



## ON-SITE INFECTION CONTROL ASSESSMENTS: PARTNERSHIP WITH EMS

### OVERVIEW

Infection control is key in preventing diseases from spreading in healthcare facilities. For many years, the Los Angeles County Department of Public Health's Acute Communicable Disease Control Program (LAC DPH ACDC) has worked with healthcare facilities such as hospitals and skilled nursing facilities to improve infection control practices. This serves to decrease healthcare associated infections (HAIs) in both patients and healthcare personnel. Emergency Medical Services (EMS) providers are a vital part of the healthcare team as they are the first to respond to pre-hospital incidents and provide care during inter-facility transports. EMS providers in LAC include emergency medical technicians and paramedics in both public (fire and sheriff departments) and private (ambulance companies) settings.

To support infection control across the continuum of care, ACDC began collaborating with the LAC Emergency Medical Services Agency (LAC EMS) to increase infection control measures in EMS providers across LAC. EMS providers face unique situations that present challenges in practicing proper infection control such as working in high stress scenarios and providing care with limited or no patient background. While performing their everyday duties, they can be exposed to patients with communicable diseases, and although there have been no documented cases of transmission in LAC to EMS providers, some have been exposed to diseases such as meningitis, tuberculosis, hepatitis A, hepatitis B, human immunodeficiency virus (HIV), etc. Their work environment (the ambulance) provides limited space for necessary resources. For example, there is no room for a sink in the ambulance to perform hand hygiene with soap and water when needed. Furthermore, if there is a breach in personal protective equipment (PPE) or if a device malfunctions or becomes contaminated, there is limited amount of room for extra supplies. Infection control by EMS providers is crucial and understanding their unique challenges is important in order to effectively help them.

ACDC received funding in 2015 through a Centers for Disease Control and Prevention (CDC) grant to perform infection control assessments in acute care hospitals, ambulatory surgery centers, and skilled nursing facilities. In 2016, ACDC expanded this project to include EMS providers. The goal of these assessments was to evaluate and understand infection control practices among healthcare personnel, identify infection control gaps and best practices, enhance disease reporting, and develop standardized infection control guidelines.

### METHODS

To perform these assessments, ACDC and LAC EMS adapted CDC Infection Control Assessment and Response survey tools<sup>1</sup> designed for other healthcare settings. The tools assessed domains of the infection control program including: staff training, healthcare personnel safety, hand hygiene, use of personal protective equipment (PPE), injection safety, respiratory hygiene, environmental cleaning, device reprocessing, sterilization, and/or high-level disinfection of reusable devices. LAC EMS selected the ten providers with the highest call volume and invited them to participate. Additional providers volunteered to participate after the opportunity was announced at the Provider Agency Advisory Committee and LAC



Ambulance Association meeting. Providers selected included private ambulance companies as well as public fire and sheriff departments.

Each infection control assessment lasted approximately seven hours and included two parts. The first part of each assessment involved the provider completing the survey tool and onsite review with LAC staff. The second part involved direct observation of infection control practices via ambulance field observation that lasted anywhere from four to seven hours in at least two ambulances per provider. At the conclusion of each visit, the provider received verbal feedback from LAC staff. Following the assessment, each provider received a detailed written summary with feedback, recommendations, and resources specific to their identified gaps.

## RESULTS

Although the goal was to assess 10 EMS providers, ACDC and LAC EMS were able to assess 14 EMS providers from September 2016 through September 2017. Results of the infection control assessments are shown in the tables and figures below. Table 1 and Figures 1-3 represent data from the infection control survey tool. Figures 4 and 5 represent data from the direct observations of staff practices.

