**ACCP Research Affairs Committee (2016-2017)**

Charge: Develop a web-based resource guide of programs and services that promote the development of clinical pharmacists’ research, scholarship, and scientific/professional writing skills.

**American College of Clinical Pharmacy (ACCP) Research Resources**

* ACCP Research and Scholarship Certificate Program: educational program aimed at developing basic clinical research and scholarly abilities. <https://www.accp.com/academy/researchAndScholarship.aspx>
* ACCP Mentored Research Investigator Training (MeRIT) Program: a 2-year longitudinal program that utilizes a combination of live and virtual teaching and mentoring methods to provide trainees with the support and education they need throughout the entire research experience (i.e., from idea to publication), either independently as a principal investigator or as an active co-investigator within a research team. <https://www.accpfoundation.org/merit/>
* ACCP Focused Investigator Training (FIT) Program: an intensive 5-day hands-on program for experienced pharmacist investigators looking to maximize their chances of success in the current research funding environment. The FIT Program focuses on Career Development Awards (K Series) and Research Grants (R Series), or similar investigator-initiated applications for submission to the National Institutes of Health (NIH) or other major funding source. <https://www.accpfoundation.org/fit/>
* ACCP Research Institute Futures Grants: mentored developmental awards designed to provide support for the development of research skills among students, trainees, and early-career ACCP members with a goal of establishing sustained interest and careers in clinical pharmacy research. <https://www.accpfoundation.org/futures/>
* ACCP Meeting Abstracts: generally two annual calls for abstracts to be considered for presentation during ACCP national forums and publication in its official journal. <https://www.accp.com/meetings/abstracts.aspx>
* ACCP Practice-Based Research Network (PBRN): network of over 1,000 clinical pharmacists practicing in over 500 distinct practice settings. The mission of the PBRN is to drive collaborative practice-based clinical pharmacy research that advances health care. <https://www.accpfoundation.org/pbrn/>

**Research Resource Guide**

**1. Overview of Different Types of Research**

a. Quantitative Research (e.g., clinical science, basic science)

* Resources Available through American College of Clinical Pharmacy (ACCP):
	+ Book: Hulley SB, Cummings SR (2013). Designing Clinical Research. Fourth edition. Lippincott Williams & Wilkins. Available at: <https://www.accp.com/store/>
	+ Book: Friedman LM, Furberg CD, DeMets D, Reboussin DM, Granger CB (2015). Fundamentals of Clinical Trials. Fifth edition. Springer International Publishing. Available at: <https://www.accp.com/store/>
* Articles:
	+ Hartung DM, Touchette DR. An overview of clinical research design. Am J Health-Syst Pharm. 2009; 66:398-408. PMID: 19202050. <http://www.ashpfoundation.org/FundamentalsHartungArticle>
* Books:
	+ Supino PG, Borer JS (2012). Principles of Research Methodology – A Guide for Clinical Investigators. Springer-Verlag New York.
* Web Resources:
	+ American Society of Health-System Pharmacists (ASHP) Guidelines on Clinical Drug Research: <https://www.ashp.org/-/media/assets/policy-guidelines/docs/guidelines-clinical-drug-research.ashx?la=en>
	+ Clinical Trial Basics (free online courses): <https://forteresearch.com/news/free-online-courses-learning-clinical-trial-basics/>
	+ Conducting your Pharmacy Practice Research Project. Chapter 5: A Scientific Approach to Your Research. [http://www.pharmpress.com/files/docs/PharmacyPracticeResearchProject\_SampleChapter(1).pdf](http://www.pharmpress.com/files/docs/PharmacyPracticeResearchProject_SampleChapter%281%29.pdf)
	+ University of Southern California (USC) Libraries Research Guide: <http://libguides.usc.edu/writingguide/quantitative>

b. Practice-Based Research

* Articles:
	+ Goode JV, Mott DA, Chater R. Collaborations to facilitate success of community pharmacy practice-based research networks. J Am Pharm Assoc (2003). 2008; 48(2):153-62. PMID: 18359728.
	+ Lipowski EE. Pharmacy practice-based research networks: why, what, who, and how. J Am Pharm Assoc (2003). 2008; 48(2):142-52. PMID: 18359727.
	+ Koshy S. Pharmacy practice-based research networks: do pharmacists need them? Int J Pharm Pract. 2014; 22(6):433-6. PMID: 24612158.
	+ Bauer SR, Abraham PE, Barletta JF, et al. Development of the Critical Care Pharmacotherapy Trials Network. Am J Health Syst Pharm. 2017; 74(5):287-293. PMID: 28213493.
* Web Resources:
	+ Agency for Healthcare Research and Quality (AHRQ) Essential Practice-Based Research Network Literature: <https://pbrn.ahrq.gov/tools-and-resources/essential-pbrn-literature>
	+ Agency for Healthcare Research and Quality (AHRQ) Practice-Based Research Network Directory: <https://pbrn.ahrq.gov/pbrn-registry>
	+ Agency for Healthcare Research and Quality (AHRQ) Practice-Based Research Networks and Primary Care: <https://www.youtube.com/playlist?list=PLD0G0A0-yGgnxASlpAM_F6H9nj3LvNpi3>
	+ Agency for Healthcare Research and Quality (AHRQ) Practice-Based Research Network Tools and Resources: <https://pbrn.ahrq.gov/tools-and-resources>
	+ American Society of Health-System Pharmacists (ASHP) Essentials of Practice-Based Research for Pharmacists: <http://elearning.ashp.org/products/5427/essentials-of-practice-based-research-for-pharmacists-not-for-ce>
	+ Research Toolkit (building collaborations, developing proposals, starting up a study, conducting and managing projects, disseminating and closing research, research with Hispanic and indigenous populations): <http://www.researchtoolkit.org/>

c. Qualitative Research (e.g., patient-reported outcomes, focus groups, interviews)

