Section: A04
Group: E

[Growing On You] DO BEARDS BREED BACTERIA?

Is being clean-shaven more hygienic than being bearded?
Hypothesis: Having a beard will not result in a higher population density of bacteria.

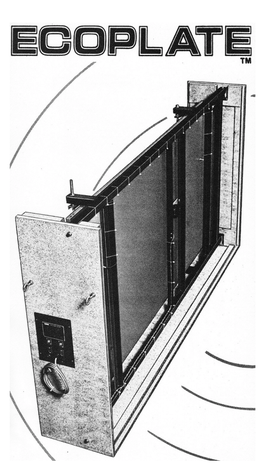
Background

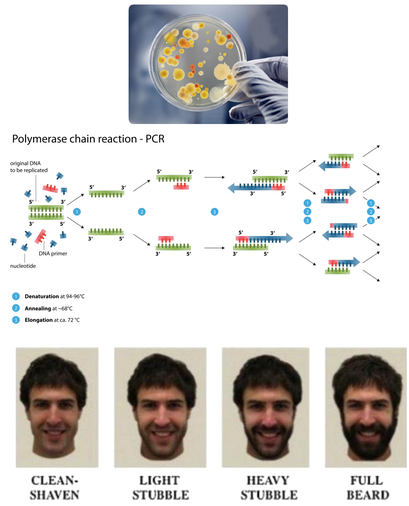
Facial hair has the potential to harbor and propagate foreign bacteria due its proximity to the mouth and nose; this easily allows food, saliva, mucus, and more to become trapped in the hairs. If left unwashed, food could begin to decompose and breed even more bacteria, increasing the likelihood of a bearded person to become sick. When physical contact is made, a possible transfer of bacteria from person to person can occur. Proper upkeep and hygiene may help prevent beards from becoming too unsanitary, but the presence of the beard itself may result in an ideal environment for bacteria to breed. Hair has traditionally been seen as a potential source of infection, as exemplified by the hair removal during surgeries that involve open wounds in the skin (1,2).

However, recent studies suggest that hair is not a significant contributor to bacterial infestation. 1967 results showed that at 10%, beards were a hazard in a microbial laboratory (5). Nowadays, looking at the 5% level and in 2014, out of 5 types microbial bacteria commonly found on the face, two were statistically significant: Staphylococcus aureus from the cheek and Coagulase-negative staphylococcus from shedding of the chin (4). Because the majority of the other microbes were not statistically significant, there is strong evidence suggesting that a beard is indeed not a microbial infestation. In addition, out of 105 surgeries without shaving, only one incident of infection occurred (3). MIC profiles of Staphylococcus aureus were taken but in shaven and bearded individuals and yielded identical results suggesting that once again, beards are as hygienic as clean shaven.

Materials

Methods





Resources

(1) Tanner J, Norrie P, Melen K. Preoperative hair removal to reduce surgical site infection. Cochrane Database of Systematic Reviews 2011, Issue 11, Art. No.: CD004122. DOI: 10.1002/14651858.CD004122.pub4.

(2) "Infection Risk in the Bearded Patient." *Infection Control & Hospital Epidemiology*. N.p., n.d. Web. 19 Nov. 2015. Tanner J, Norrie P, Melen K. Preoperative hair removal to reduce surgical site infection. Cochrane Database of Systematic Reviews 2011, Issue 11, Art. No.: CD004122. DOI: 10.1002/14651858.CD004122.pub4.

(3) "Result Filters." *National Center for Biotechnology Information*. U.S. National Library of Medicine, n.d. Web. 19 Nov. 2015.

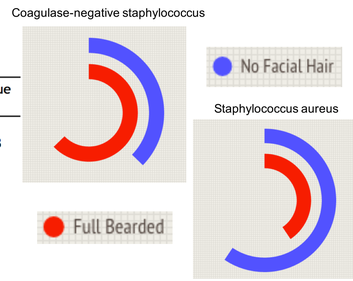
(4) Wakeam E, et al., Bacterial ecology of hospital workers' facial hair: a cross-sectional study, Journal of Hospital Infection (2014), http://dx.doi.org/10.1016/j.jhin.2014.02.010

(5) BARBEITO, Manuel S., CHARLES T. MATHEWS,, and LARRY A. TAYLOR. "Microbiological Laboratory Hazard of Bearded Men." 15.4 (1967): 899-906. *UC-eLinks*. Web. 19 Nov. 2015.

Results and Data

Demographic characteristics of the study population

	HCWs with facial hair	HCWs without facial hair	*P*-value
n	199	209	
Age	36.3 (14.5)	37.8 (13.8)	0.18
Facial hair			
Clean shaven	NA	209	
Full beard	103	NA	
Goatee	52	NA	
Moustache	25	NA	
Other	19	NA	



Appendix 3. Direct comparison of culture results for healthcare workers (HCWs) with full beards versus those without facial hair

	Fully bearded HCWs	HCWs without facial hair	*P*-value
n	103	209	
Lip			
Meticillin-sensitive coagulase-negative staphylococcus	80.6%	87.6%	0.10
Staphylococcus aureus	34.0%	45.0%	0.06
Meticillin-resistant *Staphylococcus aureus*	0	0.3%	0.48
Meticillin-resistant coagulase-negative staphylococcus	1.9%	4.8%	0.22
Gram-negatives[a]	1.0%	2.4%	0.39
Cheek			
Meticillin-sensitive coagulase-negative staphylococcus	78.6%	82.3%	0.44
Staphylococcus aureus	35.9%	52.6%	0.005
Meticillin-resistant *Staphylococcus aureus*	1.0%	0	0.14
Meticillin-resistant coagulase-negative staphylococcus	1.9%	7.2%	0.06
Gram-negatives[a]	1.9%	3.8%	0.37
Shedding			
Coagulase-negative staphylococcus	56.3%	33.5%	0.0001
Staphylococcus aureus	0	1.0%	0.31
Gram-negatives[a]	0	0.5%	0.48

[a] Gram-negatives include *Enterobacter* spp., *Klebsiella* spp., *Acinetobacter* spp., *Burkholderia* spp., *Pantoea* spp., and *Pseudomonas* spp.

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