EASILY MISSED?

Postnatal depression

Ian Jones, †Judy Shakespeare‡

A 26 year old woman visited her general practitioner six weeks after the birth of her first baby for her postnatal examination. Initially she mentioned only some problems with breast feeding, but it soon became clear that she was low in mood, and she said she had a difficulty socialising. She minimised her symptoms, however, claiming that she just had a touch of the “baby blues,” and she was reluctant to talk about how she was feeling. On closer questioning, she admitted that she felt overwhelmed, anxious about the baby, and guilty about not being a good mother.

What is postnatal depression?

Many women experience the baby blues—mood symptoms that develop within two to three days of birth, peak on the fifth day, and resolve within two weeks. However, episodes of more substantial postnatal depression are also common and can cause considerable disruption for the woman and her family. The most severe form of postpartum mood disorder—postpartum (or puerperal) psychosis—involves the acute onset of a manic, mixed, or depressive psychosis in the immediate postpartum period.

Why is postnatal depression missed?

Good evidence exists that episodes of postpartum depression are missed or misdiagnosed. One study found that only 15% of 211 postpartum women—who according to interview had experienced a mood disorder during the first year after childbirth—had sought help, been prescribed drugs, or had hospital contact. It is also clear that bipolar episodes presenting in the postpartum period might be misdiagnosed as unipolar depression. It is therefore important to consider bipolar disorder in the differential diagnosis of postpartum depressive episodes and to take a careful psychiatric history to rule this out.

The postpartum period is a time when joy is the expectation. Many women are reluctant to admit to mood symptoms because they are embarrassed or stigmatised, and they worry about their child being taken into care. Professionals might collude with women and fail to recognise severe episodes of illness that would benefit from treatment.

Why does this matter?

It is important to distinguish postnatal episodes of major depression from a minor mood disturbance (“baby blues”) because treatment for depression can alleviate the considerable distress associated with this condition. Depression of duration longer than two weeks, severe symptoms, or substantial impairment should raise suspicion of an episode of major depression.

Untreated postpartum depression causes substantial impairment to the woman, but might also have detrimental effects on the baby—in terms of emotional, behavioural, and cognitive problems—and might lead to a mood disorder in her partner. Over the past decade, the confidential enquiries into maternal death in the United Kingdom have shown suicide to be a leading cause of maternal death. Problems highlighted by the inquiries include the severity and speed of onset of postpartum illness not being recognised and the misattribution of important non-psychiatric medical conditions to psychological symptoms.

How is postnatal depression diagnosed?

Throughout pregnancy and the puerperium women come into contact with a variety of healthcare professionals including midwives, obstetricians, health visitors, and GPs. It is vital that a woman’s mental health is given the same attention as her physical wellbeing. The period of highest risk is in the weeks after delivery, but it is important that the primary care team remains vigilant throughout the year after childbirth. Postnatal depression can be diagnosed only by clinical assessment, but there are strategies that can help with case finding. Although controversial, National Institute for Health and Care Excellence guidelines on antenatal and postnatal mental health recommend that all women in pregnancy and the postpartum period should be assessed for severe mood symptoms at every contact with all healthcare professionals using a brief, three item screen (Whooley questions, box 2).

The questions have a positive predictive value of 32% and a negative predictive value of 99% for major depression but there is a lack of data of their use in the perinatal context. Another commonly used tool is the Edinburgh postnatal depression scale, a self report, 10 item questionnaire with a sensitivity range from 34% to 100%, and specificity from 44% to 100% in different studies. The most commonly used cut-off score of >12 has an overall positive predictive value of 57% and negative predictive value of 99%.

KEY POINTS

Mood disorders are common in the postpartum period but can be missed or misdiagnosed. Women might be reluctant to discuss mood symptoms because of stigma. Or they might worry about their baby being taken into care. Screening tools can be helpful to identify postnatal depression but are not substitutes for clinical assessment.

Box 1 | How common is postnatal depression?

- Postpartum blues, or baby blues, is a transient condition that affects 30-80% of women after birth
- The overall prevalence of clinically significant postpartum depressive symptoms is estimated to be between 7% and 19%. Around a third of “postnatal depression” begins in pregnancy and around a quarter begins before pregnancy.
- Postpartum psychosis occurs after about 0.1% (1 in 1000) deliveries.
- Women with bipolar disorder are at particularly high risk of postnatal depression in the postpartum period, with around half of deliveries followed by a clinically significant postpartum episode.

