Automate and Scale the Sanitization of Portable Electronics While Reducing Operational Expenditures

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THREAT OF HAIs FROM PORTABLE DEVICE CONTAMINATION

Healthcare acquired infections (HAI) continue to be a growing problem across the world, and the COVID-19 pandemic reversed much of the progress made in the past decade to reduce their prevalence[1,2]. Hand hygiene is often cited as the most important factor to fight HAI spread.[3,4] However, research in multiple areas has concluded that mobile devices used for patient care are unintentionally becoming transmission vectors of pathogenic organisms to patients,[5] and thus the CDC strongly recommends that these devices should be regularly cleaned and sanitized.[6]

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REDUCE COSTS AND HAIs

This whitepaper explores the cost savings and benefits of the ElectroClave™ system over traditional disinfectant wipes in healthcare facilities. First, discussed is the time saved, using the ElectroClave™, which can accomplish equivalent sanitization in half the time of industry-standard disinfectant wipes. Additionally, the ElectroClave™ system can reduce consumable costs by up to 90% and pay for itself within 0.42 years. The ElectroClave™ also promotes sustainability and reduces healthcare costs associated with waste disposal. Finally, the ElectroClave™ helps manage and preserve device fleets with its RFID asset tracking and allocation, minimizing occurrences of device theft or misplacement.

COST MODEL

First, the most important cost savings gained from the ElectroClave™ is on the time healthcare workers (HCW) spend disinfecting portable devices. The most common method of disinfecting portable electronics in healthcare is disinfectant wipes, and the industry-standard wipe is the PDI Super Sani-Cloth, to which we will compare the ElectroClave™ system. As effective as they are, PDI Super Sani-Cloths require a 2-minute dwell time to be effective, according to their IFUs (Instructions For Use). Moreover, the person wiping needs to ensure that the device is wet for that entire time for efficacy to be reached. In contrast, the ElectroClave™ can accomplish equivalent sanitization with a 1-minute cycle. This time savings, while initially seeming small, creates tremendous savings to healthcare over time and easily justifies using the ElectroClave™ over disinfectant wipes.

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LABOR SAVINGS

Supposing a scenario of 1000 mobile devices disinfected once per day, we can calculate that wipe time alone accounts for 2000 minutes per day, or roughly 33 hours. The ElectroClave™ can cut that time spent in half to 16 hours per day, or even less if multiple devices are disinfected per cycle. If the cost of HCW time is an extremely conservative $35/hour, an ElectroClave™ deployment can save our example facility over $583 per day in time spent disinfecting devices, or potentially $212,916 per year. (Clearly, if the cost of HCW time or number of mobile devices is assumed to be greater, then the savings will increase correspondingly.)

Using the ElectroClave compared to wipes saves time by up to

2X

CONSUMABLE SAVINGS

ElectroClave reduces consumable costs by up to

90%

Second, disinfectant wipes have a substantial consumable cost that can be reduced on the order of 90% or more by replacing them with the ElectroClave™ system. PDI Super Sani-Cloth wipes cost on average 8 cents per wipe, and in the best-case scenario every disinfection of a device requires 1 wipe. The ElectroClave™ system, by comparing the cost of the consumable disinfection modules, costs on average 1 cent per disinfection cycle. Furthermore, the ElectroClave™ can disinfect multiple devices at once (up to 8 small devices such as cell phones, or 4 tablets), meaning that the average cost only goes down per cycle for more devices being disinfected at the same time.

Depending on the number of devices a facility manages and their disinfection frequency, the savings on consumables can increase quickly. A standard canister of PDI Super Sani-Cloths + contains 160 wipes and costs about $12. Comparably, the ElectroClave's consumable cost for 160 disinfection cycles is only $1.20, netting a savings of $10.80 for the same number of disinfections. Again, this assumes best-case scenario for wipes, and worst-case scenario for the ElectroClave™. Scale that to 1000 devices disinfected once per day, and you would save $67.50 per day on consumables alone with a deployment of ElectroClaves.

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Enterprise Mobility Disinfection and Management ROI

The cost savings on consumables and labor thus makes the ElectroClaves pay for themselves in less than 6 months.

The ROI of the ElectroClave is achieved in

0.42 Years

ROI Calculation Summary

Consumable Savings Per Year	Labor Savings Per Year	Initial Capex Investment	ROI
$24,637.50	$212,916.00	$100,000.00	0.42

* Scan the QR code to calculate your specific ROI:

* For the scenario outlined above, managing 1000 devices typically requires a deployment of 20 ElectroClaves (managing 50 devices each on average). The initial capex investment, at $5k per ElectroClave, is $100k.

ENVIRONMENTAL STEWARDSHIP

There is an additional non-trivial advantage to using the ElectroClave™ instead of wipes: sustainability. Wipes, like disposable facemasks, are well-known to contribute greatly to wastage and microplastics in the environment. Infection prevention is certainly more important, but reducing waste also helps ensure a more sustainable future. In addition, excess waste incurs a real cost to healthcare facilities. Assuming a cost of $60/ton for general waste, replacing wipes with the ElectroClave™ can save additional hundreds of dollars, if not thousands per year. More involved medical waste disposal requirements would make the disposal cost for wipes go even higher (and the savings from using the ElectroClave™ correspondingly increased).

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PORTABLE DEVICE PRESERVATION

Beyond disinfection capabilities, the ElectroClave™ system also assists in preserving and managing device fleets. Many mobile devices are easily damaged from healthcare-grade disinfectants. Extending their useful life with the ElectroClave™, which demonstrates near-zero material degradation, overall means saving even more on device replacements from damage.

Unfortunately, mobile devices can be stolen or accidentally misplaced in healthcare as well. The ElectroClave™ system's advanced device management features help minimize these occurrences.

CONCLUSION

Healthcare organizations adopting the ElectroClave™ system embrace and leverage an enterprise solution that minimizes operational expenditures, maximizes staff time, all while reducing wastage and creating a more sustainable future.

ENDNOTES:

1. CDC HAI Progress Report: https://www.cdc.gov/hai/data/portal/progress-report.html
2. APIC press release: https://apic.org/news/statement-from-apic-president-ann-marie-pettis-bsn-rn-cic-fapic-about-hai-increases/
3. Why Wash Your Hands? https://www.cdc.gov/handwashing/why-handwashing.html
4. Aiello AE, Coulborn RM, Perez V, Larson EL. Effect of hand hygiene on infectious disease risk in the community setting: a meta-analysis. Am J Public Health. 2008 Aug;98(8):1372-81. doi: 10.2105/AJPH.2007.124610. Epub 2008 Jun 12. PMID: 18556606; PMCID: PMC2446461. https://pubmed.ncbi.nlm.nih.gov/18556606/
5. Olsen, M., Campos, M., Lohning, A., Jones, P., Legget, J., Bannach-Brown, A., ... Tajouri, L. (2020). Mobile phones represent a pathway for microbial transmission: A scoping review. *Travel Medicine and Infectious Disease, 35*(January), 101704. https://doi.org/10.1016/j.tmaid.2020.101704
6. https://www.cdc.gov/infectioncontrol/pdf/guidelines/isolation-guidelines-H.pdf, see page 62-3, "Patient Care Equipment and Instruments/Devices"