

Fast track accelerated diagnostic investigation for urinary incontinence in women

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ABSTRACT

INTRODUCTION: We have developed a one-hour standardised, accelerated diagnostic investigation programme to evaluate women with urinary incontinence (UI). The purpose of the study was to record how many patients followed the programme and had a diagnosis and a treatment plan after a one-hour visit and to describe the causes of deviation from the programme. A second purpose was to monitor patient satisfaction.

MATERIAL AND METHODS: In this retrospective cohort study, 276 women with the diagnosis UI participated. All patients completed a standardised investigation programme that included their medical history and an evaluation of the fluid/urination schedule. Before patients left the clinic, they were given a diagnosis and a treatment plan.

RESULTS: A total of 91% of the patients underwent examination and had a treatment plan after one consultation; 9% made multiple visits. The median patient age was 59 years (range 17-99 years); body mass index was 27 kg/m² (range 18-50 kg/m²); and the number of childbirths was 2.4; no significant difference were observed between the two groups. In the multiple-visits group, the number of previous gynaecological surgical procedures was significantly larger (67% versus 32%). These patients had significantly more chronic diseases (88% versus 58%). A total of 81 patients completed a post-examination questionnaire and (99%) were satisfied with the accelerated programme.

CONCLUSION: A total of 91% of the patients underwent an examination and received a treatment plan after one consultation; 9% paid several visits due to chronic diseases and previous gynaecological surgery. The patients expressed great satisfaction with the accelerated investigation programme.

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The prevalence of urinary incontinence (UI) in women aged 30+ years is 25% with a range of 14-41% depending on the definition used, the population studied and the investigative method deployed [1]. A Danish study from 2000 demonstrated that involuntary urination occurred at least once a week in 16% of women aged 40-60 years [2].

Diagnostic investigation of UI in women is a lengthy and time-consuming process, often entailing several

visits to the outpatient department until a diagnosis and treatment plan are in place. This puts a strain on the patient, occupies departmental resources and is costly for society.

The cost of diagnostic investigation and treatment of UI in Denmark is unknown. Based on a study conducted by COWI, the estimated payroll costs to the state entailed by incontinence care of the elderly population are in the range of DKK two billion per annum [3]. To this must be added the cost of incontinence pads and other aids. In neighbouring Sweden, expenditure is estimated to be in the order of SEK 2.8-4.0 billion, equivalent to 2-3% of the health sector expenditure [1, 2]. These amounts are, however, difficult to calculate with absolute precision, and presumably the actual figures are higher. Moreover, expenditure will undoubtedly rise in the coming years for the following reasons: 1) The prevalence of UI increases with increasing age, and this should be considered in the light of the predicted increase in the population of persons aged 65+ years in the EU from 17% in 2008 to 30% in 2060 [4]. 2) The demand for investigation and treatment of pelvic floor disorders among the elderly is expected to increase, among others due to increased public awareness of the treatment options available, and a slight decrease in the tabooification surrounding incontinence [1]. Thus, figures from the US predict a 45% increase in demand in this age group [5].

In order to meet the increasing demand for diagnostic investigation of women with UI at the



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ORIGINAL ARTICLE

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 TABLE 1

Demographic data for 276 women referred for investigation for urinary incontinence.

	Single outpatient visit (n = 252)	Multiple outpatient visits (n = 24)	p ^a
Age, ^b years, median (range)	58.8 (17-99)	57.7 (25-82)	NS
BMI, ^c kg/m ² , median (range)	27.3 (17.5-50.0)	28.7 (21.5-40.4)	NS
Parity, ^d median (range)	2.3 (0-9)	2.8 (0-5)	NS
Chronic disease, ^e % (n/N)	58 (143/247)	88 (21/24)	0.005
Previous surgery, ^f % (n/N)	32 (77/241)	67 (16/24)	0.002
Hysterectomy	22 (54/241)	42 (10/24)	
Prolapse	7 (17/241)	17 (4/24)	
Incontinence	6 (15/241)	25 (6/24)	

BMI = body mass index; NS = non-significant.

a) Mann-Whitney test. b) No lack of information. c) 46 records without information on BMI.

d) 6 records without information of parity. e) 5 records without information of chronic disease.

f) 11 records without information of previous surgery.

Department of Gynaecology at Nykøbing Falster Hospital, we have optimised the investigative programme so that it comprises a single outpatients' visit lasting one hour only. The programme is designed as an accelerated and standardised investigative programme consistent with the recommendations of the International Continence Society (ICS) and the urogynaecological guidelines from the Danish Society of Obstetrics and Gynaecology (DSOG).

The aim of the present study was to determine how many patients receive a diagnosis and treatment plan following their initial visit, to examine which factors are involved when patients have to pay multiple visits to the clinic, and to survey patient satisfaction with the accelerated programme.

