



## Original Article

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# Clean Intermittent Self-Catheterization as a Treatment Modality for Urinary Retention: Perceptions of Urologists

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**Purpose:** Clean intermittent self-catheterization (CISC) is now considered the gold standard for the management of urinary retention. In the literature, several articles on patients' perspectives on CISC and adherence to this technique have been published. No studies have yet explored the points of view of professional caregivers, such as nurses and doctors. The aim of this study was to explore the opinions of urologists about CISC and to evaluate the need for dedicated nurses specialized in CISC through a self-administered questionnaire.

**Methods:** A questionnaire was developed to explore the opinions of professional caregivers about self-catheterization and to evaluate the need to provide nurses with specialized education in CISC. Questionnaires were sent to 244 urologists through email. We received 101 completed questionnaires. The response rate was 41.4%.

**Results:** Hand function, the presence or absence of tremor, and visual acuity were rated as the most important determinants for proposing CISC to a patient. Twenty-five percent of the urologists reported that financial remuneration would give them a greater incentive to propose CISC. The lack of dedicated nurses was reported by half of the urologists as a factor preventing them from proposing CISC. A meaningful number of urologists thought that patients perceive CISC as invasive and unpleasant. Although most urologists would choose CISC as a treatment option for themselves, almost 1 urologist out of 5 would prefer a permanent catheter.

**Conclusions:** This questionnaire gave valuable insights into urologists' perceptions of CISC, and could serve as the basis for a subsequent broader international study. Further research should also focus on the opinions of nurses and other caregivers involved in incontinence management. Apart from financial remuneration, it is also clear that ensuring sufficient expertise and time for high-quality CISC care is important. This could be a potential role for dedicated nurses.

**Keywords:** Intermittent Urethral Catheterization; Perception; Urologists; Caregivers; Urinary Catheterization

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## INTRODUCTION

Various urological disorders are accompanied by voiding dysfunction, either because of an underactive bladder muscle, bladder outlet obstruction, or a combination of both. Patients with such disorders present with incomplete bladder emptying. Not only does incomplete bladder emptying worsen storage symptoms such as frequency, nocturia, urgency, and incontinence, but it may also predispose patients to a wide range of complications, including recurrent urinary tract infections, bladder stones, upper urinary tract changes, and even renal impairment [1]. Pharmacological and/or surgical treatment of voiding dysfunction often does not achieve sufficient bladder emptying. Certain treatment options for overactive bladder can lead to a degree of urinary retention. In both groups of patients, catheterization plays an important role in the treatment pathway.

Currently, the gold standard for the management of urinary retention is clean intermittent self-catheterization (CISC). CISC is defined as the repetitive temporary placement of a catheter to empty the bladder [1]. Traditionally, indwelling transurethral and suprapubic catheters have been used, but CISC has revolutionized the management of voiding dysfunction. The introduction of CISC has significantly reduced the incidence of urological complications of classic indwelling catheters, such as renal inflammation, pyelonephritis, bladder and urethral erosion, bladder stones, cancer, and urosepsis [2].

A number of articles on patients' perspectives of CISC and adherence to this technique have been published [3]. Although it has been shown that this technique improves quality of life, from the patient's perspective, CISC is often viewed as invasive, difficult, or shameful [3]. While the majority of published papers have dealt with patients' perspectives, professional caregivers' points of view on CISC have not been discussed in the literature.

The aim of this study was to explore the opinions of urologists about CISC and the need for dedicated nurses specialized in self-catheterization through a self-administered questionnaire. This work can be seen as an exploratory study on this subject. It could also serve as the basis for a subsequent broader international study.

## MATERIALS AND METHODS

An expert panel of urologists and nurses from the Department of Urology at Ghent University Hospital developed a questionnaire (Supplementary questionnaire). The aim was to explore

the opinions of professional caregivers on self-catheterization and the need to provide nurses with specialized education in CISC. A team of 5 nurses specialized in continence care from 2 Belgian university hospitals developed the questionnaire. It was then sent to 3 independent urologists for revision. The questionnaire consisted of 31 multiple-choice questions assessing 5 dimensions: demographic data (5 questions), factors making it more likely for urologists to propose CISC to patients (12 questions), factors making it less likely for urologists to propose CISC to patients (9 questions), CISC as a treatment option for oneself (3 questions), and professional experience with CISC (2 questions).

