# A Novel Approach to Journal Club to Increase Resident comfort with Study Design for Original Research

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## Background

- Journal Club is a teaching tool that is used to teach residents how to appraise scientific literature.
- Journal Club is often resident-driven where the presenting resident will lead and moderate a discussion about a selected article.
- Original research by PM&R residents is a rare.
- Resident knowledge of research study design is often limited and tends to focus on randomized control trials which can be nearly impossible to complete as a resident.
- As a result of their limited knowledge and research experience and dissuasion from large studies, resident academic output typically defaults to small scale posters of individual case reports.

## Purpose

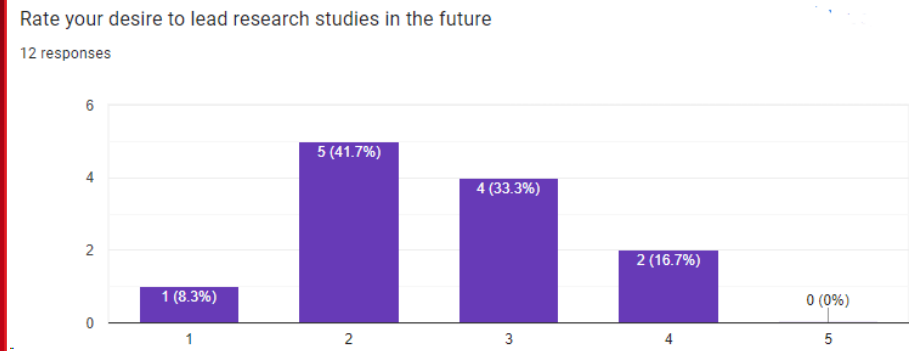
We hypothesize that:

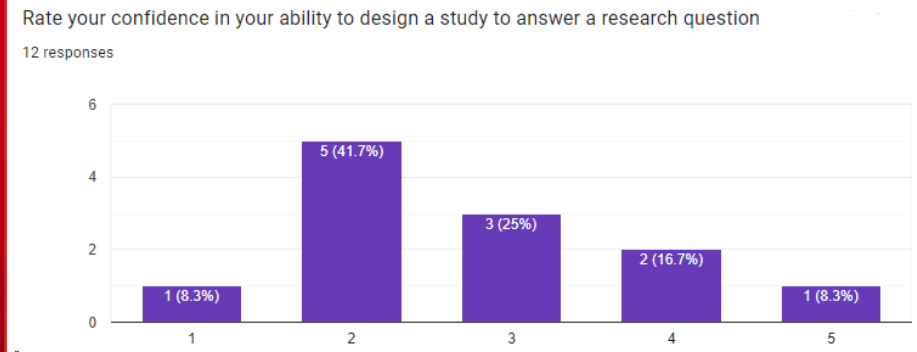
- Rethinking and redesigning how we utilize Journal Club, by putting the focus on study design, can increase resident comfort with original research and lead to a more diverse and robust way for them to design studies to answer their own research questions during residency.

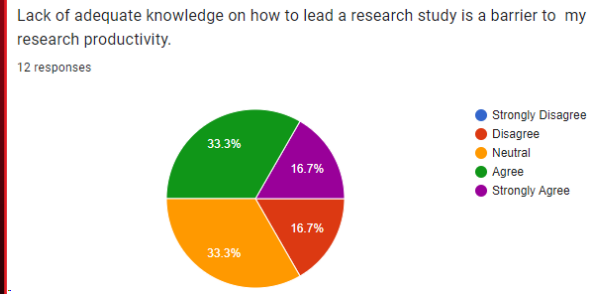
## Methods

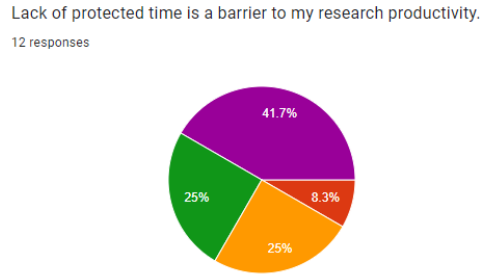
- We enlisted a methodologist to guide Journal Club through a non-traditional format.
- Rather than providing the journal club article ahead of the conference, we simply provided the research question that our chose article sought to answer.
- Residents were then placed in small groups and given the assignment of designing a study that could answer the research question.
- The Journal club consisted of resident group presentations of their study proposals followed by a review of the chosen article.
- Residents were surveyed prior to the intervention.

## Results




## Conclusions

- Resident desire to lead research studies is limited.
- Resident confidence in designing a research study to answer a question is limited despite Journal Club being a regular recurring didactic throughout training.
- Major barriers to lead research studies at the resident level include a lack of adequate knowledge as well as a lack of protected time.
- Journal club can be utilized to educate resident's and improve their skills in study design and research question development if these skills are emphasized through thoughtful formatting of their didactic time.

## Future Work

- This intervention can continue without use of a methodologist as faculty and resident comfort with study design increases.
- We can longitudinally follow resident's academic production to determine if academic output increases over time as study design knowledge and comfort increases.

## Acknowledgements

- Clinton Faulk, MD. Professor and Chair Physical Medicine and Rehabilitation, Eastern Carolina University
- Priya Chandan, MD, PhD, MPH. Clinical Associate Professor, University of Louisville

# Implementing Functional Outcome Measures in the Spina Bifida Clinic at Texas Children's Hospital

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## BACKGROUND

The Spina Bifida Clinic at Texas Children's Hospital provides care for 555 patients, with current collected metrics primarily focused on participation in registries such as the CDC registry and postnatal outcomes registry. However, there is a notable gap in the monitoring of functional progress among the children in the clinic. Currently, there is no systematic method in place to track functional metrics, which inhibits the ability to predict outcomes, identify declines in function, and intervene effectively.

## SPECIFIC AIM

The goal of this project is to implement an outcomes monitoring process that can effectively track metrics to predict functional outcomes and identify declines in function among patients in the Spina Bifida Clinic.

## PROCESS MEASURES

1. Select outcome measures agreed to by group consensus within 1 month of project onset (Fig 1)
2. Establish an Epic Note Template to track outcomes, preferably in a flowsheet format that can be tracked and facilitate data pulls - implemented within 2 months of project onset
3. Collaborate with key individuals such as clinic staff, IT specialists, and data analysts to ensure successful implementation
4. Collect metrics as a PMR/PT combined team by month 3 of project onset

**Special Acknowledgement**
**Dr. John Norbury- External Mentor**

| Category | Metrics |
|---|---|
| Anthropomorphic | BMI<br>Height<br>Arm Span<br>Head Circumference<br>Weight |
| Physical Changes | Scoliosis<br>Lordosis<br>Leg length discrepancies<br>Varus/Valgus Knees<br>Foot deformities<br>Contractures |
| ADLs and Functional Changes | Functional Mobility Scale<br>10-m walk test (videos recorded)<br>Behind<br>In front<br>Along side<br>Ability to sit without support<br>Supine to sit<br>Sit to stand as applicable<br>Stand for 10 seconds as applicable |
| Gait | Derangements<br>Lordosis<br>Flexed forward trunk<br>Pelvic obliquity<br>Trendelenburg<br>Pelvic rotation<br>Hip circumduction<br>Hip hiking<br>Crouch gait<br>Knee hyperextension<br>Limb dragging<br>Limb internal and external rotation |

**Fig 1:Outcome Metrics**

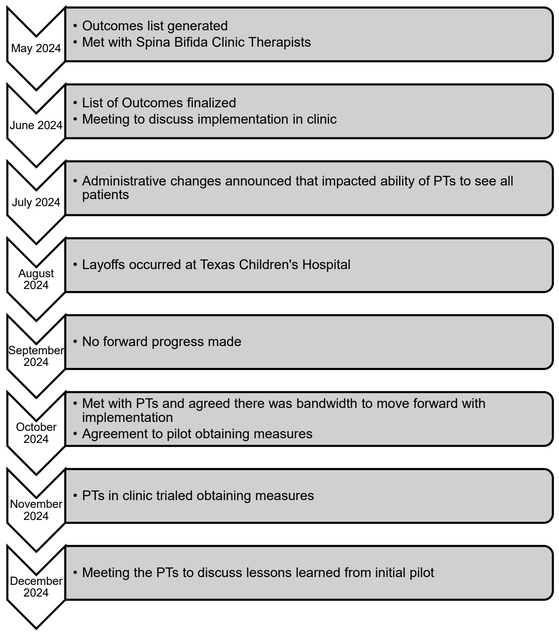


**Fig 2: Timeline**

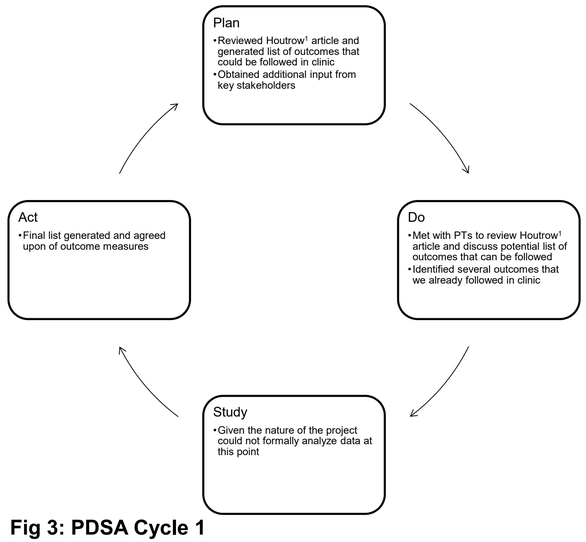


**Fig 3: PDSA Cycle 1**

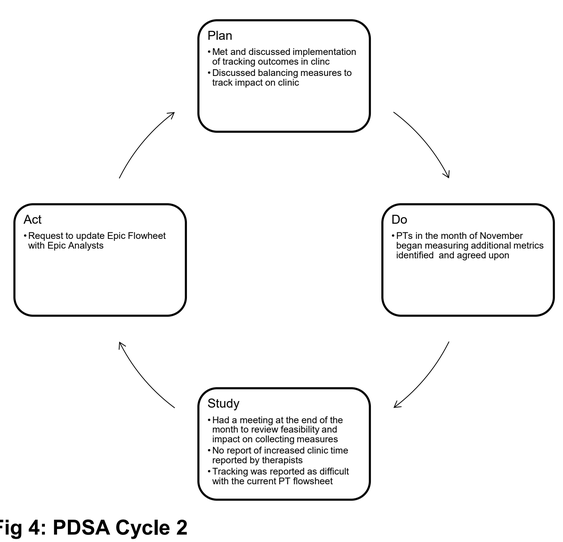


**Fig 4: PDSA Cycle 2**

## OUTCOME MEASURES

Outcome Measures

- 60% of patients seen in the Spina Bifida Clinic in the last 3 months from project onset to completion will have documented functional outcome measures

Balancing Measures

- Clinic Time: Ensuring tracking measures does not lead to a significant increase in clinic time

## RESULTS

- Process Measures 1, 3 and 4 successfully met
- Primary Outcome Measure not met
- Balancing Measure: there was no impact on overall clinic time
- During the time-period of enactment, Texas Children's Hospital underwent significant personnel changes temporarily impacting requirements/accessibility of Physical Therapists assigned

## CONCLUSION

The first few PDSA cycles demonstrate the feasibility of implementing measures of function during routine clinic visits. The next steps will be to consistently measure outcomes for all patients seen in the Spina Bifida Clinic over the next several months. Since implementation, other multi-disciplinary clinics have begun to track functional outcomes and there may be an opportunity to partner to more uniformly track across clinics and population and build a case for a quicker Epic Flowsheet Modification.

