

PHYSICIAN ASSISTANTS ON THE PEDIATRIC INFECTIOUS DISEASES SERVICE

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ABSTRACT

Exploring the role of physician assistants on the pediatric infectious diseases service

Purpose: The purpose of this study is to assess the needs of the pediatric infectious diseases service at the Health Sciences Centre in Winnipeg and predict the utility of the adding of a physician assistant to their team, which currently consists of rotating medical staff. This study aims to explore the current landscape of the service, their familiarity with physician assistants, and the potential impact a physician assistant could have.

Methods: This study consisted of one-on-one face-to-face interviews with all members of the section of the pediatric infectious diseases, as well as physician assistants working in the related fields of infectious diseases and hospitalist pediatrics.

Results: The section includes seven physicians, all of which were supportive of the physician assistant role. Areas of improvement that were identified included communication, time management, documentation, and continuity of care, as related to handover, providing timely follow-up on inpatients, ensuring adequate documentation/transition to outpatient clinic, and development of a robust antimicrobial stewardship program.

Conclusion: Attending physicians interviewed overwhelmingly supported the notion of a physician assistant joining the team and anticipate they would create continuity on the service during handover, through timely follow-ups, and during the transition from inpatient to outpatient.

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1. INTRODUCTION

The purpose of this field study is to assess the needs of the Pediatric Infectious Diseases (ID) service at the Health Sciences Centre (HSC) in Winnipeg, Manitoba and predict the utility of the addition of a Physician Assistant (PA). This study aims to explore the current landscape of the pediatric ID service, their familiarity with PAs, and the potential impact a PA could have.

a. Background

PAs are a stable element in a changing medical environment. They work with their supervising physician(s) to establish trust, and as such are granted the ability to take on more and more tasks (in the US, PAs stay in their position for an average of 9.4 years (1)). They develop an understanding of the day-to-day functions of the specialty they work with, and since they are trained as generalists, they can fulfil different roles depending on team needs, often providing a broader medical perspective in teams that are hyperspecialized (2). Canadians are willing to receive care from PAs (3), and Manitoba physicians see PAs as a valuable resource (4), but they remain underutilized (5).

In order to validate the idea of adding a PA to the pediatric ID service, we look to the literature for similar situations that have been reported on that led to improved care for the patient. Limitations of peer-reviewed literature on this topic include data from the United States or from provinces with different regulatory structures than Manitoba, groupings of nurse practitioners and PAs (NPPAs), and/or a sole focus on emergent and primary care.

A retrospective study at a large urban community hospital in Ontario reported that length of stay (LOS) and time to consult were significantly reduced in the two years after a PA was hired to the infectious diseases consult service, compared to the two years prior (6). Patient

mortality was unchanged. The authors speculate that the decreased LOS likely resulted from dedicated PA availability, leading to more frequent follow-ups, improved accessibility and facilitated communication to other care providers. The authors of this study cite that, at the time of their study, they were the only ones to publish work that included a control group (7,8).

While there are many articles (mostly from the US) looking at PAs in a primary care or emergency-room settings, there is little published on PAs in specialty and subspecialty care (such as pediatric infectious diseases). In addition, it can be troublesome to compare Canadian PA literature to that of the US, as there are vast differences in how care is provided/funded. There may however be some value in looking to the Netherlands, where 75% of PAs work in a hospital setting (9). One multi-centered study looking at inpatient hospitalist care provided via PA/MD model, versus the traditional MD model, found no significant differences in LOS or quality of care, however PAs were associated with improved patient satisfaction (10).

As demand for access to healthcare grows, strategic health care planning requires getting the right person in the right place to deliver optimal care (11). However, predicting the success of adding a PA to a service requires robust data, data that is found outside Manitoba and Canada. We believe that the addition of a PA to the pediatric ID service would improve patient care by providing consistency and continuity to the service.

b. Organizational Context

Winnipeg's Health Sciences Centre (HSC) is Manitoba's provincial tertiary centre for trauma, transplants, burns, neurosciences, complex cancer care, and pediatric care. Every hospital-based service is available at HSC, with the exception of cardiac and eye surgeries (12). In addition to more than 8000 staff, physicians, and volunteers working at the centre, HSC is a

teaching hospital affiliated with the University of Manitoba. Inpatient and outpatient services are offered to adults and children from Winnipeg, and more broadly from Manitoba, northwestern Ontario, and Nunavut.

