Promoting Growth of Specialty Services within Emergency Medicine and Enhanced Advanced Practice Provider Integration and Satisfaction

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Abstract

After the onset of the COVID-19 pandemic, national rates of burnout among clinical and ancillary staff skyrocketed, volumes of patients within hospitals increased, and community health efforts came to a halt. UPMCs Department of Emergency Medicine and its related services needed to strategically address the increased demand for these services, while having positive impacts on the population within their community. This paper will highlight three initiatives that were addressed by the department, and the public health relevance outside of the hospital. These projects highlight a need to promote provider well-being, specialty care, and accessibility to timely services via telemedicine. Focusing on a community need related to substance use disorders, the Telemedicine Toxicology Bridge Clinic was able to begin operating to provide care to patients who needed immediate access to resources to promote treatment adherence and positive patient outcomes, which has significant public health implications within the community. Internally, the Center for Community Medicine focused on enhancing the quality of orientation programming for its newly graduated and hired Advanced Practice Providers, to help support the increased demand on healthcare services while ensuring to care for provider well-being. Finally, the Post Cardiac Arrest Service addresses a growing need for cardiac arrest care for patients across the UPMC system, and how to focus on promoting positive patient outcomes by optimizing current processes.

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Preface

I want to extend a sincere thank you to the team at UPMC's Department of Emergency Medicine for welcoming me and allowing me to be a part of so many impactful projects during my extended administrative residency. To my readers, thank you for always supporting me and providing me with continued feedback that has helped me always improve and grow.

1.0 Introduction and Background: Provider Burnout, Advanced Practice Providers, and UPMC's Department of Emergency Medicine Residency Overview

Physician and provider burnout has been steadily increasing in the United States throughout the past decade and has been further exacerbated since the onset of the COVID-19 pandemic. This prevalence has been quantified with a burnout rate of 43% reported in 2020 across both clinical and ancillary staff (De Hert, 2020). Burnout encompasses work-related stress syndrome that can be the result of chronic stress within the job environment and can have detrimental impacts on individuals experiencing it. In addition to impacting individual provider mental health, burnout negatively affects ability to provide continued quality care (De Hert, 2020). Alongside physician burnout symptoms, additional stressors related to high patient volumes, training of new staff, and length of stay can cause significant detriment if staffing models are not structured to support equal patient care distribution. Some interventions that can be utilized are quality and process improvement projects, the integration of telehealth for specialty care and consultation, and having an onsite extended interdisciplinary team that expands beyond physicians and nurses (Zhang et al., 2020).

Within this portfolio, several areas will be addressed for improvement and enhancement of UPMC's Department of Emergency Medicine. The initial project will address the Toxicology service and the need for additional funding and vendors to help support an expanded staffing/reimbursement model and patient load. This project focuses on the Toxicology Bridge Clinic, which operates in a telemedicine function for patient care across Western Pennsylvania. The second project addresses the need for a daylight Advanced Practice Provider (APP) onboarding program within hospitalist medicine to improve care quality for patients and APP

satisfaction and confidence. This project is rooted in the need to reduce provider burnout, turnover, and dissatisfaction in interdisciplinary teams, promoting the success of autonomous APPs within the Center for Community Hospitalist Medicine (CCHM) and its sites. The third project addresses the Post Cardiac Arrest Services (PCAS), and the need for a more detailed workflow to help prioritize patient need and enhance the capabilities of the service through telemedicine expansion. As a result of this enhanced workflow, a dedicated APP can be justified for hire to help promote timely care during nocturnist shifts at UPMC Presbyterian.

Physician and provider burnout has been steadily increasing in the United States throughout the past decade and has been further exacerbated since the onset of the COVID-19 pandemic. This prevalence has been quantified with a burnout rate of 43% reported in 2020 across both clinical and ancillary staff (De Hert, 2020). Burnout encompasses work-related stress syndrome that can be the result of chronic stress within the job environment and can have detrimental impacts on individuals experiencing it. In addition to impacting individual provider mental health, burnout negatively affects ability to provide continued quality care (De Hert, 2020). Alongside physician burnout symptoms, additional stressors related to high patient volumes, training of new staff, and length of stay can cause significant detriment if staffing models are not structured to support equal patient care distribution. Some interventions that can be utilized are quality and process improvement projects, the integration of telehealth for specialty care and consultation, and having an onsite extended interdisciplinary team that expands beyond physicians and nurses (Zhang et al., 2020).

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UPMC's Department of Emergency Medicine encompasses many divisions, including CCHM and urgent care services. These divisions oversee the provider services (physician and APPs), including the operational management (recruitment and staffing services) and credentialing for the teams. This portfolio will outline the benefit of adding APPs to the clinical care team, and how we can best promote retention and engagement through evolved processes, robust training programs, and partnerships to help expand capacity. This also helps reduce the clinical burden for our physicians, as well promote a diverse care team for our patients in these service lines. Successfully integrating telemedicine protocols and ensuring provider accessibility helps promote better specialized patient care and reduction of extraneous Emergency Department visits and readmissions.

During the first year of my residency, I worked in CCHM in a management capacity. I collaborated closely with our human resources and recruitment team to help fill open positions

within the department and schedule interviews for roles. I shadowed our credentialing team to gain a better understanding of the timely and efficient processes that onboard our physicians and APPs for their clinical roles. I worked with the APP clinical project coordinator, collaborated with the division administrator to coordinate recruitment events, and helped manage performance evaluations for 50+ APPs. The year with CCHM enhanced my understanding of time management, payroll and benefits related to APP roles, and how to appropriately navigate tasks around the employment life cycle. These projects helped emphasize the need for APPs on the care teams, as they function in an autonomous capacity within both the daylight and nocturnist shifts. Additionally, I managed student rotations for all three divisions, which provided physicians and APPs continuing medical education credit and teaching experience.

I then transitioned into a new role within Emergency Medicine, where I managed the operational needs of Toxicology, PCAS, and the Command Center. My time in Emergency Medicine gave me a clearer understanding of the multiple services offered through these groups, and the needs for continued growth and success. I worked on projects related to physician compensation, financial summaries and budget proposals, and process flow improvement, including telemedicine. By collaborating with the clinical teams and leaders on these projects, I was able to build strong relationships and drive the expansion of telemedicine services, staffing, and patient capacity and differentiation.

1.1 Project 1: Expansion of Medical Toxicology Telemedicine Bridge Clinic for Enhanced Capabilities, Staffing Structure, and Patient Capacity

1.1.1 Problem Statement

Within UPMC's Department of Emergency Medicine, the Medical Toxicology Telemedicine Bridge Clinic is experiencing limitations related to staffing and patient care, capacity, and reimbursement when treating patients via telemedicine for substance use disorder (SUD) management.

1.1.2 Purpose Statement

The current Bridge Clinic structure adds additional hours to our Toxicologist physicians who allot part of their schedule to work an equal number of shifts monthly at the Bridge Clinic. These physicians work on a shift-rate model from 8a-5p Monday-Friday to provide same day care for patients with SUDs and who are seeking care/prescriptions. The service minimizes the high volume of returning patients at the Emergency Department seeking same day treatment or medication for SUDs. This project addresses enhancing capacity and the service through additional funding, minimizing the reimbursement gap, and planning for provider diversification and reimbursement.

