

Physician
Assistant
Demonstration
Project

2015

Abstract: Twelve physician assistants were introduced into 10 Alberta healthcare settings from June 2013 to February 2014. Eighteen months after implementation, physician assistants are considered to be valued additions to care teams, and have positively impacted processes at demonstration sites.

Final
Evaluation
Report

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- Site members including physicians, managers and staff who participated in interviews, and completed surveys and activity logs
- Site staff and managers who coordinated interviews and surveys, and allowed staff time to participate
- Patients and families who completed surveys

The following sites participated in the project:

- Bassano Health Centre and Medical Clinic
- Beaverlodge Municipal Hospital and Medical Clinic
- Foothills Medical Centre - Stroke Rehabilitation Clinic
- Milk River Health Centre and Medical Clinic
- Peter Lougheed Hospital and Mosaic Primary Care Network (PCN) - Labour, Delivery and Newborn Care
- Red Deer Regional Hospitalist Service
- Rockyview General Hospital - Southern Alberta Institute of Urology (SAIU)
- South Health Campus - Intensive Care Unit (ICU)
- Sturgeon Community Hospital - Orthopaedics
- University of Alberta Hospital – Acute Care and Emergency Surgery (ACES) and Neurosciences

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EXECUTIVE SUMMARY

The Physician Assistant (PA) Demonstration Project was developed to increase awareness of the PA role and understanding of how the role can extend medical care, how PAs can increase access to patient care, and how they can be integrated into an established collaborative care model. PAs are general health providers who care for patients under the direction and supervision of physicians. They are unregulated physician extenders, not independent practitioners, who work in the medical model in a variety of teams and clinical settings. Because PAs are unregulated, they cannot independently give and issue orders to other healthcare providers. The PA role is an opportunity for Alberta to better utilize health human resources to address workforce shortages of physicians, residents, and other healthcare providers.

Ten healthcare sites introduced 12 PAs. Data was collected across four time points: Time 1 (baseline), Time 2 (90 days), Time 3 (9 months) and Time 4 (18 months). Mixed methods were used to collect data: 1) semi-structured interviews with physicians, PAs, other healthcare providers and staff; 2) surveys from physicians, residents, healthcare providers and patients; 3) PA activity logs; and 4) clinic and administrative data. This report is a synthesis of the data from all previous time points to address the original evaluation questions set out for the project; recommendations for future PA projects are suggested.

Highlights of results are as follows:

- ❖ Recruitment was challenging due to a hiring freeze within Alberta Health Services (AHS), a lack of certainty about the term of the positions, a lack of relocation allowance and the rural location of some demonstration sites. However, most sites received multiple applications.
- ❖ PAs were successfully deployed to multiple care settings (e.g., neurosciences, stroke care, emergency departments, primary care clinics, obstetrics) and took on a variety of activities normally completed by physicians. PAs gathered patient histories, created care plans, carried out examinations, researched illnesses and assisted in surgeries, among other things.
- ❖ Some of the identified facilitators to PA implementation were physician leadership and support for PAs and sites having a strong understanding of the PA role and allowable activities.
- ❖ Barriers to successfully implementing the PA role included confusion about the PAs' ability to independently write orders, a role overlap between PAs and other providers and issues accessing electronic medical records (EMRs).
- ❖ Survey results showed that patients, physicians, residents and other healthcare providers were very satisfied with the care provided by PAs throughout the project. Furthermore, PAs were thought to positively impact processes at most sites (e.g., wait times and clinic capacity).

Recommendations to improve recruitment, deployment and impact of PAs are given in the report. Our overall recommendations are as follows:

- ❖ The PA role should be continued across the province as there has been a high success rate over the 18-month project. They have proven to contribute to many processes in various settings, can be deployed in various settings to complete a number of tasks and seem to affect outcomes positively to some degree.
- ❖ Until PAs become regulated, processes at sites may need to be examined and modified to ensure that PAs' orders can be signed quickly by physicians.
- ❖ Before introducing to any setting, the role of the PA should be explored, ensuring that it is adding the most value based on existing roles and provider gaps. The PA role can bring its unique skills to environments, and there are other similar roles to the PA that overlap; thus, site members need to determine that they need a PA and that all provider roles are clear.
- ❖ Unions, professional colleges and leadership groups should be engaged early in the process, and any lingering questions and concerns should be addressed.
- ❖ Clear payment and reporting structures need to be established to support ongoing funding and management of the role.

BACKGROUND

Shortages in Alberta's workforce of physicians, residents and other healthcare providers have increased the need for new roles and collaborative healthcare teams. The Physician Assistant (PA) Demonstration Project is an initiative that focuses on the introduction, integration, evaluation, and sustainment of PAs within Alberta. The PA program is part of a comprehensive strategy to develop collaborative care teams for quality patient care.

Physician assistants are health professionals who can care for patients under the direction of physicians. PAs assume clinical responsibilities in conjunction with their primary and supervising physicians; they are considered physician extenders trained within the medical model. The PA role is diverse and PAs have been successfully introduced in other provinces and countries.

This report describes the evaluation of 12 PAs introduced across 10 healthcare settings in Alberta as part of the demonstration project. The PAs were implemented in all five zones in Alberta Health Services (AHS) at various clinical sites in two phases. Five PAs were introduced to sites from June to October 2013, while seven were introduced to sites from January to February 2014 as follows:

Phase 1: 2013	Phase 2: 2014
<ul style="list-style-type: none"> • Peter Lougheed Hospital and Mosaic PCN Clinic • Milk River Health Centre and Medical Clinic • Bassano Health Centre and Medical Clinic • Foothills Medical Centre - Physical Medicine and Stroke Rehabilitation • Red Deer Regional Hospital - Hospitalist Service (PA1) 	<ul style="list-style-type: none"> • University of Alberta - Acute Care and Emergency Surgery • Sturgeon Community Hospital - Orthopaedics • Beaverlodge Municipal and Medical Clinic • Rockyview General Hospital - Southern Alberta Institute of Urology • South Health Campus - Intensive Care Unit • University of Alberta - Neurosciences • Red Deer Regional Hospital - Hospitalist Service (PA2)

EVALUATION

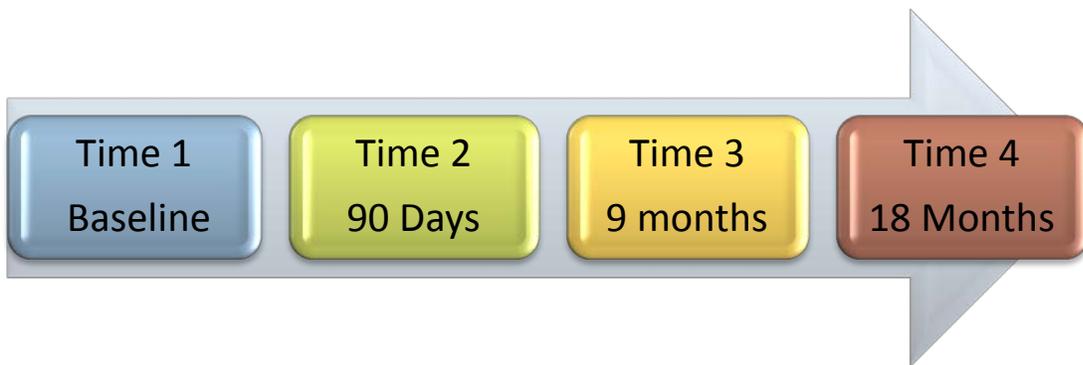
The evaluation examined recruitment, deployment, and sustainability of PAs, as well as the impact of the position on patients, other providers and processes.

The evaluators collected data at four time points (baseline, 90 days, 9 months and 18 months after implementation) using the following methods:

- ❖ semi-structured interviews with physicians, providers and staff

- ❖ surveys with patients, providers, residents and physicians
- ❖ PA activity logs
- ❖ clinic and administrative data

For each evaluation time point a summary report was produced. This allowed the leadership team to monitor implementation progress and deal quickly with emerging issues. In addition, summaries of results for each time point were written for each PA role to provide real-time feedback to sites. The evaluation at 18 months primarily focused on perceived outcomes. Detailed methods and results for each of the time points are available in the respective reports and Appendices 1-4; this report covers overall findings and recommendations. An additional data report from five sites is also included in Appendix 5.



SITE PROFILES AND PA ROLE

Ten sites were selected to employ the PA role. Two sites employed two PAs each. The following table shows details of each site and the PA's main activities.

