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Standardized Office Cystoscopy Training for Advanced Practice Providers in Urology

Susanne Quallich,* Shelly Lajiness, Jim Kovarik, Todd Doran, Heather Schultz and Joshua P. Langston

From the Division of Andrology, General and Community Urology, Department of Urology, Michigan Medicine, Ann Arbor, Michigan (SQ), Department of Urology, University of Toledo Medical Center, Toledo, Ohio (SL), Department of Urology, The University of Kansas Health System, Kansas City, Kansas (JK), Department of Physician Assistant Medicine, University of Tampa, Tampa, Florida (TD), Department of Urology, The University of North Carolina at Chapel Hill, Chapel Hill, North Carolina (HS) and Urology of Virginia, Virginia Beach, Virginia (JPL)

Abstract

Introduction: Cystoscopy is one of the most commonly performed urological procedures. Indications include evaluation of hematuria and bladder cancer monitoring, which requires frequent surveillance for management. The challenges of maintaining the urology workforce are well-documented, and alternative options should be developed for performing cystoscopy safely and effectively. Nurse practitioners and physician assistants (ie advanced practice providers) are established professionals who have provided urological care for decades and who could acquire the necessary procedural skills following establishment of practice guidelines.

Methods: Review and synthesis of the available world literature were completed to form an evidence-based proposal for a flexible cystoscopy training curriculum targeted to advanced practice providers in outpatient urology care settings.

Results: Of 49 primary sources 10 were appropriate for evaluation, resulting in development of clinical and technical knowledge domains for training U.S. based advanced practice providers in cystoscopy. Skills checklists were developed to aid in training, evaluation and privileging.

Conclusions: Based on analysis of the existing literature, we propose a framework for standardizing outpatient flexible cystoscopy training for U.S. based advanced practice providers. Adoption of this framework will establish the standards necessary to ensure high quality, reproducible outcomes essential for seamlessly integrating advanced practice providers into this procedural role within the urological health care team.

Key Words: cystoscopy, nurse practitioners, physician assistants, curriculum, patient care team

Abbreviations and Acronyms

APP = advanced practice provider

BAUS = British Association of Urological Surgeons

NP = nurse practitioner

PA = physician assistant

As the burden of urological disease grows with the aging U.S. population, it is increasingly clear that the supply of urologists will be insufficient to meet the demand. In fact, the number of practicing urologists is expected to decline over

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* Correspondence: Division of Andrology, General and Community Urology, Department of Urology, Michigan Medicine, 3875 Taubman Center, 1500 E. Medical Center Dr., Ann Arbor, Michigan 48109-5330 (*e-mail address:* quallich@umich.edu).

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the next 20 years, creating serious concerns regarding access to specialty care.[1] To meet workforce needs, urologists have partnered increasingly with advanced practice providers, ie physician assistants and nurse practitioners, who are relied on to expand patient care capabilities. This approach is in line with national trends, with advanced practice providers now representing more than 25% of medical providers,[2,3] and additional significant growth is expected over the next 10 years.[3,4] As the role of advanced practice providers expands within the specialty, there is a growing opportunity to contribute to in-office procedures, which comprise a large part of urological practice.

Recent studies have shown particular expansion in the number of cystoscopy procedures being performed by APPs, with a 10,000% increase in billed procedures noted during the last 20 years,[5] and 12% of APPs self-reporting performance of cystoscopy in a 2016 survey.[6,7] This growth has occurred along with rapid advancements in endoscopic technology that have vastly improved optics and ease of technical performance of cystoscopy. These advances make it technically feasible for a broader range of practitioners to perform such procedures with high quality outcomes when appropriately trained. While market forces and necessity are already driving this evolution in care—in 2013 APPs billed more than 2,600 cystoscopy procedures in Medicare patients alone[5]—organized urology has thus far been limited in its endorsement of APPs performing cystoscopy, partly due to a lack of evidence and precedent. This situation leaves the field with no formal direction regarding education, training or guideline development to ensure high quality care for our patients. Without formal instruction, training guidelines or performance standards practitioners are left to a paradigm of on-the-job training by collaborating physicians, which lends itself to inconsistent education.

