ANNEX 36. C Bladder management guidelines for the home-care team

The goal of long-term bladder care is to preserve renal function by preventing urinary tract infection (UTI) and pressure atrophy of the kidneys. Once a bladder-voiding regime has been established in the hospital and the patient and family properly trained, a home-care team can supervise its implementation and detect the development of any complications. The extent to which the home-care team is involved in patient management, in contrast to the patient and family, depends on the specific context.

The guidelines cover the proper hydration of the patient, the materials required, implementation of bladder voiding whether the bladder is flaccid or spastic, and the early detection of any complications.

36.C.a Managing the fluid balance

The importance of fluid control in spinal cord injury (SCI) patients cannot be overestimated. The objectives of good fluid balance are:

- to keep the patient continent and dry;
- to prevent urinary tract infections (bladder, kidney);
- to prevent reflux to the kidney;
- to prevent pockets forming in the bladder (diverticula);
- to prevent the exaggerated response of autonomic dysreflexia.

Fluid *intake* is all the liquid that goes into the body: drinks and food containing water. Fluid *output* is any liquid the person discharges from the body in the form of urine, diarrhoea or sweating due to fever or hot weather.

How much liquid should the patient drink every day?

- The patient with an in-dwelling catheter should have a big fluid intake, drinking at least 3 litres of fluids every day in order to keep the urine dilute and flush out the bladder. This decreases the risk of urinary tract infection.
- The patient managed by intermittent catheterization or reflex urination only requires the fluid input of a healthy person, around 2 litres per day.
- Tea and water are best for the bladder but other beverages are also acceptable.
- The patient must drink more if sweating a lot, or suffering from fever or strong diarrhoea, or if the weather is very hot.

How much is the daily urine output?

- The urine amount is more or less 0.5 litres less than the fluid input: 2.5 litres if the intake is 3 litres; 1.5 litres if the input is 2 litres. The rest leaves the body with breathing, sweating and normal stools.
- The urine may be less if the person has fever or strong diarrhoea or is vomiting, or is sweating excessively.

Fluid balance is the calculation between intake and output. Too positive a balance results when intake is bigger than output and may be due to excessive intake or kidney problems. More frequently, the balance is too negative when output is bigger than intake and may be caused by inadequate intake, vomiting or diarrhoea, fever and excessive sweating.

Please note:

If the balance is less than 500 ml, the quantity of fluids drunk should be increased. If obvious causes of extra loss of body fluids – fever or diarrhoea – do not resolve within a few days, or if there is any suspicion of kidney problems, the patient should be seen by a medical professional, nurse or doctor, at the local heath centre or hospital.

The patient should be taught as soon as possible to be aware of how much fluid goes into his body and how much goes out of his body. He has to take responsibility for it and know how to manage the balance. The table below shows an example of a *fluid balance chart* for a patient with an in-dwelling catheter: to make sure the patient is drinking enough, it should be filled in every day. Keeping the patient in a positive balance of about 500 ml daily ensures proper hydration, keeps the kidneys working correctly, and flushes out the bladder.

Time	Drinking quantity	Time of bladder emptying	Urine volume
05:00		05:00	400 ml
06:00	200 ml		
07:00	200 ml		
08:00	200 ml		
09:00	200 ml	10:00	450 ml
10:00	200 ml		
11:00	200 ml		
12:00	200 ml		
13:00	200 ml	13:00	400 ml
14:00	200 ml		
15:00	200 ml		
16:00	200 ml		
17:00	200 ml	18:00	450 ml
18:00	200 ml		
19:00	200 ml		
20:00			
21:00	200 ml	22:00	400 ml
22:00			
23.00			
24:00			
01:00			
02:00			
03:00			
04:00			
Total	3,000 ml		2,500 ml
Balance result	+ 500 ml		

1 glass = 200 ml

Table 36.C.1 Fluid balance chart.

36.C.b Preparing the workplace for the patient

If the home-care team works in a clinic or has its own office where patients attend, the following items should be ready.

1. bench or bed for the patient to lie on
2. screen to permit privacy
3. good lighting
4. place to put the working materials
5. water, soap and towel
6. container for waste
7. disposable gloves
8. disposable razors

9. catheters and condoms of different sizes
10. sterile catheter set
11. graded measuring recipient
12. urine bags

If the team goes to the patient's home, the necessary items should be prepared in a special bag similar to a first-aid kit.