Table 1. Site and PA Activity Details

Name of Site	PA Activity Details
Bassano Health Centre and Medical Clinic	<ul style="list-style-type: none"> The Bassano Health Centre is an acute care, sub-acute care and continuing care facility. Core programs at the Bassano Health Centre include 24-hour emergency department (ED), sub-acute medicine, ambulatory care services, primary care clinic services and community health. The PA started in mid-October 2013 and works in the hospital ED, acute care units and the clinic. The PA covers both the ED and clinic so that patients are seen in a timelier manner. The PA attends to many female patients and runs the Outpatient Procedures Clinic every second week. Overall, the PA provides general medical care to patients with a wide variety of medical conditions.
Beaverlodge Medical Clinic and Hospital	<ul style="list-style-type: none"> The Beaverlodge Municipal Hospital is an acute care facility offering 24-hour emergency care, physiotherapy, occupational therapy, X-ray and lab, a diabetes clinic and palliative care. The PA started in mid-January 2014 and works mainly in the clinic with four physicians. The PA conducts comprehensive patient assessments and takes patients daily from all physicians to reduce patient wait times in the clinic. Overall, the PA works in the clinic and occasionally in the hospital to provide general medical care to patients with a wide variety of medical conditions.
Foothills Medical Centre (SRC)	<ul style="list-style-type: none"> The FMC Stroke Rehabilitation Clinic provides outpatient medical and rehabilitative care for stroke survivors in the Calgary Zone and assists with spasticity management. The PA started in mid-October 2013 and provides general medical/rehabilitative care to outpatients suffering from stroke, supports the management of spasticity through outpatient chemodenervation and supports other common rehabilitation procedures such as joint injections.
Milk River Hospital and Clinic	<ul style="list-style-type: none"> The Milk River Health Centre is a continuing care and community support facility providing palliative care, homecare and mental health services. The Milk River Health Centre offers 24-Hour/ 7 days a week Emergency Service through the ED. The PA started in mid-August 2013 and attends to patients in the clinic and ED, and covers both areas for the physician. The PA takes general patient appointments and assists with complex procedures and group patient visits. Overall, the PA provides general medical care to patients with a variety of medical conditions.
Peter Lougheed Hospital/Mosaic PCN	<ul style="list-style-type: none"> The Mosaic Primary Care Network Women's Clinic provides comprehensive primary care to women with or without a family physician. Some of the services offered include prenatal care from early in pregnancy to birth, lactation services, family planning, and women's health screening including cervical screening. The PA started at the beginning of June 2013 and works with the Maternity Care Clinic group in the clinic and hospital. At PLC, the PA works with obstetricians to provide 24/7 care for pregnant women and newborn babies. The PA attends to rounding on mothers and newborns, conducts assessments and procedures, teaches residents, and assists the physician in the patient discharge process. At the clinic, the PA runs a breastfeeding clinic and follows up with breastfeeding mothers and jaundiced babies, and triages unattached obstetrics patients in the clinic.
Red Deer Regional Hospital	<ul style="list-style-type: none"> The Red Deer Regional Hospital provides inpatient medical care for patients that do not yet have a family doctor with admitting privileges at the hospital. The site has a total of 15 hospitalists (three groups of five hospitalists). Two PAs provide general medical care to patients with a wide variety of medical conditions. The first PA started in late October 2013 and the second in mid-February 2014. Both PAs work across a number of units in the hospital to assist with patients. The PAs generally attend to assessments, admissions and discharge. The PAs are particularly helpful with continuity of care for patients by improving physician handover, patient histories and discharge summaries.

Rockyview General Hospital	<ul style="list-style-type: none"> The Southern Alberta Institute of Urology is located at the Rockyview General Hospital. The 40,000 sq. ft. centre of excellence is the largest and most comprehensive urology centre in Canada, and is the first to offer a multidisciplinary patient-centred approach to urological care. The PA started in mid-December 2013 and works in the inpatient units, ED and operating room (OR). The PA provides general care to patients with urology disorders. The PA does not have a set schedule but fills in where needed. The PA rounds on pre-operative patients, conducts histories and physical exams, attends to emergency and surgical patients, and connects with unit staff to attend to less critical matters. The PA also acts as a surgical assistant in the OR.
South Health Campus	<ul style="list-style-type: none"> The Intensive Care Unit (ICU) is located at the South Health Campus. As a new facility, various clinical programs opened throughout 2012 and 2013. The PA started in mid-December 2013 and assists with management of critically ill patients cared for by the critical care medicine service including Rapid Response Teams and Code Blue Teams. Care by the PA includes assessing patients, presenting synopsis of patients in rounds, formulating treatment plans, leading family conferences and medically attending to patients throughout the day.
Sturgeon Community Centre	<ul style="list-style-type: none"> Orthopaedics as practiced at the Sturgeon Community Hospital deals primarily with upper extremity problems, both urgent unscheduled and scheduled. The PA started at the beginning of January 2014 and works with the Orthopaedics Group at the Sturgeon Community Hospital to provide care to patients of the upper extremity group. The PA primarily works with one physician across care settings. The PA attends to patients pre-operatively, operatively, and post-operative and follow up. The PA rounds on all orthopaedic patients twice a day five times a week and attends to hospital consults when needed.
University of Alberta (ACES)	<ul style="list-style-type: none"> The Acute Care and Emergency Surgery (ACES) Service provides inpatient surgical care for patients that are acutely ill and injured. The PA started at the beginning of January 2014 and provides general medical and surgical care to patients with a wide variety of traumatic injuries and acute surgical disorders. The PA attends to patients in inpatient units, ED and OR. The PA generally provides training and leadership to new residents, rounds on patients, organizes tests, helps with surgeries and does consults. The PA also improves patient safety by catching errors through quality assurance.
University of Alberta (Neurosciences)	<ul style="list-style-type: none"> This Edmonton Zone neurosciences program is located at two sites, UAH and the Royal Alexandra. UAH neurosurgery has about 25 to 30 patients spread across four neurosciences units. The PA started in mid-February 2014 and attends to and manages neurosurgery patients across five units. The PA provides general medical and surgical care to these patients. The PA functions as a link between residents and staff, orients residents to the program, consults patients in ED and acts as a surgical assistant in OR.

FINDINGS

Recruitment

The PAs for the project were hired over a six month period. A staggered recruitment approach was needed to allow the five zones time to prioritize sites for the demonstration project and to recruit across Canada to find the right PA for the selected sites. Recruitment was done through word of mouth in the PA community, including the military and the Canadian Association of Physician Assistant, through Journals (Canadian Critical Care). Recruitment was challenging in part due simply to the limited supply of PAs in Alberta and in Canada generally. There was also uncertainty about sustaining the role after the project was completed which may have reduced PAs' interest in the project. Many candidates applied from out of province but there was no relocation allowance for the position. Furthermore, the need to match the PAs' skillsets with the physicians' and their needs created some challenges. Rural sites were especially challenging to recruit into as moving to a remote area was undesirable for many. Despite these limitations, most sites received multiple applications.

Recommendations for recruitment of PAs in future projects include:

- ❖ Development of a PA education program to increase the number of trained Alberta PAs;
- ❖ Consider providing relocation allowances and guaranteed terms for PAs moving into Alberta to take on the role; and
- ❖ Find outlets for advertising PA roles rather than relying on word of mouth.

Deployment

Results from the three-, nine- and 18-month evaluations show that PAs work well in many different settings. For example, PAs were deployed in primary care clinics to provide general medical and obstetrics care; specialty units to provide stroke or orthopaedic care; and neurosurgical, acute and emergency surgery units to provide pre- and post-surgical care and assist in surgery. PAs have taken on a number of responsibilities from their supervising physicians, such as gathering patient histories and doing examinations, creating care plans or treatment plans, answering calls and questions from other providers, researching illnesses, attending to paperwork, doing minor procedures, assisting in surgery and planning for discharge. This suggests that PAs can be deployed in a multitude of ways, provided appropriate supports are in place.

Physician leadership and support for PAs are necessary for success. Sites that started the PA with one supervising physician progressed throughout the project very well. Some PAs were placed in specialized and skilled areas where learning progressed in a very monitored and graduated manner. Other PAs were in rural areas where the teams were quite small and very amicable with each other. The physicians and PAs in these situations developed very good and trusting working relationships. Implementation was challenging for PAs that did not have a main physician contact for mentorship or where the PA rotated among numerous physicians. Although many PAs adapted well in larger teams, learning different practice habits for multiple physicians takes time.

One site was not successful in adapting the PA role to their team and that PA was transferred to another site halfway through the implementation. Learnings from this site pointed to the need for supportive physician leadership, having a stable program in which to place PAs (as this was a new hospital and a

number of new initiatives were underway), and last but not least, a more thorough orientation for the nursing staff.

Overall, physicians noted that educating and mentoring the PAs took a substantial amount of time and that PAs introduced to specialty units required additional support. Having physicians who are willing and able to take this time is a crucial component of successful implementation.

Having a good understanding of what duties and tasks the PA was allowed to take on was also helpful in the

Success Story

“If you put the time and effort into training them to do the things that you do, you have to select which things those are going to be. If you don’t put the effort in then you don’t see the return. Once you get there, they are able to do an enormous amount and do things that they find satisfaction in that we don’t necessarily.”

successful deployment of PAs. In settings where all providers were clear on the scope of the role and had a shared understanding of what the PA could and could not do, PAs were integrated more successfully.

There were some barriers to fully implementing the PA role. Early plans called for PAs to be able to write orders for a number of medications approved by the supervising physicians. However, there were delays in obtaining regulation for PAs and no independent PA orders were allowed. PAs’ inability to issue verbal or written orders led to issues among providers at some sites. Nursing staff were confused about whether they could act on physicians’ verbal orders submitted into the EMRs by the PA or if

those orders needed verification by the physician. Ultimately, physicians still needed to verify or cosign all orders submitted by the PAs. However, in situations where orders were urgently needed, frustration arose at a few sites. Some sites were able to sufficiently adjust processes to address the need for a physician signature on PA orders. For example, having the PA attend patient rounds is a proactive strategy to validate orders and address patients concerns with the physician immediately. This avoids the PA having to track down a physician later in the day to sign orders. However, at some sites where an alternative process for signing orders had not been implemented, increased wait times occurred in order for the physician to co-sign these orders.

Before implementing the first PA, AHS engaged with numerous health care regulators and colleges in Alberta with the purpose of understanding how PAs should write patient care and medication orders and how this would impact how health care staff complete these orders. The ability of the nursing staff to process PA orders was the biggest issue with the project. The nursing regulatory body was very explicit that nurses could not accept orders from the PAs as they were unregulated whereas some physicians expected that only medications would need to be cosigned. The pushback from the nursing regulatory body led to other regulatory bodies questioning whether PAs’ orders could be processed. This directly impacted the start-up of the demonstration project as processes needed to be developed to accommodate physician sign-off. Learnings from this issue pointed to the need for earlier and extensive engagement of the groups which may have mitigated some of the concerns. The other learning was the need for PAs to be regulated within Alberta.

There were also some issues with role overlap between PAs and other providers. Some units had NPs and residents who functioned similarly to the PAs, except they could give and write independent orders. Despite this, most sites managed to find a niche for both roles to divide the work. For example, PAs might attend to

the operating room as a surgical assist while the NP looked after patients in the ER, or PAs manage the unit while residents assist in surgeries. In most circumstances, these are good working relationships based on mutual respect. For example, a couple of sites have very collaborative relationships between the NPs and PAs where they discuss patient issues and cover each other when the unit is busy.

Sites had unanticipated challenges with PAs obtaining access to the EMR system and the online order entry system. For over three months, the project team discussed getting PAs access to these systems. This delayed and restricted some PAs from doing their work as they were unable to use the system to view patient records.