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1. Houtrow AJ, MacPherson C, Jackson-Coty J, Rivera M, Flynn L, Burrows PK, Adzick NS, Fletcher J, Gupta N, Howell LJ, Brock JW 3rd, Lee H, Walker WO, Thom EA. Prenatal Repair and Physical Functioning Among Children With Myelomeningocele: A Secondary Analysis of a Randomized Clinical Trial. JAMA Pediatr. 2021 Apr 1;175(4):e205674. doi: 10.1001/jamapediatrics.2020.5674. Epub 2021 Apr 5. PMID: 33555337; PMCID: PMC7871205.

# Development of a PM&R Fellow Research Curriculum

*Cody C Andrews, MD*
*Internal Mentor: Sandra Hearn, MD*
*External Mentor: David Haustein, MD*

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

PHYSICAL MEDICINE AND REHABILITATION

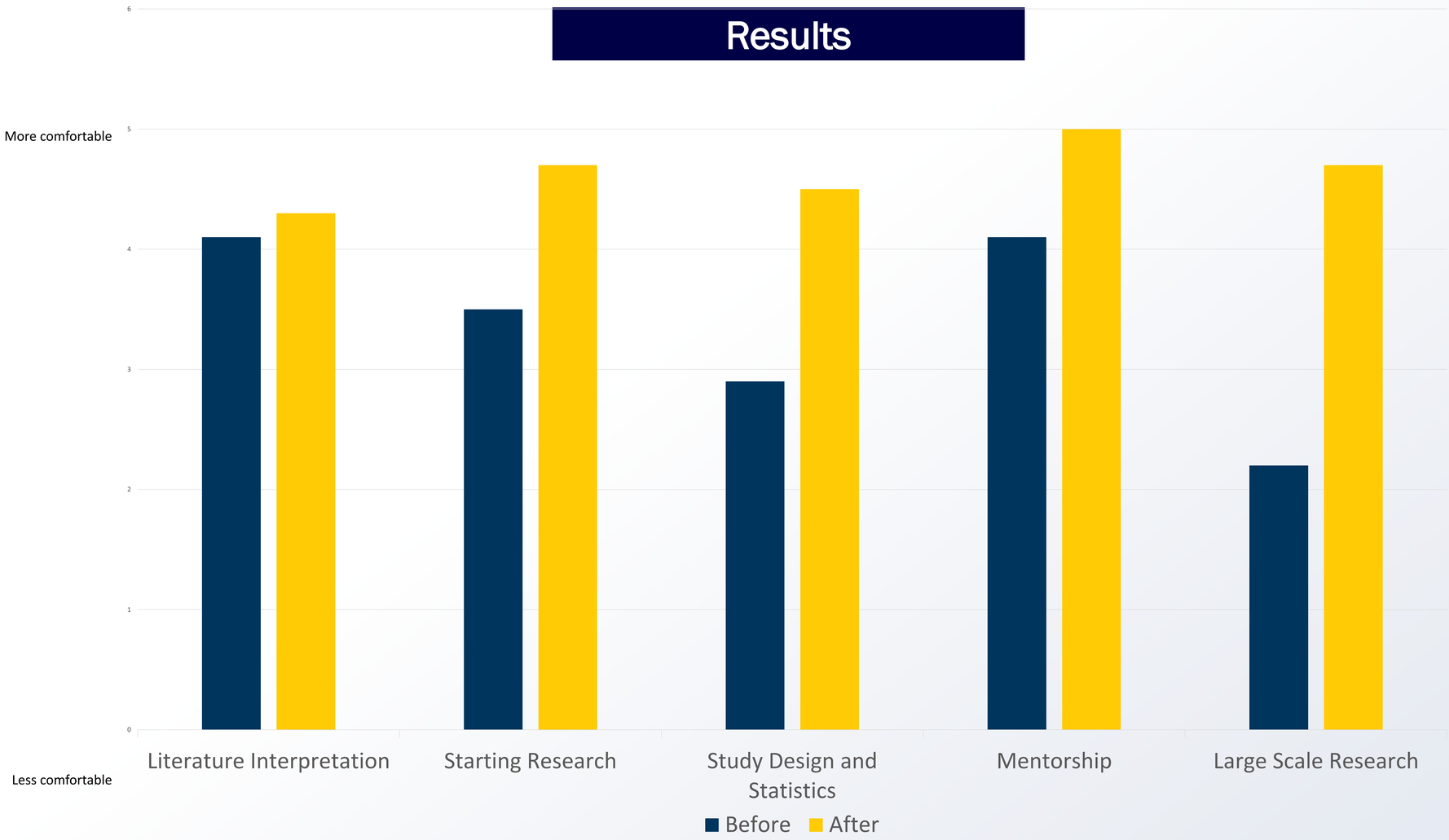
## Introduction

As physiatry grows, trainees are increasingly choosing to pursue fellowship after residency. In one recent study, almost 3 in 4 PM&R graduates matched into a fellowship, and almost half of prospective residents reported their desire for subspecialty training influenced their choice of residency program.[1] Trainees may choose to pursue fellowship training for many reasons, but a rigorous understanding of the research process and a solid foundation in critically reading and understanding emerging literature is an important aspect of becoming a subspecialist. Fellows will likely have widely variable comfort with research depending on their residency experiences. Residents value research engagement, but find difficulty engaging in research meaningfully.[2] Ensuring fellows, as the future leaders in their subspecialty fields, have adequate research preparedness is vital for PM&R to continue to grow and add value to the greater medical community.

## Methods

A four-week course focusing on the following four domains of research was designed with early fellow training in mind: Starting Research, Large Scale Research, Interpreting Literature, and Study Design and Statistics. The curriculum consisted of 4 hour-long lectures with prereading. Additionally, an asynchronous mentorship component was facilitated by setting up meetings with department leaders in research. Incoming PM&R fellows at the University of Michigan were offered participation. Three fellows (one each Cancer Rehabilitation, Pediatrics, and Spinal Cord Injury) opted to participate. Pre and post questionnaires were administered to assess program value, with 3 or 4 questions in each domain rated from 1 to 5 to assess comfort.

## Results




## Discussion

Overall, the participating fellows found value in the program, with scores in all domains improving. It is difficult to draw significant conclusions with only 3 participants, but as a proof of concept, this project shows the value of creating curricula for trainees focused on research. In particular, the fellows I worked with felt particularly weak in Study Design and Statistics and Large Scale Research. All medical students and residents receive some training in the former, though this highlights the need for ongoing learning in this area. The mechanics of large scale research are largely opaque to many trainees except those who seek specific opportunities out. Earlier, more robust education in this area could encourage more PM&R residents and fellows to explore research careers.

## Citations

1.Yang AJ, Haring RS, Swenson TL, Jain NB. Factors Influencing Fellowship Decision Making During Physical Medicine & Rehabilitation Residency. Am J Phys Med Rehabil. 2021 Apr 1;100(4):396-401.
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# Evaluation of the efficacy of a stroke discharge transitions program

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External Mentor: James Sliwa, MD[2]
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Jefferson Moss-Magee Rehabilitation
Nationally Ranked

Jefferson Health

## Background

Our Inpatient Rehabilitation Facility (IRF) cares for a large population of stroke patients with lower socioeconomic status and diverse racial and ethnic backgrounds. We also have a higher number of patients with public insurance or no insurance who are likely to have fewer resources available to them upon discharge. Although our inpatient social workers work hard to ensure a smooth discharge process from IRF care, issues after discharges are frequently discovered due to insurance, financial situations, limited access or knowledge of systems based care. Issues during the transition to home are often found during follow up visits with the patients' Neurorehab/PMR physician, patient calls to the outpatient clinic, or from outpatient therapists. Common issues include difficulties obtaining medication refills, no PCP identified or no PCP follow up appointment, no PMR follow up scheduled, issues with HomeCare or outpatient therapy.

We had the opportunity to develop a transitions program that would support patients with a stroke transitioning from structured IRF stroke services to their homes. Upon discharge, patients are called by a social worker at regular time intervals during the first 31 days after discharge. During these calls, patients are asked survey questions related to their health, function, accessibility of medications, issues with scheduling physician and/or therapy appointments, and access to food, etc. Prior studies have indicated that the incorporation of support interventions for stroke patients during their transition from hospital to home can improve functional status and other outcomes (O'Callaghan 2022).

The goal of this project is to assess the effectiveness of our transition program in improving the transition process of stroke patients from acute inpatient rehab to home.

## Design

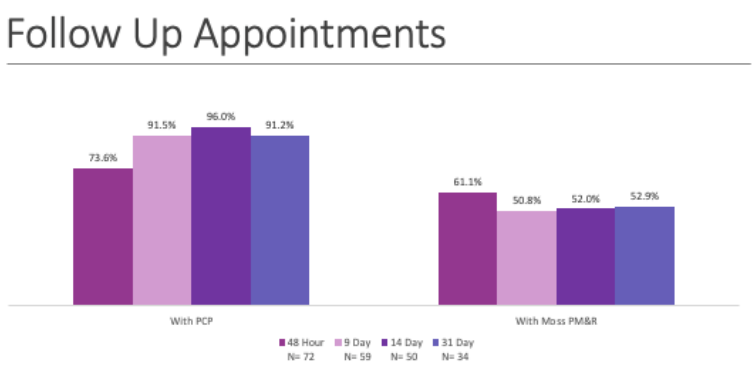
Used e-rehab and EMR to assess data on patients with stroke diagnosis admitted to inpatient rehab from 10/2022 to 10/2023. Outcomes assessed are the percentages of patients reporting issues at the time intervals of 48 hours, 9 days, 14 days and 31 days. Data was also assessed for the following outcomes:

- Rate of 30-day rehospitalization
- Patient-reported rates of confirmation of upcoming outpatient therapy or HomeCare appointments across interval time points
- Rate of patient reported follow up with PCP physician at each time interval
- Rate of patient reported follow up with PMR physician at each time interval

Goal is to improve the patient-reported rates on questions specifically pertaining to the rate of PCP follow up, rate of PMR physician follow up, HomeCare and/or outpatient therapy appointments scheduling.