Participants had to rate each item from 1 (no influence/strongly disagree) to 6 (major influence/strongly agree). The total score was calculated as the equally weighted average of the ratings (rating average; RA) per question. This number gives an estimation of the general opinion regarding the question. The lower the RA, the more participants disagreed with the statement formulated in the question. A high RA indicates overall agreement with the statement. Ratings of 1–3 (generally no influence/disagree) and 4–6 (generally influence/agree) were grouped together for further analysis. Five subgroups, based on whether the respondent was a resident in training or a qualified urologist, sex, years of experience (<10 years vs. ≥10 years), hospital setting (university setting vs. nonuniversity setting) and the number of patients on CISC (<1 patient/mo vs. ≥1 patient/mo) were analyzed. The questionnaire was sent (by the Nelson Group for the Belgian Association for Urology [BVU]) to 244 unique email addresses of the members of the BVU and the European Society for Residents in Urology, Belgium in 2015.

The questionnaire was made available online using SurveyMonkey (<https://www.surveymonkey.com>). The language used in the questionnaire was Dutch. Questionnaires with missing data were excluded from the dataset. The analysis was carried out using IBM SPSS Statistics ver. 19.0 (IBM Co., Armonk, NY, USA). The results were interpreted using the chi-square test and the Mann-Whitney U-test. P values of <0.05 were considered to indicate statistical significance. This study was approved by the Ethical Committee of Ghent University (EC/2015/0181).

## RESULTS

### Breakdown of Participants

Questionnaires were sent to the 244 available email addresses of members of the BVU (Flemish urologists and residents in

training [junior urologists]). Questionnaire data were received from 101 urologists and residents in training. The survey response rate was 41.4%. Six questionnaires were excluded be-

cause of missing data. Thus, 95 questionnaires were analyzed.

**Table 1.** Demographic characteristics of the participating urologists

Characteristic	No. of respondents (%)
<b>Sex</b>	
Male	72 (76)
Female	23 (24)
<b>Working facility</b>	
University hospital	24 (25)
Nonuniversity hospital	71 (75)
<b>Years of working experience</b>	
Resident urologist	24 (25)
< 10 yr	23 (24)
10–25 yr	28 (30)
> 25 yr	20 (21)
<b>Proposition of CISC each month</b>	
No patients	12 (13)
≥ 1 patients	83 (87)
<b>Presence of dedicated nurse in team</b>	
Always	55 (58)
Most of the time	24 (25)
Sometimes	11 (12)
Seldom	1 (1)
Never	4 (4)

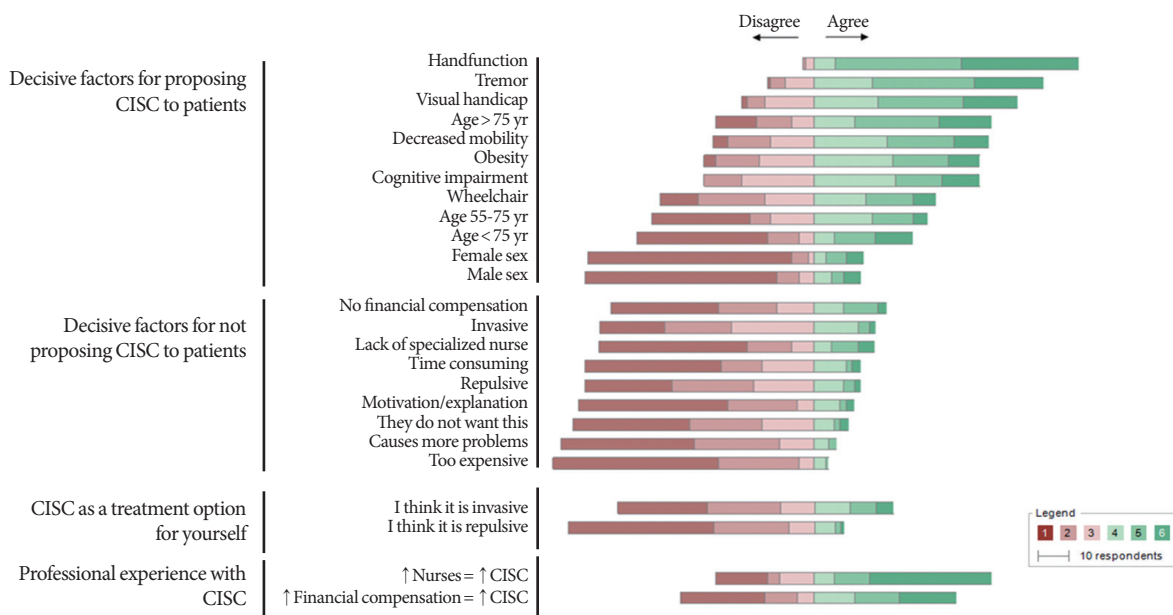
CISC, clean intermittent self-catheterization.