36.C.c Necessary material for emptying the bladder

Select an appropriate catheter or condom for the patient.

Types of catheters
Depending on what catheters are available, the life span of a catheter is different.

For in-dwelling catheterization:

- use a *plastic* catheter for less than one week only, because they are not flexible;
- use a *latex or rubber* catheter for periods of 2 to 3 weeks;
- use a *silicone* catheter for the long term as they suffer less encrustation – silicone catheters can be used for six weeks, but should be boiled every two weeks.

For intermittent catheterization:

- use a *PVC* catheter as it softens at body temperature and conforms to the urethra. It should be changed every two weeks;
- use a silicone catheter as a more economical alternative since it can last for several years – it should be boiled every two weeks.

After use, the catheter must be washed with soap and water and the lumen rinsed with force from the water tap. The catheter is then air dried and kept in a paper bag.

Catheter size
Urethral catheters should be *as small as possible*, yet ensure good drainage. The diameter of a catheter is given in Charrière units (CH) and available sizes range from 8 – 20 CH; 1 Charrière is 1/3 mm:

- for children use sizes 8 or 10 CH;
- for adult females use sizes 12, 14 or 16 CH;
- for adult males use sizes 14, 16 or 18 CH.

Sterile catheter set
If sterile catheterization is to be performed, the following set should be prepared. The set is contained in a kidney dish and wrapped in a sterilizing cloth.

Kidney dish contents:

- 1 sheet to create a sterile working area
- several gauze compresses
- 1 forceps
- 1 clamp
- 1 pair of scissors
- one pair of sterile gloves

Alternatives
Condoms are only available for men and come in different sizes to be adapted to the individual. For women and children, baby diapers (nappies) or disposable incontinence pads may be used. To measure the urine output for women, weigh the dry pad before use and the wet pad after: 1 gm extra equals 1 ml.

Additional materials

- clean plastic sheet
- disinfectant: povidone
- sterile catheter
- gel to lubricate the catheter
- a graded container to measure the urine output is used for intermittent catheterization.
- a urine bag is necessary for collecting the urine output with an in-dwelling catheter or condom; this bag has a series of lines for determining the amount of urine and is provided with a special tap for emptying; the bag should be replaced every week since it is difficult to keep clean
- boiled or distilled water to inflate the balloon if a balloon catheter is being placed (normal saline can crystallize and can cause problems for deflation of the balloon)
- 1 or 2 10 ml syringes to inflate the balloon of a balloon catheter

36.C.d Preparation of the patient

1. Explain any and every procedure to the patient before beginning.
2. Prepare bed, screen, and ensure good lighting if necessary.
3. Remove patient's bottom clothing or bedclothes.
4. Assist the patient to lie down with the legs in the normal position. With time, the patient can be put in the semi-sitting position in order to watch the procedure.
5. Place a paper or plastic sheet under the buttocks for any urine spill.

For men, inspect and clean the penis before catheterization or application of a condom.

6. Observe the genital area and check that the patient or carer washes it with water and soap. The patient is encouraged to do this by himself. If the patient cannot do this for medical reasons or has no family member you have to wash the patient's genital area yourself (use plastic gloves).
7. Shave the patient's pubic hair to avoid hair entering the condom. This is not necessary for catheterization.
8. Inspect the penis for skin irritation: retract the foreskin if not circumcised, clean the head of the penis, dry it and put the foreskin back in place.

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Figure 36.C.1

Have the patient or carer wash the patient's penis.

For women, inspect and clean the pubic area before catheterization.

6. Observe the genital area and check that the patient or carer washes it with water and soap. The patient is encouraged to do this by herself. If the patient has no family member or for medical reasons cannot wash herself you have to wash the patient's genital area yourself (use plastic gloves).
7. Shave the patient's pubic hair to avoid contaminating the catheter.
8. Inspect the patient's external genitals for skin irritation or any vaginal discharge.
9. WASH YOUR HANDS.

