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ABSTRACT

Introduction: A variety of procedures for the endoscopic surgical treatment of symptomatic benign prostatic hyperplasia (BPH) refractory to medical therapy have existed for decades. The present study examines trends in surgeon compensation for these treatments within Canada.

Methods: The physician fee schedule for BPH surgery across 10 Canadian provinces for the years 2010 and 2023 were obtained. A descriptive study examining first, the provincial reimbursement for transurethral resection of prostate (TURP) and laser ablative/enucleation surgery; second, the difference in TURP reimbursement between 2010 and 2023; and third, the
annual change in TURP reimbursement juxtaposed with the annual change in the provincial Consumer Price Index (CPI) and annual salary for the working population aged 35–44.

**Results:** Seven of 10 Canadian provinces reimburse laser BPH surgery equally to TURP. The average provincial TURP reimbursement is $545, ranging from $451 in Ontario to $688 in Saskatchewan. Since 2010, TURP reimbursement has varied by province from a 0% net change in Ontario to an increase of 21% in Nova Scotia. Reimbursement for TURP has increased at a slower pace than the local CPI, and for half of the provinces at a slower pace than the annual salary for people aged 35–44.

**Conclusions:** The compensation model for endoscopic BPH surgery does not have a unified structure in Canada that is consistent across provinces, nor does it keep up with inflation, possibly impacting future recruitment, increasing geographic disparities, and most importantly, limiting the adoption of new BPH therapies.

**INTRODUCTION**

Benign Prostatic Hyperplasia (BPH) is a progressive condition affecting over 50% of men over the age of 50. It is defined pathologically by the proliferation of smooth muscle, connective tissue and epithelial tissue of the transition zone of the prostate. Clinically, it can cause bladder outlet obstruction leading to a variety of lower urinary tract symptoms (LUTS) experienced by the patient. Not only can it chronically cause negative quality-of-life affecting symptoms such as weak urinary stream, frequency, nocturia, incomplete emptying, hesitancy, nocturia, but a large obstructive prostate can advance to more serious conditions including acute urinary retention, upper renal tract deterioration, bladder stones, infections and bladder dysfunction (diverticulum, hypotonicity).

With a growing population in North America coupled with longer life expectancy, there has been an increase in the number of patients with BPH/LUTS refractory to maximal medical therapy, eliciting the need for surgical intervention.\(^1\) A multitude of procedures now exist to resect the target zone of the prostate ranging from the ubiquitously practiced transurethral resection of prostate (TURP) to laser ablative technologies including Greenlight Photoselective Vaporization of Prostate (PVP) as well as Holmium Laser Enucleation of Prostate (HoLEP). Despite its description by Gilling et al in 1998\(^2\) and countless randomized clinical trials validating HoLEP durability and efficacy, HoLEP remains offered by less than 5% of practicing urologists nearly 25 years later.\(^1\) Among the Canadian residency training centers, HoLEP is taught at six of the 14 (43%) hospital systems. As such, the advanced endourological skillset for successful HoLEP continues to be acquired by advanced post-residency fellowship training or mid-career learning to achieve competency.\(^3\) Relative to TURP, Aquablation, Greenlight PVP, and office based Minimally Invasive Surgical Therapies (MIST) (Rezum, iTind, Urolift and Optilume BPH), HoLEP is unarguably a more complex procedure (longer operating time, most
often larger prostate volumes >80cc, anticoagulated patients) with its share of unique but rare complications (bladder perforation, transient stress incontinence and bleeding). Unlike other countries with distinct procedure codes for the various BPH procedures, it is unclear if the increasing complexity of BPH laser ablative surgery is reflected in the compensation model for urologists in Canada, particularly given that they are the preferred modality of treatment in certain patient populations per North American national guidelines.4,5

As such, we sought to examine how physician compensation for BPH surgeries has evolved over the past decade and how that is partitioned based on the complexity of the operation within the single-payer, socialized Canadian system. We also wanted to address the Provincial changes in compensation among urologists over the past decade using the index BPH procedure fee codes. Hence, the study investigates differences in BPH fee schedules between the numerous BPH operations among 10 Canadian provinces as well as their evolution over the past 10 years compared to economic inflation and changes in the average population salary.

METHODS
A descriptive analysis of the physician fee schedules for BPH surgery codes was conducted. For the first study, provincial fees from the 2023 calendar year specialist fee schedule were listed based on surgery type (TURP, LEP or PVP) to examine differences in fees for BPH surgery by procedure type. Fees were obtained from each province’s respective specialist fee schedule, which are available for public access.6–15 Provinces included were New Brunswick, Prince Edward Island, Newfoundland, Alberta, British Columbia, Manitoba, Nova Scotia, Quebec, Ontario and Saskatchewan. The exact fees were further confirmed by urologists practicing within each Canadian provincial jurisdiction.

The second analysis was focused on the change in fees over time. TURP served as the index procedure for this purpose. Physician fees of TURP from 2023’s schedule were compared to those obtained from 2010’s schedule and the percentage difference from the initial fee was expressed.