By eighteen months, most sites were keen to sustain the PA position, and a few hoped to add more PAs in the near future. Sites and the demonstration project team are actively seeking ways to sustain the PA role beyond the term of the project. Some are considering whether to develop a new alternative relationship plan so that Alberta Health or AHS can fund the position directly. Others are assessing whether physicians will pay for PAs out of their operating budgets.

Success Story

“We get along great so we have been able to have a good team environment. I think we helped each other a lot....I started a little earlier than he did. Just knowing better how things worked and then when he had to go to emergency and day surgery, and all these things just trying to work together as a team. Just trying to utilize his knowledge and my knowledge together...”

Recommendations for deployment of PAs in future projects include:

- ❖ Choose sites with enthusiastic physician support for the role and ensure that time and funding for education are available.
- ❖ All providers who will be interacting with PAs should be given training and information about the role, its scope, and its potential benefits for units, as well as how to structure the role to avoid overlap with other providers.
- ❖ Unions, professional colleges, and leadership groups should be engaged early in the process and any lingering questions and concerns should be addressed.
- ❖ Establish a means of providing ongoing funding for PAs.
- ❖ Clear role definitions and delineations between providers early in implementation are needed to avoid unnecessary conflict and quell any fears about the PAs replacing other positions in the system. Extra care and attention may be necessary to differentiate between the PA and NP roles to make them complementary.

Impact on Patients, Providers and Processes

The earlier evaluation reports highlight findings from each of the time points. The patient and provider impact sections below focus on results from satisfaction surveys administered at each time point. Survey details and clinic and administrative data are also available in the earlier reports.

Impact on Patients

Over the course of the entire project, a total of 368 patients completed the survey. The average age of the survey respondents was 52 with 60% females and 40% males. Patients were asked to respond about the

care they received from the PA. All survey items received a mean score of 4.31 or higher, which suggests that patients had positive experiences with the PAs (details of items are in Appendix 1).

At 18 months, patients strongly agreed that the PA treated them with courtesy and respect, listened to their concerns and was comfortable speaking with them. Patients also felt strongly that the PAs' knowledge and skills contributed to the quality of their care.

The patients' overall rating of the care that the PA provided was nearly the best possible care (all means over 9.2 out of 10, 0 = Worst possible care to 10 = Best possible care) for all time points. See Figure 1 for differences between time points. Figure 2 shows patients' responses to all other items over time; results show that patient satisfaction with PAs was very high from three months onward.

Success Story

"I came in that day and had several urgent consults in the ER, I knew that I had a patient that had a special request on the unit, but I was not sure what time I could get there. [The PA] went to the unit to look into it. It turned out that a palliative patient needed a variety of issues addressed in order to be discharged. This was significant because if he was not discharged urgently he would miss his daughter's convocation in Vancouver. This single father's only wish was to see his daughter walk across that stage. Without the assistance of [the PA] organizing the appropriate care, I would not have made it to see him in time and he would have missed that event. The support of the PA in the care of that man was instrumental in ensuring we could give him that opportunity."

Figure 1. Patient Care Received from PAs

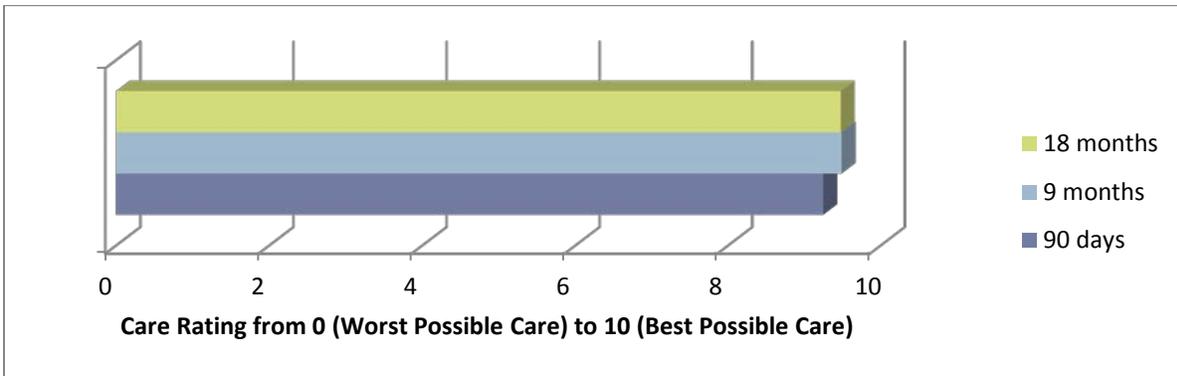
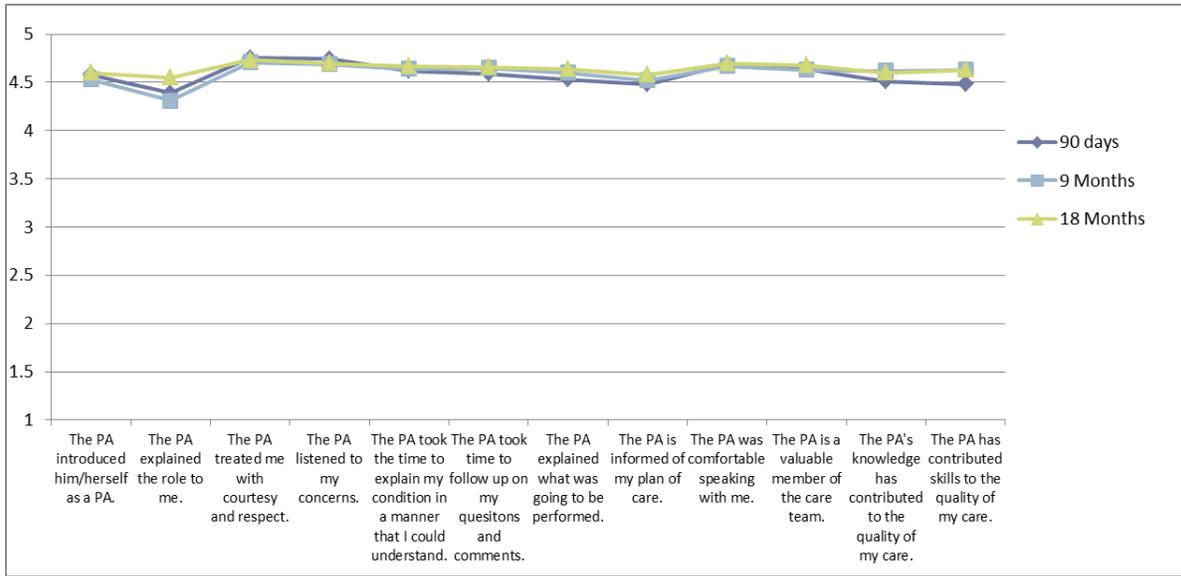


Figure 2. Patients' Survey Responses



Impact on Providers

Separate surveys were administered to physicians, residents and other healthcare providers. Unless otherwise noted, survey responses ranged from 1 (strongly disagree) to 5 (strongly agree).

Physicians. Physicians generally responded positively to all items (see Appendix 2 for details). Changes over the time points are fairly subtle. Figure 3 shows how patient safety and physician job satisfaction have been affected by the PA role. Responses were on a three point scale from 1 (decreased) to 3 (increased). Patient safety was thought to have gradually increased over time and physician satisfaction has remained relatively stable. Figure 4 shows responses over time to the remainder of the survey questions; satisfaction with PAs remained quite high over the course of the project.

Success Story

"I haven't heard any problems from staff. If anything, she helps make the nursing staff jobs easier because they are able to discharge patients in a timely fashion because they aren't waiting for us to be over there. She contacts all the [providers] when she needs to."

