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Healthcare Worker Perception of Bare Below the Elbows: Readiness for Change?

Patients prefer a clean, well-groomed, and easily identified healthcare provider, and some prefer that their providers wear white coats.¹ White coats are known to become colonized with pathogenic bacteria during the course of care, but it is uncertain whether this translates to higher rates of infection.^{2,3,4} One study reported that patients' initial preference for white coats changed once they were educated about microbial contamination of apparel.⁵ Uncertainty exists as to how physicians feel regarding how their attire impacts their self-perception and confidence. Few studies of physician preferences and perceptions regarding attire exist.^{1,6} We assessed perceptions of the white coat to assess barriers to the adoption of a bare-below-the-elbows (BBE) approach to patient care in the hospital.

At a 900-bed, urban academic medical center where BBE is recommended for inpatient care, an anonymous, institutional review board–approved survey using a Likert scale was distributed to a convenience sample of faculty and resident physicians and medical students at medical and surgical grand rounds over a 2-month period. Data were analyzed using the χ^2 test or Fisher exact test when appropriate. Alpha was set at 0.05, and all tests of significance were 2-tailed. Analyses were conducted using SAS 9.2 for Windows (SAS).

Three hundred surveys were distributed with a response rate of 64%. Incomplete responses to questions account for the differences in denominators in each survey item. Sixty percent of the respondents (112 of 188) were male; 43% of respondents were house staff, 32% were medical students, and the remaining 25% were faculty physicians. Seventy-four

percent (134 of 182) stated that they practiced predominantly in the inpatient setting.

Seventy-two percent of respondents (136 of 190) were aware of the BBE recommendation at our hospital, and 1% (2 of 192) stated that religious beliefs prevented them from complying. Forty-two percent of healthcare providers (81 of 191) reported wearing their white coats always or most of the time during inpatient care, with no difference by healthcare worker rank ($P = .76$).

The most common reason for wearing a white coat was storage (overall, 40%; attending physicians, 35%; house staff, 36%; students, 46%; $P = .40$). Sixty-four percent (123 of 192) reported carrying 5 or more items in their white coat on most days (attending physicians, 43%; house staff, 60%; students, 82%; $P = .001$). Thirty-eight percent (70 of 186) stated that, if hospital-issued scrubs had more carrying capacity, it would decrease white coat use (attending physicians, 19%; house staff, 26%; students, 68%; $P < .001$). Most respondents (160 [86%] of 186) felt that white coat use should not be mandated. Physician perceptions on the use of a white coat are summarized in Table 1.

Other reasons for wearing a white coat were perceived expectation of a colleague or supervisor (34 [22%] of 157), personal style (32 [20%] of 157), perceived patient expectation (21 [13%] of 157), or other reasons (7 [5%] of 157). There were no statistically significant differences in perceptions regarding wearing a white coat based on seniority.

Seventy-four percent (137 of 185) felt that white coats were probable or definite vectors for pathogen transmission to patients. Sixty-six percent (123 of 187) felt that practicing BBE was probably or definitely effective at reducing transmission of pathogens (attending physicians, 65%; residents, 58%; students, 78%; $P = .04$). The majority of respondents reported following a BBE approach (98 [55%] of 179).

Eighty-two percent of respondents (150 of 182) felt that white coats should be laundered at least weekly, whereas only 43% (77 of 181) reported actually doing so. Forty-five percent of attending physicians, 31% of house staff, and 53% of students washed their white coats at least weekly ($P = .03$). Forty percent of all respondents reported washing their white coat monthly, and 17% never wash their white coat.

Neckties were worn infrequently by male health care providers, with medical students reporting the highest frequency of wearing neckties (12 [36%] of 33). Wristwatches were commonly worn by attending physicians (28 [58%] of 48).

Most healthcare workers felt that self-confidence, professionalism, and patient perception were not affected by white coats and that their use should not be mandated. Laundering of white coats was infrequent, and this was concerning. Many healthcare providers, particularly residents and students, felt that white coats have the potential to cross-transmit organisms and that a BBE strategy for inpatient care was an effective way to limit cross-transmission.

Although the majority of respondents reported a BBE approach to patient care, white coats are still used along with

TABLE 1. Healthcare Worker Attitudes and Perceptions about Laboratory Coats, by Rank

Survey question, response	Proportion (%) of respondents				P
	Attending	Resident	Medical student	All	
Do you believe your patient's perception of you would adversely be affected if you did not wear your white coat?					
Definitely not or probably not	30/49 (61)	47/81 (58)	29/60 (48)	106/190 (56)	.35
Would your self-confidence be adversely affected if you no longer wore your white coat?					
Definitely not or probably not	40/48 (83)	69/80 (86)	52/60 (87)	161/188 (86)	.57
Do you feel that you appear unprofessional when not wearing your white coat?					
Definitely not or probably not	32/49 (65)	55/81 (68)	40/59 (68)	127/189 (67)	.95
How often do you wear a white coat when practicing inpatient medicine?					
At least every other day or daily	19/50 (38)	35/81 (43)	27/60 (45)	81/191(42)	.75
How often do you wash your white coat?					
Daily	1/44 (2)	1/79 (1)	0/60 (0)	2/183 (1)	.72
Every other day	2/44 (5)	0/79 (0)	1/60 (2)	3/183 (2)	.10
Weekly	17/44 (39)	24/79 (30)	31/60 (52)	72/183 (39)	.33
Monthly	18/44 (41)	34/79 (43)	22/60 (37)	74/183 (40)	.18
Never	6/44 (14)	20/79 (25)	6/60 (10)	32/183 (17)	.04
Do you believe your white coat can be a vector to transmit pathogens?					
Probably or definitely yes	29/47 (61)	61/79 (77)	47/59 (80)	137/185 (74)	.08
In the past month, how often have you worn a tie in the inpatient setting (males only)?					
Often (4–6 days per week) or daily	5/33 (15)	5/43 (12)	12/33 (36)	22/109 (20)	.02
In the past month, how often have you worn a wristwatch in the inpatient setting?					
Often (4–6 days per week) or daily	28/48 (58)	33/81 (41)	22/59 (37)	83/188 (44)	.07
When practicing inpatient medicine, how often are you "bare below the elbows?"					
Often (4–6 days per week) or daily	24/42 (55)	45/79 (57)	32/58 (57)	98/179 (54)	.76

neckties and wristwatches. Previous investigators reported that white coat weight is inversely correlated with degree of seniority.⁷ Our results suggest that the use of white coats is partly motivated by the need to increase carrying capacity.

Our study has several limitations. We used a convenience sample for our survey responses, which may not be representative of all the healthcare workers in our hospital. The study is limited to a single institution, which has had a recommendation for BBE since 2009, and therefore our findings may not be generalizable. The survey focused on inpatient attire; therefore, the results cannot be extrapolated to outpatient settings.

Policies advocating a BBE approach for inpatient care should stress the potential infection risk posed by infrequently laundered apparel. Additionally, apparel policies should emphasize the use of scrub attire and vests constructed of wipeable fabrics with pockets to satisfy carrying capacity needs. Healthcare facilities should also strongly encourage healthcare workers to wash white coats regularly and provide laundering services to encourage compliance. Coat hooks should be readily available in the clinical environment so that white coats

can be hung before providing care at the bedside. Healthcare workers should be encouraged not to wear neckties or wristwatches. Additional studies are needed to assess the impact of policies that advocate a BBE approach to inpatient care.

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