# Scientific Abstract Writing

## OhioHealth Pharmacy Resident Workshop Series

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# Learning Objectives

1. Match each element of a research project to the unique abstract section best suited for it
2. Discriminate effective strategies and common pitfalls related to scientific abstract writing
3. Apply recommended abstract writing concepts to improve a draft abstract

# Disclosure Statement

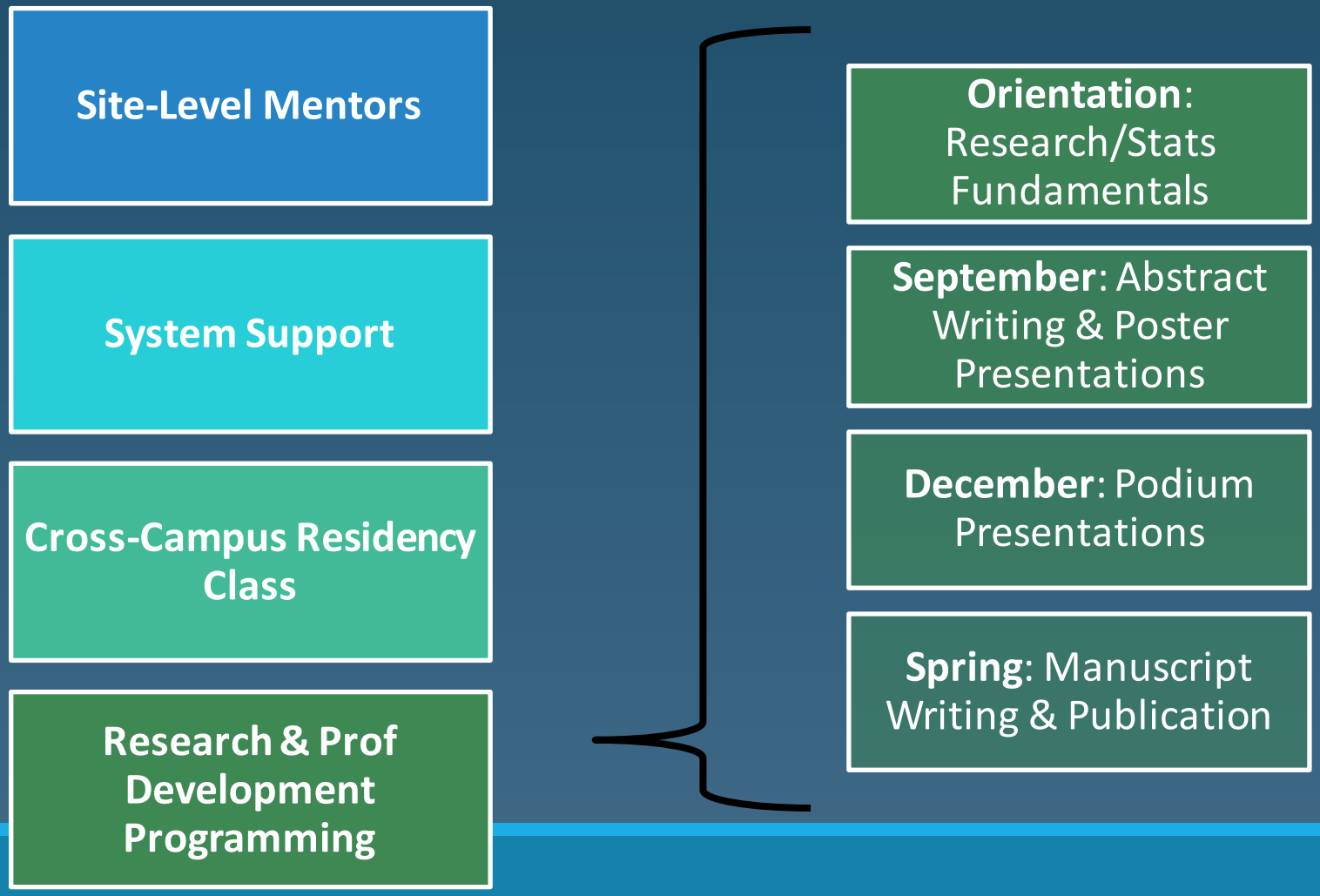
The speakers have no relevant financial disclosures.

