

**Quantitative and qualitative impact of physician assistants in a Canadian urology setting**James Misurka<sup>1</sup>, Katherine Lajkosz<sup>1</sup>, Miran Kenk<sup>1</sup>, Antonio Finelli,<sup>1,2</sup> Neil E. Fleshner<sup>1,2</sup><sup>1</sup>University Health Network, University of Toronto, Toronto, ON, Canada; <sup>2</sup>Princess Margaret Cancer Centre, Toronto, ON, Canada**Cite as:** Misurka J, Lajkosz K, Kenk M, et al. Quantitative and qualitative impact of physician assistants in a Canadian urology setting. *Can Urol Assoc J* 2023 July 21; Epub ahead of print. <http://dx.doi.org/10.5489/cuaj.8287>

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**ABSTRACT****Introduction:** Physician assistants (PAs) are healthcare professionals who act as physician extenders. PAs are being used more and more in a wide variety of clinic settings throughout Canada to increase access to healthcare and reduce cost. We set out to determine the impact of PAs on a tertiary care center urology oncology practice.**Methods:** We reviewed OHIP billing codes since the introduction of PAs for two attending urologists at Princess Margaret Cancer Centre. Data were grouped into *Early experience* and *Established experience*. In addition, questionnaires were electronically distributed among nurses, physicians, residents, and fellows who work with PAs in clinic. Patient visits conducted by PAs were tracked for one quarter to estimate the amount of annual patients seen by PAs. The costs associated with PAs are presented as recommendations for a new graduate PA hire.**Results:** On average, PAs increased clinic volume by 11.3 patient visits per day. Furthermore, they individually care for an average of 24 patients per day. PAs did not represent a financial burden on the urology practice plan (revenue gain of \$16 800). Our questionnaire demonstrated that PAs were capable healthcare professionals, who decreased workload and contributed to resident/fellow education.**KEY MESSAGES**

- PAs allow for sustainable growth of patient visits in urology clinics.
- The offset of the increase in patient visits make PAs a cost-neutral investment.
- PAs improve workload for physicians, residents, and fellows and have a positive impact on trainees' education.

**Conclusions:** PAs in a Canadian urology practice allow for more patient visits, decrease in physician workload, and positively impact trainee education. PAs saw more patients in clinic than clinic growth, thereby decreasing physician, fellow, and resident workload. The offset of the increase in patient visits made the PAs a cost-neutral investment.

## INTRODUCTION

Physician Assistants (PAs) are healthcare professionals who act as physician extenders to provide a broad range of medical services. PAs were first introduced in the Ontario medical system in 2007. The profession continues to grow, expanding into a wide variety of clinic settings throughout Canada. Currently, there are approximately 800 PAs working across Canada in a wide variety of clinical settings (1). PAs were first introduced to the urology group at Princess Margaret Cancer Centre in 2014, in an effort to maintain quality, timely care for patients. There have been very few studies regarding the experiences of PAs from a Canadian perspective and none from a urology perspective. Limited Canadian studies to date have demonstrated the benefits of PAs in the context of orthopaedic surgery, where the addition of a PA to an orthopaedic service increased surgical throughput (2) and increased physician free time (3). Introduction of PAs into infection disease service decreased length of time to consult and reduced length of hospital stay (4). The introduction of PAs into a general surgery service decreased resident workload, as well as a reduction in the amount of late discharges (5).

We set out to consider the impact of the introduction of PAs into a tertiary centre urology oncology practice. We looked at total number of patient visits, number of patient visit managed by PAs, cost of PAs to the urologist, and the added benefits of PAs to the other members of the oncology clinic.