Thirdly, we sought to examine how the fees have evolved relative to the local economic landscape. As such, the incremental annual change in TURP reimbursement fee was obtained for each province from 2010 to 2023. The obtained values were juxtaposed to the average annual changes in the provincial Consumer Price Indices (CPI) using a bar chart graph. CPI is a surrogate marker for the average change in the price of common goods and services, representing economic inflation. Another bar chart graph was generated where the incremental annual change in TURP reimbursement fee by province was juxtaposed to the provincial average annual income for adults aged 35 to 44, which represents one of the largest age groups of active urologists in Canada. Provincial CPI and average income data from obtained from Statistics Canada for the years 2010 and 2023.16,17 Costs were reported in 2010 or 2023 Canadian dollars, rounded to the nearest dollar.
RESULTS
Surgical provincial codes and their respective physician fees for endoscopic BPH surgery by province in 2023 are reported in Table 1. Aside from Alberta, British Columbia, and Newfoundland to a lesser extent, all other Canadian provinces (7/10) bundle the same physician fee for TURP, Greenlight or LEP surgery. The average fee for TURP across the 10 provinces is $545 and ranges from $451 in Ontario to $688 in Saskatchewan. The highest compensation for endoscopic BPH surgery was observed in British Columbia with a fee of $949 for laser enucleation surgery. Ontario had the lowest compensation with a fee of $451.

In Table 2, the reimbursement codes for TURP, PVP and LEP in 2010 were compared to those in 2023. The greatest relative increase in fees was observed in the provinces of Prince Edward Island and Nova Scotia with an increase of 20% and 21% respectively over 13 years. There was minimal to no change in BPH surgery compensation in Ontario and Newfoundland over the past 13 years.

With regards to the comparison of these changes in an index procedure, universally performed by all urologists, with the cost of living Canadian inflation rate, Figure 1 demonstrates graphically the annual provincial change from 2010 to 2023 of reimbursement for TURP surgery compared to the CPI. Across all provinces, the cost of living increased at a higher rate than TURP reimbursement fees. In Figure 2, the evolution of reimbursement for TURP is compared to the yearly change in average provincial salary for adults aged 35 to 44 from 2010 to 2023. TURP reimbursement was equal or greater than the change in average income within this timeframe in five out of 10 provinces (50%) including New Brunswick, Alberta, Nova Scotia, Manitoba and Saskatchewan. In Prince Edward Island, Newfoundland, British Columbia, Quebec, and Ontario, the average provincial income increased at a greater rate than TURP reimbursement fees.

DISCUSSION
BPH surgery remains one of the most common urological surgical procedures performed by urologists given the prevalence of the disease, with around 50% of the male population over 50 years of age being affected. These surgical procedures have seen significant changes over the years with an increase in the advancement of minimally invasive options. Nonetheless, endoscopic surgical treatment remains the most robust option with favorable short term and long-term outcomes. Despite this, the findings of this study suggest that the compensation of Canadian urologists practicing BPH surgery among the 10 provinces is not uniform, highly variable and only 3 (30%) have unique fee codes reflective of the complexity of the LEP procedure. Current USA Procedural Terminology (CPT®) codes provide a uniform nomenclature for coding medical procedures and services and designate between the various BPH procedures such as Rezum, iTind, Optilume BPH, Aquablation, TURP, Greenlight PVP and HoLEP. In contrast, our findings demonstrate that 7 of the 10 (70%) of the provinces cluster all BPH procedures into a single code/fee, regardless of the technology utilized. Furthermore, the observed BPH fee increase over the past 13 years did not remotely compare with the increase in
costs of living inflation rate we have witnessed this decade. The lack of a cohesive payment schedule and upkeep in compensation may impact the accessibility criterion of the Canada Health Act by diminishing uniform access to patient-individualized BPH treatment and reducing recruitment of urologists to certain provinces.\(^19\)

Although TURP is the historical gold standard of operative BPH/LUTS refractory to medical treatment for prostates volumes \(<80\text{cc},^20\) there has been an increase in the number of laser ablative surgeries performed over the previous decades owing to improved safety in men on anticoagulation medication.\(^21,22\) A variety of laser technologies exist with the two most common being Holmium LEP (HoLEP) and GreenLight PVP. It is well established the HoLEP is a procedure that has a significant learning curve often requiring fellowship training for mastery of end-firing, near-contact fibre handing, scope/sheath manipulation, tissue plane recognition along the surgical capsule and finally the intricacies of adenoma morcellation. Unfortunately, the differences in expertise are not appropriately reflected on the physician fee schedules for numerous provinces, with 8 out of 10 provinces surprisingly compensating TURP and HoLEP procedures equally. Interestingly, aside from the shorter hospital stay and reduced bleeding, several studies have demonstrated that HoLEP and GreenLight PVP (while incurring more fixed costs) are more cost-effective than TURP when considering the overall treatment episode into account.\(^23,24\) This is thought to be due to incurring less inpatient costs with a reduced postoperative hospital course among patients being treated with laser surgery. A unique fee code for PVP, a surgery which objectively saves the healthcare system money due to its outpatient nature, has not been introduced. This arguably has stimulated adoption of PVP more widely in Canada. Overall, the findings from our study of the past 13 years suggest that the Canadian jurisdictions clearly do not have a unified compensation structure for BPH treatments. Furthermore, individual Provinces have not kept up with adding new fee codes for novel technologies such as HoLEP and PVP.

