Incontinence - urinary, in women - Management

Scenario: Initial assessment and referral of a woman with urinary incontinence or overactive bladder

How do I assess a woman with incontinence?

- Determine what type of incontinence the woman has, and
- Identify any causes or conditions that are exacerbating the urinary incontinence, and
- Determine how severe the incontinence is, and
- Determine the effect of the incontinence on the woman's quality of life.

How do I determine what type of incontinence my patient has?

- **Categorize the symptoms as stress urinary incontinence, urgency incontinence, mixed urinary incontinence, or incontinence due to another cause** (such as a fistula, urethral diverticulum or chronic urinary retention).
- **From the history:**

o Determine whether the incontinence occurred:

o When coughing, sneezing, lifting, or exercising — likely to be stress urinary incontinence.

o When there was sudden urgency, or the person felt that they needed to empty their bladder but could not reach the toilet fast enough, often accompanied by frequency and nocturia — likely to be urgency incontinence associated with overactive bladder syndrome.

o If symptoms of stress urinary incontinence and urgency incontinence both occur — likely to be mixed urinary incontinence.

o If the incontinence is associated with neither of the above (this is rare), ask about:

o Voiding difficulty (hesitancy, straining to void, poor or intermittent urinary stream, and recurrent dribbling incontinence) — likely to be chronic urinary retention (overflow incontinence).

o Constant passive leakage of urine and often total incontinence — likely to be a fistula (vesicovaginal, urethrovaginal, or ureterovaginal).

o Post-void dribbling, dyspareunia, and dysuria — consider a urethral diverticulum.

- **Look for:**

o Stress urinary incontinence.

o During pelvic examination, ask the woman to cough with a full bladder and observe the external urethral meatus for leakage at the time of the first cough.

o The absence of urine leakage on coughing does not rule out stress urinary incontinence; this may be due to an empty bladder. Sometimes a full bladder may cause urethral obstruction and an absence of stress urinary incontinence. A cough may also precipitate a detrusor contraction.

o Cystourethrocele.

o Over 50% of women with stress urinary incontinence have a cystourethrocele.

o Chronic urinary retention (overflow incontinence).

o Examine the abdomen for a palpable bladder. However, an enlarged bladder may be difficult to palpate.

o Urethral diverticulum.

o During vaginal examination, feel for a soft, tender mass on the anterior vaginal wall and look for urethral discharge or tenderness.

- **Tests:**

o No laboratory tests are necessary to determine whether the woman has stress urinary incontinence or urgency incontinence.

o A residual urine measurement is needed to diagnose chronic urinary retention (overflow incontinence).

o Formal urodynamic testing (multichannel cystometry) is not recommended before starting conservative treatment.

o Tests of urethral competence, magnetic resonance imaging, and cystoscopy are not recommended in the initial assessment of women with urinary incontinence.

In depth

How do I identify any causes or conditions that are exacerbating the incontinence?

To identify any causes or conditions that may exacerbate urinary incontinence or overactive bladder:

- **Perform dipstick analysis of the urine** in all women presenting with urinary incontinence to test for active infection and glycosuria.

  - If the woman has symptoms of a urinary tract infection (UTI) and dipstick analysis is positive for both leukocytes and nitrites, send a mid-stream urine sample (MSU) and offer an antibiotic whilst waiting for the culture result.

  - If the woman has symptoms of a UTI and dipstick analysis is positive for either leukocytes *or* nitrites (but not both), send an MSU and consider offering an antibiotic whilst waiting for the culture result.

  - If the woman has symptoms of a UTI and dipstick analysis is negative for both nitrites and leukocytes, depending on clinical symptoms, decide whether to send an MSU and whether to offer an antibiotic.

  - If the woman has no symptoms of a UTI and dipstick analysis is positive for both leukocytes and nitrites, send an MSU and do not offer antibiotics without the result of the urine culture.

  - If the woman has no symptoms of a UTI and dipstick analysis is negative for either leukocytes or nitrites or both, do not routinely send an MSU and do not offer antibiotics.

- **Perform a vaginal examination.**

  - Test for weak pelvic musculature by asking the woman to squeeze the examining finger to assess the strength and endurance of muscle tone.

  - Look for evidence of pelvic organ prolapse — central (vault), anterior (cystocele), or posterior (rectocele), and atrophic vaginitis.

  - Look for a pelvic mass.

- **Ask about previous investigations and treatment, urinary tract disorders, low spinal surgery, previous surgery for incontinence, prolapse or hysterectomy, ano-rectal problems, and obstetric history.**

  - Previous surgery for urinary incontinence or pelvic organ prolapse may interfere with the normal support mechanisms of the vagina and urethra.

- **Consider whether medication** (including over-the-counter medication, such as herbal diuretics) could be causing or exacerbating the incontinence.

- Consider other factors, such as:

- Obesity.
- Smoking.
- High fluid, alcohol, and caffeine intake.
- Constipation.

- **Consider and look for neurological conditions** (particularly if there is urgency and/or chronic urinary retention [overflow incontinence]).
- **Consider and look for systemic disease,** such as heart failure and diabetes mellitus (particularly if there is urgency incontinence and nocturia).
- **In elderly women in particular, look for cognitive impairment** and consider the effect of restricted mobility and dexterity.

In depth

How do I determine how severe the incontinence is?

- Ask how often the woman is incontinent, at what times, and during which activities.
- Ask about the use of pads or changing of clothing.
- Ask the woman whether she restricts her daily fluid intake and how often she passes urine, including at night.
- Ask the woman to keep a bladder diary for 3 days to document the amount and types of fluids drunk, individual voided volume, frequency of micturition, episodes of incontinence, and pad and clothing changes. Ask her also to record episodes of urgency.
- Ask about associated symptoms, such as daytime and night-time urinary frequency.

In depth

How do I determine the effect of the incontinence on the woman's quality of life?

- Ask about the effect on her social life.
- Ask about the effect on sexual function.
- Consider using an assessment tool, such as the International Consultation on Incontinence Questionnaire.
- Also assess desire for treatment, and expectations and motivation.

In depth

Who should I refer for further investigations?

- Refer urgently (within 2 weeks) to a urologist if the woman has:

o Macroscopic (visible) haematuria without urinary tract infection.

o Unexplained microscopic (non-visible) haematuria and is 50 years of age or older.

o Recurrent or persistent urinary tract infection with haematuria and is 40 years of age or older.

o A suspected malignant mass arising from the urinary tract or pelvis.

- Refer to an appropriate specialist (urologist or urogynaecologist), using clinical judgement to determine urgency, if there is:

o A bladder that is palpable on abdominal or bimanual examination after voiding and/or chronic urinary retention (overflow incontinence)/voiding difficulties. The post-void residual volume will need to be measured.

o Symptomatic pelvic organ prolapse that is visible at or below the introitus.

o Persistent bladder or urethral pain (refer urgently if cancer is suspected).

o A pelvic mass that is clinically benign, such as uterine enlargement.

o Associated faecal incontinence.

o Suspected or known neurological disease.

o Suspected urogenital fistula.

o A history of previous prolapse surgery, incontinence surgery, pelvic cancer surgery, or previous radiation therapy.

o Recurrent urinary tract infection.

o Microscopic (non-visible) haematuria in a woman who is younger than 50 years of age.

o Refer to a renal physician if there is also proteinuria or raised serum creatinine levels.

o Refer non-urgently to a urologist if there is no proteinuria and serum creatinine level is normal.

o Complex comorbid medical disease and multiple medications.

In depth

Incontinence - urinary, in women - Management

Scenario: Management of a woman with predominantly stress incontinence

What lifestyle advice should I give to a woman with stress urinary incontinence or urgency incontinence?

- Advise, and give information on, weight loss if the woman has a body mass index of 30 kg/m^2 or greater (see the CKS topic on Obesity).
- Advise the woman to avoid drinking either excessive amounts, or small amounts, of fluid each day. The recommended daily intake is six to eight glasses of water (or other fluid).
- Although there is no evidence that modification of other behaviours improves incontinence symptoms, consider providing advice on regulating bowel habit, stopping smoking, or increasing physical exercise. Improving mobility may be helpful to disabled elderly women.

In depth

Should I recommend the use of absorbent pads or containment devices?

- Reserve the use of absorbent products for the following circumstances:
  - To cope with urinary leakage whilst awaiting assessment and treatment.
  - To contain leakage whilst awaiting response to ongoing treatment.
  - For women with severe cognitive or mobility impairment that precludes further assessment or treatment.
  - For long-term management only after all treatment options have been explored.
- If appropriate, refer to a continence adviser or the district nursing service to enable provision of the most suitable daytime and night-time protection (such as pads).
- If the woman is keen to purchase an intravaginal or intraurethral device, advise that they may only be used occasionally to prevent incontinence (such as during physical exercise).
- Do not recommend the use of menstrual tampons for incontinence.
- Ring pessaries are not recommended.

In depth

How should I manage a woman whose symptoms are predominantly of stress urinary incontinence?

- Refer to a gynaecologist or urogynaecologist if there is associated prolapse that is symptomatic or visible at or below the introitus.

- **Otherwise, refer to an appropriate practitioner for full assessment and consideration for a programme of supervised pelvic floor muscle training** (PFMT) that should ideally last for at least 3 months. Women require an individualized programme based on assessment.

  - Digital assessment of pelvic floor muscle contraction should be done before implementation of a PFMT programme.

  - At a minimum, eight pelvic floor muscle contractions should be performed at least three times a day.

  - The woman should be reviewed after 12 weeks or as required to assess response.

  - The woman should be advised to continue taught PFMT exercises if she is experiencing sufficient benefit.

  - The use of weighted vaginal cones or multicomponent behavioural therapy (bladder training plus PFMT) may improve the outcome of PFMT, but requires specialist provision and high levels of motivation in the woman.

  - Biofeedback may assist motivation, and electrical stimulation may be of help to women who cannot initiate a pelvic floor muscle contraction.

- **If initial conservative treatments fail or if the woman expresses a preference,** consider:

  - Referring to a urologist, urogynaecologist, or gynaecologist for urodynamic investigations and surgery. See Secondary care treatments for stress urinary incontinence.

  - Offering duloxetine as a second-line treatment, but only if the woman prefers pharmacological to surgical treatment or is not suitable for surgical treatment.

- **Drug treatment with alpha 1A-adrenoreceptor agonists (for example, pseudoephedrine) is not recommended.**

- **In frail elderly people:**

o Treat any reversible causes or contributing factors to stress urinary incontinence (such as cognitive impairment, urinary tract infection, excess fluid intake, restricted mobility, constipation, or adverse effects of medications).

o Take into account desire and suitability for treatment. Where appropriate, refer for full assessment and consideration of PFMT.

o Refer where appropriate to a continence adviser, the district nursing team, or elderly care team for specialist assessment for the management of incontinence.

In depth

Prescriptions

Duloxetine (second line treatment)

Age from 18 years onwards

Duloxetine capsules: 40mg twice a day

Duloxetine 40mg gastro-resistant capsules
Take one capsule twice a day.
Supply 56 capsules.

Age: from 18 years onwards
NHS cost: £30.80
Licensed use: yes
Black triangle

Start duloxetine caps: 20mg twice a day (if intolerant to 40mg)

Duloxetine 20mg gastro-resistant capsules
Take one capsule twice a day for 14 days.
Supply 28 capsules.

Age: from 18 years onwards
NHS cost: £15.40
Licensed use: yes
Black triangle

Patient information: After 2 weeks the dose should be increased to 40mg twice a day.

Incontinence - urinary, in women - Management

Scenario: Management of a woman with predominantly urgency incontinence or overactive bladder

What lifestyle advice should I give to a woman with stress urinary incontinence or urgency incontinence?