1.1.3 Introduction and Background

UPMC's Department of Emergency Medicine houses the Medical Toxicology Department, which encapsulates different telemedicine services (see *Figure 1*). A small physician group oversees all toxicology services within the department and is limited to five contracted toxicologists with three to four additional Emergency Medicine physicians that support in a moonlighting capacity. This wears the group thin over the Medical Toxicology service, which runs 24 hours a day/seven days a week, the Bridge Clinic, five days a week at eight hours a day, and the outpatient clinic, which operates one to two times monthly. The Bridge Clinic model allows for 20-minute appointment blocks, that are scheduled within the same or prior business day, with capacity for 24 appointment blocks per day. Appointments are scheduled by referring providers for either audio or audiovisual appointments and runs on a fee for service model. Ideally, patients utilize the Bridge Clinic once for timely turnaround in care, and then are directed to appropriate resources for continued care. At times, the clinic manages patient care for up to four visits, which helps enhance access to Buprenorphine, a medication that helps relieve symptoms related to opioid use withdrawals (Zoorob, Kowalchuk, & Mejia de Grubb 2018).

The Bridge Clinic service began in April of 2020, after the onset of the COVID-19 pandemic and is the newest service line for the group. With the nationwide lockdown in effect, increased hospital admissions, and higher burden on medical staff, the Department of Medical Toxicology collaborated with the Pennsylvania Department of Drug and Alcohol Programs (DDAP) to develop this model of care to limit additional burden on Emergency Departments and get patients access to necessary care in a timely manner.

The already existing opioid epidemic was further exacerbated by the pandemic, with significant barriers to access of care such as transportation and in-person care becoming even more

inaccessible (Hall et al., 2021). The treatment model reduces barriers to care through the utilization of audio and audio-visual appointments. This scheduling model supports the ability to rapidly engage and promote adherence to treatment. Patients are seven times more likely to present to an initial visit if it is scheduled between one to two days, and significantly decreases as time passes (Roy et al., 2020). Access to prescriptions of Buprenorphine treatment during the pandemic increased due to DEA waivers deeming patient evaluation via audiovisual and telemedicine platforms as sufficient (Drug Enforcement Administration, 2020). As a result, barriers to care were reduced, since this 30-day medication supply is accessible at retail pharmacies, which remained in service during the lockdowns (Alexander et al., 2020).

As the pandemic continued, the Bridge Clinic was able to see about 200 patients in its first year, with a 96% show rate, showing strong promise for success. Patient adherence to treatment showed success as well with at least one prescription of Buprenorphine being filled at local pharmacies within 30 days of the appointment, and with the returning patients, there was a 77% adherence rate related to filling of prescriptions within 30 days. (Lynch et al., 2022). From FY21 to FY22, there was a surge in volumes, prompting restructuring and evaluation of current operational structure of the telemedicine Bridge Clinic. The Bridge Clinic was now strategically positioned to partner with local behavioral health services to drive continuity of care. With UPMC's Western Behavioral Health (WBH) for further care coordination and the additional buy-in from funding sources to continue its work as patient volume continued to rise, the Bridge Clinic needed to establish a plan to grow.

1.1.4 Methods

To grow the Bridge Clinic's presence and be able to take on more patients, many methods were followed to justify our requests and proposals. Initially, I reviewed and finalized a comprehensive financial analysis for FY22 based on current funding, revenues, and expenses to see how well the clinic could sustain with the current structure and capacity. Additionally, alongside our clinical leaders for toxicology, I worked on a feasibility analysis of our current workflow and capacity to address our staffing model and areas for diversification that would be beneficial for our team. Tracking of monthly data was necessary, prompting our team to put together a dashboard on Power BI that analyzes volume, reimbursement, payor mix, and year over year growth at the clinic.

Another key area of analysis was an evaluation of current partners and new funding sources. Based on our current internal partners at Western Behavioral Health (WBH) and the Revenue Cycle for Medicaid patients, a discussion was initiated surrounding direct access to resources and bridging reimbursement gaps that are existing at a suboptimal level due to the payor mix. Externally, funding and support came from groups such as Vital Strategies and The Allegheny County Department of Health. These conversations were beneficial to leverage our partners and promote positive patient outcomes with sustainable revenues. I worked directly with our clinical partners to develop a proposal for an expanded staffing model and scenario analysis to present as a part of our $1 million Opioid Settlement Funding Proposal request to the county. The scenario analysis was necessary to highlight realistic growth and long-term objectives for the clinic when defending our request. This extra support over three years would allow for hiring an APP, higher patient capacity, and physician satisfaction and minimized burnout. I presented the budget proposal and the benefits of expanding the clinic to the members from the Department of Health -

succinctly and thoroughly explaining the team's needs and the extensive impact on the patient population.

1.1.5 Results and Discussion

Based on our comprehensive data pull, we found that 52% of our patients fall into the Medicaid payor category and 40% fall under self-pay (see *Figure 2*), and the volume of patients utilizing the clinic has grown by 500% between FY21 to FY22 (see *Figure 3*). Reimbursement year over year averages at approximately 23%, which alone is not self-sustaining revenue for the clinic and physician supplemental pay at the end of the year when looking long-term. This data is purely quantitative and is pulled on a post-date basis, eliminating the risk of duplicate data in our dashboards, thus providing us strong forecasting and informational data.

After submission and presentation of the Opioid Settlement Funding Proposal, our clinic has been awarded funding over a three-year period for direct support[1]. This funding in addition to anticipated annual revenues, which are calculated at the current reimbursement rates and annual visit projections from FY22, promotes a positive sustainability model as the service continues to expand its staffing structure and patient capacity. This funding helps cover additional costs such as hiring an APP, involvement of a WBH care coordinator, an administrator, medical director, and enhanced physician shift rates (see *Figure 4*). These were the factors used in the scenario analysis structure conducted to determine the optimal mix of revenues and settlement funding that would

[1] Due to the nature of the funding awarded to the clinic, actual funding received, and financial information will not be disclosed in this paper, but percentages are addressed to see the impact of the expenses associated with expansion. Ex: If funding is $50,000 and payments are $100,000, APP salary, and benefits expense = $37,500 (hypothetical)

support growing the service. Based on internal analysis of compensation for these roles, the anticipated changes would consume around 75% of our clinic's total income annually, leaving enough buffer for unanticipated events and end of year supplemental pay-outs. Administrative overhead, UPP overhead and medical director costs take up ~20% of the income allocated to the changes annually, and these roles are integral to provide additional support and structure for the clinic. Through the partnership with WBH, the care coordinator would be a salaried full-time employee, requiring 10% of income allocation/year. With the addition of new providers who would either be a Physician Assistant or a Nurse Practitioner, per APP to be hired, the salary and benefits would total to 25% allocation/year. A dedicated APP for the Bridge Clinic reduces the necessary physician coverage from 260 shifts to 56 shifts annually. The physician rate for these shifts will subsequently be increased per shift from the prior model, which places this allocation at 13% per year. These additional shifts will cover any provider time off or gaps and is separate from the stipends already built into our budget for the dedicated Toxicologists.

Based on the payor mix and high utilization year over year there is a need for expansion and growth. The addition of an autonomous APP to the team will alleviate the burden on the current group of physicians running the clinic. This new model will allow physicians to work fewer hours at the clinic, creating more flexibility around their other commitments within the department, and allowing for appropriate compensation for picking up Bridge Clinic shifts. The funding provides a leap forward for the clinic, as we are moving into the recruitment phase for an APP for the Toxicology group.