Figure 3. Physician Perceptions of Patient Safety and Job Satisfaction

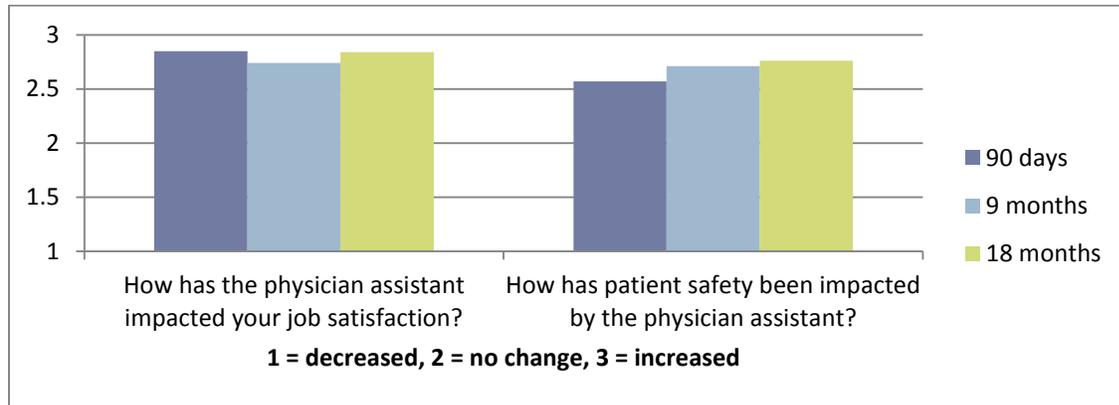
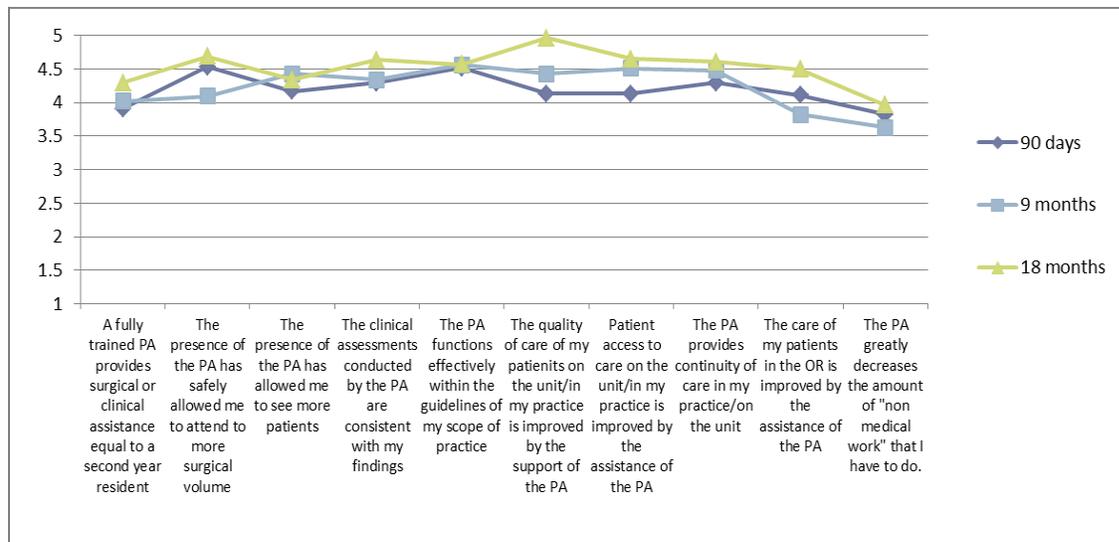
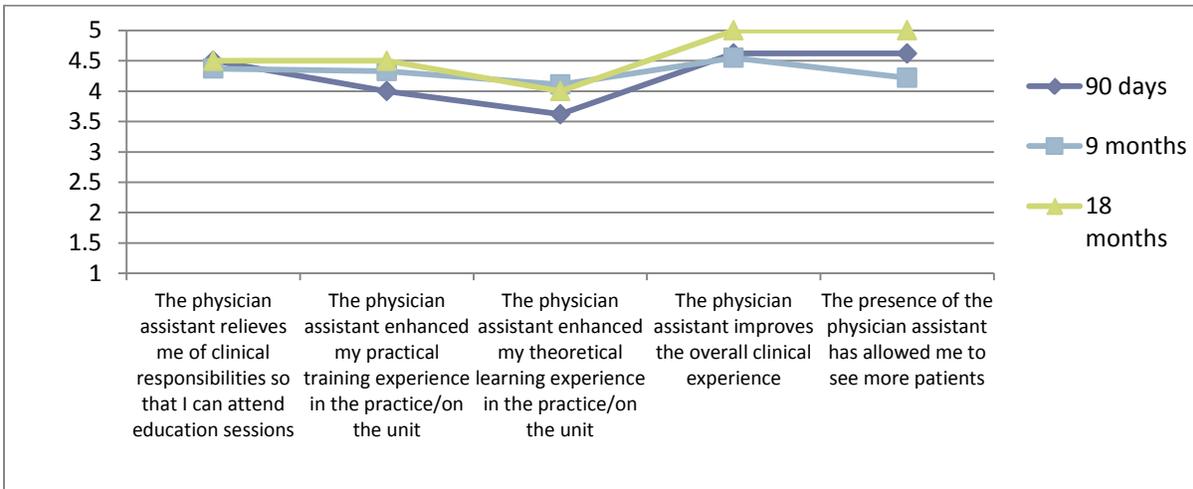


Figure 4. Physicians' Survey Responses



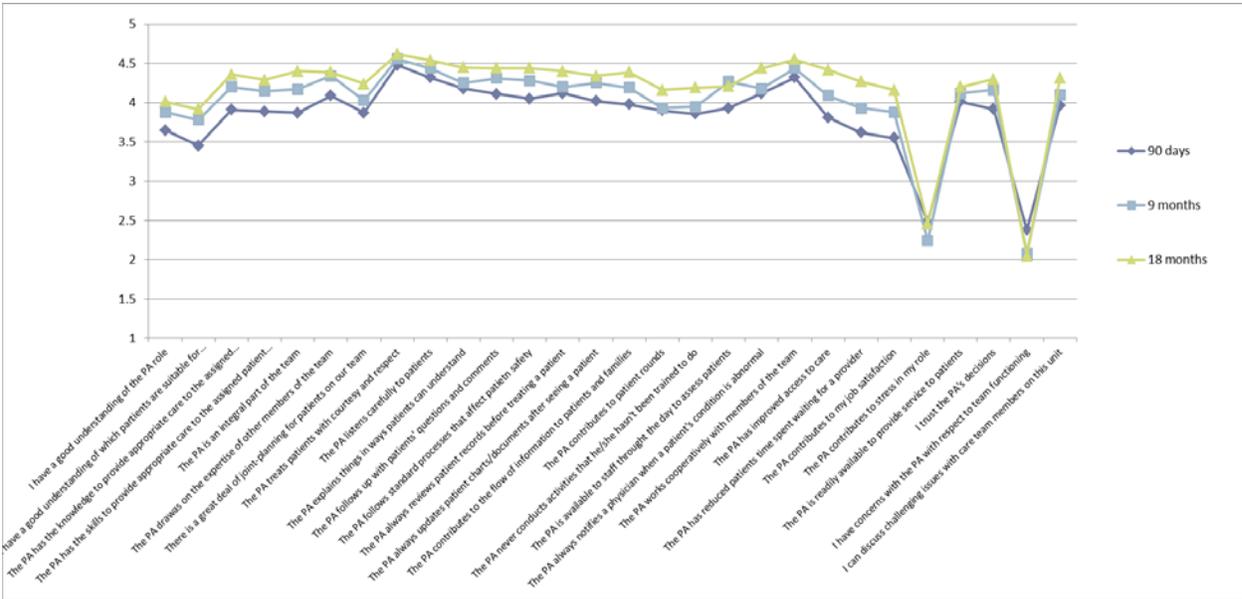
Residents. Resident responses about the PA role were generally positive as shown by mean values in the table in Appendix 3 and in Figure 5. Generally, slight increases in scores are shown for the 18-month time point; however, only two surveys were completed.

Figure 5. Residents' Survey Responses



Other Healthcare Providers. Healthcare providers responded positively to most survey items as shown by the mean values in the table in Appendix 4. Changes over the time points are subtle with responses generally being higher at 18 months (see Figure 6). Overall, satisfaction with the PA started quite high and remained high throughout the project.

Figure 6. Healthcare Providers' Survey Responses



Impact on Processes

PAs were said to have improved many processes over time. The PAs covered physicians' non-urgent calls, allowing physicians to see more acute patients. They also prepared patients for discharge, met with patients and families, and mentored residents wherever possible.

Success Story

"The PA helps triage patients, which is not reflected in the data. The PA performs phone consults (these require 20-30 minutes each) to assist with the triage as we typically deal with complex patients in the system with multiple transitions between rehabilitation teams (e.g., inpatient to outpatient, inpatient to early supported discharge [in home] that needs careful management.)"

PAs were thought to have improved wait times at several sites. For example, one site has a PA working in the outpatient clinic who takes appointments, which has doubled the clinic capacity.

Many PAs rounded on patients one to two times per day, which helped to address any patient concerns in a timely manner. Most PAs acted as a liaison between unit staff and physicians, which was often thought to have improved flow on the units. Physicians' work was not interrupted with calls as often and staff and patients did not have to wait for several hours for physicians to return calls when they were in surgery or otherwise occupied.

PAs also improved continuity of care by being present at sites on weekdays, meaning they could update physicians just starting rotations and stay informed about patients' various results and care plans. This was said to have potential to lower lengths of stay as care plans do not change when new physicians take over.

Several positive findings were found in the clinic and administrative data as noted in the previous data reports. Some of the rural sites noticed an increase in the patient panel, and scheduled, walk-in, and follow-up appointments. One operative clinic showed a decrease in wait times (average wait time to consult days) and an increase in new patients seen by month. One rehabilitative clinic indicated increases in clinic capacity with significant changes in clinic volumes. However, there were significant data issues throughout

the project that hampered our ability to draw definitive conclusions about PAs' impact on processes. Sites did not have consistent administrative data to examine indicators such as length of stay, adverse events, or number of patients seen. Data that could be extracted from the AHS database was subject to various influential factors; contributions of the PAs were difficult to isolate. Data that was forwarded from sites could not be verified or checked for reliability. Furthermore, PAs were asked to complete a log of their activities for two consecutive weeks at each time point. Details of PA logs are included in previous reports (90 day, 9 months and 18 months). The activity logs were not as useful in the evaluation as was originally expected. There were substantial variations in how PAs completed the logs and thus comparisons of PAs' effectiveness and efficiency were not possible. In the future, we recommend that activity logs be reviewed and redesigned to ensure a standardized approach to completion.

OVERALL RECOMMENDATIONS

In addition to the specific recommendations above for recruitment and deployment of PAs, the following should be considered in any future projects:

- ❖ The PA role should be continued across the province as there has been a high success rate over the 18 month project. They have proven to contribute to many processes in various settings, can be deployed in various settings to complete a number of tasks and seem to affect outcomes positively to some degree.
- ❖ Until PAs become regulated, processes at sites may need to be examined and modified to ensure PAs' orders can be signed quickly by physicians.
- ❖ Clear payment and reporting structures need to be established to support ongoing funding and management of the role.
- ❖ Explore the role of the PA before introducing to any setting to ensure the PA role is adding the most value based on existing roles and providers gaps. The PA role has unique skills to add to environments and there are other similar roles to the PA that overlap; thus, site members need to ensure that they need a PA and that all provider roles are clear.

Recommendations for Future Evaluations:

- ❖ Review potential data sources, select appropriate data sources and create primary data collection tools and processes prior to PA implementation.
- ❖ PA activity logs were not as useful in reporting as hoped; PAs did not complete the form in a standardized manner. The form should be clarified and streamlined to produce better and more comparable (over time and across sites) data.
- ❖ A more comprehensive understanding of the PA role and how it can be utilized could be obtained through workload analysis.

An economic analysis should be conducted to understand cost comparisons between PAs, NPs, clinical assistants, surgical assistants, physician extenders and other similar roles.

