

Prevalence of Bacterial Contamination of Glucose Test Strips in Individual Single-Use Packets versus Multi-Use Vials

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Abstract

Background:

Glucose measurement is the cornerstone of diabetes control. In the hospital setting, the same device and package of test strips (50 or 100 strips) can be used to monitor glucose in several patients, which can increase cross contamination. The objective of our study is to measure bacterial contamination in glucose test strips, comparing results in individual single-use packets (one hospital) versus multi-use vials (two hospitals) in Spain.

Methods:

Test strips were collected from five different wards. Each hospital also collected two unopened vials from a single ward as controls. They were sent to a reference laboratory for microbiologic study. A number equal or higher than two colony forming units per strip was considered as a positive result.

Results:

Out of 423 glucose test strips collected and cultured, 146 were contaminated (34%); only 7% of individually packed strips were contaminated versus 45% of strips packed in multi-use vials, with a high statistical significance ($p < .001$).

Conclusions:

In the strips from multi-use vials, a high contamination rate was found and highly pathogenic organisms were identified, such as methicillin-resistant *Staphylococcus epidermidis* or *Staphylococcus hemolyticus*. In contrast, in strips packed individually, there was a much lower contamination rate and no such pathogen organisms were found. Therefore, in the hospital setting, the use of blood glucose test strips in individual packages would be more advantageous (mainly from a clinical point of view, but also from a financial one) than those packed in multi-use vials.

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Abbreviations: (CFU) colony forming unit, (EPINE study) Estudio de Prevalencia de Infecciones Nosocomiales en España, (MRSA) methicillin-resistant *Staphylococcus aureus*, (MRSE) methicillin-resistant *Staphylococcus epidermidis*

Keywords: bacterial contamination, cross contamination, glucose test strips, nosocomial infection

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