Research Certificate Program Summer Seminar 2024 Friday, July 26, 2024

Today's Agenda:

12:00 Introductions and Certificate Requirements
Lisa Hutchison, PharmD, MPH

12:15 Workshop: How to Identify Clinical Problems to Research/Investigate
Lisa Hutchison, PharmD, MPH

1:15 How to Develop a Good Research/Project Question
Ben Teeter, PhD

2:15 Break

2:30 How to Write an Abstract
Megan Smith, Pharm.D.

3:30 Strengthening your Project and Results
Catherine O'Brien, Pharm.D., M.A.

4:00 Next Assignments: Worksheet(s), ASHP Module Certificates, September Research Forum
UAMS COP Residents: Video for IRB Overview
Lisa Hutchison, Pharm.D. MPH

4:30 Adjourn

UAMS COP Postgraduate/Residency Research Committee Members:

Megan Smith, Catherine O'Brien, Ben Teeter, Laura Gressler, Lisa Hutchison

Lisa Hutchison is inviting you to a scheduled Zoom meeting.

Topic: RCP Summer Seminar

Time: Jul 26, 2024 12:00 PM Central Time (US and Canada)

Join Zoom Meeting

https://uams.zoom.us/j/99947727801?pwd=sUWguw0fabobVakzLP78YhEabykHBn.1

Meeting ID: 999 4772 7801

Passcode: 749121

Current Certificate Requirements

1. Complete ASHP Essentials of Practice-Based Research for Pharmacists per assigned schedule

https://elearning.ashp.org/products/5427/essentials-of-practice-based-research-for-pharmacists-not-for-ce

2. Participate in all Summer Seminar and Winter and Wrapping it up Seminar workshops

   and lectures

3. Participate in the Residency Research Forum (September)- Megan Smith will review the dates for the Residency Research Forum

4. Provide feedback on peer reviewed research (platform presentation, poster presentation, or similar) of a non-resident (i.e. faculty, preceptor, or student)

5. Present current research at either local, state, regional, or national conference.(platform presentation, poster presentation, or similar)

6. Submission of a manuscript suitable for publication describing the resident's research.

   Manuscript must follow author guidelines from a peer-reviewed journal.

   Manuscript must include a description of the background, project rationale and detailed description of methods, results including any relevant figures and/or tables, and conclusions.

   Residents will be asked to select whether or not they intend to seek publication and intended journal.

The due date for documentation of your presentation and your manuscript is **May 30, 2025**

"The idea of finishing my project within 1 year initially seemed overwhelming. While each individual step seemed manageable, the totality of the project made me cringe and even lose sleep occasionally (honestly, quite often). Despite the valuable guidance I received from my mentors, they didn't seem to share my level of anxiety about the project. After all, it was my residency certificate that was hanging in the balance! Overall, I'm grateful for the experience because it taught me so much and really prepared me for future projects."

—Former PGY2 Ambulatory Care Resident

Research Certificate Program Progress Report

Requirement	Due Date	Completion Date
ASHP Essentials • Components of a Resident Research Plan • Identifying Contemporary, Relevant and Practical Research Questions • Study Design and Sample Selection	July 26, 2024	Email certificates to: hutchisonlisac@uams.edu
Summer Seminar (Zoom)	July 26, 2024	
ASHP Essentials • Project Management for Residency Projects • Data Acquisition and Data Cleaning	September 1, 2024	Email certificates to: hutchisonlisac@uams.edu
September Research Forum	September 30, 2024	
ASHP Essentials • Data Management • Data Analysis • Presenting Residency Project Results	November 1, 2024	Email certificates to: hutchisonlisac@uams.edu
Winter Seminar (in person)	November 18, 2024	
ASHP Essentials • Publishing a Scientific Report of Residency Project Results • Putting it All Together – An Example of a Residency Research Project	January 1, 2024	Email certificates to: hutchisonlisac@uams.edu
Wrapping it Up Seminar (Zoom)	TBA-January/February	
Review of Non-resident Research (poster, platform) Suggested meetings: AAHP, ASHP MCM, APhA	March 31, 2025	Email review form to: hutchisonlisac@uams.edu
Presentation of Residency Project (poster, platform)	May 30, 2025	
Provide Title:		Provide Conference Name:
Manuscript suitable for publication	May 30, 2025	
Provide Manuscript Title:	Identify Journal used for author guidelines:	Request UAMS Faculty Review: Yes/No

Email Completed Progress Report to: hutchisonlisac@uams.edu

Resident Signature:_____Date:_____

Workshop: How to Identify Clinical Problems to Research

Lisa C Hutchison, PharmD, MPH, FCCP

Ideas for research from clinical practice:

- Problem encountered without a solution from your literature search
- How well has evidence-based care been implemented in your institution
- Patient-specific clinical question
- Institution's concerns related to Joint Commission or CMS quality measures
- Process improvements or resource justification
- Published study discussion gives recommendations for future research
- Poster/platform sessions at professional meetings
- New program barriers, outcomes, evaluations

Kauffman YS, Billips SJ. Developing the Research Idea. IN: Kauffman YS, Witt DM, eds. The Essential Guide to Pharmacy Residency Research, Kindle edition. American Society of Health-system Pharmacists 2020.

