

healthy FMT stool donors. Although rare, MDROs were detected and should be part of standard guidelines for FMT donor screening. Most subjects testing positive for MDROs had defined risk factors associated with MDRO carriage, including international travel or exposure to healthcare environments. However, occupational exposure was not a factor associated with carriage in this study. Standardized donor screening guidelines for FMT are urgently needed to ensure that MDROs and risk factors for MDRO carriage are routinely screened for by all FMT providers. Stool banks present a unique public health opportunity to evaluate the background carriage rate of MDROs in healthy populations.

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### Observed Time Burden With Isolation Precautions at Three University-Affiliated Hospitals in Korea

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**Background:** Isolation precautions (IPs; ie, patient isolation with transmission-based precautions) are essential in hospital infection control interventions to prevent the transmission of healthcare-associated infections. Because IPs require healthcare personnel (HCP) to use personal protective equipment (PPE; eg, gown, gloves, and mask) to enter patient isolation rooms and perform hand hygiene (HH) frequently, IPs are often regarded as cumbersome tasks and may lead to fewer HCP visits. This observation study examined the time burden of IPs (ie, PPE use and HH) from time spent on HCP tasks, including patient

treatment and care, in patient isolation rooms. **Methods:** With institutional review board approval, participating hospitals were recruited. At each hospital, assigned infection control nurses observed HCP tasks at patient isolation rooms of interest and recorded each task's duration, using a stopwatch or timer and an observation form. For each observation block (ie, a duty period at 1 observation unit, regardless of the number of observed isolation rooms), unit-related information was collected, including the numbers of hospitalized patients, admission patients, discharge patients, isolation patients, and nurses. For each block, IP proportions were calculated by total time spent on IP divided by the total time spent on all tasks. Descriptive statistics, *t* test, ANOVA, and regression analyses were conducted using STATA version 16.0 software. **Results:** Three university-affiliated hospitals (838 average hospital beds, range 811–855) participated from April 2 to May 18, 2019 (for 7–9 days). In total, 2,901 tasks were monitored and the total time spent was 164,973 seconds; most tasks were done by nurses (89.2%) and females (86.8%). Although the most time-intensive task was procedures (eg, intravenous infusion) followed by medication, PPE use was the most frequent task followed by HH (Table 1). Regarding IP proportions, an overall average of 23.6% of total task time was spent on IPs (16.1% for PPE use and 7.5% for HH) in patient isolation rooms (Table 2). Notably, tasks in the tuberculosis isolation room of hospital B showed a greater HH proportion (13.7%) than PPE proportion (13.5%) because HCP usually use N95 masks only. Wards, compared to intensive care units (ICUs), showed higher PPE proportions (19.2%), potentially due to PPE stock in the nurse station and less PPE education compared to ICUs. **Conclusions:** Our study results demonstrated the substantial amount of time spent on IP compliance among all task durations in patient isolation rooms. To improve IP compliance, this time burden needs to be considered with greater system support, such as more nursing staff.

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Table 1.

Table 1. Summary of Observed Frequency and Total Time Spent for Each Task Category at Patient Isolation Rooms

Task Category	Observed Frequency				Observed Total Time Spent (Seconds)			
	Hospital A	Hospital B	Hospital C	All Hospitals	Hospital A	Hospital B	Hospital C	All Hospitals
	N (%)	N (%)	N (%)	N (%)	Sum (%)	Sum (%)	Sum (%)	Sum (%)
PPE use*	419 (51.5)	231 (46.3)	769 (48.4)	1,419 (48.9)	7,719 (13.4)	3,160 (13.9)	9,124 (10.8)	20,003 (12.1)
Hand hygiene	175 (21.5)	124 (24.8)	340 (21.4)	639 (22.0)	2,563 (4.4)	2,355 (10.4)	5,518 (6.5)	10,436 (6.3)
Procedures	54 (6.6)	31 (6.2)	145 (9.1)	230 (7.9)	13,469 (23.4)	5,384 (23.7)	22,715 (26.9)	41,568 (25.2)
Assessment	46 (5.7)	17 (3.4)	78 (4.9)	141 (4.9)	4,378 (7.6)	1,102 (4.9)	2,227 (2.6)	7,707 (4.7)
Administration	19 (2.3)	NA	114 (7.2)	133 (4.6)	2,073 (3.6)	NA	22,070 (26.1)	24,143 (14.6)
Device management	14 (1.7)	19 (3.8)	35 (2.2)	68 (2.3)	4,932 (8.6)	1,439 (6.3)	2,701 (3.2)	9,072 (5.5)
Nursing care	11 (1.4)	8 (1.6)	37 (2.3)	56 (1.9)	6,297 (10.9)	230 (1.0)	11,372 (13.4)	17,899 (10.8)
Environment management	24 (3.0)	6 (1.2)	21 (1.3)	51 (1.8)	7,883 (13.7)	86 (0.4)	1,514 (1.8)	9,483 (5.7)
Medication	6 (0.7)	26 (5.2)	15 (0.9)	47 (1.6)	699 (1.2)	3,434 (15.1)	1,279 (1.5)	5,412 (3.3)
Observation	21 (2.6)	10 (2.0)	9 (0.6)	40 (1.4)	2,304 (4.0)	1,005 (4.4)	2,133 (2.5)	5,442 (3.3)
Education	11 (1.4)	10 (2.0)	11 (0.7)	32 (1.1)	700 (1.2)	1,382 (6.1)	1,912 (2.3)	3,994 (2.4)
Test & sampling	13 (1.6)	7 (1.4)	4 (0.3)	24 (0.8)	4,659 (8.1)	2,627 (11.6)	639 (0.8)	7,925 (4.8)
Feeding	NA	10 (2.0)	11 (0.7)	21 (0.7)	NA	503 (2.2)	1,386 (1.6)	1,889 (1.1)
Total	813 (100)	499 (100)	1,589 (100)	2,901 (100)	57,676 (100)	22,707 (100)	84,590 (100)	164,973 (100)

Note. \* PPE use frequency counted all different items' donning and doffing individually. PPE, personal protective equipment; NA, not applicable