conducted for an office hygiene study[3].
- The QMRA study involved a simulated hot-desking office. Pairs of participants used a desk sequentially, with a bacteriophage tracer applied to quantify the microbial contamination on participants' hands and office surfaces.
- Standard daily office clean (basic clean) and a THI served as comparator and intervention, respectively.
- Data from this study were used in estimate the of daily risk of GIs and RIs associated with each cleaning intervention (Table 1)[3].
- The costs incurred by adopting a THI were derived from the QMRA study, with additional model inputs obtained from published data.

Table 1. Cleaning Interventions explored via an office hygiene study.

	Basic Clean	Targeted Hygiene Intervention (THI)
Product Contact Time	None – surfaces wiped immediately	As per product instructions for disinfection usage
Products	Lysol All Purpose Cleaner Spray (APC)	APC, Disinfectant Spray and Disinfectant Wipes
Items to be Cleaned	Desk surface (excluding items on desk)	APC Spray – Desk surface lifting items to clean underneath Disinfecting Wipes – Keyboard and mouse Disinfectant Spray – Chair arm rests

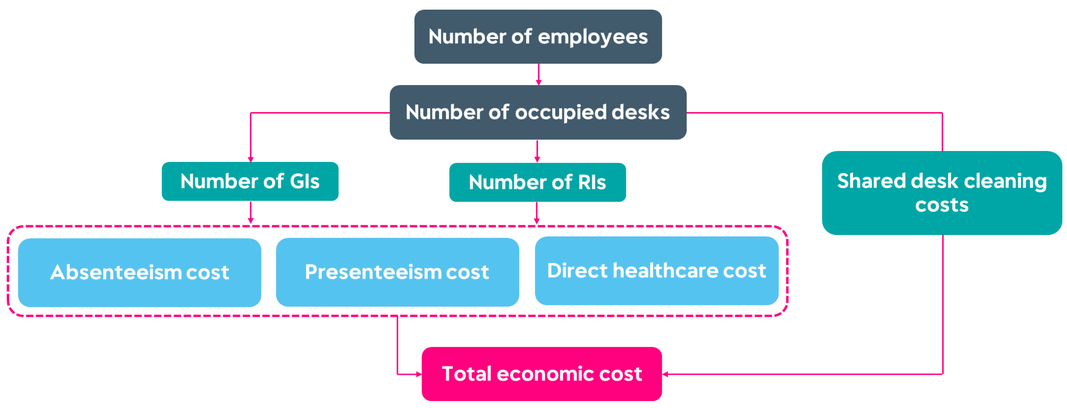

Figure 1. Budget Impact Model (BIM) Schematic. GI: gastrointestinal infection; RI: respiratory infection

RESULTS

- For a hypothetical 1000 shared desks, a TH intervention reduces GIs and RIs by 53% and 35% respectively, compared with a basic clean, resulting in a direct healthcare cost saving of 43% (£205,168) (**Figure 3**).
- From an employer perspective, THI reduces lost workdays and productivity losses by 48% (20,900 days and £2,137,883) (**Figures 2 and 3**). This results in a total economic savings of £1,043,851 (19%) over a five-year time horizon (**Figure 2**).
- The THI invention reduces the frequency of GP visits, hospitalisations, and antibiotic prescriptions by 41%, 43%, and 39%, respectively (**Table 2**).