Activity:

Overview: Working in groups, take the assigned example situation and come up with related questions or gaps in knowledge that come to mind. Identify 2 related questions to share.

Step 1: go to your Zoom group.

Step 2: Identify who has the next birthday in the group—he/she becomes the moderator who will make sure that everyone contributes, group voting occurs, and the group is done in 10 minutes.

Step 3: Identify who has the most recent birthday in the group—he/she becomes the spokesperson to track all the ideas and report to the full session. Have group vote on the top 2 questions if there isn't consensus.

Step 4: At 10 minutes, rejoin the main group. Share your top 2 questions in the Zoom chat. Each group's spokesperson will report on their scenario and their top 2 research questions.

Step 5: Select a question (from your group or others). Use the form provided and evaluate the question as you listen to Dr. Teeter's and Dr. Smith's talks on Good Research Questions and Writing an Abstract. Send finished form to Lisa: hutchisonlisac@uams.edu

Groups

Institution	Last Name	First Name	Group
ARCare	Siebenmorgen	Mary Rose	1
ARCare	Green	Victoria	2
ARCare	Renji	Nikita	3
ACH	Hankins	Caragh	4
BMH LR	Sims	McKenzie	5
BMH LR	Austin	Whitney	1
BMH NLR	Lynch	Cody	2
BMH NLR	Hutton	Corey	3
CAVHS	Cypert	Kaira	4
CAVHS	Davis	Jeff	5
CAVHS	Gosto	Leila	1
CAVHS	Grier	Kirsten	2
CAVHS	Holliman	Alana	3
CAVHS	Yowell	Dylan	4
CHI SVI	Traylor	Leslie	5
CHI SVI	Meng	Melanie	1
St. Bernards	Russell	Amanda	2
St. Bernards	Do	Viviane	3
UAMS	Williams	Olivia	4
UAMS	McDermott	Logan	5

UAMS	Novak	Natalie	1
UAMS	Agarwal	Akash	2
UAMS	Connor	Taylor	3
UAMS	Hernandez	Michelle	4
Wadley	Rangel	Jose	5
WRMC	Abbott	Wendee	1
WRMC	Griggs	Kyle	2
Unity	Hoggard	Victoria	3
Unity	Jacobus	Alexis	4
Unity	Sifford	Claudia	5
Unity	Houeye	John	1

Group # and Situation to Spark a Research/Project Question

1. You are a pharmacist in a Pediatric Clinic that provides education to pediatric patients with newly diagnosed asthma. Your supervisor wants to justify the amount of time spent to her superiors.

2. Your clinical practice is in the adult HIV clinic and you observe a high frequency of statin use. You wonder if statins benefit patients with HIV and if drug-drug interactions are a concern, but find the literature is mixed.

3. You work in a community pharmacy that asked to establish a center for home blood pressure monitoring for the senior center participants. The site will be an office area at the center and will include opportunity to sell blood pressure monitoring equipment.

4. Several family members with diabetes talk with you about berberine and the success they've had in managing their blood glucose, but you are worried about side effects and potential drug-drug interactions.

5. A physician has tried mirtazapine for appetite stimulation at the nursing homes you both work at. You find no supporting studies and are curious if your patients are benefiting or not.

How to Identify Clinical Problems to Research Worksheet

Resident Name:_____

Research Question (identified by a group):

FINER Evaluation for Question as a Resident Project at your Program

Component	Attribute	Answer
Feasible	**Timeframe, resources, participants, data available?**	
Interesting	**Who cares? (profession, community)**	
Novel	**What will you confirm, refute, extend, discover?**	
Ethical	**What is harm to subjects? Acceptable?**	
Relevant	**What is importance to science, policy, or future research?**	

PICOT-D Evaluation

Component	Question	Answer
Population	**Who will you study?**	
Intervention	**What will you do?**	
Comparison Group	**Will you include a control group? (Name what it is)**	
Outcomes	**What will you measure?**	
Timeline	**What is the study timeframe?**	
Data	**What data source(s) will you use?**	

