

Innovative approach to AMR

By Christine Click

Antimicrobial resistance largely persists in nosocomial settings. Health care professional gender studies estimate >90% female dominance in nursing. [1][2] Males represent 70% of practicing physicians although 40% of physicians are nearing retirement (≥ 55 years) [3]. While surgical specialties remain strikingly over 90% male, residents and medical students in the United States, Canada, and United Kingdom are relatively gender equivalent 50-51% female [4][5]. I propose we combat resistance at the source, capitalizing on gender inequality. Handwashing is an essential preventative yet difficult to enforce and frequently ignored. Especially in winter months health care workers express irritated skin or discomfort from soaps and disinfectants which may lead to further declining handwashing practices [6]. By providing an antimicrobial salve which heals, soothes and moisturizes, hand washing among women and surgeons may increase significantly. Strategic placement may add additional protection between washings. Salves are unlike lotions, balms or ointments and no similar products effecting multi-drug resistant organisms are available at this time. Recent research suggests extract from the white oak tree, *Quercus alba* inhibits growth, biofilm formation and quorum sensing in concerning multi-drug resistant nosocomial pathogens [7]. *Yucca brevifolia* commonly known as Joshua's tree is celebrated for both antimicrobial and healing properties among rock climbers and locals. Related species research suggests it likely [8]. By combining *Q. alba* extracts and *Y. brevifolia* oils such a product is feasible. Both *Q. alba* extract and *Y. brevifolia* oils hold FDA approvals. Commercial *Y. brevifolia* skin products already exist therefore by coupling with existing manufacturers there is potential for prompt approval and mass production.

1. Sullivan P. Nurses decry profession's 1:19 male-to-female ratio. CMAJ. 2001 Jun 12; 164 (12): 1738. PMID: PMC81172.
2. United States Census Bureau. Male Nurses Becoming More Common Place, Census Bureau Reports. 25 Feb 2013. Release Number CB13-32. Retrieved 2020 Dec 7. <https://www.census.gov/newsroom>
3. Association of American Medical Colleges. 2012 Physician Specialty Data Book Center for Workforce Studies. 2012 Nov. Retrieved 2020 Dec 7. <https://www.aamc.org/media/5971/download>
4. McKinstry B. Are there too many female medical graduates? Yes. BMJ. 2008 Apr 5; 336 (7647): 748. Doi: 10.1136/bmj.39505.491065.94. PMID: 18390524; PMID: PMC2287266.
- 5.
6. Searing, Linda. The Big Number: Women now outnumber men in medical schools. The Washington Post. 2019 Dec 23. Retrieved 7 Dec 2020. <https://www.washingtonpost.com>
7. Kampf, Günter and Kramer, Axel. Epidemiologic Background of Hand Hygiene and Evaluation of the Most Important Agents for Scrubs and Rubs. Clinical Microbiology Reviews 2004 Oct; 17 (4): 863-893. Doi: 10.1128/CMR.17.4.863-893.2004
8. Dettweiler, M., Lyles, J.T., Nelson, K. *et al.* American Civil War plant medicines inhibit growth, biofilm formation, and quorum sensing by multidrug-resistant bacteria. *Sci Rep* 2019 May; 9: 7692. Doi 10.1038/s41598-019-44242-y
9. Patel, Seema. Yucca: A medicinally significant genus with manifold therapeutic attributes. Nat. Prod. Bioprospect. 2012 Nov; 2 (6): 231-234. Doi 10.1007/s13659-012-0090-4