The pediatric ID service at HSC consists of a number of health care providers rotating through the service. Medical/PA students join the inpatient ID consulting service for 2-4 weeks at a time, medical residents are on service for 4 weeks at a time, and seven attending physicians work the inpatient service 1-2 weeks at a time. Additionally, there is one ID fellow who will spend a total of 12 months over a two-year period on service (4 weeks on service, 4 weeks off service).

In terms of workflow, pediatric ID receives between 18-30 new consults each week and between 15-30 patients on the service list each day to follow-up on clinical results and care (13). The length of time that a patient remains on the consult list ranges from 1 day to several weeks, depending on their clinical condition. Of the seven attendings, five participate in clinic, which consist of 2 attendings in the clinic, 2 half days per week. Patients are generally not scheduled to see a specific attending, but rather scheduled at the clinic date coinciding with the recommended follow-up based on their admission/course in hospital. Patients can also be referred to the pediatric ID clinic from other outpatient providers (for example: general practitioners and community pediatricians).

c. Problem of Practice and Significance

While literature exists on the use of PAs, it focuses on the economic benefit to the health care system and/or the time saved to the supervising physician. Research regarding both

Canadian PAs in specialty care, and how PAs benefit the patient, are extremely limited. As such, this work would add to the limited but relevant body of literature.

Given the rotating nature of the pediatric ID service, this research is important to delve into how a PA may impact continuity of care for patients where there is currently not a medical staff member present on a non-rotating basis. We propose the addition of a PA to the pediatric ID service would provide a level of continuity of care to patients that is not currently observed.

2. METHODS

Given the lack of quantitative data on PAs in Manitoba, a qualitative approach was used to gather preliminary data. Semi-structured interviews were conducted by myself with the entire pediatric ID service including seven pediatric ID attending physicians, one ID fellow, and two administrative staff (Table 1).

Table 1: Practice Area and Role of Interview Participants

	Role	n
Pediatric Infectious Diseases	Physician	7
	Fellow	1
	Administration	2
General Pediatrics	Physician Assistant	3
Pediatric Oncology	Physician Assistant	1
Adult Infectious Diseases	Physician	1
	Physician Assistant	1

Questions were open ended and aimed to identify operation of the section and establish themes with regards to continuity of care, patient safety, and knowledge of physician assistants (see Appendix 1). Additionally, the single adult infectious diseases PA in Manitoba was interviewed, as well as her supervising physician, Dr. John Embil. At the time of this writing,

there were three general pediatric PAs, and one pediatric hematology-oncology PA, each of whom were interviewed for this project, as they regularly consult the pediatric ID service.

Interviews were conducted individually, and responses recorded by hand. Responses were typed and colour coded to identify themes across all attendings.

3. RESULTS & DISCUSSION

Four themes were identified: communication, time management, documentation, and continuity of care (Table 2, Figure 1), each described in detail below.

Table 2: Areas of Improvement Identified by Pediatric ID Attendings

Theme	Example
Communication	Consult Efficiency Patient List/Handover Antimicrobial Stewardship Discharge Planning Transition to Outpatient
Time Management	<i>Inpatient</i> Time to Consult Time to Answer Follow-ups Offsite Patients (SBGH)
	<i>Outpatient</i> Patient No-shows Telehealth Lab Results Public Health Correspondences
Documentation	Discharge Documentation Requisition Templates Treatment Flowcharts Chart Note Templates
Continuity of Care	Consistency in Handover Daily Patient Follow-up Chronic Patients