## Results

### Initial review of data




Initial review demonstrated possible issues with data collection given the fairly unchanged percentage of patients without PCP or PMR follow-up appointments.

This prompted review of the raw data which revealed issues with data entry. Patients were incorrectly entered as having no follow up appointments with their PCP and PMR physicians.

### Patient reported satisfaction with transitional program

Has this program helped you transition safely home?


Number of patient responses

## Discussion

The primary objective of this project was to assess the effectiveness of our transition program in facilitating the smooth transfer of patients with stroke from acute inpatient rehabilitation to home. Our findings suggest that while the transition program shows promise in improving patient outcomes, there were significant challenges encountered, particularly related to data collection and entry, which impacted our ability to fully evaluate the program's effectiveness.

The challenges encountered provided an opportunity to critically review our current practices. We revised our process and expect improvements.. Additionally, we plan to implement a retraining program for staff, emphasizing the importance of accurate and consistent data entry, which is crucial for measuring the program's effectiveness.

Despite these limitations, preliminary feedback from patients and caregivers indicates that the transition program appears to enhance the readiness of stroke patients to return to the community, reduce anxiety, and improve overall satisfaction. These qualitative insights, although not fully quantified due to the data challenges, suggest that the program benefits warrant further investigation.

In conclusion, while our initial evaluation was constrained by data limitations, the process has been instrumental in refining our approach to data collection and staff training. We remain committed to improving the transition process for stroke patients, with the ultimate goal of enhancing the discharge process and outcomes

**Future Steps**

- Adjustments to current survey questions
- Re-training of data collector with the updated survey
- Re-deployment of updated survey to patients following re-training of staff with regular interval review of data to ensure accuracy
- This new data will be used to assess for the initial outcomes listed in the design of this project

## References

O'Callaghan, G., Fahy, M., Murphy, P. et al. Effectiveness of interventions to support the transition home after acute stroke: a systematic review and meta-analysis. BMC Health Serv Res 22, 1095 (2022). https://doi.org/10.1186/s12913-022-08473-6

# Implementation of Standardized Functional Assessment (SFA) in Post- Lung Transplant Patients

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## Background

- NewYork-Presbyterian Hospital is one the nation's leading transplant centers
- A significant volume of admissions to acute inpatient rehabilitation unit are post-transplant
- There has been wide adoption of standardized measures in assessing patients with disabilities
- Rehabilitation may serve as a critical partner for successful outcomes in the post-transplant period.

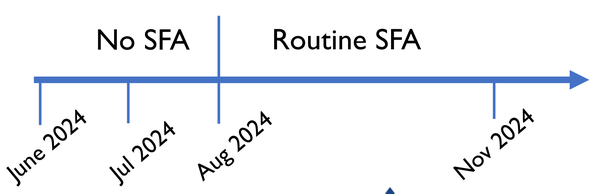
## Objectives

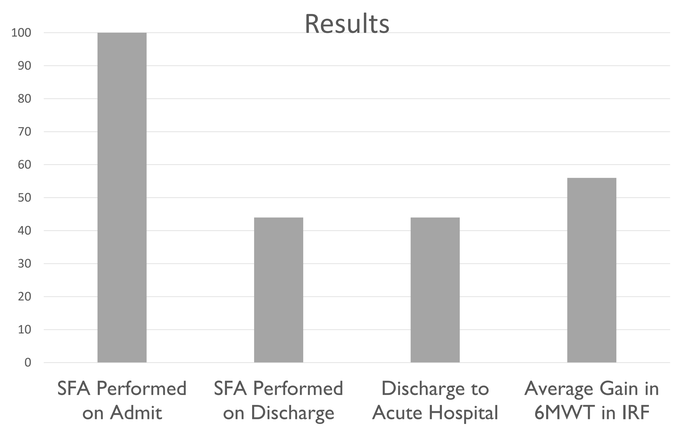
- Engagement with therapists assigned to the transplant patients' feasibility of adoption standardized functional assessments (SFA) in lung transplant patients
- Identification of measures that could be utilized for this cohort of patients
- Assess implementation of these measures for patients admitted to IRF

## Challenges

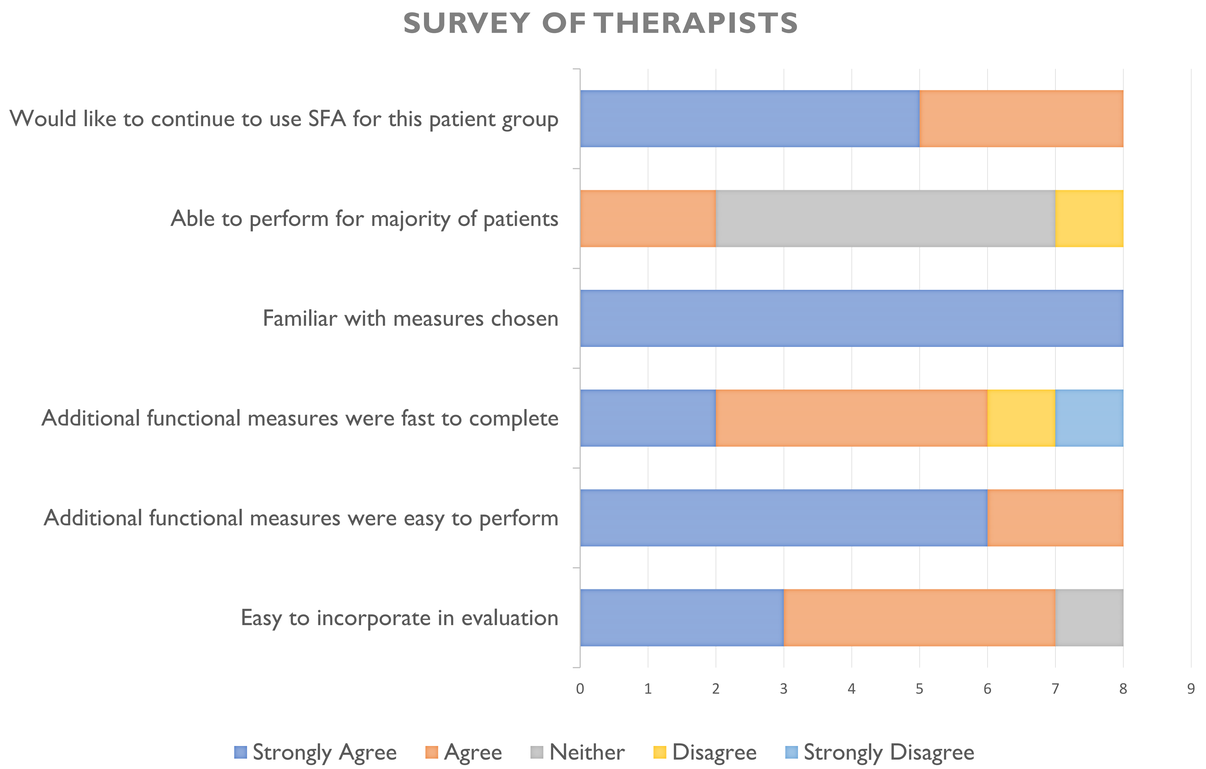
Common Themes amongst therapists

- Difficult to implement a new SFA in addition to quality indicators
- Time to complete functional assessment
- Lack of agreement as to which measures to be used
- Lack of expertise in post-transplant rehabilitation




| Assessment Tools Chosen |
|---|
| 6 Minute Minute Walk Test (6MWT) |
| Self Selected Gait Speed (10 Meters) |
| Relative Perceive Index (RPE) |
| Sit to Stand (5 time sit to stand) |




## Results

- Implementation of SFA for post-lung transplant patients was positively received
- It is not feasible to implement for all patients. Of the 9 post-lung transplant patients admitted during this period, only 3 SFA at finish of IRF course

## Discussion

- SFA were implemented for all patients (9) post-lung transplant.
- Unable to complete discharge SFA on 4/9 patients due to acute hospital re-admissions
- Discrepancy noted between the easy/familiarity of the chosen SFA and the ability to perform for patient

## Future Direction

- Continue to advocate for SFA for post-lung transplant patients
- Plan to roll out functional outcome measurements for patients' post-liver and heart transplants
- Consider implementation frailty index in the functional assessment at discharge
- Advocate consistent use of SFA for all post transplant patients

## References

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# Enhancing Recruitment: A Quality Improvement Strategy for a Prospective Research Study

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## Background

Recruitment of participants for prospective studies is critical for the success of the research studies and generalizability of data. Previous studies have highlighted skilled communication of the research team, development of partnerships with clinical teams, and adequate resources to perform recruitment activities as key components in successful recruiting.[1,2]

The process of recruitment within the division of Pediatric Rehabilitation at Cincinnati Children's Hospital Medical Center has historically been challenging.

Previous strategies to improve recruitment involved research faculty attending clinical meetings and sharing information about research studies with clinical faculty, but no standardized strategy for implementation has been developed.

The goal of this project is to improve recruitment for research studies within our division using quality improvement methodology with the objective of developing standardized processes to optimize recruitment.

## Study Recruitment Opportunity

A principal investigator (BGK) has obtained NIH funding for a study aimed at developing a tool that predicts the risk of development and/or worsening of mental health sequelae after mild traumatic brain injury in youth ages 11-17 years (MOST-mTBI). The recruitment goal is 1000 patients over a 4-year recruitment period.

Recruitment for this study began in July 2024 and occurs in a variety of settings including the Emergency department, through school athletic departments, and in outpatient clinics. The focus of this project is recruitment of subjects from outpatient clinics.

## Clinic Settings

Patients with mild traumatic brain injuries are seen within the Brain Health and Wellness Center (BWHC) which is a multi-divisional center that includes PM&R, Sports Medicine, and Neurology.

Clinic Types:

1. Head Injury/Concussion Clinics (HI/con) – exclusively patients with concussions (Sports Medicine or PM&R)
2. Advanced Clinic – exclusively patients with concussions who have risk factors for prolonged recovery (Sports Medicine, PM&R, or Neurology)
3. Sports Medicine General Clinics – variety of diagnoses including concussions

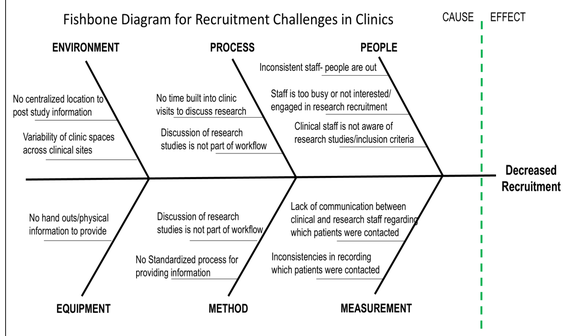
## SMART AIM Statements

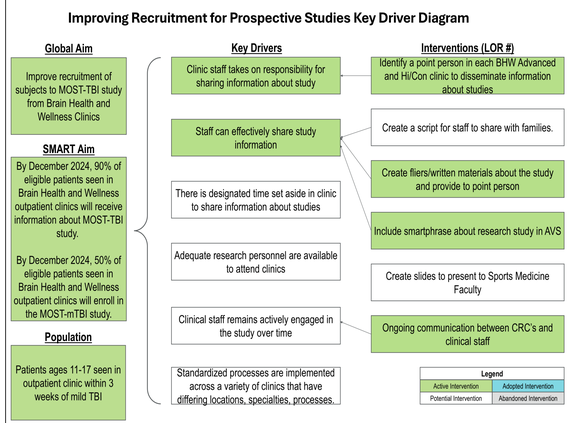
By December 2024, 90% of eligible patients seen in Brain Health and Wellness outpatient clinics will receive information about MOST-mTBI study.