- Advise, and give information on, weight loss if the woman has a body mass index of 30 kg/m^2 or greater (see the CKS topic on Obesity).

- Advise the woman to avoid drinking either excessive amounts, or small amounts, of fluid each day. The recommended daily intake is six to eight glasses of water (or other fluid).

- Although there is no evidence that modification of other behaviours improves incontinence symptoms, consider providing advice on regulating bowel habit, stopping smoking, or increasing physical exercise. Improving mobility may be helpful to disabled elderly women.

In depth

Should I recommend the use of absorbent pads or containment devices?

- Reserve the use of absorbent products for the following circumstances:

o To cope with urinary leakage whilst awaiting assessment and treatment.

o To contain leakage whilst awaiting response to ongoing treatment.

o For women with severe cognitive or mobility impairment that precludes further assessment or treatment.

o For long-term management only after all treatment options have been explored.

- If appropriate, refer to a continence adviser or the district nursing service to enable provision of the most suitable daytime and night-time protection (such as pads).

- If the woman is keen to purchase an intravaginal or intraurethral device, advise that they may only be used occasionally to prevent incontinence (such as during physical exercise).

- Do not recommend the use of menstrual tampons for incontinence.

- Ring pessaries are not recommended.

In depth

How should I manage a woman whose symptoms are predominantly of urgency incontinence associated with overactive bladder syndrome?

- **Treat any conditions that may be causing or contributing to the symptoms,** including:

o Lower urinary tract conditions (such as urinary tract infection).

o Neurological conditions (such as Parkinson's disease and multiple sclerosis).

- Systemic conditions (such as congestive heart failure and diabetes mellitus).
- Functional and behavioural disorders (such as impaired mobility and excess alcohol use).
- Adverse effects of medication (such as rapid-acting diuretics).

- Recommend caffeine reduction if appropriate.

- **Refer women with an overactive bladder with or without urgency incontinence, and those with mixed urinary incontinence, to an appropriate practitioner** for a full assessment and consideration of bladder training for a minimum of 6 weeks.

- **If bladder training is ineffective, offer to add in immediate-release oxybutynin** with upward dose titration from an initial low dose. Encourage the woman to persist with bladder training.

- **If immediate-release oxybutynin is not tolerated, consider other antimuscarinic drugs** (darifenacin, fesoterodine, solifenacin, tolterodine, and trospium) or an alternative formulation of oxybutynin (modified-release tablets or transdermal patches).

- **If antimuscarinic drugs are prescribed:**

- Counsel the person regarding the adverse effects of these drugs — particularly elderly people, who are more prone to the antimuscarinic adverse effects (see below).
- Review after 6 weeks' treatment to assess the balance between beneficial and adverse effects.
- If beneficial, review treatment after 6 months to assess whether it is still needed.
- Continue treatment for as long as benefit is maintained and the woman wishes for it to be continued.

- Consider:

- **Propiverine** to treat frequency in women with an overactive bladder without incontinence.
- **Intravaginal oestrogen therapy** (but not systemic hormone replacement therapy) with PFMT or other treatments in postmenopausal women with vaginal atrophy, urethral pain, or dysuria.
- Review at least annually to re-assess the need for continued treatment and to monitor for symptoms of endometrial hyperplasia or carcinoma in women with a uterus.
- Long-term treatment may be required. Consider seeking specialist advice if uncertain how long to prescribe intravaginal oestrogen therapy for.

- **Desmopressin** (unlicensed use) if the woman has troublesome nocturia and is younger than 65 years of age without cardiovascular disease. Advise restriction of night-time intake of fluid to reduce the risk of fluid retention and water intoxication. With desmopressin, measure serum sodium (particularly in elderly people and in people at risk of hyponatraemia):
  - Before starting treatment.
  - 72 hours after starting treatment.
  - If unwell.
  - If medications change.
  - If hyponatraemia is suspected.

- **If conservative measures fail, refer for urodynamic investigations** and consideration of sacral nerve stimulation, treatment with botulinum toxin, or surgery. See Secondary care treatments for urgency incontinence.

- **In frail elderly people:**
  - Take into account cognitive function, mobility, dexterity, desire for treatment, and expectation.
  - Where appropriate, refer for a full assessment and consideration for bladder training.
  - Review current medication. Consider adding an antimuscarinic; start at the lowest dose, as adverse effects, particularly confusion, are more common in elderly people. Be aware that antimuscarinic drugs may affect cognitive function in elderly people (particularly if cognitive impairment is already present — for example dementia) and monitor regularly for this.
  - Refer where appropriate to a continence adviser, the district nursing team, or elderly care team for specialist assessment for the management of incontinence.

- For some women with urgency incontinence who have cognitive impairment, limited mobility, or both, the use of toilet-assisted protocols, such as prompted or timed voiding, can be helpful.

- **The following treatments are not recommended:**
  - Propantheline, flavoxate, or imipramine.
  - Diuretics. However, these are needed if there is nocturnal polyuria secondary to cardiac failure.
  - Complementary therapies (acupuncture, hypnosis, herbal medicines).

In depth

Prescriptions

First line antimuscarinic

Age from 18 years onwards

Start oxybutynin tablets: 5mg two to three times a day

Oxybutynin 5mg tablets
Take one tablet two to three times a day.
Supply 56 tablets.

Age: from 18 years onwards
NHS cost: £7.70
Licensed use: yes

Age from 60 years onwards

Start oxybutynin tablets (elderly): 2.5mg twice a day

Oxybutynin 2.5mg tablets
Take one tablet twice a day.
Supply 56 tablets.

Age: from 60 years onwards
NHS cost: £7.93
Licensed use: yes

Start oxybutynin tablets (elderly): 3mg twice a day

Oxybutynin 3mg tablets
Take one tablet twice a day.
Supply 56 tablets.

Age: from 60 years onwards
NHS cost: £9.15
Licensed use: yes

Second line antimuscarinics (if oxybutynin not tolerated)

Age from 18 years onwards

Start oxybutynin m/r tablets: 5mg once a day

Oxybutynin 5mg modified-release tablets
Take one tablet once a day.
Supply 30 tablets.

Age: from 18 years onwards
NHS cost: £11.48
Licensed use: yes

Start oxybutynin patches: apply one patch twice a WEEK

Oxybutynin 3.9mg/24hours patches
Apply one patch twice a week.
Supply 8 patches.

Age: from 18 years onwards
NHS cost: £27.20
Licensed use: yes

Patient information: Apply to clean, dry, unbroken skin on the abdomen, hip, or buttock. Remove after 3–4 days and apply a new patch on a different area (avoid using the same area for 7 days).

Start darifenacin m/r tablets: 7.5mg once a day

Darifenacin 7.5mg modified-release tablets
Take one tablet once a day.
Supply 28 tablets.

Age: from 18 years onwards
NHS cost: £26.13
Licensed use: yes
Black triangle

Start fesoterodine m/r tablets: 4mg once a day

Fesoterodine 4mg modified-release tablets
Take one tablet once a day.
Supply 28 tablets.

Age: from 18 years onwards
NHS cost: £25.78
Licensed use: yes
Black triangle

Patient information: Do NOT eat or drink products containing grapefruit juice whilst taking this medicine.

Start solifenacin tablets: 5mg once a day

Solifenacin 5mg tablets
Take one tablet once a day.
Supply 28 tablets.

Age: from 18 years onwards
NHS cost: £27.62
Licensed use: yes

Start tolterodine tablets: 2mg twice a day

Tolterodine 2mg tablets
Take one tablet twice a day.
Supply 56 tablets.

Age: from 18 years onwards
NHS cost: £30.56
Licensed use: yes

Start trospium tablets: 20mg twice a day

Trospium chloride 20mg tablets
Take one tablet twice a day (on an empty stomach).
Supply 60 tablets.

Age: from 18 years onwards
NHS cost: £26.00
Licensed use: yes

Desmopressin (for troublesome nocturia)

Age from 16 to 65 years

Start desmopressin tablets: 200micrograms at bedtime

Desmopressin 200microgram tablets
Take one tablet at bedtime.
Supply 30 tablets.

Age: from 16 years to 65 years
NHS cost: £30.34
Licensed use: no - off-label indication
Black triangle

Patient information: Desmopressin reduces the amount of urine produced at night-time. To avoid the body becoming overloaded with fluid, drink no more than one mug of liquid from one hour before taking the medicine to eight hours afterwards. Only drink enough to satisfy thirst. Avoid drinks that contain caffeine such as tea, coffee, hot chocolate, and cola. Stop desmopressin during any episodes of vomiting and/or diarrhoea.

Intravaginal oestrogens (postmenopausal women)

Age from 40 years onwards

Estriol 0.1% cream (500mcg estriol per application)

Ovestin 0.1% cream
Insert one applicatorful into the vagina each evening until improvement occurs. Then reduce to one applicatorful twice a week.
Supply 15 grams.

Age: from 40 years onwards
NHS cost: £4.63
Licensed use: yes

Patient information: This product may damage latex condoms and diaphragms.

Estriol 500microgram pessaries

Ortho-Gynest 500microgram pessaries
Insert one pessary into the vagina each evening, until improvement occurs. Then reduce to one pessary twice a week.
Supply 30 pessaries.

Age: from 40 years onwards
NHS cost: £9.84
Licensed use: yes

Patient information: This product damages latex condoms and diaphragms.

Estradiol 25microgram m/r pessaries

Vagifem 25microgram vaginal tablets
Insert one pessary into the vagina each evening for 2 weeks, then reduce to one pessary twice a week.
Supply 30 pessaries.

Age: from 40 years onwards
NHS cost: £17.60
Licensed use: yes

Estradiol 2mg vaginal ring (7.5mcg estradiol/24 hours)

Estring 2mg vaginal ring
Insert one ring high into the vagina and wear continuously for 3 months.
Supply 1 vaginal ring.

Age: from 40 years onwards
NHS cost: £31.42
Licensed use: yes

Patient information: This ring must be replaced every 3 months.

Conjugated oestrogens 625micrograms/gram

Conjugated oestrogens 625micrograms/g vaginal cream
Insert 1-2 grams (using the applicator) into the vagina each evening for 3 weeks. Repeat after an interval of 1 week.
Supply 42 grams.

Age: from 40 years onwards
NHS cost: £2.19
Licensed use: yes

Patient information: Start using this cream on day 5 of your cycle (or at any time if your periods have stopped). This product may damage latex condoms and diaphragms.

Propiverine (overactive bladder without incontinence)

Age from 18 years onwards

Propiverine tablets: 15mg up to three times a day

Propiverine 15mg tablets
Take one tablet up to three times a day, increased if necessary to four times a day.
Supply 84 tablets.

Age: from 18 years onwards
NHS cost: £36.67
Licensed use: yes

Incontinence - urinary, in women - Management

View all detailed answers

CKS safe practical clinical answers - *fast*

Overview of management

- Make an assessment.
  - Determine whether the woman has stress urinary incontinence, urgency incontinence associated with overactive bladder syndrome, mixed urinary incontinence, or rarely some other cause (such as chronic urinary retention [overflow incontinence] or fistula).
  - Refer if the urinary incontinence is not stress urinary incontinence, urgency incontinence associated with an overactive bladder, or mixed urinary incontinence.
  - Identify causes that may exacerbate or co-exist with urinary incontinence or that may need referral for further investigations. Perform a dipstick analysis of the urine in all women presenting with urinary incontinence to test for blood, leukocytes, protein, nitrites, and glucose.
  - Determine how severe the incontinence is.
  - Determine the effect of the incontinence on the the woman's quality of life.
- Advise:
  - Weight loss if the woman's body mass index is greater than 30 kg/m^2.
  - Adjustment of fluid intake if it is excessively high or low.
- Treat any underlying causes. In frail elderly women, particularly look for delirium and restricted mobility.
- Management depends on the predominant cause.
  - Dominant symptoms and signs of stress urinary incontinence:
  - Refer for full assessment and consideration for a programme of supervised pelvic floor muscle training for at least 3 months.
  - If conservative treatment fails or if the woman expresses a preference, offer referral to a urologist, urogynaecologist, or gynaecologist.
  - Consider offering duloxetine as a second-line treatment if the woman prefers pharmacological to surgical treatment or is not suitable for surgical treatment.