* Resources Available through American College of Clinical Pharmacy (ACCP):
	+ - * Book: Aday LA, Cornelius LJ (2006). Designing and Conducting Health Surveys. Third edition. Jossey-Bass. Available at: <https://www.accp.com/store/>
			* Book: Fink A (2015): How to Conduct Surveys: A Step-by-Step Guide. Sixth edition. SAGE Publications. Available at: <https://www.accp.com/store/>
* Articles:
	+ - * Curry LA, Nembhard IM, Bradley EH. Qualitative and mixed methods research. Circulation. 2009; 119:1442-1452. PMID: 19289649. <http://circ.ahajournals.org/content/119/10/1442.long>
			* Schneeweiss S, Seeger JD, Smith SR. Methods for developing and analyzing clinically rich data for patient-centered outcomes research: an overview. Pharmacoepidemiol Drug Saf. 2012;21 Suppl 2:1-5. PMID: 22552973.
			* Gabriel SE, Normand SL. Getting the methods right—the foundation of patient-centered outcomes research. N Engl J Med. 2012; 367(9):787-90. PMID: 22830434.
* Web Resources:
	+ - * How to Conduct a Focus Group: <https://assessment.trinity.duke.edu/documents/How_to_Conduct_a_Focus_Group.pdf>
			* Patient-Centered Outcomes Research Institute (PCORI) Methodology Standards: <http://www.pcori.org/research-results/research-methodology/pcori-methodology-standards>
			* Patient-Centered Outcomes Research Institute (PCORI) Methodology Standards Academic Curriculum: [http://www.pcori.org/research-results/research-methodology/methodology-standards-academic-curriculum\](http://www.pcori.org/research-results/research-methodology/methodology-standards-academic-curriculum%5C)
			* Research Methods Knowledge Base – Survey Research: <https://www.socialresearchmethods.net/kb/survey.php>
			* Robert Wood Johnson Foundation - Using Qualitative Methods in Healthcare Research: A Comprehensive Guide for Designing, Writing, Reviewing and Reporting Qualitative Research. <http://www.qualres.org/index.html>

d. Health Services Research (e.g., outcomes research, cost-effectiveness research, database research)

* Resources Available through American College of Clinical Pharmacy (ACCP):
	+ - * Book: Grauer DW, Lee J, Odom TD, et al., eds. Pharmacoeconomics and Outcomes: Applications for Patient Care. Second Edition. American College of Clinical Pharmacy. Available at: <https://www.accp.com/store/>
* Articles:
	+ - * Motheral B, Brooks J, Clark MA, et al. A checklist for retrospective database studies – Report of the International Society for Pharmacoeconomics and Outcomes Research (ISPOR) Task Force on Retrospective Databases. Value Health. 2003; 6:90-7. PMID: 12641858.
			* Schumock GT, Pickard AS. Comparative effectiveness research: Relevance and applications to pharmacy. Am J Health Syst Pharm. 2009; 66(14):1278-86. PMID: 19574602.
			* Concato J, Lawler EV, Lew RA, et al. Observational methods in comparative effectiveness research. Am J Med. 2010; 123(12 Suppl 1):e16-23. PMID: 21184862.
			* Smith AK, Ayanian JZ, Covinsky KE, et al. Conducting high-value secondary dataset analysis: an introductory guide and resources. J Gen Intern Med. 2011; 26(8):920-9. PMID: 21301985.
			* Sanders GD, Neumann PJ, Basu A, et al. Recommendations for Conduct, Methodological Practices, and Reporting of Cost-effectiveness Analyses: Second Panel on Cost-Effectiveness in Health and Medicine. JAMA. 2016; 316(10):1093-1103. PMID: 27623463.
* Web Resources:
	+ - * International Society for Pharmacoeconomics and Outcomes Research (ISPOR): <https://www.ispor.org/>
			* Introduction to Big Data: <https://www.coursera.org/learn/big-data-introduction>
			* Methods Guide for Effectiveness and Comparative Effectiveness Reviews. AHRQ Publication No. 10(14)-EHC063-EF. Rockville, MD: Agency for Healthcare Research and Quality. January 2014. <https://www.effectivehealthcare.ahrq.gov/ehc/products/60/318/CER-Methods-Guide-140109.pdf>
			* STrengthening the Reporting of OBservational studies in Epidemiology (STROBE) Statement: <https://www.strobe-statement.org/index.php?id=strobe-home>

e. Implementation Science and Implementation Research

* Articles:
	+ Damschroder LJ, Aron DC, Keith RE, et al. Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. Implement Sci. 2009; 4:50. PMID: 19664226.
	+ Peters DH, Adam T, Alonge O, et al. Implementation research: what it is and how to do it. BMJ. 2013; 347:f6753. PMID: 24259324.
	+ Bauer MS, Damschroder L, Hagedorn H, et al. An introduction to implementation science for the non-specialist. BMC Psychol. 2015; 3:32. PMID: 26376626.
* Web Resources:
	+ Consolidated Framework for Implementation Research: <http://cfirguide.org/index.html>
	+ Dissemination & Implementation Models in Health Research and Practice. <http://www.dissemination-implementation.org/>
	+ The MEASURE Evaluation Implementation Research Technical Working Group: Fundamentals of Implementation Research (2012). <https://www.measureevaluation.org/resources/publications/ms-12-55>
	+ National Implementation Research Network (NIRN) Active Implementation Hub: Free, online, interactive modules, lessons, and resource library to understand and utilize implementation science. <http://implementation.fpg.unc.edu/?o=nirn>
	+ National Implementation Research Network (NIRN): <http://nirn.fpg.unc.edu/learn-implementation>
	+ National Institutes of Health (NIH) Dissemination and Implementation Science Resource Website. <https://www.nlm.nih.gov/hsrinfo/implementation_science.html>
	+ World Health Organization (WHO) – Implementation Research Toolkit. <http://www.who.int/tdr/publications/topics/ir-toolkit/en/>

f. Quality Improvement Research (e.g., MUEs, chart reviews)