By December 2024, 50% of eligible patients seen in Brain Health and Wellness outpatient clinics will enroll in the MOST-mTBI study.

## Methods

Initial Planning: Clinical research coordinators (CRC), principal investigator, and I met to discuss challenges and key drivers for successful recruitment.

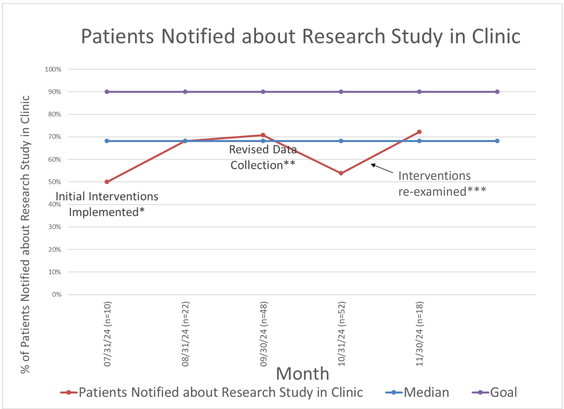


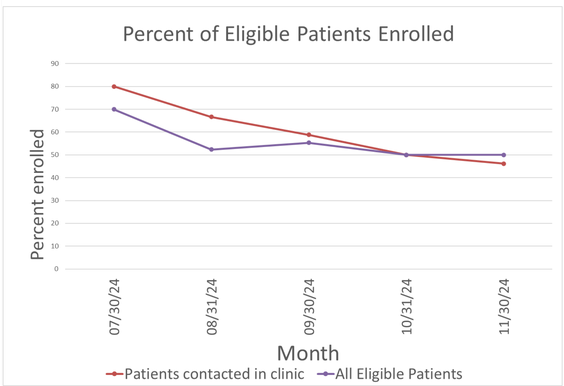




Baseline Data:
In a recent research study examining school re-entry of patients who sustained mild traumatic brain injuries, 32.6% of eligible clinic patients were informed about the study, and 21% enrolled.

## Results

Run charts:




- Initial Interventions

1. Research team identified point-people in each clinic as primary points of contact when eligible patients were scheduled in clinic and shared study information with them via virtual meeting or email
2. Research team met with sports medicine BHW leader. This provider shared information about the study at Sports Medicine Clinical Meeting
3. CRC sent emails to point-people prior to each clinic, notifying them of which patients were potentially eligible for the study
4. Research team sent monthly recruitment email updates to clinic teams with awards for successful information sharing and recruitment
5. Smart-phrase was created to share study information in patient After Visit Summaries
6. Tear-off pads with study information were created and distributed to clinical sites

## Results continued

** Data Collection Standardization
At this time, it was noted that there were slight differences in how CRC's were reaching out to clinic point-people and in how data was being recorded.
A standardized workflow for CRC recruitment process was created, and previously recorded data was revisited to ensure that it was recorded correctly

*** Interventions re-examined
There was a decline in percent of eligible patients notified about research studies in October. CRC's and point-people identified barriers as:

1. Several clinical staff were out including point-people who were very engaged in the recruitment process
2. Clinics were very busy, so staff frequently forgot to mention the study to potential participants
3. There was a disproportionate drop in general sports medicine clinics compared with concussion-only clinics

In response, site visits were conducted to the various clinical sites with goals of

1. Identifying passive ways to share study information (potential locations for informational posters, tear-off pads)
2. Re-engaging clinical staff with in-person contact
3. Identifying potential barriers to providing research study information

## Conclusions / Lessons Learned

- We did not reach our goal of 90% of patients receiving information about the study in clinic, but we did reach our recruitment goal of enrolling >50% of eligible patients.
- The success of enrolling patients who did not receive information in clinic may be due to strong follow up and communication between CRC's and all eligible patients.
- A multi-faceted approach to participant recruitment was helpful for this study.
- Implementation of a standardized workflow helped ensure consistency in recruitment strategy.
- Engagement of the clinical team through ongoing communication and flexible communication modalities was key for continued participation.

## References

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Atrium Health

Wake Forest University School of Medicine

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Department of Physical Medicine & Rehabilitation

# Medical Student Research Mentorship Program (MSRMP)

***Sima A. Desai, MD[1], Internal Mentor: Terrence Pugh, MD [1], External Mentor: Adam Tenforde, DO[2]***

***[1] Atrium Health Carolinas Rehabilitation, Charlotte, NC [2] Spaulding Rehabilitation – Harvard Medical School, Charlestown, MA***

## Introduction

**BACKGROUND**

- Annual surveys showed that faculty and residents wanted more exposure to more research opportunities and opportunities on how to be better mentors/teachers within the field of research.
- As a result → in 2021 – a medical student research mentorship program (MSRMP) was established to pair one faculty member and one resident with one medical student via an application process through our website and social media.
- In 2021, there were only 4 faculty involved. In 2022, there were 5 faculty involved. In 2023 there were 8 faculty involved including one from the Urology department.
- 2023 Data: 6 inpatient PMR (BI, SCI, Peds, Onc), 1 outpatient PMR, and 1 urologist faculty member that has an SCI interest
- This program has had 100% success rate of acceptance for AAP posters thus far.

**OBJECTIVE**

- Recruit more First Time Faculty Mentors amongst our different sites and specialties within PMR to be a part of this program with the goal of increased academic productivity and faculty development of mentorship skills.

**METHODS**

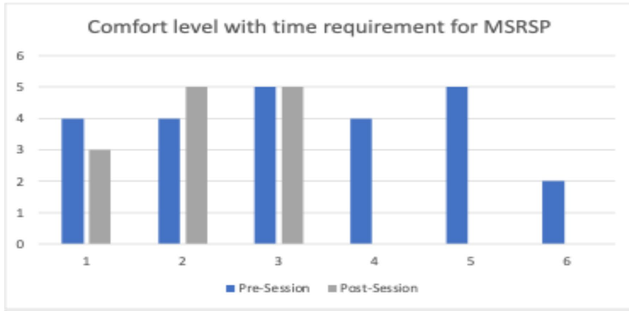
- Created a pre- and post-program survey to the faculty who have NOT participated in MSRMP to determine the barriers regarding participation and the comfort level of faculty with creating, mentoring, and presenting a case report for submission at a national conference from those that have not participated in the program before.
- Utilized pre-program data to address barriers at monthly faculty meeting, sent out a detailed email about the program itself, and the success program previously
- Discussed Educational RVU credit for participating in the program
- Post survey was sent only to the new faculty that participated

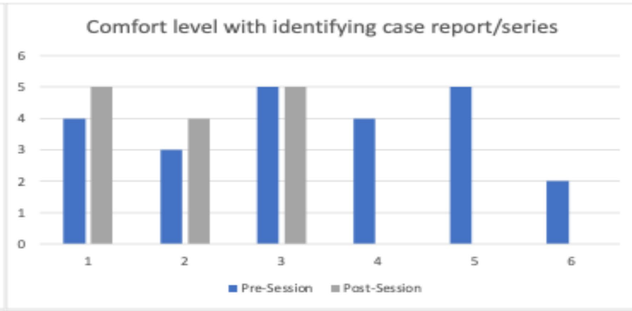
**PROGRAM**

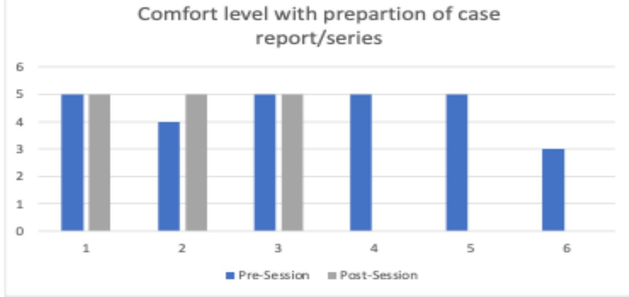
- The program enrollees/mentees are expected to attend all the virtual education sessions in anticipation of submitting a poster case report to the AAP and present at the annual meeting.
- The resident mentors are expected to attend all the education sessions and work with their faculty mentor to select an appropriate case. Perform chart review and help the students prepare poster.
- The faculty mentor was tasked with selecting a clinical case appropriate for presentation and to meet with both the resident and medical student to discuss the case.
- The virtual sessions include topics such as:
  -How to select a case
  -How to write a case report
  -How to create a poster
  -Virtual Presentations/Feedback sessions

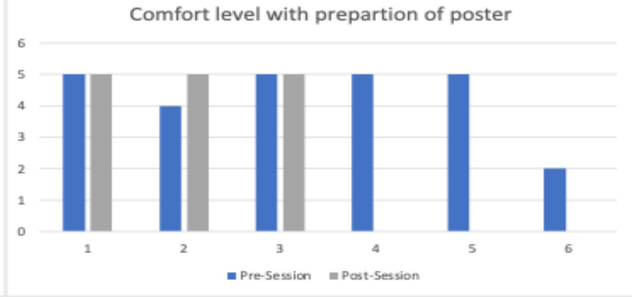
## Survey Results

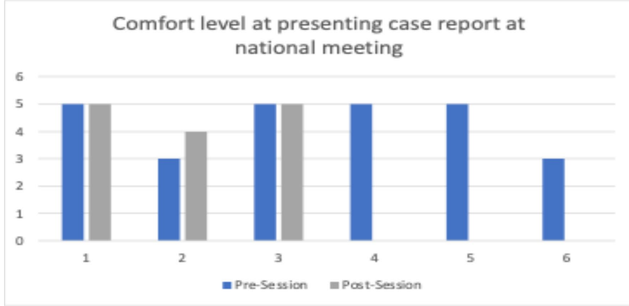
Participating and non-participating faculty were given a survey prior to the beginning of the sessions and after abstract submission and acceptance of posters to determine comfort level with the following domains. Key is as follows: 1 = Very Uncomfortable, 2 = Uncomfortable, 3 = Neutral, 4 = Comfortable, 5 = Very Comfortable.

