Objective:

1. Discuss Boyer’s Model of Scholarship.
2. Describe the process of medical writing from idea generation to publishing a manuscript in a peer-reviewed journal.
3. Provide examples on how to integrate pharmacy students and residents into research and scholarship.

Disclosure:

- I do not have a vested interest in or affiliation with any corporate organization offering financial support or grant monies for this continuing education activity, or any affiliation with an organization whose philosophy could potentially bias my presentation.

Objectives

- Help your career
- Help your trainees develop their career
- Promote your institution and the trainees institution
- Working collaboratively is a great experience
- Create a professional relationship that will last a long time
- Seeing your name in print is great, seeing your trainees name in print is even better!

What is research according to Boyer?

- DISCOVERY – Build new knowledge through traditional research (Basic Research).
- How to measure:
  - Publish in peer-reviewed journal
  - Produce and/or perform creative work within established field
  - Create infrastructure for future studies
- Can students/residents help?

Continued

- **Application** – Aid society and professions in addressing problems (relate knowledge to solve problems).
- **How to measure:**
  - Serving industry or government as an external consultant
  - Assuming leadership roles in professional organizations
  - Advising student leaders fostering their professional growth
  - Can students/residents help?


---

Continued

- **Teaching** – Study teaching models and practices to achieve optimal learning (research directly related to teaching).
- **How to measure:**
  - Advancing learning theory through classroom learning
  - Developing and testing instructional materials
  - Mentoring students
  - Design and implement a program level assessment
  - Can students/residents help?


---

What is the process?

**The research process**

- Polypharmacies in the S-HT1A receptor do not predict response to an SSRI or SNRI AD.
- There is a genetic reason why SSRI/SNRI ADs do not work.
- Determine the genetic possibilities.
- Defects in the S-HT1A receptor affect ADs.
- There was no difference.
- This was a preliminary study and we offer data disputes our analysis.
- Polymorphisms in the S-HT1A receptor do not predict response to an SSRI or SNRI AD.
- Compare the presence or absence of the mutations in responders and non-responders.

---

How Do You Begin?

1. Find an interested student/resident — many times they will come to you.
2. Determine and discuss their goals (and yours).
3. Decide on a project that is reasonable to achieve:
   - These will be very different for a student in classes, IPPE, APPE or a resident.
4. Be very clear on your expectations.
5. Explain the implications of not meeting your expectations.
6. Discuss authorship order so it is not awkward at the end:
   - The person that does the most work should be the first author, this should be the student/resident.
7. Determine a time-line with measurable milestones
   - Idea, outline, literature review, etc…
8. Have regular follow up meetings — you cannot miss these because of your busy schedule, nor can they.
9. Build in some “fudge time” to your deadlines.
How Do You Begin?

10. As they start to put things together, review and revise as you go along, don’t wait until the end.
11. If a poster, they should be developing the basic outline of the poster even before you have data.
12. If a manuscript, the proposal is basically the completed manuscript without a conclusion or summary.
13. Submit, but don’t think you’re done.
14. If a poster (accept/reject), if a manuscript (reject or revisions).

Preparing a poster – Prep

Preparing a poster – Done

Preparing a manuscript

- Determine what type of article
  - Original Research, Review Article, Case Report, etc.
- Determine if you want to publish at the:
  - Medicine Level
  - Pharmacy Level
  - Specialty Level (Psychiatry, Infectious Disease, etc.)
- Determine the journal you wish to publish in (ie. AJHP)
  - http://www.ajhp.org/site/misc/ifora.xhtml

Preparing a manuscript

- Reasons not to get involved in scholarship:
  - No time
  - No benefit
  - Don't know how
  - What if the student/resident does not complete it
  - What if we begin and then I or they get too busy
- Make Time:
  - Choose a specific day and time
  - Be consistent with your protected time
  - Do what is best for you (early morning vs. late afternoon)
  - It does not have to be long (ie. 2 hours per session)

Preparing a manuscript

- Begin by actually writing the outline:
  - Abstract (last)
  - Introduction
  - Case
  - Summary
  - References
- I like to tell people at this point, the paper is done, we just need to fill in the blanks.
Finally….  