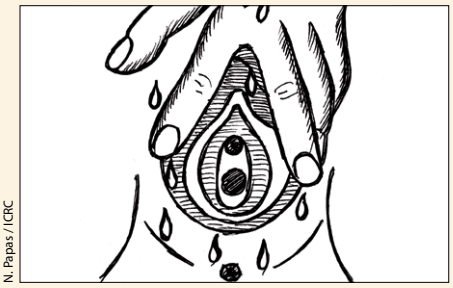

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Figure 36.C.2

Have the patient or carer wash the patient's genital area.

36.C.e Intermittent catheterization

Placing a catheter is usually a technique for qualified medical or para-medical staff. However, the long-term care of paraplegic patients can be made easier and more comfortable for the patients if they can be taught how to place a catheter themselves, as long as they respect strict hygiene measures, such as washing their hands thoroughly before self-catheterization.

Please note:

NEVER use force to insert a catheter; this may cause damage.

Once the patient is prepared and you have washed your hands:

1. Open the sterile catheter set and create a sterile field with the sheet in the dressing set, touching only the edges of the sheet.
2. Pour povidone on the gauze compress in the kidney dish.
3. Open the catheter wrapping by pulling the two plastic pieces at the end apart.
4. Lubricate the catheter tip with gel for about 7 – 10 cm. and place it on the sterile paper ready for insertion.
5. Put on the sterile gloves.
6. Using the sterile forceps, pick up a gauze compress with povidone and swab the patient's genitals, penis or labia, then throw away the compress.

For men:

7. Hold the penis firmly behind the head of the penis and retract the foreskin if not circumcised; then, with another povidone-compress, clean the urethra opening with a circular motion.
8. Hold the penis straight at a 90° angle from the body with one hand and insert the lubricated catheter with the other for the first 10 cm of the catheter when you may feel a slight resistance; it is the sphincter. Don't use force: wait until the sphincter relaxes before continuing.
9. Then, point the penis downwards in the direction of the patient's feet and continue inserting the catheter for about another 10 cm.

For women:

7. Separate the labia with two fingers of one hand.
8. Clean the urethral area with povidone-compresses, using a new compress for each stroke and moving only downward from pubis area to the anus.
9. Keeping the labia apart, with the other hand insert the catheter gently inside the urethra.

THE HAND HOLDING THE GENITALS OF THE PATIENT IS CONSIDERED NOT STERILE. ONLY THE STERILE HAND SHOULD HOLD THE CATHETER.

For both men and women:

10. When urine comes out, insert the catheter 5 cm further inside the bladder to be sure that the catheter is really inside.
11. Hold the catheter in place until all the urine is drained off and into the recipient.
12. Withdraw the catheter slowly to ensure that you don't damage the urethra.
13. Note the quantity and nature of the urine.
14. Remove your gloves and assist to redress and position the patient.
15. Remove waste *and* material.
16. WASH YOUR HANDS.

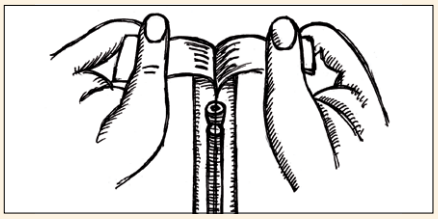
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Figure 36.C.3
Opening a sterile catheter set.

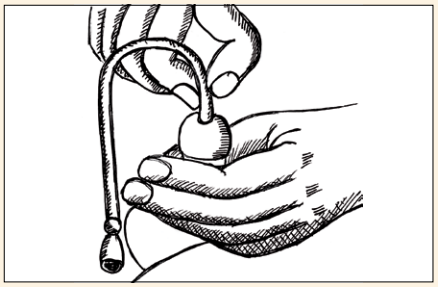
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Figure 36.C.4
Hold the penis at a 90° angle to insert the catheter.

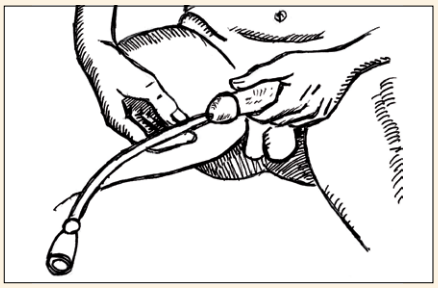
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Figure 36.C.5
Point the penis downwards.

