

Driving Higher Standards in Ambulances Hygiene



A day in the life of an ambulance crew can be described as “hectic” at the very least. First, a crew may respond to somebody with severe chest pains. Then, an elderly person is stung by a hornet. Later, they may attend to a gunshot wound or severe automobile accident.

Events like these, all too common for mobile emergency workers, often leave little time to keep the emergency vehicle clean. And that’s created some problems:

- A recently [published study](#) on Australian paramedics showed that one-third of ambulance staff work in a visibly dirty vehicle, and 90% found blood contamination of stretcher frames, internal compartment surfaces, extrication and other equipment. More alarming, many paramedics could not describe how to clean blood or decontaminate the ambulance.
- In [Las Vegas, NV.](#), only 57% of EMS workers wore gloves, and only 28% regularly washed their hands and reusable equipment was disinfected only 38% of the time (ideally these should all be much closer to 100%. The ambulance stretcher was disinfected 55% of the time, the most of all measured surfaces.
- A Chicago, IL., [study showed](#) cleaning protocols when followed routinely could reduce levels of pathogenic bacteria in an ambulance. However, 6% of sites sampled in ambulances tested positive for *Staphylococcus aureus*, and of those positive samples, 77% showed some antibiotic resistance, and 12% were methicillin-resistant *S. aureus* (MRSA).

Ambulance crews agree that they represent the front line of not only providing emergency—and often lifesaving—patient care, but are also responsible for keeping ambulances free of pathogens. However, crews cited several barriers to cleanliness, including the impression of too little time between patient cases and the pressure to respond to another emergency call instead of completing a thorough cleaning. Another barrier was lack of appropriate cleaning products and equipment, while a third barrier cited was a workplace culture that did not encourage vehicle cleaning, especially among younger, recently trained emergency service workers.

Ambulances make up an integral part of any healthcare response protocol and play a key role in emergencies keeping patients safe and healthy. Hygiena™ Cleaning Verification Systems have long been used in many health care settings, from emergency rooms to intensive care units, and even ambulances and emergency response crews. Several ambulance services in Great Britain that provides emergency care for the country's National Health Service use Hygiena ATP monitoring equipment to conduct post-cleaning assessment and monitoring of five high-risk areas in the cab (where the driver sits) and five areas in the patient area.



Hygiena's SystemSURE Plus ATP Cleaning Verification Systems indirectly measures the energy-containing molecule that is part of any plant or animal in relative light units (RLUs), conversions from ATP levels to measurable light that indicate levels of contamination. The higher the RLU, the more contaminated the surface. RLU thresholds for healthcare facilities have been set and can vary depending upon the type of healthcare facility and degree of use.



To establish RLU thresholds for ambulances, Hygiena scientists worked with one ambulance service group, to identify key high-risk areas of ambulances that need to be cleaned and monitored.

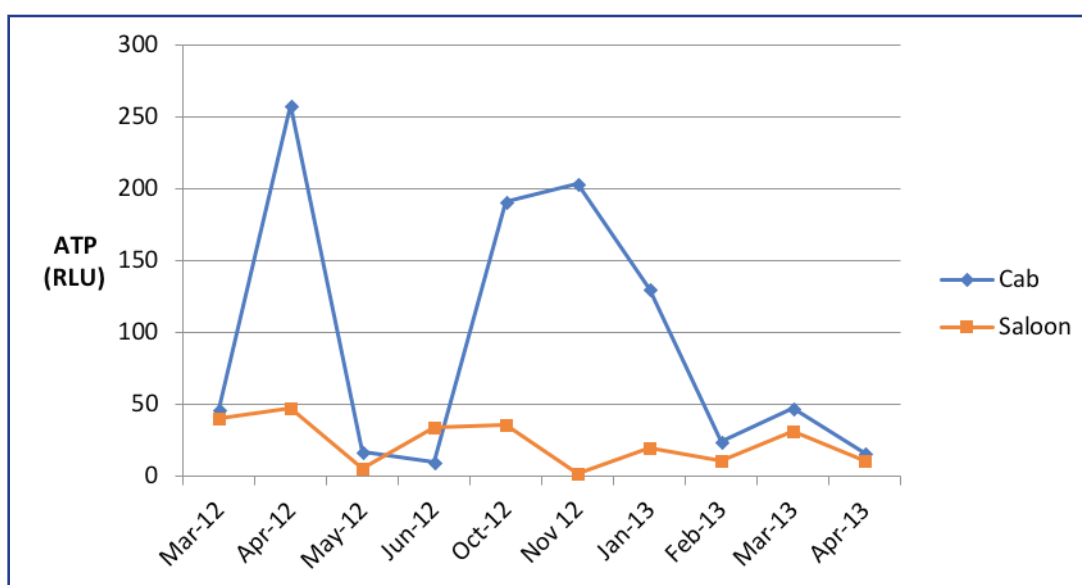
After gathering data over several months across a fleet of vehicles, scientists compared pre-cleaning and post-cleaning RLU levels in the drivers' cab and patient area. Not surprisingly, overall RLU levels in the cab area tended to be higher than in the patient area, where cleaning efforts are concentrated. However, key areas of the cab, including the door release lever and steering wheel, showed dramatic RLU decreases



after cleaning. In the patient area, significant reductions were seen on the stretcher mattress' head area, the carry chair handles and clinical waste receptacle.

From this study, cleanliness benchmarks for ambulances were calculated and the benchmarks for pass / fail criteria were found to be similar to those in the hospital near patient areas. For the ambulance patient area, 50 RLUs or less were needed for a "pass" score and readings above 100 RLUs were recorded as a "fail" score, whereas in the driver's cab 50 RLUs or less were needed for a "pass" score and readings above 200 RLUs were recorded as a "fail" score. After cleaning, all vehicles had an average RLU of 46 for the cab area, and an average RLU of 40 for the patient area. The trend over a 12-month period is shown in the figure below.

Figure 1: Post-cleaning ATP scores in ambulance cab and patient area



The study showed the effectiveness of ATP-based cleaning verification, established valuable thresholds limits and highlighted possible design changes that could help prevent contamination and improve infection control. These design changes noted involve creating easier to clean instrument sets, the removal of porous materials, and changes in how to clean steering wheels, gear levels and door handles would enable better results.

"ATP methods have proven to be very effective in identifying sources of contamination but also optimize and verify cleaning procedures. In additional routine monitoring of hygiene levels using simple ATP tests provides instant objective evidence that the highest standards are maintain and that risk are managed effectively," said Martin Easter, PhD., Hygiena Chief Scientific Officer.