* Articles:
	+ Phillips MS, Gayman JE, Todd MW. ASHP guidelines on medication-use evaluation. American Society of Health-system Pharmacists. Am J Health Syst Pharm. 1996; 53(16):1953-5. PMID: 8862210.
	+ Vassar M, Holzmann M. The retrospective chart review: important methodological considerations. J Educ Eval Health Prof. 2013; 10:12. PMID: 24324853. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3853868/pdf/jeehp-10-12.pdf>
* Web Resources:
	+ Academy of Managed Care Pharmacy (AMCP): Drug Utilization Review. 2013. Primer for conducting a DUR. <http://www.amcp.org/WorkArea/DownloadAsset.aspx?id=9296>
	+ American Society of Health-System Pharmacists (ASHP): The Pharmacist’s Role in Quality Improvement. <http://www.ashp.org/DocLibrary/Policy/QII/RoleinQI.aspx>
	+ Columbia University: Best Practices for Creating a Chart Review Form for Retrospective Analysis. 2012. <http://www.columbia.edu/cu/compliance/pdfs/Creating_CRF_V7.pdf>
	+ Force RW (presentation). Quality Improvement: A Primer for Pharmacy. <http://www.alaskapharmacy.org/files/2016_Conv_Slides/Slides_Quality_Improvement.pdf>
	+ Institute for Healthcare Improvement (IHI). Resources: <http://www.ihi.org/resources/Pages/default.aspx>
	+ Institute for Healthcare Improvement (IHI). Training Programs and Online Courses: <http://www.ihi.org/education/Pages/default.aspx>
	+ National Learning Consortium (NLC) Continuous Quality Improvement (CQI) Strategies to Optimize your Practice – Primer. <https://www.healthit.gov/sites/default/files/tools/nlc_continuousqualityimprovementprimer.pdf>
	+ Northwestern University: Chart Review Guidance and Instructions: <http://globalhealth.northwestern.edu/docs/IHF-Chart-Review-Guidance-Templates.pdf>
	+ World Health Organization (WHO) Guide for Drug Use Evaluations. Step-by-Step Guide for the Process of Conducting a DUE. <http://apps.who.int/medicinedocs/en/d/Js4882e/8.5.html>

g. Systematic Reviews and/or Meta-Analyses

* Articles:
	+ - * Khan KS, Kunz R, Kleijnen J, Antes G. Five steps to conducting a systematic review. J R Soc Med. 2003; 96(3):118-21. PMID: 12612111.
			* Engberg S. Systematic reviews and meta-analysis: studies of studies. J Wound Ostomy Continence Nurs. 2008; 35(3):258-65. PMID: 18496080.
			* Uman LS. Systematic reviews and meta-analyses. J Can Acad Child Adolesc Psychiatry. 2011; 20(1):57-9. PMID: 21286370.
			* Impellizzeri FM, Bizzini M. Systematic review and meta-analysis: a primer. Int J Sports Phys Ther. 2012; 7(5):493-503. PMID: 23091781.
			* Moher D, Shamseer L, Clarke M, et al. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. Syst Rev. 2015; 4:1. PMID: 25554246.
* Web Resources:
	+ - * The Cochrane Handbook – How to Conduct Systematic Reviews, Meta-Analyses, and Evaluate the Quality of Individual Studies: <http://www.cochrane.org/editorial-and-publishing-policy-resource/cochrane-handbook-systematic-reviews-interventions>
			* Introduction to Systematic Review and Meta-Analysis: <https://www.coursera.org/learn/systematic-review>
			* Systematic Reviews and Meta-Analyses: A Step-by-Step Guide: <http://www.ccace.ed.ac.uk/research/software-resources/systematic-reviews-and-meta-analyses>

h. Case Reports or Case Series

* Articles:
	+ Kooistra B, Dijkman B, Einhorn TA, et al. How to design a good case series. J Bone Joint Surg Am. 2009; 91 Suppl 3:21-6. PMID: 19411496.
	+ Rison RA. A guide to writing case reports for *the Journal of Medical Case Reports and BioMed Central Research Notes*. J Med Case Rep. 2013; 7:239. PMID: 24283456.

<http://jmedicalcasereports.biomedcentral.com/articles/10.1186/1752-1947-7-239>

* + Sun Z. Tips for writing a case report for the novice author. J Med Radiat Sci. 2013; 60(3):108-13. PMID: 26229618. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4175810/pdf/jmrs0060-0108.pdf>

**2. Evaluating the Published Literature**

a. Conducting a Literature Search

* Articles:
* Smith KM. Building upon existing evidence to shape future research endeavors. Am J Health Syst Pharm. 2008; 65:1767-1774. PMID: 18769006. <http://www.ashpfoundation.org/FundamentalsSmithArticle>
* Ecker ED, Skelly AC. Conducting a winning literature search. Evid Based Spine Care J. 2010; 1(1):9-14. PMID: 23544018. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3609008/>
* Web Resources:
	+ How to Do (or Not To Do) a Critical Literature Review: <http://publications.aston.ac.uk/3431/1/Jesson_and_lacey2006.pdf>
	+ How to Use the Cochrane Library: <http://www.cochranelibrary.com/help/how-to-use-cochrane-library.html>
	+ The Literature Search Process: <http://www.library.sath.nhs.uk/wp-content/uploads/2013/09/researchguidance.pdf>
	+ Medical Subject Headings Tutorial: <https://www.nlm.nih.gov/bsd/disted/meshtutorial/introduction/index.html>
	+ PubMed Tutorial: <https://www.nlm.nih.gov/bsd/disted/pubmedtutorial/cover.html>

b. Preparing a Literature Review

* Web Resources:
	+ How to Write an Evidence-Based Clinical Review Article: <http://www.aafp.org/afp/2002/0115/p251.pdf>
	+ Types of Literature Reviews and Methodologies: <http://onlinelibrary.wiley.com/doi/10.1111/j.1471-1842.2009.00848.x/pdf>

c. Resources to Aid in Literature Evaluation

• Resources Available through American College of Clinical Pharmacy (ACCP):

