THE MARJORY WARREN LECTURE

Incontinence—still a geriatric giant?

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Introduction

Marjory Warren was born in 1897 and died in 1960, by which time she had established geriatric medicine as a specialty and had demanded the facilities in district general hospitals that we all now enjoy.

In 1946 she wrote in The Lancet: "there should be a change of attitude on the part of the medical profession towards the care of the chronic sick. When this is established, the change will be reflected in nursing and other hospital staff. A higher standard and a great deal more work is needed in the care of the chronic sick. The creation of a specialty for geriatrics would stimulate better work and initiate research. The chronic sick should be diagnosed and treated in special blocks of the general hospital set up and equipped for the purpose. Chronic aged sick should be admitted to homes only through hospital units, all homes for the chronic sick should be attached to the hospital units to ensure close follow up work." [1].

It is my contention that many geriatricians, while reaping the benefits of specialist geriatric medicine in district general hospitals, have forgotten the additional tenets of Marjory Warren, and this is no more apparent than in the treatment of urinary incontinence in the old. Of this, she said: "A laissez-faire attitude on the part of the medical and nursing personnel to incontinence is quite incompatible with modern methods of treatment and care" [1]. That contention in the 1940s must be even more damning in the 1990s if it is true. Over the last 15 years there have been substantial advances in our understanding of the anatomy and physiology of the bladder, its pathological processes and their relation to the function of the organ. Furthermore, advances in the pharma-physiology of the bladder have led to significant improvements in treatment, with the likelihood that ever more specific and effective drug therapy will be developed in the future.

In 1991 Bernard Isaacs suggested that the clinical presentation of older patients was dominated by "the giants of geriatrics: immobility, instability, incontinence and intellectual impairment" [2]. Thus, Marjory Warren's words would still apply for the incontinent population today: "It is surprising that the medical profession and the country at large should have been content to do so little for this section of the community...these patients have been inadequately cared for in the past and often still receive scant attention and little, if any, treatment in an atmosphere which entirely lacks sympathy with their age and condition" [1]. Isaacs, nearly 50 years later, echoed these sentiments: "the aim of modern geriatric medicine is to forestall the giants of geriatrics by diagnosing and treating their causes. Unfortunately, the giants still abound...The giant incontinence was once an example of the inverse care law which states that the more common a condition is, the less attention is devoted to it. In some places the gap between knowledge and practice remains" [2].

For some reason, incontinence is still not regarded as a specialist subject for geriatric medical physicians. It would be hard to count the geriatricians with an active research interest in incontinence and take up the fingers of two hands. Only 3% of the membership of the British section of the International Continence Society are geriatricians. In a recent survey, only 8% of general practitioners would elect a geriatrician as the most likely person to whom they would refer a patient with detrusor instability. Nor have we been able to educate our general practitioner colleagues who were unlikely to examine the abdomen and perform a rectal or vaginal examination on patients who consulted them with incontinence [3]. The situation has not improved and has even deteriorated since then, with a recent poll showing that no more than 8% of patients who had symptoms of bladder instability would have an MSU at first appointment and only 5% would have a physical examination (unpublished results of ACC survey, 1996).

The following review concentrates mainly on important advances. However, in order to avoid putting the coping stones on the wall before the foundations are firm, let me reiterate a few important principles.

Urinary incontinence is common, it produces profound hardship and heartache and yet in the
majority of cases it is curable or at least can be considerably improved. All doctors, when confronted with a patient with urinary incontinence, are beholden to take a history and carry out an examination, which must include a pelvic examination and an MSU. In all patients, and especially in those who are markedly physically or mentally disabled, doctors should look for treatable causes of incontinence which are independent of bladder and urethral sphincter function [4]. These include urinary tract infection, drugs affecting the bladder and sphincter, increased solute load (e.g. hyperglycaemia or hypercalcaemia), immobility and physical handicap, oestrogen deficiency, inappropriate concentration of urine at night, psychiatric disease, fluid intake and bowel disorders. Having excluded these, the primary causes of incontinence are detrusor instability, stress incontinence, outflow obstruction and urinary retention with acontractility, a combination of which may be present. These diagnoses are made clinically and the appropriate treatment given on this clinical diagnosis. Only cases which fail to respond need further investigation—usually urodynamics.