# But first…

GENERAL RESEARCH TIMELINE EXPECTATIONS

SCIENTIFIC WRITING OVERVIEW

# OhioHealth Pharmacy Resident Research Structure



# Timeline

| | |
|---|---|
| J/J | CITI, REDCAP, Orientation with OhioHealth, OHRI, etc.<br>Stats and Research Fundamentals - lecture and chapters<br>Research idea brainstorming and needs assessments<br>PICO/FINER Worksheet → Pitch panels |
| A | IRP – submit buy end of month |
| S | IRB Protocol – submit by end of month |
| O | IRB approval<br>Midyear Mtg prep |
| N | Kick off meeting, submit data requests<br>Make poster |
| D | Midyear Mtg<br>Data collection |

# Timeline

| | |
|---|---|
| J | Data compilation, shell tables<br>Submit to stats |
| F | Complete analyses, make tables/figures<br>Prep spring conference |
| M | Spring conference practice presentations |
| A | Spring conference presentation |
| M | Manuscript draft – submit to mentors by end of month |
| J | Manuscript completion<br>Submit for publication! |

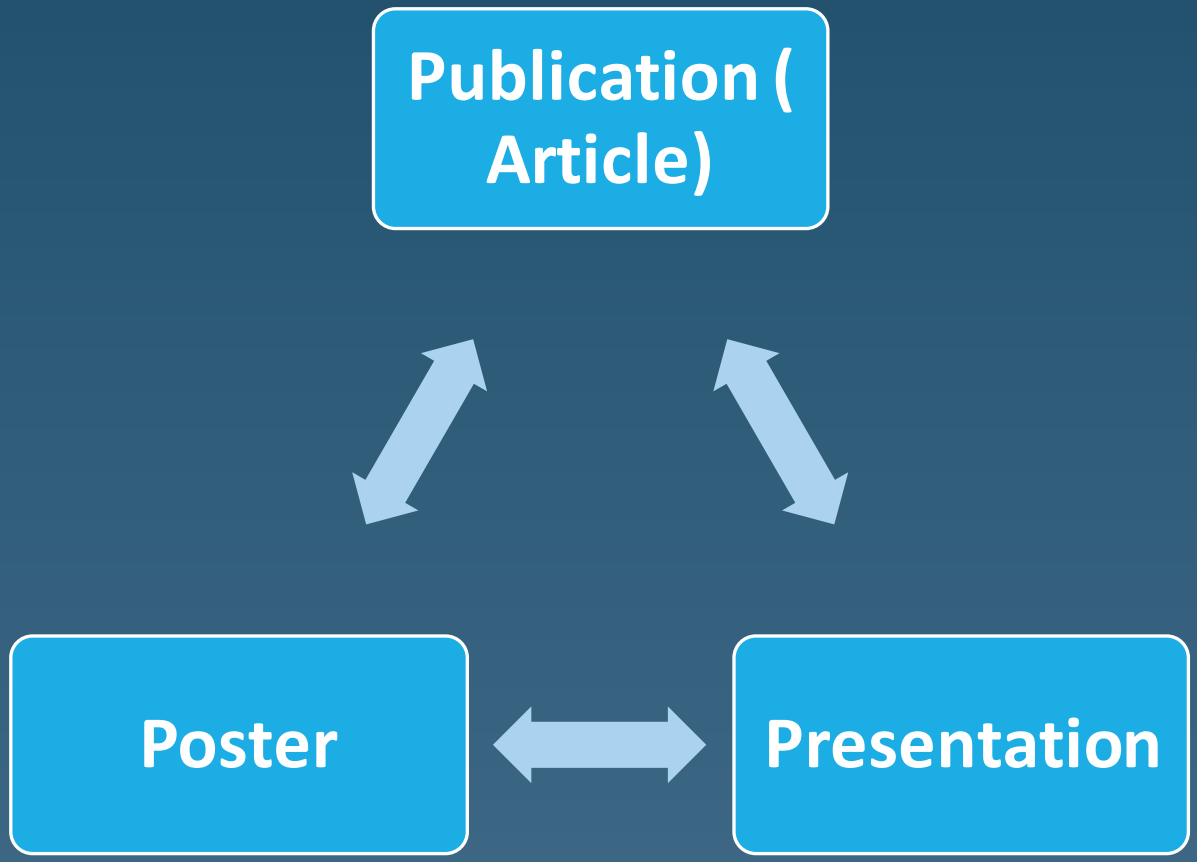
# Your Expectations

- **Own all aspects of your research project**
  - Your research team
  - Your verbal and written **communications**
  - Your timeline/**deadlines**
- Work diligently on project every month of the year towards goal deadlines – use your resources and **maintain project tracker**
- Deliverables: IRB protocol, poster presentation (research-in-progress), podium presentation (complete project), poster (complete project), data collection sheets/analyses, final written manuscript

# Scientific Writing 101

- Disseminate knowledge and inspire new investigations
- Must be...
  - **ACCURATE**
  - Able to communicate enough details to be **reproducible**
  - **Concise** enough to keep readers attention

# Every Project Needs an Abstract



# What's at Stake

Acceptance vs. rejection

- No editing prior to printing/posting!
- Poster vs. podium acceptance

Reviewer impressions (3-5 individuals)

- Representation of you and your institution

Your reach for dissemination

# Step 1

Read and adhere to all requirements, FAQs, resources!