Good Research Questions

Ben Teeter, PhD
Investigator, Center for Implementation Research
Associate Professor, Department of Pharmacy Practice

Goals for today

- Review elements that make for a good research question
- Understand that some questions are better than others, and that's OK
- Understand that we all work within limitations to create the best research questions we can
  - Limitations = e.g., time, money, available expertise, time, available data, and time

2 Approaches

- The "scientist trying to make a living at science" approach
  - To flesh out the elements of good (and "fundable") research questions/projects
- The "clinician-scientist" approach
  - Blending of clinical work and research/QI
  - Opportunistic approach towards improving local clinical practice and making gains in knowledge

Exercise: What is wrong with these research questions?

1. How many steps does it take to get from my office to the elevator?

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2. Is cigarette smoking related to lung cancer?

Exercise: What is wrong with these research questions?

1. How many steps does it take to get from my office to the elevator?
2. Is cigarette smoking related to lung cancer?
3. What is the most cost-effective method of implementing comprehensive medication management in rural primary care clinics?

Exercise: What might be wrong with these research questions?

1. How many steps does it take to get from my office to the elevator?
2. Is cigarette smoking related to lung cancer?
3. What is the most cost-effective method of implementing comprehensive medication management in rural primary care clinics?
4. Is the medication *Expensonil* (expected $10,000 per day out of pocket cost) more efficacious than placebo in the treatment of shopping addiction?

FINERMAPS

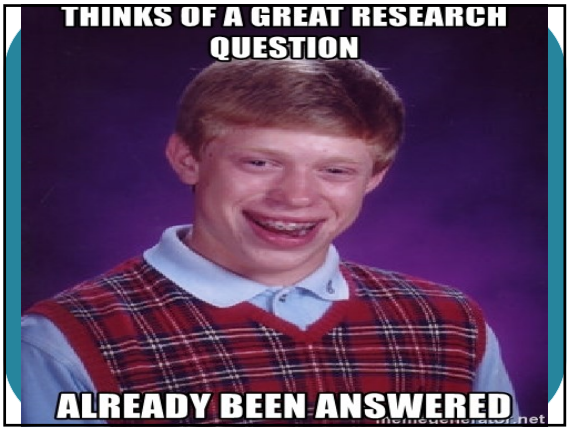
- Feasible
- Interesting
- Novel
- Ethical
- Relevant
- Manageable
- Appropriate
- Potential value and publishability
- Systematic

Choosing an Area/Topic…

- This element is pretty much taken care of already for you as Residents; but, in general:
- You should find your area/topic sufficiently interesting and important to you to spend your time on it!
- Is your institution able to mentor you and support your work in this area?

Find a gap to fill

- **You want to address an unknown**
  - Do we know the answer already? Keep looking…
  - If we already know something about the area/topic, is there room for improvement?
- **How do you know what is unknown??**
  - Your own assessment of the literature
  - Review paper recommendations
  - Published "priorities" and requests from NIH, professional organizations, etc.
  - Ask the local and national experts in the area



Fill a gap that people want filled now (*or soon…*), or is "timely"

- **Who is out there saying we need this question answered sooner rather than later?**
  - Healthcare systems, professional groups, NIH, etc.?
- **Is there a natural experiment about to happen that can be capitalized on?**
- **Is there a new policy or system mandate about to go into effect?**

Have a good answer to this question:

- **What will be the impact of answering your research question?**
  - Who will benefit?
  - What will be better or "fixed"?
  - Are there many benefits to many stakeholder groups? How many "wins" are you creating?

Will your question/project produce generalizable results?

- **How do the findings relate to:**
  - Other patent populations?
  - Other clinical settings?
  - Other educational settings?
- **The more your results generalize, the more they are publishable**
  - There are notable exceptions– e.g., case studies, some qualitative work, etc.

How implementable are your findings ?

- **Can your findings be easily acted upon?**
- **If you tested the effectiveness of a clinical intervention, how hard might it be to be adopted and used in clinical practice?**
  - Will patients be OK with it?
  - Will clinicians be onboard?
- **Does your new QI tool easily fit into the clinic flow?**

Make sure your question(s) can be feasibly answered

- **Can you answer the question…**
  - in the time frame you have?
  - with the money you have?
  - with the data you have or you can get?
    - Can you measure what you want to study?
  - with the mentoring/support you have?
- **But, lets not think too small…**
  - Balance feasibility with potential impact/importance

