Pharmacy Research - Sample Timeline

ASHP Resources: Essentials of Practice-Based Research for Pharmacists and Tips for New Investigators

- Identify research topic
- Identify advisor
- Review ideas with faculty, director, or preceptors
- Develop research question
- CITI/NIH training with co-investigators
- Conduct literature search
- Decide on a hypothesis that is well focused and testable (if applicable)
- Define specific aims
- Test research question/aims with study team
- Identify study design
- Submit abstract for a meeting (if presenting)
- Review IRB requirements
- Formulate a statistical analysis plan
- Develop project plan including methods
- Begin grant preparation (if applicable)
- Follow-up with advisor on research progress
- Follow-up on any IRB issues
- Submit grant (if applicable)
- Present poster at a meeting (if applicable)
- Data collection/entry
- Prepare data for analysis and analyze data
- Prepare abstract for a final presentation
- Discuss preliminary results with study team
- Write manuscript
- Follow-up with advisor on research progress
- Data collection/entry
- Write manuscript
- Data collection/entry
- Practice final presentation with study team
- Write manuscript
- Submit final IRB report (if applicable)
- Practice poster presentation for an ASHP meeting (if applicable)
- Finalize study logistics
- Meet with advisor to discuss data collection process
- Test data collection form after IRB approval has been obtained
- Practice poster presentation for an ASHP meeting (if applicable)
- Format database and discuss with advisor
- Revise project plan and submit for IRB review
- Obtain departmental support
- Plan study logistics
- Determine data sources
- Develop data collection form (paper or electronic)
- Prepare a final presentation
- Meet with advisor to discuss data collection process
- Data collection/entry
- Write manuscript
- Give final presentation
Timeline Checklist

- Identify research topic
- Identify advisor
- Review research ideas with faculty, director, or preceptors
- Develop research question
- CITI/NIH training with co-investigators

Month 1

Take-Home Points

- Select the best question for research
  - Ensure the question will allow you to generate conclusions based on an analysis of evidence rather than individual attitudes or beliefs
  - Examine
    - Size – magnitude of the effect that can be produced by an intervention
    - Scope – extent to which existing activities could be affected
    - Scalability – potential for expansion to a substantial outcome
    - Sustainability – potential for long-term support

- Ensure that you have an adequate patient population
  - Large enough to answer the question
  - Focused enough to exclude confounders

- ASHP Resource
  - Essentials of Practice-Based Research for Pharmacists
    - “Components of a Resident Research Plan – Part 1”
    - “Components of a Resident Research Plan – Part 2”
    - “Identifying Contemporary, Relevant and Practical Research Questions”
    - “Project Management for Residency Projects”
Month 1 cont’d

Timeline Checklist

- Conduct literature search
- Decide on a hypothesis that is well focused and testable (if applicable - research projects do not always test a hypothesis)
- Define specific aims
- Test research question/aims with study team
- Identify study design

Take-Home Points

- Review biomedical literature
  - Begin with secondary literature review – MEDLINE, EMBASE, IPA, CINAHL, CDSR, DARE
  - Confirm the need for investigation
  - Learn from the mistakes of others

- Turn the research question into a testable hypothesis (if applicable - research projects do not always test a hypothesis)
  - Specify the relationship between two or more variables
  - Acknowledge the assumptions associated with the hypotheses
  - Precisely describe how the variables will be measured

- Write one or two specific aims
  - Pick an achievable objective with clear endpoints
  - Start planning your strategy by sketching out methods you could do to accomplish each aim

- Study design
  - Keep in mind that a descriptive or observational study design may be more appropriate
  - ASHP Resource: Essentials of Practice-Based Research for Pharmacists
    - “Study Design and Sample Selection”

- Avoid bias
  - Be mindful of
    - Factors that relate to the exposure of patients to treatments in the population
    - Factors that influence inclusion of patients in the study
    - Factors related to assessment and measurement
  - Apply methods to address bias in design and analysis
Month 2

Timeline Checklist

- Identify institutional partners
- Submit abstract for an ASHP meeting (if presenting)
- Review IRB requirements
- Formulate a statistical analysis plan (see institutional resources available)
- Develop project plan including methods
- Begin grant preparation (if applicable - not all research projects are eligible)

