Objective:
To evaluate the drug calculation skills of nurses commencing employment in 5 major academic teaching hospitals in the Irish Republic.

Background:
Medication errors have been identified as the most common type of error affecting the safety of patients and the most common single preventable cause of adverse events occurring in approximately one out of every five doses in a typical hospital (Barker et al., 2002). Drug errors have been found to occur in 49% of drug administration procedures (Taxis & Barber, 2003), which are predominately nurses' responsibility. Medication errors resulting from poor calculation skills are an international problem (Polifroni et al., 2003). Mathematical errors have been found to account from between 11-14% of medication errors to 18.5% of errors (Gladstone 1995). Two skills are necessary in order to perform accurate drug calculations, basic mathematical skills to calculate mathematical problems and the ability to conceptualise the clinical information presented and extract the relevant information in order to formulate a maths calculation to be solved. Several studies concur that nursing curricula and continuing education programmes continue to have insufficient teaching input on pharmacology and tends to focus on pharmacology knowledge required for the administration of medications. The drug calculation skills of nursing students have been found to be inadequate with regard to mathematical calculation deficiencies, mathematical skill and conceptual and measurement inabilities (Gladstone 1995).

Methods:
A cross sectional survey design incorporating mixed methods was used. The 30-item questionnaire was divided into two sections and sought information on both background information and drug calculation skills of the participants and includes a 20-item drug calculation test on metric conversions, tablets and fluid dosages and infusion rates. The majority were scenario-based questions and contextual to registered general nurses areas of practice. Sampling Strategy: Five study sites were selected to represent the major academic teaching hospitals in the Irish republic. All registered nurses (approx n=100) commencing employment in the five designated sites over a six-month period were invited to participate in the study in 2008/2009. Data analysis: Descriptive and inferential statistics were used to test associations between the categorical variables represented in the questionnaire and to test differences on drug calculation scores between groups (e.g chi square test; t-tests). All qualitative data generated from the two open-ended questions was transcribed and subjected to coding and thematic analysis.

Results and Conclusions:
This paper will present significant findings on the mathematical and conceptual competency of nurses commencing employment in relation to metric conversion, drug dosages and infusion rates. It will offer perspectives on the nature of drug calculation education offered across different organisations within the health system and make recommendations as to improvements that may be undertaken to improve medication safety.