Be clear and focused in the language of the question

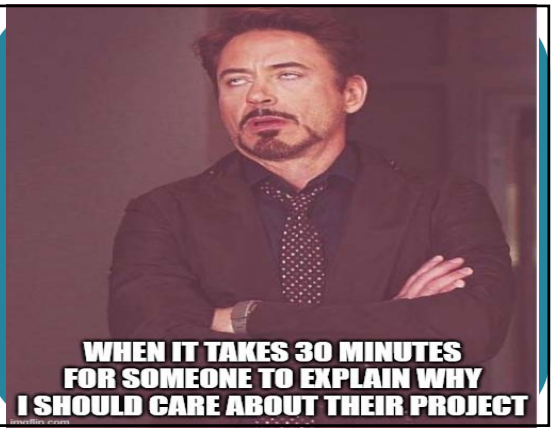
- **Focus on the relationship or issue being uncovered**
- **I like questions that start with "what" or "how"**
  - What impact does *intervention X* have on *outcome Y*?
  - How does a change in *behavior X* affect *outcome Y*?
  - What are the barriers to the *implementation of X*?
  - How did *new policy X* impact *clinician behavior Y*?
  - What is the relationship between *financial incentives to perform behavior X* and the *rate of behavior X*?

Watch out for too narrow or too broad

- **Try to avoid yes/no questions ("Does")**
- **Try to avoid over-specific questions**
- **Most people err on the side of too broad…**
  - **Maybe key in on populations/samples**
    - "*Among older patients with diabetes*, what impact does intervention X have on…"
  - **Maybe key in on types of settings/contexts**
    - "What are the barriers to implementing X *in rural primary care clinics?*"

"Elevator Test"

- **You enter the elevator in ED2 on the ground floor. Dean Stowe enters right after you. You are both going to the 6th floor. As the door closes, the Dean asks, "What are you doing for your residency project?"**
  - Can you present the research question/project in a clear and focused manner by the end of the ride? Does she have time to make a comment on how cool (and manageable) it is?
  - When you are coming up with your research question/project, keep this in mind-- "Can I tell someone the gist of this quickly and they'll get it?"



OK… Reality check

- **No question/project is "great" on all these elements**
- **Where you compromise depends on your situation**
  - How much time you have
  - What data you have access to or can collect
  - How much mentoring/support you have

Approach of a clinician-scientist (or a resident scientist)

- **Research is not #1 priority**
- **But, you can approach your work with a "research attitude" (Durbin, 2004)**
  - "Why do we do the things we do?"
  - "Is there a better way?"
  - "Why don't we do something?"
  - "Can I inform others about the things we are doing/trying?"

Approach of a clinician-scientist (continued)

- **With the "research attitude" you could…**
  - Encounter potential research questions all the time (daily??)
  - Be on the look out for opportunities to create a "researchable" question from what needs to be solved anyway
  - Be on the lookout for natural experiments and capitalize on them
  - Attract and/or seek collaboration from "R"esearchers who are looking for and NEEDING good ideas from the real world!

So, lets re-look at those key elements again…

- **Timing?**
  - What really needs to be fixed *right now* in your location?
  - Do others agree that this is a good thing to tackle now?
- **Important?**
  - If you fixed the problem, would the impact be substantial?
  - Do others agree that it would be substantial?

So, lets re-look at those key elements again…

- **Gap?**
  - From literature, sure; but also from your own clinical/educational work
  - Fix a local gap, yes; but with a mind towards "testing" a solution if you can and sharing what you find
  - Not too big of a gap

So, lets re-look at those key elements again…

- **Generalizable?**
  - Take a more "relaxed" view on this
  - Would other local environments potentially benefit?
  - Even if your "findings" might not generalize well, would your "process"?
  - Even if generalizability is low, bring the research attitude to QI

So, lets re-look at those key elements again…

- **Implementable?**
  - This one is easier for clinician/resident scientist as the project is probably local
  - It is probably one of the research questions!
    - "How feasible is the innovation in this setting?"

And last but NOT least…

- **Feasible?**
  - REALLY have to pay attention to this element!
  - Your other duties cannot suffer
  - Observe others or find examples of projects that have already worked in that setting
  - Work with your mentor to make sure the project is not too big, and make adjustments if you need to
  - For Residents, you have less than a year to get through the whole thing, including sharing the results…

Goals for today

- Understand elements that make for a good research question
- Understand that some questions are better than others, and that's OK
- Understand that we all work within limitations to create the best research questions we can
  - Limitations = e.g., time, money, available expertise, time, available data, and time

Exercise revisited : What's wrong with these questions?

