SRTP - Project Description Form #228

PART I:

Name of Schulich faculty member who will supervise the project	Elise Lu
Supervisor's Schulich, Western, Hospital or Lawson Email	elise.lu@lhsc.on.ca
Schulich Department	Paediatrics

PART II - Project Description

Title of Project	Understanding the etiologies and inpatient management of patients admitted for growth faltering at Children's Hospital - LHSC

Background

Growth Faltering (GF) is a descriptive diagnosis encompassing many causes of poor weight gain. It may be the first presentation of a serious medical condition or it may simply be caused by insufficient calories, such as from inadequate breastmilk supply. GF is a frequent reason for hospital admission, yet there is no consensus approach to evaluation and data on inpatient management is very limited. The two most frequently cited studies of inpatient evaluation of GF are retrospective studies from 1978 and 1982. These studies found that most patients had only insufficient caloric intake as the cause of their GF and that laboratory and imaging tests were rarely useful in identifying an underlying disease. Unfortunately, it is not clear how applicable this data is to the current era. The pediatric patient population has changed dramatically since these studies were published and the breadth of laboratory and imaging data that can be obtained has expanded.

Up to date data on inpatient evaluation of GF is essential for evidence-based management of these patients. The largest study to date of GF in the inpatient setting was published by this author in 2022. This study from Pittsburgh, Pennsylvania, showed that about 60% of patients have insufficient intake alone but also found a higher rate of genetic disorders than previously reported. Work using this dataset to understand the utility of inpatient evaluation is ongoing. This proposal aims to expand this work by replicating the study in the London, Ontario population. This would either validate the Pittsburgh data as generalizable to other regions or suggest important differences in GF across countries and geographic regions.

Ultimately, this information combined with our previously published work, could be used to develop a risk stratification tool to allow clinicians to stratify patients and avoid unnecessary testing.

Hypothesis

We hypothesize that growth faltering is primarily due to insufficient caloric intake and that laboratory and imaging studies obtained during inpatient admission are of low utility. We further hypothesize that the rates of underlying disease in the population of London, Ontario will be similar to that identified in this author's prior study in Pittsburgh, Pennsylvania, USA.

Proposed Methodology

This is a retrospective cohort study using chart review. We will identify patients ages 2 weeks to 2 years admitted to CH-LHSC with a diagnosis of growth faltering (failure to thrive) from January 1, 2015 to December 31, 2021. Data elements including demographics (DOB, gender, race, ethnicity, insurance, zip code), severity of GF (weight, height/length, growth trajectory), testing results (laboratory, imaging, and procedures), medications ordered, diagnoses (admitting, working, and discharge), and length of stay will be collected. Documentation (ED notes, admission H&P, progress notes, and discharge summaries) from the index admission and for two years post-admission will also be reviewed to determine diagnosis at discharge and diagnosis at 2 years post-presentation. This data will be

used to describe the presenting characteristics of our patient population, the frequency of laboratory testing, and the ultimate diagnoses obtained in our patient population to better characterize the presentation, work-up, and etiology of GF in our population.

Expected Outcomes

The primary outcome is ultimate diagnosis. This is divided into five categories – insufficient intake, mechanical feeding difficulties, organic disease, mixed (multiple classes of diagnoses), and unknown. Organic disease is further subdivided into malabsorption, genetic disorders, reflux, and other.

Secondary outcomes that may be analyzed include length of stay, readmission, time to diagnosis, and gastrostomy tube placement.

We will evaluate the association between various presenting features (severity of GF, symptoms, physical exam findings) and results of evaluations (labs and imaging) with ultimate diagnosis to determine if any features are predictive of diagnosis and if any evaluation has utility in identifying underlying eitology.

Research Environment – Description of the number of research personnel, primary location of research, size of lab, etc

This research will be carried out using the electronic medical record and computer software. There is no physical lab space. I work at Children's Hospital - LHSC, but this project may be done remotely. Currently, this project involves only myself and a statistician, but the group may expand with time.

Names and titles of other individuals who will be involved with the research project?

Michael Miller, PhD - Statistician

Can this project be done remotely?	Yes
Duration of Project	One Summer

Expected Objectives/Accomplishments for Student?

1. Complete chart review of identified records and document findings in RedCap. RedCap instrument has already been created as part of a prior study.
2. Analyze initial data including association between presenting features and ultimate diagnosis, with the assistance of PI and statistician.
3. Compare London data and Pittsburgh data to determine if conclusions are generalizable.
4. Write abstract with the goal of submission to regional or national conference.

PART III - Certifications

If the project will require any certification approvals from one or more of the following offices, please check the appropriate box below.	- Human Ethics
Human Ethics: If you have the protocol information, please enter it below (or enter the status of the approval).	REDA 14271, REB 124354 - in process

Note: certification approval should be obtained prior to the start of the summer. Projects without this approval will not be a priority for funding.