### Demographic Data

The sex distribution of the respondents (male, 72 [76%]; female, 23 [24%]) corresponded to the population of Belgian urologists, which consists of 235 male urologists and 62 female urologists (79% and 21% respectively). There was a significantly greater percentage of female urologists in the group of trainees than in the group of urologists (46% vs. 17%). Twenty-five percent of the respondents were residents in training. As the relatively high number of residents in training compared to urologists can be seen as a possible risk factor for bias, these 2 groups were afterwards analyzed separately. Twenty-four percent of the studied population worked in a university hospital. Although the majority of urologists reported proposing CISC at least once a month to patients, almost 1 out of 8 respondents reported never proposing CISC. Nearly half of the study population reported always having a dedicated nurse available. Table 1 presents the demographic characteristics of the participating urologists. Fig. 1 gives an overview of the different aspects evaluated and the answers retrieved.

### Factors Leading Urologists to Propose CISC to Patients

Visual acuity, hand function, and the presence or absence of tremor were the most important factors leading urologists to



**Fig. 1.** Questionnaire data. Participants were asked to rate each item from 1 (no influence/strongly disagree) to 6 (major influence/strongly agree). Different colors represent the possible answers. CISC, clean intermittent self-catheterization.

**Table 2.** Overall agreement with survey items in 3 subgroups: residents in training versus qualified urologists, < 10 years versus ≥ 10 years of experience, and university settings versus nonuniversity settings

Variable	Position		Years of experience		Hospital setting	
	Residents in training (n = 24)	Qualified urologists (n = 71)	< 10 yr (n = 47)	≥ 10 yr (n = 48)	University (n = 24)	Nonuniversity (n = 71)
<b>Decisive factors to propose CISC to patients</b>						
Sex						
Male	6 (25)	10 (14)	9 (15)	7 (19)	3 (13)	13 (18)
Female	7 (29)	10 (14)	19 (9)	17 (8)	3 (13)	14 (20)
Age (yr)						
<55	15 (63)	19 (27)	20 (43)	14 (29)	7 (29)	27 (38)
55-75	17 (71)	22 (31)	23 (49)	16 (33)	6 (25)	33 (47)
>75	18 (75)	43 (61)	29 (62)	32 (67)	11 (46)	50 (70)
Visual acuity						
Hand function	20 (83)	50 (70)	40 (85)	30 (63)	14 (58)	56 (79)
Presence or absence of tremor	24 (100)	67 (94)	47 (100)	44 (92)	24 (100)	67 (94)
Decreased mobility	20 (83)	58 (81)	40 (85)	38 (79)	21 (88)	57 (80)
Obesity	16 (67)	44 (62)	35 (75)	25 (52)	18 (75)	42 (59)
Wheelchair dependence	18 (75)	39 (55)	33 (70)	24 (50)	18 (75)	39 (55)
Cognitive function	13 (54)	29 (41)	22 (47)	20 (42)	13 (54)	29 (41)
	16 (67)	41 (58)	29 (62)	28 (59)	15 (63)	42 (59)
<b>Decisive factors for not proposing CISC to patients</b>						
Need for explanation and motivation						
Investment of time	6 (25)	11 (8)	6 (13)	8 (17)	4 (17)	10 (14)
Absence of financial compensation	7 (29)	9 (13)	9 (19)	7 (15)	3 (13)	13 (18)
I think patients do not want CISC	12 (50)	14 (20)	6 (34)	10 (21)	8 (33)	18 (25)
Patients think CISC is unpleasant	6 (25)	6 (9)	9 (19)	3 (6)	1 (4)	11 (16)
Patients think CISC is invasive	4 (17)	12 (17)	7 (15)	9 (19)	3 (13)	13 (18)
Absence of dedicated nurse	6 (25)	15 (21)	10 (21)	11 (23)	4 (17)	17 (24)
CISC is too expensive for the society	9 (38)	12 (17)	12 (26)	9 (19)	6 (25)	15 (21)
CISC causes more problems	2 (8)	3 (4)	3 (6)	2 (4)	0 (0)	5 (7)
	3 (13)	5 (7)	5 (11)	3 (6)	2 (8)	6 (9)
<b>CISC as a treatment option for yourself</b>						
I think CISC is invasive	8 (33)	19 (27)	18 (38)	9 (19)	7 (29)	20 (28)
I think CISC is unpleasant	4 (17)	6 (9)	7 (15)	3 (6)	4 (17)	6 (9)
<b>Professional experience with CISC</b>						
More dedicated nurses = more CISC	23 (96)	39 (55)	38 (81)	24 (50)	17 (71)	45 (63)
More financial compensation = more CISC	18 (75)	31 (44)	29 (62)	20 (42)	15 (63)	34 (48)

