May 18, 2018

Hi Everyone

This week's Departmental Acknowledgement goes to **Lianne Kopel** for her recent victory at the Just For Kids (JFK) Dancing with the Stars event

JFK is a long running organization that raises funds annually through various events to purchase needed equipment for the MCH. Look around and you will see evidence of their generosity and support everywhere in the MCH.

Lianne is a relatively recent recruit to our Division of Respiratory Medicine who now joins a line of Departmental "winning dancers" (Preetha Krishnamoorthy and Nadine Korah come to mind).

Lianne is proud that her dad and her raised $14,180 for equipment for the MCH ! The event overall raised over $200,000!!

Lianne was involved in the campaign last year, which raised money for NICU and respiratory-related equipment such as a video laryngoscope and cough assist devices. The JFK also started the sibling park, so the siblings of hospitalized NICU patients can get fun babysitting under the same roof as their hospitalized sibling, reducing stress for NICU families.

This year, Lianne wanted to "pay it forward" and the funds raised will go to purchase equipment for neurosurgery, craniofacial surgery, a cardiac , and continued support of the sibling park.

A word document describing the equipment JFK will purchase is attached as well as a link to Lianne's personal fundraising page if you fell so inclined. In addition I have been permitted to include a picture of Lianne in her dancing regalia with her dancing partners is below
https://jfk.akaraisin.com/DWTS2018/ZevandLianne

Please join me in congratulating Lianne on her success and more importantly the kindness of her philanthropic efforts on behalf of the MCH.

Have a great weekend everyone!

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Echocardiography Machine & Lab support: $300,000

The top equipment priority for the Neonatal Intensive Care Unit (NICU) and the Research Institute (RI) is an echocardiography (ECHO) machine required to support the clinical research of Dr. Gabriel Altit, a new recruit from Stanford University who specializes in neonatology.

Among its many functions, ECHO acquires live images of the heart, allows technicians to define the anatomy from different angles, and measures the performance of the different portions of the heart and how this performance is affected by the baby's condition(s). It is a painless technique that captures images without radiation. It is well tolerated and safe.

The new echocardiography machine that the NICU wishes to acquire will allow 3D assessment of cardiac structure, 3D assessment of function and deformation analysis of the heart. These are highly sophisticated indicators that give better appreciation of the 3D behavior of the heart but also interaction between the left and right side of the heart. These are especially important as they will give new insights in patients with cardiac anomalies or with complex neonatal conditions.

This new machine allows for advanced quantification of muscular contraction and relaxation, looking at different segments of the heart and how: a) they move in time and b) how they rotate in time. These techniques provide new insights about how the heart behaves and how it impacts the health of our small patients.

In the context of Dr. Altit's research, this machine will allow him and his team to evaluate their patients in order to provide state-of-the-art care with ongoing cardiac monitoring.
This machine, only dedicated to the advancement of research, will be available at all time for the neonatal unit but also to further understand their NICU graduates at a pediatric, adolescent and adult age.

Examples would be:

- Understanding the cardiac behavior in babies that had a lack of oxygen at birth and how it may impact their neurological outcome.
- Defining the progressive adaptation of babies with congenital cardiac defects after birth and in their pediatric /adult life.
- Studying targeted management strategies, in at risk patients, based on physiological cardiac data and monitor the cardiac response to these strategies for ongoing fine-tuning in the intent to improve outcomes.
- Appreciating the impact of prematurity on cardiac function and pulmonary vessels in the long term.
- Following and studying longitudinally and in an integrated manner with the outpatient clinics their cohort of patients to better understand cardiovascular differences that put them at risk for mid and long-term adverse conditions.

Finally, images acquired with this machine will augment teaching and academic opportunities for the students rotating within the NICU.

Equipment for Neurosurgery

The Division of Neurosurgery has two urgent needs that will help provide state-of-the-art operative approaches to children suffering from neurosurgical ailments.

A) Sterilizable Ultrasound Probe - Hockey Stick: $40,000

In many cranial or spinal surgeries, once the bone has been elevated to provide access to the central nervous system, an ultrasound examination under sterile conditions is helpful in planning the surgery and in determining the extent of resection later on during the intervention. For example, this allows the neurosurgery team to decide on the best time to evaluate more formally the completeness of the resection (with the intra-operative MRI) or in the case of spinal operations to determine when it is time to terminate the resection.

The "hockey stick probe" is an important ultrasound accessory that sterilizable and can be used without a cover. The resolution of the images provided by the probe is quite spectacular. It is small and light and its shape allows it to have better contact with the small joint structures and bony prominences.

It is estimated that the ultrasound probe would be used in 70 to 80 neurosurgery cases per year. General surgery may also occasionally borrow the device for certain procedures.

B) Flexible endoscope support: $20,000

More and more conditions are treated using neuro-endoscopy in pediatric neurosurgery. This includes hydrocephalus, intraventricular tumours, intraventricular cysts, and fenestration of septations within the ventricular system. Endoscopes are also used for minimally invasive approaches to single suture synostosis. In order to free the surgeon's hand the endoscope needs to be supported by a specifically designed stand that can be placed in an ideal position. The surgeon is then able to use the working channels to perform the endoscopic surgery.

There is currently once support for neurosurgeries using endoscopy. Because the equipment needs to be sterilized between cases, unnecessary delays can occur. A second endoscope stand would ensure that a sterilized support is always available for surgery, thereby maximizing efficiencies in the OR.

Endoscopy is used on approximately 50 cases per year.

<u>Equipment for Craniofacial Surgery</u>

Piezo Electric Device: $40,000

The piezo electric device is an advanced bone cutting technology that allows pediatric bone to be cut without harming the delicate tissues underneath such as the brain or nerves. It uses a special energy source that creates high frequency sonication (the act of applying sound energy to agitate particles) to cut the bone, without sharp blades that could harm nearby soft tissue structures.

This high-tech device is used often in state-of-the-art craniofacial plastic and neurosurgery cases. It is particularly useful in very young children where the bones are soft and small, and the underlying structures are particularly delicate. For example, when we perform mandibular distraction (lengthening) for babies born with severely small mandibles that have significant airway issues, this device allows the jaw bones to be cut without injuring the nerves and tooth buds within the small, growing mandible. It can also be used during procedures where plastic and neurosurgery must cut the skull bones to expand a small skull that has fused to allow brain growth to proceed.

Approximately 10-15 young patients requiring mandibular distraction per year and another 10-15 cranial vault cases would benefit from this advanced, increased safety technology.