MATERIAL AND METHODS

The retrospective cohort study comprised 276 women with a median age of 59 years (range 17-99), 25% of whom were aged 70+ years (Table 1). The inclusion criterion was patients referred under the diagnosis of UI in the period from April 2006 to the end of March 2007. A total of 322 patients were referred, 46 of whom were excluded on grounds of misreferral, missing medical records, cancellations and deficient medical records. Data were obtained on complicating secondary diagnoses, previous gynaecological surgery and number of childbirths. It was also recorded whether the patient was treated by a gynaecologist or a urogynaecologist, and which type of treatment the patient had received (Table 2). Patients attended a urogynaecological outpatient department staffed by a medical specialist (gynaecologist or urogynaecologist) and a continence care nurse, and they brought a 48-hour bladder diary. One hour was allocated for the diagnostic investigation, and all patients underwent a standard examination pro-

gramme corresponding to level two in the DSOG's urogynaecological guidelines from 2003 [1] which includes: medical history and assessment of bladder diary, gynaecological examination, post-void residual measurement, filling and voiding cystometry in seated position, cough stress-test in supine position and short-term incontinence pad weighing test as well as a free uroflowmetry. Before the patient left the outpatient department, a diagnosis was made and a treatment plan prepared. If the patient required surgery, the secretary scheduled an appointment for surgery in consultation with the patient.

A second purpose of the present study was to survey patient satisfaction with the accelerated patient programme using a questionnaire completed by a group of patients who attended the department in 2008.

A total of 81 patients completed a post-examination questionnaire to determine their satisfaction with the accelerated investigation programme (Table 3).

The diagnostic investigation and urodynamic examinations were performed and reported in accordance with the ICS and the DSOG [1]. The continuity of investigation, treatment and management was ensured by having the patient attend the same physician and nurse throughout the programme.

Definitions

Urogynaecologist: Physician specialised in gynaecology who holds an ICS certification, is actively engaged in UI investigation and performs at least 25 incontinence operations annually.

Continence care nurse: A trained continence care nurse who has completed the ICS-certified urodynamics course.

Statistical analysis

The comparability of multiple-visit patients with single-

 TABLE 2

Outcomes of investigation of 276 women referred for urinary incontinence. The values are % (n/N).

	Single outpatient visit (n = 252)	Multiple outpatient visits (n = 24)	p ^a
Fully investigated	91 (252/276)	9 (24/276)	
Patient seen by			0.07
Urogynaecologist	47 (118/252)	29 (7/24)	
Gynaecologist	53 (134/252)	71 (17/24)	
Treatment			-
Medical	41 (104/252)	33 (8/24)	
Pelvic floor training	13 (32/252)	0 (0/24)	
Prolapse surgery	18 (46/252)	25 (6/24)	
Incontinence surgery	27 (68/252)	42 (10/24)	

a) Fisher's exact test.

visit patients was analysed. The data were analysed non-parametrically using Fisher's exact test with a significance level of $p < 0.05$.

Ethical concerns

The Danish Data Protection Agency was not notified as no personal data were recorded.

Trial registration: not relevant.

RESULTS

Age distribution, BMI and parity in the two groups showed no significant differences (Table 1). Among the multiple-visit patients, the number of previous gynaecological procedures (prolapse and incontinence surgery and hysterectomy) was significantly higher (67% versus 32%). The number of instances of chronic disease was significantly increased (88% versus 58%) (Table 1).

No significant difference between the two groups were observed in relation to the specialist physician's degree of sub-specialisation (Table 2). Following the initial visit to the outpatients' department, 91% (252/276) had a diagnosis and a treatment plan (Table 2), and 9% (24/276) required an average of 2.3 visits (range 2-4). Among single-visit patients, 99% (78/79) were satisfied with the investigation they had undergone, a full 99% (80/81) preferred only a single visit and one patient (1/81) was in doubt as to whether she would have preferred to pay two visits (Table 3).

The majority of patients (61%; 164/271) had chronic disease and 39% (107/271) were healthy (Table 4).

After diagnostic investigation had been completed, 41% (112/276) were started on medical treatment; 12% (32/276) were referred for pelvic floor training; 28% (78/276) underwent surgery for incontinence and 19% (52/276) underwent surgery to correct genital organ prolapse.

DISCUSSION

The team at Nykøbing Falster Hospital has developed an accelerated and standardised investigative programme for UI in women. It was hypothesized that an optimised programme would ensure rapid and effective investigation and treatment of women referred due to urinary incontinence. The hypothesis was confirmed by data that indicate that 91% (252/276) of the women were investigated and had a treatment plan after a single one-hour visit to the outpatient department. The multiple-visit group of patients constituted 9% (24/276).

A Danish National Board of Health evaluation from 2009 states that nationwide 36% were fully investigated at their initial visit to an outpatient department while 57% of patients required two visits. These figures are based on an average of 42 Danish gynaecological and



TABLE 3

Satisfaction with the investigation programme among 81 women referred for urinary incontinence.

Subject	%	n/N
1. Too many examinations		
Yes	2	2/81
No	98	79/81
Don't know	0	0/81
2. Prefer multiple visits		
Yes	0	0/81
No	99	80/81
Don't know	1	1/81
3. Amount of information		
Too much	0	0/81
Not enough	2	2/81
Just right	98	79/81
4. Information should be spread over multiple visits		
Yes	4	3/81
No	94	76/81
Don't know	2	2/81
5. Written information fully satisfactory^a		
Yes	79	45/57
No	5	3/57
Don't know	16	9/57
6. Satisfaction with programme^b		
To a high degree	95	75/79
To some degree	4	3/79
To a lesser degree	1	1/79

a) 24 questionnaires not answered. b) 2 questionnaires not answered.

urological departments surveyed using questionnaires [2]. The number of visits was not determined for gynaecological departments in isolation and therefore we cannot compare data directly.