* Book: Gehlbach SH (2006). Interpreting the Medical Literature. Fifth edition. McGraw-Hill. Available at: <https://www.accp.com/store/>
* Book: Aparasu RR, Bentley JP (2014). Principles of Research Design and Drug Literature Evaluation. Jones & Bartlett Learning. Available at: <https://www.accp.com/store/>
* Book: Guyatt G, Rennie D, Meade MO, Cook DJ (2015). Users’ Guides to the Medical Literature: A Manual for Evidence-Based Clinical Practice. American Medical Association: McGraw-Hill Education. Available at: <https://www.accp.com/store/>
* Articles:
* Cuddy PG, Elenbaas RM, Elenbaas JK. Evaluating the medical literature. Part I: Abstract, introduction, methods. Ann Emerg Med. 1983; 12(9):549-55. PMID: 6614609.
* Elenbaas RM, Elenbaas JK, Cuddy PG. Evaluating the medical literature. Part II: Statistical analysis. Ann Emerg Med. 1983; 12(10):610-20. PMID: 6625262.
* Elenbaas JK, Cuddy PG, Elenbaas RM. Evaluating the medical literature, Part III: Results and discussion. Ann Emerg Med. 1983; 12(11):679-86. . PMID: 6356998.
* Miser WF. Critical appraisal of the literature. J Am Board Fam Pract. 1999; 12(4):315-333. PMID: 10477196.

**3. Developing an Original Research Idea**

a. Generating Feasible Research Ideas (e.g., clinical controversies, unanswered clinical questions)

* Resources Available through American College of Clinical Pharmacy (ACCP):
	+ Book: Hulley SB, Cummings SR (2013). Designing Clinical Research. Fourth edition. Lippincott Williams & Wilkins. Chapter 2: Conceiving the Research Question and Developing the Study Plan. Available at: <https://www.accp.com/store/>
	+ Book: Friedman LM, Furberg CD, DeMets D, Reboussin DM, Granger CB (2015). Fundamentals of Clinical Trials. Fifth edition. Springer International Publishing. Chapter 3: What is the Question? Available at: <https://www.accp.com/store/>
* Articles:
	+ Tully MP. Research: Articulating questions, generating hypotheses and choosing study designs. Can J Hosp Pharm 2014; 67:31-34. PMID: 24634524. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3952905/>
	+ Cole Z. Strategies for developing purpose in your research. Association of Psychological Sciences. Observer 2015; 28 (5). <http://goo.gl/DZctkb>
* Books:
	+ Foster J, Corby L. How to get ideas (2001). Berrett-Koehler Publishers, Inc.
	+ Supino PG, Borer JS (2012). Principles of Research Methodology – A Guide for Clinical Investigators. Springer-Verlag New York. Chapter 2: Developing a Research Problem.

b. Formulating Research Questions, Specific Aims, and Hypotheses

* Articles:
	+ Lipowski EE. Developing great research questions. Am J Health Syst Pharm. 2008; 65:1667-1670. PMID: 18714115. <http://www.ashpfoundation.org/FundamentalsResearchQuestions>
	+ Weber RJ, Cobaugh DJ. Developing and executing an effective research plan. Am J Health Syst Pharm. 2008; 65:2058-2065. PMID: 18945867. <http://www.ashpfoundation.org/FundamentalsEffectiveResearchPlan>
* Web Resources:
	+ American Society of Health-System Pharmacists (ASHP) Foundation Residency Research Tips: <http://www.ashpfoundation.org/ResearchTips>
	+ Evidence-Based Practice: <http://guides.mclibrary.duke.edu/ebm/home>

c. Items to Consider Before Starting a Study:

* + 1. Choosing a Mentor
* Resources Available through American College of Clinical Pharmacy (ACCP):
	+ American College of Clinical Pharmacy (ACCP) - Access a Mentor: <https://www.accp.com/resfel/mentor.aspx>
* Articles:
	+ Detsky AS, Baerlocher MO. Academic mentoring--how to give it and how to get it. JAMA. 2007; 297(19):2134-6. PMID: 17507350.
	+ White SJ, Tryon JE. How to find and succeed as a mentor. Am J Health Syst Pharm. 2007; 64:1258-9. PMID: 17563045.
	+ Zerzan JT, Hess R, Schur E, et al. Making the most of mentors: a guide for mentees. Acad Med. 2009; 84(1):140-4. PMID: 19116494.
	+ Chopra V, Edelson DP, Saint S. Mentorship malpractice. JAMA. 2016; 315(14):1453-4. PMID: 27115263.
* Web Resources:
	+ How to Find Your Pharmacy Mentor: <http://www.pharmacyschoolhq.org/find-pharmacy-mentor/>
	+ Introduction to Mentoring: A Guide for Mentors and Mentees: <http://www.apa.org/education/grad/mentoring.aspx>
	+ Questions to Ask Before Choosing a Mentor: <https://www.insidehighered.com/advice/2017/03/13/questions-ask-when-selecting-mentor-and-trying-nurture-mentoring-relationship>
	+ Roadmap to Finding a Mentor: <https://www.pharmacist.com/roadmap-finding-mentor>
		1. Building a Research Team and Promoting Collaboration
* Articles:
	+ Lakhani J, Benzies K, Hayden KA. Attributes of interdisciplinary research teams: a comprehensive review of the literature. Clin Invest Med. 2012; 35(5):E260-E265. PMID: 23043705.
* Web Resources:
	+ Bennett LM, Gadlin H, Levine-Finley S. Collaboration & Team Science: A Field Guide. National Institutes of Health, 2010. <https://ccrod.cancer.gov/confluence/download/attachments/47284665/teamscience_fieldguide.pdf>
	+ Team Science Toolkit: <https://www.teamsciencetoolkit.cancer.gov/Public/Home.aspx>

