

# Clinical Algorithms

## Urinary incontinence in women

PAUL HILTON

Urinary incontinence is defined as "a condition in which involuntary loss of urine is a social or hygienic problem, and is objectively demonstrable."<sup>1</sup> It is a common cause of referral to gynaecology clinics, although the real extent of the problem, both in terms of the numbers of sufferers and the extent of their suffering, is probably grossly underestimated by health care agencies. The prevalence of incontinence occurring twice or more each month is estimated to be 8.5% in women aged 15-64 and 11.6% in those aged 65 or over.<sup>2</sup> Thus there may be up to 20 000 incontinent women in each health district, 180 000 in each region, and perhaps three million in the United Kingdom as a whole. Of these, less than 20% are likely to have had any investigation other than culture of midstream urine specimens,<sup>3</sup> and a similarly small proportion receive help from health or social services.

### Classification

The traditional classification of urinary leakage is based on symptoms—that is, stress, urge, and continuous types. The bladder, however, has rightly been described as an unreliable witness, and a cystometric diagnosis based on the results of urodynamic testing is more reliable for determining treatment. The table shows the distribution of diagnoses in a group of patients referred to a gynaecological urodynamic clinic.

### Definitions

*Genuine stress incontinence* describes the case where intravesical pressure exceeds the maximum urethral pressure but in the absence of detrusor activity.

*Detrusor instability* occurs when the detrusor is shown objectively to contract, spontaneously or on provocation, during the filling phase of a cystometrogram while the patient is attempting to inhibit micturition.<sup>1</sup>

*Impaired bladder compliance* refers to a bladder with a high pressure rise during the filling phase of a cystometrogram.<sup>1</sup> A rise of more than 15 cm H<sub>2</sub>O at 500 ml capacity (compliance less than 30 ml per cm H<sub>2</sub>O) is considered abnormal.

*Hypersensitive bladder* (sensory urgency) here implies the occurrence of the first sensation of bladder filling at less than 25% of cystometric capacity or the sensation of bladder pain at any stage during the filling phase of a cystometrogram.

*Voiding dysfunction* encompasses both underactive detrusor function and overactive urethral closure mechanisms.

*Bladder neck incompetence* is the demonstration, during radiological screening or urethral stress profiles, of bladder neck opening in the absence of urinary leakage through the distal urethra.

### Role of the primary health care team

Although classification based on urodynamic assessment is advocated, the primary health care team has a vital role in the management of incontinence. In 1977 the Chief Nursing Officer for England and Wales identified incontinence as a priority area, suggesting the designation of a specialist nurse continence adviser in each health district.<sup>4</sup> Where available such specialist help should be recruited at the outset in the management of an incontinent patient. In districts where specialist help is not available the district nurse should be involved, not only to help assess the degree and cause of incontinence but also to help formulate a realistic plan for treatment and to contribute to treatment. Palliative measures—for example, the provision of aids to personal hygiene, skin care, and incontinence garments—are a particularly important area for involvement of the nurse early in management. The provision of pads and pants should never be considered to be first line management for the incontinent patient. They may, however, be a valuable adjunct, maintaining a patient's self confidence and allowing her to continue her normal social life pending definitive treatment. The need for such measures should therefore be considered early and reviewed regularly during the course of management, particularly<sup>5</sup>: while awaiting further investigation; while undergoing treatment which takes time to be effective—for example, pelvic floor exercises; where initial treatment is unsuccessful; while waiting for an operation; where a patient has made an informed decision to avoid or delay active treatment; and where investigation or active treatment is inappropriate or unavailable.