- Dominant symptoms of urgency incontinence associated with overactive bladder syndrome:
- Recommend caffeine reduction if appropriate.
- Refer for full assessment and consideration of bladder training for a minimum of 6 weeks.
- If ineffective, offer immediate-release oxybutynin. If this is not tolerated, consider other antimuscarinic drugs (darifenacin, fesoterodine, solifenacin, tolterodine, and trospium) or an alternative formulation of oxybutynin (modified-release tablets or transdermal patches).
- Consider propiverine to treat frequency without urinary incontinence, intravaginal oestrogen for postmenopausal women with vaginal atrophy, and desmopressin for troublesome nocturia.
- If conservative measures fail, refer for urodynamic investigations and consideration of sacral nerve stimulation, treatment with botulinum toxin, or surgery.

- Recommend the use of absorbent pads or containment devices only when appropriate.

How do I assess a woman who has incontinence?

- To assess a woman who has urinary incontinence or urgency:
- Determine what type of incontinence the woman has (stress urinary incontinence, urgency incontinence associated with overactive blabber, overflow incontinence, or incontinence from another cause), and
- Identify any causes or conditions that are exacerbating the urinary incontinence or overactive bladder, and
- Determine how severe the incontinence is, and
- Determine the effect of the incontinence on the woman's quality of life.

How do I determine what type of incontinence my patient has?

- **Categorize the symptoms as stress urinary incontinence, urgency incontinence, mixed urinary incontinence, or incontinence due to another cause** (such as a fistula, urethral diverticulum or chronic urinary retention).
- **From the history:**
- Determine whether the incontinence occurred:
- When coughing, sneezing, lifting, or exercising — likely to be stress urinary incontinence.

- When there was sudden urgency, or the person felt that they needed to empty their bladder but could not reach the toilet fast enough, often accompanied by frequency and nocturia — likely to be urgency incontinence associated with overactive bladder syndrome.
- If symptoms of stress urinary incontinence and urgency incontinence both occur — likely to be mixed urinary incontinence.
- If the incontinence is associated with neither of the above (this is rare), ask about:
- Voiding difficulty (hesitancy, straining to void, poor or intermittent urinary stream, and recurrent dribbling incontinence) — likely to be chronic urinary retention (overflow incontinence).
- Constant passive leakage of urine and often total incontinence — likely to be a fistula (vesicovaginal, urethrovaginal, or ureterovaginal).
- Post-void dribbling, dyspareunia, and dysuria — consider a urethral diverticulum.

- **Look for:**

- Stress urinary incontinence.
- During pelvic examination, ask the woman to cough with a full bladder and observe the external urethral meatus for leakage at the time of the first cough.
- The absence of urine leakage on coughing does not rule out stress urinary incontinence; this may be due to an empty bladder. Sometimes a full bladder may cause urethral obstruction and an absence of stress urinary incontinence. A cough may also precipitate a detrusor contraction.
- Cystourethrocele.
- Over 50% of women with stress urinary incontinence have a cystourethrocele.
- Chronic urinary retention (overflow incontinence).
- Examine the abdomen for a palpable bladder. However, an enlarged bladder may be difficult to palpate.
- Urethral diverticulum.
- During vaginal examination, feel for a soft, tender mass on the anterior vaginal wall and look for urethral discharge or tenderness.

- **Tests:**

- No laboratory tests are necessary to determine whether the woman has stress urinary incontinence or urgency incontinence.

- A residual urine measurement is needed to diagnose chronic urinary retention (overflow incontinence).
- Formal urodynamic testing (multichannel cystometry) is not recommended before starting conservative treatment.
- Tests of urethral competence, magnetic resonance imaging, and cystoscopy are not recommended in the initial assessment of women with urinary incontinence.

Basis for recommendation

Recommendations on history taking and examination

- These recommendations are based on expert advice found in guidelines from the National Institute for Health and Clinical Excellence (NICE) [National Collaborating Centre for Women's and Children's Health, 2006] the Canadian Urological Association [Canadian Urological Association et al, 2006] the American College of Obstetrics and Gynaecologists [American College of Obstetrics and Gynecologists, 2005], a study group statement from the Royal College of Obstetricians and Gynaecologists [RCOG, 2002], in review articles [DTB, 2001; O'Neil and Gilmour, 2003; Rogers, 2008] and a textbook [Drife and Magowan, 2004].

Palpation of the bladder

- The sensitivity of bimanual examination is poor. One study [Nygaard, 1996] compared bimanual examination with catheterization. Volumes of post-void residual urine were estimated for 50 women with urinary incontinence by bimanual examination and then immediately by catheterization. Only one of the seven women who had post-void urine greater than 50 mL was detected by bimanual examination. Therefore, bimanual examination had a sensitivity of 14%, specificity of 67%, positive predictive value of 7%, and negative predictive value of 82%.

Recommendations on testing

- Expert opinion from NICE [National Collaborating Centre for Women's and Children's Health, 2006] is that evidence is sufficient to recommend that urodynamic testing is not required before initiating conservative treatment in women with urinary incontinence.
- NICE [National Collaborating Centre for Women's and Children's Health, 2006] does not recommend:
  - Cystoscopy as part of the initial assessment, as available evidence does not support its role.

- Routine use of magnetic resonance imaging, computed tomography, radiography, or ultrasonography, as evidence for their use is lacking.
- Tests for urethral incompetence (Q-tip, Bonney, Marshall, and fluid-bridge tests).

How do I identify any causes or conditions that are exacerbating the incontinence?

To identify any causes or conditions that may exacerbate urinary incontinence or overactive bladder:

- **Perform dipstick analysis of the urine** in all women presenting with urinary incontinence to test for active infection and glycosuria.
  - If the woman has symptoms of a urinary tract infection (UTI) and dipstick analysis is positive for both leukocytes and nitrites, send a mid-stream urine sample (MSU) and offer an antibiotic whilst waiting for the culture result.
  - If the woman has symptoms of a UTI and dipstick analysis is positive for either leukocytes *or* nitrites (but not both), send an MSU and consider offering an antibiotic whilst waiting for the culture result.
  - If the woman has symptoms of a UTI and dipstick analysis is negative for both nitrites and leukocytes, depending on clinical symptoms, decide whether to send an MSU and whether to offer an antibiotic.
  - If the woman has no symptoms of a UTI and dipstick analysis is positive for both leukocytes and nitrites, send an MSU and do not offer antibiotics without the result of the urine culture.
  - If the woman has no symptoms of a UTI and dipstick analysis is negative for either leukocytes or nitrites or both, do not routinely send an MSU and do not offer antibiotics.
- **Perform a vaginal examination.**
  - Test for weak pelvic musculature by asking the woman to squeeze the examining finger to assess the strength and endurance of muscle tone.
  - Look for evidence of pelvic organ prolapse — central (vault), anterior (cystocele), or posterior (rectocele), and atrophic vaginitis.
  - Look for a pelvic mass.
- **Ask about previous investigations and treatment, urinary tract disorders, low spinal surgery, previous surgery for incontinence, prolapse or hysterectomy, ano-rectal problems, and obstetric history.**

- Previous surgery for urinary incontinence or pelvic organ prolapse may interfere with the normal support mechanisms of the vagina and urethra.

- **Consider whether medication** (including over-the-counter medication, such as herbal diuretics) could be causing or exacerbating the incontinence.

- Consider other factors, such as:

- Obesity.

- Smoking.

- High fluid, alcohol, and caffeine intake.

- Constipation.

- **Consider and look for neurological conditions** (particularly if there is urgency and/or chronic urinary retention [overflow incontinence]).

- **Consider and look for systemic disease,** such as heart failure and diabetes mellitus (particularly if there is urgency incontinence and nocturia).

- **In elderly women in particular, look for cognitive impairment** and consider the effect of restricted mobility and dexterity.

Clarification / Additional information

- The strength of pelvic floor muscle contractions may be assessed digitally. The Oxford grading system is an example of a grading scale that is used to quantify the strength of the contraction.

- Proposed definitions are [Laycock and Jerwood, 2001]:

- 0 = no contraction. No discernible muscle contraction.

- 1 = flicker. A flicker or pulsation is felt under the examiner's finger.

- 2 = weak. An increase in tension is detected, without any discernible lift.

- 3 = moderate. There is lifting of the muscle belly and also elevation of the posterior vaginal wall.

- 4 = good. Increased tension and a good contraction elevate the posterior vaginal wall against resistance (pressure by the examining finger applied to the posterior vaginal wall).

- 5 = strong. Strong resistance is applied to the elevation of the posterior vaginal wall. The examiner's finger is squeezed and drawn into the vagina.
- Clinical guidelines for 'the physiotherapy management of females aged 16–65 years with stress urinary incontinence' by the Chartered Society of Physiotherapists state that the Oxford grading system has been shown to be reliable by inter-rater and test-retest reliability studies. This assessment is the key to the selection of treatment: women with a grade of 3, 4, or 5 are recommended pelvic floor muscle exercises and any other appropriate treatment available [Chartered Society of Physiotherapy, 2001].

Basis for recommendation

These recommendations reflect expert advice found in clinical guidelines from the National Institute for Health and Clinical Excellence (NICE) [National Collaborating Centre for Women's and Children's Health, 2006] and the American College of Obstetrics and Gynaecologists [American College of Obstetrics and Gynecologists, 2005], a study group statement from the Royal College of Obstetricians and Gynaecologists [RCOG, 2002], and a Drug and Therapeutics Bulletin [DTB, 2001].

Exclude urinary tract infection

- Urinary tract infection may cause frequency, urgency, and incontinence. It causes urgency incontinence more often than stress incontinence [Rogers, 2008].

Management of the results of dipstick testing

- The recommendations regarding dipstick testing of urine are in line with those of NICE [National Collaborating Centre for Women's and Children's Health, 2006], which based its recommendations regarding dipstick testing of urine on the results of an observational study (n = 265) that aimed to find out the usefulness of using urine reagent strips in screening women with urinary incontinence for urinary tract infections (UTIs) [Buchsbaum et al, 2004]. The study did not document whether the participants had symptoms of a UTI. The urine culture result was used as a gold standard, and the following were calculated:
  - Prevalence of UTI: 12%.
  - Sensitivity: 29%. The dipstick test was positive in 9 of 11 women with a UTI.
  - Specificity: 99%. The dipstick test was negative in 232 of 234 women without a UTI.
  - Positive predictive value: 82%. Of 11 women with a positive dipstick result, 9 also had a positive urine culture.

- Negative predictive value: 91%. Of 254 women with a negative dipstick result, 232 also had a negative urine culture.

- Positive predictive values increase with increasing prevalence (or prior probability) and negative predictive values decrease with increasing prevalence (or prior probability). Therefore, if the clinical judgement is that the probability of UTI is high, a negative dipstick result should not be used to exclude UTI. In other words, if the prior probability is thought to be substantial (or if the risk of complications or severe disease is thought to be substantial), consider sending a mid-stream urine sample and offering an antibiotic even when the dipstick result is negative.