## METHODS

PAs impact on the tertiary urology program was assessed multiple ways. First, we looked at patient access to care by reviewing OHIP billing codes, broken down quarterly, since introducing PAs into outpatient urology practice for two attending urologists at Princess Margaret Cancer Centre. Data were grouped into two separate periods: an *Early experience* and a *Established experience* of PAs (Early: 2014 Q2 - 2015 Q3 and Established: 2016 Q4 - 2019 Q4). There was a gap between the two periods, as there were no PAs working (due to maternity leave) with the team during that period. Data points were displayed using scatterplots demonstrating number of services provided for each quarter and period, along with the fitted regression lines. All regression analyses were conducted using Newey-West standard errors of lag 1. Secondly, we tracked the number of patients seen by PAs, (new patients and follow up patients) for a quarter. Patient managed visits were compared to the growth in the clinics. Thirdly, an anonymous questionnaire was developed and sent to all nurses, residents, fellows and physicians with interactions with the

urology PAs. Questionnaires were delivered electronically and were optional. Surveys were grouped by role in clinics (nurses, residents, fellows and physicians). Groups were compared, as well as learners (residents and fellows) vs non-learners (nurses and staff physicians). The questionnaire (see appendix 1) aimed to interrogate qualitative perceived value to patient care, level of care delivered by PAs, teaching experience and workload alleviation. Finally, to establish cost of PAs, the Health Force Ontario ([healthforceontario.ca](http://healthforceontario.ca)) recommendations for a new graduate PA hire salary of \$92,000.00 was used for calculations. This was then multiplied by 1.2 to cover employee benefits and vacation. The salary was multiplied by 0.6 to represent clinical days spent with the two urologist over a two week period. We tracked the number of patients seen directly by the PAs over a billing quarter. The number of visits managed by PAs was compared to clinic growth and to establish a monetary value for the PAs. PAs do not bill OHIP; however, patient visits conducted by PAs with physician involvement/supervision was billed by supervising physician. To estimate PA value, OHIP billing codes — specific assessment (A353) were used for all follow up patients and consultation (A355) for all new patients visits.

Adjusted Cost of PA =  $92,000 \times (1.2) \times 0.6 - ((x(A353) + y(A355)) \times 3 \text{ days} \times 48 \text{ weeks})$   
This formula represents three days of clinical volume per week. The PAs are working the other two days, although, the lack of billing data from the other two days makes the full calculation impossible. Nonetheless, the PAs are working in other physicians' clinics with comparable volumes. It should be noted that, during the study time, clinical space and resources at Princess Margaret Cancer Centre did not change.

## RESULTS

**Patient Visit Impact:** Our *Early experience* time period showed an average number of visits increased by 308 patient visits, per quarter, over the first six quarters. This translates into 8.5 additional patient visits per clinic, which adjusts to 42.7 extra patient visit per a five day work week. In the first six quarters in our *Established experience* we experienced continued growth by an average of 98 additional patient visits per quarter. This translates into 56.4 extra patient visits per 5 day work week. This represents 11.3 additional patients seen per clinic. Linear regression coefficients for each time period (Figure 1) demonstrate the following parameters: *Early experience* period, slope 74.9, 95CI (-9,158.7), P-value 0.068 and for *Established experience* period slope 17.4, 95CI (-0.5,35.3), P-value 0.056. A trend towards statistical significance was observed between the two periods (P-value 0.087) (Figure 1).

Although average clinic volume grew by 11.3 clinic visit, PAs on average accounted for 24 patients per day including two new patients. This is explained by fewer patients being seen by residents, fellows and staff.

## Questionnaire results

A total of 46 surveys were distributed with a completion rate of 89% (41/46). In general, PAs were perceived to be competent healthcare professionals, with 88% of respondents stating that

they function at the level of a post graduate year 3 (PGY3) or higher and 39% of respondents stating that they function at a post graduate year 5 (PGY5) or fellow level. Ninety-eight percent of respondents felt that PAs had the knowledge and confidence to deal with most patients seen in the urology clinic. PAs also had a positive impact on residents and fellows in clinic. Ninety-two percent of fellows and residents felt that PAs reduced their workload in clinic and 74% felt that they directly, or indirectly, enhanced their learning. Amongst all groups, 95% of respondents felt that clinic volume would have to be reduced if PAs were removed from clinics (Figure 2). In addition, we have performed sensitivity analyses regarding reduced workload for attending urologists among only medical doctors (attending physicians, fellows and residents) who responded to workload question, as well as attending physicians only. These analyses demonstrated that 93% of medical doctors (27 of 29 respondents) and 100% of attending physicians (5 of 5 respondents) also endorse reduced workload. Two residents and one attending staff did not respond to the question. In addition, all respondents felt that PAs would be helpful on the urology ward and 30% felt that they would be helpful in the operating room. There was no significant difference in response distribution between each group or learners vs non-learners ( $P > 0.05$ ).