Table 1. Demographic Characteristics of EMS Providers Assessed

Characteristic	n (%)
Medical Director is employed by company	6 (43%)
Provider has Designated Infection Control Officer (DICO)	11 (79%)
Average number of hours per week dedicated to infection prevention and control (range)	11 (1-40)
Average number of call responses per week (range)	1,406 (20-7711)
Average number of transports per week (range)	787 (7-4392)

Figure 1. Features of Infection Control Programs and Healthcare Personnel Safety

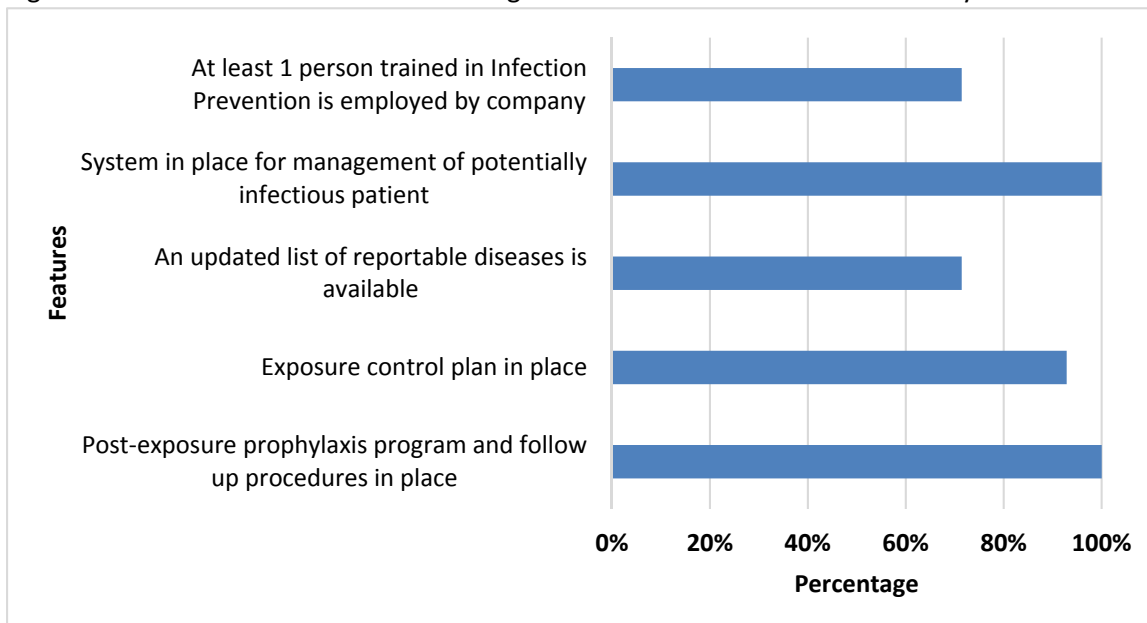




Figure 2. Percentage of Providers that Require Healthcare Personnel to Demonstrate Competency for the Four Infection Control Domains