The DSOG's urogynaecological guidelines for UI offer no recommendations regarding how many appointments the patient should have [1, 2].

The high rate of fully investigated patients following a single outpatient visit in this study may be attributed to the optimised investigation programme and the interdisciplinary teamwork between the gynaecologist and continence care nurse who each attended to the patients throughout the entire investigation programme.

At Nykøbing Falster Hospital, the timeframe for the initial outpatient visit has been set to one hour. This is sufficient time to take the medical history, perform a gynaecological examination and perform other clinical examinations. The national Danish average time allowed is 48 minutes for the initial visit [2].

At Nykøbing Falster Hospital, examinations are performed at a basic level and as such they resemble examinations performed at other hospitals in Denmark; as regards level 2 examination, a number of these exami-

 TABLE 4

Chronic diseases among 71 of 271 women referred under the diagnosis urinary incontinence.

	%	n/N
Healthy patients	39	107/271
<i>Chronic disease</i>	61	164/271
Obesity	20	55/271
Hypertension	23	62/271
Ischaemic heart disease	8	22/271
Lung disease	9	25/271
Diabetes mellitus	7	19/271
Neurological disorder	5	14/271
Back problems	4	12/271
Arthritis	6	15/271
Alcoholism	2	4/271
Mental disorder	3	9/271
Dementia	0	1/271

nations are frequently employed in diagnostic investigation; commonly urodynamic test.

The Danish National Board of Health evaluation states that only a small proportion of Danish hospital departments perform the level 2 examinations recommended by the DSOG such as filling and voiding cystometry and cystoscopy [2].

Throughout the process, i.e. both during investigation and treatment, the patient is assigned to the same physician and mostly also to the same nurse. A number of studies have found that continuity in the contact with the treatment provider is a patient preference and that it yields greater efficiency and is less resource-intensive [6].

At Nykøbing Falster Hospital, patients are attended to exclusively by specialist physicians, including gynaecologists with a sub-speciality in urogynaecology. For comparison, according to the national average, 76% of patients at the first outpatient visit are seen by a specialist in either gynaecology or urology. In the gynaecological departments, 72% of patients are attended to by a specialist [2].

There was no significant difference between the two groups in relation to the specialist physician's degree of sub-specialisation (Table 2). The most appreciable and the only significant difference between the two groups – single versus multiple visits – was observed for patients who had previously undergone gynaecological surgery or who had chronic disease. This would seem to indicate that these two predisposing factors make diagnostic investigation more difficult. This is supported by the DSOG's urogynaecological guidelines in which UI in patients with certain chronic diseases or a history of gynaecological surgery is characterised as complicated UI [1].

Patients who have previously undergone gynaecological surgery are assumed to constitute a more difficult group of patients than patients who have undergone no such surgery; it is well known that gynaecological prolapse surgery can cause postoperative stress incontinence (unmasked incontinence) [7, 8], that urethral sling procedures to correct stress incontinence may cause voiding dysfunction [8], and that radical hysterectomy may result in damage to peripheral nerves serving the bladder and urethra and hence cause ensuing incontinence [9].

Significantly more patients with chronic diseases than without chronic diseases required more than a single outpatient visit. The reason for this is that certain chronic conditions may exacerbate UI or be a direct cause of it, such as chronic obstructive lung disease (COLD) in stress incontinence and neurological conditions as well as diabetes in urgency [7, 10]. Conversely, UI tends to predispose patients to falls, infections, skin infections, isolation and depression, which would also explain the link between complicated UI and chronic disease [10].

All in all, regardless of whether they are the direct or indirect cause of incontinence, chronic diseases are complicating factors in this patient group and they hence make diagnostic investigation more difficult. At the Department of Nykøbing Falster Hospital we have developed an accelerated-investigative programme that includes a single outpatient visit. The programme is consistent with the recommendations of the ICS and the guidelines from the DSOG.

With a predicted increase in the number of elderly citizens in future and considerable costs for urinary incontinence, the investigative programme should be instrumental in lowering costs in the health sector. A single visit is convenient to the patients, not only to the elderly patient, but also to the woman who is in active employment and to those who have a long distance to the hospital.

The patients expressed great satisfaction with the accelerated investigation programme.

CONCLUSION

The standardised and optimised diagnostic investigation programme of one hour's duration met expectations in full: 91% of the patients were fully investigated and had a treatment plan after a single visit and just 9% required multiple visits.

The results at Nykøbing Falster Hospital were obtained owing to the accelerated investigation programme, interdisciplinary teamwork with the nursing staff and staffing with fully specialised physicians.

Those who had to pay multiple visits did so because of chronic diseases (dementia, alcoholism, psychiatric

and neurological disorders) and a history of gynaecological surgery.

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