Values are presented as number of respondents (%) of the subgroups that rated the factors between 4–6. CISC, clean intermittent self-catheterization. \*P < 0.05, statistically significant difference.

propose CISC to a patient. The factors of decreased mobility, age above 75 years, obesity, wheelchair dependence, and cognitive function were rated as mildly important; sex and age under 75 years were clearly less important as reasons to propose CISC to patients. Urologists with fewer than 10 years of experience were more likely to take age under 55 years into account in their decision about whether to propose CISC than the older urologists. However, urologists who worked at a university center did not see age >75 years old as a major factor influencing the decision to utilize CISC as a treatment option.

### Factors Leading Urologists not to Propose CISC to Patients

The argument that patients consider CISC invasive and unpleasant often leads urologists not to propose CISC as a treatment option. Twenty-five percent of the residents in training tended to think that patients do not want CISC as a treatment option, compared to 8.5% of the qualified urologists. The lack of financial compensation was perceived as a problem by 1 of 4 respondents. Residents in training were more likely to see the absence of financial compensation as a problem than the older generation. In contrast, the investment of time and the need for motivation and explanation was not seen as a problem by the majority of urologists. Urologists who reported never propos-

**Table 3.** Overall agreement with survey items in 2 subgroups

Variable	Number of new patients on CISC			Sex		
	< 1 Patient/ mo (n = 12)	≥ 1 Patient/ mo (n = 83)	P-value	Male (n = 72)	Female (n = 23)	P-value
<b>Decisive factors to propose CISC to patients</b>						
Sex						
Male	6 (50)	10 (12)	0.001*	14 (19)	2 (9)	0.230
Female	3 (25)	14 (17)	0.492	15 (21)	2 (9)	0.186
Age (yr)						
< 55	7 (58)	27 (33)	0.081	23 (32)	11 (48)	0.167
55–75	7 (58)	32 (39)	0.193	28 (39)	11 (48)	0.448
> 75	12 (100)	49 (59)	0.006*	47 (65)	14 (61)	0.701
Visual acuity	11 (92)	59 (71)	0.130	52 (72)	18 (79)	0.567
Hand function	12 (100)	79 (95)	0.437	68 (94)	23 (100)	0.248
Presence or absence of tremor	11 (92)	67 (81)	0.355	57 (79)	21 (91)	0.186
Decreased mobility	8 (67)	52 (63)	0.787	42 (58)	18 (78)	0.085
Obesity	8 (67)	49 (59)	0.614	41 (57)	16 (70)	0.282
Wheelchair dependence	7 (59)	35 (42)	0.292	31 (43)	11 (48)	0.688
Cognitive function	7 (58)	50 (50)	0.900	41 (57)	16 (70)	0.282
<b>Decisive factors for not proposing CISC to patients</b>						
Need for explanation and motivation	3 (25)	21 (13)	0.531	9 (13)	5 (22)	0.483
Investment of time	3 (25)	13 (16)	0.419	11 (15)	5 (22)	0.471
Absence of financial compensation	4 (33)	22 (27)	0.620	20 (28)	6 (26)	0.874
I think patients do not want CISC	1 (8)	11 (13)	0.632	9 (13)	3 (13)	0.946
Patients think CISC is unpleasant	3 (25)	13 (16)	0.419	10 (14)	6 (26)	0.174
Patients think CISC is invasive	6 (50)	15 (18)	0.013*	15 (21)	6 (26)	0.597
Absence of dedicated nurse	4 (33)	17 (20)	0.316	15 (21)	6 (26)	0.597
CISC is too expensive for the society	1 (8)	4 (5)	0.610	4 (6)	1 (4)	0.821
CISC causes more problems	3 (25)	5 (6)	0.027	6 (8)	2 (9)	0.957
<b>CISC as a treatment option for yourself</b>						
I think CISC is invasive	4 (33)	23 (28)	0.686	19 (26)	8 (35)	0.437
I think CISC is unpleasant	1 (8)	9 (11)	0.792	6 (8)	4 (17)	0.218
<b>Professional experience with CISC</b>						
More dedicated nurses = more CISC	9 (75)	53 (64)	0.449	46 (64)	16 (70)	0.619
More financial compensation = more CISC	7 (58)	42 (50)	0.616	36 (50)	13 (57)	0.586