Review previously accepted abstracts to conference!

Complete in sufficient time for review and refinement before submission!

→Submit all deliverables to project team at least 2 weeks in advance of submission deadline

# Abstract Writing Workshop

"FIX MY ABSTRACT!" EXERCISE

# Title

- Pertains directly your study question
  - Include **key words**
- Phrased as research question, study description, or statement of conclusion
- Less is more
  - Conciseness → readability and interest
  - **Max 10-12 words**

# Title

- Titles in abstracts and on posters should be written in sentence case
- Titles in Abstracts and on Posters Should be Written in Sentence Case
- TITLES IN ABSTRACTS AND ON POSTERS SHOULD BE WRITTEN IN SENTENCE CASE

# Title Pitfalls

- Too wordy
- Misleading/nonspecific as to key elements
- Use of abbreviations or proprietary names

# Fix my abstract!

The utility of Exparel® for improving pain control in a multimodal, opioid-sparing approach after TKA: a single-center, prospective, single-blind cohort study

# Title – Examples

A prospective study evaluating analgesic strategies in total knee arthroplasty

What is the role of liposomal bupivacaine in pain management after total knee arthroplasty?

Liposomal bupivacaine versus a traditional periarticular cocktail for pain control after total knee arthroplasty

Liposomal bupivacaine not associated with improved pain control after total knee arthroplasty

# Background/Introduction

- 1-2 sentences describing your rationale
  - What is known
  - Where are the gaps prompting your project
- 1 sentence stating your hypothesis, purpose, or objective

# Background Pitfalls

- Too exhaustive of literature review
- Too long – save your real estate for more important sections!
- Unnecessarily broad/simplified for audience

# Fix my abstract!

Liposomal bupivacaine (Exparel®) is a long-acting local anesthetic preparation with demonstrated efficacy over placebo in reducing post-operative pain and opioid requirements in hemorrhoidectomy and bunionectomy. Limited economic data suggests an improvement in lenth of stay (LOS) and hospitalization costs with a multi-modal analgesic regimen including liposomal bupivacaine compared to an opioid-based analgesic regimen employing intravenous (IV) patient-controlled analgesia (PCA) after colorectal surgery. A dose-ranging pharmacokinetic study of liposomal bupivacaine in total knee replacement (TKA) did not find significant differences in pain scores through 72 hours post-operatively for currently-approved doses as compared to conventional bupivacaine.

Efficacy and cost-effectiveness of liposomal bupivacaine local infiltration around the surgical site in TKA has not been assessed in a multi-modal, opioid-sparing analgesic approach as is used at the Grant Medical Center Bone and Joint Center. Given lack of clinical evidence over standard of care paired with significant medication safety concerns and economic impact, liposomal bupivacaine was previously denied formulary status at OhioHealth. This study is designed to address current gaps in comparative efficacy and economic data.

# Background – Example

Liposomal bupivacaine (Exparel®) is a long-acting local anesthetic preparation with demonstrated efficacy over placebo in reducing postoperative pain and opioid requirement. Limited comparative efficacy and cost-effectiveness data exist for its use in total knee arthroplasty (TKA) when used in a multimodal, opioid-sparing analgesic and anesthetic approach. We hypothesized that liposomal bupivacaine offers no clinical advantage over our standard of care but carries significant economic impact.

# Methods

- Most important and most difficult!
- Essential – study design, population, setting, timeframe, procedure, outcomes
- IRB approval if required
- NOT results or commentary

# Methods Pitfalls

- Disorganized – proceed in logical order
  - **P**opulation, **I**ntervention, **C**omparison, **O**utcome
  - Primary analysis first and distinct from secondary outcomes
- Too granular
- Often limited by word count:
  - Exhaustive list of data collected
  - Exhaustive exclusion criteria
  - Statistical tests used

# Fix my abstract!

This is a prospective, randomized, single-blinded, controlled trial comparing liposomal bupivacaine local infiltration around the surgical site to our current intra-operative analgesic approach. This study was approved by our institutional IRB. All adult unilateral TKA patients of the collaborating surgeon were eligible to participate in the study. Patients were excluded if they were non-English speaking, unable to give informed consent, admitted from or discharged to a medical facility, unable to complete a 140-foot walk at baseline, have contraindications to either study drug or to nerve blockade, or taking scheduled long-acting opioid medications before their surgery. Patients were randomized in a 1:1 open-label fashion to receive either local infiltration with liposomal bupivacaine or popliteal nerve block with ropivacaine and peri-articular injection per current protocol. All patients were to receive a pre-operative adductor canal nerve block from Anesthesia and a post-operative opioid-sparing analgesic regimen per institutional protocol. Patients and all post-operative healthcare providers were blinded to study arm assignment.