LIMITATIONS

The data has limitations. Obtaining administrative or clinic data specific to the PA role was difficult. Administrative data was site-specific and unique to sites due to the setting and number and types of providers working; thus standardized measures were not possible. Not all sites were AHS facilities, so data collected was based on what sites were willing to forward.

Data was not always collected consistently. Dates for data collection had to be adjusted to work around physicians and providers being away from work. Data collection points at sites varied from two weeks to two months. PA activity logs were also completed inconsistently, which made analysis difficult. Some sites had low response rates for surveys, while other sites were unable to complete specific surveys (e.g., patient). Ceiling effects were noticed with the patient data, as there was little variation in their responses. The Supervision of Services Agreements were to be reviewed for all PAs to get a sense of the activities the PAs were approved to conduct. However, the Agreements did not provide detailed listings of the activities the PAs conducted and was omitted from the data collection plan.

APPENDICES

Appendix 1. Patient Survey

The average age of the survey respondents ($n = 96$) is 53 (range 14 to 89) with 67% females and 33% males. Patients responded to a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) about the care they received from the PA.

Table A-1. Patient Survey Means for Time Points 2, 3 and 4

Items	90 Day Mean	9 Months Mean	18 Months Mean
1. The PA introduced him/herself as a PA	4.58	4.53	4.60
2. The PA explained the role to me	4.39	4.31	4.55
3. The PA treated me with courtesy and respect	4.75	4.71	4.73
4. The PA listened to my concerns	4.74	4.69	4.70
5. The PA took the time to explain my condition in a manner that I could understand	4.62	4.64	4.67
6. The PA took time to follow up on my questions and comments	4.59	4.65	4.66
7. The PA explained what was going to be performed	4.53	4.60	4.64
8. The PA is informed of my plan of care	4.48	4.52	4.58
9. The PA was comfortable speaking with me	4.69	4.67	4.70
10. The PA is a valuable member of the care team	4.64	4.63	4.68
11. The PA's knowledge has contributed to the quality of my care	4.51	4.62	4.60
12. The PA has contributed skills to the quality of my care	4.48	4.63	4.63

Appendix 2. Physician Survey

Physicians responded to a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree with 0 = Not Applicable) at three time points: 90 day ($n = 23$), 9 months ($n = 41$), and 18 months ($n = 26$). Questions 2 and 9 were cleaned to reflect only responses that were applicable to specific clinical settings.

Table A-2. Physician Survey Means for Time Points 2, 3 and 4

Survey Items	90 Day Mean	9 Months Mean	18 Months Mean
1. A fully trained PA provides surgical or clinical assistance equal to a second year resident	3.91	4.02	4.30
2. The presence of the PA has safely allowed me to attend to more surgical volume	4.53	4.10	4.69
3. The presence of the PA has allowed me to see more patients	4.17	4.43	4.34
4. The clinical assessments conducted by the PA are consistent with my findings	4.30	4.34	4.64
5. The PA functions effectively within the guidelines of my scope of practice	4.52	4.56	4.57
6. The quality of care of my patients on the unit/in my practice is improved by the support of the PA	4.13	4.43	4.69
7. Patient access to care on the unit/in my practice is improved by the assistance of the PA	4.13	4.51	4.65
8. The PA provides continuity of care in my practice/on the unit	4.30	4.48	4.61
9. The care of my patients in the operating room is improved by the assistance of the PA	4.11	3.82	4.05
10. The PA greatly decreases the amount of “non medical work” that I have to do	3.82	3.63	3.96

Appendix 3. Resident Survey

Residents responded to a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree with 0 = Not Applicable) at three time points: 90 day (*n* = 8), 9 months (*n* = 9), and 18 months (*n* = 2).

Table A-3. Resident Survey Means for Time Points 2, 3 and 4

Items	90 Day Mean	9 Months Mean	18 Months Mean
1. The physician assistant relieves me of clinical responsibilities so that I can attend education sessions	4.50	4.37	4.50
2. The physician assistant enhanced my practical training experience in the practice/on the unit	4.00	4.33	4.50
3. The physician assistant enhanced my theoretical learning experience in the practice/on the unit	3.62	4.11	4.00
4. The physician assistant improves the overall clinical experience	4.62	4.55	5.00
5. The presence of the physician assistant has allowed me to see more patients	4.62	4.22	5.00

Appendix 4. Healthcare Provider Survey

Residents responded to a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree with 0 = Not Applicable) at three time points: 90 day (*n* = 8), 9 months (*n* = 9), and 18 months (*n* = 2).

Table A-4. Healthcare Provider Survey Means for Time Points 2, 3 and 4

Items	90 Day Mean	9 Months Mean	18 Months Mean
1. I have a good understanding of the PA role	3.65	3.88	4.01
2. I have a good understanding of which patients are suitable for management by the PA	3.45	3.78	3.92
3. The PA has the knowledge to provide appropriate care to the assigned patient groups	3.91	4.20	4.36
4. The PA has the skills to provide appropriate care to the assigned patient groups	3.89	4.15	4.29
5. The PA is an integral part of the team	3.87	4.17	4.40
6. The PA draws on the expertise of other members of the team	4.09	4.34	4.39
7. There is a great deal of joint-planning for patients on our team	3.87	4.03	4.24
8. The PA treats patients with courtesy and respect	4.48	4.56	4.62
9. The PA listens carefully to patients	4.32	4.44	4.54
10. The PA explains things in ways patients can understand	4.18	4.25	4.45
11. The PA follows up with patients' questions and comments	4.11	4.31	4.44
12. The PA follows standard processes that affect patient safety	4.05	4.28	4.44
13. The PA always reviews patient records before treating a patient	4.12	4.20	4.40
14. The PA always updates patient charts/documents after seeing a patient	4.02	4.25	4.34
15. The PA contributes to the flow of information to patients and families	3.98	4.19	4.39
16. The PA contributes to patient rounds	3.90	3.93	4.16
17. The PA never conducts activities that he/she hasn't been trained to do	3.86	3.95	4.19
18. The PA is available to staff throughout the day to assess patients	3.93	4.27	4.21
19. The PA always notifies a physician when a patient's condition is abnormal	4.12	4.18	4.44
20. The PA works cooperatively with members of the team	4.32	4.44	4.55
21. The PA has improved access to care	3.81	4.09	4.42
22. The PA has reduced patients time spent waiting for a provider	3.62	3.93	4.27
23. The PA contributes to my job satisfaction	3.55	3.88	4.16
24. The PA contributes to stress in my role	2.48	2.24	2.46
25. The PA is readily available to provide service to patients	4.01	4.12	4.20
26. I trust the PA's decisions	3.92	4.16	4.30
27. I have concerns with the PA with respect to team functioning	2.38	2.08	2.05
28. I can discuss challenging issues with care team members on this unit	3.96	4.10	4.31

Appendix 5. Data Report dated September 2015



Physician
Assistant
Demonstration
Project

September

2015

Abstract: Measureable data from five healthcare sites with physician assistants (PAs) was extracted through an AHS administrative database or forwarded to Workforce Research & Evaluation. The data was included to determine if the PA role can be attributed to service delivery improvements.

Data
Report

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 - Milk River Health Centre and Medical Clinic
 - Sturgeon Community Hospital – Orthopaedics
 - University of Alberta Hospital – Neurosciences
 - Red Deer Regional Hospitalist Service (Physician Assistant 2)

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EXECUTIVE SUMMARY

The Physician Assistant Demonstration Project is an initiative designed to increase patients' access to care and complement and support the role of existing health professionals. Physician assistants (PAs) have been delivering safe, competent, and effective healthcare services in some Canadian provinces. The PA role can help to better utilize health human resources to address workforce shortages of physicians, residents, and other healthcare providers. Twelve PAs were implemented into healthcare settings across Alberta. We held discussions with site members about quantitative measures that would be suitable to demonstrate impact of the PA role. Five sites were able to provide data. The findings were as follows:

Milk River Health Centre and Medical Clinic

The PA role in Milk River is linked to improvements in clinic capacity as demonstrated by increases in patient panel, external patient requested clinic hours, and clinical usage with measures stabilizing from 9-18 months. Data from cycles between 2013 and 2014 show that the PA positively influenced the physician's red zone time.

Bassano Health Centre and Medical Clinic

Data linked to the PA role in Bassano showed decreases in total no show appointment and total cancelled appointments. There were increases in total patients booked, total clinic appointments, total walk-ins, total patients seen, total PA clinic appointments, total complete physical examinations/papanicolaou tests, and total follow up appointments. The data for next available appointments indicated fluctuations.

Sturgeon Community Hospital

The PA role in orthopaedic surgery is linked to timely triaging of surgical candidates. Wait times for consultation with the surgeon have decreased by 20.0% during the first year of PA implementation followed by another 2% decrease the next year. The number of patients the PA sees in clinic increased in 2014-2015. Surgical candidates are now being prioritized for surgery in a timely manner. Patients who have not used alternative therapy prior to referral to the surgeon are now being redirected to the appropriate treatments. The PA is also contributing in the operating room. The PA also has comparable surgical times for routine surgeries to the surgical assistant role.

University of Alberta – Neuroscience

We were unable to link the PA role for the neuroscience units to any measurable system improvements.

Red Deer Hospitalist Program – Physician Assistant 2

We were unable to link the second PA for the hospitalist group to any measurable system improvements on unit 22.

Although not all sites show measurable impacts of the PA role, softer data (e.g., interviews) attest to the positive contributions of the PA role in those settings.

INTRODUCTION

This preliminary data report intends to demonstrate measurable impacts of the physician assistants (PAs) at their respective sites. The data should help to get a better understanding of potential long-term outcomes associated with the PA roles. We have included the findings from Milk River Health Centre and Medical Clinic, Bassano Health Centre and Medical Clinic, Sturgeon Community Hospital – Orthopaedics, University of Alberta – Neuroscience, Red Deer Regional Hospital (second physician assistant).

We had discussions with leaders, physicians, and/or PAs from sites to identify available data sources indicating impacts of the PAs. Sites forwarded quantitative or clinic data to show impacts of the PAs in those settings. We also pulled additional AHS administrative data for specific units or sites where PAs were assigned. Table 1 lists the PA implementation dates of each site. Not all sites had readily available data that could clearly show contributions of the PAs. For example, isolation of the PA’s contribution was not possible at most sites as residents or nurse practitioners are common providers who work with the PAs across units. Therefore, data at those sites reflects the outcomes associated with multiple providers, not only the PA.