The impact on the patients is immensely beneficial on many fronts. In the future, patients will receive same or next day visits with a physician or APP who can prescribe Buprenorphine for them while in the program, allowing for continuity of outpatient care and access to be enhanced.

Patients will also be referred to the Bridge Clinic from the Emergency Departments which will help limit avoidable admissions and the associated cost to the department for seeing Medicaid patients.

During this project we saw a strong push from our well-connected clinical partners, who developed relationships with the administrative team and helped push along the proposal process to make these strides for success. As our provider pool changed with the addition of Toxicology fellows in the department, there is a need for expansion and diversification to minimize burnout and potential oversight related to quality of care for the patients. This prompted the push for finding partners and revenue maximizing opportunities.

1.1.6 Recommendations

There are many long-term positive impacts of creating an interconnected Bridge Clinic that treats individuals on the same day for SUDs. Continuity of care is an area where the clinic is promoting growth and evolution, by partnering with WBH to create a pipeline for patients who are a fit for inpatient rehabilitation care. Patients will be able to utilize this multi-platform service at a telemedicine capacity, enhancing convenience of care as well, while minimizing additional costs of inpatient and emergent care if it is not required.

Our group will be continuing to work on our ability to minimize the gap in reimbursement for Medicaid and Self-Pay patients to promote longevity of the clinic after the additional funding is exhausted. For the interim period, we were able to accomplish our goals of beginning the expansion and diversification of the program and staffing around the Bridge Clinic, and we aim to begin recruitment for an APP as the funding comes in, to adequately support the shift financially and operationally. Currently, we are functioning at the maximum capacity for appointments,

highlighting a need for expanded capacity based on this demand. As the paperwork with the county is finalized, funding should be received, and we will then post an APP position for hire. The project is still ongoing, and the anticipated next steps can be further visualized in *Figure 5.*

1.1.7 Competency Development

Throughout this project, I grew more confident and developed many MHA competencies over the six-month project timeline. My financial skills were expanded through the compilation of a comprehensive financial summary and development of a budget proposal with multiple scenario analyses (see *Figure 4*). I was able to put together these summaries and develop a compelling narrative, as this is arguably the most important aspect, since the summaries are a high-level overview of strictly the costs and revenues associated with the clinic. Telling the story and the impact drove the success of these proposals as the benefits outweigh the costs of not having this care available to Medicaid patients with SUDs.

Strategic orientation was developed through repeated meetings with our internal and external partners to understand the Bridge Clinic's strategic position within the system and community. Understanding the need within the Department of Medical Toxicology in Emergency Medicine helped showcase the added long-term benefits to all stakeholders involved.

Communication was key in this project, as the relationship building and success of the project hinged on repeat follow-up, engagement, and finalization. Finally, on the self-development front, I saw myself grow more comfortable with a service line I had not initially been involved with during the first year at my residency. I formed relationships with our clinical team and gained valuable information related to their experiences and helped push forward the more administratively focused parts of the project. My preceptor helped push me to be more vocal, be

the lead on some aspects of communication, and helped me continue to develop my strengths during this project.

1.2 Project 2: Development of a Robust Advanced Practice Provider Orientation Curriculum for Satisfaction and Retention in Community Hospitalist Medicine

1.2.1 Problem Statement

UPMC's Center for Community Hospitalist Medicine (CCHM) has increased the utilization of autonomous Advanced Practice Providers (APPs) but has experienced high turnover in newly graduated APPs who work daylight shifts within the department.

1.2.2 Purpose Statement

With the utilization of APPs on care teams within CCHM, successful transition out of school has been seen with nocturnist new graduates who join the team on the APP fellowship track, a four-month intensive training program to acclimate to the unit and requirements of the role. Daylight APPs have experienced high turnover and have expressed dissatisfaction, primarily in new graduates. There is also some concern about their own confidence with providing care autonomously within the first few months within the role. The development and implementation of a structured daylight orientation process will help these new graduates become confident in their clinical skills and become strong members of their integrated care teams over time.

1.2.3 Introduction and Background

UPMC's CCHM division addresses patient needs while in the hospital seeking care for internal medicine purposes. This department spans ten non-academic UPMC Hospital sites in Western Pennsylvania, with additional services via telemedicine at some rural UPMC sites (see *Figure 6*). The staffing model operates on dynamic care teams of physicians and APPs like nurse practitioners and physician assistants. During the daylight shifts at CCHM, the staffing model involves both physicians and APPs on-site for patient care, while the nocturnist schedules have autonomous APPs functioning on-site with on-call physicians accessible virtually for additional assistance as needed. This model works successfully with a continuity of care centered scheduling model, where providers work seven, 12-hour shifts on, and then have seven days off to offset the utilization of paid time off (PTO). In addition, pay for the APPs is standardized to 72 hours per pay period, and all additional hours worked get banked to be paid out quarterly to the APPs. This model functions to better care for patients' needs, address provider concern around working odd shifts that disrupt their schedule and promotes cohesive care teams during each shift. This model has been successful for nocturnist APPs who complete the fellowship program, experienced APPs that work either daylight or nocturnist shifts, and posed a new opportunity for newly graduated, new-hire APPs.

Nationally, health systems have experienced high rates of burnout among providers, with the exacerbation of burnout and turnover after the onset of the pandemic. As of 2021, APP turnover rates reached a six-year high of 10%, adding to the already existing high turnover and burnout of additional providers (Association for Advancing Physician and Provider Recruitment, 2022). Due to new providers entering the field directly after completing part of their program virtually with reduced clinical rotation experience, there were additional stressors placed leading to turnover.

This adds to the already existing burdens on APPs within their fields, exacerbating anxiety related to their clinical capabilities. Direct costs associated with APP turnover nationally ranges between $85,000-$100,000 which weighs heavily on the departments who are not only losing their providers, but also allocating portions of the budget to turnover costs (Hartsell & Noecker, 2020). Although turnover is not always directly associated with dissatisfaction with the department and role, exit interviews revealed that lack of training for a fully autonomous role set new graduates at a significant disadvantage within their role in CCHM. Among some exit interviews rang the concern that there was not enough training to prepare for this autonomous role directly after graduation. This caused APPs to be nervous when providing care, even after an initial training period, leading to associated issues with clinical peers and patients.

To address this need and reduce the cost of turnover, a new avenue must be explored to increase satisfaction and retention among APPs. The rationale behind a structured daylight orientation was from success seen in nocturnist new graduate APPs who completed the fellowship program, alongside promoting APP self-reliance and limiting additional provider burnout from unequal distribution of patient care. By implementing a structured and thorough program for these new APPs, higher quality of care can be seen across other providers as well. Experienced practitioners can pay greater attention to patients of higher acuity and complexity when they feel that they can trust their diverse team to provide care autonomously (Woo, Lee & Tam, 2017). This programming will help create structured expectations for preceptors who can further develop the specialized clinical skills needed by these new graduates to acclimate to their new environment. In studies conducted to address turnover and success of APP orientation programs, turnover rates see a 6% decline after implementation, from 10% to 4% (Grek et al., 2022). This success speaks to the directly correlated improvement with confidence and success that new hires can feel after

completing an orientation and can be implemented quicker than interventions such as an increase in pay across the different provider tiers.