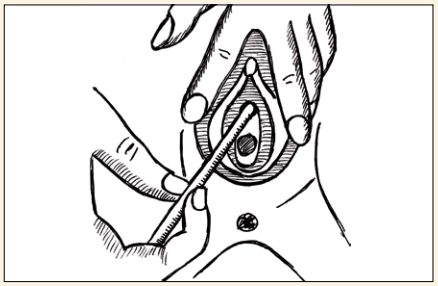
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Figure 36.C.6
Separate the labia and insert the catheter.

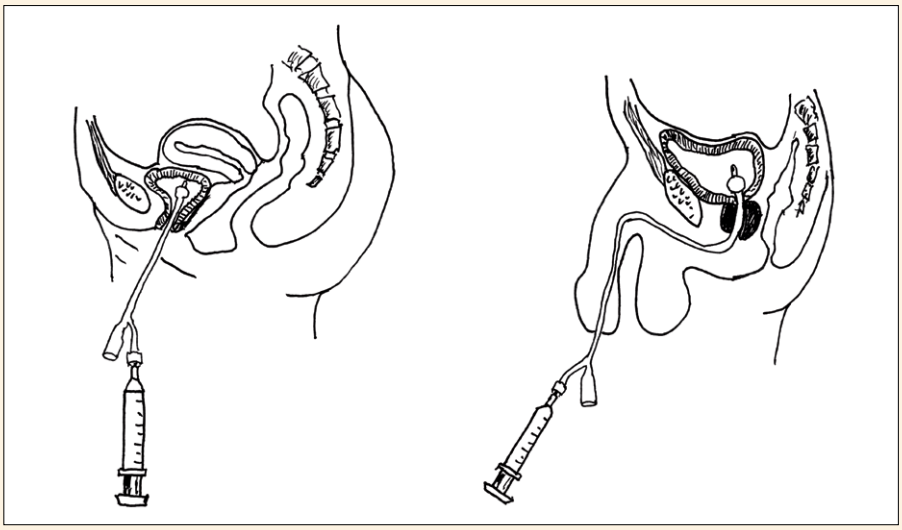
36.C.f Insertion and removal of an in-dwelling urethral catheter

First the balloon of the catheter must be tested. Open the catheter wrapping; a second, sterile wrapping, encloses the catheter. This is placed on the sterile sheet. Fill the sterile syringe with 10 ml of distilled or boiled water and then push the tip through the rubber stopper of the balloon channel. Inject the water; the balloon should inflate

properly and not leak. Now, withdraw the fluid and replace the catheter and syringe on the sterile sheet. If there is any problem with the balloon, discard the catheter and repeat the procedure with a new one. The rest of the procedure is the same as for intermittent catherization until the urine starts flowing (steps 1 – 9).

10. When urine comes out, insert the catheter 5 cm further inside the bladder to be sure that it is really inside.
11. Clamp the catheter with the compress until the urine bag is connected so that no more urine comes out.
12. Connect the catheter to the urine bag and unclamp the catheter.
13. Fill the balloon with 10 ml from the filled syringe.

Figure 36.C.7
Filling the balloon of an in-dwelling catheter.



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14. Pull back the catheter gently until you feel some resistance.
15. In men, the catheter is fixed to the patient's abdomen by a gauze bandage. For women, it is bandaged to the thigh.
16. Note the nature of the urine: colour and smell.
17. Remove your gloves and assist to redress and position the patient.
18. Remove waste and material.
19. WASH YOUR HANDS.

How to take care of an in-dwelling balloon catheter
The objective is to prevent infection by removing dried crusts from the catheter. The patient or family carer can be taught the procedure.

1. Prepare the patient and wash your hands, then put on gloves.
2. Wash the penis or labia with soap and water.
3. Retract the foreskin if the patient is not circumcised or separate the labia with two fingers.
4. Wash the head of the penis or inside the labia and the catheter coming out of the urethra with soap and water using a gauze compress.
5. Dry the head of the penis before repositioning the foreskin or the area between the labia.

How to change a urine bag
The patient or family carer should be taught this procedure.

1. Prepare the patient, wash your hands and put on gloves.
2. Hold the end of the catheter with a gauze compress and pull out the "old bag".
3. Clamp the catheter with a compress to prevent spilling of urine.