Box 2 | Whooley questions

1 During the past month, have you often been bothered by feeling down, depressed, or hopeless?
2 During the past month, have you often been bothered by having little interest or pleasure in doing things?
3 Is this something you feel you need or want help with?

Reference

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Cite this as: BMJ 2014;347:g64500 doi: 10.1136/bmj.g64500

This is one of a series of occasional articles highlighting conditions that may be more common than many doctors realise or may be missed at first presentation. The series advisers are Anthony Hamden, university lecturer in general practice, Department of Primary Health Care, University of Oxford, and Richard Lehman, general practitioner, Banbury. To suggest a topic, please email us at practice@bmj.com

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Previous articles in this series

- Motor neurone disease (BMJ 2014;349:g4052)
- Copper deficiency (BMJ 2014;348:g3691)
- Bladder cancer in women (BMJ 2014;348:g2171)
- Subdural haematoma in the elderly (BMJ 2014;348:g1682)
- Intestinal malrotation and volvulus in infants and children (BMJ 2013;347:f6949)
The aim of screening tools for postnatal depression is not to diagnose depressive disorders but to identify those women who need further clinical and psychiatric assessment. The International Classification of Diseases 10th revision (ICD-10) criteria for an episode of major depression are given in box 3. It is vital that all episodes after childbirth are not automatically labelled as postpartum depression but that other conditions such as generalised anxiety disorder, substance misuse disorders, obsessive compulsive disorder, and post-traumatic stress disorder are also considered. In particular, the acute onset of severe mood symptoms or rapid deterioration must be taken seriously and a diagnosis of postpartum psychosis considered. In the assessment it is also important to consider any factors that might have increased the risk of depression, such as domestic violence, and which might need to be dealt with.

The diagnosis of postnatal depression is a syndromal one, but a physical examination and investigations might be important if the history suggests a physical health condition that might present with psychological symptoms. For instance excessive tiredness or weight gain might suggest hypothyroidism and require thyroid function testing.

### How is postnatal depression managed?

Depression after childbirth responds to the same treatments as episodes occurring at other times. Treatments range from general support and listening visits by health visitors for mild symptoms, to talking treatments such as cognitive behavioural therapy or interpersonal therapy and antidepressants for moderate to severe episodes. Although ICD-10 defines mild, moderate, and severe episodes of depression by symptom count (see box 3), in clinical practice severity is better judged by the impairment the episode is causing and by specific symptoms such as psychotic phenomena.

Postpartum women may be more reluctant to take antidepressants, especially if they are breast feeding. The decision about breast feeding and antidepressants after childbirth is discussed in box 4. Severe mood episodes, such as postpartum psychosis, are a psychiatric emergency and admission of the woman is almost always required, ideally together with her baby to a mother and baby unit. Although mood stabilising and antipsychotic drugs are key to the treatment of postpartum psychosis in the acute phase, psychological support is likely to be required in the recovery phase. In addition, putting women in touch with support groups such as Action on Postpartum Psychosis (http://www.app-network.org/) can be of great benefit.

Contributors: Both authors contributed to the conception and drafting of this article and reviewing it critically. They have both approved the version to be published. JS will act as guarantor.

### Competing interests

JS is a member of the Guideline Development Group of the NICE (update) guideline on antenatal and postnatal mental health. He has received funding for research in bipolar disorder and perinatal mental health from the Wellcome Trust, Böhringer Ingelheim, National Alliance for Research on Schizophrenia and Depression, and the MRC. He has received honorariums from Lilly, GlaxoSmithKline, Lundbeck, Jansen, and AstraZeneca to give talks on psychopathology and his research on perinatal mood disorders. JS is a member of the Guideline Development Group of the NICE (update) guideline on antenatal and postnatal mental health. He has received travel and accommodation expenses from NICE and the RGIP.

### Provenance and peer review

Commissioned; externally peer reviewed.

### Patient consent

Patient consent: patient hypothetical, deaf, or anonymised.

### Literature cited

Investigation of suspected urinary tract infection in older people

Sean Ninan,1 Carly Walton,2 Gavin Barlow3

An 84-year-old woman, who lived in a residential home, was referred to the acute medical assessment unit with a two-day history of increasing confusion of unclear cause. She was unable to provide a clear history, but her daughter mentioned that she was not usually confused. On examination, her temperature was 36.8°C, her heart rate was 67 beats per minute, and her blood pressure was 135/70 mm Hg. She looked dehydrated and was noted to be incontinent of dark, offensive-smelling urine. Urinary tract infection was suspected.

