TABLE 1. Adherence to Central Line Insertion Practices (CLIP) Between PICC and CVC

Variable	PICC No. (N = 1,377)	PICC Adherence, %	CVC No. (N = 2,304)	CVC Adherence, %	Statistics	*P* Value
Hand hygiene performed before insertion	1,374	99.8	1,880	81.6	277.945	<.001
Appropriate skin prep before insertion	1,377	100.0	2,304	100.0	NA	NA
Skin prep agent completely dried before insertion	1,368	99.4	1,836	79.7	295.318	<.001
Maximal sterile barriers (MSB) used before insertion	1,267	92.0	1,161	50.4	664.978	<.001
Sterile gloves	1,364	99.1	2,278	98.9	0.28	.597
Sterile gown	1,297	94.2	1,267	55.0	626.556	<.001
Cap	1,349	98.0	2,244	97.4	1.203	.273
Mask	1,357	98.7	2,259	98.1	1.246	.264
Large sterile drape	1,360	98.8	1,768	76.7	327.637	<.001

NOTE. CLIP, central-line insertion practices; PICC, peripherally inserted central catheter; CVC, central venous catheter; NA, not available; Statistics, Pearson Chi-square test.

placed by nurses. Our results suggest better adherence with CLIP by nurses than by doctors.

It has been reported that the application of maximal sterile barriers (MSBs) used before CVC insertion could lower medical costs and decrease the incidence of catheter colonization, catheter-related bloodstream infections, and death,[6] which reflects the importance of MSBs in the prevention of CLABSI. However, compliance with MSB protocols for CVC insertions was only 50.4% in this investigation, especially for sterile gowns (55.0%) and large sterile drapes (76.7%). This finding suggests that enough and timely access to adequate supplies and personal protective equipment (PPE) for CLABSI prevention would greatly affect compliance with CLIP, and these costs should be fully supported in departmental budgets. In stratified analyses by department, the worst compliance with MSB use in CVC insertion occurred for anesthesia and operating rooms (1.6%), radiotherapy units (40%), and neurosurgery units (47.6%), which strongly suggests the need to improve supervision, to strengthen training, and to increase feedback in the use of MSBs.

In conclusion, our data indicate that compared to PICC insertions, there was significantly less adherence with hand hygiene, complete drying of the skin disinfectant, and poor adherence with MSBs with CVC insertions. CLIP adherence should also be monitored daily to optimize patient safety.

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The Need for Rotavirus Vaccine Introduction in the National Immunization Program of More Than 100 Countries around the World

To the Editor—Despite the existence of the improved health care and health promotion, diarrhea continues to cause 1.7 million deaths each year in children younger than 5 years old worldwide. Roughly, rotavirus is responsible for more than a third of these deaths[1]; it is a leading cause of severe diarrhea in children younger than 5 years of age around the world. According to the published report of sentinel rotavirus surveillance of the 35 member states of the World Health Organization (WHO), an average of 40% (range, 34%–45%) of diarrhea cases attributable hospitalization in children under 5 years of age were associated with rotavirus infection.[2] Similarly, in countries of the eastern Mediterranean region, ~40% of gastroenteritis cases in children ensue from rotavirus infection.[3] In Iran, a developing country in the Middle East, the proportion of rotavirus infection in children suffering from gastroenteritis varies from 11.6% to 64.67% across the country by 2009.[4]

The WHO has recommended the integration of rotavirus vaccine into all national immunization schedule. However, more than 100 countries had not introduced rotavirus vaccine as of April 2016, including Afghanistan, Algeria, Andorra, Antigua and Barbuda, Azerbaijan, Bahamas, Bangladesh, Barbados, Belarus, Belize, Benin, Bhutan, Bosnia and Herzegovina, Brunei Darussalam, Bulgaria, Cabo Verde, Cambodia, Central African Republic, Chad, Chile, China, Comoros, Cook Islands, Costa Rica, Croatia, Cuba, Cyprus, Czech Republic, Democratic People's Republic of Korea, Democratic Republic of the Congo, Denmark, Dominica, Egypt, Equatorial Guinea, France, Gabon, Grenada, Guinea, Hungary, Iceland, Indonesia, Iran (Islamic Republic of), Ireland, Italy, Jamaica, Japan, Kazakhstan, Kuwait, Kyrgyzstan, Lao People's Democratic Republic, Lebanon, Lesotho, Lithuania, Malaysia, Maldives, Malta, Monaco, Mongolia, Montenegro, Myanmar, Nauru, Nepal, Netherlands, Nigeria, Niue, Oman, Pakistan, Papua New Guinea, Poland, Portugal, Republic of Korea, Romania, Russian Federation, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Samoa, San Marino, Serbia, Singapore, Slovakia, Slovenia, Solomon Islands, Somalia, South Sudan, Spain, Sri Lanka, Suriname, Switzerland, Syrian Arab Republic, The former Yugoslav Republic of Macedonia, Timor-Leste, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Ukraine, United Arab Emirates, Uruguay, Vanuatu and Viet Nam.[5] Moreover, the results of a meta-analysis study in Iran have provided sufficient evidence to introduce rotavirus vaccine in the routine national immunization program. According to the findings of this meta-analysis, the pooled estimates of rotavirus infection in gastroenteritis cases and gastroenteritis-related hospitalizations were 35% (95% CI, 28%–41%) and 39% (95% CI, 30%–48%), respectively[6].

Rotarix and *RotaTq* are 2 types of new oral vaccines available against rotavirus infection. The monovalent rotavirus vaccine (RV1) is implemented in 2 scheduled doses (at 2 and 4 months of age), and the pentavalent rotavirus vaccine (RV5) is implemented in 3 oral doses (at 2, 4, and 6 months of age). Both vaccines listed can be integrated in a national immunization program.[5] The pooled estimates of rotavirus vaccine efficacy derived from the result of clinical trials suggested that these 2 vaccines can prevent 70% and 83% of all disease cases, respectively. Moreover, these 2 vaccines were 80% and 90% protective against rotavirus gastroenteritis, respectively.[7] A review study in collaboration with the WHO using 89 observational studies and clinical trials approved the safety and efficacy of rotavirus vaccine. Published studies indicate higher efficacy of vaccine in developed countries than in developing countries. Vaccine efficacy in the prevention of severe cases in America, Europe, and Latin America was estimated to be 89.1%.[1] In Asian and African countries, the pooled estimate of *Rotarix* vaccine efficacy against severe cases of disease during the first year was 58% (95% CI, 40%–72.3%).[8] The rate in developing countries may be improved if relevant preventive measures are considered along with immunization against rotavirus.

In conclusion, rotavirus vaccine should be introduced to the immunization program as a part of a prevention program for diarrheal diseases to maximize its impact. Policy makers should consider additional control measures such as exclusive breastfeeding up to 6 months, healthy water supply, personal hygiene, and sanitation along with the treatment of rotavirus-related illnesses and gastroenteritis cases to achieve an efficient immunization program against rotavirus.[5]

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