Additionally, the reimbursement fee for the staple, index urologic procedure, TURP, has seen inconsistent change among provinces since 2010. The provinces Prince Edwards Island, Nova Scotia, Quebec and Saskatchewan have seen the greatest changes in compensation, whereas Ontario and Newfoundland have seen close to no change in their fees. For the same procedure across Canada, a TURP has the lowest reimbursement in Ontario and Quebec (450$ and 458$, respectively) compared to Saskatchewan (688$ - a 52% higher physician fee). When putting these changes into perspective by comparing them to the evolution of their respective province’s CPI, none of the provincial compensation numbers had changed at a comparable rate to the CPI. This effectively signals that performing TURP brings less financial value to the physician with every year since at least the year 2010. It is worth noting that the evolution of the average income/salary varied significantly from province to province and was found at times to be concordant with changes in TURP reimbursement. Therefore, it is possible that the reimbursement is partially based on the overall provincial economic health and spending habits. In sum, physician fees for performing TURP has inconsistently varied from province to province.
over the years and has not kept up with inflation. Such factors may influence future willingness to perform LEP or PVP procedures or undergo training to adopt new technologies that would ultimately pay the same as the standard procedure and impact future urologist recruitment to provinces based on differences in compensation. One must be sensitive to the daunting fact that in the upcoming decade, the population of men aged over 60 will double in number,\textsuperscript{25} while the urological workforce will remain stagnant.\textsuperscript{26}

Appropriate compensation for labour is intimately tied to work satisfaction and the prevention of work-related stressors, including burnout.\textsuperscript{27,28} Burnout among physicians is a growing issue affecting nearly fifty percent of physicians, with urologists becoming among the most affected specialty.\textsuperscript{29} an issue exacerbated further by the COVID-19 pandemic and ultimately leading to delays in wait times for surgery.\textsuperscript{30} New research from the Occupational Information Network (O*NET), a part of the Department of Labor, ranks urologist as one of the most stressful occupations in the United States.\textsuperscript{31} With an increase in the demand for urological procedures, especially for BPH surgery, it would be important to ensure that professionals capable of rendering this service are provided with the support required to sustain their efforts. Increased awareness of the inequitable LEP surgeon compensation and advocacy for more consistent fee schedules are clearly needed.\textsuperscript{32}

The study’s limitations include the descriptive nature that does not allow for statistical comparison, although that does not preclude one from making reasonable conclusions from the data. One of the assumptions of the paper is the use of TURP as a benchmark for the trend in compensation for urological procedures. Clearly, a separate study to evaluate all urological procedure codes/fee structures would be needed to validate if the trends are consistent. Furthermore, the majority of BPH cases are managed non-surgically and therefore the compensation models for those cases are not reflected by the findings of this paper. The strength of the paper is in the quality of the data obtained that allow for reliable interpretations and conclusions. To the best of our knowledge, this is the first Canadian study to report on national trends and BPH procedure compensation differences.

**CONCLUSIONS**
The surgical management of BPH is most done via TURP or laser technologies including LEP and PVP, yet the compensation model for these procedures do not have a unified structure in Canada that is consistent across provinces, reflective of the differences in complexity, time, and patient outcomes and nor does it keep up with inflation. The fact that the majority of BPH surgery is performed with TURP in Canada is a strong indication that there are barriers in the adoption of arguably superior surgeries such as LEP. Many surgeons will not spend the additional time to train and perform longer and more complex surgeries if their remuneration is not commensurate. With the heavy demands of managing as many patients as possible with few resources, any obstacle including financial will impair a shift in practice towards novel, more complex technologies. These factors may be further exacerbated when geographical disparities are considered by new urologists seeking employment. An example being that only a single
center offers HoLEP in Ontario, where the compensation is lowest and has not changed since 2010. There may be a disinsentive towards learning new technologies, especially when the urologist knows that they will not be adequately compensated in their Province. Future studies examining the barriers to change in the compensation landscape for BPH surgery are warranted to find eventual solutions to this issue.
REFERENCES
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FIGURES AND TABLES

Figure 1. Evolution of transurethral resection of prostate (TURP) reimbursement vs. provincial Consumer Price Index from 2010–2023.

Figure 2. Evolution of transurethral resection of prostate (TURP) reimbursement from 2010–2023 vs. change in average provincial salary.
Table 1. National TURP and laser reimbursement codes for Canadian urologists for 2023

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*Same refers to the procedure code/fee being identical to transurethral resection of prostate (TURP).

Table 2. National TURP reimbursement codes in 2010 vs. 2023 in CAD, rounded to nearest dollar

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