Introduction:
High fidelity simulation based training (SBT) is a profoundly effective educational tool for healthcare providers in which critical events are actualized without risk to patients. Simulation based training provides situational awareness for low frequency yet high intensity events with an environment and philosophy of learning and safety. This approach to learning has many benefits including skills development, competency and confidence enhancement, team building, collaboration, communication, systems/environmental analysis as well as needs and cultural assessments.

It is imperative that dialysis nurses can identify when their patients are at risk of dialysis related complications/emergencies and implement appropriate and timely intervention. Confidence levels vary significantly among nurses when dialysis specific emergencies arise. This is largely due to the infrequency of such events, as well as inadequacy of specialized training to prepare for them. These factors can act as barriers to the acquisition and maintenance of confidence and competency leading to risk in adversity to patients.

Methods
Pilot study included 14 renal nurse participants. Years of hemodialysis nursing experience ranged from 6 months to 16 years. All participants were hemodialysis nurses from the renal program at London Health Sciences Centre (LHSC), 50% were from in hospital acute centres, remaining staff were form a shopping mall based satellite unit. 13 Registered Nurses (RN), 1 Registered Practical Nurse (RPN). Each session involved 4-5 hemodialysis nurses. 3 training sessions were offered, each lasting approximately 3 hours. Training scenarios were created based on typical hemodialysis related emergencies. Training sessions took place in the simulation lab within the Canadian Surgical Technologies & Advanced Robotics (CSTAR) at LHSC using a high-fidelity simulator (Laerdal SimMan 3G) in conjunction with a “dummy” hemodialysis treatment using the Fresenius 5008 dialysis machine. Four scenarios were simulated, including; hypoglycemia, intra-dialytic hypotension (IDH), cardiac arrest and venous needle dislodgement. Debriefing sessions took place after each scenario lasting approximately 20 min. Participants were given a confidence survey using a 10 point Likert scale after the session was complete. They were asked to rate their confidence both before (retrospectively) and after the training session.

Results
Confidence scores were proven to increase after the simulation based training sessions. Scores increased by 2.1 points for the hypoglycemia scenario, 1.5 points for the IDH scenario, 2.8 points for cardiac arrest and 2.8 points for the venous needle dislodgement scenario. Collectively, confidence scores increased on average by 2.3 points on the Likert scale. It is important to note that those situations that occur less frequently (cardiac arrest and venous needle dislodgement) were the scores that increased the most, supporting the benefit of SBT for low frequency/high intensity events. Narrative comments submitted by staff were positive indicating that there is a prominent need and desire for SBT in the dialysis setting, and it was felt that this should be a mandatory component of education for all dialysis nurses regardless of years of experience.
Discussion
Simulation based training adds a component of confidence when high risk situations arise in the dialysis setting where time is of the utmost importance. We believe that the implementation of such an educational program will enhance patient safety by improving the preparedness of our renal staff to handle such emergencies effectively and timely. Our pilot project was held in the controlled environment of CSTAR providing an opportunity for staff to be removed from the distraction of their familiar unit; however, we learned that stepping outside of that familiar environment also posed some challenges and did not effectively represent specific environments of care.

We believe there is a valuable learning opportunity to moving SBT into the familiarity of each unique environment. An in-situ training opportunity is now available; the benefits of which include the ability to identify cultural/environmental gaps and needs assessment for functionality and efficiency.