All this is known and practised daily, and gone are the days when the majority of incontinent patients were discharged from the wards with catheters. Marjory Warren would have no cause to comment about geriatricians that "the patient must be treated as a whole—physically, psychologically and socially—and the physician must never lose sight of all these aspects" [5]. Gone too are the days when a patient under our care could complain: "I went into hospital a good-looking 22-year-old with self-respect and confidence. I am now totally incontinent of urine and rely on babies' underwear" [2].

**Prevalence**

The prevalence of urinary incontinence depends on the questions asked in the survey. However, there is general agreement that about 6-7% of patients have severe incontinence (measured by urinary loss and/or psychological impact) and that the prevalence rises with age [6-10]. Populations of elderly people in institutions of any sort have very high levels of urinary and faecal incontinence: up to 20% on acute medical and surgical wards and 40% in psychogeriatric or longer-stay institutions [11]. Prevalence also rises markedly with physical and mental disability [6]. However, even in the most severely physically disabled and in those who are markedly confused there remains a proportion of elderly patients who are still continent of urine and faeces. Further research is imperative in this group to define the reasons for their remaining continent.

Not all patients with incontinence, even if it is severe, want treatment for their condition. They may be unduly pessimistic about the symptom, regarding it as due to their age and so unlikely to be treatable. Indeed, patients are more likely to require treatment for other lower urinary tract symptoms than they are for incontinence.

**Lower urinary tract symptoms**

Urinary symptoms cannot be considered in isolation: one often impacts on or alters another. Furthermore, it is not only their presence that is important but also their frequency, severity and 'bothersomeness'.

A patient who has urgency may not have incontinence associated with detrusor instability because they respond to their symptom with frequency and nocturia and possibly also restrict their fluids. To ascertain the severity of incontinence, therefore, it is important to ascertain the severity of each symptom and use an amalgamated score. The problem is deciding the weight to give each symptom, and what is normal or abnormal. For example, day-time frequency of about 3 h encompasses almost all people, whereas those going every hour (which would be regarded as abnormal) includes only 30% of a community population. Similarly, almost all men and women get up once a night once they are over 80, but it would be definitely abnormal to rise three times, as do 10-20%, and twice might be regarded as too often in some patients, even at advanced age. The prevalence of nocturia increases with ageing in both sexes, but especially in men.

Thus, the criteria for severe urge incontinence might be frequent incontinence (several times per week or more), or less frequent incontinence but severe impact (high bothersomeness, interference with daily activities, social life or relationships or causing distress and diminished quality of life), or incontinence plus high frequency or incontinence plus nocturia three or more times per night. Sandvik et al. [10] designed a severity index for urinary incontinence in female patients attending an outpatient clinic in Norway. They combined the frequency of urinary leakage with the quantity of loss to create an index of severity. This combined index correlated more closely with urinary loss measured by pad-weighing than either of the elements on their own. The index also correlated strongly with the bothersomeness of the symptom of incontinence. In general, the prevalence of incontinence having an impact is lower than the overall prevalence of incontinence and there is little change in this relationship with age.

**Objective measures of incontinence and its severity**

There is no well-validated and reliable instrument to measure severity of incontinence. Apart from the
history, specialist continence nurses commonly use a urinary diary or frequency volume chart for patient assessment. History taking and especially the question: "Are you incontinent?" is not reliable in assessing continence status. The urinary diary often underestimates urinary symptoms compared with the history, possibly due to the charting itself leading to an improvement in symptoms. Diary keeping helps the patient to become involved in their own treatment and challenges negative beliefs, such as that the patient is incontinent all the time. Urinary diaries provide invaluable evidence about the degree of frequency and the timing of incontinent episodes. The addition of urinary volumes to the charts provides a measure of bladder capacity and how it varies over 24 h. Some studies now use mean voided volume as a measure of the bladder's ability to store urine. Wyman et al. suggested that, for both genuine stress incontinence and detrusor instability, the diurnal micturition frequency, nocturnal micturition frequency and number of incontinent episodes was reproducible but the same for each diagnosis [12]. Dikno et al. [13] showed that the largest volume on a frequency volume chart correlated with the capacity of the bladder on urodynamics and that those patients with a history of detrusor instability often had a smaller average and maximum voided volumes. However, the frequency volume chart was not sufficiently accurate to indicate a diagnosis in individuals.