1.2.4 Methods

For this project, there were many steps taken to ensure initial success. I worked closely with our clinical project director to break ground on a daylight APP orientation that would have the same benefits of the APP Fellowship program for our nocturnist APPs. I collaborated with peers across the UPMC system that had developed APP orientation protocols, and what areas they deemed necessary from an administrative perspective. I also helped run APP forums within the department, to hear feedback on areas of concern for new hires and how an orientation protocol may impact the current workflow. This helped build rapport with the APPs, to enhance communication regarding expectations and improvements. We proposed that a three to four-month timeline with the current staffing schedule of seven-on/seven-off would be adequate to allow the APP to acclimate to the role. The three to four-month timeline was flexible as well, allowing for additional supervision time as needed. This also allows for quicker completion related to confidence of performance by the administrator and clinical peers.

Alongside the clinical director, I ensured that we were maintaining checkpoints for the APP to have with their preceptor, administrator, or clinical project director, ensuring a seamless increase in responsibility. The Clinical Project Director introduced concepts such as Accountability Rounding, which would allow for thorough assessment of the APP during their orientation phase. Once finalized, we presented this to our administration, and next steps were initiated.

Over the next few months, there were some changes in the structure of the administration in CCHM, putting a pause on the initial pilot of the orientation programming. With the help of our

new operations specialist and clinical project director, the pilot assessment and post-implementation feedback was considered to ensure successful orientation protocols to maximize provider confidence and satisfaction.

Since the transition and pilot, I have reviewed with the operations specialist the feedback, areas for improvement and success to measure the outcomes of the project, as I have since taken on new responsibility within my residency.

1.2.5 Results and Discussion

Based on APP feedback from our pilot program, there were some pain points for improvement. Rather than having the orientee working a seven on/seven off schedule during orientation, the revision of having the APP work Monday through Friday from 7a-7p over the span of the orientation period was preferred.

The APPs on this new daylight program have a different pay structure compared to their non-orienting counterparts. The 72-hour standard pay model is not utilized during orientation; rather, paying the APPs for all hours worked, and official schedule and pay model starting after orientation. Alongside this, the difference in rates has been changed to reflect the APPs equity based on experience and new-graduate status, rather than a fixed fellowship rate which was set at ~$5 less per hour than equity rate.

To date, five APPs have gone through the revised model with the enhanced rate, M-F work schedule, and structured orientation. Two APPs have completed the program and are now functioning autonomously at their sites, while three APPs are still making their way through. Another improvement was to have a clinical skills evaluation in tandem to the administrative 90-

day check-in. This evaluation would be completed by the clinical project director to ensure confidence during accountability rounding and patient care.

The results demonstrated success with the implementation of the orientation programming. Feedback was integral throughout development and implementation to allow for realistic expectations and checkpoints for success of new hires. Based on the two APPs who completed orientation in our pilot program, the team was able to consider concerns related to the schedule and structure (see *Table 2*). Primarily, having seven days off between orientation shifts staggered the learning process, and there was a preference for continuity of training, even if it required significant input of hours. This change to M-F also helped the new hires work with different care teams, allowing for expanded learning experiences and diverse care management styles, pushing them to be successful and adaptable.

Based on the outcomes from the new program, feedback has been highly positive related to the confidence APPs have entering the role after orientation. We have also seen a reduction in complaints and concerns for new APPs in practice. The APPs can take on a higher patient load over time than initially anticipated, which allows them to have a full roster of patients consistently at the end of their orientation. The department aims to continue utilizing this new format to retain our new hire APPs by creating a synergistic relationship between their clinical confidence and satisfaction with employment. Due to the nature of the feedback data, it is purely qualitative, and some social desirability biases may exist when reporting back to administration about the orientation structure. This can be mitigated by the implementation of many checkpoints throughout the orientation process. Preceptors give direct feedback related to performance, which helps balance individual feedback and perceived growth. This project timeline can be further seen in *Figure 7*, showcasing current processes and feedback collection.

1.2.6 Recommendations

The development of a robust structure for the daylight CCHM APPs was a successful initiative which has continued to grow and flourish. It has addressed the concerns many new hire APPs have when functioning autonomously in their role alongside feedback from other clinical partners related to patient care. This process has helped promote enhanced applications for positions within the department, and key advantages for newly graduated APPs who are seeking full-time employment within the UPMC system. Although I am no longer working on the project, having communication with my successor in CCHM has been essential to monitor project outcomes and success through analysis of qualitative and quantitative feedback related to satisfaction and retention. As of current, all seven of the participants in the pilot and new orientation program have been retained. As the team moves forward with this project, more quantitative data can be collected to measure long-term success, such as patient compliments, length of stay, consistently improving performance evaluation scores, and limited complaints from clinical peers *Figure 7*.

Currently in my role within Emergency Medicine, I am working with our operations specialist and clinical project director for Emergency Medicine to help develop a comprehensive orientation process for newly graduated APPs as well, to enhance retention and confidence in our new hires. This project has a different scope than the CCHM onboarding guide but draws on similar competencies which allows for standardized evaluation of success. We can utilize processes such as increasing patient load, having clinical checkpoints, and having different preceptors for effective team building.

Overall, there has been a push towards integrating APPs into different departments across UPMC, as they help alleviate the burden of short-staffing and overworking physician counterparts.

As each department begins to do this, a recommendation could be to listen to the clinical partners and what their expectations of APPs will be, and set certain expectations from an administrative perspective, to create mutual agreement of the job being completed. Alongside this, a robust orientation helps promote retention and confidence in providing quality care. With the core value surrounding high quality care at UPMC, this should be prioritized for all clinical peers who are new graduates and have limited experience.

1.2.7 Competency Development

Through this project, I further developed the following core competencies: performance management and process improvement alongside leadership. Serving as the manager of our team of 50+ APPs, I felt integrated into the team in a manner that would allow me to see growth over time and areas of improvement that could be addressed. I conducted pre-hire interviews and exit interviews of many APPs who expressed their goals, feedback, and areas of improvement that may have changed their experiences. I also conducted performance reviews in conjunction with medical directors, hearing areas for improvement and areas of strength for all our APPs. Through this, a new motivation was created to improve current processes and begin the dialogue with our administrator and clinical project director, to translate a successful nocturnist program that could benefit our new graduate daylight APP hires. Through this orientation program, we improved the current process of onboarding and orientation for new graduate daylight APPs, which has had many positive outcomes. This program has allowed for improved satisfaction communicated through feedback, enhanced performance measurement by multiple preceptors and clinical/administrative team members, and an effective and empowering structure. I have grown as a leader as I have collaborated with colleagues to ensure project success, utilized constructive

feedback to improve the overall foundation of the program, and have built rapport with my team to ensure clear and effective communication.

1.3 Project 3: Re-configuration of Post-Cardiac Arrest Services Workflow to Expand Telemedicine Services and Provider Coverage

1.3.1 Problem Statement

UPMCs Post Cardiac Arrest Service (PCAS) line currently has a limited staffing structure with physicians and daylight Advanced Practice Providers (APPs) only. To successfully expand the program to other UPMC sites virtually, restructuring the workflow through patient stratification and acuity will help prioritize patient consultation, especially during nocturnist shifts. This will further be supported through a 24/7 staffing model that will allow for flexibility and promote timely care across the system.