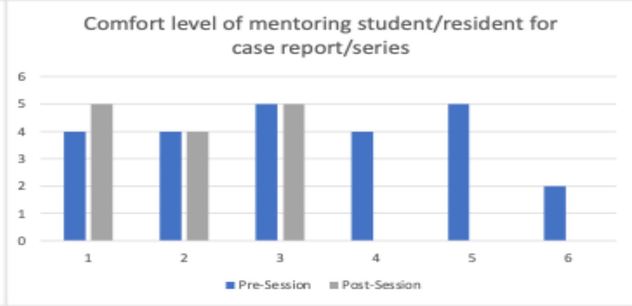



## Pre-Session Feedback

| Barriers to Participation | Solutions to enhance participation in MSRMP |
|---|---|
| Unique enough learning case | Admin Time and/or Paid Time |
| Time x 4 | Detailed Email about program |
| How to get started | Help faculty identify what types of cases may be worth presenting |

## Post-Session Feedback

| |
|---|
| Written summary of goals after each virtual meeting to have as a reference for topics discussed |
| Great program to get medical students exposed to case reports and research. Evening timing are challenging. Some of the meetings could have been "check ins" via email instead of actual meeting. Helpful when all the projects were discussed with feedback |
| Pacing felt slow due to multiple meetings but perhaps is best pace for medical students. Appreciated mini-presentations by senior resident as well as proposed timeline upfront. Structure of pairing resident with attending and medical student is great way to translate knowledge |

## Discussion

- Pre and Post Surveys found that the time was likely the largest barrier to participation
- Solutions suggested were to help faculty identify cases and allocate administrative time
- Total of 8 faculty participated which were all inpatient faculty this year but 3 were new inpatient faculty (one from brain injury and 2 from oncology)
- All new faculty who participated did find the program beneficial but no drastic changes from pre and post surveys
- 100% success rate was achieved for acceptance of abstracts for AAP and some cases are planning to be submitted to journals for further academic productivity

## Conclusion

- We increased the number of new faculty who had NOT participated in our program before but they were all inpatient faculty
- We hope to attract more faculty and expand the program beyond 8 faculty faculty members in the future
- We hope to add faculty from our outpatient and outlying inpatient rehabilitation sites in the future by utilizing Educational RVUs as an incentive
- Time will remain a barrier as this program occurs after-hours
- This program provides a feasible curriculum to follow for other PMR programs without large research departments to enhance academic productivity

## References

1. Conroy MB, Shaffiey S, Jones S, et al. Scholarly research projects benefit medical students'research productivity and residency choice: Outcomes from the University of Pittsburgh School of Medicine. Acad Med. 2018 Nov; 93(11):1727-1731. doi: 10.1097/ACM.0000000000002328

## Contact Info

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# **Title -** Neurogenic Lower Urinary Tract Dysfunctions and its management in Spinal Cord Injury Patients at Rehabilitation Centre in Nepal.

Dr. Raju Dhakal, Medical Director, Spinal Injury Rehabilitation Center, Nepal

External Mentor – William Bockeneck, Internal Mentor – Shashinda Bhuju

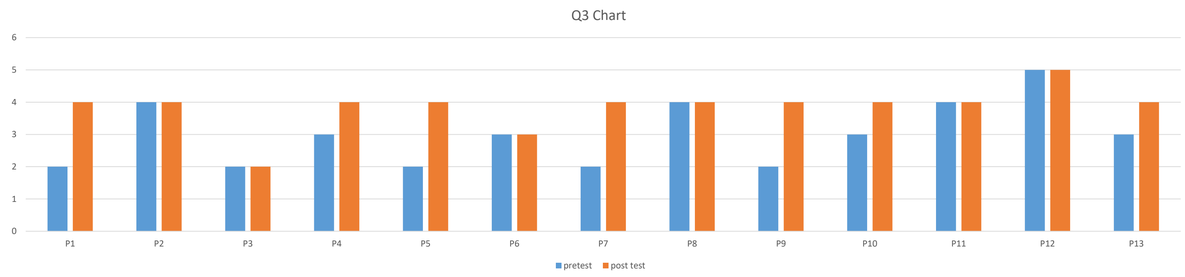
Authors: Raju Dhakal, Shashinda Bhuju, Mandira Baniya, John Chae, Michael Kennelly, William Bocekneck

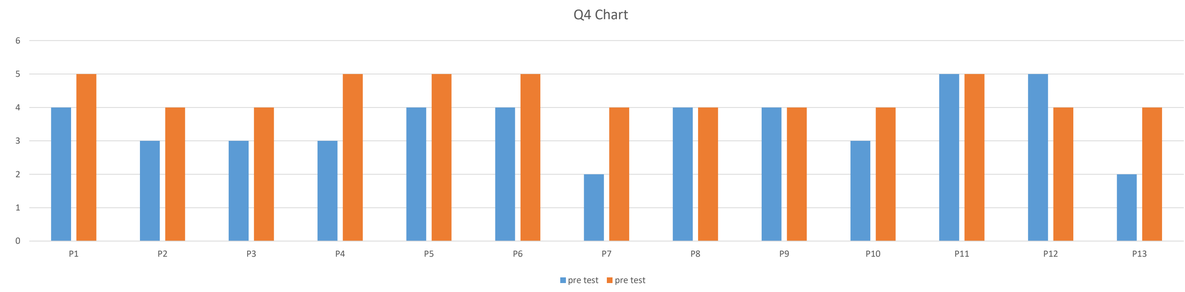
**Introduction:** Majority of patients with spinal cord injuries (SCI) presented at Spinal Injury Rehabilitation Center with urinary problems such a s incontinence, urinary retention, renal impairment, urinary tract infection, renal stones, and poor quality of life are some complications of thi s condition. The Neurogenic Lower Urinary Tract Dysfunctions (NLUTDs) and its rehabilitation has been practicing at spinal injury rehabilitatio n center since its establishment, however, we need to improve standards of care by clinical audit with development of protocol and the check list for monitoring and evaluation periodically to improve quality of NLUTDs care to reduce the adverse urological events after SCI.

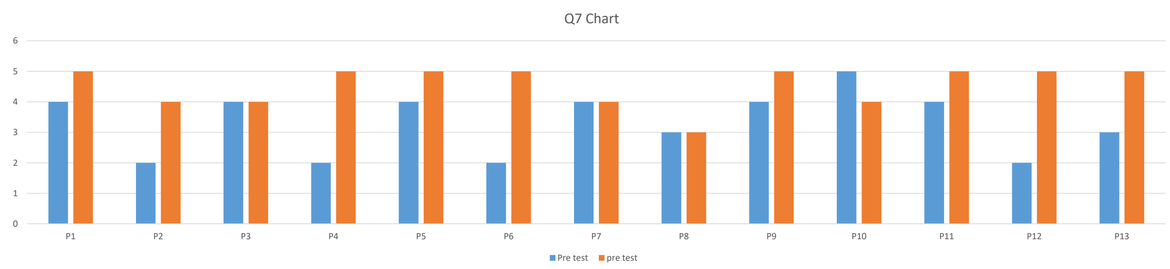
**Objective:** To standardize NLUTDs care after SCI by developing protocol and check list at spinal injury rehabilitation center.

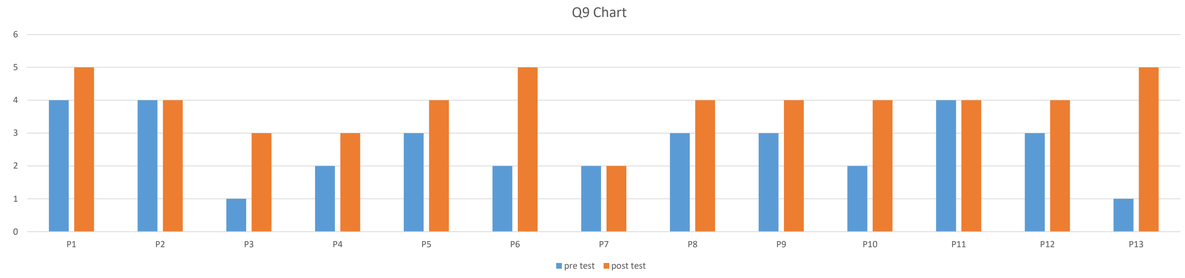
**Study methodology:** Baseline audit by reviewing the available documents from patients file and usual practices at SIRC was done. Developed NLUTDs audit tools that includes protocol and checklist with a reference from SIRC`s context and other relevant evidences. Follow up audit, as sessed the standard of care by implementing audit tools at Spinal Injury Rehabilitation Centre, Nepal. A 5 point Likert scale (strongly disagree-1, disagree-2, Neutral-3, agree-4, strongly agree-5) used to assess before the development of standard protocol and checklist and after the de velopment of protocol and checklist to see how much useful the outcome and the impacts of developed protocols for standardization of NLUT Ds management at Spinal Injury Rehabilitation Center, Nepal

**Result:** A total of 13 doctors and nurses participated in this audit which revealed significant improvements following a pre- and post-test evalu ation particularly on Q3, Q4, Q7, Q9 and Q11. However in the Q10, both pre and post test scores are at lower side suggesting further improve ment. After implementing targeted educational interventions and training based on the audit findings, a post-test assessment demonstrated an increase in knowledge and competence among the rehabilitation team with standardization of NLUTDs care at the center.

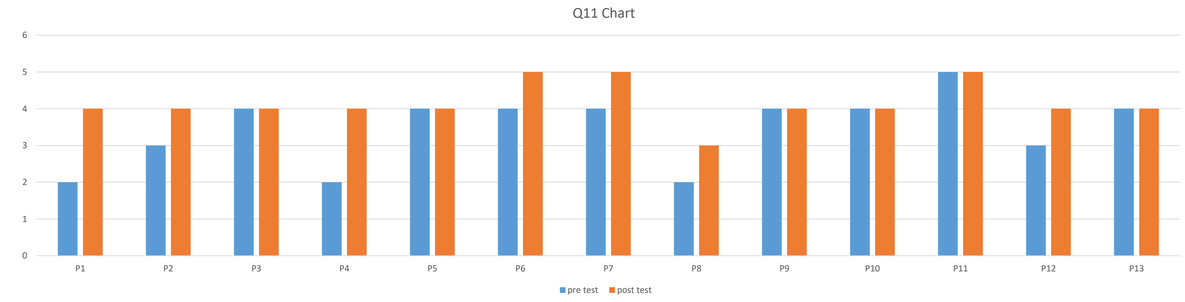







## Protocols developed for NLUTDs at Spinal Injury rehabilitation Center, Nepal

1. Routine assessment of NLUTDs of all inpatients
2. All patients goal set for NLUTDs and interventions are planned
3. Patient and caregivers education-group and one to one sessions in Nepali language
4. Practical demonstration and hands on training of reusable intermittent catheters
5. Routine re-education of re-use of plain catheter after cleaning with soap and running tap water
6. Doctors and nurses re-educate and monitor bladder diaries, leakage, intake output
7. 1 week prior to urodynamic study (UDS) regular check of UA/C&S, if positive treat prior to UDS, UDS after CIC in around 2-3 months of injury.
8. Regular reporting of UDS finding, in case of over activity , low compliance bladder, start anticholinergics and or B3 agonist,
9. If underactivity, alpha 1 antagonist can be used
10. Necessary urological interventions e.g. cystoscopy, suprapubic catheterization routinely and timely done
11. Routine ultrasound of KUB, after 2-3 months of admission ideally but we do as per need basis.
12. There is proper and regular counseling regarding bladder care at home and in community with supply of medicine and products and follow up advice

**Conclusion:** The developed NLUTDs checklist and the protocol have been useful and is a solid document to standardize NLUTDs manageme nt after spinal cord injury at Spinal Injury Rehabilitation Center, Nepal. Developed standard NLUTDs audit tools which consists of protocol w ith checklist to improve quality of care of neuro-urological issues after SCI.