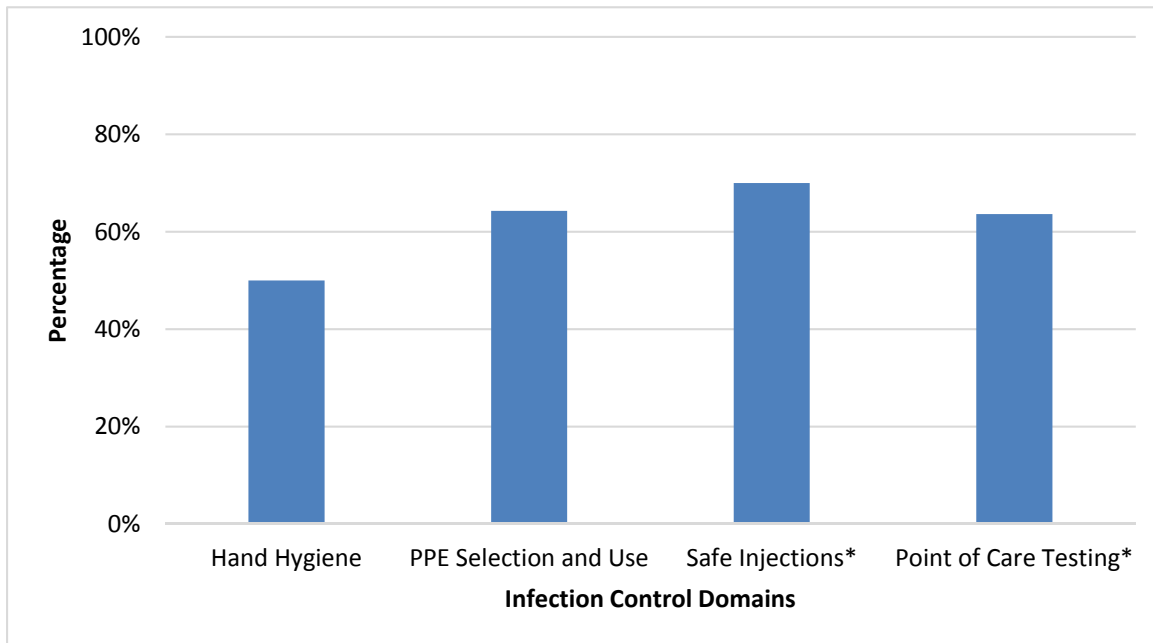


Figure 3. Audit and Feedback Practices for Assessed EMS Providers by Infection Control Domain†

†Per the CDC, auditing is a formal process that must include both monitoring and documentation; therefore, a facility may provide feedback but not have a formal auditing process.

