Resources to Support Health Care Personnel in CLABSI Prevention		
Resource	**Description**	**Use/Implications**
Supplies and Equipment	Personnel must have ready access to the supplies and equipment necessary for the proper insertion and care of central venous catheters (CVCs).	Using kits or carts that contain all the necessary supplies in one convenient package or location eliminates needless searching that not only wastes time but also jeopardizes patient safety, as staff may be tempted to "cut corners" and not follow evidence-based practices.
Education, Training, and Competency Assessments	Appropriate education, training, and competency assessment resources are needed for all staff responsible for the insertion and maintenance of CVCs.	Several studies have demonstrated that intensified training and educational programs reduce the risk of CLABSIs.[1–5] Even in resource-limited countries, promoting and reinforcing infection prevention measures (such as proper hand hygiene) through education and training can help improve practices.[6,7]
Trained Infection Preventionists and Epidemiologists*	Trained infection preventionists and epidemiologists are essential in ensuring that infection prevention and control programs are in place and that CLABSI surveillance is performed appropriately.	Epidemiologists and infection preventionists are important resources to all staff, providing education, motivation, and support in implementing best practices or troubleshooting barriers.
Staffing Levels†	Appropriate staffing levels are a key resource. Researchers have reported a significant link between nurse staffing levels and CLABSIs.[8,9]	A vicious circle can develop when nurses are unable to cope with the burden of work, as subsequent absences from work add to the burden of the remaining nurses.[10]
Automated Systems for HAI Surveillance	Automated systems for HAI surveillance are another infrastructure resource that researchers suggest likely play a key role in creating a successful culture of safety and implementing evidence-based practices.[11,12]	Such systems allow infection preventionists to collect more data more efficiently, including details on adherence to CVC insertion bundles and collection of central line–days.[12] Better and more timely data on process and outcome measures can then be used to develop performance improvement initiatives. Additional information on automated surveillance systems can be found in the toolkit and monograph Chapter 5.

* This key human resource is often inadequately staffed and may be entirely lacking in developing countries.[6,13–15]

† Achieving and maintaining appropriate staffing ratios can be particularly challenging in developing countries.[16]

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