PA cost models: PAs are currently funded completely by the urology partnership via a combination of philanthropic support and out of pocket cost to urologist. The cost was subsidized by fifty percent in the first year with the health force Ontario career start program. This was not used in the calculation assessing cost. Cost analyses of the introduction of PAs into the urology group can be interpreted by revenue generated by clinic volume growth (estimated at 11.3 patient clinic visits in this analysis) or by actual number of patients seen by PAs (estimated at 24 patient visits in this analysis). Utilizing the volume growth approach, there was a net revenue generation of \$16,800 per year (based upon a 5 day work week, and 48 work weeks per year). Utilizing the actual number of patients seen by PA approach, there was a net revenue generation of \$65,280 per year (based upon a 5 day work week, and 48 work weeks per year).

## DISCUSSION

PAs were introduced into the urology group at Princess Margaret Cancer Centre in 2014, in an effort to maintain quality, timely care for patients. During the *Early experience* after PA introduction an additional 8.5 patient visits per clinic were realized. This adjusts to 42.7 extra patient visits per 5 day work week. Furthermore, once established, an additional growth was witnessed up to 11.3 patient visits per clinic. Our findings corroborate those of Taylor et al who demonstrated that PAs increase physician's ability to see more patients (6). In addition, PAs could assess less complex cases, complete forms, and perform minor procedures to allow physicians to be more efficient (6).

An interesting observation was the fact that PAs on average saw more than twice as many patients as the marginal growth in clinic volumes themselves (11.3 vs 24 patient visits). The disconnect between growth in clinics and the amount of patients seen by PAs is felt to be a result of

several factors. These include more face time for physician patient interaction (6), as well as better teaching experience for learners. Indeed, our questionnaire enforces that PAs do have a positive impact on learning environment for residents and fellows. Moreover, given that each PA-physician relationship is different, the PAs autonomy responsibilities will impact the time needed to review cases prior to completing the patient visit which will ultimately have an impact on the total patients able to be seen (6). Other barriers to growth may also explain this disconnect, such as access to administrative staff, nursing and physical infrastructure. This could represent potential for further growth / improvement in the future. The questionnaire results reinforce that PAs manage a significant amount of patients in clinics, as 67% of respondents felt that, if PAs were removed from clinic, patient volume would need to be reduced by at least 11 patients per clinic. Additional learning from the questionnaire demonstrated that introduction of PAs did not just increase clinic volumes, but also decreased workload for fellows and residents and had positive impacts on resident/fellow education. This is similar to Bohm et al's findings where 83% of residents surveyed agreed that PAs reduced their workload (3). There were differences noted between our results and Bohm et al's, as we found that 78% of residents and fellows reported that PAs influenced their learning, while Bohm et al questionnaire showed no improvement in education or training in the operating room (3). Healthcare practitioners surveyed believed that PAs could have additional benefit to the urology team if utilized in the operating room and on the urology ward, managing inpatients and consults. PAs will likely be able to add value to these areas as well, as seen by both Bohm et al and Decloe et al (3,4). Decloe et al demonstrated a decrease in time to consult and length of hospital stay, while respondents in Bohm et al questionnaire stated that fully trained PAs provide surgical assistance equal to a post-grad year 5 while care in the operating room and ward by the assistance of PAs (3,4). With respect to the workload of physicians in clinic, our overall results and sensitivity analyses, demonstrate that medical doctors and attending staff overwhelmingly endorse a reduced workload after incorporating PAs into their practice.