Mc Cormack et al. [14] found great discrepancy between history and data on a chart, and the difference between bladder capacity from the frequency volume chart (mean day-time, 176 ml; mean night-time 232 ml) and the average cystoscopic bladder (mean 383 ml). However, chart-determined data are probably a more valid indication of urinary habits, and the lower mean volumes may be due to patients micturating frequently or early to prevent an accident. In the International Continence Society BPH study, 1271 consecutive men over the age of 45 were recruited. Each completed a frequency volume chart and a detailed questionnaire. The exact agreement between the frequency volume data and the questionnaire was 41%, while that for nocturia was 68%. However, if the criteria for agreement were widened to allow a discrepancy of one category (there were five categories for each), these agreements rose to 91 and 97% [15]. The International Continence Society questionnaire is designed to be self-completed, which might cause problems in an elderly population (only 36% of the men in the study were over 75) and where patients may not be as lucid [16]. The results also indicated that there was very little relationship between the men's perception of their stream being reduced and the uroflow metered data. This may reflect not only a patient's experience of what is normal but also the difficulty of voiding into a flow meter in a clinical setting [15].

The relationship between the theoretical and practical management of different classical diagnoses

"Incontinence is never such a serious problem that a well trained staff cannot deal with the majority of incontinent patients by simple nursing procedures" [17]. There is ample evidence that simple nursing treatments, including hygiene, diet, fluid intake, care of the bowels, bladder retraining and pelvic floor exercises are effective in improving the majority of patients [18]. These simple procedures, coupled with medical management based on a clinical diagnosis are effective and should be practised by every doctor and nurse dealing with elderly people [19]. However, secondary referral should lead to a more accurate diagnosis and more sophisticated treatment.

Stress incontinence

The treatment of stress incontinence depends on rectifying the possible underlying mechanisms. Unfortunately, there are conflicting and complex theories, the most prominent of which are the pressure transmission and the hammock hypotheses [20]. These relegate the bladder to a passive role and dictate surgical correction of stress incontinence to anatomical terms. The former suggests that anatomical slippage of the bladder occurs so that the urethra is outside the intra-abdominal cavity and that rises in intra-abdominal pressure are no longer transmitted to the superior section of the bladder neck. Imaging of the bladder neck shows that urinary loss occurs concurrently with a cough if there is loss of anatomical support. Treatment based on this theory needs to reincorporate the upper urethra into the intra-abdominal cavity by surgery, pelvic floor exercises or mechanical means such as intravaginal sponges. The hammock hypothesis suggest that there is a defect in the tension on urethropelvic ligaments through levator muscle contraction which normally elevates and compresses the bladder neck and urethra [21]. This may be associated with abnormal striated muscle around the external sphincter, which consists of slow twitch and fast twitch fibres. If the former was affected the patient might leak continually, whereas with the latter leakage might only occur when the patient coughed or strained. Both fibres might respond to pelvic floor physiotherapy.

A further mechanism of urethral incompetence in women is due to abnormalities of the urethral mucosa or spongy vascular tissue. These tissues may provide an occlusive mechanism and may be damaged in such conditions as atrophic urethritis or decreased vascular flow. If this is the cause of stress incontinence it may respond to oestrogens. The beneficial effect of the vascular tissue on closure may explain the lack of clinical effect of ephedrine in patients with stress...
incontinence—any beneficial effect of the smooth muscle being dissipated by an equal effect on the vascular tissue. The lack of effectiveness of the treatment of stress incontinence \[22-24\] must indicate our lack of understanding of the pathophysiology of the condition and that further research, including randomized controlled trials of the various treatment options, is required.