* + 1. Integrating and Mentoring Students and Residents in Your Research
* Articles:
	+ Sambunjak D, Marasic A. Mentoring: What’s in a name? JAMA. 2009; 302(23):2591-2592. PMID: 20009061.
	+ Kichler K, Kozol R, Buicko J, et al. A structured step-by-step program to increase scholarly activity. J Surg Educ. 2014; 71(6):e19-21. PMID: 25241156.
	+ Deal EN, Stranges PM, Maxwell WD, et al. The importance of research and scholarly activity in pharmacy training. Pharmacotherapy. 2016; 36(12):e200-e205. PMID: 27885711.
* Books:
	+ Book: HJ Humphrey (2010). Mentoring in Academic Medicine. American College of Physicians. <https://store.acponline.org/ebizatpro/Default.aspx?TabID=251&productId=17195>
* Web Resources:
	+ Be a Coach not a Guru: <https://www.insidehighered.com/advice/2013/07/29/essay-coaching-style-mentoring>
	+ Toolkit for Effective Research Project Mentoring. <http://www.ucdenver.edu/research/CCTSI/education-training/Documents/Mentoring%20Toolkit.pdf>
		1. Formulating a Realistic Research Timeline
	+ Web Resources:
		- Conducting a Successful Residency Research Project: <http://www.ajpe.org/doi/pdf/10.5688/aj720492>
		- Planning the Methodology – Timeline: <https://www.bcps.org/offices/lis/researchcourse/develop_writing_methodology_timeline.html>
		1. Negotiating with Administrators/Institution for Research Time
* Web Resources:
	+ Hilaire ML (Presentation, 2012). A Practitioner’s Guide to a Winning Career in Patient Care, Teaching, and Scholarship. <http://www.aacp.org/career/grants/Documents/Hillaire%20Slides%20MCM%202012.pdf>
	+ Individual Development Plan: <http://govleaders.org/idp.htm>
	+ Jorgenson J (Presentation). Effective Pharmacy Interactions with the C-Suite. <http://asp.pharmacyonesource.com/images/sentri7/PharmCSuite.pdf>
	+ Personal Development Plan: <http://www.mindofwinner.com/create-personal-development-plan/>
	+ Webinar: Difficult Conversations. <https://leanin.org/education/managing-difficult-conversations/>
	+ Webinar: Negotiation. <https://leanin.org/education/negotiation/>
		1. Investigating Avenues for Funding (e.g., practice grants, institutional grants)
* Resources Available through American College of Clinical Pharmacy (ACCP):
	+ American College of Clinical Pharmacy (ACCP) Research Institute: [http://www.accpfoundation.org/index.aspx](http://www.accpri.org/index.aspx)
	+ Book: Reif-Lehrer L (2005). Grant Application Writer's Handbook. Fourth Edition. Jones & Bartlett Learning. Available at: <https://www.accp.com/store/>
* Articles:
	+ Devine EB. The art of obtaining grants. Am J Health Syst Pharm. 2009; 66(6):580-7. PMID: 19265188. <http://www.ashpfoundation.org/FundamentalsDevineArticle>
* Web Resources:
	+ American Association of Colleges of Pharmacy (AACP), Compilation of Research Funding Opportunities: <http://www.aacp.org/resources/research/Pages/ResearchFundingOpportunities.aspx>
	+ American Society of Health-System Pharmacists (ASHP) Foundation, Research Grant Opportunities: <http://www.ashpfoundation.org/MainMenuCategories/ResearchResourceCenter/FundingOpportunities>
	+ National Institutes of Health (NIH) – Type of Grant Programs: <https://grants.nih.gov/grants/funding/funding_program.htm>
	+ Where to Search for Funding: <http://www.sciencemag.org/careers/where-search-funding>
		1. Managing Your Time
* Web Resources:
	+ Making the Right Moves A Practical Guide to Scientifıc Management for Postdocs and New Faculty: <https://www.hhmi.org/sites/default/files/Educational%20Materials/Lab%20Management/Making%20the%20Right%20Moves/moves2_ch6.pdf>
	+ Webinar – Time Management for Authors and Researchers: <https://www.brighttalk.com/webcast/11201/130509>

**4. Turning a Research Idea into a Research Study**

a. Writing Your Research Protocol

1. Selecting an Appropriate Study Design
* Resources Available through American College of Clinical Pharmacy (ACCP):
	+ Book: Hulley SB, Cummings SR (2013). Designing Clinical Research. Fourth edition. Lippincott Williams & Wilkins. Available at: <https://www.accp.com/store/>
* Web Resources:
	+ American Society of Health-System Pharmacists (ASHP) Research Bootcamp – Overview of Study Designs used for Clinical Research (webinar): <http://www.ashpmedia.org/Foundation/BootCamp/study1/study-design-1.html>
	+ American Society of Health-System Pharmacists (ASHP) Research Bootcamp – Cohort and Case-Control Studies (webinar): <http://www.ashpmedia.org/Foundation/BootCamp/study2/study-design-2.html>
	+ American Society of Health-System Pharmacists (ASHP) Research Bootcamp – Randomized Control Trial (webinar): <http://www.ashpmedia.org/Foundation/BootCamp/study3/study-design-3.html>
	+ American Society of Health-System Pharmacists (ASHP) Research Bootcamp – Writing a Research Plan Introduction (webinar): <http://www.ashpmedia.org/Foundation/BootCamp/Writing%20a%20Research%20Plan/Writing%20a%20Research%20Plan.html>
	+ Selecting a Study Design: <http://home.cc.gatech.edu/cmgardne/uploads/58/Research%20Methods%20and%20Designs.docx.pdf>
	+ Types of Study Designs: <http://research.library.gsu.edu/c.php?g=115595&p=755213>
1. Selecting Appropriate Study Methodology and Outcomes
* Resources Available through American College of Clinical Pharmacy (ACCP):
	+ - * + Book: Guyatt G, Rennie D, Meade MO, Cook DJ (2015). Users’ Guides to the Medical Literature: A Manual for Evidence-Based Clinical Practice. American Medical Association: McGraw-Hill Education. Available at: <https://www.accp.com/store/>
* Articles:
	+ - * + Coster WJ. Making the best match: selecting outcome measures for clinical trials and outcome studies. Am J Occup Ther. 2013; 67(2):162-70. PMID: 23433270. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3628620/>
* Web Resources:
	+ - * + American Society of Health-System Pharmacists (ASHP) Research Bootcamp – Introduction to Studying Interventions (webinar): <http://www.ashpmedia.org/Foundation/BootCamp/Introduction%20Interventions/Introduction%20Interventions.html>
				+ American Society of Health-System Pharmacists (ASHP) Research Bootcamp – The Scientific Method Generalizability and Sampling (webinar): <http://www.ashpmedia.org/Foundation/BootCamp/gen1/gen-1.html>
1. Formulating a Data Analysis Plan
* Resources Available through American College of Clinical Pharmacy (ACCP):