What is the next investigation?

Suspected urinary tract infection is a common scenario when evaluating ill older adults. The diagnosis may be challenging, as patients are often unable to provide a history of acute urinary symptoms (for example, owing to delirium or dementia), and asymptomatic bacteriuria (see table 1 for definitions) is common in older people. The prevalence of asymptomatic bacteriuria is so high in older people (up to 50% in older women living in long term care)1 that it does not necessarily indicate acute illness and is not, on its own, an indication for treatment. Such diagnostic difficulties may lead to overtreatment, unnecessary antibiotic treatment, and delay in making the true diagnosis. A retrospective review of 265 case notes for patients diagnosed as having a urinary tract infection at the time of discharge from hospital found that 43% of patients had no evidence of actually having had a urinary tract infection.2

On the basis of prospective cohort studies, the Health Protection Agency and British Infection Association recommend that urinary tract infection can be diagnosed when at least three of the following symptoms are present: dysuria, frequency, suprapubic tenderness, urgency, polyuria, and haematuria.3 However, diagnosis becomes problematic when a patient is unable to provide a clear history of acute urinary symptoms, owing to the high prevalence of asymptomatic bacteriuria. The Scottish Intercollegiate Guidelines Network (SIGN) guidelines recognise the difficulties in older people with the following statement: “In patients over 65 years of age, diagnosis should be based on a full clinical assessment, including vital signs.”4 Although some experts maintain that a diagnosis of urinary tract infection cannot be made without a clear history of acute urinary symptoms, we recognise that patients who are unable to provide such a history may still develop urinary tract infections.

Thus, in our opinion, when an older person is unable to provide a definitive history of acute urinary symptoms, a urinary tract infection should be diagnosed only when evidence exists of bacteriuria (based on urine culture) and systemic inflammation (for example, fever/hypothermia or raised white cell count or C reactive protein) and, importantly, no other more likely cause of the acute illness exists. The following sections discuss the evidence base for this opinion, including the role and limitations of tests often used to try to confirm the diagnosis of urinary tract infection in older people. The presence of at least two systemic inflammatory response syndrome criteria (see box) is often used to define systemic inflammation, but this may be less useful in older patients.5 8

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<th>Character of urine</th>
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<td>A change in character of urine is often a trigger for healthcare practitioners to suspect a urinary tract infection. A prospective cohort study of 399 clinically suspected episodes of urinary tract infection found that gross haematuria, or a change in colour or odour of the urine, had a positive predictive value of 47% for bacteriuria plus pyuria. A change in character of urine may also be caused by dehydration, renal stones, or certain foodstuffs. It is not useful in making a diagnosis of urinary tract infection in older people.</td>
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<th>Urine dipstick tests</th>
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<td>Urine dipstick tests detect the presence of leucocyte esterase and nitrites, which are often used as surrogate markers of an elevated urinary white cell count (pyuria) and Gram-negative bacteriuria, respectively. However, as discussed below, the presence of pyuria or bacteriuria does not necessarily equate to the presence of urinary tract infection. A prospective cohort study evaluated 101 nursing home residents in America with clinically suspected urinary tract infection. Positive leucocytes or nitrites had a positive predictive value of 45% (95% confidence interval 34% to 56%).</td>
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Table 1 | Definitions of terms relating to urinary tract infection

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tr>
<td>Bacteriuria</td>
<td>The presence of bacteria in the urine</td>
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<tr>
<td>Asymptomatic bacteriuria</td>
<td>The presence of bacteria in the urine without typical symptoms or signs of urinary tract infection; quantitative counts of greater than 105 colony forming units per millilitre of urine (cfu/mL) are considered diagnostic of asymptomatic bacteriuria if found in a single sample in men or on two consecutive occasions in women</td>
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<tr>
<td>Urinary tract infection</td>
<td>Infection caused by invasion of the urinary tract by microorganisms, with symptoms and signs that can be attributed to such an infection; in patients able to provide a history, these should comprise at least three of the following: dysuria, urgency, frequency, or suprapubic tenderness (see text for discussion of clinical features)</td>
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Additional information:

- Do not use urine dipstick tests to diagnose urinary tract infection in older people; if they are performed at all, only a negative result should be considered useful in excluding a urinary tract infection.
- In patients who are able to provide a history, urinary tract infection should be diagnosed only in the presence of a combination of at least three acute urinary symptoms or signs; such as dysuria, urgency, frequency, or suprapubic tenderness.
- In patients who are unable to provide a history, urinary tract infection should be diagnosed only when evidence exists of acute inflammation (for example, fever/hypothermia or raised white cell count or C reactive protein) associated with bacteriuria on urine culture and no other more likely cause of their acute illness exists.
- Asymptomatic bacteriuria is common in older people; avoid treating bacteriuria in patients with non-specific symptoms that cannot be attributed to urinary tract infection, as this confers no benefit and may cause harm.

