The Use of Self-Capping Intravenous Catheters by EMS providers is Associated with a Reduction in the Rate of Accidental Needlesticks

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Purpose: Prehospital management of patients by EMS providers often requires intravenous therapy. Accidental, contaminated needlesticks have been identified as an occupational hazard. This study investigates the relative safety of self-capping needles when compared with the use of conventional ones.
Methods: The ALS service conducts 12,000 transports per year, nearly all of which require intravenous therapy. Paramedics within this system are required to report all on-the-job injuries, including accidental needle sticks. In July 1993, the use of a new catheter replaced the conventional one. The needlestick rate as a proportion of total injuries from a ten-month period before and after introduction of the new catheter was examined. Statistical analysis was performed using the Yate's corrected Chi-square test for 2 x 2 contingency tables.
Results: During the period prior to the new protocol, 44 injuries were reported, 15 of which involved needlesticks. Eleven of the 15 needle sticks were contaminated. After initiation of the new protocol, one of the 31 reported injuries was due to an uncontaminated needle stick. The increased proportion of total injuries due to needle sticks was significant ($\chi^2 = 8.6$, $0.001 < p < 0.005$). The 95% confidence intervals for differences between the proportion of injuries due to needlestick was (0.16, 0.46). Intravenous success rate remained unchanged.
Conclusions: A reduction in the proportion of injuries among ALS providers due to needlesticks can be achieved through the use of self-capping needles. The use of these intravenous catheters does not appear to adversely affect intravenous success rate.

Performance and Storage of Blood Glucose Reagent Strips

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Objective: Visually read reagent strips for rapid determination of blood glucose concentration are commonly used to guide initiation of emergent treatment of hypoglycemia or hyperglycemia. The purpose of this study was to determine the stability of the most widely used blood glucose: reagent strips, Chemstrip bG, after storage under various conditions (air-exposure, extremes in temperature) to simulate the prehospital environment.
Methods: Performance of the Chemstrips (Biodynamics, Boehringer Mannheim, Indianapolis) was examined over a 24-weeks period under three different temperatures: 1) room temperature; 2) 37°C; and 3) 4°C. One sealed and one open container was stored at each temperature. At four-week intervals, three strips were taken from each study sample and compared to fresh Chemstrips (sealed container, expiration date two years from time of testing) as well as three hexokinase controls (hypoglycemic, euglycemic, and hyperglycemic). Chemstrips were read manually and by reflectance meter (Accu-Chek, bG).
Results: Chemstrips stored in sealed containers maintained their accuracy (within 95% confidence limits) throughout the study period. However, storage in unsealed containers led to a rapid deterioration (<8 weeks) at room temperature and at 37°C. Manual reading of the Chemstrips was significantly more accurate than was the use of the reflectance meter after four weeks ($p < 0.001$).
Conclusions: Chemstrips bG, stored in sealed containers and cooler temperatures, give accurate blood glucose results. Under less than ideal storage conditions, glucose reagent strips can be reasonably relied upon for up to 24 weeks only if read manually.

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