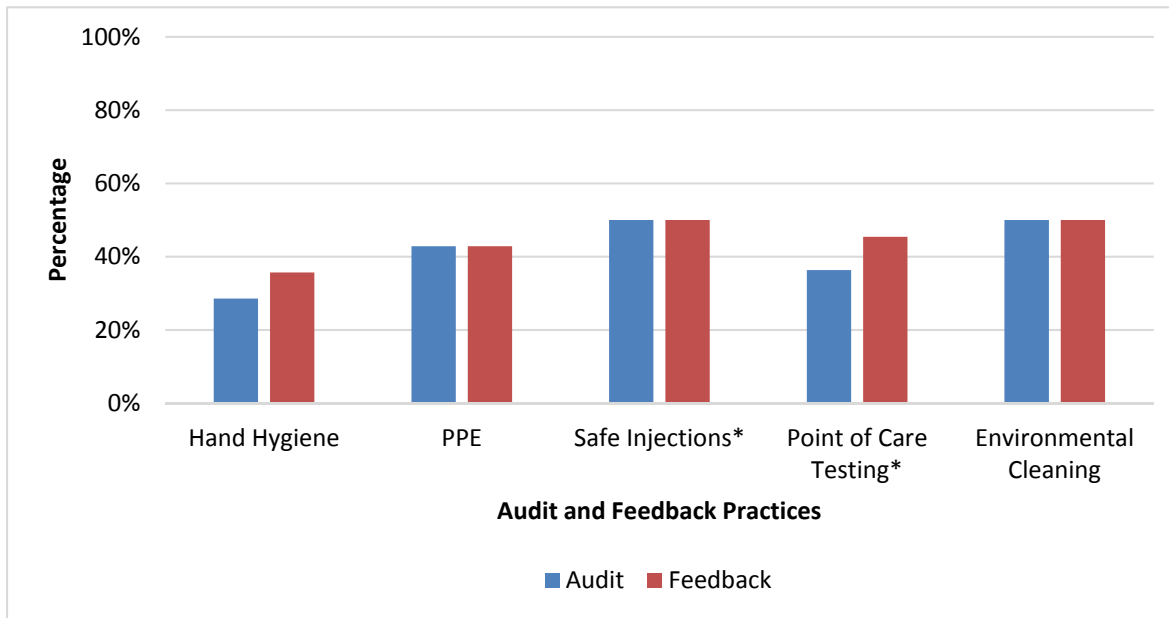




Figure 4. Observations of Hand Hygiene (HH) Practices

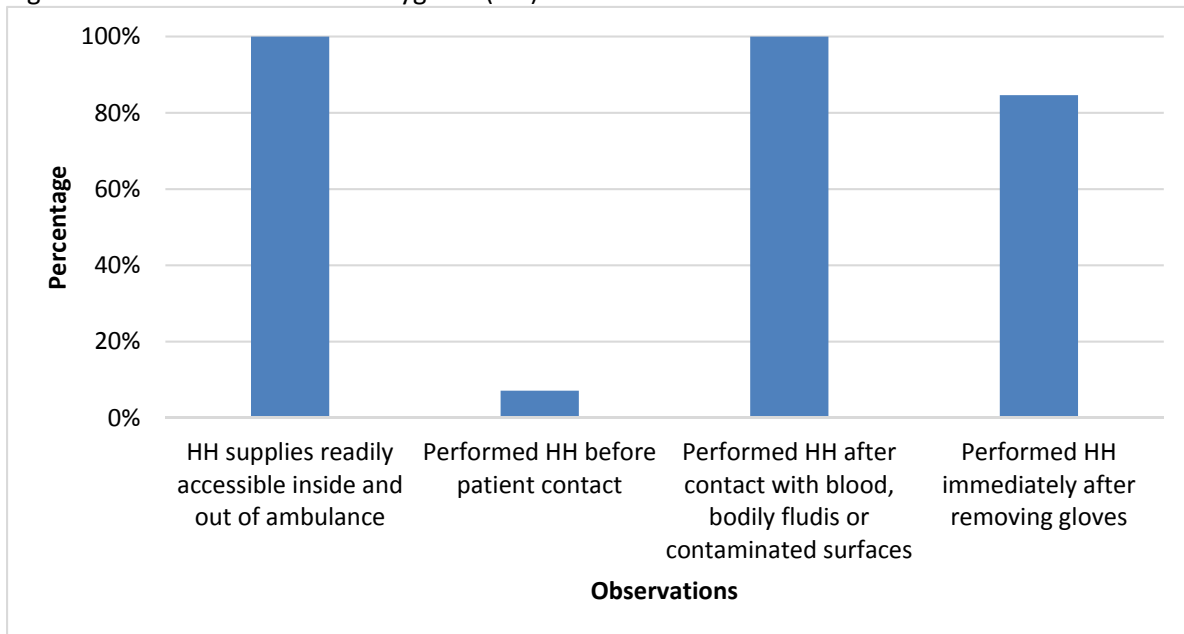
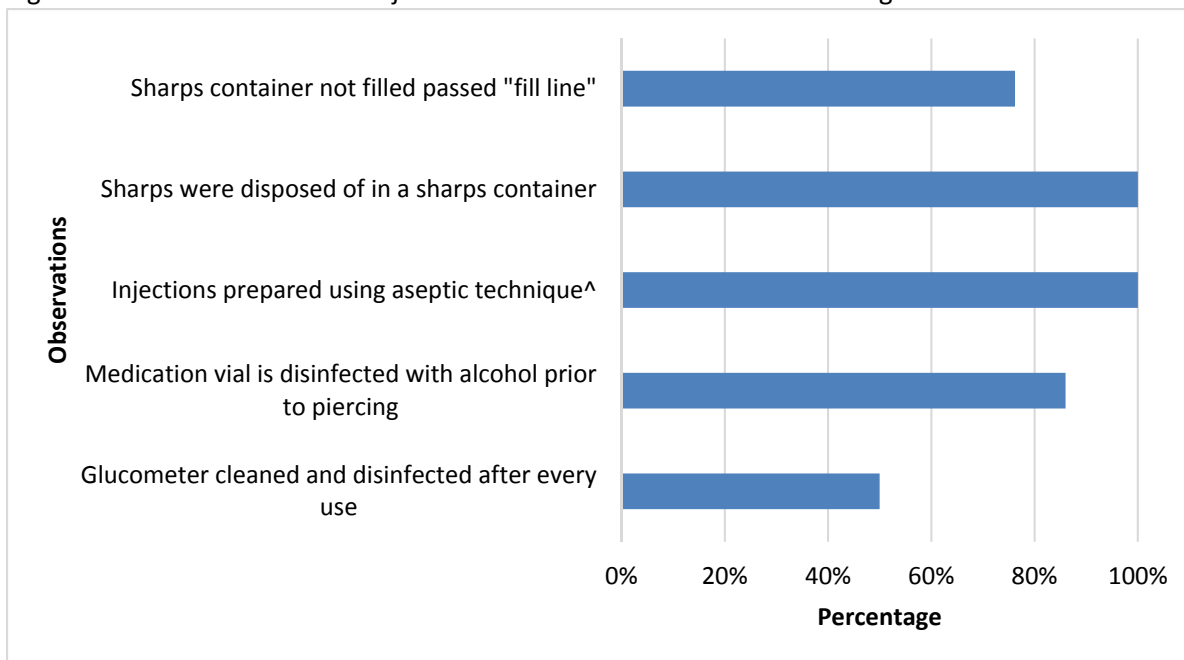