Table 1. PA Implementation Dates

Sites	PA Start Dates
Milk River Hospital/Medical Clinic	August 18-24, 2013
Bassano Health Centre and Medical Clinic	October 13-19, 2013
Sturgeon Community Hospital – Orthopaedics	January 5-11, 2014
University of Alberta – Neuroscience	February 9-15, 2014
Red Deer Hospitalist Program – PA 2	February 9-15, 2014

RESULTS

Milk River Health Centre and Medical Clinic Data

The PA was implemented in the Milk River Health Centre and Medical Clinic in mid-August, 2013. This section reports on data from the Milk River Medical Clinic. Data forwarded includes: patient requested clinic hours, patient panel, no show and missed appointments, clinic usage report, cycle times measurement report, appointments booked, wait times, cancelled clinic appointments, and emergency department visits. The data was produced by the clinic’s electronic records system WOLF.

Patient’s Demand Summary Report

Table 2 shows the number of clinic hours of the PA’s primary supervising physician and number of patients. Number of clinic hours includes all patient visits to the doctor including repeat visits. The table shows an increase in patient throughput in the clinic from March-June 2013 to March-June 2014.

Table 2. Comparison of 2013 and 2014 Patient Requested Clinic Hours

	March 1-June 5, 2013 (Baseline)	March 1 – June 5, 2014 (7-10 months into PA implementation)	Percent Change
Number of internal patient requested clinic hours	151	153	1.3%
Number of external patient requested clinic hours	1,434	1,658	15.6%
Number of total patient requested clinic hours	1,645	1,811	10.1%

Patient Panel

The patient panel is the number of patients who identify the primary supervising physician as their family physician. The patient panel has increased from 1624 patients in July 2013 to 1780 patients in July 2014 (increase of 9.6%). The patient panel as of March, 2015 has 1736 active and confirmed patients. There were 182 new patients added to the panel since August 1, 2013. This indicates that more patients are attached to their physician due to increased capacity.

No Show and Missed Appointments

The total number of no show and missed appointments for the clinic was lower in 2014. There was a 51.5% reduction in no show appointments in 2014. The number of all missed appointments also decreased by 10.4% in the same time point. Month to month comparison of data showed that every month of the year with the exceptions of last two months had the improvement in both no show and missed appointments. This positive change is attributed to clinic and ER coverage from the PA role. Patients have access to the clinic in a more timely manner; they are no longer booking clinic appointments and then accessing emergency services when they do not want to wait weeks for their clinic appointment. When patients access emergency services, they often do not contact the clinic to inform them that they have been seen by a physician elsewhere.

Table 3. No Show and Missed Appointments for 2013 and 2014

	No Show 2013	All Missed Appointments 2013	No Show 2014	All Missed Appointments 2014	No Show % Change	All Missed Appointments % Change
January	17	92	8	61	-52.9%	-33.7%
February	20	71	10	64	-50.0%	-9.9%
March	28	80	6	61	-78.6%	-23.8%
April	25	81	11	84	-56.0%	3.7%
May	10	80	7	77	-30.0%	-3.8%
June	22	59	5	51	-77.3%	-13.6%
July	24	72	8	64	-66.7%	-11.1%
August	21	95	8	52	-61.9%	-45.3%
September	6	48	3	63	-50.0%	31.3%
October	7	83	6	54	-14.3%	-34.9%
November	12	61	12	81	0.0%	32.8%
December	2	50	10	69	400.0%	38.0%
Total	194	872	94	781	-51.5%	-10.4%

Note: Data includes 2 physicians = 1 FTE physician
 All missed appointments include no shows, cancelled clinic appointments > 24 hours and < 24 hours

Clinic Usage

Clinic usage was measured by patients serviced, appointments scheduled, and patient records accessed. We observed increases in all measures from year 2013 to 2014 (see Table 4) and by time point (see Table 5). Most measures initially decreased from baseline to 90 days, and then increased from the 9 to 18 month time points. This indicates that the PA role allows for more patients to be served in the clinic.

Table 4. Clinic Usage Report for 2013 and 2014

Time Period	Patients Serviced	Appointments Scheduled	Patient Records Accessed
January 1, 2013 – December 31, 2013	5529	6407	4679
January 1, 2014 – December 31, 2014	6007	6819	10699
% Change	8.6%	6.4%	128.7%

Note: Figures include two physicians (who make up 1 FTE) and a PA

Table 5. Clinic Usage Report for Four Time Periods

Time Period	Patients Serviced	Appointments Scheduled	Patient Record Accessed
BASELINE May 1, 2013 – July 31, 2013	1421	1660	353
90 DAYS September 1, 2013 – November 30, 2013	1232	1422	2348
% Change (Baseline - 90 days)	-13.3%	-14.3%	565.2%
9 MONTHS March 1, 2014 – May 31, 2014	1643	1860	3017
% Change (Baseline – 9 months)	15.6%	12.0%	754.7%
18 MONTHS December 1, 2014 – February 28, 2015	1654	1852	2796
% Change (Baseline – 18 Months)	16.4%	11.6%	692.1%

Note: Figures include two physicians (who make up 1 FTE) and a PA

Cycle Times

Cycle times were collected randomly from when patients come in to the clinic to when they left. Cycle times improved from an average of 74.0 minutes (median 70.5) in 2013 to an average of 48.0 minutes (median of 45.0) in 2014. Cycle times are influenced if the physician is called to attend to the clinic, emergency, long term care and home care multiple times during regular clinic hours. The PA helped with taking care of clinic work to reduce the workload for physician. The PA ensured that patients were seen as soon as possible. Clinic patients did not have to wait while the physician attended to patients in emergency.

Cycle times were updated for 2015 for short and long appointments. Definitions for cycle times are as follows:

Cycle Time: The time from when the patient arrives at the clinic to leaves the clinic.

Wait to Be Seen: The time from when a patient arrives at the clinic to when they are seen by a physician.

Minutes Behind: The time from when a patient is scheduled to see a physician (appointment time) to when the physician begins the appointment. This value can be negative (ahead of schedule).

Pre-work Cycle Time: The time from when the patient is roomed, to when the team member leaves the patient.

Red Zone: The time from when the physician enters the room to when the physician leaves at the conclusion of the appointment.

Red Zone Mismatch: The difference between how long the appointment takes and how much time was available for the appointment. This includes known double booked appointments.

- A positive value is an appointment that takes more time than available.
- A negative value is an appointment that takes less time than available.

Thirty-two patients were selected randomly for the year of 2013. Appointments were scheduled for “short” (10 minutes) and “long” (20 minutes) appointments in May and June, 2013. No appointments were double-booked.

Table 6 also shows data collected on 25 patient encounters for two days in May-June 2014. All appointments were scheduled for fifteen minutes and are considered “short” appointments. No appointments were double-booked. The data shows improvements across all categories, which suggests an efficient use of the physician’s time.

Details for the 2015 cycle time data were not available.

Table 6. Milk River Cycle Time Summary in Minutes

	Cycle Time	Wait to Be Seen	Minutes Behind	Pre-work Cycle Time	Red Zone	Red Zone Mismatch
2013 Cycle Time Summary						
Average	74	56	50	3	16	6
Median	70.5	51.5	47	1.5	15	5
Minimum	34	20	15	0	2	-8
Maximum	124	108	98	12	43	33
Range	90	88	83	12	41	41
2014 Cycle Time Summary						
Average	48	33	28	5	11	-4
Median	45	34	27.5	5	10	-5
Minimum	11	1	-13	1	2	-13
Maximum	90	81	73	10	33	18
Range	79	80	86	9	31	31

Appointments Booked

Total appointments booked and appointments booked for PA show increases since the PA was implemented. For total appointments booked, March 2014 shows a higher number of patients booked. April 2014 shows the highest number of patients booked with the PA, suggesting increased PA utilization over time.

Table 7. Appointments Booked by Milk River Clinic and PA

Month	Total Appointments Booked	Appointments booked for PA
Aug-13 (Baseline)	552	
Jan-14 (5 Months)	627	83 (13.2% of total appointments)
Feb-14 (6 Months)	568	148 (26.1% of total appointments)
Mar-14 (7 Months)	631	159 (25.2% of total appointments)
Apr-14 (8 Months)	581	210 (36.1% of total appointments)

Note: The data represents the total number of patients seen including the multiple visits of patients

Wait Time for 3rd Next Available Appointment

The clinic data shows patient wait times (3rd to next available appointments) for long and short appointments from March 2014 to February 2015 (see Table 8). The averages fluctuate over the months likely due to residents, students, and locums providing care in the clinic at times.

Table 8. Wait Time in Days for 3rd Next Available Appointment

Long			Short		
Date	Clinic Average	Average Month	Date	Clinic Average	Average Month
2014/03/03	30	March, 2014 27.40	2014/03/03	7	March, 2014 6.60
2014/03/10	5		2014/03/10	3	
2014/03/17	18		2014/03/17	14	
2014/03/24	45		2014/03/24	8	
2014/03/31	39		2014/03/31	1	
2014/04/07	32	April, 2014 34.25	2014/04/07	8	April, 2014 11.50
2014/04/14	37		2014/04/14	15	
2014/04/21	32		2014/04/21	10	
2014/04/28	36		2014/04/28	13	
2014/05/05	36	May, 2014 20.75	2014/05/05	7	May, 2014 9.00
2014/05/12	24		2014/05/12	14	
2014/05/19	13		2014/05/19	6	
2014/05/26	10		2014/05/26	NA	
2014/12/01	29	December, 2014 24.80	2014/12/01	14	December, 2014 9.80
2014/12/08	22		2014/12/08	7	
2014/12/15	22		2014/12/15	9	
2014/12/22	24		2014/12/22	13	
2014/12/29	27		2014/12/29	6	
2015/01/05	24	January, 2015 20.67	2015/01/05	2	January, 2015 4.67
2015/01/12	17		2015/01/12	6	
2015/01/26	21		2015/01/26	6	
2015/02/02	28	February, 2015 23.50	2015/02/02	5	February, 2015 5.75
2015/02/09	29		2015/02/09	9	
2015/02/16	22		2015/02/16	3	
2015/02/23	15		2015/02/23	6	

Cancelled Clinic Appointments

There is a decrease in cancelled appointments from 5% in 2013 to 1% in 2014. This may be the result of the physician not having to cancel appointments to attend to emergency services. The PA helps by providing coverage to ER or clinic patients. This measure differs from the missed appointments as those appointments are not cancelled by the clinic, but missed by the patient.