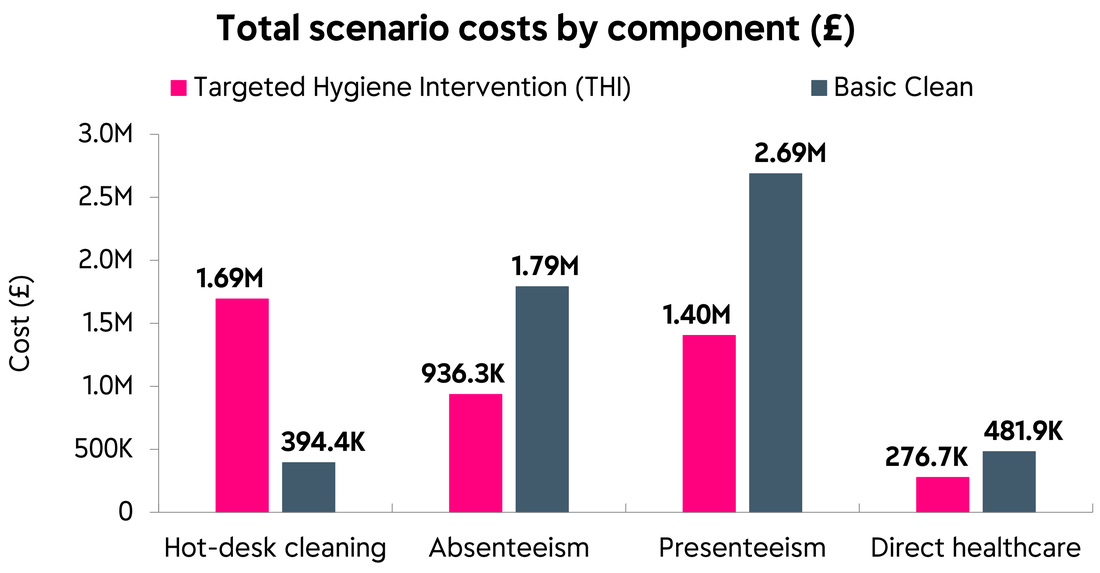

Figure 2. Economic outcomes over five years.

Table 2. UK population clinical outcomes.

Intervention	Number of GIs	Number of RIs	Number of GP visits	Number of Hospitalisation	Number of Antibiotic prescriptions
Basic Clean	6,426	7,830	1,277	181	559
Targeted Hygiene (THI)	3,051	5,127	753	100	356

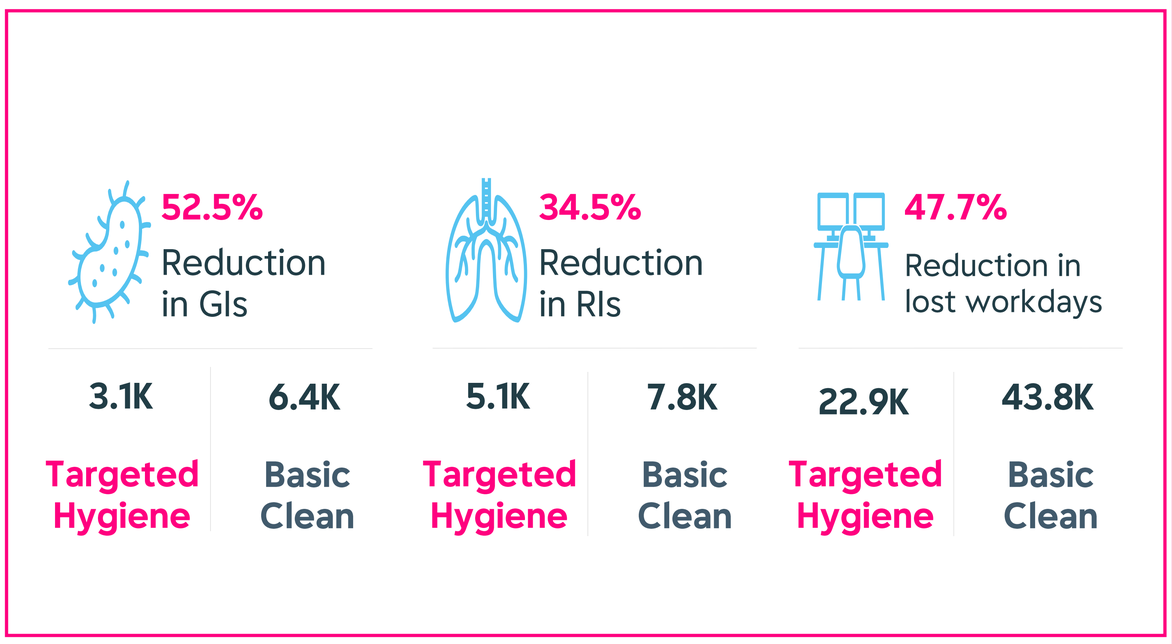

Figure 3. Targeted Hygiene (THI) outcomes.

LIMITATION & CONCLUSION

- The simulated study environment was assumed to be identical to the environment considered in the BIM, in reality, office-specific conditions such as air conditioning, office size, clustering, time spent using shared desks and ventilation are all factors that may impact the transmission of workplace-acquired infections.
- Regardless, findings from this BIM suggests that THI could lead to significant cost savings for both healthcare systems and employers. Employers might consider adopting a THI as it can reduce productivity losses from fewer lost workdays, and increased productivity.
- These outcomes maybe transferrable to other shared environments, such as employee break rooms, where there is high interaction with shared surfaces and objects. However, further research may be required.

References

1. Zivich PN, Gancz AS, Aiello AE. Effect of hand hygiene on infectious diseases in the office workplace: A systematic review. American journal of infection control. 2018.46(4):448-55.
2. Fragaszy EB, Warren-Gash C, White PJ, Zambon M, Edmunds WJ, Nguyen-Van-Tam JS, *et al.* Effects of seasonal and pandemic influenza on health-related quality of life, work and school absence in England: Results from the Flu Watch cohort study. Influenza Other Respir Viruses. 2018.12(1):171-82
3. Manuscript in preparation