Digital assessment of pelvic floor muscle contraction

- Evidence for digital pelvic floor muscle assessment is lacking. However, expert opinion from NICE is that treatment decisions will be directed by whether a woman is able to contract her pelvic floor muscles. NICE therefore recommends that routine digital assessment of pelvic floor muscle contraction should be done before the use of supervised pelvic floor muscle training for the treatment of urinary incontinence [National Collaborating Centre for Women's and Children's Health, 2006].

How do I determine how severe the incontinence is?

- **To determine how severe the incontinence is:**

- Ask how often the woman is incontinent, at what times, and during which activities.
- Ask about the use of pads or changing of clothing.
- Ask the woman whether she restricts her daily fluid intake and how often she passes urine, including at night.
- Ask the woman to keep a bladder diary for 3 days to document the amount and types of fluids drunk, individual voided volume, frequency of micturition, episodes of incontinence, and pad and clothing changes. Ask her also to record episodes of urgency.
- Ask about associated symptoms, such as daytime and night-time urinary frequency.

Clarification / Additional information

- Bladder diaries document fluid intake, how often urine is passed, ideally a measurement of how much urine is passed (or whether the amount passed is large or small), episodes of incontinence, and pad or clothing changes.

- The normal volume of urine passed per void is between 200 mL and 400 mL [Rogers, 2008], and the generally quoted average voiding frequency is four to eight times daily, including one void per night.

Basis for recommendation

Use of pads to assess severity

- The recommendation to assess severity of incontinence by asking about the use of pads is based on expert advice in a review article [O'Neil and Gilmour, 2003].
- The National Institute for Health and Clinical Excellence (NICE) evaluated 20 studies on pad testing (14 considered the test-retest reliability of pad testing and six case series measured the test-retest reliability over 24–72 hours). NICE concluded that the evidence supporting the use of pad testing is of poor quality and contradictory, but although there is no evidence for their diagnostic value, they may be useful in evaluating the outcome of treatment [National Collaborating Centre for Women's and Children's Health, 2006].

Bladder diaries

- Bladder diaries are recommended by the National Institute for Health and Clinical Excellence (NICE).

o NICE evaluated five studies that were all case series and analysed bladder diaries kept for 1 day (one study), 3 days (one study), and 7 days (three studies). NICE concluded that bladder diaries were a reliable method of quantifying urinary frequency and incontinence and were useful for assessing the outcome of treatment. Although the optimum duration of bladder diaries was unclear from the studies, NICE recommends that they should be kept for a minimum of 3 days [National Collaborating Centre for Women's and Children's Health, 2006].

- CKS expert reviewers stated that the accepted voiding frequency was a maximum of eight times in 24 hours. A study on asymptomatic women (n = 300) in the US who kept a 24 hour log of fluid intake and volume of urine voided found that the median number of voids in 24 hours was eight and that 95% of women reported voiding fewer than 13 times in 24 hours [Fitzgerald et al, 2002].
- A Health Technology Assessment found that bladder diaries were the most cost-effective method of assessing severity compared with pad testing and validated scales [Martin et al, 2006].

How do I determine the effect of the incontinence on the woman's quality of life?

- **To determine the effect of the incontinence on the woman's quality of life:**

- Ask about the effect on her social life.
- Ask about the effect on sexual function.
- Consider using an assessment tool, such as the International Consultation on Incontinence Questionnaire.

- Also assess desire for treatment, and expectations and motivation.

Basis for recommendation

- These recommendations reflect expert advice found in clinical guidelines from the National Institute for Health and Clinical Excellence (NICE) [National Collaborating Centre for Women's and Children's Health, 2006] and a Drug and Therapeutics Bulletin [DTB, 2001].
- NICE evaluated the test-retest reliability of several quality-of-life and symptom scoring scales and found good reliability for the following instruments: International Consultation on Incontinence Questionnaire (ICIQ), Stress and Urge Incontinence and Quality of Life Questionnaire (SUIQQ), Incontinence Quality of Life (I-QOL), Bristol Female Lower Urinary Tract Symptoms (BFLUTS), King's Health Questionnaire, Urinary Incontinence Severity Score (UISS), Incontinence Severity Index (ISI), and the SEAPI-QMM (an acronym for stress-related leak, emptying ability, anatomy [female], protection, inhibition, quality of life, mobility, and mental status).

Who should I refer for further investigations?

- Refer urgently (within 2 weeks) to a urologist if the woman has:
- Macroscopic (visible) haematuria without urinary tract infection.
- Unexplained microscopic (non-visible) haematuria and is 50 years of age or older.
- Recurrent or persistent urinary tract infection with haematuria and is 40 years of age or older.
- A suspected malignant mass arising from the urinary tract or pelvis.
- Refer to an appropriate specialist (urologist or urogynaecologist), using clinical judgement to determine urgency if there is:
- A bladder that is palpable on abdominal or bimanual examination after voiding and/or chronic urinary retention (overflow incontinence)/voiding difficulties. The post-void residual volume will need to be measured.

- Symptomatic pelvic organ prolapse that is visible at or below the introitus.
- Persistent bladder or urethral pain (refer urgently if cancer is suspected).
- A pelvic mass that is clinically benign, such as uterine enlargement.
- Associated faecal incontinence.
- Suspected or known neurological disease.
- Suspected urogenital fistula.
- A history of previous prolapse surgery, incontinence surgery, pelvic cancer surgery, or previous radiation therapy.
- Recurrent urinary tract infection.
- Microscopic (non-visible) haematuria in a woman who is younger than 50 years of age.
- Refer to a renal physician if there is also proteinuria or raised serum creatinine levels.
- Refer non-urgently to a urologist if there is no proteinuria and serum creatinine level is normal.
- Complex comorbid medical disease and multiple medications.

Basis for recommendation

Urgent referral

- The recommendations for urgent referral are based on expert advice from the National Institute for Health and Clinical Excellence (NICE) [National Collaborating Centre for Women's and Children's Health, 2006] and referral advice for suspected cancer from NICE [NICE, 2005].

Referral (using clinical judgement to determine urgency)

- These recommendations are based on expert advice from NICE [National Collaborating Centre for Women's and Children's Health, 2006].

Measuring the residual volume

- NICE recommends measuring the residual volume in women with suspected voiding dysfunction or with recurrent urinary tract infection. Most of these women will be referred to a urologist for further investigations. NICE recommends referral for ultrasonography of the bladder to measure the volume of

residual urine, as this is more acceptable and has less adverse effects than catheterization [National Collaborating Centre for Women's and Children's Health, 2006].

- Three studies compared portable ultrasonography with catheterization and concluded that, compared with catheterization (which is the gold standard but is less acceptable and has more adverse effects), ultrasonography was within clinically acceptable limits.
- The sensitivity of bimanual examination is poor; only one in seven women with a post-void volume greater than 50 mL is detected by bimanual examination [Nygaard, 1996].

What lifestyle advice should I give to a woman with stress urinary incontinence or urgency incontinence?

- Advise, and give information on, weight loss if the woman has a body mass index of 30 kg/m^2 or greater (see the CKS topic on Obesity).
- Advise the woman to avoid drinking either excessive amounts, or small amounts, of fluid each day. The recommended daily intake is six to eight glasses of water (or other fluid).
- Although there is no evidence that modification of other behaviours improves incontinence symptoms, consider providing advice on regulating bowel habit, stopping smoking, or increasing physical exercise. Improving mobility may be helpful to disabled elderly women.

Basis for recommendation

Weight loss if obese

- The National Institute for Health and Clinical Excellence (NICE) found consistent evidence from observational studies that obesity is associated with stress urinary incontinence and urgency incontinence, and good evidence from two randomized controlled trials that losing weight may improve symptoms.
- Intra-abdominal pressure is higher in women who are obese than in those who are not, and the chronically high pressure may weaken the pelvic floor support structures and narrow the gap between the pressure inside the bladder and the intra-abdominal pressure. Incontinence is likely if the pressure outside the bladder is higher than the pressure inside the bladder [Nygaard et al, 2002].
- NICE recommends weight loss only in women with urgency incontinence or overactive bladder. However, the Scottish Intercollegiate Guidelines Network (SIGN) recommends weight loss in overweight women with either stress urinary incontinence or urgency incontinence [SIGN, 2004].

Adjusting fluid intake if it is either excessive or inadequate

- Although evidence from poor-quality randomized controlled trials on modifying fluid intake is inconclusive, NICE [National Collaborating Centre for Women's and Children's Health, 2006] and SIGN [SIGN, 2004] have commented that both excessive and inadequate fluid intake may lead to lower urinary tract symptoms.
- A combination of low urine output and frequent voiding may reduce the functional capacity of the bladder [DTB, 2001].
- The Food Standards Agency recommends six to eight glasses of fluid a day [FSA, 2008].

Lifestyle interventions

- NICE does not make any recommendations on treating constipation, stopping smoking, or exercising because there is no evidence for their benefit. However:

o Constipation may contribute to urinary incontinence, and straining may weaken pelvic floor muscles [National Collaborating Centre for Women's and Children's Health, 2006] and cause voiding difficulties due to bladder outflow obstruction [DTB, 2001]. There is also evidence from observational studies that constipation may be associated with prolapse. Preliminary evidence suggests that chronic straining and constipation may increase the latency time of the pudendal nerve, which supplies the muscles responsible for pelvic support. Pudendal nerve damage may be partly reversible. Therefore, treating constipation may decrease urinary incontinence by improving the function of the pudendal nerve [Nygaard et al, 2002]. No studies were found on the effect of modifying bowel habit on urinary incontinence.

o Smoking is associated with urinary incontinence and overactive bladder, but there is no evidence that smoking cessation improves symptoms. However, smoking is linked to coughing, which may exacerbate stress incontinence.

o The evidence regarding physical exercise is based on observational studies and is inconclusive.

o Weak evidence from a small trial whose results did not reach statistical significance indicates that improving mobility and toileting skills in disabled elderly women may reduce the number of episodes of incontinence.

Should I recommend the use of absorbent pads or containment devices?

- Reserve the use of absorbent products for the following circumstances:

- To cope with urinary leakage whilst awaiting assessment and treatment.
- To contain leakage whilst awaiting response to ongoing treatment.
- For women with severe cognitive or mobility impairment that precludes further assessment or treatment.
- For long-term management only after all treatment options have been explored.

- If appropriate refer to a continence adviser or the district nursing service to enable provision of the most suitable daytime and night-time protection (such as pads).
- If the woman is keen to purchase an intravaginal or intraurethral device, advise that they may only be used occasionally to prevent incontinence (such as during physical exercise).
- Do not recommend the use of menstrual tampons for incontinence.
- Ring pessaries are not recommended.

Basis for recommendation

Absorbent pads

- The emphasis should always be on appropriate treatment [NPC, 1999]. Offering disposable pads prematurely can lead to psychological dependence on them and reluctance to accept active treatment [SIGN, 2004]. The National Institute for Health and Clinical Excellence (NICE) recognized that absorbent products, hand-held urinals, and toileting aids are options in women who do not wish to pursue active management but stressed that women must be fully aware of all the treatment options available in order to make a fully informed decision. NICE recommended that pads should be considered in women awaiting treatment [National Collaborating Centre for Women's and Children's Health, 2006].
- A Cochrane systematic review and a Health Technology Assessment found evidence that pads, particularly disposable insert pads, are effective in containing urinary leakage.

Referral for incontinence pads

- This is based on expert advice [DTB, 2001].

Use of containment devices

- There is limited evidence of efficacy for the use of mechanical devices to prevent incontinence. NICE found limited evidence of efficacy for Contrelle® Activgard (formerly known as the Continence Guard or

Conveen® Contiguard) and FemSoft® in the management of incontinence. Adverse effects, particularly urinary tract infection, are very common with the intraurethral device.