4. Uncap the new bag and make sure you don't touch the connection with your hands or anything else.
5. Connect the new bag to the catheter.
6. Dispose of the old bag, remove your gloves, and WASH YOUR HANDS.

How to remove a urethral in-dwelling balloon catheter

This procedure is used when the catheter needs to be changed or is not needed anymore. If the patient or family carer has learnt the technique of balloon catheter insertion, then they can also learn how to remove the "old" one and place a new one. Only a doctor should determine if an in-dwelling catheter is no longer needed.

1. Prepare the patient, wash your hands and put on gloves.
2. Push the tip of a syringe into the rubber stopper of the balloon channel and aspirate to empty the balloon.
3. Hold the catheter near the entrance of the urethra with a compress and pull it gently out.
4. YOU MUST FEEL NO RESISTANCE.
5. Check the end of the catheter for blood or other problems. If there is a problem, call a nurse or the doctor.
6. Dispose of the old catheter, remove your gloves and WASH YOUR HANDS.

If you have trouble deflating the balloon, leave the syringe in the rubber stopper for several minutes before applying suction. If this fails, seek help from a doctor. Never apply any force in pulling out the catheter and never cut any part of the catheter.

If a doctor has determined that the catheter is no longer needed, always check after its removal:

- that the patient is drinking enough;
- that the patient passes urine spontaneously;
- if the patient has not passed urine after 4 hours of catheter removal he or she should be catheterized again.

36.C.g Caring for a suprapubic in-dwelling catheter

A suprapubic catheter is placed by the surgeon in the hospital. It requires the least amount of nursing care afterwards but is the method most likely to result in urinary tract infection.

How to change a suprapubic in-dwelling catheter

This is a medical act. It should be done only by specially trained staff. Exceptions are tolerated only with permission from the home-care team leader and after individual evaluation of the capability of the patient or the carer. A suprapubic catheter should be changed every 2 – 3 weeks.

Prepare the patient and the equipment.

1. Assist the patient to lie down.
2. Place the urine bag between the legs of the patient.
3. WASH YOUR HANDS and put on plastic gloves.
4. Open the dressing set.
5. Cover the pubic area with a gauze compress.
6. Create a sterile area with the sheet in the dressing set.
7. Put povidone on the gauze compresses in the kidney dish.

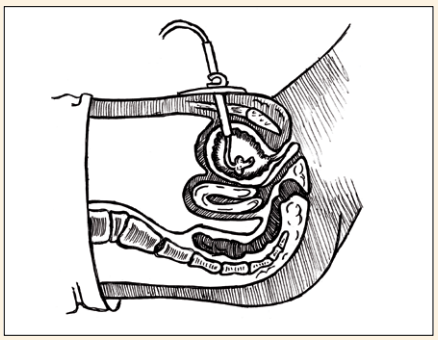

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Figure 36.C.8

Suprapubic in-dwelling catheter.

8. Open the catheter and test the balloon of the new balloon catheter as for a urethral in-dwelling catheter.
9. Put gel on the end of the catheter and place it on the sterile sheet ready for insertion.

Remove the old suprapubic catheter.

1. Wearing plastic gloves, remove the dressing around the base of the catheter.
2. Insert the syringe into the rubber stopper and deflate the balloon, as for a urethral in-dwelling catheter.
3. Pull the catheter out. (Remember how deep the catheter was in the bladder and in which direction you withdrew it.)
4. Check the end of the catheter for blood, sediments or other problems. If there is a problem, call the nurse or the doctor.
5. Put the catheter in the waste.
6. Remove the plastic gloves and put on sterile gloves.

Place the new catheter.

1. Take the povidone-soaked gauze compress with the sterile forceps and clean the area of insertion of the suprapubic catheter from inside to out.
2. Pick up the new catheter and insert the catheter into the bladder.
3. If urine is flowing connect the urine bag without touching the connecting point, but continue to insert the catheter 5 cm further to ensure that it is well into the bladder.
4. Inflate the balloon with 10 ml of distilled water.
5. Gently withdraw the catheter until resistance is felt.
6. Make a dry dressing around the catheter at the point of insertion with sterile gauze.
7. Check if urine continues to flow and control the colour and quantity of urine.
8. Remove your gloves and assist to redress and position the patient.
9. Remove waste and material.
10. WASH YOUR HANDS.