● NEEDS IMPROVEMENT

● NOTED AS POSITIVE

SECTION OF PEDIATRIC INFECTIOUS DISEASES

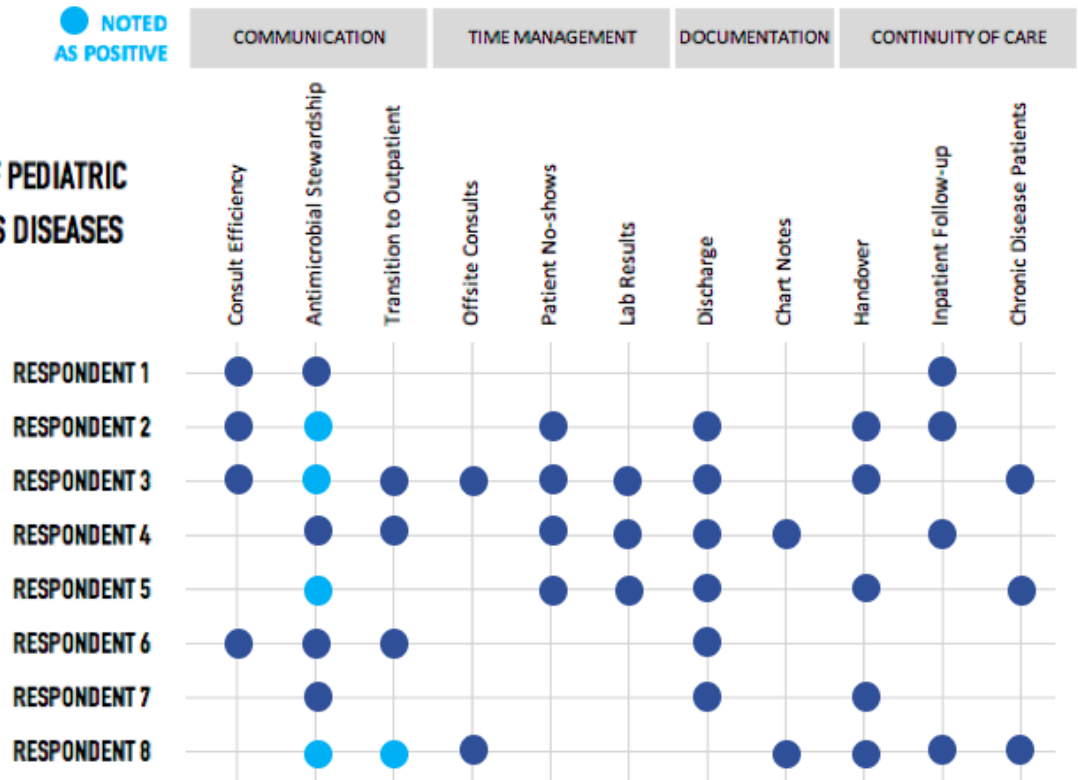


Figure 1: Responses from all clinical care providers (seven attending physicians and one fellow) of the section of Pediatric Infectious Diseases presented by theme area

a. Communication

i. Consults/Advice to the Pediatric Hospitalist Team

Four of the seven attendings noted that more efficient consults were needed, stating that when the consulting service provided thoughtful information, the consultee was better able to respond to the consult. Given this is a teaching hospital, junior learners are often asked to initiate the consult, and as such, they may not be detail rich.

Although some of the attendings interviewed were unsure if a PA would take new consults, there is evidence that a hospitalist ID consultant, running alongside a fellow-teaching attending is a successful model (14). Those requesting consults reported satisfaction with the

hospitalist ID consultant being a consistent person (not a rotating group), they received faster recommendations, had more availability for discussions, and helped facilitate discharges in regards to clinic follow-up. Survey of ID fellows in this same study reported lower instances of volume overload/burnout (their service had 49 consults/*month*, whereas the HSC service has 18-30 consults/week). In this study the hospitalist was an MD, not a PA, however it is not unreasonable to think that a PA could work toward this role. One of the attendings interviewed for this study responded that the role of a PA on their service would be to, ‘have them work with the MD to make them an expert’.

ii. Patient Lists & Handover

Six of the seven attendings work inpatient one week at a time. One of the seven attendings works inpatient two weeks at a time. Number of weeks worked per calendar year ranged from 3 to 12. The organization of the patient list used by each attending is at their own discretion. Lists differ both in software program used, as well as those who list “active” patients vs all patients. Given the majority of the attendings work inpatient one week at a time, weekly handovers increase the risk that pertinent patient info gets missed, or in the worst case, a patient is missed in handover. Concise and accurate handover information leads to efficient, safer rounds (15). Five of the seven attendings discussed handover when asked about improvements needed to the pediatric ID service.