Cite this as: BMJ 2014;348:g4070 doi: 10.1136/bmj.g4070

This series of occasional articles provides an update on the best use of key diagnostic tests in the initial investigation of common or important clinical presentations. The series advisers are Steve Atkin, professor of medicine, Weill Cornell Medical College Qatar, and Eric Kilpatrick, honorary professor, department of clinical biochemistry, Hull Royal Infirmary, Hull York Medical School. To suggest a topic for this series, please email us at practice@bmj.com.

The bmj.com/podcasts

Gavin discusses when and how to test for the infection. https://soundcloud.com/bmjpodcasts/investigating-urits-mixdown

LEARNING POINTS

Do not use urine dipstick tests to diagnose urinary tract infection in older people; if they are performed at all, only a negative result should be considered useful in excluding a urinary tract infection.

In patients who are able to provide a history, urinary tract infection should be diagnosed only in the presence of a combination of at least three acute urinary symptoms or signs; such as dysuria, urgency, frequency, or suprapubic tenderness.

In patients who are unable to provide a history, urinary tract infection should be diagnosed only when evidence exists of acute inflammation (for example, fever/hypothermia or raised white cell count or C reactive protein) associated with bacteriuria on urine culture and no other more likely cause of their acute illness exists.

Asymptomatic bacteriuria is common in older people; avoid treating bacteriuria in patients with non-specific symptoms that cannot be attributed to urinary tract infection, as this confers no benefit and may cause harm.

thebmj.com | 23-30 August 2014
Systemic inflammatory response syndrome criteria\(^7\)

- Heart rate > 90 beats/min
- Respiratory rate > 20 breaths/min
- White cell count > 12/µL or < 4/µL
- Temperature > 38.3°C or < 36°C
- Blood glucose > 7.7 mmol/L in the absence of diabetes
- Acutely altered mental status

for the presence of bacteriuria, whereas a negative dipstick test had a negative predictive value of 100% (74% to 100%). This study lends support to the recommendation from the SIGN guidelines: “Do not use dipstick tests for the diagnosis of UTI in older people.”\(^8\) In our opinion, if a dipstick test has been done it should be considered useful only if the result is negative and no clinical features of urinary tract infection are present, thus excluding the latter. We do not recommend using urine dipstick tests to rule in the diagnosis of urinary tract infection in older people, on the basis of the evidence available from prospective studies and guideline recommendations.

### Urine culture

The purpose of urine culture is to identify bacteriuria and determine sensitivity to antibiotics. A bacterial count of 10\(^5\) cfu/mL is widely considered to be “significant” bacteriuria,\(^11\)\(^12\) but lower counts have been shown to be relevant in men and women with symptoms of a urinary tract infection.\(^13\)\(^14\)

The diagnosis of urinary tract infection cannot be based on urine culture alone, however, as bacteriuria may be present in asymptomatic healthy people, as discussed in a previous article in this series.\(^15\) In older people, the prevalence of asymptomatic bacteriuria is so high that it cannot be considered an abnormal finding (table 2). The evidence summarised below suggests that treatment of asymptomatic bacteriuria is unlikely to be of benefit and instead may cause harm.

Non-specific symptoms such as fatigue, malaise, and weakness may sometimes be offered as evidence of a potential urinary tract infection requiring antimicrobial treatment. However, a prospective cohort study did not find any difference in these symptoms between patients with and without bacteriuria.\(^16\) Moreover, prospective randomised trials have shown that the treatment of asymptomatic bacteriuria in older people does not reduce the incidence of symptomatic urinary tract infection or improve chronic genitourinary symptoms.\(^17\)\(^18\) and a randomised controlled trial of 358 patients confirmed that the treatment of asymptomatic bac-

eriuria does not affect mortality.\(^19\) Young women prescribed antibiotics for asymptomatic bacteriuria in a randomised trial had a threefold higher rate of recurrence of symptomatic urinary tract infection than those not prescribed antibiotics.\(^20\)