Values are presented as number of respondents (%) of the subgroups that rated the factors between 4–6.

CISC, clean intermittent self-catheterization.

\*P < 0.05, statistically significant difference.



ing CISC to patients were more likely to believe that CISC causes more problems than other treatment options (infections, iatrogenic urethral injury, etc.) than urologists who proposed CISC at least once a month.

### CISC as a Treatment Option for Oneself

Twenty-eight percent of the questioned urologists, especially younger ones, considered CISC to be an invasive form of treatment, but only half of them found it unpleasant.

Seventy-seven percent would prefer self-catheterization over other catheterization options for themselves. However, 10% would use a suprapubic catheter and 7% a transurethral catheter. Further analysis of this data showed that younger urologists and urologists working in a university setting were more likely to prefer self-catheterization than the other urologists. The set of respondents who would prefer a permanent catheter was mainly male (89%).

### Professional Experience With CISC

The majority of the urologists agreed that they would be more likely to propose CISC to patients if they had a specialized nurse at their disposal and received some form of financial compensation. Especially for urologists with fewer than 10 years of experience, the lack of a dedicated nurse and the lack of financial compensation seemed important. Tables 2 and 3 show the results of the questionnaire presented in different subgroups of urologists.

## DISCUSSION

### Factors Determining Whether Urologists Proposed CISC to Patients

Age was found to be an important factor when proposing CISC. Self-catheterization becomes less practical with age because of comorbidities (e.g., tremor, vision impairment) or loss of the skills needed to perform CISC. However, it is remarkable that even younger age (<55 years old) was taken into account, although one would assume that the majority of these patients are perfectly capable of performing self-catheterization. Other than merely medical reasons (e.g., young patients with multiple sclerosis, spinal cord injuries, etc.), a possible explanation is the psychological barrier posed by CISC. Van Achterberg et al. [3] reported that younger patients felt that the need to perform CISC added to their "sickness role," thereby lowering motivation levels and influencing adherence. They felt that CISC also

had an impact on forming relationships, affecting intimacy and sexuality. Wyndaele [4] surprisingly reported that younger age was also a predictive factor for clinical urinary tract infections in both male and female CISC patients. These factors could play a role in urologists' decisions not to propose CISC, even to younger patients. Interestingly enough, the younger and more inexperienced the urologists were, the more they took young age into account as a barrier to proposing CISC. Is this because they could relate more to these patients and understood the important psychological aspect of this treatment option for young, active patients? With regard to the speculation that CISC is more difficult in the elderly, Whitelaw et al. [5] and Pilloni et al. [6] retrospectively reviewed charts of patients older than 60 and 70 years old, respectively, who used CISC as a way to empty their bladder completely. In their cohorts, patients were able to master the CISC procedure remarkably well, with only minor complications, and experienced an improved quality of life.

Good motor and sensory functions are key skills for performing CISC. However, patients also need organizational skills (e.g., preparation of materials) [1]. This survey shows that, in order of importance, hand function, presence or absence of tremor, and vision acuity were major factors influencing the decision to propose CISC. Nonetheless, Whitelaw et al. [5] reported the case of an 80-year-old woman with both arthritis and severe cataracts who still learned CISC properly. Vahter et al. [7] concluded that a visual handicap is not an obstacle to learning catheterization, but that a sufficient hand grip is mandatory.

Decreased mobility and central obesity may interfere with adequate positioning for introducing the catheter into the urethra. However, this survey showed that these factors were perceived as less important than fine motor skills. This is probably because of the availability of certain tools that facilitate self-catheterization, such as abductors and knee spreaders, catheter holders, and penis holders [1].