1. How many steps does it take to get from my office to the elevator?
   So what? Not a gap that needs filling.
2. Is cigarette smoking related to lung cancer?
   We know this already.
3. What is the most cost-effective method of implementing comprehensive medication management in rural primary care clinics?
   Not feasible for you as a resident scholar. Too big.
4. Is the medication *Expensonil* (expected $10,000 per day out of pocket cost) more efficacious than placebo in the treatment of shopping addiction?
   The intervention itself is not implementable. If nobody can afford the treatment, why study it in the first place?

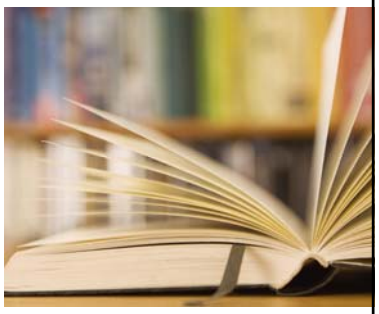
Questions?

Email: BSTeeter@UAMS.edu

HOW TO WRITE YOUR ABSTRACT

–AND A COUPLE OTHER THINGS

Megan Smith, PharmD, BCACP
Postgraduate Research Certificate Program
July 28, 2023



Expectations for this Hour

- Use Reactions
- Use Comment Box
- Use annotations – let's try!
- Camera On – we will pause for camera off at least once
- Other ideas you like?

FINER Criteria for Research Questions

Feasible	Adequate number of subjects (Sample Size) Adequate technical expertise (Personnel) Affordable in time and money (Funding) Manageable in scope (Time)
Interesting	Answer is interesting to investigator, peers, and community
Novel	Confirms, refutes, or extends previous findings
Ethical	IRB approvable and ethically conducted and designed
Relevant	To scientific knowledge To clinical or health policy To future research

Abstract Rubric Criteria

- Varies for each meeting
- Find in the Call for Abstracts

APhA 2020 Evaluation Criteria

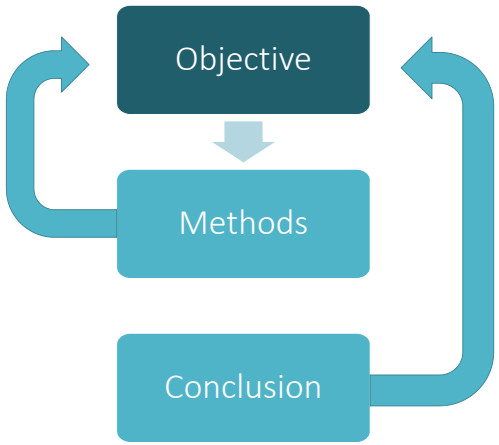
1. **Relevance/Originality**
   a. Rationale for the study clearly defined
   b. Topic makes important contribution to pharmacy practice (patient care, pharmacy operations, pharmacy profession) or theoretical basis of pharmaceutical sciences because it is original or of vital importance to the profession.
2. **Research Questions/Objectives**
   a. Question(s) to be answered or objectives to be met by research are clearly stated
3. **Methods**
   a. Evaluation of the methods considering all the following which are applicable for the type of research being presented:
   b. Measurement
   c. Study design
   d. Data collection process, sampling strategy or sources of data
   e. Data analysis clearly specified
4. **Results**
   a. Findings are reported for each study objective or research question
5. **Implications/Conclusions**
   a. Implications of findings to pharmacy practice, policy theory, or further research are discussed.
   b. Conclusions are appropriately stated based on the results

"Anatomy" of the Abstract

Big Picture Topic	Title
Problem/Gap in the Literature	Background or objective
Solution to Problem	Objective
Specific Method to be Examined or Used • How you will know if that solution was right or wrong	Methods - who, what, when, how
How to evaluate your original argument/thesis	Last part of Methods – what you will do with all the data you gathered. (data analysis)
What Happened	Results
Summary	Conclusion

Which part is most critical??

[type annotation on this screen or use chat feature]



The objective is to…

- to identify and characterize barriers of community pharmacies providing CMRs in the care management program
- evaluate the baseline impact of primary care clinical pharmacist interventions on health registry metrics for patients receiving clinical pharmacy services.
- evaluate patient baseline knowledge of newly prescribed antidepressant medications
- assess the clinical and economic outcomes of implementing a pharmacist-led asthma medication intervention for pediatric Medicaid beneficiaries in a Washington DC based managed care organization.