**Urge incontinence**

This is a condition frequently associated with overactivity of the detrusor muscle arising from intrinsic detrusor muscle instability and/or impaired neurological control. There is probably an underlying myogenic abnormality related to denervation and increased sensitization to muscle receptor agonists \[25\]. This increased excitability may also be associated with an increased ability to spread electrical activity between cells, resulting in co-ordinated myogenic contractions of the whole detrusor. The detrusor must contract as a whole for intravesical pressure to increase; therefore, an increase in local activity in a normal bladder muscle would not result in a co-ordinated contraction and thus there would be no rise in intravesical pressure, whereas in an unstable bladder excitation will spread to the whole of the bladder, resulting in intraluminal pressure rises.

If the abnormality in detrusor muscles is the initial focus of excitability and the result of the whole bladder wishing to contract, then there also needs to be an abnormal neuronal response for this full contraction to take place. Normal storage of urine is dependent on spinal reflex mechanisms that activate sympathetic and somatic pathways to the urethral outlet, and chronic inhibitory systems in the brain that suppress parasym pathetic excitatory outflow to the urinary bladder \[26\]. Sympathetic firing may also inhibit the detrusor muscle by a sympathetic-parasympathetic action, i.e. the two autonomic systems talk to each other. Voiding is mediated by inhibition of sympathetic-somatic pathways which stimulate sympathetic outflow to the bladder base and urethra and the pudendal outflow to the external urethral sphincter. Tense vesicle afferent activity at capacity activates the brain stem micturition centre which inhibits the spinal guarding reflexes. There is thus a series of simple on/off switching circuits \[26\], and there is no switching off of sympathetic activity or striated nerves to the sphincter with cord lesions giving retention, or detrusor sphincter dyssynergia. Damage to the brain can induce bladder overactivity by reducing suprapontine inhibition. Behavioural treatments for urge incontinence, such as bladder retraining, probably act by increasing the inhibition of subpontine micturition reflexes by the higher centres. They have shown consistent response rates of over 50%.

Damage to the micturition reflex pathways in the sacral spinal cord leads to the emergence of primitive spinal-bladder reflexes triggered by C fibre bladder afferent neurons. Normal afferent impulses from the bladder are carried in the myelinated A\(_6\) fibres of pelvic nerves to the sacral spinal cord. In those with chronic spinal injuries, infants, patients with multiple sclerosis and elderly patients with hyperactive bladders, there is a prominent change to afferents being carried by the unmyelinated C fibres. These convey impulses from tension receptors in the bladder wall, and only a minority fire in intact animals, i.e. they are normally silent. Capsaicin is a C fibre afferent neurotoxin and can be administrated intravesically to treat certain types of neurogenic bladder overactivity \[27, 28\].

A drawback to antimuscarinic drugs at present is that they are not specific for the types of muscarinic receptors in the bladder, predominantly M\(_2\) and M\(_3\) \[29\]. The function of these receptors is also complex and as yet not clear. Additional actions such as the auto-inhibition of acetylcholine release via M2 receptors or the activation of M1 receptors presynaptically increasing acetylcholine release are only just becoming apparent \[30\]. It is likely that specific antagonists to these receptors will soon be available and should produce less widespread muscarinic receptor inhibition effects. It may be more important to inhibit the M\(_1\) receptors.

**Incomplete bladder emptying, with or without outflow obstruction**

The major advance in this situation is the use of intermittent catheterization. It may also reverse acontractility following an acute event such as a stroke, hip fracture or fall. It is a clean rather than a sterile technique, which is likely to improve chronically infected urine by encouraging complete emptying. It also leads to less trauma and urinary infections, as the patient is catheter-free between catheterizations. If the patient has neither the manual nor mental dexterity for self-catheterization, a partner can frequently be enlisted to help. Each catheter can be used for a week and only needs to be washed well and rinsed after use. Storage in a cool, dry place is best, and soaking the catheter in antiseptic solutions is discouraged. The importance of hand-washing and a good soapy wash of the perineum should be emphasized.

