

### **The Problem: Central Line Associate Blood Stream Infections (CLABSI)**

There is currently an unmet need in clinical patient care to provide inexpensive and consistently effective prevention of central line associated blood stream infections (CLABSI). A hospital acquired CLABSI occurrence typically increases the patient stay by 7-25 days, with a mortality rate of 10-40%.<sup>1,2</sup> There are typically 250,000 - 500,000 CLABSI cases reported in the USA each year, with ~80,000 of those occurring in intensive care units (ICU), and almost always attributed to a lack of proper sanitization during central venous catheter (CVC) or peripherally inserted central catheter (PICC) maintenance.<sup>1</sup> ICU patients are particularly susceptible to CLABSI, as these critically ill patients often require hundreds of central line accesses per day for repeated administration of vasoactives, antibiotics, blood products and blood draws.

CLABSI is categorized by insurance underwriters as a “never event” because it is a serious and largely preventable hospital acquired infection (HAI). Beyond the ~30,000 deaths/year attributed to CLABSI, medical costs associated with CLABSI treatment are not reimbursed by insurance and must be borne exclusively by the hospital, at an average cost of ~\$45,000 per instance. Some estimates<sup>2</sup> place this combined cost well above \$10B annually for just ICU-based CLABSI treatments. Since each CLABSI occurrence is often attributed to negligence on the part of the caregiver, there are almost always accompanying litigation costs (~\$9B/yr. combined nationally). Further financial penalties are borne by 25% of US hospital’s due to the Affordable Care Act (a.k.a. ‘Obamacare’), which penalizes hospitals with CLABSI rates in the bottom quartile of the nation by reducing their overall Medicare reimbursements for all procedures on all patients by 1%. This equates to an average loss of ~\$500 per discharged patient<sup>3</sup> from ~1,250 hospitals. With the bottom quartile of hospitals in the USA discharging approximately 8 million patients per year,<sup>4</sup> this results in a financial loss of at least \$4B/yr. If the unreimbursed direct costs of treatment, escalating litigation costs, and federal penalties are combined, CLABSI is at least a \$24 BILLION financial problem for ~5,000 hospitals in the USA.

### **The Solution: *easySCRUB* melamine foam sponge saturated with 70% isopropyl alcohol (IPA)**

Hub Hygiene, Inc. is an Atlanta-based medical product manufacturer spun out from Georgia Tech in 2017 and now financially backed by BASF and Children’s National to develop *easySCRUB*, a patented<sup>5</sup> and award-winning<sup>6,7</sup> microporous polymeric foam technology for medical applications. We are currently undergoing Category I medical device packaging, sterility and biocompatibility testing with expected FDA clearance for human use by Q2/2019.

Each *easySCRUB* consists of an individually packaged, single-use, 2x2x1cm sugar cube-sized, open-cell microabrasive melamine foam sponge that is saturated with 0.5mL isopropyl alcohol (IPA). It is used in a scrubbing/twisting motion to promote and maintain cleanliness and sterility of the intravenous (IV) catheter hubs, ports, luer locks, septum and/or add-on device during connection and maintenance events. The *easySCRUB* technology is suitable within multiple infection-prone areas of a hospital system, including: ICUs, dialysis, oncology, emergency room (ER), pediatric, neonatal, maternity, and anesthesiology – among others.



**The Proof: Bacteria colony forming unit (CFU) reduction by several orders of magnitude**

Hub Hygiene Inc. has demonstrated through ASTM-E1837-96 “Standard Test Method to Determine Efficacy of Disinfection Processes for Reusable Medical Devices (Simulated Use Test)” conditions that our universally applicable *easySCRUB* microabrasive sponge material will rapidly and effectively remove and absorb CLABSI-causing bacteria (e.g., Staphylococcus aureus & Pseudomonas aeruginosa) during CVC/PICC-maintenance events without damage to the IV catheter, hub, septum, luer lock and/or add-on medical device being cleaned, even with exceptionally poor ‘scrub the hub’ protocol<sup>8</sup> adherence (Figure 1).

Beyond its vastly superior cleaning efficacy as compared to traditional IPA-saturated prep pads, the *easySCRUB* technology also facilitates infection-control compliance and monitoring by emanating an audible ‘squeak’ when used as indicated, thereby reassuring the caregiver, patient and their loved ones of proper IV maintenance.