In Taylor et al's interviews there was widespread agreement that PAs improve physicians' quality of life (6). Bohm also showed improvement in physicians' quality of life of residents and physicians (3). The primary motivation of interviewed physicians by Taylor et al noted improving work-life balance not financial gain (6). In our cost analysis, we perceive that the addition of PAs represents a cost neutral investment in the Canadian urology landscape. Bohm et al did demonstrate in their study that PAs used as a surgical assist in a knee arthroplasty program in Winnipeg, Manitoba were cost neutral when compared to general practitioner assists (3,6). There is a limitation in our calculation of the monetary value of the PAs. For simplicity, patients seen by PAs were grouped as follow up patients and assigned a value equal to A353 (specific assessment) and new patients were assigned a value equal to A355 (new consultation). Billing

codes A354 (partial assessment) and A935 (special surgical consultation) are not used in the calculation. Also, small procedures like hormone injections, uroflowmetry, and post void residual were excluded. This likely underestimates the billings that we attribute to the PAs.

Another limitation to our study is the lack of patient related outcomes measured with respect to PA interactions. Further studies examining PAs impact on patient satisfaction are encouraged, to help assess the quality of care delivered by a healthcare team utilizing PAs. This is even more relevant given an increase in present day focus to utilize PAs and nurse practitioners.

## **CONCLUSIONS**

The introduction of PAs allowed for an increase in patient visits. Unexpectedly, PAs saw more patients in clinic than the clinics grew, decreasing physician, fellow, resident workload. The urology oncology practice experienced other benefits, such as improving education for fellows and residents. The offset of the increase in patient visits made the PAs a cost neutral investment. Physician Assistants in a Canadian urology practice allow for more patient visits, decrease in physician workload, and have positive impact on trainees education.

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FIGURES AND TABLES

Figure 1.

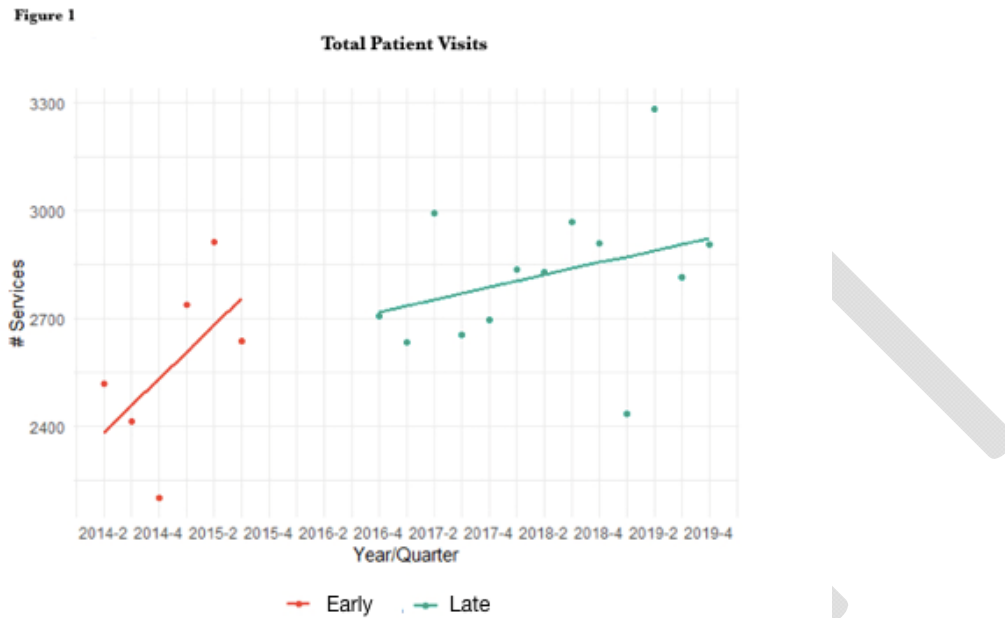


Figure 2.