How to care for a suprapubic in-dwelling catheter

1. WASH YOUR HANDS.
2. Put on plastic gloves and remove the dressing.
3. Dispose of the gloves and dressing.
4. Open the dressing set.
5. Put povidone on the gauze compress and pick it up with the sterile forceps.
6. Swab the entrance area of the suprapubic catheter from inside to out.
7. Put a sterile compress around the catheter and cover it with another compress.
8. Fix the compress with tape.
9. Fix the catheter to the abdomen with a bandage.
10. Dispose of all soiled materials.
11. WASH YOUR HANDS.

The dressing should be changed every day. If the patient has a lot of hair in the suprapubic area it should be shaved.

36.C.h Bladder irrigation

Bladder irrigation should be done to clear an obstructed urethral or suprapubic in-dwelling catheter to obtain free flow of the urine or to remove a potential source of obstruction, e.g. blood or sediments due to infection. It should be done only on an empty bladder. Only trained medical staff of the home-care team should perform this procedure: any manipulation of the bladder can cause autonomic dysreflexia.

Equipment and material

- soap and water and a towel
- 1 plastic sheet
- 1 container for waste
- 1 sterile kidney dish
- 1 sterile 60 ml syringe
- 300 ml sterile 0.9% saline solution warmed to a maximum of 37° C: if the solution is too cold or too hot it damages the mucosa of the bladder
- clean clamp
- 2 sterile gauze compresses
- 1 sterile gauze compress soaked with povidone

Procedure

1. After explaining the procedure, undress and place the patient in a comfortable position lying on the back.
2. Place a plastic sheet under the buttocks.
3. Ensure the genital area is washed with soap and water.
4. WASH YOUR HANDS and put on plastic gloves.
5. Put the warm saline in the kidney dish.
6. Open the sterile syringe and fill it with 50 ml of saline (less for children) from the kidney dish.
7. Put a gauze compress around the catheter to protect it and clamp it closed.
8. Disconnect the urine bag and empty it.
9. Keep the connection end of the urine bag in a sterile gauze compress and set the bag aside.
10. Clean the end of the catheter with a gauze compress soaked in povidone.
11. Take a sterile compress to hold the end of the catheter and connect the syringe to the catheter.
12. Unclamp the catheter.
13. Gently inject the contents of the syringe into the bladder. NEVER use force, you may cause damage.
14. Clamp the catheter again.
15. Wait 5 seconds, then attach the urine bag to the catheter; let the injected saline and any urine flow freely into the bag. Ensure that the injected saline has drained out completely and check the colour and odour.
16. If the urine is very dirty or dark, do another irrigation following the same procedure.
17. Remove your gloves and assist to redress and position the patient.
18. Remove waste and material.
19. WASH YOUR HANDS.

36.C.i Application of a condom

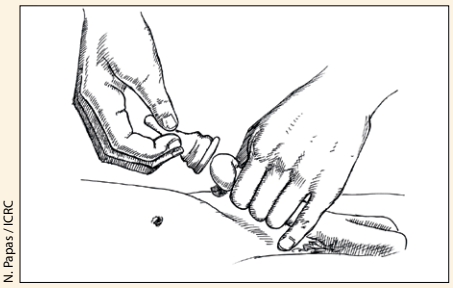
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Figure 36.C.9
Applying a condom.

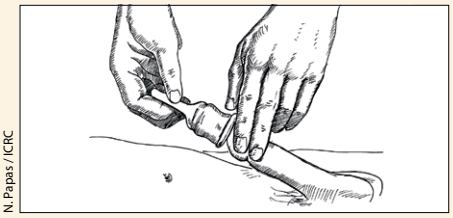
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Figure 36.C.10

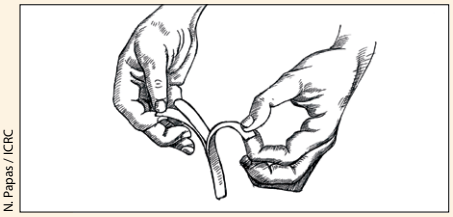
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Figure 36.C.11
With adhesive tape.