Take-Home Points

- Implementing interventions in pharmacy practice-based research\(^5\)
  - Consider applying the RE-AIM model

- Measurement instruments\(^6\)
  - Consider reliability, validity, and responsiveness
  - Try selecting an instrument that already exists

- IRB Review
  - Incorporate IRB processes early in your timeline
  - Submit a clear and detailed plan for the research
  - The ASHP Foundation requires evidence of IRB approval before funding research projects

- ASHP Foundation Research Grant Programs
  - Master’s Resident Practice-Based Research Grant
  - New Investigator Research Grant
  - Practice Advancement Demonstration Grant
  - Pharmacy Resident Practice-Based Research Grant
  - Research Boot Camp

- Grant preparation
  - Plan more than enough time
  - Ensure that you review your institution’s grant requirements
Month 3

Timeline Checklist

- Obtain departmental support
- Plan study logistics
- Determine data sources
- Develop data collection form (paper or electronic)
- Format database and discuss with advisor
- Revise project plan and submit for IRB review

Take-Home Points

- Determine the impact of your research on different departments within the institution
  - Multidisciplinary involvement may be very helpful
- Important questions to consider
  - Will you need to educate other departments regarding the protocol?
  - Do other departments require review by their departmental research committee prior to IRB submission?
  - If medical records review is involved, have all HIPAA implications been addressed?
- Grant Submission
  - Organization is critical as the quality of the grant will have a major impact on funding decisions
  - Pay close attention to application instructions
  - Submit your application to the grants administration office in advance of submission to the funding agency.
- Data Sources
  - Retrospective data is usually easier to collect
  - Ensure that you have adequate data to address your research question
  - Internal data sources: medical records, adverse event reports, prescription claims data, purchasing data
  - External data sources: public and proprietary data sets
- Data Collection
  - Collection form and methods should be tested beforehand
  - Collect more data rather than less
  - Establish data entry and display processes to facilitate analysis
- ASHP Resources
  - Essentials of Practice-Based Research for Pharmacists
    - “Data Acquisition and Data Cleaning”
    - “Data Management – Part 1”
    - “Data Management - Part 2”
Month 4

Timeline Checklist

☐ Follow-up with advisor on research progress

☐ Follow-up on any IRB issues

☐ Submit grant (if applicable – not all research projects are eligible)

Month 5

Timeline Checklist

☐ Finalize study logistics

☐ Meet with advisor to discuss data collection process

☐ Test data collection form after IRB approval has been obtained

☐ Practice poster presentation for an ASHP meeting (if applicable)

Month 6

Timeline Checklist

☐ Present poster at a meeting (if applicable)

☐ Data collection/entry

Month 7

Timeline Checklist

☐ Follow-up with advisor on research progress

☐ Data collection/entry
Month 8

Timeline Checklist

☐ Prepare data for analysis and analyze data
☐ Prepare abstract for a final presentation
☐ Discuss preliminary results with study team

Take-Home Points

- Incorporate adequate time for revision of the abstract
- Seek out review from advisors who were not involved in the research
- ASHP Resources
  - Essentials of Practice-Based Research for Pharmacists
    - “Data Analysis – Part 1”
    - “Data Analysis – Part 2”

Month 9

Timeline Checklist

☐ Prepare a final presentation
☐ Practice final presentation with study team

Take-Home Points

- Concisely present your research findings in 10-15 minutes
- Consider using flow diagrams to describe methods
- Avoid busy tables or slides that are difficult to read
- Take time to discuss study limitations
- Consider the importance of stance, voice, and eye contact
Month 10

Timeline Checklist

☐ Write manuscript

☐ Give final presentation

Take-Home Points

➤ Focus on the title, abstract, tables, and figures
➤ Adopt a standard framework to make it easier to read
➤ Take time to revise and incorporate feedback
➤ Adhere closely to the journal’s instructions
➤ ASHP Resources
  o Essentials of Practice-Based Research for Pharmacists
    ▪ “How to Effectively Present Your Residency Research Project Results”
    ▪ “Anatomy of the Research Article and the Peer Review Process”
    ▪ “Putting It All Together: An Example of a Residency Research Project”

Month 11

Timeline Checklist

☐ Write manuscript

Month 12

Timeline Checklist

☐ Submit final IRB report (if applicable – report submission is not always required)

☐ Edit and submit manuscript
References