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What is a Research Agenda?
All definitions of a research agenda include the following elements:

- A plan for your current and future research that includes both short and long term goals for development of the knowledge and development of your own skills
- A focus for your research – you cannot study everything
- A willingness to change and adapt your research agenda over time according to changes in the academic, political or cultural environment



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PA Profession Historically has not had a Strong Research Agenda

- All systematic reviews of the PA literature have noted an over-abundance of cross-sectional studies and a lack of progression in our research questions
- Lack of agreement on crucial questions
- Lack of data sources
- Lack of funding
- Lack of advanced research training among PAs and PA educators

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Why should I have a Research Agenda?

- Without a plan or area of interest, it is difficult to keep up with the changes in the field
- Helps you decide when to say “yes” and when to say “no”
- Allows you to both develop expertise and be recognized as an expert in a field
- Makes your life less difficult – you can get more out of focused research (poster, presentation, article, book chapter, invited speeches) than if you hopscotch around
- Trite but true “Those who fail to plan, plan to fail”

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What should I include in my Research Agenda?

- A big goal
- Sub-questions to answer on your way to your goal
- A step-by-step plan for reaching the goal
- A list of resources you will need to achieve your goal
- **Specific** deadlines for
 - IRB completion
 - Data collection
 - Data analysis
 - Paper submission
- Consideration of data sources
- Consideration of collaboration options

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What else will help me succeed in research?

- Accountability partner
- Good collaborators / editors
- Administrative support
- Introduce yourself to researchers whose work you admire
- Present your work regularly
- Write every day. **Seriously.**

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What else will help me succeed in research?

- Get back up when you fall down!
- Try to read regularly in your area of interest. Set up Google Scholar alerts.
- Get the most out of every project:
 - Poster
 - Abstract
 - Presentation (or several)
 - Publication
- Plan ahead for recurring grants – don't wait until RFP comes up

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Research Agenda Example – PA Value

- Background: because of the way PA services are billed, it is difficult to accurately determine the contribution PAs make to the medical care system
- We cannot see from billing data how many patients PAs see alone and how many they see with a doctor
- Cannot accurately assess resource usage by PAs as compared to doctors (many have done this inaccurately!)

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What Wasn't Known?

- What percentage of visits do PAs provide completely on their own?
- How productive are PAs relative to doctors in the same clinical setting?
- Is PA pay optimized relative to clinical contribution?
- When PAs see patients without physician input, are they as safe as doctors?
- Do PAs over-order tests to compensate for shorter duration of clinical training?
- And so much more...

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Solutions:

- Look for a non-insurance-based data source. Big data held by large practices and health systems potentially make these analyses possible for the first time
- Partnered with US Acute Care Solutions (USACS) – a very large Emergency Medicine practice with >200 EDs in 19 states.
- USACS has an active research team that does both practice-based evaluation and large-scale health services research
- PAEA was gracious enough to fund this work through the Faculty Generated Research Grant program – thanks!

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Methods - Analysis

- Descriptive statistics used for visits treated by APPs vs doctors and staffing levels
- Primary analysis used multivariable linear regression to estimate the effect of APP coverage on productivity, patient flow and safety
- Random-intercept models to account for panel data structure (ED days clustered within EDs)
- Safety measured by return to ED within 72 hours for same complaint. LOS measured by averages for admitted and discharged patients
- Exploratory analysis conducted on a subset of EDs for incident reports on safe practice and on patient satisfaction from Press-Gainey Scores

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Results

- 13 millions total visits, 2.4 million visits by PAs, 177,000 visits that were considered shared APP/doc visits
- RVUs - doc 3.6 vs PAs 2.8 /visit
- Docs more likely to see older and sicker patients – in some EDs this is a matter of policy – PAs not allowed to see sicker patients
- Docs more likely to admit patients (19.7% vs 4.6%)
- PAs and NPs spend much less of their time in critical care. When they have a critical care patient, they are likely to share that visit with a doctor

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Safety and Satisfaction Results

- Using PAs/NPs did not increase left without treatment
- Increasing PA/NP coverage did not increase the number of incident reports for poor outcomes, 72 hour returns, or 72 hour returns for admission
- Press-Gainey scores did not change with increased PA/NP coverage



