

## Sigma Theta Tau International's 29th International Nursing Research Congress

### Safe Implementation of a Hyperglycemic Crises Protocol by Utilizing a Conversion Table

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**Purpose:** Diabetic ketoacidosis (DKA) and Hyperosmolar hyperglycemic state (HHS) are medical emergencies associated with increased morbidity, mortality and healthcare costs (Joslin, 2013). Prompt identification and proper management of these emergencies are imperative to improve patient outcomes and prevent death (Juneja, et al., 2009). Intravenous (IV) insulin is adopted for treatment of hyperglycemia in the critical care setting (DeSalvo, Greenberg, Henderson, & Cogen, 2012;ADA, 2017;Kreider & Lien, 2015). Its use is renowned for positive clinical outcomes however the risk of hypoglycemia and its accompanying negative sequelae are inherent. IV insulin drips necessitate enhanced critical thinking skills, vigilant monitoring of lab values, titration of fluid, electrolytes and insulin. **Methods:** An interprofessional collaborative effort, based on evidenced based studies (DeSalvo, Greenberg, Henderson, & Cogen, 2012;Myers, Zilch & Rodriguez,2013) developed and sought to pilot a hyperglycemic crises protocol (on the critical care units) that facilitated an appropriate and timely management of patients presenting with DKA or HHS. Such interventions contribute to length of stay reductions and associated complications of an ICU admission. Every effort to restore patients to diabetic control must be advocated for. Preliminary hyperglycemic crises protocol drafts, piloted on critical care units, required nursing estimation for insulin titration thus impacting accuracy and patient safety. This latter practice could have had the potential to cause nurses to erroneously administer IV insulin drips. Immediate efforts to address this injurious practice were necessitated prior to patient harm occurrence. This hyperglycemic crises protocol was presented to the nursing critical care collaborative council, an interdisciplinary team, for consideration, input, approval and stakeholder buy-in. The Chief Nursing Officer strongly advocated for clarification regarding scope of practice regarding IV insulin titration, by registered nurses, in the ICU setting. As a response, the New York State Office of Professional Licensure indicated that these tasks are definitely within critical care nurses scope of practice when accompanied by the facility to decrease medication errors. **Results:** A conversion table was developed in order to assure accuracy of insulin drip calculation while fostering an environment of safety for both staff and patients alike. Buy- in from staff was essential in the successful implementation of the pilot program which lead to the establishment of the protocol as an adjunct in the clinical management of patients presenting with DKA and HHS. Resulting evidence included decreased length of stay – which facilitated availability of precious ICU beds for other patients that warranted a higher level of care and decreased incidence of hypoglycemia in DKA or HHS patients admitted to the ICU. Ongoing nursing education and competency evaluation is maintained annually via skills fairs, briefs and huddles. Still medical direction regarding transition from insulin drip to subcutaneous insulin has caused confusion within the ranks of novice physicians. It has been noted that the young MD's were not trained in the half life of regular insulin in the IV nor the onset of action of intermediate or basal insulin. Previously trained ICU nurses were called upon to explain. **Conclusion:** The resulting outcomes indicate decreased length of stay -facilitated availability

of precious ICU beds for patients that warranted a higher level of care and decreased incidence of hypoglycemia in patients with these diagnoses admitted to the ICU.

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**Title:**

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**References:**

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**Abstract Summary:**

Hyperglycemic crises are medical emergencies associated with increased morbidity, mortality and healthcare costs. The development of a conversion table, versus nursing estimation, for insulin titration was adopted to assure accuracy of insulin drip calculation while fostering an environment of safety for multidisciplinary staff and patients.

**Content Outline:**

Introduction: The use of intravenous insulin in the treatment of hyperglycemic crises (diabetic ketoacidosis or hyperosmolar hyperglycemic state) is the regimen of choice but accompanied by risk of hypoglycemia. Body: Nursing estimation of insulin titration is fraught with the potential of patient harm. Development and implementation of a conversion table affords safe practice and patient care management of acute disease process. Trained ICU nurses are invaluable in imparting knowledge, related to use of IV insulin, to novice physicians as they begin ICU rotations Conclusion: Quality indicators have noted decreased length of ICU stay and incidences of hypoglycemia in this patient population

First Primary Presenting Author

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**Professional Experience:** Nurse Educator 2013-present-Northwell Health System. As the Certified Diabetes Educator for the Lenox Hill Hospital Division-acted as a member of the committee developing and implementing the Hyperglycemic Crises Protocol. Nurse Coordinator-Clinical Specialist 2011-2013-Mount Sinai Medical Center Clinical Education/Program Specialist 2005-2011-XL Health-MedAssurant PRIDE Scholar - NIH funded program Clinical Medical Instructor -SUNY Downstate Medical Center. Core member of the Harlem Healthy Heart Series and mentee of Icilma Fergus MD

**Author Summary:** Dr. Renee Murray-Bachmann has a background in nutrition, nursing, research and is a NIH PRIDE fellow. As a member of the Department of Nursing Education and Professional Development and as a practicing diabetes educator, Dr. Murray-Bachmann educates staff and patients. That being the case, she is placed in the position of understanding the importance of patient satisfaction and safety as well as staff engagement. Dr. Murray-Bachmann also acts a mentor to graduate students.

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**Author Summary:** Demonstrated progressive clinical, academic and leadership experience in emergency, trauma, perioperative and orthopaedic nursing. Graduated Case Western Reserve University Frances Payne Bolton DNP program, with research and publications in resilience, structural empowerment and engagement. ANCC certification in Nursing Administration, Adult Nurse Practitioner, Orthopaedic Nursing. Currently Senior Administrative Director, Patient Care Services, Surgical Nursing, Orthopaedic Program Coordinator, Lenox Hill Hospital New York, New York, USA. Community Nurse Leader, Alpha Phi Chapter, Sigma Theta Tau International

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**Professional Experience:** Seon Lewis-Holman has experience in the development of clinical and population disease management programs for hospital and community settings. She is a clinical nurse specialist (board certified), and is published in scholarly peer reviewed journals.

**Author Summary:** Seon Lewis-Holman is currently responsible for the development, planning, coordination, and implementation of educational and staff development programs for three hospital sites in a large metropolitan area.

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**Professional Experience:** Board Certified Adult-Gerontology Nurse Practitioner working with inpatient and outpatient adults. Lenox Hill Hospital, Division of Endocrinology- Position: Endocrine Nurse Practitioner. Duties: Diabetes management and other Endocrine conditions, specifically thyroid, hormonal and pituitary. Prior to this role: Registered Nurse for over 10 years (certified in critical care)who has spent time educating other nurses and gaining knowledge in the specialties of Neurosurgery, Neurology and Cardiology.

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Fifth Secondary Presenting Author

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**Professional Experience:** Practicing in the field of nursing for 19 years. Certified as a Medical-Surgical Nurse and have worked in nursing education/professional development for the last 7 years.

**Author Summary:** Practicing, under the mentorship of Dr. Bachmann, as a diabetes champion towards the goal of attaining certification as a diabetes educator. Along with Dr. Bachmann, provided inservices both nationally and internationally on the risks for diabetes complications.

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**Professional Experience:** 35 years of progressive leadership experience in nursing served as Magnet

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**Author Summary:** 35 years of progressive leadership experience in nursing served as Magnet coordinator, Director of education, senior administrative director and Chief Nurse Executive. Research focus has been on staff nurses engagement and participation in Shared Governance forums with the goal of understanding what promotes a nurses use of Evidence based Practice.