iii. Antimicrobial Stewardship

A sustained antimicrobial stewardship program (ASP) alongside an ID consultation service was shown to decrease antimicrobial resistance, LOS, and infection related mortality

(16). At HSC, the pediatric ID ASP is an unfunded program running one day a week with one attending and one hospital pharmacist. Armed with the patient's chart, current antibiotic regimen, and laboratory cultures and sensitivities, they review appropriate use, and report back to the inpatient team responsible for the patient, with encouragement or recommendation. While all attendings agree the ASP is a beneficial program, four of the seven attendings noted there needs to be more antimicrobial stewardship. Barriers include lack of time, dedicated funding, and personnel.

iv. Communicating with Family at Time of Discharge

On a busy service, once patients have met criteria for discharge, the order may be written and be left up to nursing staff to finish the discharge paperwork. There are subtleties of the patient's care plan that may not be communicated as intended. A good example is a patient who is discharged with a prescription for 2 weeks of antibiotics and a follow-up outpatient appointment in the pediatric ID clinic coinciding with the stop date on their prescription. It is the intention of the provider to assess the patient clinically at the 2-week mark and determine whether further antibiotic treatment is necessary. If a patient is unaware of this plan, and are unable to attend their clinic appointment, they are now without follow-up and without antibiotics (17). Patients are provided with a discharge information sheet (see Appendix 2), but it is only as valuable as the provider makes it. The addition of a PA could allow for a consistent staff member that's familiar with the patient, and with the plan for ongoing care. It would be reasonable to have a PA fill out this sheet, and discuss with patients and their families before they leave hospital.

v. Transition to Outpatient Clinic, Pending Labs

When patients are discharged from the children's hospital, they may need outpatient follow-up from services that were consulted, and subsequently following them during their admission. In the case of pediatric ID, 40-50% are requested to be seen in the clinic (17). At HSC, the inpatient pediatric service uses paper charts, whereas the outpatient pediatric clinics use Accuro (electronic medical record; EMR).

Patients are scheduled for an appointment in the clinic based on a duration of time following discharge (for example: follow-up in two weeks), rather than with a particular physician who may have been on service during their admission. The importance of good record keeping, and transmission of this information from the paper charts to the EMR becomes apparent when patients present to clinic and are faced with a team of care providers who are unfamiliar with their history. Ideally the patient's admission note, initial consult to pediatric ID with consultant response, and discharge information sheet would be input into the EMR. However, it is unclear whose responsibility this would be, as the binder of orders/chart notes from their visit gets sent to patient records for binding into a formal paper chart. Discharge summaries are dictated by phone and typed by a third party. It is therefore unlikely to have a tangible discharge summary when the patient presents to clinic, especially if they are being seen within 4 weeks of their discharge, as this is the turnaround time on dictated discharge summaries (18). It's also worth considering if outpatient follow-up needs to be performed by a specialist, or whether follow-up for more routine infectious presentations could be triaged to the family's primary care provider.

A final point was raised by some members of the pediatric ID team regarding laboratory tests that are ordered when the patient is admitted, but reported following discharge. Without

specific notification to the families and outpatient providers, these test results are often not reviewed or communicated with family, and may be repeated unnecessarily.

b. Time Management

i. Inpatient

a. Time to Consult

When asked what could be improved, three of the seven attendings commented on the timing of consults from other services. If pediatric ID was not consulted until the afternoon, that patient may not be seen until the next morning. Consulting pediatric ID during rounds (when the need for a consult is identified), rather than after, could help define the workflow of the day and allow the patient to be seen in a timely fashion.

b. Time to Answer

There was no concern by the service that there was an appreciable delay in having a member of the pediatric ID team see and respond to a consult, however the initial contact is often made by a junior learner, and as such, their assessment and plan may include a review with, and final recommendation from, the attending.

c. Follow-ups

Given there are 18-30 consults per week and 15-30 patients on the list, daily follow-up with all patients that pediatric ID is following is not always possible. One attending noted that critically ill patients (pediatric ICU, neonatal ICU, hematology/oncology) need the daily follow-

up, as they are most likely to require frequent drug adjustments, but unfortunately are not always seen daily.