- Menstrual tampons used intravaginally may support the bladder neck and therefore prevent incontinence; however, there is no evidence to support their use. The manufacturers of these products state that they should be used only during menstruation.

Ring pessaries

- These are not recommended by NICE, as limited evidence does not support their use regardless of whether prolapse is present. However, some experts believe that ring pessaries are of benefit to some women and continue to fit or recommend them.

How should I manage a woman whose symptoms are predominantly of stress urinary incontinence?

- Refer to a gynaecologist or urogynaecologist if there is associated prolapse that is symptomatic or visible at or below the introitus.
- **Otherwise, refer to an appropriate practitioner for full assessment and consideration for a programme of supervised pelvic floor muscle training** (PFMT) that should ideally last for at least 3 months. Women require an individualized programme based on assessment.
  - Digital assessment of pelvic floor muscle contraction should be done before implementation of a PFMT programme.
  - At a minimum, eight pelvic floor muscle contractions should be performed at least three times a day.
  - The woman should be reviewed after 12 weeks or as required to assess response.
  - The woman should be advised to continue taught PFMT exercises if she is experiencing sufficient benefit.
  - The use of weighted vaginal cones or multicomponent behavioural therapy (bladder training plus PFMT) may improve the outcome of PFMT but requires specialist provision and high levels of motivation in the woman.
  - Biofeedback may assist motivation, and electrical stimulation may be of help to women who cannot initiate a pelvic floor muscle contraction.
- **If initial conservative treatments fail or if the woman expresses a preference,** consider:
  - Referring to a urologist, urogynaecologist, or gynaecologist for urodynamic investigations and surgery. See Secondary care treatments for stress urinary incontinence.

- Offering duloxetine as a second-line treatment, but only if the woman prefers pharmacological to surgical treatment or is not suitable for surgical treatment.

- **Drug treatment with alpha 1A-adrenoreceptor agonists (for example, pseudoephedrine) is not recommended.**

- **In frail elderly people:**

- Treat any reversible causes or contributing factors to stress urinary incontinence (such as cognitive impairment, urinary tract infection, excess fluid intake, restricted mobility, constipation, or adverse effects of medications).

- Take into account desire and suitability for treatment. Where appropriate, refer for full assessment and consideration of PFMT.

- Refer where appropriate to a continence adviser, the district nursing team, or elderly care team for specialist assessment for the management of incontinence.

Clarification / Additional information

- An appropriate practitioner will depend on local continence services and may be:

- A continence adviser/nurse specialist.

- A nurse specialist in urogynaecology.

- A physiotherapist specialising in women's health.

- The practitioner may be based in the community or in secondary care.

- Some GP practices may have a specially trained practice nurse.

Basis for recommendation

Referral for symptomatic prolapse

- This is based on expert advice in guidance from the National Institute for Health and Clinical Excellence (NICE) [National Collaborating Centre for Women's and Children's Health, 2006].

Supervised pelvic floor muscle training (PFMT)

- NICE [National Collaborating Centre for Women's and Children's Health, 2006] reviewed the evidence for PFMT and concluded that:

  - There is good evidence from well-conducted randomized controlled trials (RCTs) that daily PFMT is an effective first-line treatment in women with stress and mixed urinary incontinence. The only adverse effects are occasional pain and discomfort.

  - Clear evidence on an optimal training regimen is lacking. NICE therefore adopted the minimum number of pelvic floor exercises advised across the studies (that is, 24; eight contractions three times a day). As most studies evaluated 3 months of treatment, NICE considered this an appropriate duration of PFMT to recommend.

  - Good evidence from RCTs indicates that there is no benefit from combining PFMT with either biofeedback or electrical stimulation. Therefore, NICE has not routinely recommended the use of biofeedback or electrical stimulation with PFMT. However, NICE concluded that the support generated by biofeedback may help to motivate some women, and electrical stimulation may be of value for women who cannot initiate a pelvic floor muscle contraction.

- CKS expert reviewers stressed the importance of:

  - An individualized exercise programme.

  - Digital assessment of pelvic musculature, as not all women are suitable for PFMT.

Weighted vaginal cones

  - Although good evidence from RCTs indicates that weighted vaginal cones may be as effective as PFMT in the short term, they are not suitable for all women and there are compliance problems. NICE has therefore not recommended the use of vaginal cones. Several CKS expert reviewers commented that they may be useful in some women.

Multicomponent behaviour therapy

  - Some evidence from RCTs indicates that multicomponent behavioural therapy reduces leakage episodes, but research on direct comparisons with single-component therapies is needed. NICE has not recommended multicomponent behavioural therapy.

Follow up

- As most studies evaluated the effect of PFMT after 12 weeks, NICE [National Collaborating Centre for Women's and Children's Health, 2006] recommended that this is an appropriate duration of PFMT before

assessing its effectiveness and also advised continuing the exercises if they have been found to be beneficial.

Use of duloxetine

- NICE recommends that duloxetine be prescribed second line only to women who would not consider or are not suitable for surgical treatment.

o Although good evidence from RCTs indicates that short-term use of duloxetine in women with stress incontinence can reduce incontinence, increase the interval between voids, and improve quality of life, there is a lack of long-term effectiveness data for both PFMT and duloxetine and a lack of long-term safety data for duloxetine. Adverse effects, particularly nausea, are common.

o In addition, NICE does not recommend duloxetine as a first-line treatment for stress urinary incontinence because results from a NICE economic model suggested that PFMT is more cost effective than duloxetine alone. NICE does not recommend duloxetine as second-line treatment routinely — only if a woman prefers pharmacological to surgical treatment or is unsuitable for surgical treatment. This is based on a second economic model that suggested surgery was cost effective relative to duloxetine as a second-line treatment to PFMT.

Referral for surgery

- Surgery is an option if conservative treatments have failed. NICE recommends that urodynamic investigations are necessary for most women before surgery [National Collaborating Centre for Women's and Children's Health, 2006].

Alpha 1 A-adrenoreceptor agonists (such as pseudoephedrine)

- The Scottish Intercollegiate Guidelines Network (SIGN) does not recommend the use of alpha-adrenoreceptor agonists [SIGN, 2004]. Although weak evidence supports the use of adrenoceptor drugs in women with stress urinary incontinence compared with placebo, further trials are needed to determine their place in treatment. They have the potential for serious, although rare, adverse effects (such as cardiac arrhythmias and hypertension), as they are not selective for urethral adrenoreceptors. They are not licensed for the treatment of stress urinary incontinence in the UK.

Management of frail elderly people

- The recommendations are based on expert advice in guidelines from the European Association of Urologists [European Association of Urology, 2006] and a review article [Josephson and Ginsberg, 2004].

How should I manage a woman whose symptoms are predominantly of urgency incontinence associated with overactive bladder syndrome?

- **Treat any conditions that may be causing or contributing to the symptoms,** including:
  - Lower urinary tract conditions (such as urinary tract infection).
  - Neurological conditions (such as Parkinson's disease and multiple sclerosis).
  - Systemic conditions (such as congestive heart failure and diabetes mellitus).
  - Functional and behavioural disorders (such as impaired mobility and excess alcohol use).
  - Adverse effects of medication (such as rapid-acting diuretics).
- Recommend caffeine reduction if appropriate.
- **Refer women with an overactive bladder with or without urgency incontinence, and those with mixed urinary incontinence, to an appropriate practitioner** for a full assessment and consideration of bladder training for a minimum of 6 weeks.
- **If bladder training is ineffective, offer to add in immediate-release oxybutynin** with upward dose titration from an initial low dose.
  - Encourage the woman to persist with bladder training.
- **If immediate-release oxybutynin is not tolerated, consider other antimuscarinic drugs** (darifenacin, fesoterodine, solifenacin, tolterodine, and trospium) or an alternative formulation of oxybutynin (modified-release tablets or transdermal patches).
- **If antimuscarinic drugs are prescribed:**
  - Counsel the person regarding the adverse effects of these drugs — particularly elderly people, who are more prone to the antimuscarinic adverse effects (see below).
  - Review after 6 weeks' treatment to assess the balance between beneficial and adverse effects.
  - If beneficial, review treatment after 6 months to assess whether it is still needed.
  - Continue treatment for as long as benefit is maintained and the woman wishes for it to be continued.
- Consider:
  - **Propiverine** to treat frequency in women with an overactive bladder without incontinence.

- **Intravaginal oestrogen therapy** (but not systemic hormone replacement therapy) with PFMT or other treatments in postmenopausal women with vaginal atrophy, urethral pain, or dysuria.
- Long-term treatment may be required.
- Review at least annually to re-assess the need for continued treatment and to monitor for symptoms of endometrial hyperplasia or carcinoma in women with a uterus.
- Consider seeking specialist advice if uncertain how long to prescribe intravaginal oestrogen therapy.
- **Desmopressin** (unlicensed use) if the woman has troublesome nocturia and is younger than 65 years of age without cardiovascular disease. Advise restriction of night-time intake of fluid to reduce the risk of fluid retention and water intoxication. With desmopressin, measure serum sodium (particularly in elderly people and in people at risk of hyponatraemia):
- Before starting treatment.
- 72 hours after starting treatment.
- If unwell.
- If medications change.
- If hyponatraemia is suspected.

- **If conservative measures fail, refer to a urologist** for urodynamic investigations and consideration of sacral nerve stimulation, treatment with botulinum toxin, or surgery. See Secondary care treatments for urgency incontinence.

- **In frail elderly people:**

- Take into account cognitive function, mobility, dexterity, desire for treatment, and expectation.
- Where appropriate, refer for a full assessment and consideration for bladder training.
- Review current medication.
- Consider adding an antimuscarinic; start at the lowest dose, as adverse effects, particularly confusion, are more common in elderly people. Be aware that antimuscarinic drugs may affect cognitive function in elderly people (particularly if cognitive impairment is already present — for example dementia) and monitor regularly for this.
- Refer where appropriate to a continence adviser, the district nursing team, or elderly care team for specialist assessment for the management of incontinence.

- For some women with urgency incontinence who have cognitive impairment, limited mobility, or both, the use of toilet-assisted protocols, such as prompted or timed voiding, can be helpful.
- **The following treatments are not recommended:**
  - Propantheline, flavoxate, or imipramine.
  - Diuretics. However, these are needed if there is nocturnal polyuria secondary to cardiac failure.
  - Complementary therapies (acupuncture, hypnosis, herbal medicines).

Clarification / Additional information

Appropriate practitioner

- An appropriate practitioner will depend on local continence services and may be:
  - A continence adviser.
  - A continence nurse specialist.
  - A nurse specialist in urogynaecology.
  - A physiotherapist specialising in women's health.
- The practitioner may be based in the community or in secondary care.
- Some GP practices may have a specially trained practice nurse.

Symptoms of hyponatraemia

- Symptoms of hyponatraemia include [Baylis, 2003]:
  - Mild hyponatraemia: anorexia, headache, nausea, vomiting, lethargy, oedema.
  - Moderate hyponatraemia: personality change, muscle cramps, muscle weakness, confusion, ataxia.
  - Severe hyponatraemia: drowsiness, convulsions, coma, death.
- For more information regarding desmopressin and hyponatraemia, see Cautions and contraindications.

Basis for recommendation

Reducing caffeine

- Limited evidence indicates that reducing caffeine intake reduces frequency and urgency in women who have an overactive bladder with or without urinary incontinence [National Collaborating Centre for Women's and Children's Health, 2006].

Bladder training

- There is good evidence from randomized controlled trials (RCTs) that bladder training is effective in women with urgency or mixed urinary incontinence. The combination of bladder training with either oxybutynin or tolterodine results in a greater reduction in frequency of micturition but has not been shown to lead to further improvements in incontinence [National Collaborating Centre for Women's and Children's Health, 2006].

