

Management of urinary tract infections in family medicine

— H J van der Westhuizen



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Curriculum vitae

Hein van der Westhuizen obtained the MB ChB degree in 1962 from the University of Pretoria. He was one of the first to do a Masters degree in Family Medicine at Pretoria and also served as part-time lecturer there. He obtained the MFGP in 1973. During this time he practised in South West Africa and Pretoria. In 1974 he moved to practice in Brits. From March 1984 to May 1987 he joined the Dept of Family Practice at Medunsa where he was Associate-Professor. He is presently the Medical Director of the Mines Benefit Society from June 1987.

There are many ways to manage urinary tract infections in Family Medicine, but the following has worked for me in the many years of encountering urinary tract problems in my patients.

It is important to realise that there are only a few conditions that we commonly encounter in Primary Care.¹ Many studies show that urinary tract infection is one of the most common. That is why it is important that the family physician should have a clear understanding of the condition as well as a method to manage these conditions appropriately and effectively.

For management and convenience purposes, I classify urinary tract infection in my patients in the following categories:

1. Babies - male and female up to the age of about 2 years (ie before they have bladder control).

Summary

Urinary tract infection as a common condition needs a clear management policy in family practice. Crucial to such management is the collection of an uncontaminated specimen of urine, microscopy and culture. Without this there is no firm foundation for cost effective further investigation or rational management.

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2. Males
3. Females

In a busy family practice the collection of a urine specimen determines how reliable our assessment will be.^{2,3} A correct diagnosis in urinary tract infection is of the utmost importance, as our actions usually depend on the diagnosis, and as most of the actions are invasive, an accurate diagnosis cannot be over emphasised.

The easiest form of collection is in males. Here a midstream clean catch specimen of urine in a sterile container is sufficient. Because this is a very important step in the management I prefer to do this myself. In the many years in family practice I have learnt that patients are unable to catch a midstream uncontaminated specimen even after I have repeatedly demonstrated the method.

In female patients, a lot of problems present in collecting a specimen that is uncontaminated, even with gadgets, and methods of involving a team are very unreliable.⁴ I have for many years made use of an infant size feeding tube size 5 French, to collect a sterile specimen of urine from my female patients, by holding the labia apart and introducing the sterile tube with a non-touch technique. The tip of the catheter is inserted into the bladder. As the female urethra is relatively short it is usually a

simple and painless procedure.⁵ The trick is to know the anatomy. The urethra in the female in the supine position runs directly downwards, so a common mistake is to try and push the catheter upwards and not downwards. With one clean downward thrust the catheter is usually inside the bladder. In this way it is easy to produce sterile urine from the bladder. The procedure is harmless and not painful.

The collection of a urine specimen determines how reliable our assessment will be

A more difficult problem is to get sterile urine from babies before they have bladder control. Once again I use an infant size feeding tube. In baby girls the technique is the same as for females. An assistant, usually the mother, must push the baby's legs down, grabbing them above the knees and holding them apart. In that way the baby is unable to wriggle around. At this age their hands impose no problems. After one demonstration this procedure is usually very adequately performed by doctors and after a few demonstrations, by inexperienced auxiliary medical staff. Again it is important to realise that the urethra runs directly downwards and not forwards so the catheter must be pushed downwards into the bladder. In little boys the prepuce is still attached to the glans and there is only one passage through which the catheter, which is dipped in sterile KY jelly, goes in smoothly and without problems. If a non-touch technique is used, sterile, uncontaminated urine can be obtained. The smaller the child, the easier this procedure becomes. In most instances they don't cry, but if they should cry, it is usually because they are held down. The beauty of this procedure is that even after the baby has urinated there is still sufficient urine for culturing and microscopic and chemical examinations. Very seldom is it necessary to perform the procedure a second time because of inadequate urine in the bladder.

A correct diagnosis is of the utmost importance

I have also used the infant size feeding tube in males if they are unable to urinate in front of me, so that I may catch a clean catch midstream specimen. If we realise that urine production is approximately 1 ml per minute it is easy to understand that after five minutes sufficient urine will be available in the bladder for examination.

This method has proved to be the most successful and reliable.

The only other method worth mentioning, in my opinion, is the suprapubic needle aspiration of urine.⁶ I suppose with adults this is usually very effective but in small babies who are unable to control their bladders, it is a problem to wait for the bladder to be filled. One other drawback is also that the needle aspiration often produces a few red blood cells. Red blood cells are an abnormal finding in the urine so this method is problematic for me, as it is important to know that the urine which I examine is the urine in the bladder and all abnormalities are from this uncontaminated urine.