d. Offsite Inpatients

Although the majority of the patients under the care of the pediatric ID service are housed at the Children's hospital at HSC, there are approximately 1-2 consults each week from St. Boniface General Hospital (SBGH) for newborns with infectious etiology. Given these patients are at a different physical location, working them into the daily service is challenging, as was specifically mentioned by two of the attendings.

ii. Outpatient

a. Patient No-shows

Outpatient clinics are held 2 mornings/week, with two attendings +/- medical learners. Patient no-shows were an inefficiency recognized by both attendings who participate in clinic, and those who do not. For this project, three clinic mornings were observed. The no-show rate was between 15-21% (2 out of 13 patients on two occasions, and 3 out of 14 patients, respectively). The clinic re-books no-show patients in an ongoing effort to try and provide follow-up.

b. Telehealth

Two of the seven attendings see patients via Telehealth, and raised two concerns. Firstly, there is a high rate of no shows for Telehealth appointments. Patients are reminded, but are required to present to the clinic or nursing station where the telehealth is to take place, and

absenteeism has been an issue. Secondly, the attending may get pages during telehealth meetings, and are unable to attend to issues in real time.

c. Public Health Correspondences

One of the pediatric ID attendings is the Clinical Lead for Pediatric Tuberculosis (TB). In addition to the clinical responsibilities that comes with this role, there are 5-15 public health correspondences per day that she receives and must respond to.

c. Documentation

i. Discharge Documentation

As was previously mentioned, appropriate discharge documentation eases the transition of follow-up care in the community, be that with a primary care provider, or in the pediatric ID clinic. Having the admission note, consult note, and discharge information sheet available electronically is an asset in the future care needs of the patient. Having the information sheet filled out by a junior learner, or nursing staff who may be unfamiliar with the subtleties of the plan, leaves room for error and/or omissions of appropriate follow-up.

ii. Requisition Templates

For common presentations (for example: congenital syphilis, chronic hepatitis, HIV positive patients), laboratory requisition templates do not currently exist, but could be easily built within the EMR, and shared with colleagues.

iii. Treatment Flowcharts

In certain chronic disease presentations where predictable patterns of care are followed (for example: HIV-immunocompromised individuals needing altered vaccine schedule), treatment flowchart/algorithms don't currently exist. Exploring the creation of an algorithm in these patient populations would streamline care, and help to ensure nothing is missed when being seen by different providers.

iv. Chart Note Templates

It was indicated there is not time in clinic to be writing full and final notes on patient encounters during clinic time. Attendings who aim to complete them in the clinic time allotted may delay seeing patients in a timely manner, and those who write brief notes in clinic, will need to use time designated for other activities to complete their notes. It is possible there may be instances when chart notes templates ('macros' in Accuro) could aid in creating a quality note in less time.

d. Continuity of Care

i. Consistency in Handover

Patient handover (from an attending that has completed the prior week to the one that will be leading the service for the upcoming week) happens on Wednesday mornings. This becomes a continuity of care issue given that information is stored and organized differently by different attendings. Plans are often not part of handover, but should be. On weeks where attending handover coincides with a new block of medical learners and residents, there is no one on the team that is familiar with the patient.

ii. Daily Follow-up

Not all patients are followed daily due to time/workload constraints, as was noted by four of the attendings. This becomes a continuity of care concern as the patient's condition could change and the team may not be notified. If pediatric ID indicates to the primary service that they 'are following', that comes with the expectation that they see the patient frequently enough to observe changes in clinical condition.

iii. Chronic Patients

For the patients with chronic conditions (either chronic infectious conditions or other chronic health problems that make them susceptible to infection), information on their past medical history, previous admissions, and treatment successes and failures becomes a powerful tool in future admissions. Having rotating staff and learners means that these patients are at risk of being admitted without a pediatric ID team member who is familiar with their medical history.

e. Familiarity with the PA Role

Four of the seven attendings were familiar with PAs and the scope of their practice, two required clarification on their roles (including no requirements for co-signatures, and ability to work with a group of supervising physicians rather than a single supervisor), and one was unfamiliar, however all had interacted with a PA in the past. Clarification was provided as necessary. When asked how a PA could be utilized, top responses included continuity of ward patients, including handover (7/7), providing timely follow-up on inpatients (5/7), ensuring adequate documentation/transition to outpatient (3/7), performing consults (3/7), and taking a role in the ASP (2/7).