Antimuscarinic drugs

- Good evidence from RCTs indicates that all antimuscarinic drugs are more effective than placebo.
  - There is no evidence of any clinically important difference among different antimuscarinics; all are equally effective in improving frequency, incontinence episodes, and quality of life in women with an overactive bladder.
  - Most of the trials comparing drugs studied oxybutynin and tolterodine.
  - A dry mouth is more common with immediate-release oxybutynin than with tolterodine, trospium, extended-release oxybutynin, or transdermal oxybutynin.
- The National Institute for Health and Clinical Excellence (NICE) adopted a cost minimization approach and therefore recommends immediate-release oxybutynin as first choice.
  - However, NICE advised that if immediate release oxybutynin is not well tolerated, darifenacin, solifenacin, tolterodine, trospium, or a modified-release or transdermal formulation of oxybutynin should be considered as an alternative.
- Fesoterodine was not available when the NICE guideline was developed. Fesoterodine is a prodrug which is converted in the body to its active metabolite, tolterodine. Two trials have been identified: one study compared fesoterodine to placebo and found it to be more effective than placebo, and the other study compared it with tolterodine [Chapple et al, 2007; Nitti et al, 2007]. Both studies had high dropout rates, and the second study was not powered to detect a difference between fesoterodine and tolterodine [NHS Scotland, 2008; Regional Drug and Therapeutics Centre, 2008]. Fesoterodine is currently a 'black triangle' drug (it is under intensive monitoring by the Medicines and Healthcare products Regulatory Agency [MHRA]). Many CKS expert reviewers recommend its use.

Antimuscarinic drugs and cognitive adverse effects in elderly people

- Although antimuscarinic drugs may affect cognitive function in elderly people [Wagg, 2008; BNF 57, 2009], CKS found little evidence to support one antimuscarinic drug over another in minimizing cognitive adverse effects in elderly people.

  - A literature review on urinary incontinence in older women examined the impact of newer antimuscarinic drugs on cognitive function, in people without cognitive problems and in artificial environments, with increasing dose titration [Wagg, 2008]. The review found no studies investigating the effect of long-term dosing on cognitive function (particularly elderly people) [Wagg, 2008].
  - A systematic review found that antimuscarinics were not significantly associated with serious adverse events [Chapple et al, 2008].
  - Some CKS expert reviewers recommended that antimuscarinic drugs with higher potential to cross the blood-brain barrier (for example oxybutynin) should not be used in elderly people.
  - Given that all antimuscarinic drugs are known to cause cognitive adverse effects, CKS recommends regular monitoring of these drugs when used in elderly people, and to consider substituting for an alternative drug if cognitive adverse effects are an issue.

Follow up

- The recommendations on when to review after starting an antimuscarinic drug are based on expert opinion in national guidance [SIGN, 2004] and from CKS expert reviewers.

Propiverine

- A randomized study (n = 185) evaluated four different daily doses of propiverine (15 mg, 30 mg, 45 mg, and 60 mg) and found a reduction in urinary frequency in all dosage groups. Blurred vision and dry mouth were the most common adverse effects. The optimum dose for subjective efficacy and tolerability was 30 mg daily [National Collaborating Centre for Women's and Children's Health, 2006].

Short-term topical rather than systemic oestrogens

- There is good evidence from RCTs that the short-term use of intravaginal oestrogens may improve incontinence and frequency in postmenopausal women with vaginal atrophy. There is no evidence of benefit for systemic oestrogens alone, or combined with progesterone, in postmenopausal women with urinary incontinence [National Collaborating Centre for Women's and Children's Health, 2006].

- Most CKS expert reviewers advised that intravaginal oestrogens may be used in women with vaginal atrophy at the same time as other treatment, including bladder training.
- CKS recommends that healthcare professionals should consider seeking specialist advice before prescribing intravaginal oestrogens long term or repeatedly because the benefits and safety of long-term or repeated use of topical intravaginal oestrogen are uncertain.
  - The British National Formulary recommends treatment should be reviewed at least annually to monitor for symptoms of endometrial hyperplasia or carcinoma [BNF 57, 2009].
  - Some CKS expert reviewers suggested prescribing long term, whereas others suggested a break after 3 months before repeating the course in women with a uterus.

Desmopressin

- There is good evidence from RCTs that desmopressin significantly reduces nocturia but insufficient evidence that it reduces incontinence in women. It acts by reducing urinary output and is not a specific treatment for urgency. It can be used in addition to other treatments.
- Hyponatraemia is common. NICE warns that hyponatraemia may be more common in elderly women. As hyponatraemia is also more likely to occur soon after starting treatment, NICE recommends pretreatment and early post-treatment monitoring of serum sodium [National Collaborating Centre for Women's and Children's Health, 2006].
- The symptoms of hyponatraemia are standard clinical advice in the Oxford Textbook of Medicine [Baylis, 2003].
- Several CKS expert reviewers advised that for women younger than 65 years of age, desmopressin:
  - Can be used in addition to other treatments if the woman has troublesome nocturia.
  - Should be used cautiously long term.
- CKS recommends seeking specialist advice if more than 3 months of treatment is planned.

Treatments not recommended

- Flavoxate, propantheline, and imipramine in women with urinary incontinence or overactive bladder are not recommended, as there is no evidence for their effectiveness [National Collaborating Centre for Women's and Children's Health, 2006].
- No good RCTs are available to support the use of imipramine, and its cardiotoxic adverse effects limit its use [SIGN, 2004].

- The evidence is insufficient to support the use of diuretics for the treatment of nocturia [National Collaborating Centre for Women's and Children's Health, 2006].
- The use of complementary therapies is not recommended, as evidence on their use is insufficient [National Collaborating Centre for Women's and Children's Health, 2006].

Referral if conservative treatments fail

- This recommendation reflects expert advice [National Collaborating Centre for Women's and Children's Health, 2006].

Management of frail elderly people

- The recommendations are based on expert advice in guidelines from the European Association of Urologists [European Association of Urology, 2006] and a review article [Josephson and Ginsberg, 2004]. Elderly people may be taking several different medications, all with antimuscarinic adverse effects, and this may lead to antimuscarinic overload [Josephson and Ginsberg, 2004].

Timed voiding and prompted voiding

- There is limited evidence that prompted voiding and timed voiding reduces the number of incontinence episodes in cognitively impaired men and women [National Collaborating Centre for Women's and Children's Health, 2006].

What treatment might be offered in secondary care to a woman with stress urinary incontinence in whom conservative measures have failed?

- The following treatments are recommended by the National Institute for Health and Clinical Excellence (NICE):
  - Retropubic mid-urethral tape procedures using a 'bottom up' approach. Open colposuspension and autologous rectal fascial sling are recommended alternatives.
  - Synthetic slings using a retropubic 'top down' approach or a transobturator foramen approach are also alternatives, provided the woman is made aware of the lack of long-term outcome data. Long-term complications include voiding difficulties and the development of urgency and urge incontinence.
  - Intramural urethral bulking agents are also an acceptable alternative, provided the woman is made aware that:

- Adverse effects are common but mainly transient and include acute retention, haematuria, dysuria, frequency, and urinary tract infection.
- Repeat injections may be required to achieve efficacy.
- Efficacy diminishes with time.
- The procedure is not as effective as a retropubic suspension or sling.
- An artificial urinary sphincter should be recommended only if previous surgery failed. Subjective cure rates are high, but:
- Adverse effects included pump malfunction and urinary retention.
- Device removal and revision were common.

- NICE does not recommend:
- Laparoscopic colposuspension as a routine procedure.
- Anterior colporrhaphy, needle suspensions, paravaginal defect repair, and the Marshell–Marchetti–Krannz procedure.

Clarification / Additional information

- Treatment aims to augment urethral closure or support or stabilize the bladder neck or urethra.
- **Operations that augment urethral sphincter closure include:**
- Injection of urethral bulking agents into the submucosal tissue of the urethra or bladder neck aims to prevent stress incontinence by increasing the resistance to flow.
- Artificial urinary sphincters: an occlusive cuff is inserted around the urethra and, when inflated, exerts a constant closure pressure which is maintained by an inflated pressure-regulated balloon. When the woman wishes to pass urine, she manually operates a small pump in the labium.

- **Procedures to stabilize the bladder neck and urethra include:**
- Procedures that prevent the downward displacement of the urethra by using sutures to secure the paraurethral or vaginal tissues to a fixed structure, such as Burch colposuspension, the Marshall–Marchetti–Kranz procedure, and the vaginal obturator shelf procedure.

- Minimally invasive procedures that suspend the paraurethral tissues by means of a suspensory suture secured to the rectus sheath and inserted under endoscopic control, such as the Raz, Pereyra, Stamey, and Gittes procedures.
- Sling operations that stabilize the urethra by placing a strip of material around the underside of the urethra and securing it to a fixed structure above. These may be:
- Fixed to the pubic arch or rectus sheath.
- Inserted by open surgery: abdominal or combined abdominal and vaginal.
- Minimally invasive: retropubic space (from bottom upwards or from top downwards or obturator foramen [from outside inwards, or from inside outwards]).

[National Collaborating Centre for Women's and Children's Health, 2006]

Basis for recommendation

- These recommendations are based on expert advice from the National Institute for Health and Clinical Excellence (NICE) [National Collaborating Centre for Women's and Children's Health, 2006].
- Retropubic suspension procedures:
- Good evidence from randomized controlled trials (RCTs) indicates that open colposuspension is effective and has longevity. Laparoscopic colposuspension is equally effective.
- When used solely for stress incontinence, long-term outcomes are poor for anterior colporrhaphy, needle suspensions, and paravaginal defect repair. There is no evidence that the Marshell–Marchetti–Krantz procedure offers any advantage over open colposuspension.
- Synthetic slings: evidence from RCTs shows a comparable effect for open or laparoscopic colposuspension.
- Bulking agents:
- Controlled trials evaluating bulking agents are few, mainly small, and of poor quality. NICE concluded that bulking agents have poor efficacy and may be less effective than open surgery.
- Case series show that any effect declines with time.
- Artificial urinary sphincter: data are limited to cases series. Subjective cure rates are high.

What treatment might be offered in secondary care to a woman with urgency incontinence associated with overactive bladder syndrome in whom conservative measures have failed?

- The following treatments are recommended by the National Institute for Health and Clinical Excellence for women who have not responded to conservative treatments:
  - Sacral nerve stimulation in women with urgency incontinence due to detrusor overactivity.
  - Adverse effects include pain and discomfort.
  - Up to two-thirds of women achieve continence or substantial improvement in symptoms, and beneficial effects appear to persist for 3–5 years after implantation.
  - Life-long follow up is necessary.
  - Augmentation cystoplasty in women with urinary incontinence due to detrusor overactivity who are willing to self catheterize.
  - About half of women report improvement.
  - Postoperative complications are common and include bowel disturbance, metabolic acidosis, urine retention, and mucus production.
  - Many people will need to self catheterize, and the incidence of urinary tract infection is high.
  - Rarely, cancer may occur in the bowel segment.
  - Life-long follow up is recommended.
  - Urinary diversion should be considered only if sacral nerve stimulation or augmentation cystoplasty is not appropriate. Explain that:
  - Bladder infection, stoma problems, and upper urinary tract dilation are common subsequently.
  - The need for surgical revision is common.
  - Life-long follow up is recommended.
  - The place of detrusor myomectomy is unclear.
  - In one small case series, most women reported some improvement.
  - One-third of women required intermittent self catheterization.
  - Botulinum toxin type A. Explain that:

- Self-catheterization may be necessary afterwards.
- There are no long-term data.
- The use of botulinum toxin type A for idiopathic detrusor overactivity is outside its UK licence.