The urinalysis from an adequately collected urine specimen, is relatively easy and straight forward. Normal urine is clean, occasional urothelial cells, white blood cells or red blood cells are the only findings that can positively be disregarded. Significant pyuria, haematuria and bacteruria are positive indicators to a possible urinary tract infection.⁷

This however, may not be due to the normal bacteriological infections that we encounter in every day practice. Infections like bilharzia, tuberculosis and virus infections may also produce significant findings.

Occasional urothelial cells, white blood cells or red blood cells may be disregarded

The basis of the diagnosis for common bacteriological infections is a urine culture.

It is relatively easy to make up one's own culture media for culture and sensitivity.

An inexpensive incubator can easily be made out of a polystyrene container with a fish tank thermostat, and an ordinary 40 watt electrical bulb. This method is sufficient for everyday investigation by the family physician.

With significant microscopic findings and a negative culture, further investigations are warranted and more elaborate investigations and other laboratory tests are usually necessary.

The symptoms and signs of urinary tract infection in patients with adequate bladder control, are typical of all infections. It is important to realise that the common symptoms of dysuria are frequently not due to the ordinary bacteriological infections treatable with antibiotics.^{8,9} Fever and cold shivers may also be due to other causes or other infections. The one symptom that is usually not mentioned or asked for is that of nocturia. It is usually not normal for males to get up at night and pass water, and for females who have had children, once or twice is acceptable, but not more than that.

Nocturia of recent origin is even more significant. All the other symptoms and signs as we know are non-specific and relate to the infection.

Once more it is thus important to make the diagnosis of urinary infection by culture.

The basis of diagnosis for common bacteriological infections is a urine culture

With an adequate and well established diagnosis the management becomes well spelled out. In females in the reproductive age, one urinary tract infection may be treated without further investigation. In young girls, boys and men all urinary tract infections should be further investigated.^{10, 11}

The management initially is supportive and specifically includes adequate hydration. My advice is that patients must take fluids every half hour of the day. It is desirable in adults to have an output of three litres of urine with urinary tract infections. With smaller children spoon feeding may be

necessary. In more severe cases it may even be necessary to rehydrate patients intravenously. However, with adequate explanation and understanding from the patient, oral rehydration is usually sufficient.

Specific measures include those of management of a specific infection. An antibiogram is the only way of making sure that the correct antibiotic is prescribed. It is so often the case that if the antibiotic is prescribed straight away, that with the antibiogram the next morning, it is proved to be the wrong antibiotic.

Without culture facilities, an antibiotic like Ampicillin or Cotrimoxazole is the preferred drug choice.^{12, 13, 14, 15}

Make absolutely sure about adequate fluid intake

There are different schools for treating urinary tract infections, from one single dose on to long term treatment which may be as long as two years. Most of these studies however are done in hospital

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practice. I prefer to give antibiotics for the first week. If my patients are better, I see them again after a week to do an urinalysis. If there is improvement I will continue with an antibiotic with a low dose only at bedtime.¹² This allows the bladder to clean itself and does not alter the bacteriological flora from which the infection usually comes. If my patient remains well I give this treatment for the next four weeks and I also like to alternate bedtime medication weekly. I make absolutely sure that my patients take enough

With significant microscopic findings and a negative culture further investigations are warranted

fluids. After four weeks another urinalysis will give sufficient evidence whether the infection is controlled or not.

Only now, if the condition of the patient allows me to wait, will I go further to do the special investigations needed. In adults an excretory urogram is sufficient. In children however a cystogram is also necessary. The common condition of vesico urethral reflux must be excluded.¹¹ If other conditions like polycystic kidney or mega urethra are expected, non-invasive techniques like sonar may also be employed.

In some instances, for example, in females in the child bearing age who have had children, with recurrent infections, I would prefer initially a cystoscopy and retrograde pyelogram by an urologist because the most common conditions are diagnosed in this way. In small girls, boys and men however, the other methods of investigation are more suitable as they will allow for the most common conditions to be diagnosed.

The treatment then is that of the underlying cause.

In young girls, boys and men all urinary tract infections should be further investigated

When no particular cause or urinary tract abnormality can be detected it is now sufficient to wait and see whether the patient will have a recurrent attack. In the meantime especially in our hot climate it is important to stress to the patient the need to take adequate fluids.

If the patient however has repeated attacks of urinary tract infection or develops chronic urinary

tract infections, long term management with low dose urinary tract antiseptics is advisable.¹³ Long term management means six months at least and preferably up to two years. Patients may come in monthly for urinalysis to check whether the infection is under control.

It is important to realise that for patients on urinary tract antimicrobial management, culture of the organisms becomes a problem. The infected agent may be sufficiently absorbed by the bacteria on the culture media but not adequate to control the infection in vivo. A more sophisticated laboratory may be asked to do the investigation in this instance. It becomes even more necessary to collect the urine adequately. Transportation to the laboratory must also be immediate. The longer the organisms are in the urine with the antimicrobial added, the more the organisms are inhibited and not able to grow on culture.

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