f. The Pediatric PA Perspective

In order to get an outsider perspective of the functions of the pediatric ID team, the three general pediatrics PAs and one hematology-oncology PA were interviewed regarding their experiences with the service. The four PAs indicated that they deal with the pediatric ID service daily for IV antibiotics, opinion on treatment choice and duration, and for consulting on unknown infections. Pros identified included visibility on ward, good communication skills, availability for clarifications, and availability of the fellow when on service. Of note, there will not be an ID fellow in the next academic year, so this consistency will be lost. Cons identified included delays in final recommendations (by attending), occasional missed follow-ups, and change in patient management when a new attending takes over.

g. The Infectious Diseases PA Perspective

In September 2018, Lauren Shute, the first adult ID PA was hired in Manitoba, working solely with Dr. John Embil. She performs all consults, which are reviewed with her supervising physician, and attends clinic alongside him. Dr. Embil reports that it took approximately 6-8 months to have a PA working independently, so to speak. Given there are constantly learners rotating through a teaching hospital such as HSC, Dr. Embil believed that training a PA was no additional time commitment, as he's always teaching. Lauren predicts the pediatric ID service could utilize a PA for continuity of care, and identifies the biggest risk occurs at the weekly handover.

Melissa Decloe, the first adult ID PA in Canada, was hired in November 2011 at Toronto East General Hospital (now Michael Garron Hospital). She saw new consults, followed up with inpatients, and worked in the outpatient clinic. At Michael Garron, as with HSC, attendings work

one week at a time. Melissa reported that she was crucial in bringing the new attending up to speed on all the patients. In addition to her published research regarding the decreased time to consultation and LOS after she joined the team (6), she feels a PA can play a role in preventing antimicrobial overuse. This role is now held by Maureen Taylor, Canadian certified PA (CCPA), who mirrored what Melissa said. She notes that she provides continuity of care that the group of supervising physicians rely on, and that she now runs the hospital's fecal transplant program.

4. CONCLUSION

In order to estimate the success of a PA in a specialty where they currently are not employed, areas of inefficiency were identified by the attending physicians that make up the pediatric ID service, as described in the results section. Attending physicians interviewed overwhelmingly supported the notion of a PA joining the team and anticipate they would create continuity on the service during handover, through timely follow-ups, and during the transition from inpatient to outpatient.

a. Proposed Role

Based on the research described above, I believe that a Pediatric ID Physician Assistant could perform the following tasks:

- Consults: based on the hesitancy of some attendings, a PA may either be first contact for all consults or may see a subset of consults on specific suspected infectious presentations
- Be present for hand over between outgoing and incoming attendings
- Develop a unified list format to be used by all attendings

- Support a formal ASP
- Ensure discharge information sheet is detail oriented, and discuss with patient/family before they leave the hospital
- Develop a notification system for laboratory reports that are pending at time of discharge
- In consultation with other team members, develop chart note templates/macros and requisition templates
- Create care plans for chronic patients, documenting past medical history, and history of prior admissions
- Ensure daily follow-up for all patients being followed by the service

The question may not come down to whether the team feels a PA would be a useful addition to the service, but rather how the role would be funded. Funding models for PAs include Winnipeg Regional Health Authority (WRHA) funded positions and PAs who are paid privately by the supervising physician or practice group. WRHA funded salaries are in accordance with the Physician and Clinical Assistants of Manitoba (PCAM) collective agreement (19). The question of financial neutrality is often raised. PAs in Manitoba do not bill for their services, and supervising physicians cannot bill for patients they did not see, although discussing the case would seem to suffice for billing purposes. Physicians who hire PAs privately may bill for their services, and as such have a more direct recuperation of funds. Proposals for new WRHA funding would begin by pediatric ID making a proposal to the Department Head of Pediatrics, followed by the WRHA Regional Chief Medical Officer, and finally Manitoba Health.

b. Recommendations

In addition to the recommendation of adding a PA to the pediatric ID team (with role specific tasks described above), I further suggest:

- “Triaging” outpatient follow-up: ranging from primary care provider (GP, community pediatrician), pediatric ID clinic (any attending to see), or specifically scheduled outpatient appointment with the ID specialist who managed the patient during their admission(s)
- Specialized consult forms: rather than a generic consult form, create a pediatric ID consult form to help foster meaningful consults from the outset
- Expand the current ASP

c. Limitations

Although the entire section of pediatric ID was interviewed, limitations of this study included the small sample size. Additional limitations include the lack of anonymity and lack of in-depth knowledge of how the service runs day to day. Should a PA be added, future work could include a retrospective study with measurable indicators to use for quantification pre- and post-addition of a PA.

d. Acknowledgement

I would like to thank my Capstone mentor, Dr. Joanne Embree for taking time to meet with me to develop this project. Additional thanks to the entirety of the pediatric ID team (physicians, fellow, administrators), general pediatric and hematology-oncology physician assistants, and adult ID physician, Dr. Embil and colleague Lauren, CCPA for meeting with me.

Although outside of the scope of the proposed project, thanks to Maureen (CCPA) and Melissa (CCPA) who provided me with their experiences as infectious diseases PAs in Ontario. Lastly, I'd like to thank Becky Mueller (PA-C) for editing this paper.

5. REFERENCES

1. AAPA. 2009_AAPA_Census_Report.pdf [Internet]. [cited 2018 Dec 28]. Available from: https://www.aapa.org/wp-content/uploads/2016/12/2009_AAPA_Census_Report.pdf
2. Ross N, Parle J, Begg P, Kuhns D. The case for the physician assistant. *Clin Med*. 2012 Jan 6;12(3):200–6.
3. Doan Q, Hooker RS, Wong H, Singer J, Sheps S, Kissoon N, et al. Canadians' willingness to receive care from physician assistants. *Can Fam Physician Med Fam Can*. 2012 Aug;58(8):e459-464.
4. Casselman A. The utilization of physician assistants in Manitoba over the past 15 years. *J Canada's Physician Assist* [Internet]. 2018 Jul 1 [cited 2019 Jan 2];1(1). Available from: <http://ojs.lib.umanitoba.ca/index.php/jcpa/article/view/623>
5. Jones I, Ives R, Burrows K, Jones AW. A Perspective on the Economic Sustainability of the Physician Assistant Profession in Canada. *J Canada's Physician Assist* [Internet]. 2018 Jul 1 [cited 2019 Jan 1];1(1). Available from: <http://ojs.lib.umanitoba.ca/index.php/jcpa/article/view/628>
6. Decloe M, McCready J, Downey J, Powis J. Improving health care efficiency through the integration of a physician assistant into an infectious diseases consult service at a large urban community hospital. *Can J Infect Dis Med Microbiol J Can Mal Infect Microbiol Medicale*. 2015 Jun;26(3):130–2.
7. Bohm ER, Dunbar M, Pitman D, Rhule C, Araneta J. Experience with physician assistants in a Canadian arthroplasty program. *Can J Surg J Can Chir*. 2010 Apr;53(2):103–8.
8. Ducharme J, Alder RJ, Pelletier C, Murray D, Tepper J. The impact on patient flow after the integration of nurse practitioners and physician assistants in 6 Ontario emergency departments. *CJEM*. 2009 Sep;11(5):455–61.
9. Timmermans MJ, Vught AJ van, Wensing M, Laurant MG. The effectiveness of substitution of hospital ward care from medical doctors to physician assistants: a study protocol. *BMC Health Serv Res*. 2014 Dec;14(1):43.
10. Timmermans MJC, Vught AJAH van, Peters YAS, Meermans G, Peute JGM, Postma CT, et al. The impact of the implementation of physician assistants in inpatient care: A multicenter matched-controlled study. *PLOS ONE*. 2017 Aug 9;12(8):e0178212.
11. Hooker RS. Taking the long view on physician assistants. *J Physician Assist Educ Off J Physician Assist Educ Assoc*. 2011;22(4):4–5.
12. Shared Health. Health Sciences Centre: Manitoba's Hospital [Internet]. Shared Health. [cited 2020 Mar 13]. Available from: <https://sharedhealthmb.ca/patient-care/facilities/health-sciences-centre/>