1.3.2 Purpose Statement

The current PCAS model utilizes a small team of dually employed physicians that split their time between research and clinical work alongside casual APPs to be accessible around the clock for consults and care. This model currently exists on the telemedicine platform Vidyo, and consults are requested via Medcall, which is utilized at many UPMC sites across the state for post-resuscitation consults. These consults all currently follow the same workflow through Medcall and Vidyo, with hopes to diversify patient type. With indication of new emergent, returning emergent,

and returning non-emergent patient types, better patient outcomes and timely care can be better achieved. To promote accessibility of the service as we expand virtually, staff diversification will need to take place by designing a dedicated nocturnist APP position for the service. This service allows patients who have experienced cardiac arrest and required resuscitation to be seen and have a treatment plan created to promote better outcomes post-discharge from the hospital.

1.3.3 Introduction and Background

PCAS is a service line within Emergency Medicine that integrates cardiac resuscitation research and patient management post arrest and the need for cardiopulmonary resuscitation (CPR). Currently, there are around five contracted physicians, five moonlighting Emergency Medicine physicians, and two casual advanced practice providers (APPs) on the team who help provide in-person care at UPMC Presbyterian and virtually at over 10 UPMC sites.

This service helps promote long-term survival of patients from days to years after having cardiac arrest and requiring CPR. With national metrics of ~ 300,000 annual cardiac arrests, less than 10% survive, and many of those that do survive experience a large burden related to mental health and additional comorbidities (Elmer et al., 2016). This service at UPMC has yielded a median of 5.3 years survival and has reduced the short-term deaths and health complications amongst their patient population through organized treatment for post-cardiac arrest care (Elmer et al., 2016). Our providers connect directly with physicians and patients in the emergency room and throughout their inpatient stay after cardiac arrest. Physical examinations that test neurological functioning can help address areas of concern and need for additional treatment and can help reduce the risk of comorbidities over time. In patients who experience cardiac arrest, the risk for neurological impairment including memory, attention, and executive functioning can be

exacerbated and could lead to negative outcomes without specialized treatment (Sabedra et al., 2015). Alongside long-term health benefits, the PCAS team provides services that can help limit hospital readmissions, and as a result,increased healthcare costs to both the patient and the UPMC system. Rehospitalization after cardiac arrest yields higher length of stay, extensive medical procedures to address root causes, and reduced quality of life (Damluji et al., 2018).

The need for expansion of the PCAS service has been expressed as a need for telemedicine expansion outside of Western Pennsylvania UPMC sites. Currently, only about 33% of cardiac arrests are observed and treated by the team within the UPMC system, prompting a need for broader patient care through patient stratification within an enhanced workflow. The expansion of a similar service, stroke specialty services that have been implemented across many health systems, emphasizes a push for follow-up care to ensure long-term positive health outcomes. Post-implementation of specialty stroke services in hospitals have helped decrease stroke deaths. Research highlights that implementation of rehabilitative and follow-up specialty care for stroke patients leads to a significantly lower likelihood of presenting disability compared to non-rehabilitated patients (Rodgers & Price, 2017). This research and program implementation provides additional support for the need of PCAS services across the UPMC system, and the great benefit and reduced negative health outcomes that can be addressed.

1.3.4 Methods

The team explored many avenues of reconfiguration to grow the PCAS presence and increase the reach and patient capacity. I began by working closely with our physician partners to review the current financial state for the service to see if we had additional allocation in our budget to hire a new APP. Seeing that volumes were steadily increasing across the service year over year,

and with only two casual APPs working daylight and nocturnist shifts, we saw that there was a higher cost associated with supplemental overtime coverage annually and high burden placed on them to dedicate additional time to commitments outside of the service line.

With the help of our human resources team and the operations specialist, I posted the APP position for recruitment and was the main point of contact for interested candidates and the interview process. I am currently working on creating a specified job code and description that addresses her specific tasks within the department.

Another integral part of this project is planning for the future of the service and how we plan to diversify it. I took the lead on developing a current state and goal state process flow map (see *Figure 8 and 9*), that will more clearly stratify patients for appropriate care and address urgent needs in a timely fashion. This will help us continue to expand the service within the system and highlight the benefits of how the consults can lead to better patient outcomes.

1.3.5 Results and Discussion

Based on the FY22 financial outcomes for PCAS, there is sufficient room in the budget to accommodate an additional APP. There will be a decrease in moonlighting shifts required by contracted/non-contracted physicians and casual APPs. The cost of hiring a dedicated APP will help promote efficient management of the clinical and research aspects of the service and will create areas for continued success within the department. Physician burden will be reduced, alongside appropriate reimbursement for the patient care provided by the APP during the night shift. Volumes have steadily increased year over year with approximately 400 unique patient encounters over FY22, with 2,000 encounters total with in-person and telemedicine services. This rise in patient volume can also be attributed to the expanded capabilities of Safar and Medcall,

creating opportunity for the service to consult physicians at other hospitals for post-cardiac arrest care.

After assessing the FY22 financials and operational needs, we were able to get a new APP position approved. Within a month of discussion, we hired an internal APP with experience at UPMC within the Heart and Vascular Institute. Her skillset and aspiration to develop specialized care skills and be involved with research made it a quick choice for the team to move forward with hiring. With an 8-week turnaround time for credentialing, the APP was able to start with the department in January 2023 and will be providing care in an autonomous capacity by March. The consistent night provider will help expand the reach of the service to more patients and will help provide timely consultation and appropriate direction for further continued care.

By collaborating with our physicians, I was also able to create a detailed process flow for the future goals of the service (see *Figure 9*). With this, we can observe clearer areas for opportunity for patient care, by identifying acuity and appropriately managing patient load across multiple sites at all hours of the day. There is enhanced justification for the need of the service across new sites, as we are currently connecting with partners outside of the current Western Pennsylvania UPMC sites. As administration, we can clearly define the mission and vision for the service and support our clinical peers in their desire to expand their service.

1.3.6 Recommendations

As I reflect on my time with this team and through their growth over the past year, I see great potential for successful expansion planning. Expanded provider coverage allows for enhanced accessibility across the UPMC system. We continue to have conversations with different teams across UPMC, as far out as the UPMC Pinnacle hospitals, which are about 200 miles away

from the main group in Pittsburgh to see what opportunities exist for this service to be implemented.

Moving forward with the telemedicine expansion will be justified with the higher staffing capacity, allowing for increased patient volumes and revenues. Having a structured workflow helps drive conversations around the need for the program. It also highlights areas where the administration can collaborate with other teams to get the service to be enhanced to provide expanded capabilities via telemedicine. There have been great strides for enhancement of the service, and with the continued support of our leadership and administration, this can become an even more successful service that will serve these patients and improve their quality of life.

1.3.7 Competency Development

Through this project, I was able to grow and take on additional responsibilities. Through the competency of accountability, I managed the recruitment and onboarding process in a timely fashion after we received internal approval for having a new APP on the team. I made sure to be timely in my responses, thorough in my expectations for the interview process, and was accessible to the candidates for additional questions related to the roles. I was accountable because I managed communications between administration, our recruitment team, human resources, the PCAS team, and the candidates. Accountability was also observed through my quick turnaround for our future directions and goals, financial summaries, and recommendations to my preceptor to gain approval for this new pursuit for the department. I ensured timely onboarding was managed, ensured an orientation protocol was in place, and continue to check in with our new hire to check her progress.