Antibiotic treatment for asymptomatic bacteriuria in older people has not been shown to be of any benefit and may in fact cause harm,\(^12\) as a result of adverse effects such as rash, drug interactions, development of antibiotic resistance, and disruption of the human microbiome, increasing the risk of super-infection. SIGN calculated a number needed to harm of three when antibiotic treatment is given for asymptomatic bacteriuria in older women and advises against treatment of asymptomatic bacteriuria in older people.\(^4\) Thus urinary cultures should not be requested for patients who are asymptomatic or who have non-specific features of “general decline,” which are common in older patients, without evidence of systemic inflammation; they should also not be requested solely on the basis of a positive dipstick test. Requests for urine culture in older people should be limited to two situations. The first is patients with acute urinary symptoms typical of a urinary tract infection, to confirm susceptibility to empirical antibiotic treatment. A negative culture in patients with symptoms does not necessarily rule out infection—for example, if the laboratory does not report bacterial counts below 10\(^5\) cfu/mL or if the patient has taken antibiotics before sampling. The second is patients who are unable to provide a history of acute urinary symptoms but have features of systemic inflammation, such as fever/hypothermia or raised white cell count or C reactive protein (see Blood tests section), and no other more likely source of infection or explanation for their acute illness.

The UK Standards for Microbiology Investigations recommend midstream urine samples or clean catch specimens for routine diagnosis of bacteriuria.\(^21\) Alternatively, a sample may be obtained by use of an external condom catheter for male patients. A prospective cohort study showed that a simple standardised method for collection of urine for culture by external condom catheter had a sensitivity of 90% compared with in and out catheterisation.\(^22\)

### Urinary white cell count (pyuria)

Clinicians may erroneously interpret pyuria (indicated by an elevated urinary white cell count) as evidence of urinary tract infection in patients with bacteriuria. However, a prospective cohort study found evidence of pyuria in 94% (81% to 97%) of patients with asymptomatic bacteriuria.\(^23\) On the basis of this evidence, the Infectious Diseases Society of America guidelines for the diagnosis and treatment of asymptomatic bacteriuria recommend that pyuria is not used to differentiate urinary tract infection from asymptomatic bacteriuria,\(^1\) noting that pyuria may also be found in older people without bacteriuria.

#### Blood tests

Older patients may not develop a fever in the presence of bacterial infection.\(^24\) Blood white cell count or C reactive protein may be used as evidence of bacterial infection but are not specific to urinary tract infection. A prospective cohort study of 221 older people who presented to the emergency department showed that a white cell count threshold of 14 000 cells/mm\(^3\) had a positive predictive value of 39% for
bacterial infection and a negative predictive value of 90%.25
Another prospective cohort study of 232 people admitted to
elderly care wards via the emergency department showed
that a C reactive protein of more than 60 mg/L had a posi-
tive predictive value of 92% for bacterial infection, with val-
ues less than 60 mg/L having a negative predictive value of
90%.26 These studies were not done specifically for the
diagnosis of urinary tract infection, so results of blood tests
should be interpreted in the context of other clinical features
and test results.

Outcome
The patient was admitted to hospital under the care of a
geriatric medicine team trained in comprehensive geriat-
ric assessment. She had recently started taking codeine for
knee pain and developed symptoms and signs consistent
with delirium shortly after. No clinical, biochemical, or
radiological features consistent with infection were present,
although she was dehydrated. A clean catch urine sample,
sent by the emergency department, yielded *Proteus mirabi-
lis* at greater than 10^2 cfu/mL of urine with pyuria.

She did not receive antibiotics for the bacteriuria, as she
had no history of acute urinary symptoms or evidence of
systemic inflammation. Instead, a diagnosis of delirium sec-
ondary to dehydration and opioid treatment was made. She
made a good recovery, following a tailored, multi-component
intervention including appropriate fluid therapy, laxatives,
and a change from codeine to paracetamol.27

Contributors: SN had the idea for the article, and all authors were involved
in its planning and design. SN did a literature search with the assistance
of a librarian. SN and CW reviewed and summarised relevant articles
identified in the literature search. SN wrote the first draft of most of the
article. CW wrote the sections relating to urine culture and treatment of
asymptomatic bacteriuria. GB reviewed and revised large sections of the
article. All authors revised the article further for important intellectual
content, and all have reviewed the final draft. SN is the guarantor.

Competing interests: We have read and understood the BMJ policy on
declaration of interests and declare the following interests: none.
Provenance: Not commissioned; externally peer reviewed.
Patient consent: Patient consent not required (patient anonymised, dead,
or hypothetical).
References are in the version on thebmj.com.
Accepted: 8 May 2014