WCHRI CCHCSP
Lunch & Learn:

How to write a lay abstract: Effectively communicating your grant application to non-specialists

January 20, 2021

Dr. Meghan Riddell, PhD
Departments of Obstetrics and Gynecology/Physiology

women & children's health research institute

UNIVERSITY OF ALBERTA

Canadian Child Health Clinician Scientist Program

CCHCSP
PCCCSE

Programme canadien de cliniciens-chercheurs en santé de l'enfant

The Canadian Child Health Clinician Scientist Program (CCHCSP) is a national, multidisciplinary training program that supports highly qualified clinicians in developing the research skills required to pursue a career bridging the gaps between research and clinical care. Trainees receive funding, mentorship and progress review, along with a comprehensive career development curriculum.

THANK YOU CCHCSP SUPPORTERS!

SickKids FOUNDATION

BC CHILDREN'S HOSPITAL FOUNDATION

the Children's Hospital Research Institute of Manitoba

Alberta Children's HOSPITAL RESEARCH INSTITUTE

CHEO RESEARCH INSTITUTE

women & children's health research institute

STOLLERY CHILDREN'S HOSPITAL FOUNDATION

CCHCSP acknowledges the large network of volunteers (centre leaders, mentors, trainees, administrators) who make local and national program delivery possible.

Agenda:

1. What is an abstract and what is it used for?
2. Components of an abstract
3. What is a lay abstract and why are they required
4. Exercise working through examples

women & children's health research institute

What is an abstract and what is it for?

An **abstract** is a brief summary of a research article, thesis, review, conference proceeding, or any in-depth analysis of a particular subject and is often used to help the reader quickly ascertain the paper's **purpose**.

Source: Wikipedia

Why do we write abstracts?

1) To save time!
2) To attract attention to our work

women & children's health research institute

Components of an abstract

1) Relevant background information to identify the topic area of the work
2) Focused background that allows a reader to be led to the specific research question
3) The research question/hypothesis
4) Methodological information
5) Summary of the most important results or anticipated results
6) Importance of the findings in context

women & children's health research institute

What is a lay abstract?

A lay abstract is a scientific summary of work that will be performed or has been performed that is targeted towards the public and non-specialists.

women & children's health research institute

How are lay abstracts used?

1) To attract the interest of researchers from outside your specialty
2) To accurately inform funding bodies/regulatory bodies about your research
3) To educate the public in order to encourage engagement and display the value of your research to both the general public and targeted non-specialists who may benefit from or be interested in your research

women & children's health research institute

A **lay abstract** is a brief summary of a research article, thesis, review, conference proceeding, or any in-depth analysis or proposal on a particular subject and is often used to help the non-specialist reader to quickly ascertain the work's **purpose**.

women & children's health research institute

So then why are lay abstracts so hard to write?!

- You know too much! This makes many of the details seem very important.
- The public/non-specialist represents everyone who is not directly involved in your research area so trying to make it understandable to everyone is overwhelming

women & children's health research institute

Identify your desired audience

- Successful communication is strategic communication.
- Identify specific groups of non-specialists you would most like or need to have understand the work you are presenting. e.g. Grant administrators, patient groups, specialist groups of clinicians, parents of young children
- If possible, ask someone you know that is in this target group or someone who does not know your work to read a draft of your abstract.

Select keywords and messages

- Identify keywords and messages that need to be in your abstract to elicit interest from or help target groups understand your work.
- Include essential technical terms that are necessary, but they need to be thoroughly explained using basic terminology if possible.
- Avoid acronyms unless this is truly a part of wider vernacular (i.e. a news reporter would use the acronym)

women & children's health research institute

Pay attention to requirements for the language level

- Often there are suggestion/requirements for the language level the abstract should be written at (WCHRI says Grade 8).
- Online tools are available for estimating the level of your writing.
- Keep in mind that not just the words, but sentence structure also must be considered. Short concise sentences are ideal.

women & children's health research institute

Example #1: WCHRI Innovation Operating Grant

Technical title: Development of a physiologically oriented placental organoid culture model

Lay title: Development of a placenta in a dish experimental system

women & children's health research institute

Technical abstract target audience:

1. Peer review scientists
- Grants panel unlikely to contain a specialist in my field but they will be highly educated in related fields

women & children's health research institute

women & children's health research institute

Technical abstract:

The placenta is a temporary organ of gestation with immense importance for the health of both the fetus and the mother during pregnancy. It serves as the exchange interface between the maternal and fetal compartments facilitating the exchange of oxygen, nutrients and waste as well as serving as a selective barrier preventing transmission of many infections and xenobiotics from the maternal circulation. Placenta malformation and dysfunction results in major complications of pregnancy, such as preeclampsia (PE), intrauterine growth restriction (IUGR), and premature delivery. Importantly, these complications are associated with lifelong consequences for both the mother and the fetus. Unfortunately, current knowledge about the human placenta is limited largely due to the lack of good functional experimental models.

