Pharmacy Research Timeline*

Month 1

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

Month 1 cont'd

- 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

Month 2

- Identify institutional partners
- 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)

Month 3

- 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

Month 4

- Follow-up with advisor on research progress
- Follow-up on any IRB issues
- Submit grant (if applicable)

Month 5

- 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

- Present poster at a meeting (if applicable)
- Data collection/entry

Month 7

- Follow-up with advisor on research progress
- Data collection/entry

Month 8

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

Month 9

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

Month 10

- Write manuscript
- Give final presentation

Month 11

- Write manuscript

Month 12

- Submit final IRB report (if applicable)
- Edit and submit manuscript

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*Sample timeline – the components will need to be adjusted based on the specific research that will be conducted.

Month 1

Timeline Checklist

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

Take-Home Points

- Select the best question for research[1]
  - 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

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[2]
  - 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[3] (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

- Avoid bias[4]
  - 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 Residency Practice-Based Research Grant
  - New Investigator Research Grant
  - Practice Advancement Demonstration Grants
  - 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

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

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

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

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5. Planas LG. Intervention design, implementation, and evaluation. *Am J Health-Syst Pharm*. 2008; 65:1854-63.
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