Institutional Subcutaneous Insulin Protocol

Utilizing Computerized Prescriber Order Entry Eliminates Sliding Scale Orders

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Computerized Prescriber Order Entry (CPOE) was instituted at New York Hospital Queens (NYHQ) in November 2007 utilizing the Eclipsys Sunrise Clinical Manager™ platform. Prior to and immediately after implementing CPOE, the majority of insulin regimens prescribed were based upon a sliding scale approach. In an effort to improve inpatient glycemic control, decrease the use of sliding scales, and decrease the use of 50% dextrose in hypoglycemic patients able to be treated oral glucose, a multidisciplinary team was formed to utilize information technology (IT) to augment prescribing behavior and educate health care staff on appropriate use of subcutaneous insulin.

The team developed a CPOE institution-wide insulin protocol for all inpatients prescribed subcutaneous insulin. The available insulin protocols in CPOE were limited via technology to display multiple dose insulin (MDI) regimens using either basal-bolus or twice daily premixed insulin. Specific protocols were included for patients on hospital diet, parenteral and enteral feeding, NPO, pediatrics and transition from intravenous to subcutaneous insulin. The CPOE insulin protocols included orders for capillary glucose timing, insulin administration, and staged treatment of hypoglycemia. The computerized protocols were implemented in January 2008. Six months from the year before and after implementation of the protocols was compared. Point-of-service (POS) glucose results, parenteral hypoglycemia treatment, and adherence to the protocol for patients who were prescribed subcutaneous insulin regimens in July-December 2007 vs. July-December 2008 were compared for patients on the general Med/Surg units. Subjects were identified through retrospective chart review. Results are shown in the table below.

| **Total Number of POC BGs** | **< 40 mg/dL** | **40-69 mg/dL** | **70-180 mg/dL** | **> 180 mg/dL** |
|---|---|---|---|---|
| Jul – Dec 2007<br>68,469 | 248 (0.4%) | 1,760 (2.6%) | 43,989 (64.2%) | 22,472 (32.8%) |
| Jul – Dec 2008<br>66,423 | 124 (0.2%) | 1,508 (2.3%) | 48,960 (73.7%) | 15,831 (23.8%) |

| | **Pre- protocol Jul – Dec 2007** | **Post-protocol Jul – Dec 2008** |
|---|---|---|
| Pateints prescribed sliding scale insulin<br>(150 charts from Jul-Dec 2007 vs.<br>150 Charts from Jul-Dec 2008) | 75% | < 1% |
| Patients prescribed basal insulin<br>(150 charts from Jul-Dec 2007 vs.<br>150 Charts from Jul-Dec 2008) | 34% | 34% |
| Utilization of Dextrose 50% Water for six month period<br>(based on pharmacy purchase records) | 2295 doses | 1755 doses |

Conclusion: Utilization of information technology to implement a computerized subcutaneous insulin protocol resulted in increased utilization of basal-bolus insulin therapy, elimination of sliding scale insulin orders and a significant impact upon distribution of glucose levels without an increase in rates of HYPOglycemia. Including a pre-determined computerized order set for hypoglycemia detection and treatment drastically reduced the hospital's use of 50% dextrose for hypoglycemia treatment.