Research Objective

- Use action verbs that are specific enough to be evaluated or measured
  - assess, determine, compare, verify, calculate, describe
- Be specific
- Verb, target audience (pharmacist, patient), and outcome

Do something on someone/something in this context measuring this outcome

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Let's Examine One

Effectiveness of Community Pharmacist Integration into a Patient-Centered Medical Home on CMS Outcome Measure: Hemoglobin A1c

Objectives: In 2016, a feasibility and acceptability study of integrating a community pharmacist was conducted at a patient-centered medical home (PCMH). Upon completion of the study, a community pharmacist was integrated into this PCMH and began managing patients with diabetes with a Hemoglobin A1c(HbA1c) >9%. "Diabetes: Hemoglobin A1c Poor Control" is one of many outcome measures that the PCMH is evaluated annually from the Centers for Medicare and Medicaid Services (CMS). The objective of this follow-up study is to determine the effectiveness of the pharmacist at improving clinical outcomes for diabetic patients with a HbA1c >9%.

Methods: A quasi experimental study with a pre-post and non-equivalent control group will be conducted to compare and contrast the calculated clinic scores for patients with HbA1c >9%. The clinic score is calculated from the number of patients with Type 1 or Type 2 diabetes with a HbA1c >9% divided by the total number of patients in the clinic with Type 1 or Type 2 diabetes. The clinic score will be measured prior to pharmacist intervention, May-November 2016, and after pharmacist integration, May-November 2017. The clinic score at this PCMH will also be compared to the clinic score at another PCMH in the same city that does not have an integrated pharmacist during the study period (May-November 2017).

Results: Research in progress.

Objectives: Comprehensive Primary Care Plus (CPC+) is an advanced patient-centered medical homes (PCMH) payment model introduced by Centers for Medicare and Medicaid Services (CMS). This model aims to improve patient care by incentivizing primary care clinics to improve value and quality. "Diabetes: Hemoglobin A1c Poor Control" is one of many CPC+ quality measures; therefore, this measure is the focus of this follow-up study. The objective is to determine the impact of a community pharmacist on HbA1c (%) for patients that had interactions with the community pharmacist and determine the impact of a community pharmacist on the quality measure for patients with HbA1c >9%.

Methods: In May 2017, a Kroger pharmacist integrated into a primary care clinic for 20 hours per week. Pharmacists' interventions included patient education, medication adherence counseling and insulin titrations to patients with HbA1c >9%. A quasi experimental study with a matched pre-post design and non-equivalent control group will be conducted. Retrospective chart reviews will be used to gather the last HbA1c value drawn in 2016 and 2017 for all current patients in the clinic with a diagnosis of Type 1 or Type 2 diabetes, as defined by the CMS clinical quality measure definition, "Diabetes: Hemoglobin A1c (HbA1c) Poor Control (>9%)." This data will be used to calculate the clinic score for 2016 and 2017, at the intervention clinic and the control clinic. Statistical testing will be conducted using chi square analysis. Patients that directly interacted with the pharmacist will be evaluated further to directly evaluate the pharmacists' effectiveness. To do so, the HbA1c value obtained directly prior to the pharmacists intervention will be used as the pre-HbA1c. The post-HbA1c will be the next HbA1c value obtained and will evaluate using a paired t-test.

Results: Research in progress. The project has received IRB approval and results will be presented at APhA Annual Convention.

Common Pitfalls of Abstracts

- Making project too big
- Defending or concluding instead of **describing**
  - Example: Explore how technician protocols increase influenza vaccinations
  - Better: Determine the impact of technician protocols on influenza vaccinations in an independent pharmacy
- Can't follow or repeat the methods
- Objective doesn't match methods and conclusions

A couple other things…

Statistician Support

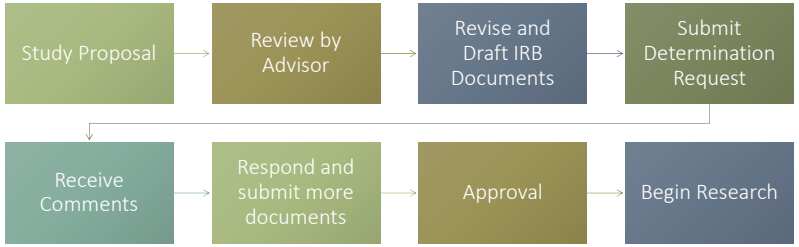
Assists with methodology and data can be analyzed appropriately to answer your question

Oh…we didn't collect that

We can't analyze that type of data?

I didn't think about confounders

Navigating the IRB – START EARLY!