In order to evaluate a patient's ability to practice CISC, a test known as the paper and pencil test has been created and validated in patients with neurological disease by Amarenco et al. [8]. Using this rapid and easy-to-perform test, caregivers can evaluate the probability of success in learning CISC by evaluating the various physical and cognitive skills (hand function, mobility, attention, memory, and learning capacity) needed to perform the procedure correctly.

As confirmed by our survey, the cognitive status of the patient plays a role in the decision to propose CISC. First, the in-

dividual should be aware of the need to catheterize and respond accordingly. Memorization of the technique, including the correct sequence of steps for the procedure as well as hygiene precautions, seems paramount at first glance [1]. However, participants of the survey did not score this factor as high as one would expect. Vahter et al. [7] showed that most patients with cognitive impairments were able to learn self-catheterization in spite of their handicap. Perfect cognitive function is therefore not considered a necessary condition for learning CISC.

### Obstacles to Proposing CISC to Patients

A substantial proportion of the surveyed urologists thought that patients perceive CISC to be invasive and unpleasant. At first, patients see this procedure as intimidating, with significant physical, psychological, and emotional impact. However, these feelings seem to decrease with time and good support. Kessler et al. [2] reported a considerable improvement of quality of life with CISC. Patients reported self-catheterization as easy, mostly painless, and not interfering with their daily life activities.

Why do a number of urologists still believe that patients consider CISC to be invasive and distasteful? A possible reason for this is that they mostly encounter and counsel patients in the initial phase, when patients seem to struggle with the idea of CISC. In the course of follow-up, patients mostly consult a urologist when having problems with CISC, so the impression may arise that CISC is an inherently troublesome procedure.

Another possible explanation is that this point of view reflects the personal thoughts of some urologists about CISC, as some of them would not prefer CISC as a treatment option for themselves. Our research showed that young, inexperienced urologists were more likely to think that patients do not want this treatment option, but this feeling tended to disappear as urologists became more experienced.

Twelve percent of the respondents reported never proposing CISC to patients. This is remarkable, as this treatment option is considered the gold standard for urinary retention [9]. An analysis of this group of urologists showed that they were more convinced that CISC is invasive and causes more problems than other treatment options than urologists who proposed CISC at least once a month. These prejudices do not seem to be true in practice. To our knowledge, there are no data in the literature about the type of drainage prescribed based on urologists' preferences. We only found one reference in which the authors studied different ways of promoting continence in long-term care, comparing diapers, prompted voiding, and electrical stim-

ulation with indwelling catheters. Of the 25 nurses surveyed by Johnson et al. [10] about their preference for urinary incontinence treatments for frail older adults in long-term care, almost 80% definitely or probably preferred prompted voiding to promote continence. In another study, McMurdo et al. [11] reported a higher preference rate for indwelling catheters among night-shift nurses than among day-shift nurses (39% vs. 16%). This can be explained by the difficulties that nursing staff encounter in managing prompted voiding as a way to promote continence. Indeed, training patients to void at regular hours can be time-consuming and problematic, especially on night shifts, when the nursing team is heavily outnumbered.

### CISC as a Treatment Option for Oneself

The overwhelming majority of the respondents stated that they would prefer CISC for themselves. However, 17% would prefer a permanent catheter (either transurethral or suprapubic) instead of CISC. This is surprising, as it is well documented that these techniques give rise to more side effects than intermittent catheterization [12]. Weld and Dmochowski [13] reported that intermittent catheterization had significantly lower complication rates than urethral catheterization. Based on these results, we can assume that currently, a number of patients are still unnecessarily on permanent catheters, not only because of financial reasons, but potentially also because of negative feelings of the caregiver towards intermittent catheterization. However, the urologists who preferred a permanent catheter were mostly male and older in age. The younger generation, especially those who worked at a university hospital, almost unanimously preferred intermittent catheterization for themselves. This is a signal that over the course of the following years, CISC will become the absolute gold standard for urinary retention in practice.

### Professional Experience With CISC

The objective of this set of questions was to obtain better insights into what is needed to offer high-quality CISC care and management. Currently, urologists receive no specific financial compensation for instructing patients about how to perform CISC, although this procedure is time-consuming. One of 4 urologists thought that financial compensation would stimulate them to propose CISC to patients. In particular, younger urologists considered financial compensation for their actions to be necessary. However, as CISC is clearly associated with fewer complications, in the long run this could lead to extra savings

in health care. More than half of the participants thought that the availability of a specialized nurse would make them more likely to propose CISC to patients. In this regard as well, younger urologists emphasized the need for dedicated nurses more than the older generation.