Emergency and Outpatient Visits

Data for the emergency department extracted through the AHS administrative database (see Table 9). The table shows the number of patients receiving outpatient and emergency services, the length of stay

(LoS), and number of procedures for all review periods. Compared to the baseline, the number of people receiving outpatient care increased and ED visits decreased while the total number of patients receiving services remained stable. As a result, the share of outpatient visits increased from about 17% in the baseline to more than 21% following PA implementation. The only exception is 18 month period in which both ED and outpatient visits declined although the share of outpatient visits was still high at 22%. ED length of stay significantly declined during 90 day and 9 month periods along with an increase in the number of outpatient procedures. The decline in the number of patient visits during 18 month period could be influenced by factors other than those associated with the clinic.

Table 9. Outpatient and ED Visits, LoS, and Procedures

Selected indicators for PA outcomes for baseline 90 day, 9 month, and 18 month points for Milk River										
		Number of Patients			Mean Total LOS (Minutes)			Number of Procedures		
		Out-P	ED	Total	Out-P	ED	Total	Out-P	ED	Total
Milk River [†]	Baseline	162	775	937	n/a	180.1	180.1	216	313	529
	90 Day	179	742	921	n/a	146.8	146.8	241	337	578
	9 Month	209	722	931	n/a	153.4	153.4	270	297	567
	18 Month	159	569	728	n/a	176.2	176.2	221	234	455
[†] Note: The numbers are based on the site level data, which included all patients receiving care at this site during the review periods										

BASSANO HEALTH CENTRE AND MEDICAL CLINIC DATA

This section reports on data for several time points, with the PA being implemented in mid-October, 2013. Overall, the data shows mixed findings. Increasing trends were observed in total PA clinic appointments, total complete physical examinations (CPX)/ papanicolaou (paps), and total follow up appointments. There is a general decreasing trend in the following data: total patients booked, total no show appointments, total cancelled appointments, total walk-ins, total clinic appointments, and total patients seen. Over time, the PA has increased his appointments booked, but the total patients booked may decrease as a result of having only one physician and PA in the clinic (instead of two physicians and residents). A general falling trend was observed in total third to next available appointments.

Table 10. Bassano Clinic Data

Note: Data taken from the EMR - Includes all patients seen by Physicians, PA, Resident and PCN Nurse/Dietician

Time Period	Total Patients Booked	Total No Show	Total Cancelled Appts	Total Clinic Walk-ins	Total Patients Seen in ED	Total Clinic Appts	Total Patients Seen	Total PA Clinic Appts	Total 3 rd to Next	Total CPX/Pap	Total Follow up Appts	Notes
Baseline												
Jul-13	569	40	16	17	0	530	530	0	6	8	74	2 Physicians(1 holiday for 3 wks
Aug-13	579	67	20	8	0	500	500	0	9	11	117	1 FT Physician + 1 PT Physician (1 Day/wk)
Sep-13	532	34	16	10	0	492	492	0	7	10	84	1 FT Physician + 1 PT Physician (1 Day/wk)
Total	1680	141	52	35	0	1522	1522	0	22	23	368	
90 Day												
Oct-13	634	20	30	2	0	586	586		4	8	105	1 FT Physician + 1 PT Physician (1 Day/wk)+ 1 Resident
Nov-13	564	24	9	0	0	531	531	47	4	10	99	Resident
Dec-13	542	26	0	3	0	519	519	68	4	10	83	1 FT Physician + 1 PT Physician +1 PA+1 Resident
Total	1740	70	39	5	0	1636	1636	115	12	28	287	1 FT Physician +1 PT Physician +1 PA
9 Months												
Apr-14	515	21	0	0	0	494	494	40	6	5	71	Physician & PA(Both - 2 wks holiday)
May-14	461	29	0	6	0	510	510	84	4	11	114	1 FT Physician + 1 PT Physician + 1 PA
Jun-14	431	25	0	2	0	470	470	82	4	15	121	1 FT Physician + 1 PT Physician + 1 PA
Total	1407	75	0	8	0	1474	1474	206	14	31	306	
18 Months												
Jan-15	395	18	0	4	0	367	367	82	10	10	137	Physician & PA gone 1 wk
Feb-15	403	10	10	2	0	363	363	79	6	14	143	Physician & PA gone 1 wk
Mar-15	465	9	0	2	2	435	437	94	5	12	254	
Total	1263	37	10	8	2	1165	1167	255	21	36	534	

The clinic has 1 Full Time Physician and 1 Part Time (works 1 day per week and 1 weekend per month). Dr. Richards occasionally has 1 Resident and 1 Student working with him

Total Patients Booked in Clinic prior to No Shows/Cancelled Appointment/Clinic Walk Ins

No Show Totals = Patients scheduled in the clinic who did not show for their appointment

Cancelled scheduled clinic appointments are due to the fact that the Physician was seeing patients in the ER

Clinic Total - total number of patients seen in the clinic by Physicians, PA, Residents, & PCN Staff

Total Seen- Total number of patient's seen in both clinic and ER

PA Total - Total number of patients seen in the Clinic by the PA

PA Cycle Time Data - Data was collected from June 1 - 28 2014 - 28 patients Cycle times taken throughout the day average red zone time for short appointments(20 min) was 10.46 and the average for long appointments(40 Min) 33.3

3rd to Next Data - is Collected at noon every Friday for Dr. Richards - the numbers documented are an average for the month/PA and Residents average same day/next day access

CPX/PAP - 30 Minute Full Physical appointments - with Pap for Female patients.

Follow up Appointments - Physician requested Callback/Follow-up/ER Follow-up - 10 minute appointments

Emergency and Outpatient Visits

We extracted ambulatory visit data for the site through the AHS administrative database (see Table 11). The table shows figures for both out-and-inpatients at the emergency department for the selected indicators. Number of patients, the mean total length of stay (LoS), and number of procedures for all time points are noted in the table. Trends indicate a decrease in the number of patients in outpatient; an increase in the number of patients in ED; no change in LoS; and fluctuations in the number of procedures.

Table 11. Select Indicators for All Time Points - Bassano

Selected indicators for PA outcomes for baseline 90 day and 9 month periods for Bassano										
		Number of Patients			Mean Total LOS (Minutes)			Number of Procedures		
		Out-P	ED	Total	Out-P	ED	Total	Out-P	ED	Total
Bassano [†]	Baseline	346	709	1055	n/a	141.1	141.1	381	526	907
	90 Day	334	719	1053	n/a	117.7	117.7	370	476	846
	9 Month	353	827	1180	n/a	134.1	134.1	396	659	1055
	18 Month	302	750	1052	n/a	119.1	119.1	347	618	965
Note: [†] The numbers are based on the site level data which included all patients receiving care at this site during the review periods										

STURGEON COMMUNITY HOSPITAL AND ORTHOPAEDIC CLINIC DATA

This section reports on data for several time points, with the PA being implemented in January, 2014. Measures include wait times, data from a two theatre pilot study, number of new patients seen by the PA per month, and administrative data.

Wait Times

The data compares patient average wait times for consults from referral for April 2013, April 2014, and June 2015. Percent changes show a significant reduction in average wait times during post PA implementation periods.

Table 12. Average Wait Time to Consult/Days for 3 Months

Date	Average Wait time to Consult/Days	Percent Change
April 2013	194	
April 2014	155	-20%
June 2015	152	-2%

Two Theatre Pilot Study

Quality improvement conducted a pilot study for orthopaedic surgeons at the Sturgeon Community Hospital on April 16, 2014. The experiment helps to determine the appropriate roles and responsibilities required in the operating theatre in order to fully utilize the surgeon’s capacity. The provider team in theatre 1 consisted of one orthopaedic surgeon, one anaesthesiologist, two registered nurses (RNs), one respiratory therapist, 0.5 RN floater, and one physician surgical assistant. The provider team in theatre 2 consisted of one orthopaedic surgeon, one anaesthesiologist, one RN, two respiratory therapists, 0.5 RN floater, and one physician assistant surgical assistant. The same orthopaedic surgeon attended to patients scheduled in two theatres for routine surgeries including: carpal tunnel, isolated AC resection, and bankhart/glenoid. Table 13 depicts expected versus actual preparation, surgical, and post-surgical times. The findings of the study were as follows:

- The actual prep time was greater than expected by 38.6% of overall cases. This finding may be due to the fact that in regular operating room conditions the surgeon contributes to the prep process. The surgeon was not available for the prep time during the pilot.
- The actual surgeon time was less than expected by 20.6%. This finding may be the result of two factors: 1) the surgeon was not involved in the preparation of the patient; and 2) the most stable patients were selected for the pilot.

- The actual post-surgery time is less than expected by 37.2%. The expected time includes closing the patient, cleaning the room, and setup for the next patient. The pilot study did not specifically check on the setup time for the next patient.

The pilot study was successful and surgeries finished two hours earlier than expected. Although the study was not intended to specifically capture data associated with the contribution of the physician assistant role, the surgical assistant position (whether conducted by the physician assistant or physician) attends to main duties such as patient positioning prior to the surgical procedure and closing the incision after the procedure. Overall, the duties of the surgical assistant role reduce the surgeon’s “in” and “out” recorded times, allowing the surgeon to attend to patients in both theatres. Eight routine orthopaedic surgeries finished prior to 1 pm with the assistance of the teams, including the PA acting as a surgical assistant.