In conjunction with accountability, I developed the Human Resources management competency through the recruitment process. I worked with human resources to get the job code

created to help disposition the role to the recruitment portal, ensuring the role appropriately highlighted the expectations and pay code. I collaborated with human resources and physician partners to develop a job description for the role. Since this APP has a unique role, we wanted to develop a specific set of expectations for her to continue to grow within the PCAS team. During the interview process with the clinical staff, I ensured certain questions were asked to help gain a better understanding of the staff availability, training needs, etc. to report back to human resources. I am currently working on developing a specialized job description for the APP, melding our PCAS APP job description on the University of Pittsburgh side with a UPMC Emergency Medicine APP's job description.

Finally, throughout this process, I was professional and timely while coordinating the hiring and onboarding of the APP. I managed communications with the new hire to ensure that her questions were answered and that she felt welcomed to the team, even before her start date. I worked with our clinical team to establish an orientation timeline for her and communicated the administrative benchmarks that would be expected to ensure she is on track for success.

1.4 Conclusion

Throughout my experience within the Master of Health Administration and Master of Business Administration programs at The University of Pittsburgh, I have been able to apply my knowledge through my residency at UPMC. The Department of Emergency Medicine has afforded great opportunities for growth and development throughout the past year and a half, and I have seen the direct success and impact of my projects within the department. Through my support of

the Toxicology and PCAS teams, more frequent communication and improvements have been implemented, as well as timely data captures and financial summaries.

Overall, the projects completed over this residency emphasize a need for addressing physician burnout through process improvement and diversification of care teams. Addition of APPs to the teams across Hospitalist, Toxicology, and PCAS groups requires forethought and planning for success and satisfaction. Expanding capacity requires more dedicated staff within these divisions, and thoughtful implementation of orientation programs will allow for these APPs to function autonomously at a faster rate. Having confident APP and physician teams will drive positive patient outcomes, increase the quality of care, and reduce the overall burden on current providers. With the expansion of these services too, a decrease in extraneous Emergency Department visits and inpatient admissions will be seen, as our specialty services see patients virtually with continuity of care in mind.

2.0 Figures and Tables

2.1 Figures

Figure 1: UPMC Emergency Medicine Specialized Services Organizational Chart

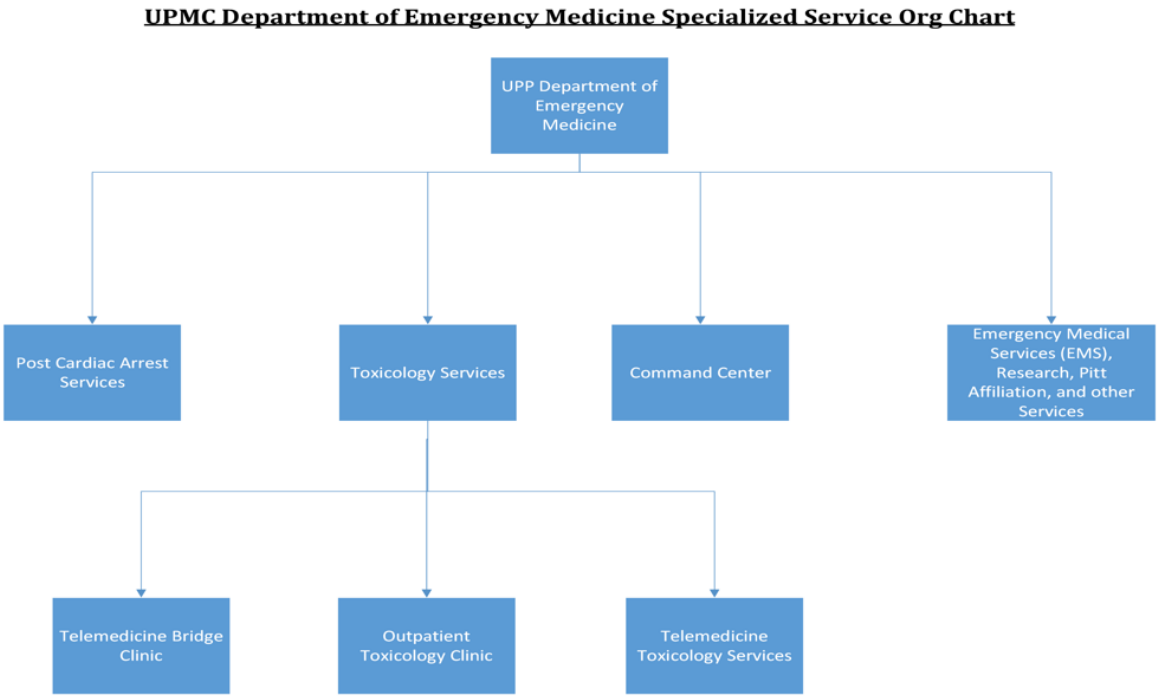


Figure 2: Payor Mix for Toxicology Bridge Clinic

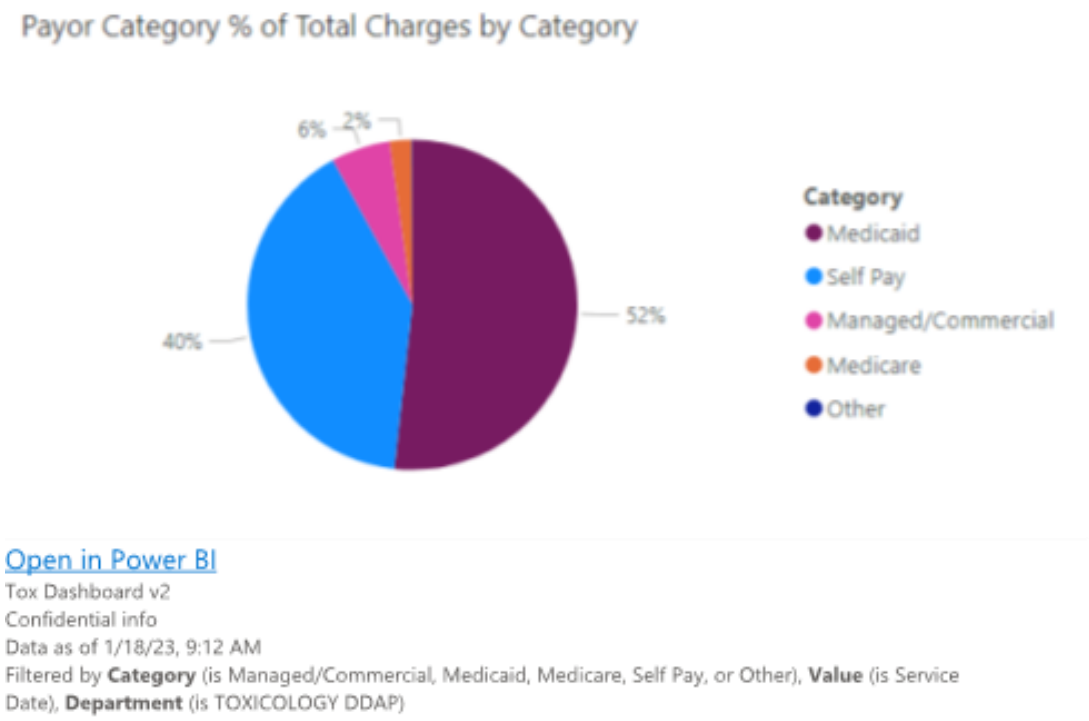
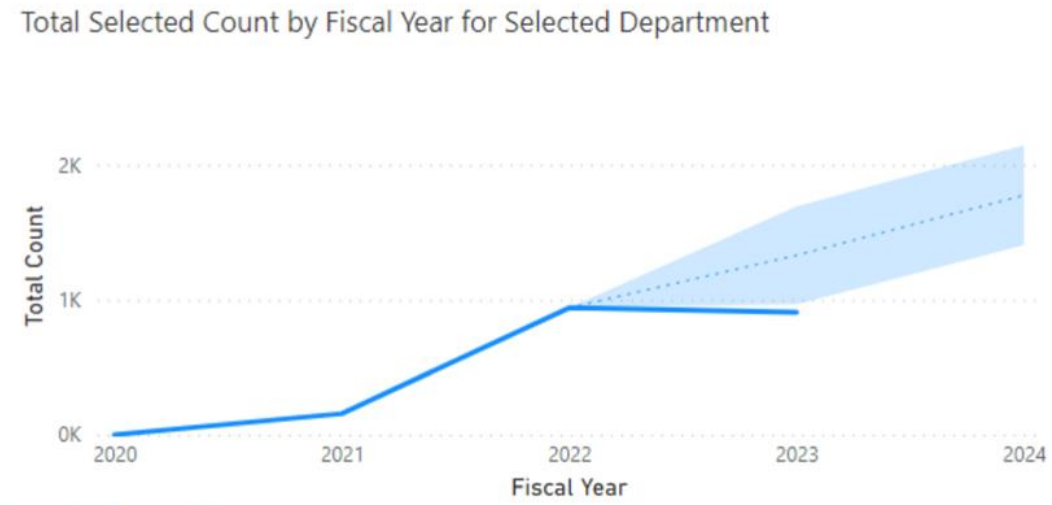