Clarification / Additional information

- These treatments for an overactive bladder aim to alter or modulate the nerve supply to the bladder and contractility, increase its capacity, or bypass the lower urinary tract completely. As a result, detrusor contractility is reduced in several of these procedures, and difficulty voiding is therefore a very common adverse effect. Women should be considered for these procedures only if they are willing and able to self catheterize.
- Sacral nerve stimulation:
  - Appropriate electrical stimulation of the sacral reflex pathway inhibits the reflex behaviour of the bladder.
  - Permanently implantable sacral root stimulators provide chronic stimulation to the S3 nerve roots.
  - A percutaneous nerve evaluation is done initially by inserting a needle under local anaesthetic through the sacral foramina and connecting it to an external stimulation source.
  - After a few days, people who show a satisfactory response then have a permanent implant [National Collaborating Centre for Women's and Children's Health, 2006].
- Augmentation cystoplasty:
  - The bladder wall is bivalved and a segment of bowel (usually ileum) incorporated into the defect.
- Urinary diversion:
  - The ureters are transported to an isolated segment of ileum which is used to create an ileal conduit (a permanent cutaneous stoma) into which urine drains continuously into a stoma bad attached to the abdominal wall.
- Detrusor myomectomy:
  - Detrusor muscle is excised from the fundus of the bladder, leaving the bladder mucosa intact and thus creating a permanent wide diverticulum.

Basis for recommendation

- These recommendations are from the National Institute for Health and Clinical Excellence (NICE) [National Collaborating Centre for Women's and Children's Health, 2006].
  - After considering the evidence from randomized controlled trials (RCTs), NICE concluded that there was a stronger body of evidence to support the use of sacral nerve stimulation than augmentation cystoplasty, urinary diversion, or botulinum toxin.
  - Data on augmentation cystoplasty used to treat overactive bladder or urgency incontinence are limited to case series.
  - Data on the outcomes of urinary diversion in women with urgency incontinence are limited.
  - The role of detrusor myomectomy is unclear, as all of the case series included people with both neurogenic bladder function and idiopathic detrusor overactivity.
  - Despite the limited evidence on the use of botulinum toxin, NICE recognizes that this is rapidly becoming accepted clinical practice.
- The Women's Health Specialist Library (part of the National Library for Health) has reviewed the evidence from 2006–2008 on sacral nerve stimulation in the management of overactive bladder syndrome and concluded that recent evidence supports this as an effective long-term treatment with a good safety profile and that a stronger body of evidence exists for its use than for augmentation cystoplasty, urinary diversion, or botulinum toxin type A [Women's Health Specialist Library, 2009].

View all prescribing information

CKS safe practical clinical answers - *fast*

Important aspects of prescribing information relevant to primary healthcare are covered in this section specifically for the drugs recommended in this CKS topic. For further information on contraindications, cautions, drug interactions, and adverse effects, see the electronic Medicines Compendium (eMC) (http://emc.medicines.org.uk), or the British National Formulary (BNF) (www.bnf.org).

Antimuscarinics

What dose of antimuscarinic should I prescribe?

- Antimuscarinic adverse effects can limit treatment success. Adverse effects can be reduced by starting at a low dose and gradually increasing until a satisfactory clinical response is achieved.
  - For oxybutynin [ABPI Medicines Compendium, 2007a; ABPI Medicines Compendium, 2007c]:
  - The usual starting dose is 5 mg two or three times a day.
  - In elderly women, a starting dose of 2.5 mg or 3 mg twice daily is recommended by the manufacturers of oxybutynin.
  - Increase the dose as necessary to a maximum of 5 mg four times a day.
  - Modified-release preparations are effective and have fewer adverse effects than immediate-release preparations, but they are more expensive.
  - Other antimuscarinic drugs should also be prescribed cautiously in frail and elderly people because of an increased risk of adverse effects. For further information, see Management of urgency incontinence symptoms/ overactive bladder.
  - For dosage information, see Table 1.

Clarification / Additional information

- Dosages for the various antimuscarinic preparations are listed in Table 1.

Table 1. Licensed doses of antimuscarinics drugs for incontinence.

Antimuscarinic preparations	Dose
Oxybutynin immediate-release tablets (2.5 mg, 3 mg and 5 mg)	5 mg two or three times a day, increasing to a maximum of 5 mg four times a day. In elderly women, a starting dose of 2.5 mg or 3 mg twice a day is recommended.
Oxybutynin modified-release tablets (5 mg and 10 mg) (Lyrinel XL®)	5 mg daily, increasing to 10 mg daily after 7 days if necessary. Total daily dose should not exceed 20 mg. There should be an interval of at least one week between any increase or decrease in dose.
Oxybutynin transdermal patch (releasing 3.9 mg of oxybutynin per 24 hours) (Kentera®)	One 3.9 mg transdermal patch applied twice weekly (every 3 to 4 days).
Darifenacin modified-release tablets (7.5 mg and 15 mg) (Emselex®)	7.5 mg daily, increasing to 15 mg daily after 2 weeks if necessary. For people with moderate hepatic impairment (Child–Pugh score 7–9): the dose should be restricted to 7.5 mg daily.
Fesoterodine modified-release tablets (4 mg and 8 mg) (Toviaz®)	4 mg daily, increasing to 8 mg daily if necessary. Full treatment effect was observed between 2 and 8 weeks.
Solifenacin immediate-release tablets (5 mg and 10 mg) (Vesicare®)	5 mg daily, increasing to 10 mg daily if necessary. For people with severe renal impairment (creatinine clearance 30 mL/min or less), moderate hepatic impairment (Child–Pugh score of 7–9), and if treated with a potent inhibitors of cytochrome CYP 3A4 (such as ketoconazole, itraconazole, nelfinavir, and ritonavir): do not exceed 5 mg daily.
Tolterodine immediate-release tablets (1 mg and 2 mg) (Detrusitol®)	2 mg twice a day. Reduce to 1 mg twice a day if adverse effects are troublesome. For people with impaired liver function or severe renal impairment (GFR 30 mL/min or less): 1 mg twice a day.
Tolterodine modified-release tablets (4 mg) (Detrusitol XL®)	4 mg daily. This formulation is not suitable for people with impaired liver function or severe renal impairment (GFR 30 mL/min or less).
Trospium immediate-release tablets (20 mg) (Regurin®)	20 mg twice a day (on a empty stomach). For people with severe renal impairment (creatinine clearance 10–30 mL/min/1.73 m^2): 20 mg daily or every second day.

Data from: [ABPI Medicines Compendium, 2007a; ABPI Medicines Compendium, 2007b; ABPI Medicines Compendium, 2008d; ABPI Medicines Compendium, 2008e; ABPI Medicines Compendium, 2008f; ABPI Medicines Compendium, 2008g; ABPI Medicines Compendium, 2009b; ABPI Medicines Compendium, 2009c; ABPI Medicines Compendium, 2009d]

Who should not receive an antimuscarinic?

- Do not prescribe an antimuscarinic to people with:
  - Myasthenia gravis.
  - Significant bladder outflow obstruction or urinary retention.
  - Severe ulcerative colitis.
  - Toxic megacolon.
  - Gastrointestinal obstruction.
  - Uncontrolled angle-closure glaucoma.
  - Intestinal atony.

[BNF 57, 2009]

What adverse effects of antimuscarinics should I be aware of?

- Adverse effects of antimuscarinic drugs include dry mouth, gastrointestinal disturbances, blurred vision, dry eyes, drowsiness, dizziness, fatigue, difficulty in micturition, palpitation, and skin reactions (including dry skin, rash, and photosensitivity).
- Central nervous system stimulation, manifested as restlessness, disorientation, hallucination, and convulsion, can also occur.
- Antimuscarinic drugs can very rarely precipitate angle-closure glaucoma.

[BNF 57, 2009]

Duloxetine

What dose of duloxetine should be used?

- For the management of stress urinary incontinence:
  - The recommended dose of duloxetine is 40 mg twice a day.
  - Re-assess after 2–4 weeks of treatment to evaluate the benefit and tolerability of the treatment.

- If adverse effects are likely to be a problem, consider starting treatment at a dose of 20 mg twice a day for 2 weeks before increasing to the recommended dose of 40 mg twice a day.
- For information on treatment reduction and discontinuation, see Drug withdrawal or dose reduction.

[ABPI Medicines Compendium, 2008a]

What issues should I consider when withdrawing duloxetine or reducing the dose of duloxetine?

- Advise the person not to stop treatment abruptly.
- If duloxetine treatment is to be discontinued, reduce the dose gradually over at least 1 to 2 weeks to reduce the risk of withdrawal reactions.
- If intolerable withdrawal reactions occur after a dose reduction or on stopping treatment, resume the previously prescribed dose and continue decreasing the dose more gradually.

[ABPI Medicines Compendium, 2008a]

What are the contraindications and cautions for duloxetine?

- **Duloxetine is contraindicated in people:**
  - Taking monoamine oxidase inhibitors.
  - Taking a CYP1A2 inhibitor (such as fluvoxamine or ciprofloxacin) — combination results in elevated plasma concentration of duloxetine.
  - With hepatic impairment.
  - With severe renal impairment (creatinine clearance less than 30 mL/min; approximately stage 4 CKD [chronic kidney disease]).
  - With uncontrolled hypertension — there is a potential risk of hypertensive crisis.
- **Prescribe duloxetine with caution in people with:**
  - Increased intra-ocular pressure, or those at risk of acute narrow-angle glaucoma — mydriasis has been reported in association with duloxetine.
  - Epilepsy — concomitant treatment may precipitate seizures.

- A history of mania or a diagnosis of bipolar disorder — concomitant treatment may precipitate a mixed or manic episode. If this occurs, stop treatment with duloxetine.

  [ABPI Medicines Compendium, 2008a]

Can duloxetine be used during pregnancy and breastfeeding?

- Duloxetine should not be used during pregnancy or breastfeeding.

Basis for recommendation

- Data and experience with duloxetine are insufficient to recommend its use during pregnancy or breastfeeding [Schaefer et al, 2007].
- Complications consistent with serotonin-noradrenaline reuptake inhibitor (SNRI) toxicity, a possible drug discontinuation syndrome, or serotonin syndrome have been reported in neonates exposed to SNRIs in the third trimester [Micromedex, 2009].
- The manufacturer of duloxetine (Yentreve®) recommends that duloxetine should be used in pregnancy only if the potential benefit justifies the potential risk to the fetus, and that the use of duloxetine while breastfeeding is not recommended [ABPI Medicines Compendium, 2008a].

What are the key drug interactions with duloxetine?

- Concurrent use of duloxetine with a monoamine oxidase inhibitor or a reversible inhibitor of monoamine oxidase type A is contraindicated.
- Combination with a CYP1A2 inhibitor (such as fluvoxamine or ciprofloxacin) is also contraindicated.
- Concurrent use of duloxetine with other serotonergic drugs is not recommended.

Clarification / Additional information

- Duloxetine should not be started for 2 weeks after a monoamine oxidase inhibitor (MAOI) has been stopped, or for 24 hours after a reversible inhibitor of monoamine oxidase type A (RIMA [i.e. moclobemide]) has been stopped.
- An MAOI or RIMA should not be started for at least 1 week after duloxetine has been stopped.

  [Taylor et al, 2007]

Basis for recommendation

- Concurrent use of duloxetine with monoamine oxidase inhibitors and reversible inhibitors of monoamine oxidase type A can cause very toxic and sometimes fatal reactions similar to serotonin syndrome [Baxter, 2008].
- Concurrent use of duloxetine with selective serotonin reuptake inhibitors, tricyclic antidepressants, St John's wort, venlafaxine, triptans, tramadol, pethidine, and tryptophan can rarely cause serotonin syndrome [Baxter, 2008].
- Combination with a CYP1A2 inhibitor (such as fluvoxamine or ciprofloxacin) is not recommended by the manufacturer of duloxetine because this results in elevated plasma concentration of duloxetine [ABPI Medicines Compendium, 2008a].