There are national and international precedents for training and evaluation programs for APPs performing operative procedures. Training programs for colposcopy have been developed in the U.S.,[8] and the BAUS has had a cystoscopy training program in place for NPs in the United Kingdom since 2000.[9,10] To date, there has not been a concerted or systematic effort to train APPs to perform cystoscopy in the United States. Against this backdrop we sought to develop a proposal for APP cystoscopy training.

Methods

We aimed to synthesize and expand existing training guidelines to propose a curriculum for APPs in the United States to promote standardized training for safe and effective cystoscopy in the care of urology patients. We sought to identify studies including existing training guidelines as well as reports and outcomes of cystoscopy by APPs. We identified relevant studies (abstracts were excluded) by conducting searches of MEDLINE® via PubMed®, Web of Science™ (formerly ISI Web of Knowledge™), CINAHL®, Scopus®, Google Scholar™ and the Cochrane Database between 1990 and 2018. Key words included "nurse" and/or "nurse practitioner" and/or "physician assistant" combined with "cystoscopy" and/or "training." "Cystoscopy training" was also searched as an individual term. Reference lists for any sources revealed in the initial search were also individually reviewed to locate additional resources that might not have been identified by the original search terms. Search results were selected for inclusion if they met these criteria. Any articles that discussed training on systems that are no longer available were rejected.

Results

The literature search revealed 49 primary sources (see figure). After screening abstracts based on inclusion criteria 25 studies were deemed relevant for further examination. No

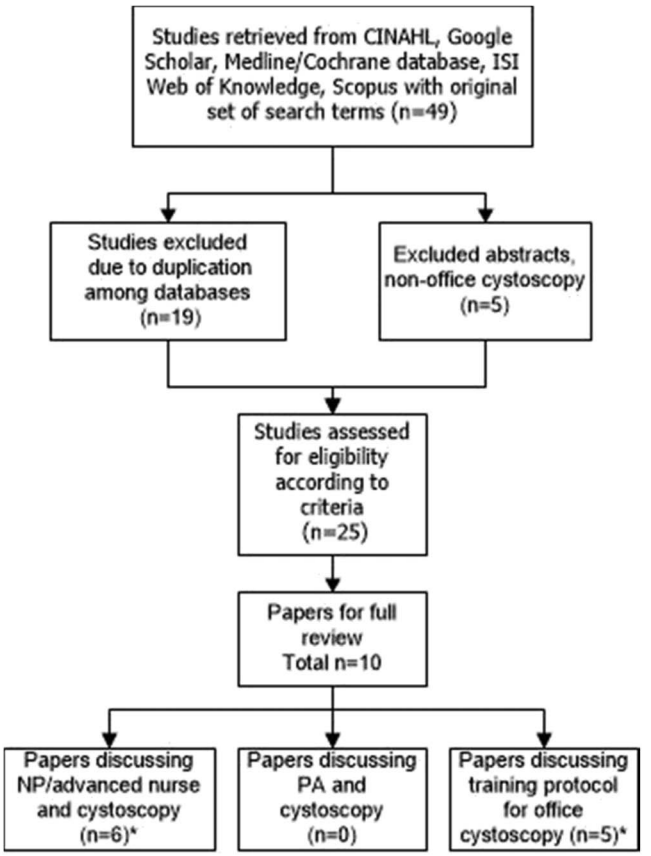

Figure. Strategic search for studies addressing office cystoscopy training and role of nurse practitioners and physician assistants. Asterisks indicate 1 article met both criteria.

study was identified that described a cystoscopy training program for APPs in the U.S. A total of 10 unique items were ultimately included for full review. Two resources presented international training guidelines identified from the British Association of Urological Surgeons/British Association of Urological Nurses, which offered step-by-step instruction and a separate training logbook to evaluate progress.[10] Training in cystoscopy for U.S. based obstetrician/gynecology residents and graduates was described in 2 additional studies.[11,12] Six articles described programs that evaluated advanced nurses performing cystoscopy.[13−18] Two studies discussed the increasing prevalence of cystoscopy performed by APPs in the U.S. but did not describe training.[5,6] One article was identified that called for formalization of cystoscopy training in the U.S. but did not outline actionable details.[19] No report discussed physician assistants performing cystoscopy.