Based on these results, it may be the case that urologists want to outsource the teaching of CISC to a specialized nurse, first of all because it is very time-consuming, but probably also because a dedicated continence nurse is better suited for this job.

It is clear from this survey that both financial considerations and the availability of expertise and time play a role in supporting high-quality CISC care. This underscores the need for training courses and dedicated nurses.

This survey was limited by the number of urologists who answered our questionnaire. We also must remain careful because the information was obtained in a single country. This work can be seen as an exploratory study on this subject. It could serve as the basis for a subsequent broader international study. Further research should also focus on the opinions of nurses and other caregivers involved in incontinence management.

Surprisingly, a substantial proportion of urologists still thought that patients perceive CISC as invasive and unpleasant, although the literature shows that patients do not always consider it this way. Indeed, using semi-structured interviews, Shaw et al. [14] and Ramm and Kane [15] demonstrated some negative impacts of CISC related to practical and psychological difficulties, but Ramm and Kane [15] pointed also out some positive impacts on quality of life related to the improvement of urinary symptoms. Younger urologists almost unanimously preferred CISC as a treatment option for themselves. This is an indication that CISC will eventually become the real gold standard in practice. In addition to financial remuneration, it is also clear that ensuring sufficient expertise and time for high-quality CISC care is important. This could be a potential role for dedicated nurses.

## SUPPLEMENTARY MATERIAL

Supplementary questionnaire can be found via <https://doi.org/10.5213/inj.1734824.412>.

## REFERENCES

- Seth JH, Haslam C, Panicker JN. Ensuring patient adherence to clean intermittent self-catheterization. *Patient Prefer Adherence* 2014;8:191-8.
- Kessler TM, Ryu G, Burkhard FC. Clean intermittent self-catheterization: a burden for the patient? *Neurourol Urodyn* 2009;28:18-21.
- van Achterberg T, Holleman G, Cobussen-Boekhorst H, Arts R, Heesakkers J. Adherence to clean intermittent self-catheterization procedures: determinants explored. *J Clin Nurs* 2008;17:394-402.
- Wyndaele JJ. Complications of intermittent catheterization: their prevention and treatment. *Spinal Cord* 2002;40:536-41.
- Whitelaw S, Hammonds JC, Tregellas R. Clean intermittent self-catheterisation in the elderly. *Br J Urol* 1987;60:125-7.
- Pilloni S, Krhut J, Mair D, Madersbacher H, Kessler TM. Intermittent catheterisation in older people: a valuable alternative to an indwelling catheter? *Age Ageing* 2005;34:57-60.
- Vahter L, Zopp I, Kreegipuu M, Kool P, Talvik T, Gross-Paju K. Clean intermittent self-catheterization in persons with multiple sclerosis: the influence of cognitive dysfunction. *Mult Scler* 2009;15:379-84.
- Amarenco G, Guinet A, Jousse M, Verollet D, Ismael SS. Pencil and paper test: a new tool to predict the ability of neurological patients to practice clean intermittent self-catheterization. *J Urol* 2011;185:578-82.
- Patel MI, Watts W, Grant A. The optimal form of urinary drainage after acute retention of urine. *BJU Int* 2001;88:26-9.
- Johnson TM, Ouslander JG, Uman GC, Schnelle JF. Urinary incontinence treatment preferences in long-term care. *J Am Geriatr Soc* 2001;49:710-8.
- McMurdo ME, Davey PG, Elder MA, Miller RM, Old DC, Malek M. A cost-effectiveness study of the management of intractable urinary incontinence by urinary catheterisation or incontinence pads. *J Epidemiol Community Health* 1992;46:222-6.
- Sugimura T, Arnold E, English S, Moore J. Chronic suprapubic catheterization in the management of patients with spinal cord injuries: analysis of upper and lower urinary tract complications. *BJU Int* 2008;101:1396-400.
- Weld KJ, Dmochowski RR. Effect of bladder management on urological complications in spinal cord injured patients. *J Urol* 2000;163:768-72.
- Shaw C, Logan K, Webber I, Broome L, Samuel S. Effect of clean intermittent self-catheterization on quality of life: a qualitative study. *J Adv Nurs* 2008;61:641-50.
- Ramm D, Kane R. A qualitative study exploring the emotional responses of female patients learning to perform clean intermittent self-catheterisation. *J Clin Nurs* 2011;20:3152-62.