The primary outcome measure is the number of physical therapy (PT) sessions necessary to achieve first successful community walk (140 feet). Secondary outcomes measures include total opioid consumption in oral morphine equivalents (OMEs) during admission, average visual analogue pain scores (VAPs) during admission, length of stay, incidence of opioid-related adverse drug events (ORADEs) during admission, PT personnel time spent during admission, time spent in operating room (OR), time spent in post-anesthesia care unit (PACU), total drug charges for admission, total hospitalization charges for admission, and readmission within 30 days.

# Methods – Example

This prospective, randomized, single-blinded, controlled trial compared liposomal bupivacaine periarticular injection (PAI) to conventional bupivacaine PAI within a modern multimodal analgesic approach. All elective adult unilateral TKA patients of the collaborating surgeon were eligible to participate in the study. Patients were randomized 1:1 to either the liposomal bupivacaine protocol or the standard-of-care protocol. All patients received regional anesthesia and standard multimodal analgesia protocols. Patients and all postoperative healthcare providers were blinded to study arm assignment.

# Results

- Include most important findings
- Same order as described in methods
- Describe objectively and concisely - **just the data**
- Include raw numbers AND statistical analyses (i.e. p values, CIs, SD etc.)

# Results Pitfalls

- Doesn’t answer research question
  - Or doesn’t answer it first
  - Or answers a different research question
- Presented subjectively or with analysis of meaning or limitations
- Include methodology
- Include tables, charts

# Fix my abstract!

A total of 60 patients were enrolled per our *a priori* power calculation. The final analysis included 59 patients after 1 exclusion for randomization error. No significant demographic differences between the study arms were found. There was no statistically significant difference in the primary outcome of number of physical therapy (PT) sessions required to achieve home-going discharge goals (3.0 ± 1.2 vs 3.6 ± 1.3, P=0.137), nor in the clinical secondary outcomes. We pursued additional secondary outcomes analyses to assess economic impact of the compared modalities. A significant difference in medication charges was found, calling into question the cost-benefit of this agent.

# Results – Example

A total of 59 patients were enrolled per our a priori power calculation after 1 exclusion for randomization error. The study arms were demographically similar. There was no statistically significant difference in the primary outcome of number of physical therapy (PT) sessions required to achieve home-going discharge goals (3.0 ± 1.2 vs 3.6 ± 1.3, $p$=0.137), nor in the clinical secondary outcomes. We found a significant increase in medication charges for surgical admission with liposomal bupivacaine ($3848 vs $2726, $p$<0001).

# Conclusion

- Summarize the most important points and what they mean
- What actions you suggest for practice or research
- Follow methods and results in consistent, logical order
- 1-2 sentences

# Conclusion Pitfalls

- Restate results
- Overstating your results by making sweeping conclusions
- Making unrelated/unnecessary commentary on the topic at large

# Fix my abstract!

We found no significant difference in any clinical endpoint studied, but economic analyses revealed increased medication costs. These results are especially pertinent in the era of bundled payment reimbursement approaches for TKA. Our study supports earlier literature suggesting no significant clinical benefit of using liposomal bupivacaine over standard of care in TKA and underscores cost-of-care concerns with this agent.

# Conclusion – Example

Our study supports earlier literature suggesting no significant clinical benefit of using liposomal bupivacaine over standard of care in TKA and underscores cost-of-care concerns with this agent.

# References and Recommended Readings


Dupree, LH, Casapao, AM. Research and scholarly methods: Writing abstracts. *J Am Coll Clin Pharm*. 2023; 1-10. doi:10.1002/jac5.1822

American College of Clinical Pharmacy – Abstract Guide https://www.accp.com/meetings/abstractguide.aspx

Scientific Writing Workshop – Getting the most of your 300 words: enhancing abstract submissions. ACCP Annual Mtg Oct 2017

Author Development Series, Pt1. ACCP Annual Mtg Oct 2019

ASHP Poster Abstract Resources

https://midyear.ashp.org/-/media/midyear-conference/docs/2019/MCM19ResidentFellowsPosterSubmissionInstructions.ashx?la=en&hash=1647EE52EC7D9544CCE0B4289AFCB5146295D0F1

https://midyear.ashp.org/Posters/Residents-and-Fellows

ACS Webinar on Active vs. Passive Voice https://www.acs.org/content/dam/acsorg/events/professional-development/Slides/2015-04-09-active-passive.pdf

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For questions regarding Pharmacy CE, contact Jamie.Summerlin@OhioHealth.com