Recently, methods have been developed for the in vitro culture of self-organizing stem/progenitor cell derived organoids. Organoids generally better represent in vivo like complex tissue architecture and can allow for the persistent maintenance of progenitor cells pools, thereby proving to be a powerful model to examine progenitor cell differentiation, infection mechanisms, and model disease. Importantly, in the past year two methods detailing the development of placental organoid cultures have been published. These organoids are comprised of trophoblast subtypes, the placental equivalent of epithelial cells, and represent the first publications allowing for the persistent culture of trophoblast progenitor cells where they self-renew and also differentiate into terminally differentiated trophoblastic populations. Unfortunately, both methods result in the development of organoids with an inverse orientation, where the trophoblastic cell type that normally forms the external surface of the placenta and would be bathed in maternal blood instead faces a cystic core. Hence, these methods cannot be used in studies examining maternal to fetal delivery and infection due to the inaccessibility of the transport epithelium. Here we propose to develop a method for culture of placental organoids with a physiologic orientation. These organoids will then be used to examine the effect of two of the most common insults associated with placental dysfunction; hypoxia and inflammation; and to examine mechanisms of placental malaria, a devastating parasitic infection of pregnancy. The developed organoids will also be used in the future to model common placental disorders of pregnancy, such as PE and IUGR, and as a platform for pre-clinical screening for placental targeted therapies.

women & children's health research institute

Keywords/messages:

- Placenta
- What the placenta does (exchange interface/barrier)
- Problems with the placenta cause pregnancy complications
- We don't know much about the placenta
- Placenta organoid models are new and good, but they do not have the right cell type on the outside
- Our goal is to make better organoids
- This will help facilitate research into important pregnancy complications/infections and could become a drug screening platform

women & children's health research institute

Who are my lay abstract target audience?

1. Grant administrators
2. Funders
3. Medical doctors interested in the placenta (Obstetricians, Family doctors)
4. Pharmaceutical companies
5. Pregnant women

women & children's health research institute

Lay abstract:

The placenta is a critical organ regulating the growth and health of the developing fetus. This organ is responsible for the delivery of nutrients and oxygen to the fetus, removal of waste, and protection from infections. The development and proper function of the cells on the outermost surface of the placenta is particularly important since this is the site where all of these functions occur. Since the surface of the placenta is bathed in the mother's blood, it is a barrier between the mother and the fetus that must be overcome and is also a target of any drugs given to to the mother. Therefore, knowing how drugs effect these cells is important in predicting whether drugs meant to treat the pregnant mother or the fetus may have unintended side-effects in the placenta.

The growth of organs in a dish has proven to be a powerful tool to enable research testing new drugs before they are introduced to people. This model is also useful for scientists to learn fundamentally important information about how cells function. Traditional methods of cell culture where a single layer of cells are attached to a plastic dish cannot properly mimic characteristics of tissues that are normally arranged in a three-dimensional manner. In particular, when we culture the cells that make up the outermost layers of the placenta they fail to grow and cannot carry out other functions they have when they are in the body. Very recently, methods have been developed for the growth of "placentas in a dish" or placental organoids. Though a large step forward towards better models of the placenta than traditional methods, these new models form inside-out and therefore are not suitable for studies looking at things delivered to the placenta from the mother's blood. This includes studies about placental infection and drug delivery. In this project we will work to improve these new placentas in a dish to optimize them so that they form with the proper orientation. This will then allow for future studies looking at delivery of drugs and how infectious agents, such as parasites and viruses, infect the placenta and to understand how the placenta forms.

Keywords/messages:

- Placenta
- The outermost cells of the placenta are very important and the target of and a barrier to drugs.
- Placenta organoid models are new and good, especially for drug testing.
- Current models form inside-out = bad for drug testing and understanding anything that starts out in the mother's blood.
- Our goal is to make better organoids that aren't inside-out.
- This will help facilitate future research.

women & children's health research institute

Lay Abstract #2:

Individuals with a genetic condition called Prader-Willi Syndrome (PWS) are at risk to develop obesity at a young age. Weight gain is the result of an imbalance between the amount of calories consumed and the amount of calories used throughout the day, which overtime can cause changes in weight. Children with PWS often have a very high calorie intake because of the constant feeling of hunger many children with PWS experience. However, even children with PWS who limit their intake of calories can still gain excessive amounts of weight. A reason for this may be because children with PWS use fewer calories than healthy children; however, this is not fully understood yet. It is thought that children with PWS use calories differently, including when it comes to digesting and absorbing food by the body. Our study will look at whether children with PWS expend less calories after consuming a meal than children without PWS. The type of foods eaten can affect the calories used after a meal. Foods high in protein usually result in a higher amount of calories used after a meal. As well, high protein foods are known to decrease the feeling of hunger. Therefore, our study will also determine if a high protein meal can increase calories used and reduce feelings of hunger in children with and without PWS. The results of this study could be used to develop specific diets for children with PWS that helps reduce curbing excessive weight gain and hunger.

women & children's health research institute

Lay Abstract #3:

Every year billions of tax-payers dollars are invested in the development and implementation of research based ideas to improve various aspects of child healthcare. Yet healthcare problems and ineffective care practices continue. This problem is in part, due to a gap between research evidence (what we know) and healthcare practices (what we do). This has led to a growing body of science that seeks to understand ways to best ensure uptake of research into practice and uses knowledge translation (KT) strategies to help with uptake. In child health there have been recent developments of research-based ideas/products to help increase the best available research evidence into practice. These products/ideas can target healthcare providers and consumers in ways that are meaningful and accessible. There is little research done on how to sustain these research ideas to improve child health. Sustainability is the degree to which a research-based idea/product continues to be used in practice after efforts of implementation have ended. Sustainability research is a growing field of science that needs further research to understand how to predict, aid and evaluate long-term use in practice.

In my postdoctoral research I will (a) systematically search the existing literature to understand what current approaches exist to evaluate and predict sustainability; (b) develop a framework to evaluate sustainability outcomes, and (c) pilot test the framework across child health hospital settings that are currently using research-based products to improve areas of child health (e.g., infant pain assessment and management).

This research is important to ensure that the money spent on these research-based products is warranted, and if they are effective, can be maintained and spread to other child health settings. This research on sustainability will inform the uptake and success of new child health research-based products developed to improve child healthcare.

Thank you!


STOLLERY
CHILDREN'S
HOSPITAL
FOUNDATION


LOIS HOLE
HOSPITAL
FOR WOMEN