13. Guillaume Poliquin, MD. KBraun MPAS Capstone Interview. 2019.
14. Townsend J, Vishnupriya KS, Klein E, Spoelhof B, Zenilman J. Hospitalist Infectious Disease Service in Academic Medical Centers: A Win-Win for Hospitalists and Fellows. *South Med J*. 2018 Sep;111(9):534–6.
15. Pearkes T. Patient handover in orthopaedics, improving safety using Information Technology. *BMJ Open Qual*. 2015 Jan 1;4(1):u207329.w2939.
16. Horikoshi Y, Suwa J, Higuchi H, Kaneko T, Furuichi M, Aizawa Y, et al. Sustained pediatric antimicrobial stewardship program with consultation to infectious diseases reduced carbapenem resistance and infection-related mortality. *Int J Infect Dis*. 2017 Nov 1;64:69–73.
17. Joanne Embree, MD. KBraun MPAS Capstone Interview. 2019.
18. Cathy Belanger, Manager, Transcription Services, Shared Health. Question about Dictation Transcription. 2020.
19. PCAM. *Collective-Agreement-between-WRHA-and-PCAM-FULLY-EXECUTED.pdf* [Internet]. [cited 2020 Mar 16]. Available from: <http://www.pcam.ca/wp-content/uploads/2017/10/Collective-Agreement-between-WRHA-and-PCAM-FULLY-EXECUTED.pdf>

6. APPENDICES

Appendix 1: Interview Questions – Pediatric ID Attending Physicians

1. Describe your schedule (clinic, inpatient, on call, teaching, research, etc.)
 - a. For each clinical component listed, what works efficiently? What needs improvement?
 - b. For what duration of time are you performing inpatient duties?
2. Are there areas for improvement in Pediatric ID in terms of patient safety?
3. Are you familiar with Physician Assistants?
 - a. If yes, please describe your understanding of their role?
 - b. Have you worked directly with PAs?
 - c. How could a PA in Pediatric ID contribute to the section?
4. I'll be spending time observing in the Pediatric ID clinic – is there anything specific I should be looking out for?

Appendix 2: Discharge Information Sheet



**Health Sciences Centre
Winnipeg**

820 Sherbrook Street
Winnipeg, Manitoba R3A 1R9
(204) 774-6511

**PLEASE PRINT OR WRITE LEGIBLY
SEE REVERSE FOR GUIDELINES
USE PART TWO (OPTIONAL) FOR ADDITIONAL INFORMATION**

Admission Date: _____
DAY MONTH YEAR

Discharge Date: _____
DAY MONTH YEAR

Parents / Legal Guardian: _____

First Nation Community: _____

Status # / Treaty #: _____

Patient's Address: _____

Referring Physician: _____
NAME HOSPITAL OR AREA

DISCHARGE INFORMATION SHEET

PART ONE

DATE _____

PATIENT _____

DOB _____

HSC NO _____

Disposition of Form:

Patient to Deliver

Faxed

Mailed

To Whom? _____

Date: _____

1. **DIAGNOSIS:**

2. **OPERATIVE AND NON-OPERATIVE PROCEDURE(S):**

3. **PERTINENT LABORATORY VALUES AT DISCHARGE:**

4. **DISCHARGE MEDICATIONS:** Refer to Health Sciences Centre DISCHARGE Medication Reconciliation/Prescription
5. **DIET AND ACTIVITY INSTRUCTIONS:**

6. **FOLLOW-UP PLANS (INCLUDING COMMUNITY SERVICES ARRANGED/EQUIPMENT PROVIDED/INSTRUCTION SHEETS PROVIDED/ARRANGEMENTS MADE):**

7. **HOME CARE INVOLVED:** YES NO
8. **SEE PART TWO FOR ADDITIONAL INFORMATION REGARDING OTHER SERVICES INVOLVED:** YES NO

FORM COMPLETED BY:

PRINTED NAME OF PHYSICIAN OR DESIGNATE OR NURSE	SIGNATURE OF PHYSICIAN OR DESIGNATE OR NURSE	DATE
PRINTED NAME OF PHYSICIAN OR DESIGNATE OR NURSE	SIGNATURE OF PHYSICIAN OR DESIGNATE OR NURSE	DATE

DISTRIBUTION: WHITE - HSC MEDICAL RECORD YELLOW - REFERRING PHYSICIAN PINK - PATIENT/FAMILY

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