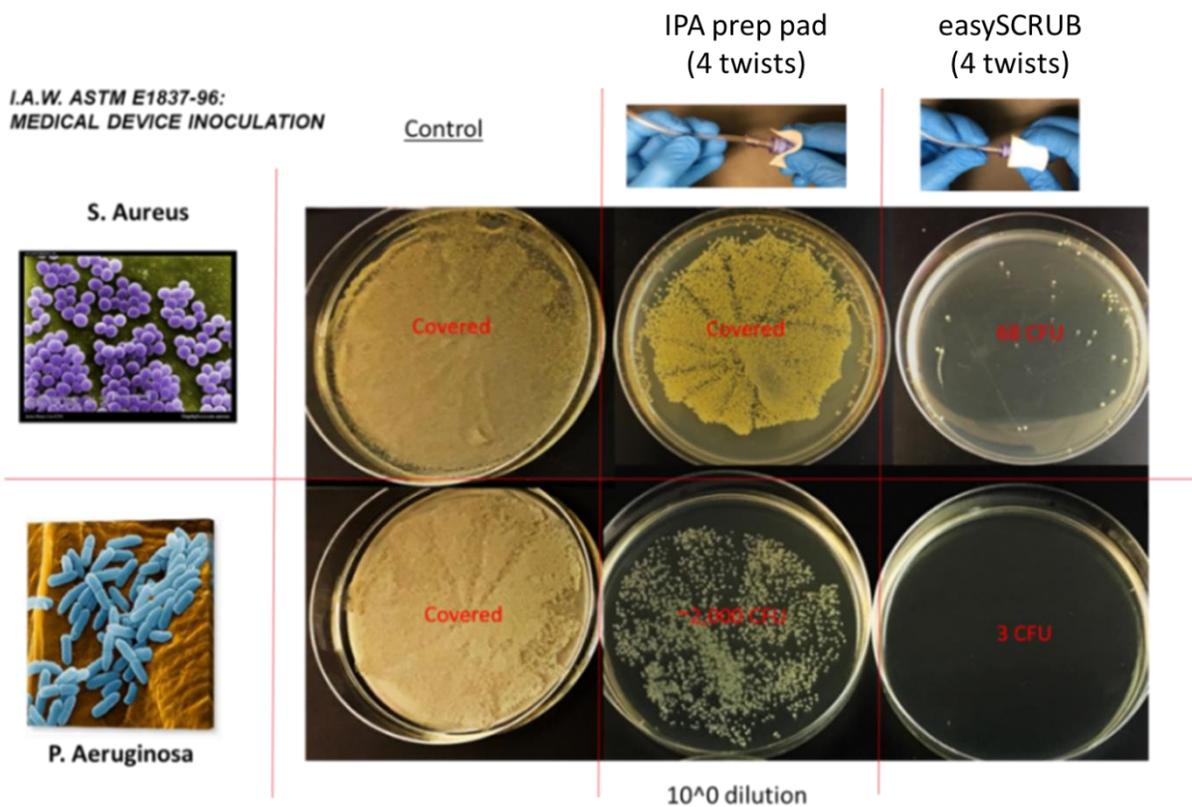


Figure 1: In a simulation of commonly-occurring non-adherence to the ‘scrub the hub’ protocol, after only four twists in three seconds of scrubbing, *easySCRUB* has successfully removed several orders of magnitude more CLABSI-causing bacteria colony forming units from the port, as compared to traditional IPA-saturated nonwoven prep pads.

**For complimentary samples, or more information contact:**

Dr. W. Jud Ready  
Hub Hygiene, Inc.



2132 Brookview Dr. NW  
Atlanta, GA 30318-1610  
404-605-0520

[jud@hubhygiene.com](mailto:jud@hubhygiene.com)

**References:**

---

<sup>1</sup> Perin, D.C., Erdmann, A.L., Higashi, G.D.C., Sasso, G.T.M.D, "Evidence-based measures to prevent central line-associated bloodstream infections: a systematic review" *Rev. Latino-Amer. Enfermagem*, Vol 24 (2016) - <http://dx.doi.org/10.1590/1518-8345.1233.2787>

<sup>2</sup> Nicholas Graves Stephan Harbarth Jan Beyersmann Adrian Barnett Kate Halton Ben Cooper, "Estimating the Cost of Health Care-Associated Infections: Mind Your p's and q's." *Clinical Infectious Diseases* Vol. 50, No. 7: 1017-1021, (2010) <http://dx.doi.org/10.1086/651110>

<sup>3</sup> "Medicare Provider Utilization and Payment Data: Inpatient" -- <https://www.cms.gov/research-statistics-data-and-systems/statistics-trends-and-reports/medicare-provider-charge-data/inpatient.html>

<sup>4</sup> "Statistics for non-federal, short-term, acute care hospitals by state." -- [https://www.ahd.com/state\\_statistics.html](https://www.ahd.com/state_statistics.html)

<sup>5</sup> US Patent # 10,166,085, "Method of disinfecting ports in central venous catheter systems."

<sup>6</sup> <https://coe.gatech.edu/news/health-star-again-spring-capstone-design-expo>

<sup>7</sup> <https://gtri.gatech.edu/newsroom/electronic-systems-laboratory-team-brings-50k-pediatric-medical-device-competition-win>

<sup>8</sup> <https://www.cdc.gov/dialysis/prevention-tools/scrub-protocols.html>