- Hopefully things turn out well, if they don’t, reconsider….don’t trash it.  
- There’s a place for everything!

Types of trainee collaboration

- Original Research:  
  - New or innovative teaching methods or courses  
  - Laboratory Based (i.e., genetic markers)  
  - Comparisons of medications for efficacy or side effects  
  - Pharmacokinetic analysis — drug interactions  
  - Pharmacoeconomic analysis  
  - Treatment of side effects  
  - Retrospective analysis  
  - Surveys  
  - Adherence

- Review Articles:  
  - Comprehensive reviews (great for residents)  
  - Mini-reviews (great for students)

- Case Reports:  
  - Unreported drug activity  
  - Unexpected side effects  
  - Synergistic effects  
  - Case Series always better

Types of trainee collaboration

- Miscellaneous:  
  - Letters to the Editor  
  - Book Reviews  
  - Editorialis/Opinion Papers  
  - Continuing Education Papers

Poster vs. Manuscript

- Manuscripts are always better for anyone’s CV, but takes much more time  
- Not all research will warrant a manuscript, sometimes a poster is as far as it can go  
  - General rule, 1 in every 3 posters should become a paper.
- What is the purpose?  
  - All student-resident candidates have ASHP MCM Posters, so many will want to do more:  
  - Submit to a peer-reviewed scientific or clinical meeting, not a student submission  
  - Look for online publications (peer-review)

From an Idea to Print

- From the idea to the paper ready to submit can be months to years, this depends on you, IRB, your collaborators, resources, sometimes funds  
- Submission  
  - 2-4 months for response (reject, revise, accept-not)  
  - If revision, one month to revise and resubmit  
  - 1-2 months for decision  
  - 2-4 months for publication.  
  - If rejected, consider a lower impact factor journal
Impact Factor

- Impact Factor = A/B
  - A = the number of times that articles published in a journal for 2011 and 2012, were cited by articles in indexed journals during 2013
  - B = the total number of "citable items" published by that journal in 2011 and 2012. ("Citable items" are usually articles, reviews, proceedings, or notes, not editorials or letters to the editor, in other words, peer review articles)

- 2012 Examples:
  - JAPhA – 1.16
  - AJHP – 2.10
  - Annals of Pharmacotherapy – 2.57
  - Pharmacotherapy – Impact Factor: 2.86
  - Annals of Internal Medicine – 14.0
  - JAMA – 29.98
  - The Lancet – 39.06
  - NEJM – 51.66

My collaborators over time

<table>
<thead>
<tr>
<th>Students</th>
<th>Residents/Fellows</th>
</tr>
</thead>
<tbody>
<tr>
<td>AE Barton-Pai**</td>
<td>TM Bowles****</td>
</tr>
<tr>
<td>GD Garrison**</td>
<td>MJ Brev****</td>
</tr>
<tr>
<td>B Heyscue**</td>
<td>J Garver**</td>
</tr>
<tr>
<td>CM Grum-Miller**</td>
<td>LA Nelson****</td>
</tr>
<tr>
<td>S Bhonsare**</td>
<td>SJ Popish*</td>
</tr>
<tr>
<td>AM Wright*</td>
<td>JT Tass****</td>
</tr>
<tr>
<td>A Trendler*</td>
<td>AK Feldman***</td>
</tr>
<tr>
<td>J Pulivis**</td>
<td>TK Murphy*</td>
</tr>
<tr>
<td>D Demczor*</td>
<td>K Burton*</td>
</tr>
<tr>
<td>CM White*</td>
<td>L Hollis*</td>
</tr>
<tr>
<td>RA Golley*</td>
<td></td>
</tr>
<tr>
<td>A Veivio*</td>
<td></td>
</tr>
</tbody>
</table>

* Denotes number of projects

Q&A

Sometimes the questions are complicated and the answers are simple.