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Discussion (1)

- APP usage and pay are optimized in this ED practice. No economies of scale were seen, but no losses were detected either. APP pay is appropriate for their billing. However, some services provided by APPs that benefit the practice but do not generate income are not accounted for in this model (ex: provider-in-triage, culture follow ups)
- Doctors see about 2x as many patients as APPs per hour, although doctors did often work alone whereas APPs rarely work alone. Doctors also have nearly double RVUs per hour, which is partially accounted for by higher pt. complexity
- The current model of APP implementation does not seem to negatively impact patient safety, flow or satisfaction

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Discussion (2)

- These data do not support large—scale replacement of doctors by PA/NPs
- The current model of side-by-side practice seems to provide cost-effective, quality care
- Practices are optimizing PA/NP use for their settings. This data set included everything from large, urban academic medical centers to isolated rural EDs. The staffing models are different at each of these centers based on their own needs. This provides good generalizability of these data and show that the flexibility induced by using APPs is helpful within the US health system

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Limitations

- New grad APPs in this group benefit from an additional training program and this practice also has extensive tools used to standardize clinical management of patients that are not common in private practice EM. May limit the generalizability of this data
- Limited data are available about all the functions for which different sites use APPs, which likely slightly underestimates the contributions of APPs to the practice
- Quality metrics (72-hour return and incident reports) are extremely crude surrogate measures of quality of care provided
- No *a priori* power analysis conducted, however, large sample size may mitigate this concern

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Next...

- This study answered part of the question about PA/NP value. But what if the **way** PAs/NPs practice is more costly to the system (even if not to the employer)
- Several articles have asserted that PAs/NPs overuse testing to compensate for shorter duration of training
- Using the same dataset, we have conducted an analysis comparing how doctors and APPs use testing resources to come to dispositions for chest pain and abdominal pain in the ED

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“Emergency Physician and Advanced Practice Provider Diagnostic Testing and Admission Decisions in Chest Pain and Abdominal Pain”. Academic Emergency Medicine 2021;28(10):36-45.

OBJECTIVE
Emergency physician (EP) and advanced practice provider (APP) diagnostic testing and admission decisions in chest pain and abdominal pain (CP and AP) are compared. The study aims to determine if there are differences in testing and admission decisions between EPs and APPs.

DESIGN
Retrospective cohort study using a national emergency department (ED) database.

SETTING
National Emergency Department Data System (NEDDS).

PATIENTS
Patients with CP and AP.

MEASUREMENTS AND MAIN RESULTS
The study found that EPs and APPs have similar testing and admission decisions for CP and AP. However, EPs were more likely to order certain tests and admit patients to the hospital.

CONCLUSIONS
The study suggests that EPs and APPs have similar testing and admission decisions for CP and AP. However, EPs were more likely to order certain tests and admit patients to the hospital.

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Methods

- Used same dataset as for first paper, although we only looked at patients with chest pain (N=946,132) or abdominal pain (N=663,599)
- Chest pain outcome measures:
 - Labs ordered on CP patients
 - ECG
 - Imaging (CT, CXR, US, other)
 - Admissions, stratified by age group
- Abdominal pain outcome measures:
 - Labs ordered on Abd Pain patients
 - ECG
 - Imaging (CT, US, x-rays of abd or chest, other)
 - Admissions, stratified by age group and sex

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Methods (2)

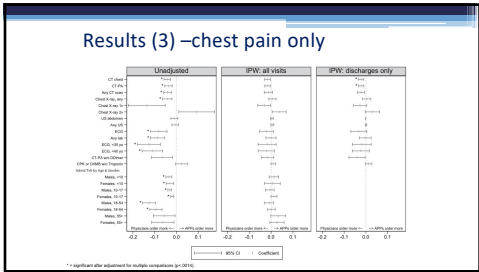
- Initial descriptive stats used to compare patient and clinician characteristics
- Inferential statistics were used to control for potential effect modifiers including patient age, number of years in practice for each clinician
- Separate analyses were run for admitted and discharged patients as a potential marker for disease severity
- Less than 1% of patients had missing data, so patients with missing data were excluded