Guidelines for Reporting Research

Research Method	Recommendations
Qualitative: interviews and focus groups	COREQ Checklist
Observational Research	STROBE Checklist
Survey	Kelley K, Clark B, Brown V, Sitzia J. Good practice in the conduct and reporting of survey research. Int J Qual Health Care. 2003;15(3):261-266.
Systematic Review (Quant and meta analysis)	PRISMA Checklist
Systematic Review (Qualitative)	ENTREQ Checklist
Economic Evaluations	CHEERS guidelines
Randomized controlled trial	CONSORT Checklist

Adapted from J Am Pharm Assoc Author Guidelines: https://www.japha.org/article/S1544-3191(15)00044-8/pdf

Resident Research Forum

Who: Pharmacy residents

What: Venue for presenting background and methods of research

When: September 16, 17, 19, 20

Where: Virtual (Zoom)

How: Diverse panel along with other residents and preceptors provide feedback and ask questions about your topic

Sign up: https://www.signupgenius.com/go/4090E48A4A62AA4F58-50397142-resident

Google Folder to upload presentations, 2 days in advance

Please Sign Up by August 2nd

Questions

Strengthening Your Project and Results

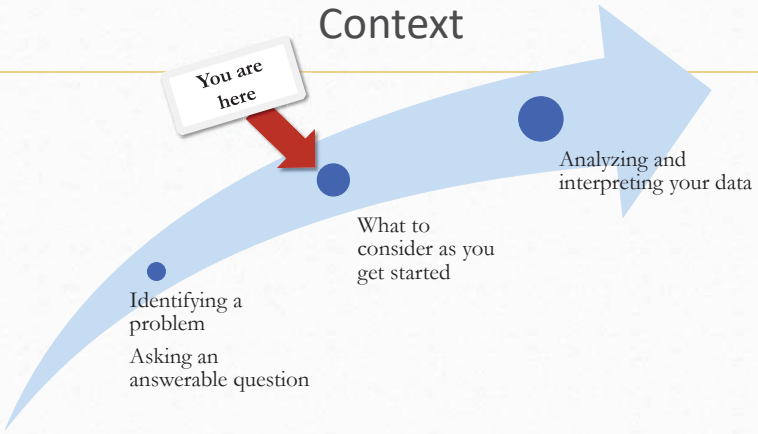
Research Certificate Program Summer Seminar 2024

Catherine O'Brien, PharmD, MA

Introduction and Purpose

- Be able to ask the right questions about your project
- Plan for the outcome measures that fit your question
- Have a clear plan for how to keep track of your data

Context



Overview

- Focus today will be on how to **get a strong start** and considerations for specific project types
- For all project types:
  - Middle
    - Trouble-shooting (e.g. poor recruitment, fewer data points than expected, survey items not performing as expected)
  - End
    - Analyzing and interpreting data
    - Post-hoc analyses
    - Next steps?

Retrospective Review

- Examples
  - Evaluation of meropenem use among patients in the intensive care and hematology/oncology units at a pediatric hospital
  - Risk factors associated with the development of multi-drug resistant Pseudomonas aeruginosa in children and adults with cystic fibrosis

Retrospective Review

- What is the purpose?
  - e.g. Is this a step toward a prospective study?
- What are the best outcome measures to use?
- Power calculation vs justification for convenience sample
- What are likely confounders, and how might you account for them?
- Determine statistical plan *a priori*
- What data do you need to collect?
- Managing your data
  - How are you collecting it? Where and how are you storing it? How are you securing it?

Survey

- Examples
  - Patient-Centered Communication in a Pediatric Asthma Clinic
  - Determining Barriers and Strategies with Medication Adherence among Adolescents and Young Adults Post-Liver and Renal Transplant

Survey

- Which survey?
  - Design your own versus one that's already been validated
  - If designing your own, considering best practice for survey design
- Question type (free text, value ranges, Likert scales, multiple choice, etc)
  - This also informs statistical plan
- How should surveys be administered?
  - Consistency if multiple investigators
- Should clinical data be collected as well?
- Do you need consent/assent?
- Data management considerations

Quality Improvement

- Examples
  - Impact of new pharmacy service on A1C levels
  - Impact of provider education on adherence to guidelines for antibiotic dosing for otitis media

Murphy JE et al. Best practices for supporting and improving pharmacy resident research and quality improvement projects. JACCP 2023; epub ahead of print; DOI 10.1002/jac5.1904