**Recommendation:** The developed checklist and protocol can be used to other facilities where SCI unit exists in Nepal.

# Enhancing Research Capacity in Sports Medicine within the PM&R Department at JHU: A Collaborative Approach to Academic Excellence

Mohammed Emam MD*, Alexis Coslick DO*
Internal Mentor: Preeti Raghavan, MD* External Mentor: Justin Hata, MD**
*Physical Medicine and Rehabilitation, Johns Hopkins University School of Medicine, Baltimore, MD, USA
** Physical Medicine and Rehabilitation, Loma Linda University, CA, USA

## Background

- The sports medicine program at JHU was established in 2021 with two full-time clinical physicians and has since expanded to four clinical physicians.
- Despite growth, original research productivity has been limited due to the absence of protected time for research.

## Aims

A strategic initiative aims to:

•Enhance original research productivity by leveraging resources, engaging medical professionals, and fostering interdisciplinary collaborations.

## Objective

- Increase the number of IRB-submitted projects led by sports medicine faculty to at least four within 6 months bet. Mar 2024-Dec 2024 (baseline 3 projects from 9/21-2/24)
- Establish a sustainable research framework and eventually enhance original research publications.

## Plan

Intervention

**Map out existing research resources**

"PM&R Specific Aims Workshop" lead by PM&R research faculty who could serve as mentors to Sports Med faculty navigating IRB submission and research design process.

Biostatistics Epidemiology and Data Management (BEAD) Core, a program at JHU that provides research support services to faculty and trainees.

**Initiate a Sports Medicine Research Interest Group**

A meeting invitation was sent out to undergrad Students, medical students and residents interested in sports medicine research to attend a meeting with faculty, a virtual meet and greet was se-up.

A survey was then sent to the attendees investigating their interests within sports medicine to match these with appropriate faculty and form specific research teams.

Example topics included: Regenerative medicine

**Protect Fellow Research Time**

10% of Sports fellows' research time was built into their weekly schedule towards research and scholarly activities.

**Cross-Departmental Collaboration**

Partnership was formed with performing arts physical therapy, pelvic floor physical therapy, and department of pediatrics.

Engaged orthopedics and neurology faculty for future project collaboration development.

## Outcome

- A sports Medicine Research Interest Group was initiated, including 3 PM&R faculty, 2 sports fellows, 4 residents, 8 medical students, and 4 undergrad students.
- A formal Sports Medicine MSIG founded at JHU. and a sports medicine PM&R faculty (A.C.) was appointed as an advisor. The group were encouraged to engage in research activities.
- As baseline, from Sep. 2021 to Feb. 2024: 3 IRB projects were submitted. From Mar. 2024- Dec. 2024; a total of 7 IRB projects were submitted, an increase of 133%

## Future Steps

- Institutionalize quarterly research meetings with a defined agenda and follow-up action items.
- Maintain the sports medicine MSIG and research interest group as a platform for engaging students and residents.
- Focus on manuscript preparation and submission to enhance original research output.
- Track and report on long-term outcomes, such as published research and explore external funding for projects.

# Increasing Resident and Researcher Engagement Efficacy

Kevin Franzese, DO†; Emily Solsrud, MD†; Clayton Bunting, DO†; George Wittenberg, MD†; Lee Fisher, PhD†; Chris Garrison, MD‡

† University of Pittsburgh, ‡ Baylor University

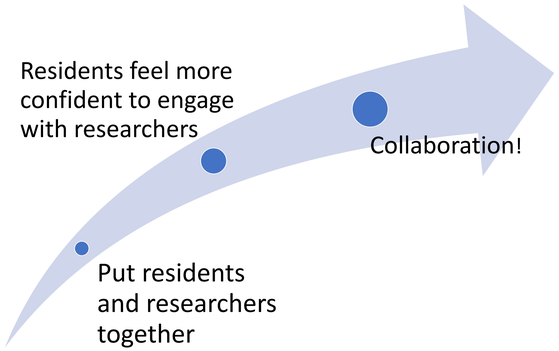
## Background

Siloing of research and clinical activity at academic institutions is not a new problem. Our institution recently completed a new outpatient and research facility which put these groups adjacent to each other, creating a unique opportunity to improve collaboration and interaction. "Introductory" activities between Rehab Neural Engineering Laboratory (RNEL) staff/trainees and Physical Medicine and Rehabilitation (PM&R) trainees were well received, but residents did describe low levels of awareness of and confidence in engaging with RNEL despite relatively higher enthusiasm to do so, suggesting low engagement efficacy.

To this end, we set out to create a more structured means of interaction with a goal of increasing resident engagement efficacy, with a long-term goal of increasing resident collaboration on RNEL projects. We sought to do this by physically putting residents into the research space during their neurorehabilitation rotations.

RNEL meets once a week for a "NERD hour" (Neural Engineering and Rehabilitation Discussion), where research trainees present ideas and updates for their projects to the entire group.

## Objectives



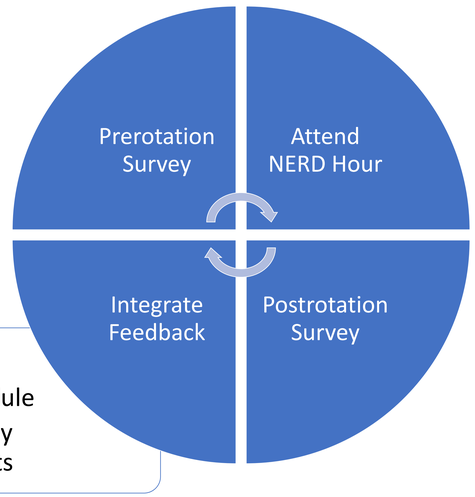

## Methods

This project has been approved by the UPMC Quality Improvement Review Committee (Project ID 25081).

Over five months, three residents per month were given the opportunity to attend a NERD hour on Monday morning once during their rotation. We created a brief survey utilizing a five-point Likert scale assessing the following:

- Familiarity with RNEL projects
- Sense of connectedness to RNEL
- Interest in participating in research at RNEL
- Confidence discussing stroke rehabilitation technologies with colleagues
- Enthusiasm for stroke rehabilitation
- Ability to engage a researcher to develop a research idea
- Confidence in ability to discuss rehabilitation technologies with patients

The survey was administered before and after each rotation.

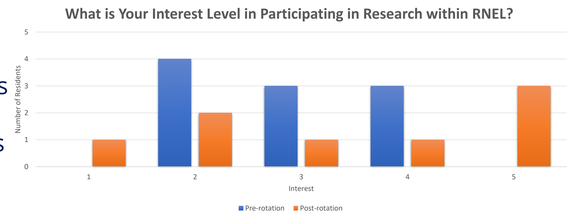


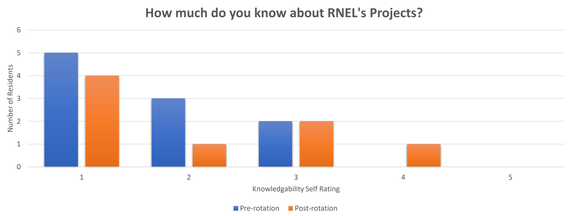

- Schedule
- Faculty Escorts

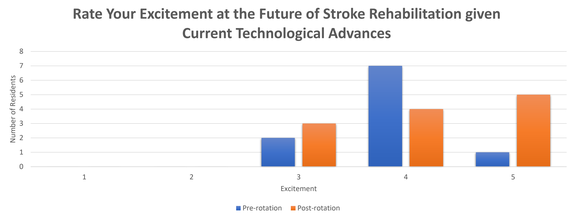
Later iterations saw the addition of upcoming NERD hour topics so that residents might plan which session they'd like to attend, identifying other activities during the week residents could partake in, and the integration of other key faculty into the process of bringing trainees to NERD hour sessions.

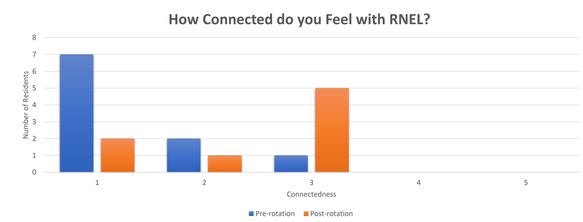
## Results

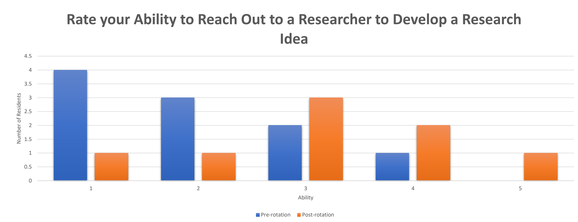
Every resident was able to attend at least one NERD hour during the study period. Ten residents answered the pre-rotation survey and eight answered the post-rotation survey. Survey results suggests general increases in all self-ratings assessed.

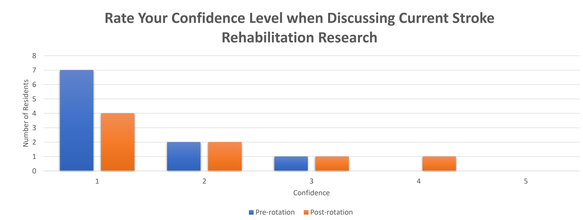


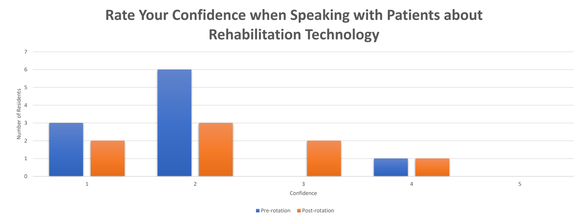




## Discussion

Residents reported increased interest in research, increased familiarity and connectedness with our researchers, and increased confidence that they could effectively engage with researchers about stroke rehabilitation topics and ideas. We were able to quickly integrate feedback into future iterations of the project. For example, we received early and consistent feedback that getting NERD hour topics in advance was preferable, which only took a few emails between collaborators to facilitate.