The literature review was used as background to develop the proposed curriculum. The 10 identified references were evaluated, and the proposed clinical knowledge (supplementary Appendix 1, https://www.urologypracticejournal.com) and technical knowledge (supplementary Appendix 2, https://www.urologypracticejournal.com) domains for training U.S. based APPs in cystoscopy were synthesized based on these references. This curriculum is most influenced by the BAUS article, which offers clear suggestions regarding didactic content.[10] Several other articles offer some guidance regarding didactic content and training for cystoscopy but far fewer specific details.[11−13,18] Along with these 5 studies the Urology Milestone Project of the ACGME (Accreditation Council for Graduate Medical Education)/American Board of Urology was used for procedural training reference, which resulted in a proposal for training APPs for independent flexible cystoscopy practice within urology environments along with practical checklists for procedural assessment (supplementary Appendixes 3 to 6, https://www.urologypracticejournal.com).

Several studies have examined the quality and financial implications of cystoscopy performed by specially trained nurses in the United Kingdom and Australia,[13−17] and more recently in Denmark.[18] In multiple analyses these practitioners were observed to provide equivalent services to physicians in terms of identification of primary and recurrent lesions.[13−17] Gidlow et al found that the chance corrected proportional agreement (κ) of the cystoscopy findings between a specialist urology nurse and a specialist urology registrar in the United Kingdom was 0.95 overall.[14] Similarly Taylor et al found in a United Kingdom based study that the sensitivity and specificity of nurse practitioner performed cystoscopy were 96% and 100%, respectively, compared to physician colleagues.[17] These authors also analyzed diagnostic cystoscopy performed by nurse practitioners as a subgroup of all procedures performed and observed no significant difference in either the findings or the treatment plans developed compared to physician performed procedures.

When examining alternative metrics, Sapre et al found high levels of patient satisfaction in 60 patients, with 80% rating their satisfaction as excellent or very good, and a decreased wait time for surveillance cystoscopy of at least 50%.[15] Similarly in the Australian study by Chatterton et al the waiting period for flexible cystoscopy for bladder cancer surveillance was reduced by 72% during the study period, with eventual complete eradication of the waiting period by time of publication.[13] Chatterton[13] and Sapre[15] et al also comment on the improved continuity of care in their populations since the providers could perform surveillance cystoscopy in addition to ongoing office based disease management such as intravesical therapy.

A single institution, United Kingdom based analysis indicated that NPs performing cystoscopy were significantly more likely to refer patients for cystoscopy under general anesthesia compared to their physician colleagues. This difference was noted to decrease over time, suggesting improvement through a learning curve period, although statistical significance persisted.[16] Neither Gidlow[14] nor Taylor[17] et al found any difference in referral patterns for general anesthesia procedures between NPs and physicians. Direct comparison among these studies is limited by methodological differences.

Discussion

The aging population and diminishing urology workforce require practices to seek alternatives for expanding access and maintaining levels of care.[1,5] Significant technical advancements in procedural tools, such as improved optics for flexible cystoscopy and higher quality office ultrasound, make it technically feasible for these procedures to be performed by a wider range of practitioners. Advances in imaging quality and the ability to capture images allow consultation with a collaborating physician who may not be in clinic during the procedure, thus enhancing patient safety. Furthermore, as the health of the overall population improves and patients are living longer with chronic urological conditions such as low risk prostate cancer and superficial bladder cancer, the need for surveillance cystoscopy for these conditions increases. There are also expanding indications for cystoscopy to deliver medications and devices into the lower urinary tract, which in turn increase the use of cystoscopy in the office. The observed growth in the volume of urological procedures performed by APPs in real-world practice settings indicates the need for development of standards for education and training to ensure consistent delivery of high quality care.