Quality Improvement

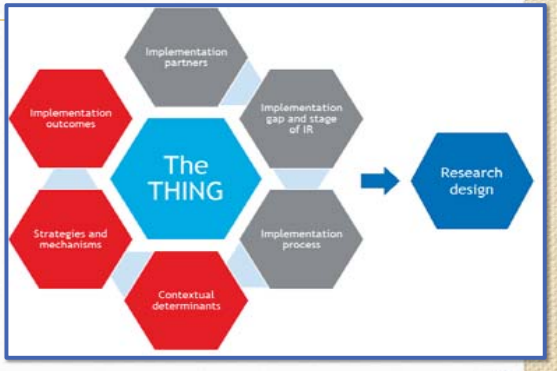
- Which outcome measures are most appropriate?
  - Feasible and meaningful
  - Laboratory values, patient-reported outcomes, other?
- Prospective versus retrospective?
  - If prospective, will consent/assent be required?
- Data management and statistical plan considerations as already discussed

Implementation Science

- Examples
  - Integrating opioid use disorder treatment into primary care settings (*JAMA Netw Open* 2023;6:e2328627)
  - Evaluating rural community pharmacists' perceptions of integrating mental health services to reach underserved populations (PI: Sarah Landes, PhD, Co-investigator Megan Smith, PharmD, BCACP)

Implementation Science

- What makes the program or intervention work in practice settings?
  - Select a framework – helps to determine measures
  - Select intervention and implementation strategies to deploy
  - Select an outcome(s)
    - Acceptability, adoption, appropriateness, cost, feasibility, fidelity, penetration, sustainability



Summary

- Start strong by getting input at the beginning
- Ask for help if something unexpected happens
- Input at the end
- If you need to get in touch with somebody, contact one of us from the Research Certificate Program!

Resources

- ASHP Research Resource Center (Link)
  - Pharmacy Research Fundamentals
  - Includes links to numerous webinars and papers
- ACCP Research Resources page (Link)
  - Biostatistics resources
  - Link to a word document with papers and other resources separated by research type
- Survey Resource
  - Boynton PM, Greenhalgh T. Selecting, designing, and developing your questionnaire. *BMJ* 2004; 328:1312-1315

Resources

- Spreadsheet tips
  - https://libraryguides.unh.edu/excel/bestpractices
- Implementation science resources
  - Overview of frameworks
  - https://implementation.fpg.unc.edu/ Contains learning modules and other resources

RESIDENCY RESEARCH CERTIFICATE PROGRAM: WHAT COMES NEXT?

You may still be feeling a little new at this!

What Comes Next?

August
- Sign up for Forum
- Find out your site's IRB/Project process
- Develop your Research question, Background, Methods

September
- Complete 2 more ASHP modules
- Present at September Research Forum
- Include PICOT-D statement

October
- Revise and complete abstract & protocol
- Submit to IRB/other for determination

November
- Complete 3 more ASHP modules
- Attend Winter Seminar
- Share Elevator Speech in small groups

December
- After approvals, get started!

At September Research Forum include a PICOT-D statement

Elias BL, Polancich S, Jones C, Convoy S. Evolving the PICOT Method for the Digital Age: The PICOT-D. J Nurs Educ. 2015 Oct;54(10):594-9. doi: 10.3928/01484834-20150916-09. Erratum in: J Nurs Educ. 2015 Nov;54(11):623. PMID: 26431521.

TABLE 1
PICOT-D Component Structure

PICOT-D Component	Component Wording	Evidence-Based Search Terms
Population/patient problem	In adult patients newly diagnosed with type 2 diabetes	
Intervention	How does transdermal monitoring of blood glucose	
Comparison intervention/ current state	Compared with finger-stick blood glucose testing	
Outcome/desired state	Affect compliance with blood glucose testing frequency and lowering HbaA1C levels	
Time	Within a 6-month period	
Data	When looking at home blood glucose test frequency and HbaA1C levels	

Note. PICOT-D = Population/patient problem, Intervention, Comparison intervention/current state, Outcome/desired state, Time, Data. HbaA1C = glycated hemoglobin.

Example: Targeted Education to Improve Sugammadex Utilization in an Academic Medical Center

- P: Members of the **anesthesiology department** at UAMS
- I: **Educational presentation** on: use of sugammadex in the hospital over previous 2 years (% of patients under 100 kg receiving 2 or more vials. **To include** sugammadex appropriate dosing, rocuronium use, neostigmine indication and dosing, **and** follow-up monthly email updates on usage **plus** one in-person follow-up
- C: **Pre education usage** compared to **post** education usage
- O: **Average # vials** of suggamadex used per anesthesia case and **Average** weekly **institutional costs**
- T: 9 weeks pre intervention and 11 weeks post intervention (**20 weeks**)
- D: **mg/kg** Vials used per case and **costs** per week

For members of the anesthesiology department, how does an educational intervention affect usage when comparing pre-education to post-education over a 20-week period looking at vials used per case and costs per week.

See you in September at the Forums!

And then:

See you November 18th at the Winter Seminar!