Figure 3: Volume Year-Over-Year for Toxicology Bridge Clinic



Open in Power BI
Tox Dashboard v2
Confidential info
Data as of 1/18/23, 9:12 AM
Filtered by **Value** (is Unique Patients), **Fiscal Year Short** (is FY20, FY21, FY22, or FY23), **Value** (is Service Date), **Department** (is TOXICOLOGY DDAP)

Figure 4: Opioid Settlement Proposal - Funding, Capacity, and Staffing Structure[2]

Budget Proposal for Allegheny County

		Physician Coverage + FT APP (40 hrs/wk & 2x volume)	Physician Coverage + 2 FT APPs (40hrs/wk each & 3x volume)	Physician Coverage + 2 FT APPs (40hrs/wk each & 4x volume)
Toxicology Bridge Clinic Statistics	Annual Visits	5000	7500	10000
	Payment per Charge (variable)	~23% of Charge	~23% of Charge	~23% of Charge
Revenues				
Anticipated County Funding		xxxxx	xxxxx	xxxxx
Annual Payments*		xxxxx	xxxxx	xxxxx
Total Income		xxxxx	xxxxx	xxxxx
Expenses				
Administrative Overhead		xxxxx	xxxxx	xxxxx
Medical Director		xxxxx	xxxxx	xxxxx
Care Coordinator (WPH)		xxxxx	xxxxx	xxxxx
UPP Overhead		xxxxx	xxxxx	xxxxx
APP Salary + Benefits (2)		xxxxx	xxxxx	xxxxx
Annual Physician Coverage + Benefits(3)		xxxxx	xxxxx	xxxxx
	Shift Rate	xxxxx	xxxxx	xxxxx
	Annual Shifts	56	112	112
Total Expenses		xxxxx	xxxxx	xxxxx
Net Income (loss)		xxxxx	xxxxx	xxxxx

* : annual payments retrieved from CY22 Q1 DDAP Data

[2] Due to the nature of the funding awarded to the clinic, actual funding received, and financial information will not be disclosed in this paper, but percentages are addressed to see the impact of the expenses associated with expansion. Ex: If funding is $50,000 and payments are $100,000, APP salary, and benefits expense = $37,500 (hypothetical)