This project had multiple limitations. Low sample size permitted only limited analyses of our results. More significantly, the demands of the inpatient rehabilitation unit made getting residents to sessions difficult at best and at times impossible, especially when key faculty were not available to physically facilitate the process. Spreading this burden to other collaborators made this easier, but the process remains quite vulnerable to scheduling variability and competing demands. Lastly, the timescale of this project did not permit the capture of any resultant collaboration between researchers and residents, which we will monitor for as it continues.

## Conclusions

Residents enjoy exposure to research activity, and after attending research meetings reported more enthusiasm, connectedness, and confidence that they could engage with researchers in the future. This may increase collaboration.

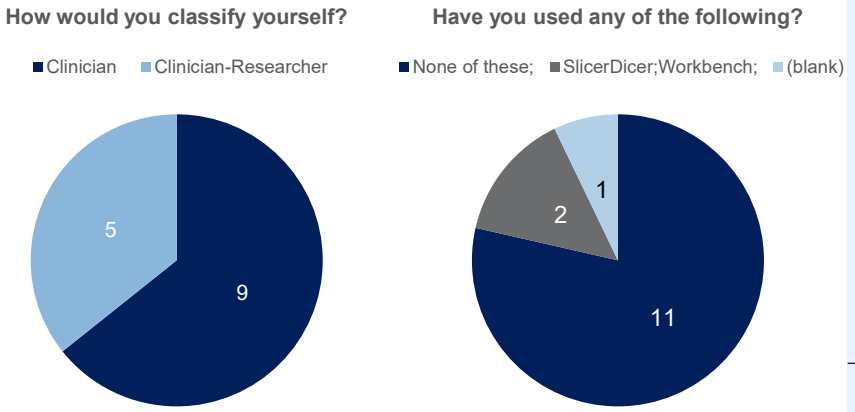
# Encouraging A Department Research Culture via Clinical Data Access

Stephen Hampton, MD[1], Kimberly J. Waddell, PhD[1], Gary S. Clark, MD[2]
1 Department of Physical Medicine and Rehabilitation, Perelman School of Medicine, University of Pennsylvania, Philadelphia
2 Department of Physical Medicine and Rehabilitation, Case Western Reserve University/Metro Health Medical Center, Cleveland, Ohio

Penn Medicine
University of Pennsylvania Health System

## Plan

The majority of faculty in our department are primarily clinicians, though we have a growing number of full-time researchers. While Quality Improvement projects are distinct and often smaller in scope from Grant-supported research projects, they may serve as an important entry point for clinicians to engage with data-driven approaches to problem solving. Over time, this may inspire clinician-research collaborations and help foster a more robust research culture within a department. To support my growth in use of Electronic Medical Record (EMR) tools to benefit our department, I was recently named the Chief Medical Information Officer (CMIO). Preparing for this role was a primary motivation for applying to the PAL Program. For one aspect of this leadership role, I intend to reduce real and perceived barriers to appropriately accessing clinical data for Quality Improvement and Clinical Research activities.

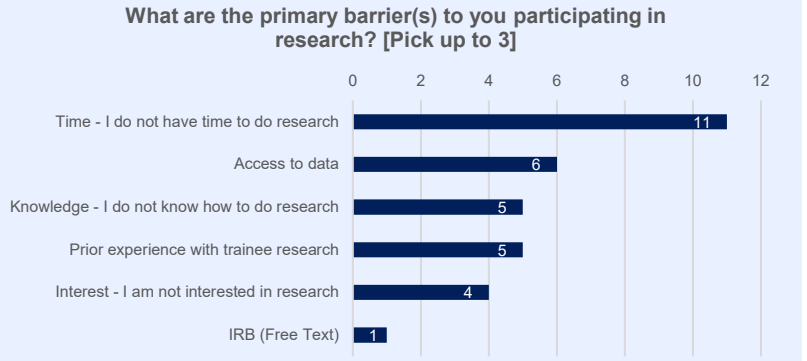


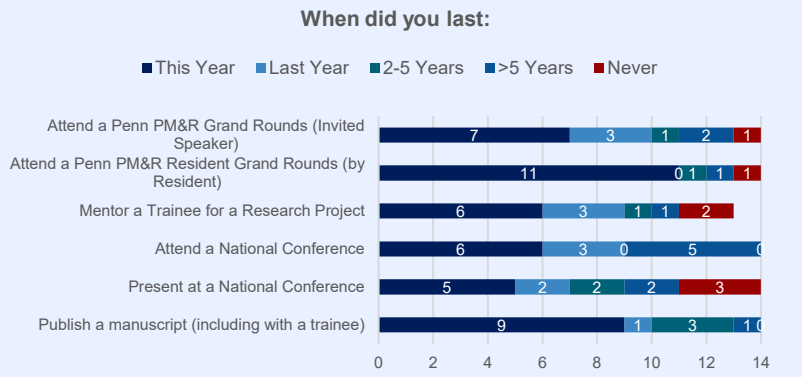


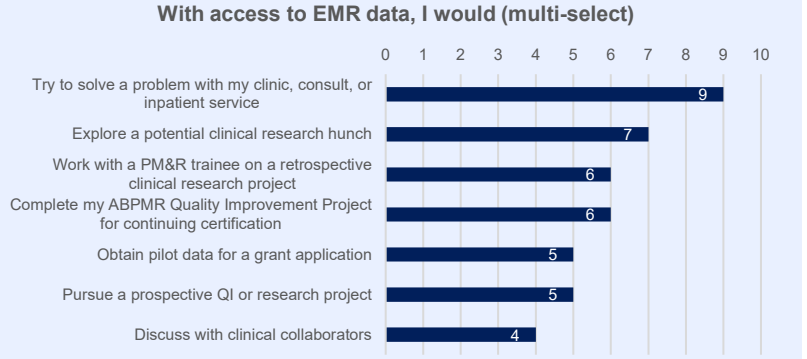


## Do

During an in-person faculty retreat and subsequent faculty meeting, I presented on EMR tools to access clinical data and completed a survey. Primary goals included: 1) assessing current attitudes and perceived barriers to research participation by clinical faculty, 2) presenting readily available EMR tools (e.g., Epic's SlicerDicer) that clinicians could use to monitor areas of interest, 3) inviting request submissions for utilization of these tools, supporting development of formal QI projects where appropriate, and 4) fostering dialog between clinicians and researchers about potential common interests.



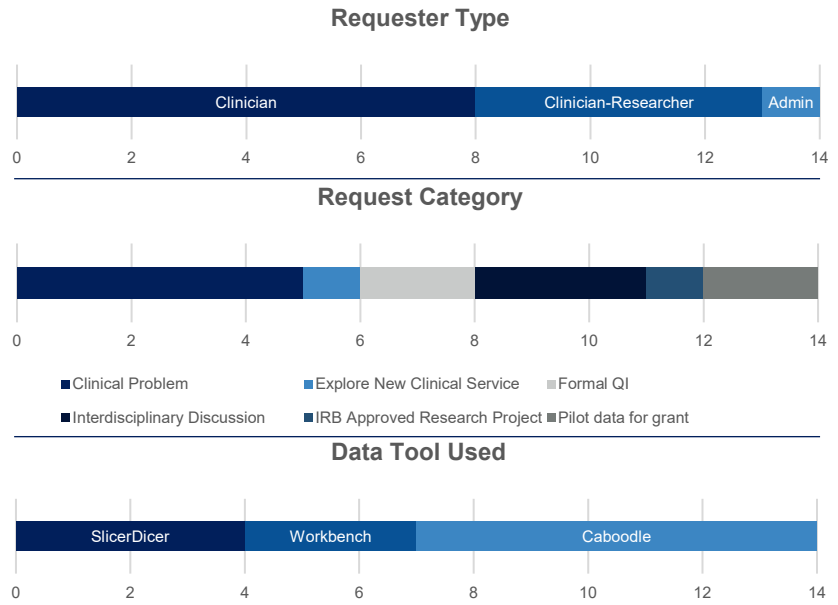




## Study

Primary outcomes included: 1) number of EMR data requests from September to December 2024 (0 prior to this period), 2) responses regarding the current research culture by clinicians and researchers during initial and follow-up survey.

14 of 27 (52%) faculty completed the survey. None of the respondents self-reports as a primary researcher. On a 10-point likert scale, a rating of the "research culture" in our department had an average rating of 7. Subsequently, 9 people submitted 14 data requests. Half of the requests could be fulfilled with "self-service" data tools (i.e., SlicerDicer and Workbench). The other half required a more advanced query with the "Caboodle" database.




## Act

Despite identified barriers to research participation and limited experience with EMR data tools, multiple faculty requested clinical data during this QIP. I facilitated the creation of data tools appropriate for their request and provided education in their use. In future bimonthly faculty meetings and annual faculty retreats, we will continue to present options for clinical data access, as well highlight and celebrate the successful use of these tools within our department.

# Empowering Rehabilitation Engineering: Streamlining IRB Protocols with a Standardized Checklist

Jennifer Hankenson, MD, FAAPMR, DipABLM

## INTRODUCTION

**Background:** Rehabilitation engineering applies engineering principles to the design and development of assistive devices and technologies aimed at improving the quality of life for individuals with disabilities and facilitating their independence. This field includes innovations such as wearable sensors, brain-computer interfaces, prosthetic devices, and non-invasive brain stimulation technologies. Despite the promising benefits of these advancements, integrating them into clinical practice at Yale University has been challenging.

**Establishing a Collaborative Program:** The collaborative relationship between MCI Management Center Innsbruck and Yale University began in mid-2023, initiating the formal Rehabilitation Engineering program. Since then, three protocols have been developed and implemented. However, all of these protocols have been plagued by delays, underscoring the need for a more streamlined and efficient approach to IRB protocol creation.

**Problem Statement:** The current processes for IRB protocol creation within the PM&R department at Yale University lack standardization and coordination. This has resulted in bottlenecks, inefficiencies, and high variability in protocol quality, ultimately affecting IRB approval rates and turnaround times.

## PLAN

**Objective:** Develop a standardized checklist to streamline the IRB protocol creation process for rehabilitation engineering projects, ensuring consistency, completeness, and efficiency.

**Goals:**

1.Create a comprehensive, standardized checklist that covers essential components of IRB protocol creation.
2.Train staff and researchers on using the new checklist.
3.Ensure effective implementation of the checklist in upcoming protocols.
4.Reduce the amount of time it takes to create protocols.
5.Reduce the turnaround time from IRB submission to approval.

**Timeline:**

- **Development Phase:** 2 month
- **Pilot Implementation Phase:** 1 months
- **Review and Refinement Phase:** 3 months

## DO

**Steps to Implement:**

**1.Data Collection:** Gather feedback from existing IRB protocols and previous projects to identify common pitfalls and best practices.
**2.Develop Checklist:** Create a draft checklist to address identified issues and ensure completeness.
**3.Pilot Testing:** Apply the checklist to upcoming protocols, train staff and researchers, and monitor compliance.
**4.Gather Feedback:** Collect qualitative feedback from staff, researchers, and IRB members on the checklist's usability and effectiveness.