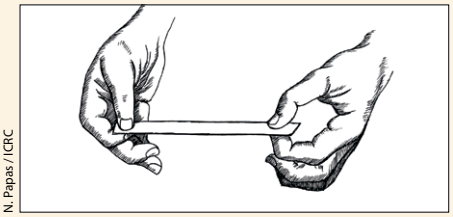
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Figure 36.C.12

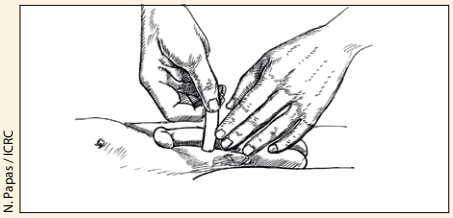
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Figure 36.C.13

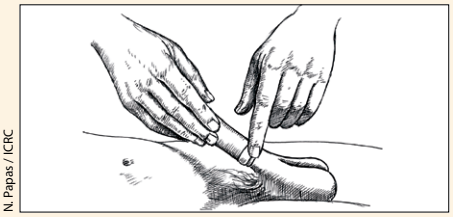
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Figure 36.C.14

The patient should be taught this procedure as soon as possible, preferably already in hospital, so that he can manage the fitting of a condom himself. The bag should be changed before it is quite full, usually about every 6 hours. The patient should also learn this procedure.

Once the patient is prepared and the genital area cleaned and inspected:

1. Take the correct size condom catheter.
2. Roll the condom smoothly over the penis, leaving 2.5 cm between the end of the penis and the plastic connecting tube. This space prevents irritation of the tip of the penis and provides for full drainage of urine.

Fixing the condom: the procedure depends on the type being used, i.e. whether or not it includes an adhesive tape.

Without adhesive tape

1. Secure the condom firmly but not too tightly to the penis. Then, put a strip of elastic tape or velcro around the base of the penis over the condom.
2. Ordinary tape should not be used because it is not flexible and can stop blood flow.

With adhesive tape

1. Put the tape around the base of the penis before putting in place the condom, then secure the condom by rolling it over the tape.

If ready-made urinary condoms are not available, an ordinary condom can be adapted.

Attach the urinary bag:

Make sure that the tip of the penis is not touching the condom.

2. Make sure the condom is not twisted; a twisted condom can obstruct the flow of urine.
3. Connect the urine bag to the condom catheter.
4. The urine bag should always be below the level of the penis and condom.

Check after 30 minutes:

1. Check for any sign of problems – swelling and discoloration of the penis indicates that the condom is too tight.
2. Assess the urine flow.
3. Prevent any twisting and pulling of the catheter.

Condom catheters can be used for a maximum of 3 days.

Please note:

For patients who have a reflex erection: if the condom is applied when the penis is flaccid and the patient has a reflex erection, the condom catheter may be too small and could therefore obstruct the urine flow. The condom catheter should be applied during the erection, if any.

36.C.j Reflex urination: suprapubic tapping and pressure

Suprapubic tapping and pressure on the bladder are used for stimulation if the patient has a reflex for urinating and the urine is collected without a catheter. The patient should have been taught to do these procedures while still in the hospital. The home-care team must ensure that the patient understands how to perform them correctly.

For a spastic bladder:

1. Tap the lower abdomen just above the pubis and overlying the bladder with the tips of the fingers.
2. Keep tapping until the urine flows (not longer than 10 minutes).
3. More or less 70 taps, not too strong and not too weak.
4. Stop tapping when the urine flows.
5. When urine stops flowing, start tapping again.
6. Repeat this procedure until a good amount of urine is out of the bladder.

For a flaccid bladder:

1. Use the abdominal muscles as if defecating or press with the hands over the bladder.

The tapping/pressure session should be repeated every 4 hours and the patient should never miss a session; before sleeping, another session should be completed.

A urinary condom is applied to collect the urine. Such devices are not available for women; disposable urinary pads or baby diapers (nappies) may be used instead.

The home-care team must check the amount of *residual urine* every two weeks. The bladder is emptied by sterile catheterization and the patient drinks 4 glasses of water. The patient then urinates by whatever method is used. A catheter is passed again to measure the residual urine. The amount of residual urine should be less than 75 ml. If more than this amount is recorded on several tests, the patient should be referred for a change of method of bladder care.