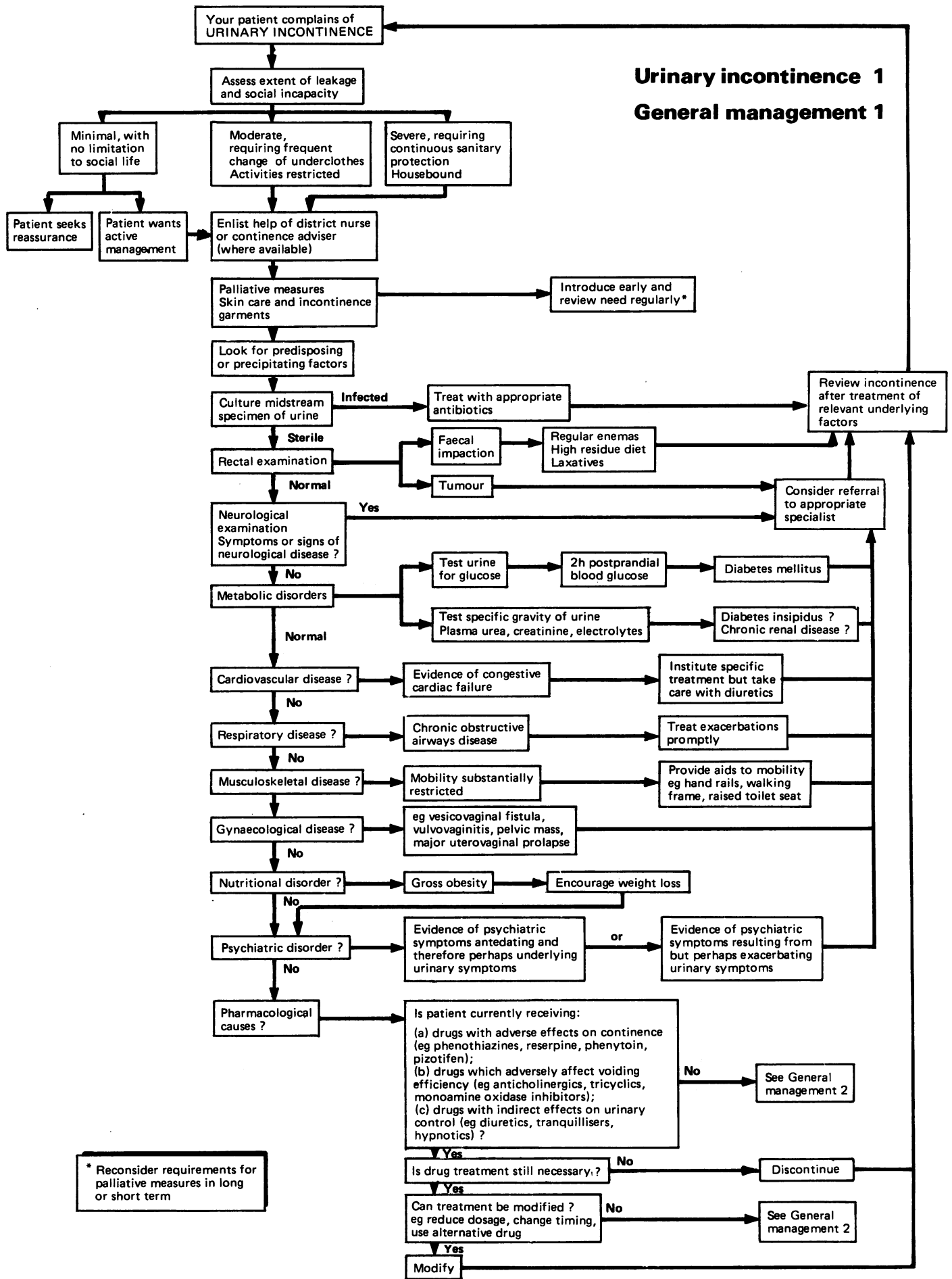
In most cases of incontinence a specific abnormality of lower urinary tract function can be defined. It is important to recognise, however, that, particularly in the elderly, there are often precipitating factors not associated with the urinary tract, which tip the balance between the individual predisposed to incontinence by impaired lower urinary tract function and the patient whose impaired function can no longer be contained. Such precipitating factors may occur in any system, and a preliminary general medical, neurological, psychiatric, pelvic, and even environmental assessment is at least as important as evaluation of the urological aspects. Many drugs may influence continence control or voiding efficiency by virtue of their actions on cholinergic or adrenergic effector mechanisms; current drug treatment should therefore be re-evaluated.