Figure 5. Observations of Safe Injection Practices and Point of Care Testing\*



^Aseptic technique is a method used to keep objects and areas free from contamination with microorganisms to minimize the risk to the patient<sup>2</sup>; an example would be a designated medication preparation area.

\*Note that some providers did not provide injections or medications (basic life support services only); therefore, they were not included.



## DISCUSSION

Overall, findings from the infection control assessments were positive. All but one provider had staff assigned to infection control duties prior to our visit; 79% of whom had a single designated infection control officer. In addition, observed providers were aware and able to state companies' infection control policies such as appropriate contact time for disinfectants/cleaners.

However, while all providers provided infection control policies, direct observations did not always reflect what was written. For example, during policy and procedure review, the exposure control plan for blood borne pathogens stated that all sharps containers shall be closeable and sealable in accordance with OSHA standards to prevent leaks and punctures. However, during observation, several sharps containers did not have a lid or the lid was loose, which could cause potential needle-stick injuries to staff and/or patients. Furthermore, cleaning policies were not always followed during direct observations as a new and clean cloth/wipe was not always used to decontaminate the gurney. In addition, staff stated that glucometers were wiped down after each patient use; however, actions observed varied. Lastly, while the CDC recommends hand hygiene before and after all patient encounters<sup>3</sup>, only 7% performed hand hygiene before patient contact, and only two providers included hand hygiene before patient contact in their written policy. To fully support infection control efforts among EMS providers, their leadership should require regular skills demonstration by staff to assess competency. By doing this, as well as regularly observing staff practices, they can improve infection control.

There are some limitations to this overall study and analysis. First, this was a voluntary study with a small sample size. In LAC, there are 38 licensed private providers and 31 public providers. We were only able to assess nine private (24%) and five public (16%) providers. Furthermore, as providers were allowed to say no and others volunteered for the assessment, it is possible that the companies who participated performed better than those who were not assessed. Additionally, it was hard to compare companies as they varied in size and services provided. For example, some of the smaller private ambulance providers only provided Basic Life Support (BLS) services, whereas the larger providers perform both BLS and Advanced Life Support (ALS) services. It is likely that these larger providers have more resources available to them compared to the smaller providers. The types of calls also posed a limitation as care differed for each call for BLS versus ALS response. In addition, the amount of calls varied from zero to five responses, limiting the LAC staff's opportunities for observations. Lastly, for these assessments the staff not only knew they were being observed, their observer was conspicuously shadowing them. Moreover, the providers were made aware ahead of time of the visit, which may have altered their infection control practices and allowed management to pre-select the ambulances that LAC staff observed. Therefore, based on these limitations, it may be hard to generalize our results for all EMS providers across the board.

In the upcoming year, LAC staff will begin conducting follow-up interviews to assess changes following the infection control assessments. Additionally, education and training opportunities are being planned to address the most prevalent gaps. ACDC will develop best practice guidelines and will develop infection control training based on best practices. ACDC in conjunction with LAC EMS will continue to work together with EMS providers to improve infection control policies and practices.



## REFERENCES

1. Centers for Disease Control and Prevention. (2015). CDC Infection Control Assessment tools. Retrieved from <https://www.cdc.gov/hai/prevent/infection-control-assessment-tools.html>
2. The Joint Commission. *Preventing Central Line–Associated Bloodstream Infections: Useful Tools, An International Perspective*. Nov 20, 2013. Accessed [12 Dec 2017]. <http://www.jointcommission.org/CLABSIToolkit>
3. Center for Disease Control and Prevention. (2017). Hand Hygiene in Healthcare Settings. Retrieved from <https://www.cdc.gov/handhygiene/providers/index.htm>