### Book: Glantz SA (2012). Primer of Biostatistics. Seventh edition. American College of Clinical Pharmacy. Available at: <https://www.accp.com/store/>

### Book: DiCenzo R (2015). Clinical Pharmacist's Guide to Biostatistics and Literature Evaluation. Second edition. American College of Clinical Pharmacy. Available at: <https://www.accp.com/store/>

* Articles:

### De Muth JE. Preparing for the first meeting with a statistician. Am J Health Syst Pharm. 2008; 65:2358-2366. PMID: 19052282 <http://www.ashpfoundation.org/FundamentalsDeMuthArticle>

* Web Resources:
	+ American Society of Health-System Pharmacists (ASHP) Research Bootcamp – The Role of Statistics and Statisticians (webinar): <http://www.ashpmedia.org/Foundation/BootCamp/mccarren/mccarren.html>
	+ Statistics at Square One: <http://www.bmj.com/about-bmj/resources-readers/publications/statistics-square-one>
1. Formulating a Data and Safety Monitoring Plan
* Web Resources:
	+ - * Data and Safety Monitoring Plan Writing Guidance: <https://www.nimh.nih.gov/funding/clinical-research/data-and-safety-monitoring-plan-writing-guidance.shtml>
			* National Institutes of Health (NIH) Policies and Guidance for Data and Safety Monitoring of Clinical Trials: <https://humansubjects.nih.gov/data_safety>
1. Conducting Power and Sample Size Calculations
* Web Resources:
	+ List of Programs: <http://www.biostat.ucsf.edu/sampsize.html#Prog%20List>
	+ Online Calculator: [http://www.nss.gov.au/nss/home.nsf/pages/Sample+size+calculator](http://www.nss.gov.au/nss/home.nsf/pages/Sample%2Bsize%2Bcalculator)
	+ Online Calculator: <https://www.stat.ubc.ca/~rollin/stats/ssize/>
1. Writing a Consent Form
* Articles:
	+ - * Grady C, Cummings SR, Rowbotham MC, et al. Informed Consent. N Engl J Med. 2017; 376(9):856-867. PMID: 28249147. <http://www.nejm.org/doi/full/10.1056/NEJMra1603773>
* Web Resources:
	+ - * Clinical Research Study Investigator's Toolbox – Informed Consent: <https://www.nia.nih.gov/research/dgcg/clinical-research-study-investigators-toolbox/informed-consent>
			* Informed Consent Document Template and Guidelines: [www.nia.nih.gov/sites/default/files/informed\_consent\_template.docx](http://www.nia.nih.gov/sites/default/files/informed_consent_template.docx)
			* University of Michigan Informed Consent Guidelines: <http://research-compliance.umich.edu/informed-consent-guidelines>
1. Submitting to the Institutional Review Board (IRB)
* Articles:
	+ Enfield KB, Truwit JD. The purpose, composition, and function of an institutional review board: balancing priorities. Respir Care. 2008; 53(10):1330-6. PMID: 18811996. <https://www.ncbi.nlm.nih.gov/pubmed/18811996>
	+ Byerly WG. Working with the institutional review board. Am J Health Syst Pharm. 2009; 66:176-84. PMID: 19139484. <http://www.ashpfoundation.org/FundamentalsByerlyArticle>
* Web Resources:
	+ Purpose and Function of Institutional Review Boards (IRBs): <https://www.bioethics.nih.gov/courses/pdf/2012/Karp.pdf>