Often the identification and correction of underlying or precipitating factors will result in a remission in control of continence; where such factors cannot be defined or where subsequent review shows a persistence of urinary disorder, an attempt should be made to establish a clinical diagnosis. Although the suffering experienced is invariably considerable, in few instances could urinary incontinence be considered a dangerous or life threatening condition.

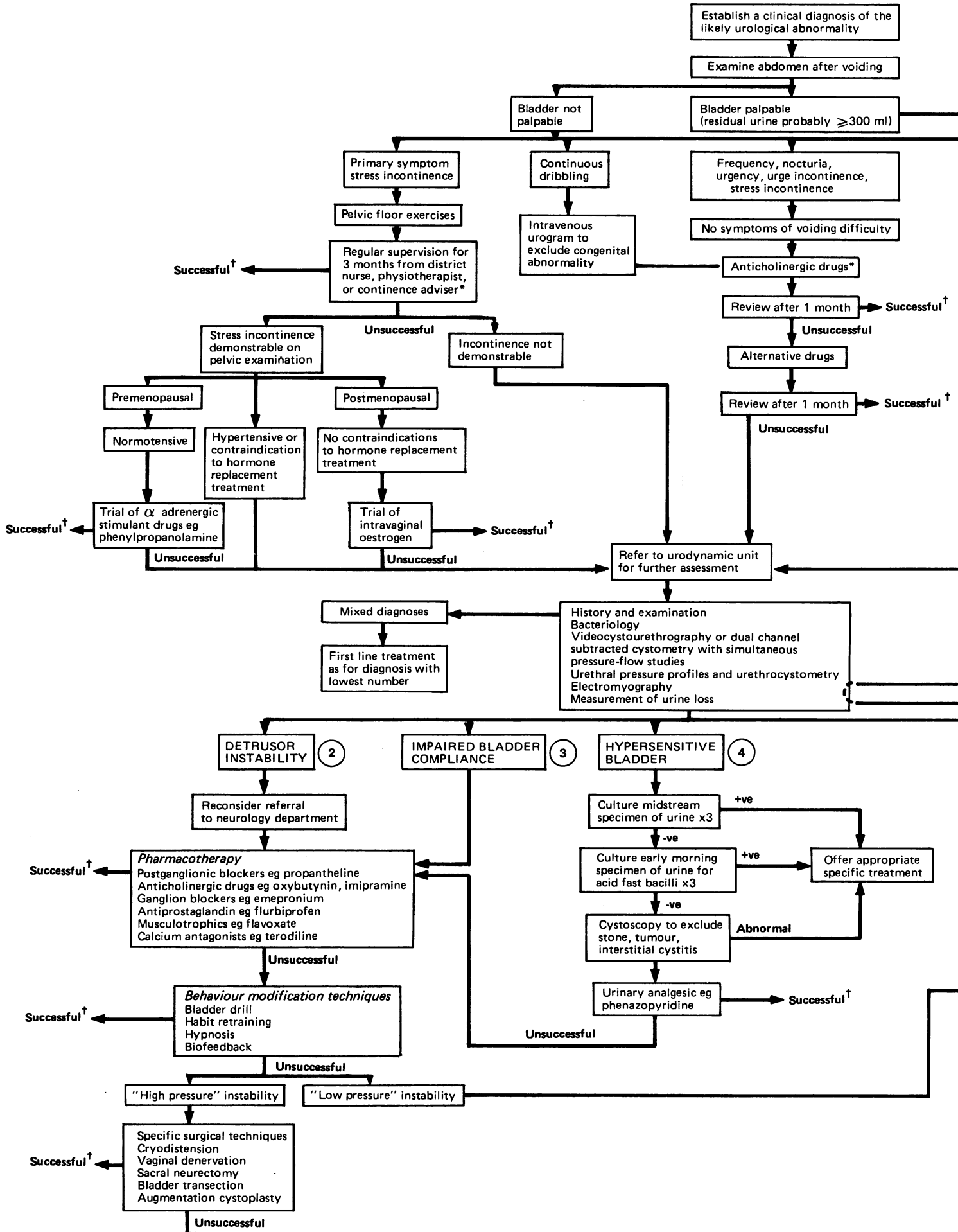
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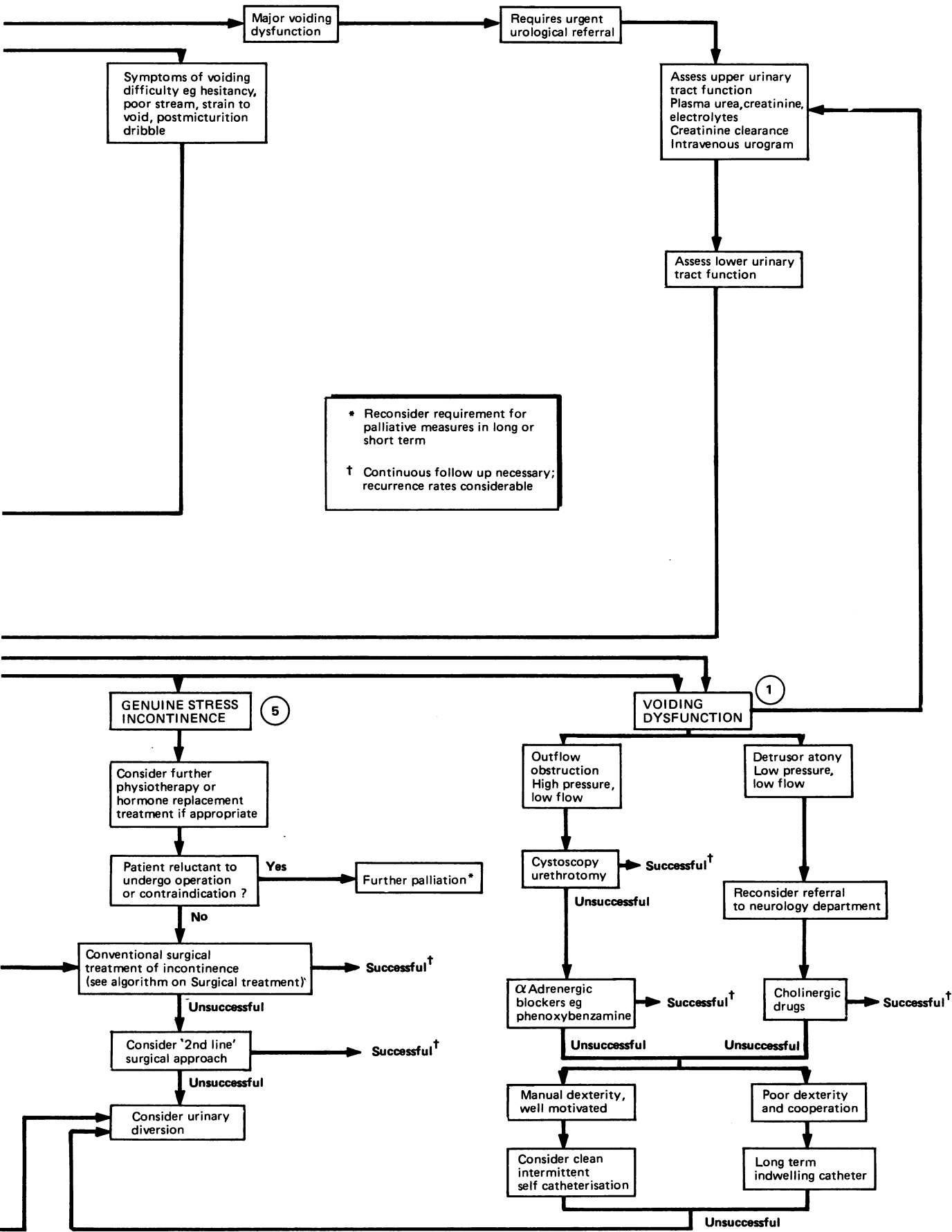
## Urinary incontinence 1 General management 1