Endoscopic technology has advanced rapidly in the last 30 years, becoming an integral part of the care of urology patients but with variable access. Given the increasing demands for flexible cystoscopy, use of APP cystoscopists will become a vital way to expand access and reduce wait times, improving adherence to hematuria screening guidelines and urothelial cancer surveillance guidelines. Use of specially trained nurses for provision of cystoscopy outside the United States has resulted in improved access to services while maintaining high quality care.[13–17] In the United States growth of APP cystoscopy has been significant despite a lack of rigorous analysis of the practice among physicians.[20] Given the unique health care environment in the United States and the limitations of state laws, this lack of substantiation has allowed persistence of institutional restrictions and limitations of state law, impacting the ability of APPs to practice to their full capacity.[7,21]

Studies analyzing cystoscopy by other nonphysician providers, specifically physician assistants, have not yet been undertaken. There is also limited mention in the existing literature of any credentialing processes at institutions with nurse cystoscopists.

Cystoscopy, and its related didactic content, is built into the training of urology residents. As a specialty field, detailed urology content is often absent from NP and PA training curricula and clinical rotations. This omission results in a deficit of knowledge related not only to didactic content, but also to procedural specifics for this specialty clinical environment.

A national precedent exists for training and evaluation of APPs in cystoscopy. Advanced practice providers in clinical urology environments are already performing an increasing number of cystoscopies and cystoscopic procedures.[5–7] Appropriate mentorship and training, whether through a structured course or on-the-job training and urologist collaboration, are of utmost importance.[22,23] Cystoscopy training should be comprehensive and provide a working knowledge of the pathophysiology, diagnosis and management of urological conditions and indications for office cystoscopy (supplementary Appendix 1, https://www.urologypracticejournal.com). Training must include recognition and interpretation of normal vs abnormal lesions and anatomy. Advanced practice providers will formulate appropriate clinical management strategies in consultation with a urologist as needed or as required by state licensing laws. Cystoscopy training and supervision should be conducted by a urologist or an experienced APP cystoscopist.

Cystoscopy systems with the ability to capture images may also enhance APP education and provide greater confidence, improved quality of care and better patient outcomes, which can contribute to job retention. Cystoscopy with the examination visualized on a monitor allows for easier direct supervision, evaluation and critique by the supervising provider. Captured images of obvious urological pathology, such as strictures, tumors and stones, allow for additional surgical planning without the need for a repeat procedure, and grant the APP and collaborating physician the opportunity to review and discuss the results while encouraging continued teaching and education.

While differences in the legalities and expectations of medical care exist between the U.S. and other nationalized systems, use of specially trained nurses in more resource limited organizations provides meaningful insight into a potential role in procedural services within the U.S. care model. In fact, similar programs, specifically for colposcopy, have already been instituted in the U.S., supported by evidence demonstrating equivalent physician and nonphysician provider outcomes regarding diagnostic accuracy and complication rates.[24] However, no objective analysis of the provision of APP cystoscopy has yet been undertaken in the United States.

Use of APPs to their greatest scope of practice is an important strategy for reducing costs and increasing access in this context of a shrinking urology workforce.[25] This issue is likely to become increasingly vital with the aging of the urology workforce, aging of the population and changes in practice patterns, which have led to a projected 46% gap in supply of the urology workforce by 2035.[1] However, growth of the APP workforce in urology can help to bridge the growing gap, decreasing the lack of available specialized urological care to 12%.[1] Between 1994 and 2012 nonphysician provider performance of urological procedures rose dramatically, with annual cystoscopy claims increasing 10,440%, excluding procedures performed and billed by physicians.[5]

A standardized cystoscopy training curriculum as we propose is likely to encourage improved skills, confidence and assessment scores as reported in other contexts.[11,12,24] This curriculum promotes confidence that APPs will be trained to the same standard, regardless of individual practice environment.

