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ALISA TESO : A STUDY ON THE EVALUATION OF INFUSION PUMP PERFORMANCE USED IN B.M.A. GENERAL HOSPITAL. THESIS ADVISOR. : SOMSRI DAOCHAI, M.Sc., CHUSAK VEJBAESYA, M.D. ,Ph.D., PRAMOTE BEJRAJATI, M.D. FRCS (Ed), FRCS.(GLAS), PEERA KRUGKRUNJIT, M.Sc. (BIOSTAT). 127 p. ISBN 974-664-871-3

By standard checkup and maintenance of the infusion pumps, the users can detect errors or malfunction early and prevent patients from serious harm. This study is intended to evaluate the performance of the infusion pumps used in B.M.A. General Hospital for at least 2 years. Thirty-nine infusion pumps, 19 of which were used between 5-11 years and the rest were used between 2-4 years were used for this study.

Cylinder capacity of 5, 50, 100 ml were considered for flow measurement and a stopwatch was used for measurement of flow rate. Data were analyzed for percentage flow error by SPSS for Windows. As for occlusion pressure, pressure meter was used to detect 3 flow rates. Results in this study showed that most infusion pumps had a flow accuracy within AAMI standard of ± 10 %. Seven machines had a flow accuracy below AAMI standard. (17.95%) Five machines 5-11 years old and 2 machines 2 years old had a flow accuracy below AAMI standard in low flow rate (5 ml/hr, 10 ml/hr). Continuous flow of 48 hrs in setting flow rate 100 ml/hr had mean percentage of flow error within AAMI standard. In occlusion test, ten machines had not corresponding to the unit's machine performance. (25.64%) and the rechargeable battery in sixteen machines was out of order (41.02%). Baxter Flo-Gard used different administration set and had a flow accuracy within AAMI standard. Total infusion pumps showed significant difference of flow accuracy at $p < 0.05$ in 5 level flow rate; 5, 10, 40, 100, and 300 ml/hr. Flow accuracy at rate 5 ml/hr was lowest and had value in positive; value measured higher than setting value and flow accuracy not being influenced by concentration of solution. Measurement of occlusion pressure in 3 flow rate had not shown significant differences of $p > 0.05$ in flow rate of 10, 100, and 300 ml/hr. Low flow rate had occlusion pressure higher than high flow rate. Studying all infusion pumps showed significant differences of flow accuracy of digital display at $p < 0.05$ in 5 levels flow rate; 5, 10, 40, 100, and 300 ml/hr. In flow rate 5 ml/ hr flow accuracy was lowest and had a negative value; value measures lower than setting value and flow accuracy of digital display not being influenced by concentration of solution.

The infusion pumps aged 8-11 years fail constantly in terms of flow accuracy, occlusion pressure, and air in infusion line. Rechargeable batteries were not functioning in machine aged 4-11 years. Therefore, preventive maintenance should be carried out on the infusion pumps as recommended in the program.