\* Reconsider requirements for palliative measures in long or short term

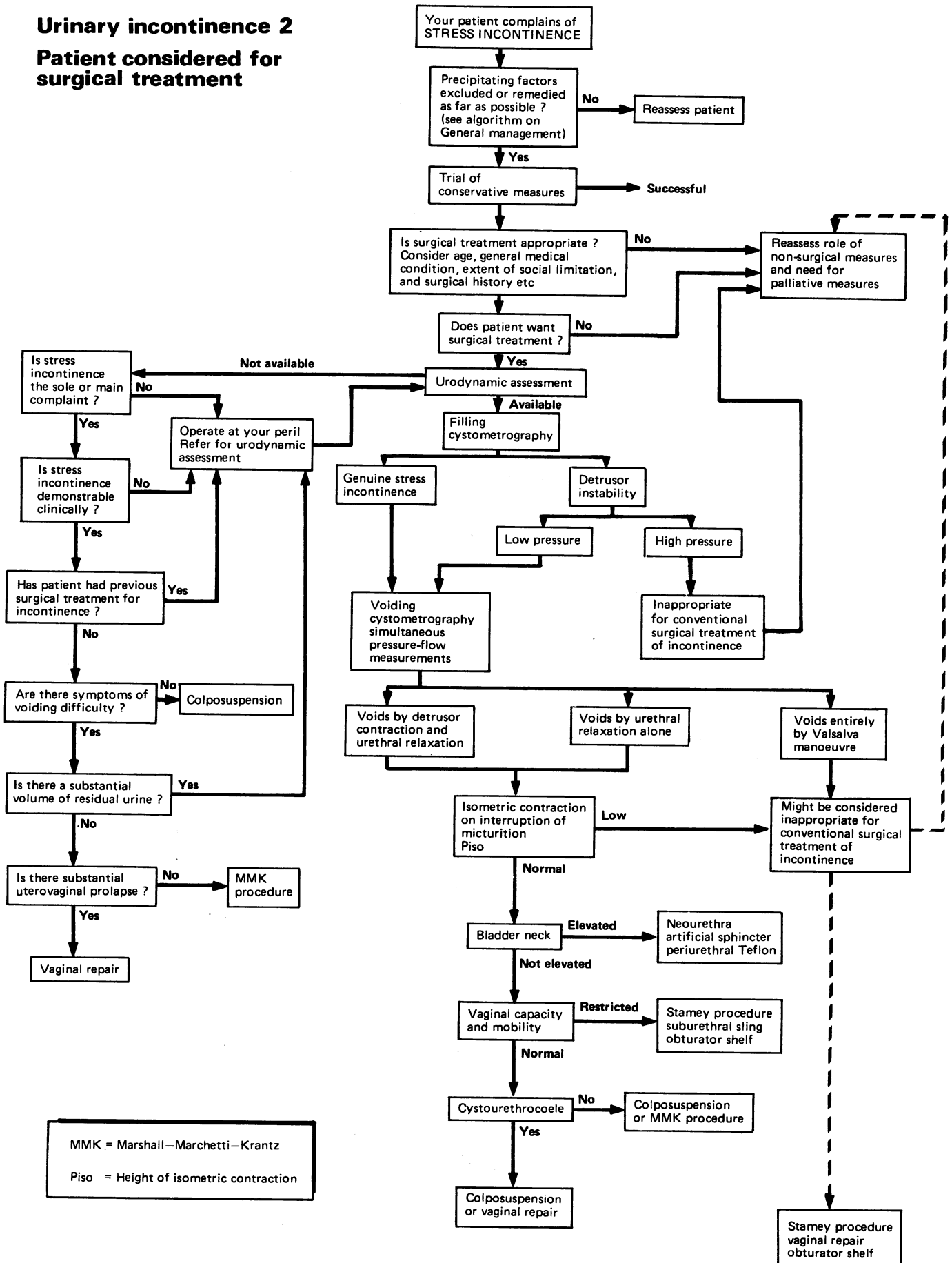


**Urinary incontinence 1**  
**General management 2**



## Urinary incontinence 2

### Patient considered for surgical treatment



MMK = Marshall-Marchetti-Krantz  
 Piso = Height of isometric contraction

Appropriate physical or pharmacological therapeutic trials are therefore justified without a definitive diagnosis in most cases. The one important exception to this statement, however, is where major voiding dysfunction is suspected. Symptoms of voiding difficulty—for example, hesitancy, straining to void, poor urinary stream, incomplete bladder emptying, and postmicturition dribbling—are notoriously unreliable in women; the finding of a palpably enlarged bladder, however, suggests a residual volume of 300 ml or more,<sup>6</sup> and justifies early referral to assess upper urinary tract function and relieve outflow obstruction.

Where stress incontinence is the sole or main complaint patients should be given instruction in pelvic floor exercises. A trial over three months is recommended, and results are more likely to be beneficial when regular supervision with reinforcement and encouragement are given. In postmenopausal women intravaginal oestrogen preparations may be helpful, partly because of their effects on the urethral and periurethral tissues,<sup>7</sup> but also perhaps because the relief of atrophic genital changes eases the discomfort from persistent urinary leakage. It is important to recognise that systemic absorption occurs through the vaginal mucosa and the same prescribing precautions as with orally administered hormone replacement treatment apply.

In patients with mixed symptoms it is more realistic to assume a diagnosis of detrusor instability,<sup>8</sup> and a therapeutic trial of an anticholinergic agent should be considered. None of these agents is specific for the bladder, and therapeutic benefit (over and above the placebo effect, which is inevitable in a condition so commonly psychosomatic) is unlikely before side effects are experienced. The most common side effect is reduced salivation, and patients should be advised not to increase their fluid intake (particular care should be taken with emepromium bromide, which must be taken with fluid to avoid oesophageal ulceration). In patients with symptoms of detrusor instability who also have symptoms suggestive of voiding dysfunction there is a risk that anticholinergic drugs may compromise voiding further; such individuals should not be treated but referred for definitive investigation.