b. Conducting Your Study

1. General principles of good clinical practice (GCP) and protection of human subjects
* Books:
	+ - * Lo B, Field MJ. Conflict of Interest in Medical Research, Education, and Practice (2009). Institute of Medicine Committee on Conflict of Interest in Medical Research, Education, and Practice. National Academies Press. <https://www.ncbi.nlm.nih.gov/books/NBK22942/>
* Web Resources:
	+ - * Belmont Report: <https://www.hhs.gov/ohrp/regulations-and-policy/belmont-report/index.html>
			* Collaborative Institutional Training Initiative (CITI) Program: <https://about.citiprogram.org/en/series/human-subjects-research-hsr/>
			* Collaborative Institutional Training Initiative (CITI) Program – Good Clinical Practice: <https://about.citiprogram.org/en/series/good-clinical-practice-gcp/>
			* Collaborative Institutional Training Initiative (CITI) Program – Responsible Conduct of Research: <https://about.citiprogram.org/en/series/responsible-conduct-of-research-rcr/>
			* FDA Regulations Relating to Good Clinical Practice and Clinical Trials: <https://www.fda.gov/ScienceResearch/SpecialTopics/RunningClinicalTrials/ucm114928.htm>
			* Good Clinical Practice – Consolidated Guidance: <https://www.fda.gov/downloads/drugs/guidances/ucm073122.pdf>
			* National Drug Abuse Treatment Clinical Trials Network (CTN) – Good Clinical Practice: <https://gcp.nidatraining.org/resources>
			* National Institutes of Health (NIH) Clinical Research Training: <https://www.cc.nih.gov/training/training/crt1.html>
			* Protecting Human Research Participants: <https://phrp.nihtraining.com/users/login.php>
			* The Research Clinic (webinar): <https://ori.hhs.gov/TheResearchClinic>
			* U.S. Department of Health & Human Services, Office for Human Research Protections – Research Regulations: <https://www.hhs.gov/ohrp/regulations-and-policy/regulations/index.html>
1. Responsibilities of an Investigator and the Research Team
* Articles:
	+ - * Baer AR, Zon R, Devine S, et al. The clinical research team. J Oncol Pract. 2011; 7(3):188-92. PMID: 21886502. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3092661/>
* Web Resources:
	+ - * Investigator Responsibilities — Protecting the Rights, Safety, and Welfare of Study Subjects: <https://www.fda.gov/downloads/Drugs/.../Guidances/UCM187772.pdf>
			* National Drug Abuse Treatment Clinical Trials Network (CTN): Build Your Team for Research Success. <http://ctndisseminationlibrary.org/display/925.htm>
			* Responsibilities of the Research Team: <https://ccrod.cancer.gov/confluence/download/attachments/71041052/Roles_Research_Team.pdf>

1. Study Start-Up and Management
* Web Resources:
	+ Adverse Event Grading/Classification: <https://ctep.cancer.gov/protocolDevelopment/electronic_applications/docs/ctcaev3.pdf>
	+ Clinical Study Management: <http://hub.ucsf.edu/clinical-study-management>
	+ National Institutes of Health (NIH) Toolkit for Clinical Researchers: <https://www.nidcr.nih.gov/research/toolkit/#startup>
	+ Protocol Feasibility Checklist: <http://hub.ucsf.edu/sites/hub.ucsf.edu/files/Protocol_Feasibility_Checklist.doc>
	+ Standard Operating Procedures and Templates: <http://michr-resources.org/30110-study-and-data-management/228845-michr-standard-operating-procedure-templates>
	+ Study Management Templates: <http://michr-resources.org/30110-study-and-data-management/228846-study-management-templates>
1. Data Collection and Management
* Articles:
	+ Richesson RL, Nadkarni P. Data standards for clinical research data collection forms: current status and challenges. J Am Med Inform Assoc. 2011; 18(3):341-6. PMID: 21486890. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3078665/pdf/amiajnl-2011-000107.pdf>
* Web Resources:
	+ American Society of Health-System Pharmacists (ASHP) Research Bootcamp – Data Management and Analysis, Part 1 (webinar): <http://www.ashpmedia.org/Foundation/BootCamp/data1/data-1.html>
	+ American Society of Health-System Pharmacists (ASHP) Research Bootcamp – Data Management and Analysis, Part 2 (webinar): <http://www.ashpmedia.org/Foundation/BootCamp/data2/data-2.html>
	+ Data Management Plans: <https://library.stanford.edu/research/data-management-services/data-management-plans>
	+ Research Data Management: <http://www.niso.org/apps/group_public/download.php/15375/PrimerRDM-2015-0727.pdf>
	+ Research Electronic Data Capture (REDCap): <https://www.project-redcap.org/>
1. Concluding Your Study
* Web Resources:
	+ NIDCR Study Completion and Closeout Documents: <https://www.nidcr.nih.gov/Research/toolkit/#completion>
		1. Analyzing the Data
* See biostatistics and data analysis resources above.

**5. Disseminating Study Results**

a. Guidance for Writing a Scientific Abstract

* Resources Available through American College of Clinical Pharmacy (ACCP):
	+ American College of Clinical Pharmacy (ACCP) – Guide to Writing an Abstract: <https://www.accp.com/meetings/abstractguide.aspx>

b. Guidance for Developing Scientific Posters

* Articles:
	+ - * Erren TC, Bourne PE. Ten simple rules for a good poster presentation. PLoS Comput Biol. 2007; 3(5):e102. PMID: 17530921.   <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1876493/>
			* Persky AM. Scientific posters: a plea from a conference attendee. Am J Pharm Educ. 2016; 80(10):162. PMID: 28179711. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5289718/>
* Web Resources:
	+ - * Creating Effective Poster Presentations: <https://projects.ncsu.edu/project/posters/>
			* Scientific Posters: Tips, Significance, Design, Templates & Presentation: <http://ppop.stanford.edu/posters.html>

c. Guidance for Developing Oral Presentations

* Articles:
	+ Bourne PE. Ten simple rules for making good oral presentations. PLoS Comput Biol. 2007; 3(4):e77. PMID: 17500596. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1857815/>
* Web Resources:
	+ Giving Oral Presentations: <http://www.nature.com/scitable/ebooks/english-communication-for-scientists-14053993/giving-oral-presentations-14239332>

