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Changes to physician and nurse time burdens when caring for patients under contact precautions

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Abstract

Contact precautions are complex behavioral interventions. To better understand barriers to compliance, we conducted a prospective study that compared the time burden for health care workers caring for contact precautions patients versus other patients. We found that nurses spent significantly more time in the rooms of contact precautions patients. There was no significant change in physician timing. Future studies need to evaluate workflow changes, so that barriers to contact precaution implementation can be fully understood and addressed.

BACKGROUND

Hospital-acquired pathogens are most commonly transmitted via healthcare workers (HCWs).¹ There is a large body of evidence showing that contact precautions, requiring HCWs to don gowns and gloves upon entry to the patient's room, are effective at reducing the transmission of multidrug-resistant organism.^{2,3,4} However, compliance with contact precaution protocols remains poor.⁵ Lack of time is often cited as a reason for noncompliance.^{6,7} However, it is unclear if the magnitude of this burden is realistic or is overestimated by already constrained HCWs. To better understand barriers to contact precautions use, we conducted a prospective study to compare the time burden for HCWs when caring for patients in contact precautions versus other patients.

METHODS

We conducted an observational study of HCW timing at an 87-bed Veterans Affairs hospital (site A) and a 592-bed tertiary care teaching hospital (site B). Two members of the study team trained in conducting observations covertly monitored HCW behavior at the hospitals'

surgical and intensive care unit wards. At site A, contact precautions and intensive care rooms are single rooms and others are two-bed rooms. In site B, all patients are in single rooms.

Observers recorded the descriptions and timings of all relevant HCW events for a given room during each observation period. Inclusion criteria included events that involved a nurse or physician. Exclusion criteria included any event that was not classified as preparation, consultation, or service.

Observations were classified into these three categories to determine the optimal target for future contact precaution interventions. Preparation included any action performed before entering a patient room, such as gowning, gloving, or using a computer station. Consultation was defined as HCW discussions with each other before entering or after exiting a patient room. Any action that occurred while the HCW was in a patient room was considered service. The observers did not enter patients' rooms, thus, details of behavior inside the rooms were not recorded.

Observations were conducted from Monday to Friday during daytime working hours. Observers worked independently. Each observation session lasted at least one hour. To facilitate covert observation, observers worked from nursing stations on the wards. Statistical comparisons were performed in R 3.3.1 (R Project for Statistical Computing, Vienna, Austria) using the Welch two-sample t-test. This study was considered quality improvement, for which institutional review board approval was not required.

RESULTS

A total of 1,058 observations were conducted over a fifty-hour observation period from August 2012 to February 2013. Approximately half of the observations occurred among HCWs caring for contact precautions patients (n=588; 56%). Most involved nurses (n=849; 80%).

Nurses spent significantly more time in the service of contact precautions patients than those not under precautions, with 7.14 minutes (95% Confidence Interval (CI): 6.08, 8.21) versus 5.08 (95% CI: 4.48, 5.69; p=0.001). Overall, the difference in nursing consultation times was not significant, with 2.52 minutes (95% CI: 1.60, 3.45) for contact precautions compared to 3.59 (95% CI: 1.77, 5.40) for others (p=0.29). However, there were different site-specific trends of borderline statistical significance. At site A, a Veterans Affairs hospital, nurses spent more time in consultation for patients under contact precautions, with 3.10 minutes (95% CI: 1.94, 4.27) versus 1.91 (95% CI: 1.48, 2.34; p=0.053). At site B, an academic teaching hospital, nurses spent less time with contact isolations patients: 1.62 minutes (95% CI: 0, 3.29) versus 5.47 (95% CI: 1.65, 9.30; p=0.059).

We found no statistically significant changes to physician consultation, preparation, or in-service times for patients under contact precautions compared to other patients. On average, physicians spent 4.06 minutes (95% CI: 2.77, 5.35) in consultation for contact precautions patients, compared to 6.77 for others (95% CI: 3.98, 9.56; p=0.08). They spent an average of 1.46 minutes (95% CI: 1.00, 1.91) in preparation for contact precautions patients, versus

2.99 minutes for others (95% CI: 0.55, 5.46; $p=0.16$) and 6.94 minutes (95% CI: 4.13, 9.74) in service with contact precautions patients, compared to 5.62 with others (95% CI: 4.36, 6.89; $p=0.40$).

DISCUSSION

Increasing adherence to contact precautions requires interventions that target complex HCW behaviors. Although time burdens are often cited by doctors as a reason for contact precaution noncompliance,⁶ we found no significant change at our hospitals in the amount of preparation, in-service, and consultation times required by physicians caring for contact precautions patients. This highlights a potential disconnect between perceived barriers to contact precaution implementation and actual time-burdens. Further studies are needed to investigate when and how doctors perceive the time burdens they experience.

In contrast to the physician data, we found that nursing staff spent significantly more time in-service caring for patients under contact precautions than other patients. This difference in results by HCW type mirrors the controversy in the literature, where some studies show increased in-service time for contact precautions patients and others report no change.^{8–10} There are several possible reasons for the increase in nursing service time under contact precautions. First, nurses may perform multiple procedures during the same room entry, decreasing the number of distinct visits to the room to reduce repeated gowning and gloving. It is also possible that patients under contact precautions have more complicated clinical needs that necessitate additional direct nursing care. We were limited by an inability to conduct in-room observations. Future studies should incorporate measurements from inside rooms to capture changes to the workflow of the clinical interaction itself.

Given the opposite borderline significant trends in nurse consultation times at our two institutions, larger studies investigating the effect of site-specific patient profiles on contact precaution changes to HCW timing are warranted. Additional research is also needed to collect data linking observed HCW behaviors to specific patients. This would allow researchers to examine associations between time spent with patients and clinical outcomes, such as the rate of hospital readmission and thirty-day mortality.

The use of contact precautions is associated with increased patient time for nursing staff. For contact precaution compliance to rise, additional studies are needed to evaluate when and how this burden can best be mitigated.

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