### Management at the secondary referral level

The techniques of urodynamic investigation are outside the scope of this article, and interested readers are referred to one of the many excellent textbooks on the subject.<sup>9</sup> Cystoscopy has always played a vital part in urology, and many authors have advocated its use in the investigation of incontinence. Its cost effectiveness is questionable, however, and I limit the use of cystoscopy in the investigation of incontinent patients to those with pronounced bladder hypersensitivity, voiding dysfunction, or haematuria.

*Distribution of cystometric diagnoses among 600 consecutive patients referred to a gynaecological urodynamic clinic*

Cystometric diagnosis	No (%) of patients
Genuine stress incontinence	269 (45)
Detrusor instability	71 (12)
Voiding dysfunction	42 (7)
Hypersensitive bladder	22 (4)
Impaired bladder compliance	6 (1)
Genuine stress incontinence and detrusor instability	40 (7)
Other mixed diagnoses	48 (8)
Urethral diverticulum	4 (0.7)
Vesicovaginal fistula	1 (0.2)
Bladder neck incompetence only	11 (2)
No abnormality detected	75 (13)
Investigation unjustified	11 (2)

Up to 15% of incontinent women have a complex abnormality of lower urinary tract function, with two or more diagnoses (table). In such cases the main aims of management should be: (a) to maintain upper tract function and therefore relieve any voiding dysfunction first; and (b) to be as conservative as possible and therefore treat any

instability or hypersensitivity before resorting to surgical treatment (which has limited prospects for success in this group); hence the numerical ranking given to diagnoses in the algorithm. In the case of detrusor instability three types of treatment may be considered: behaviour modification techniques, drugs, and surgery. In general, behaviour modification seems to give the best prospects for success with initial cure and improvement rates of 80-90% often reported.<sup>10</sup> All of these techniques are extremely time consuming, however, and my preference is therefore to use pharmacotherapies as first line treatment, with cure rates of only 20-30% and symptomatic improvements of 50-60%, and to reserve bladder drill as inpatient treatment for the non-responders.