Performance of an arbitrary number of procedures does not guarantee the competency of an APP, although BAUS[10] and Chatterton et al[13] suggest that 50 supervised procedures is an appropriate goal. We believe that performing multiple procedures under direct supervision rather than a set number of procedures provides the foundation for proper technique and systematic evaluation. Direct supervision by a urologist or an experienced APP cystoscopist would allow for immediate constructive feedback and remediation if necessary. However, we acknowledge that individual clinics may wish to set the number of supervised cystoscopies for APP trainees before credentialing. The exact number of procedures required for the APP cystoscopist will be determined by

individual states and the needs of the specific urology practice environment. Competency, expertise and proficiency will develop through ongoing practice, performance review and self-assessment.

Although this training curriculum has not yet been piloted, we are involved in teaching urology content to nurse practitioners, physician assistants and residents. This content was developed due to recognition of the lack of urology curriculum content in NP/PA programs and based on review of the literature. Clinical and technical knowledge goals were developed based on comments from NP/PA colleagues seeking privileging and credentialing to perform cystoscopy. A reasonable next step is a pilot project to offer evaluation of this content.

Conclusion

Proficiency in cystoscopic procedures requires technical, interpretive and cognitive competency, and the ability to integrate cystoscopic findings into the overall care of a urology patient. We propose a standardized training protocol for APPs wishing to learn cystoscopy, and we review the practice as it currently exists globally among nonphysicians. The present training proposal is a synthesis of cystoscopy training guidelines based on the available world literature. The decision to train APPs in this procedural skill for surveillance, diagnosis or intervention (eg difficult catheter placement) will be based on facility policy, needs of the urology practice and individual state laws. Clinical and technical knowledge lists, coupled with skills checklists, will also provide the documentation necessary for facility privileging boards.

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Editorial Commentaries

This well written article presents clear evidence that patient access is a growing problem in urology and that APPs are part of the solution. It is obvious based on the data presented that the number of cystoscopies being performed by APPs is large and getting larger. As a urology team and community, we need curricula that are of substantial quality and are validated to ensure delivery of the quality of care that our urological patients deserve as the scope of NP/PA practice broadens. The current paradigm of on-the-job training is insufficient to deliver these programs reliably. The authors propose a standardized training and evaluation program that starts with cognitive skills, deconstructs the task and involves a checklist of procedural steps that the trainee must successfully complete. The Department of Defense has been using such curricula for a long time. How do you get 64 privates to parachute safely to the ground from a C-130 plane? You teach the cognitive, deconstruct the psychomotor, have a checklist and then layer the skill set.

As we increase the scope of APPs to improve access to urological care in the U.S., we should move toward advanced educational techniques and certifications to ensure quality across providers. Development of curricula such as this for baseline competency with urologist supervision should be the first step toward successful implementation. From that point experience and collaboration with urologists should provide continued learning for mastery. Of course, the next phase of this project should be validation of the curriculum.

Theodore Crisostomo-Wynne and Timothy C. Brand
Urology Clinic
Madigan Army Medical Center
Tacoma, Washington

Standardization in training can allow for opportunities to measure outcomes across providers and institutions. The curriculum proposed by the authors includes an appropriate level of clinical knowledge, technical knowledge and skills for an APP wishing to learn flexible cystoscopy.

The authors specifically discuss use of APPs to perform cystoscopy for evaluation of hematuria and bladder cancer surveillance. However, the proposed curriculum includes knowledge and performance of biopsy and fulguration, ureteral stent removal, dilation of urethral stricture and difficult Foley catheter placement. The authors note that specific procedures performed by APPs will vary by state and institution, and will be based on the needs of each urology practice setting. However, it may be useful to define the current scope of practice for APPs (type and number of procedures currently performed) to understand utilization and how practices change over time, and to assess specific outcomes.

The authors also note that it is difficult to determine the minimum number of procedures required to attain competency and that performing an arbitrary number of procedures does not guarantee competency. However, defining a minimum number of procedures could be useful in standardizing training. Particularly in practice settings that have not historically used APPs much time can be spent reinventing the wheel in developing criteria for training and credentialing. As this curriculum is implemented in the authors' pilot program, it will be important to define what objective outcomes will be measured, for example referral for biopsy under general anesthesia or correlation of visual findings with histological findings.

Jessica Kee
Urology Clinic
Stanford Health Care
Palo Alto, California