d. Guidance for Writing a Scientific Manuscript

1. Overview of the Publication and Peer Review Process
* Resources Available through American College of Clinical Pharmacy (ACCP):
	+ Book: Browner WS (2012). Publishing and Presenting Clinical Research. Third edition. Lippincott Williams & Wilkins. Available at: <https://www.accp.com/store/>
* Articles:
	+ Uniform requirements for manuscripts submitted to biomedical journals. International Committee of Medical Journal Editors. JAMA. 1997; 277(11):927-34. PMID: 9062335.
	+ von Elm E, Altman DG, Egger M, et al; STROBE Initiative. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. PLoS Med. 2007; 4(10):e296. PMID: 17941714 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2020495/>
	+ Nahata MC. Tips for writing and publishing an article. Ann Pharmacother. 2008; 42:273-7. PMID: 18212252.
	+ Chipperfield L, Citrome L, Clark J, et al. Authors' Submission Toolkit: a practical guide to getting your research published. Curr Med Res Opin. 2010; 26(8):1967-82. PMID: 20569069.
	+ Gagnier JJ, Kienle G, Altman DG, et al; CARE Group. The CARE Guidelines: Consensus-based Clinical Case Reporting Guideline Development. Glob Adv Health Med. 2013; 2(5):38-43. PMID: 24416692. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3833570/>
	+ Zhang W. Ten simple rules for writing research papers. PLoS Comput Biol. 2014; 10(1):e1003453. PMID: 24499936. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3907284/>
	+ Benchimol EI, Smeeth L, Guttmann A, et al; RECORD Working Committee. The REporting of studies Conducted using Observational Routinely-collected health Data (RECORD) statement. PLoS Med. 2015; 12(10):e1001885. PMID: 26440803. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4595218/>
	+ Ogrinc G, Davies L, Goodman D, et al. SQUIRE 2.0 (Standards for QUality Improvement Reporting Excellence): revised publication guidelines from a detailed consensus process. Am J Med Qual. 2015; 30(6):543-9. PMID: 26497490. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4620592/>
* Web Resources:
	+ Consolidated Standards of Reporting Trials (CONSORT). <http://www.consort-statement.org/checklists/view/32-consort/66-title>
	+ English Communication for Scientists – Writing Scientific Papers: <http://www.nature.com/scitable/ebooks/english-communication-for-scientists-14053993/writing-scientific-papers-14239285>
	+ International Committee of Medical Journal Editors (ICMJE). <http://www.icmje.org/>
	+ International Committee of Medical Journal Editors (ICMJE)Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals: <http://www.icmje.org/recommendations/>
	+ International Committee of Medical Journal Editors (ICMJE) Disclosure of Potential Conflicts of Interest: <http://www.icmje.org/conflicts-of-interest/>
	+ National Library of Medicine (NLM) Research Reporting Guidelines and Initiatives: [www.nlm.nih.gov/services/research\_report\_guide.html](http://www.nlm.nih.gov/services/research_report_guide.html)
	+ Peer Review - An Introduction and Guide: <http://publishingresearchconsortium.com/index.php/prc-guides-main-menu/155-peer-review-an-introduction-and-guide>
1. Formulating a Publication Plan and Timeline
* Articles:
	+ - * Roederer M, Marciniak MW, O'Connor SK, Eckel SF. An integrated approach to research and manuscript development. Am J Health Syst Pharm. 2013; 70(14):1211-8. PMID: 23820457.
1. Selecting a Journal
* Web Resources:
	+ - * Choosing the Right Journal for Your Research: <http://www.aje.com/en/arc/choosing-right-journal-your-research/>
			* Eigenfactor Journal Ranking Search: <http://www.eigenfactor.org/projects/journalRank/journalsearch.php>
			* How to Choose Journals for Submitting Your Paper: <http://www.editage.com/insights/how-to-choose-journals-for-submitting-your-paper>
			* The Thomson Reuters Impact Factor: <http://wokinfo.com/essays/impact-factor/>
1. Deciding who Merits Authorship
* Articles:
	+ - * Feeser VR, Simon JR. The ethical assignment of authorship in scientific publications: issues and guidelines. Acad Emerg Med. 2008; 15(10):963-9. PMID: 18801021. <http://onlinelibrary.wiley.com/doi/10.1111/j.1553-2712.2008.00239.x/epdf>
* Web Resources:
	+ - * International Committee of Medical Journal Editors (ICMJE) - Defining the Role of Authors and Contributors: <http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html>
1. Reference Tools and Software
* Web Resources:
	+ - * EndNote™: <http://endnote.com/training#video>
			* Mendeley: <https://www.mendeley.com/reference-management/reference-manager/>
			* RefWorks™: <https://www.refworks.com/refworks2/help/Quick_Start_Guide.htm>
			* Zotero: <https://www.zotero.org/>

e. Moving Your Poster to a Manuscript

* Articles:
	+ - * Hicks R. Transforming a presentation to a publication: Tips for nurse practitioners. Journal of the American Association of Nurse Practitioners. 2015; 27(9):488-496. PMID: 25782067
* Web Resources:
	+ - * Morrison JL (Presentation). Transforming your presentation into a journal article. <http://horizon.unc.edu/conferences/transforming.pdf>

f. Guidance for Reviewing a Scientific Abstract or Manuscript

* Articles:
	+ Sylvia LM, Herbel JL. Manuscript peer review—a guide for health care professionals. Pharmacotherapy. 2001; 21(4):395-404. PMID: 11310511.
	+ Bourne PE, Korngreen A. Ten simple rules for reviewers. PloS Comput Biol. 2006; 2(9):e110. PMID: 17009861. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1584310/>
	+ Lovejoy TI, Revenson TA, France CR. Reviewing Manuscripts for Peer-Review Journals: A Primer for Novice and Seasoned Reviewers. Ann Behav Med. 2011; 42(1):1-13. PMID: 21505912.
* Web Resources:
	+ Getting Peer Review Right: A Guide for Early Career Researchers (webinar): <https://www.brighttalk.com/webcast/11201/134767>
	+ How to Perform Peer Review: <https://authorservices.wiley.com/Reviewers/journal-reviewers/how-to-perform-a-peer-review/index.html>
	+ Tips for Reviewing Scientific Manuscripts: <https://www.elsevier.com/connect/10-tips-for-reviewing-scientific-manuscripts-and-5-red-flags>

g. Disseminating Your Research Findings

* Web Resources:
	+ - * Advances in Patient Safety: From Research to Implementation - Dissemination Planning Tool: <https://www.ahrq.gov/professionals/quality-patient-safety/patient-safety-resources/resources/advances-in-patient-safety/vol4/planningtool.html>
			* Effectively Promoting Your Research: <https://www.brighttalk.com/webcast/11201/225853>