### Algorithm 1

The main steps in the algorithm are as follows:

- (1) Confirm the complaint of urinary leakage and assess the extent of the problem and degree of social incapacity.
- (2) Recruit the help of a nurse continence adviser (where available).
- (3) Search for and remedy predisposing or precipitating factors in relation to other systems.
- (4) Establish a clinical diagnosis.
- (5) Institute limited therapeutic trials where appropriate.
- (6) If necessary, refer to a specialist urodynamic clinic.
- (7) Make a definitive diagnosis and start treatment.
- (8) Continue follow up in all cases since recurrences are common.

### Surgical treatment of urinary incontinence

Surgical treatment of urinary incontinence in women has traditionally been carried out by gynaecologists using the vaginal approach with the dictum "do a vaginal repair first and if this fails go above." Although still adopted by many doctors, such an approach must now be questioned for several reasons. Firstly, the success rates of anterior colporrhaphy reported on the basis of objective assessment in most series (36-60%) are consistently worse than those for suprapubic procedures—for example, Burch colposuspension (80-90%).<sup>9</sup> Secondly, suprapubic procedures carried out as first line surgical treatment are considerably more effective than when performed after failure of a vaginal operation (97% v 71% at one year follow up).<sup>11</sup>

Although the aim of most operations is to raise the bladder neck, different operations (and individual surgeons) vary in the extent to which this is achieved. The higher the bladder neck is raised, the better the prospects for cure of incontinence, but also the greater the risks of inducing outflow obstruction with postoperative voiding difficulties. Women whose voiding is compromised preoperatively should therefore be operated on with caution and using procedures which cause relatively less obstruction. Perhaps the best single measure of detrusor reserve, and the prognosis for postoperative voiding, is the isometric pressure reached on sudden interruption of micturition during the voiding phase of a cystometrogram.<sup>12</sup>

### Algorithm 2

The selection of patients for surgical treatment of incontinence and the choice of procedure therefore rest on both clinical and urodynamic questions.

- (1) Is the symptom of stress incontinence a major element of complaint?
- (2) Does the patient have a urodynamic abnormality amenable to surgical treatment?
- (3) Have conservative measures been tried and failed?
- (4) Does the patient want an operation?
- (5) Is the voiding pattern normal?
- (6) Is the bladder neck raised on clinical or radiological assessment?

(7) Is there adequate capacity and mobility within the vagina?

(8) Is there appreciable anterior vaginal wall prolapse? If vaginal capacity is adequate colposuspension is my preferred procedure for the combination of stress incontinence and anterior wall prolapse; some clinicians, however, prefer a vaginal repair where prolapse is present and otherwise use the Marshall-Marchetti-Krantz cystourethropepy.

## References

- 1 Hald T, Bates CP, Bradley WE, et al. *The standardisation of terminology of lower urinary tract function: a collation of reports from the standardisation committee of the International Continence Society*. Glasgow: International Continence Society, 1984.
- 2 Thomas TM, Plymat KR, Blannin J, Meade TW. Prevalence of urinary incontinence. *Br Med J* 1980;281:1243-5.