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Results (1)

- Doctors ordered more investigations than PAs or NPs, but their patients were sicker (higher triage acuity, older, and had more comorbidities)
- Patients seen by doctors were more likely to be admitted than patients seen by PAs/ NPs

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Discussion

- PAs and NPs see more lower acuity CP and Abd pain patients than MDs. However, in this study, 30% of CP patients seen by an APP were at ESI level 2, and 3% of abd pain patients were at ESI level 2. This is compared to 48% of CP patients and 7% of Abd pain patients at ESI 2 seen by MDs
- Unadjusted analyses showed APPs using fewer resources, however most of these findings disappeared when we controlled for acuity
- In general, PA/NP practice did not differ from MD practice when all the controllers were put into the model

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Limitations

- We cannot tell if the patients were seen in a fast track or main ED from the data
- PAs and NPs who work for USACS undergo a 2-year training program after hire. All providers at USACS regularly receive further clinical training and decision support resources designed to standardize care. Not all emergency medicine providers receive these resources, which may limit the generalizability of this study
- None of the APPs work without a physician onsite, so this data does not support independent practice by APPs

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What next?

- With the focus on OTP and a push toward greater PA autonomy, the question arises about the safety of PA practice given the short training (a 4-6 week rotation) PAs have in emergency medicine compared to a doctor (a 4 year residency program)
- We are now thinking about a project on safety in APP emergency medicine practice. Hard to determine useful outcome measures when most patients actually have a good clinical outcome, so we're still thinking on this

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What's the take away from this example?

- Hopefully, this example shows how you can build a body of work from one study to the next
- You can use the questions raised in one study to develop the next
- You can look around in the environment to see what questions should be answered to guide policy and strategy

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How do you find *your* focus?

- What are your interests?
- What are the **needs** of the profession / students / education community?
- Where do you see changes happening? Can document these over time to try to understand why changes are happening
- What are the potential data sources?
- With whom can you collaborate?

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Develop a personal research agenda

- What is the big question within the area of focus you have chosen
- Figure out what foundation needs to be established in the literature to answer the big question and how that will help you answer the intermediate questions
- Try to find \$\$\$\$
- Work the evidence pyramid!



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graph BT; A[Case Study / Case Series] --> B[Cross Sectional Studies]; B --> C[Longitudinal Observational Studies]; C --> D[Experimental Designs / Interventions];
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You don't have to do it all yourself!

- Consider collaboration with other PA educators / PA programs / experts on your campus / external experts
- If you don't need a collaborator, at least seek advice on projects
- Consider secondary analyses of existing datasets
 - PAEA / AAPA
 - Federal
 - State
 - Educational

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Money

- Always a challenge
- Secondary datasets helpful here
- Collaborate with people who have big data
- Pursue VA appointment for access to VA data
- PAEA grants
- Consider collaborating across health professions to access their professions' grant opportunities or IPE money

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Dissemination

- Never only get one thing out of each study
 - Presentation
 - Poster
 - Abstract
 - Paper
- Make scholarship out of things you are doing already
- Start with the end in mind – know your audience (audience – target journal) as you design your study!
- Which journals are having a "conversation" about this topic right now?
- Practicalities – pay to play? Predatory journal? Time to publication?

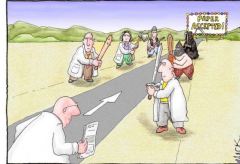
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Application

- I have provided a handout that is designed to help you take a step-by-step approach to designing your own research agenda.
- Feel free to use this by yourself or in a group of colleagues to help you break down the steps you need to reach your research goals!


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Good Luck on your Research Journey!



Most scientists regarded the new streamlined peer-review process as "quite an improvement."

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Additional Talks

- The Importance of Research to Advance the PA Profession
- The Importance of the National PA Research Agenda
- How to Write a Strong Conference Proposal
- How to Become a Peer Reviewer
- Increasing Your Knowledge through All of Us: Secondary Clinical Data for Research and Clinical Work

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For additional information

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