What adverse effects of duloxetine should I be aware of?

- The most common adverse effects seen in clinical trials were nausea, dry mouth, fatigue, and constipation, which usually occur in the first week of treatment.
- Duloxetine treatment is associated with small increases in blood pressure (BP).
  - Monitor BP in people with known hypertension or other cardiac disease and those whose conditions could be affected by an increase in BP (see the section on Monitoring in the CKS topic on Neuropathic pain - drug treatment).
  - Consider reducing the dose or gradual discontinuation in people who experience a sustained increase in BP while taking duloxetine.
- Hyponatraemia is associated with all types of antidepressants (duloxetine is a serotonin-noradrenaline reuptake inhibitor).
  - Consider hyponatraemia if the person develops dizziness, drowsiness, confusion, nausea, muscle cramps, or seizures.
  - If hyponatraemia is suspected, stop duloxetine and manage according to severity and duration of symptoms, and state of hydration.
- Bleeding abnormalities have been reported with serotonin-noradrenaline reuptake inhibitors.

- This risk is increased in people who are also taking low-dose aspirin or nonsteroidal anti-inflammatory drugs (NSAIDs) — consider gastroprotection for people who are prescribed duloxetine with an NSAID or aspirin.
- This increased risk may also apply to those who are very old or those with a history of gastrointestinal bleeding — consider using an alternative drug in these groups.
- Exercise caution in people taking warfarin.

- Suicidal thoughts and suicide attempts have rarely been reported during duloxetine treatment or early after stopping treatment.
- Advise people to seek medical advice immediately if they notice any changes in mood, increased anxiety and agitation, negativity and hopelessness, or suicidal ideation.

- Treatment with duloxetine has been associated with an increase in fasting plasma glucose.
- The clinical significance of this is not clear, but it may be prudent to monitor blood glucose in people who are taking duloxetine to treat painful diabetic neuropathy.

[ABPI Medicines Compendium, 2008a]

Clarification / Additional information

- Recent data has shown high discontinuation rates during the first 4 weeks of duloxetine treatment caused by adverse effects [Women's Health Specialist Library, 2009].

Basis for recommendation

- Duloxetine has been associated with small increases in blood pressure and clinically significant hypertension in some people [ABPI Medicines Compendium, 2008a; Micromedex, 2009].
- In clinical trials, treatment with duloxetine led to a mean increase in blood pressure of up to 2.1 mmHg systolic and 2.3 mmHg diastolic, compared with placebo.
- Cases of hypertensive crisis have been reported with duloxetine, especially in people with pre-existing hypertension.

- The recommendation regarding antidepressants and hyponatraemia is in line with advice from the Committee on Safety of Medicines (now the Commission on Human Medicines) [MHRA, 1994].

- Most of the evidence for an increased risk of bleeding is from observational studies of selective serotonin reuptake inhibitors (SSRIs) [de Abajo et al, 1999; van Walraven et al, 2001; Dalton et al, 2003; Meijer et al, 2004]. However, there have also been reports of bleeding abnormalities with serotonin-noradrenaline reuptake inhibitors [Micromedex, 2009]. Recommendations for minimizing this adverse effect are expert opinion extrapolated from managing this adverse effect with SSRIs [Paton and Ferrier, 2005].
- Isolated cases of suicidal thoughts and suicide attempts have been reported during duloxetine therapy or early after treatment discontinuation. The Commission on Human Medicines recommends that people be monitored frequently for the emergence of suicidal thoughts or behaviour during treatment with duloxetine [CSM, 2006].

What monitoring is required for duloxetine?

- In people with hypertension or other cardiac disease and those whose condition could be affected by an increase in blood pressure (BP), monitor BP before starting treatment and regularly throughout treatment, especially during the first month.
  - If a sustained increase in BP occurs, consider either a dose reduction or a gradual discontinuation of duloxetine.
- In people taking warfarin, monitor the international normalized ratio (INR) when duloxetine is started or stopped, or after an increase in dose.

Basis for recommendation

- Duloxetine has been associated with an increase in blood pressure and clinically significant hypertension in some people. This may be due to the noradrenergic effect of duloxetine. Cases of hypertensive crisis have been reported with duloxetine, especially in people with pre-existing hypertension [Micromedex, 2009].
  - For people who experience a sustained increase in blood pressure while receiving duloxetine, the manufacturer recommends that either a dose reduction or a gradual discontinuation should be considered [ABPI Medicines Compendium, 2008a].
- Increases in the international normalized ratio (INR) have been reported when duloxetine was co-administered with warfarin [ABPI Medicines Compendium, 2008a]. It would therefore seem prudent to monitor the INR in anyone taking warfarin concomitantly with duloxetine.

Desmopressin

What dose of desmopressin should be prescribed?

- Prescribe 200 micrograms at bedtime, increasing to 400 micrograms if the lower dose is not effective [BNF 57, 2009].
- Desmopressin is not licensed for nocturia in women with idiopathic urinary incontinence. Informed consent to treatment should be obtained and documented [National Collaborating Centre for Women's and Children's Health, 2006].

What are the cautions and contraindications for desmopressin?

- Desmopressin should not be used in women with heart failure, psychogenic polydipsia, or polydipsia associated with alcohol dependence.
- Desmopressin should be used cautiously in people at higher risk of hyponatraemia, including those with [Micromedex, 2009]:
  - The syndrome of inappropriate antidiuretic hormone secretion.
  - Dipsogenic diabetes insipidus.
  - Hepatic cirrhosis.
  - Adrenal insufficiency.
  - Hyperglycaemia.
  - AIDS.
  - Other drugs known to cause hyponatraemia.
- Desmopressin can also be used cautiously in women taking diuretics for conditions other than heart failure.

Clarification / Additional information

- Older people, particularly those who are hospitalized or living in long-term care facilities, are more at risk of drug-induced hyponatraemia [Kugler and Hustead, 2000; Palmer et al, 2003].
- Symptoms of hyponatraemia include [Baylis, 2003; Palmer et al, 2003]:

- Mild: anorexia, headache, nausea, vomiting, lethargy, oedema.
- Moderate: personality change, muscle cramps, muscle weakness, confusion, ataxia.
- Severe: drowsiness, convulsions, coma, death.

- Several drugs have been reported to cause hyponatraemia; those that are more commonly implicated include [Palmer et al, 2003; Liamis et al, 2008]:
- Diuretics: thiazides (such as bendroflumethiazide), indapamide, amiloride, loop diuretics (such as furosemide).
- Antidepressants: tricyclic antidepressants (such as amitriptyline), selective serotonin reuptake inhibitors (such as fluoxetine), monoamine oxidase inhibitors (such as phenelzine), venlafaxine.
- Antipsychotic drugs: phenothiazines (such as trifluoperazine), butyrophenones (such as haloperidol).
- Antiepileptics: carbamazepine, oxcarbazepine, sodium valproate.
- Desmopressin.

What adverse effects of desmopressin should I be aware of?

- Desmopressin is well tolerated at recommended doses.
- Adverse effects can include headache, abdominal pain, and nausea. Isolated cases of allergic skin reactions and more severe general allergic reactions have been reported.
- Water retention/hyponatraemia (due to fluid overload) occurs if treatment with desmopressin is undertaken without concomitant reduction of fluid intake.

[ABPI Medicines Compendium, 2008b; BNF 57, 2009]

What drug interactions are associated with desmopressin?

- The manufacturer of desmopressin tablets warns that there may be an increased risk of water retention and/or hyponatraemia with [ABPI Medicines Compendium, 2008b]:
- Drugs known to induce syndrome of inappropriate antidiuretic hormone secretion (SIADH) (such as tricyclic antidepressants, selective serotonin re-uptake inhibitors, chlorpromazine, and carbamazepine).
- Concomitant treatment with loperamide — leading to an increased plasma concentration of desmopressin.

- However, the clinical significance of these interactions is unknown as CKS did not find any documented reports of these interactions in a standard reference textbook on drug interactions [Baxter, 2008].

Intravaginal oestrogen

What dose of intravaginal oestrogen should I prescribe?

- **Topical oestrogens should be used in the lowest effective amount to minimize systemic absorption.**
  - Review at least annually to re-assess the need for continued treatment and to monitor for symptoms of endometrial hyperplasia or carcinoma in women with a uterus. For further information, see Adverse effects.
  - Long term treatment may be required as symptoms can recur on cessation of therapy.
- For the treatment of atrophic vaginitis in post-menopausal women, licensed doses for intravaginal oestrogen preparations are:
  - Intravaginal cream:
  - Ovestin® (estriol 0.1%): insert one applicatorful daily for 2–3 weeks, reducing to twice a week.
  - Pessaries/vaginal tablets:
  - Ortho-Gynest® pessaries (estriol 500 micrograms): insert 1 pessary daily (preferably in the evening) until improvement occurs, reducing to a maintenance dose of one pessary twice a week.
  - Vagifem® vaginal tablets (estradiol 25 micrograms): insert one vaginal tablet daily for 2 weeks then reduce to one vaginal tablet twice a week.
  - Vaginal ring:
  - Estring® (releasing approximately estradiol 7.5 micrograms over 24 hours): insert the ring into the upper third of the vagina. The ring is then worn continuously for 3 months before replacing with a new ring.
- For information on the duration of treatment, see Management of urgency incontinence symptoms/ overactive bladder.

[BNF 57, 2009]

Who should not receive intravaginal oestrogens?

- The manufacturers of topical oestrogens advise that these preparations are contraindicated in people with:

  - Known, past, or suspected breast cancer.
  - Known or suspected oestrogen-dependent malignant tumours (such as endometrial cancer).
  - Undiagnosed genital bleeding.
  - Untreated endometrial hyperplasia.
  - Previous idiopathic or current venous thromboembolism (deep venous thrombosis, pulmonary embolism).
  - Active or recent arterial thromboembolic disease (such as angina, myocardial infarction).
  - Acute liver disease or a history of liver disease (if liver function tests have failed to return to normal).
  - Known hypersensitivity to the active substances or to any of the excipients.
  - Porphyria.

- If use is indicated in these people, consider seeking specialist advice.

[ABPI Medicines Compendium, 2006; ABPI Medicines Compendium, 2008c; ABPI Medicines Compendium, 2009a]

What adverse effects of intravaginal oestrogens should I be aware of?

- Intravaginal oestrogens may cause local irritation or itching at the beginning of treatment. In general, these symptoms are transient.
- The British National Formulary advises that the endometrial safety of long-term or repeated use of topical vaginal oestrogens is uncertain.
  - Consequently, treatment should be interrupted as least annually to re-assess the need for continued treatment. If breakthrough bleeding or spotting appears at any time on therapy, the reason should be investigated and may include endometrial biopsy to exclude endometrial malignancy.

[BNF 57, 2009]

What are the key drug interactions with intravaginal oestrogens?

- Manufacturers of intravaginal oestrogen preparations reported no clinical drug interactions with these products.

What advice should I give to someone prescribed intravaginal oestrogen?

- Advise the woman that:

o Topical oestrogens should be used in the lowest effective dose to minimize systemic absorption.

o Medical advice should be sought if she experiences breakthrough bleeding or spotting at any time during treatment (see Adverse effects).

- Warn the woman that certain intravaginal oestrogen preparations can damage latex condoms and diaphragms (for example Ortho-Gynest® cream and pessaries, and Ovestin® cream).

o If in doubt, check the Summaries of Product Characteristics (SPCs) or the patient information leaflets.