Table 13. 2014 Expected Versus Actual Times for Pre, During, and Post Orthopaedic Surgery

Procedure	Pre Time Expected	Actual Prep Time	% Deviation	Surgeon Time Expected	Actual Surgeon time	% Deviation	Post-Surgery Time Expected	Actual Post Surgery Time	% Deviation
Carpal Tunnel	11	12	9.1%	21	8	-61.9%	28	9	-67.9%
Isolated AC Resection	9	14	55.6%	31	14	-54.8%	32	23	-28.1%
Bankhart/Glenoid	14	12	-14.3%	36	38	5.6%	32	25	-21.9%
Bankhart/Glenoid	14	22	57.1%	36	32	-11.1%	30	22	-26.7%
Bankhart/Glenoid	14	14	0.0%	36	32	-11.1%	32	29	-9.4%
Bankhart/Glenoid	14	25	78.6%	36	31	-13.9%	32	18	-43.8%
Bankhart/Glenoid	14	18	28.6%	36	37	2.8%	32	19	-40.6%
Carpal Tunnel	11	23	109.1%	21	9	-57.1%	32	12	-62.5%
Totals	101	140	38.6%	253	201	-20.6%	250	157	-37.2%

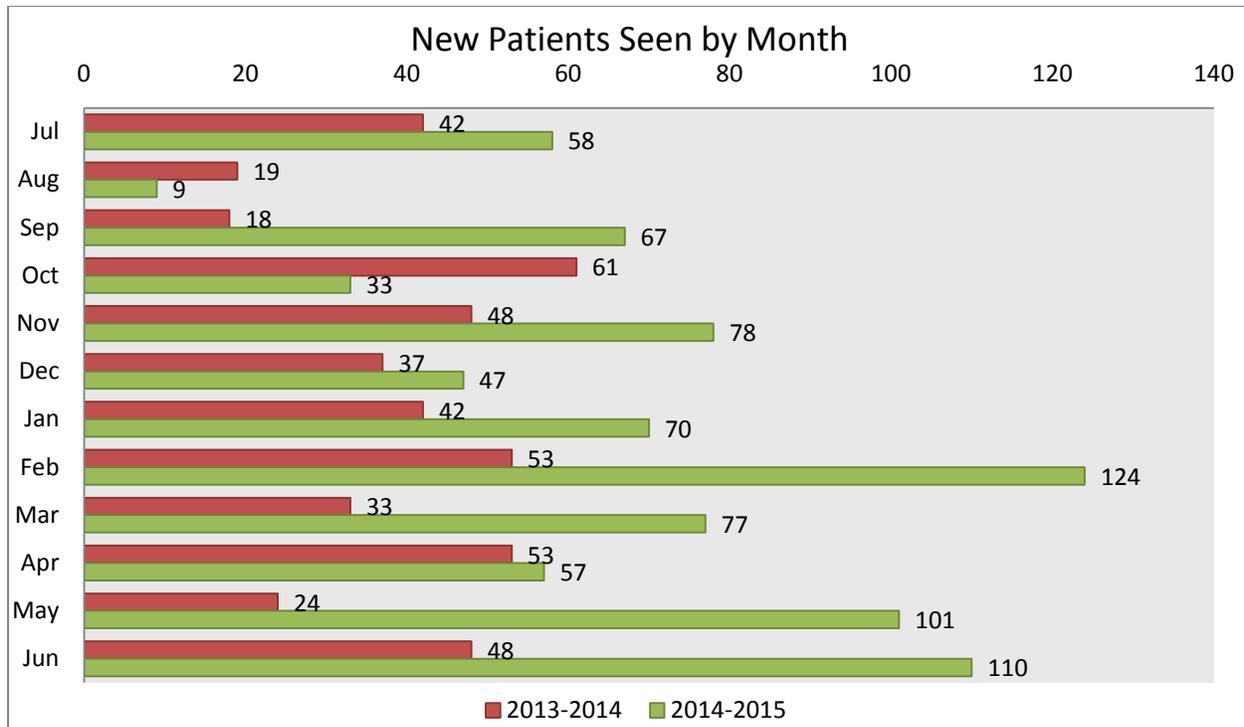
Number of Patients per Month

Two years of data report on the total number of new patients seen per month in the clinic. Trends highlight increases in patient throughput on average the second year of PA implementation (see Figure 1, green bars). There were only two time points where the number of patients was higher for the previous year.

Table 14. Total New Patients Seen by Month

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
2013-2014	42	19	18	61	48	37	42	53	33	53	23	48
2014-2015	58	9	67	33	78	47	70	124	77	57	101	110

Figure 1. Total New Patients Seen by Month 2013-2015



Select Indicators from Administrative Database

We extracted inpatient visit data for this site through the AHS administrative database (see Table 15). The patients in this sample included only those who were under hospitalists care supported by PA. The table shows the number of patients, the length of stay (LoS), alternate level of care (ALC) days, discharges, 30-day readmission rate, and 30-day return to ED rate for all time points. Fewer patients were provided care by hospitalists who were working with PA with a slight increase in LoS. Improvements were seen in the percentage of patients discharge by 11 a.m., 30-day readmission and ED return rate. Results for the 18 month period may not be accurate as they were based on partial data (due to lag, data for all months were not available at the time of data pull).

Table 15. Select Indicators for All Time Points - Sturgeon

Selected indicators for PA outcomes for baseline 90 day, 9 month, and 18 month points								
		Total Patients	Mean Total LOS (days)	Mean Acute LOS (days)	Mean ALC Days (days)	Discharge by 11 a.m. (%)	30-Day Readm rate (%)	30-Day Return to ED rate (%)
Sturgeon	Baseline	235	1.93	1.93	0.00	49.0%	2.28%	17.81%
	90 Day	200	2.17	2.17	0.01	55.0%	0.53%	9.57%
	9 Month	149	2.32	2.32	0.00	56.0%	0.77%	12.31%
	18 Month [†]	141	2.04	2.04	0.00	41.0%	0.00%	10.94%

[†] Incomplete data as more recent data were still unavailable from the database

UNIVERSITY OF ALBERTA NEUROSCIENCES DATA

Select Indicators from Administrative Database

We extracted all patient data for the neuroscience units through the AHS administrative database (see Table 16) for three review points. Measures include total patients, mean total length of stay (LoS, days), mean acute LoS (days), mean ALC days (days), mean expected LoS, mean total LoS over expected, and mean acute LoS over expected LoS. Overall, we did not observe any improvements in the indicators selected for analysis. On the contrary, average length of stay generally increased across all units while the number of patients on units decreased. We noted that the indicators for this site are unlikely to be reflective of the PA role.

Table 16. Select Indicators for Three Time Points

Selected indicators for PA outcomes for baseline 90 day and 9 month periods for U of A Hospital Neuro Units								
		Total patients	Mean Total LOS (days)	Mean Acute LOS (days)	Mean ALC days (days)	Mean Expected LOS	Mean Total LOS over Expected	Mean Acute LOS over Expected LOS
U of A 4A2	Baseline	142	6.98	5.92	1.06	6.41	0.57	-0.49
	90 Day	131	7.18	6.76	0.41	7.60	-0.42	-0.84
	9 Month	130	8.57	7.91	0.66	7.20	1.37	0.71
U of A 4G3	Baseline	157	7.15	6.61	0.54	7.56	-0.41	-0.95
	90 Day	117	8.15	7.68	0.47	7.06	1.09	0.62
	9 Month	124	8.63	8.48	0.15	7.39	1.24	1.08
U of A 4G4	Baseline	107	7.68	6.26	1.42	7.24	0.45	-0.97
	90 Day	129	7.40	6.99	0.40	7.65	-0.25	-0.65
	9 Month	108	10.70	10.03	0.68	9.09	1.61	0.93
U of A 5A2	Baseline	172	8.01	6.97	1.04	8.94	-0.93	-1.97
	90 Day	165	7.62	6.48	1.13	6.41	1.20	0.07
	9 Month	100	10.30	10.30	0.00	8.26	2.04	2.04

RED DEER HOSPITALIST DATA (PHYSICIAN ASSISTANT 2)

Select Indicators from Administrative Database

We extracted select indicators from administrative database for unit 22 (see Table 17). The table shows the number of patients, the length of stay (LoS), ALC days, discharges, 30-day readmission rate, and 30-day return to ED rate for three review periods. Data did not show any consistent changes for 90 day and 9 month points. Data for 18 months were not considered reliable because complete data for this period was still not available at the time of this analysis.

Table 17. Select Indicators for All Time Points - Red Deer

Selected indicators for PA outcomes for baseline 90 day and 9 month periods								
● All patient data for Red Deer Unit 22 PA2								
		Total patients	Mean Total LOS (days)	Mean Acute LOS (days)	Mean ALC days (days)	Discharge by 11 a.m. (%)	30-Day Readm rate (%)	30-Day Return to ED rate (%)
Red Deer Unit 22 PA2	Baseline	674	10.78	9.81	1.00	14.84%	2.87%	25.81%
	90 Day	701	10.84	10.80	0.04	13.12%	2.11%	25.35%
	9 Month	794	10.59	9.67	0.92	15.24%	2.94%	24.18%
	18 Month [†]	477	9.23	9.13	0.10	13.21%	1.52%	22.84%

[†] Incomplete data

LIMITATIONS

Each site had different data sources (e.g., electronic medical record systems, manual data collection) and measures making data retrieval and analysis from each site unique and complex. May sites have incomplete data, inconsistent data, or data that may not necessarily reflect the sole impact of the PA role but may be influenced by other providers. Therefore, caution should be used when interpreting results and cross-site comparisons should not be made. Baseline and post PA implementation data can be compared for each respective site, not across sites.

CONCLUSION

Despite the limitations mentioned above, three out of five sites indicated measureable system improvements that can likely be attributed to the introduction of the PA role. This suggests that the PA role adds value to these care settings. The data from the two inpatient sites is difficult to interpret as the measures are influenced by a range of factors. This makes it difficult to discern the impact of the PA role on system outcomes. However, feedback obtained from patient, provider and physician interviews attest to the positive impacts of the PA roles in all settings.