- 3 Thomas TM. Epidemiology of micturition disorders. In: Stanton SL, ed. *Clinical gynecologic urology*. St Louis: C V Mosby, 1984:35-41.
- 4 Friend P. *Promotion of continence and management of incontinence*. London: DHSS, 1977;77:1. (DHSS Circular CNO(SNC).)
- 5 Norton C. Pads and mechanical methods. In: Stanton SL, ed. *Clinical gynecologic urology*. St Louis: C V Mosby, 1984:499-509.
- 6 Hilton P, Stanton SL. Algorithmic method for assessing urinary incontinence in elderly women. *Br Med J* 1981;282:940-2.
- 7 Hilton P, Stanton SL. The use of intra-vaginal cream in genuine stress incontinence. *Br J Obstet Gynaecol* 1983;90:940-4.
- 8 Farrar DJ, Whiteside CG, Osborne JL, Turner-Warwick R. A urodynamic analysis of micturition symptoms in the female. *Surg Gynecol Obstet* 1975;141:875-81.
- 9 Stanton SL. Urethral sphincter incompetence. In: Stanton SL, ed. *Clinical Gynecologic Urology*. St Louis: C V Mosby, 1984:169-92.
- 10 Jarvis JG, Millar DR. Controlled trial of bladder drill for detrusor instability. *Br Med J* 1980;281:1322-3.
- 11 Stanton SL, Hertogs K, Cox C, Hilton P, Cardozo LD. Colposuspension operation for genuine stress incontinence—a five year study. *Proceedings of the twelfth annual meeting of the International Continence Society*. Leiden: The Netherlands, 1982.
- 12 Coolsaet B. Stop test, a pre-operative determination of bladder contractility. *Proceedings of the ninth annual meeting of the International Continence Society*. Rome, 1979.

# Lesson of the Week

## Curable metastatic cancer in young women

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Disseminated cancer is rare in young women and the prognosis usually poor. Gestational choriocarcinoma is an exception, being potentially curable; it should be considered if there is a history of hydatidiform mole. Most patients with hydatidiform mole are followed up by the United Kingdom's registration scheme and treated at an early stage when necessary.<sup>1</sup> Choriocarcinoma also arises from about one in 40 000 non-molar pregnancies and, although the symptoms may develop within weeks of delivery or miscarriage, there may be a delay of months or years. In about one quarter of these cases the presentation is non-gynaecological.<sup>2</sup> We report three cases that indicate the importance of considering this diagnosis in any woman with a possible history of pregnancy and clinical features suggestive of metastatic malignancy. The diagnosis can be confirmed by the results of assay of the urine or blood for human chorionic gonadotrophin.<sup>3</sup>

### Case 1

A 30 year old woman was admitted to hospital with severe upper abdominal pain in March 1986. A mass was found in the upper right quadrant of the abdomen. Two months earlier she had suffered from a short episode of weakness of the right arm and leg and dysphasia. A computed tomogram of the brain was normal, and a transient ischaemic attack was diagnosed. Her obstetric history was of three normal pregnancies with the last delivery in June 1985; menstruation had resumed after she had stopped breast feeding.

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### A diagnosis of gestational choriocarcinoma should be considered in a young woman with metastatic cancer

Laparotomy showed a large retroperitoneal haemorrhagic tumour of the right kidney. A right nephrectomy was performed, and choriocarcinoma was diagnosed histologically. Her serum human chorionic gonadotrophin concentration was 33 200 IU/l, and enhanced computed tomography and magnetic resonance imaging of the brain showed a deposit in the left occipital lobe and haemorrhage in the thalamus.

She was treated with a course of etoposide, high dose systemic methotrexate and regular intrathecal methotrexate, actinomycin D, cyclophosphamide, and vincristine (the EMA/CO protocol).<sup>4</sup> The human chorionic gonadotrophin concentration fell to normal and the metastases resolved. She completed treatment in August and remained symptom free.

### Case 2

A 45 year old woman presented with anaemia and signs of pneumonia in May 1986. Bilateral cannonball pulmonary metastases were seen in a chest radiograph. There was a suprapubic mass that on ultrasonography was partially cystic and thought to be either a uterine or ovarian tumour. She was premenopausal and was not using contraception. She had three children, and the last known pregnancy had been seven years earlier.

Because she was too ill for general anaesthesia daily cyclophosphamide was started. She became severely anaemic and was found to have a bloodstained vaginal discharge. Treatment with prednisolone and progestogens was started, and a diagnostic uterine curettage was performed. Tumour was found in the curettings, which was immunocytochemically positive for human chorionic gonadotrophin. The serum human chorionic gonadotrophin concentration was 465 000 IU/l.

She received combination chemotherapy (EMA/CO) for six months. The human chorionic gonadotrophin concentration became normal, and the tumour masses regressed completely. She was well six months after completing treatment.