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## Causes of Inefficiencies in IRB Protocol Creation

**People**
- Untrained staff
- Poor communication
- Staff workload balance

**Methods**
- Complex process
- Inconsistent methods
- Lack of clear protocols for amendments

**Materials**
- Limited resources
- Poor quality of materials

**Environment**
- Distracting environment
- Inadequate space

**Measurement**
- Inaccurate data
- Inconsistent measurement
- Lack of proper calibration procedures

**Equipment**
- Outdated equipment
- Maintenance issues
- Limited access to necessary technology and tools

**Data**
- Incomplete data
- Poor data management
- Frequent queries about training and conflict of interest records

**Management**
- Lack of support
- Ineffective policies
- Delays in IRB responses

## Overview of Checklist Components

**Study Procedures**

•Screening Procedures

**Data Collection and Quality Assurance**

•Secure Data or Specimen Storage

**Safety and Risk Management**

•Risk Assessment and Mitigation

•Risk Communication

**Administration and Oversight**

•Comprehensive Staff Training

•Thorough Documentation

•Adequate Laboratory Facilities

•Reliable WiFi Connectivity

•Improved Graphics User Interface (GUI)

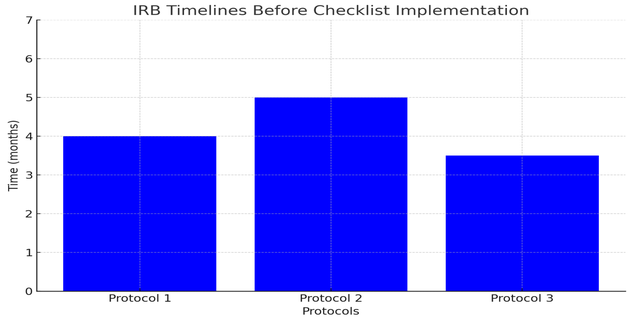
•Proper Device Calibration

•Effective Patient Recruitment Strategies

•Protocol Amendment Procedures

•IRB Protocol Training

•Timely Responses to IRB Queries




## STUDY

**Evaluation of Implementation:**
- **Checklist Completion Rates:** Monitor the frequency and thoroughness of checklist use in new protocols.
- **Feedback Collection:** Gather feedback from staff, researchers, and IRB members.
- **Outcome Measures:** Assess improvements in protocol quality and reductions in IRB approval turnaround times.

**Comparative Historical Data:**
- **Initial Protocol Submission to Approval:**
  - **Historical Average:** 4-6 months
  - **Case Example for Protocol 1:** Took approximately 4 months due to protocol amendments and learning curve.
  - **Case Example for Protocol 2:** Initial protocol written in November, started in January, changed from clinical trial to feasibility study, approved by March.
  - **Case Example for Protocol 3:** Took approx. 3.5 months due to necessary modifications and repeated queries about completed training and conflict of interest records.
- **Current Experience:** Recent protocol took 3 weeks to write and is undergoing IRB review with a total expected turnaround of 2-3 months.

## ACT

**Refinements and Full Implementation:**
**1.Analyze Feedback:** Review feedback and data collected during the pilot phase.
**2.Adjust the Checklist:** Make necessary adjustments based on the findings.
**3.Roll Out and Monitor:** Implement the refined checklist for all future IRB protocol submissions and establish a continuous feedback loop for ongoing improvements.

## RESULTS

**Key Findings:**
•Checklist Development: Successfully developed a comprehensive standardized checklist.
•Staff Training: Conducted training sessions for all relevant staff and researchers.
•Compliance Rates: Achieved high compliance with the checklist during the pilot phase.
•Stakeholder Feedback: Collected positive feedback from staff, researchers, and IRB members on the checklist's usability and effectiveness.

**Current Experience:**
•Recent IRB Protocol: Developed in 3 weeks using the new checklist, currently under IRB review.
•Expected Turnaround: Anticipated reduction to 2-3 months overall.

## CONCLUSION

The standardized checklist significantly improved the IRB protocol creation process by ensuring consistency and completeness. Positive feedback from stakeholders indicates the checklist is practical and effective. Ongoing monitoring and refinement will ensure continuous improvement and sustained success in integrating rehabilitation engineering projects into clinical practice, thereby enhancing patient care.

# A Hybrid Writing Accountability Group (WAG) Model to Promote Academic Productivity

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## Introduction

The PM&R department's goal to boost scholarly output and reputation faces several challenges. A structured PM&R Writing Accountability Group (WAG) was proposed to support academic writing and scholarship in the face of competing responsibilities. We recognized scheduling challenges were barriers to in person approaches and developed a novel hybrid participation model to foster consistent writing habits.

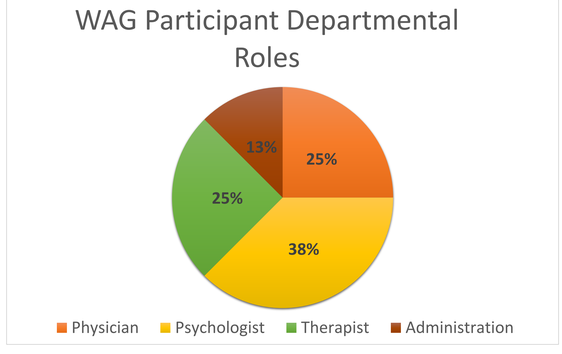
## Objectives

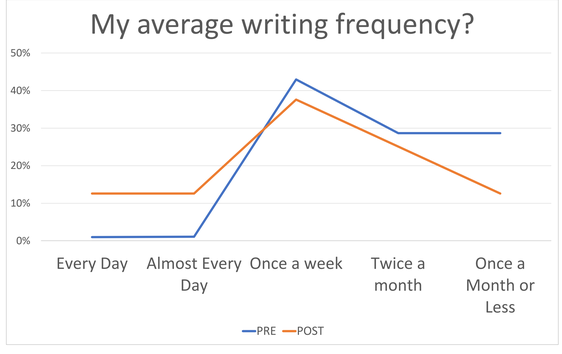
Develop and facilitate a 10-week WAG using a hybrid model for diverse PM&R department members and assess its impact on writing habits, time management, and perceived productivity.

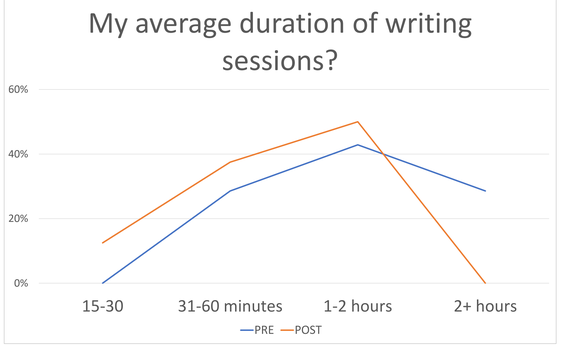
## Methods

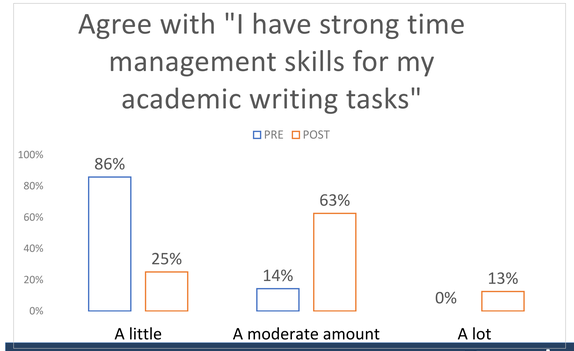
- Recruitment: The WAG facilitator (EH) presented at faculty meetings and met with therapy leadership to ensure diverse membership.
- Facilitation: The WAG facilitator led all weekly sessions and maintained the weekly tracker.
- During the 10-week WAG, participants were encouraged to attend either in Synchronous Participation: A common weekly meeting time, suitable for the majority over Zoom, was designated for live group sessions, encompassing updates, goal-setting, communal writing periods, and wrap-ups, or Asynchronous Participation: Members unable to attend live sessions were requested to dedicate an hour weekly at their convenience, ensuring they communicate their progress and objectives via email by each week's end.
- Synchronous Participation Sessions: 5 min of updates from prior session and goal setting for the WAG session. 45 minutes of timed, communal writing, 5 min of reporting, next-week goal setting, and wrap-up.
- Tracker: An online tracker accessible to all members, recorded attendance, goal descriptions, compliance with weekly writing goals, and WAG session goals. Asynchronous sessions and goals were also documented.
- Survey: A short anonymous survey was sent to all members before (PRE) the WAG started and on the last week (POST).

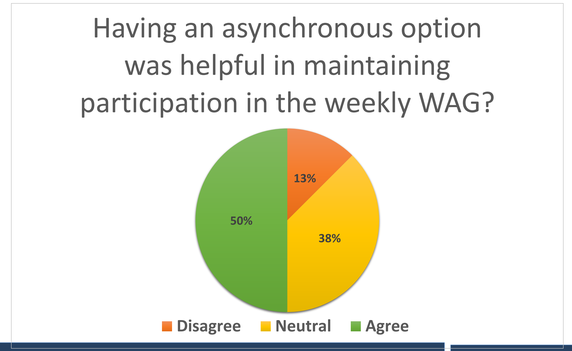
## Results (Figures)

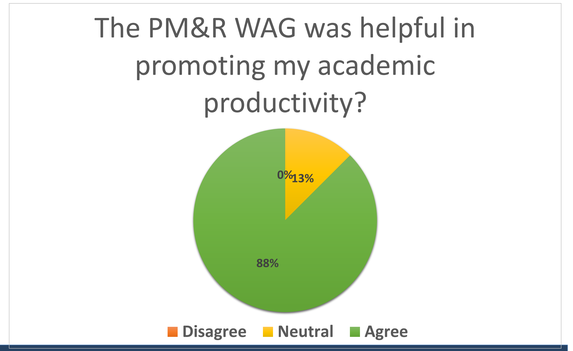



## Results

- 8 JHU/JHH PM&R employees participated in the 10-week WAG, representing diverse disciplines (physician, psychology, therapy, administration)
- Attendance compliance with all WAG sessions was 77%.
- 75% WAG members took advantage of the asynchronous option for their weekly WAG session
- On average 60% of WAG members met their 7 day writing goal each week.
- Near the end of the WAG, participants reported more frequent and shorter academic writing sessions.
- Near the end of the WAG, members reported better time management skills with their writing and enhanced academic productivity with the WAG.
- 100% of members reported they would be interested in joining a future WAG.

## Conclusion

A hybrid model had a positive impact on writing frequency and perceived overall productivity during the 10-week WAG. Weekly attendance was near 80%, and half of the members felt that having an asynchronous option helped their participation in the WAG. All participants were interested in participating in a future WAG. This model may serve as a useful approach for PM&R departments to promote academic writing and scholarly productivity among a diverse group of faculty, clinicians and administration.