Figure 5: Bridge Clinic Expansion Timeline and Milestones

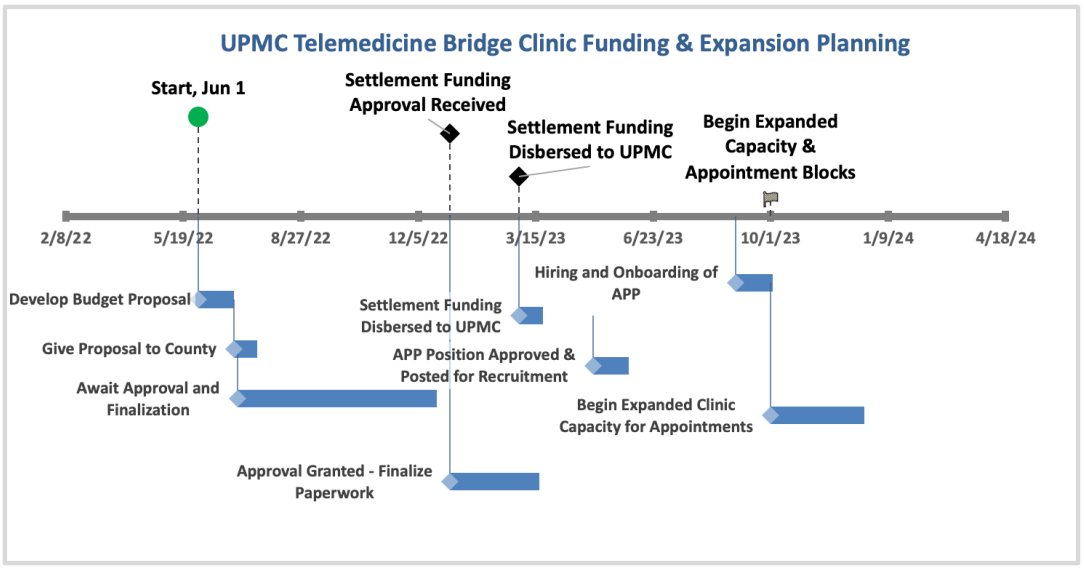


Figure 6: UPMC CCHM Site Overview and Map

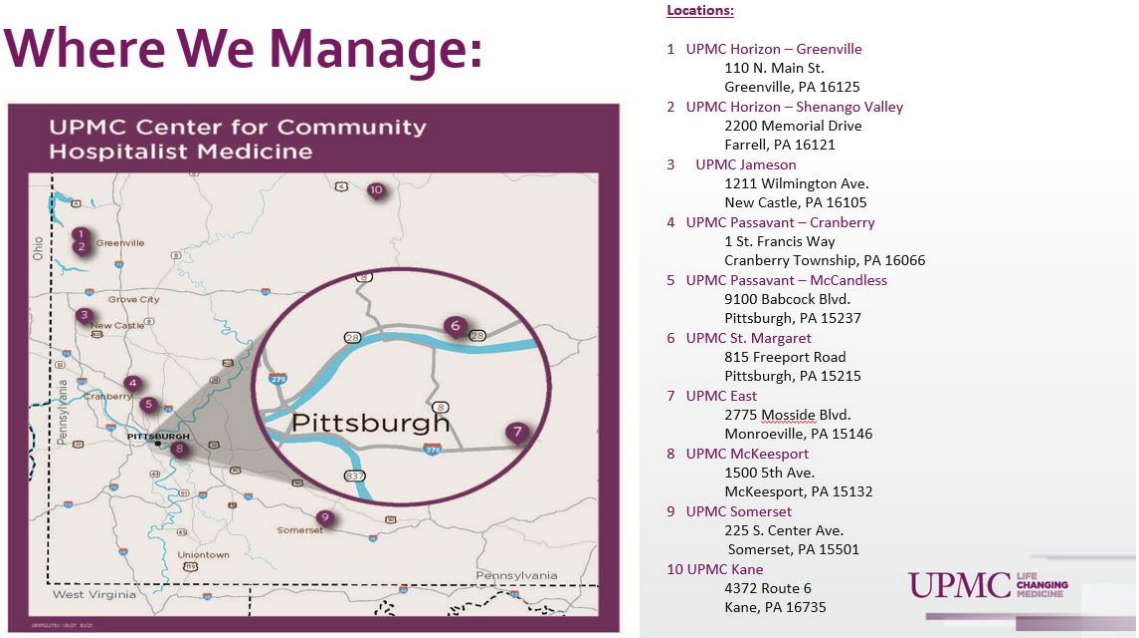


Figure 7: CCHM Orientation Project Timeline and Implementation

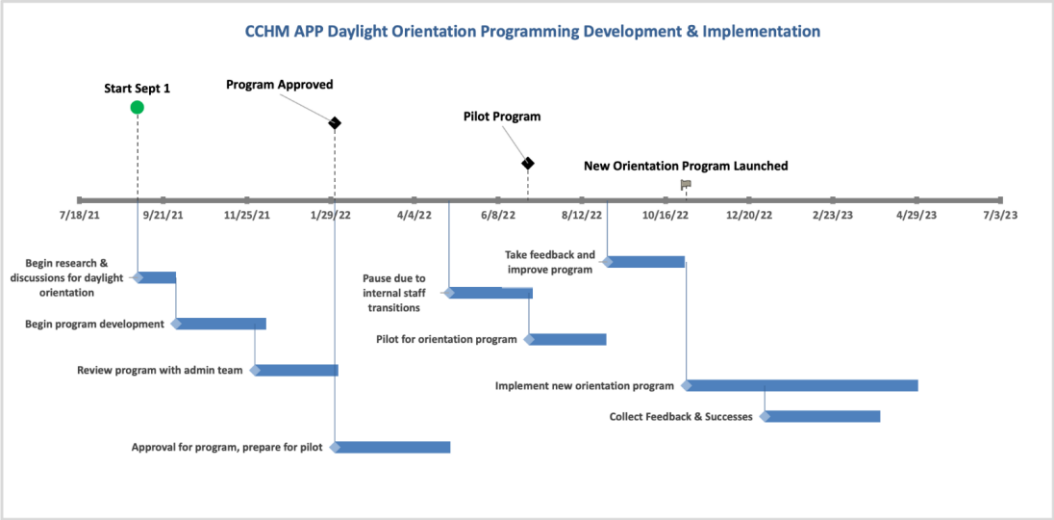
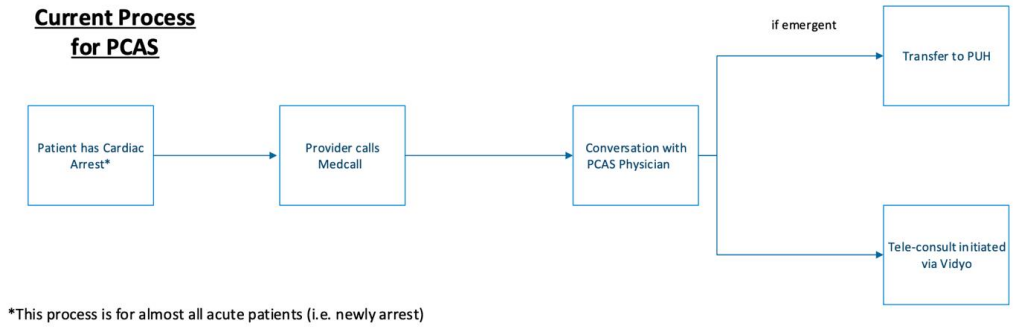
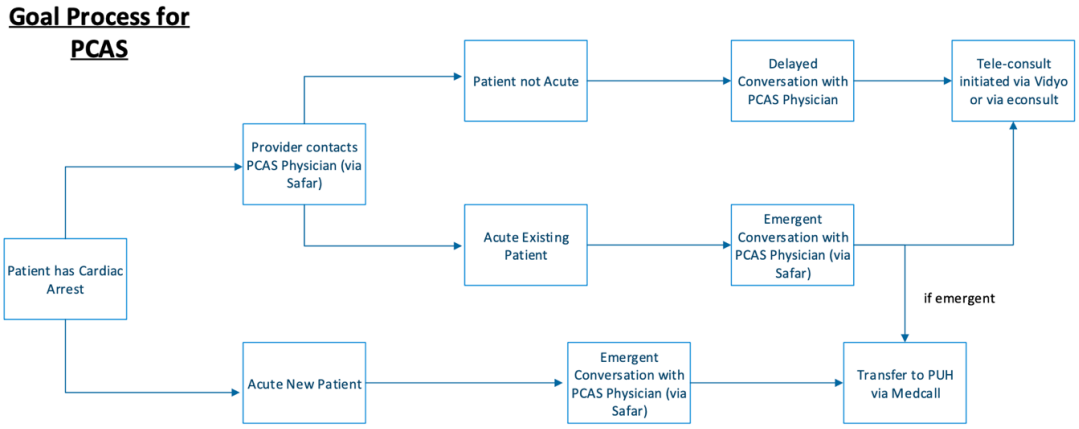


Figure 8: PCAS Current Process for Patient Triage



*This process is for almost all acute patients (i.e. newly arrest)

Figure 9: PCAS Future Goal Workflow for Patient Differentiation in Triage



2.2 Tables

Table 1: Key Abbreviations

Acronym	Term
APP	Advanced Practice Provider
CCHM	Center for Community Hospitalist Medicine
CPR	Cardiopulmonary Resuscitation
DDAP	Department of Drug and Alcohol Programs
DEA	Drug Enforcement Administration
FY21 or FY22	Fiscal Years 2021 and 2022
MHA	Master of Health Administration
MBA	Master of Business Administration
PCAS	Post Cardiac Arrest Services
PTO	Paid Time Off
SUD	Substance Use Disorders
WBH	Western Behavioral Health

Table 2: CCHM Orientation Guidelines - Original vs. Current Distinguishing Factors

Features	Initial Model	Current Model
Orientation Timeline	3-4 months	2-3 months
Work Schedule	12-hour shifts 7-on/7-off	8-hour shifts Monday through Friday
Pay Scale	Fellowship Rate at ~$5 less than Equity Rate	Equity Rate
Pay Checks	All Hours Worked	All Hours Worked
Check-in Methods	90-day Check-In with Admin	90-day Check-In with Admin Rounding with Clinical Director

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