**Stroke and incontinence**

Stroke and incontinence often go together. Incontinence is associated with poorer stroke outcome, but the management of incontinence after stroke has not been systematically studied and the effect of treating post-stroke incontinence on stroke outcome is unknown.
A majority of patients with an acute stroke are incontinent [31–34]. Although there seems to be an improvement in continence status during the time of admission, much of this can be accounted for by deaths which occur in incontinent patients more commonly than in those who are continent at the onset of stroke [31, 35–37]. Although the frontal lobe is involved in bladder control, most studies of stroke victims suggest that the size of the stroke and consequently the severity of the symptoms is more important. The side of the stroke is unimportant. Only the occipital lobe seems to be free of any connection with urinary incontinence [38, 39].

When managing a patient with incontinence and stroke it is important to establish whether there was pre-morbid incontinence and whether there are any non-urogenital causes of incontinence. Incontinence is a marker for stroke severity because it is associated with death, disability and the place of discharge of stroke survivors. It is possible that recovery of incontinence may promote morale and self-esteem, which could actually hasten overall recovery and lead to a better outcome [33]. Despite the high association of stroke and incontinence and the possibility of a better outcome if the incontinence is treated, there are no studies of the treatment of incontinence in this group of patients. However, on published evidence of treating non-stroke survivors with incontinence, it would be surprising if many stroke survivors could not be cured and others made socially dry.

**Faecal incontinence**

Faecal incontinence enjoys even less attention than urinary incontinence but must be very much more devastating. The prevalence again depends on the questions asked, but it may be as high or higher than urinary incontinence. Certainly in institutions about one-third of elderly patients suffer from faecal incontinence [11]. There is again a marked correlation with mental and physical incapacity, and a treatment and management plan which is more steeped in myth and hearsay even than that for urinary incontinence used to be.

Not any less damaging may be the attitude held by many doctors and nurses that patients' bowels should be open once a day. This is almost always at a time most convenient for the nursing staff and bears no relation to the patient's previous habits. It is important to find out the patient's previous bowel history and to try to emulate that—i.e. do not force the bowels to open every day if patient only went twice a week before—also to find out if the patient had a gastro-colonic reflex. Any attempt by the patient's bowel not to respond to the demands placed on it often results in increasing loads of laxatives, high-fibre diets and rectal stimulants.

There is adequate information in the literature suggesting that faecal incontinence can be treated, but there are major barriers to doing so, not least the attitudes of nurses and doctors [40–42]. The present management of faecal incontinence starts with assessment, examination and the use of a stool chart to note frequency, consistency, amount and continence.

If the problem is elimination, encourage a balanced diet with reasonable fibre-containing foods. Ensure an adequate fluid intake of about 1.5 l per day. Additional fibre should not be used in people who cannot eliminate their faeces: it will make matters worse. A well-planned bowel management programme decreases the number of enemas and laxatives used and a significant number of patients can have a regular bowel movement without stimulation. A number of patients become unexpectedly continent on this regime. Rectal stimulation should be reduced to the minimum, either working up from no stimulation to phosphate enemas or working down from phosphate enemas if they are already given. The sequence is: no stimulation, digital stimulation, glycerine suppository, bisacodyl suppositories, small enema, phosphate enema. Laxatives are added to ease the passage of stools if they are very hard and to harden stools if they are very soft. They should not be used constantly. Lactulose is widely prescribed but may be unnecessary and has an unpleasant taste.

**Conclusion**

Urinary and faecal incontinence is a common condition but is only one of the symptoms associated with abnormalities of the lower urinary or bowel tract. It is one the geriatric giants, but it is curable and therefore should be one of the special interests and abilities of geriatricians, and one of which they are proud. We should not need to be reminded by Marjory Warren of our principles: "there can be little doubt that in the past failure to obtain good results for elderly, sick and infirm has been brought about by too little attention from medical and nursing staff". Let us never forget that "a number of the most crippling conditions from which the long term chronic sick suffer are preventable" [17].

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**References**