

URO-TAINER® CATHETER MAINTENANCE GUIDE TO THE RIGHT MANAGEMENT PLAN



INTRODUCTION

Caring for and maintaining indwelling catheters is important in preventing problems such as blockage. The various causes can be minimised through a proactive approach.

The Uro-tainer® concept has been developed to replace standard bladder irrigation using syringes to reduce the associated risks of contamination and excessive pressure and/or vacuum on the bladder wall (Getliffe K.A. 1996)¹.

The Uro-tainer® product line consists of different fluids that have their own distinct indications for use.

The most common indication is combatting and preventing catheter scale and calcification. The research of professor Getliffe (Getliffe K.A 1994)² demonstrated that calcification occurs in 50% of all indwelling catheters, potentially resulting in catheter blockage.

This brochure will provide you with instructions on using Uro-Tainer® solutions effectively for catheter maintenance.

These guidelines are evidence-based, yet should not replace professional judgement and action.

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THE MOST COMMON PROBLEMS WITH INDWELLING CATHETERS

Infection:

- Urinary tract infections associated with indwelling catheters make up roughly 45% of all hospital infections (Winn C. 1996)³.
- Research shows that in 62% of all cases a significant quantity of bacteria is present in the bladder after just three weeks (Kumon H. et. al 2001)⁴.

Bypassing:

Leakage along the catheter is a very common problem in patients with an indwelling catheter.

The most common leakages are caused by:

- Catheter blockage
- Cracked drainage tube leading to the urine collection bag
- Incorrect catheter or balloon size
- Elevated pressure on the catheter due to constipation
- Detrusor instability or "unstable bladder" - whenever the detrusor muscle spontaneously contracts, it causes bladder spasms that results in leakage around the catheter. These contractions can be strong enough to push catheter out of the bladder.
- Trigone irritation/bladder spasms; often as a result of irritation resulting from incorrect catheter or balloon sizes, or traction on the catheter.

(Rew M. & Woodward S. 2001)⁵

Pain and discomfort:

If the catheter wearer indicates pain, verify that:

- The catheter is the correct CH size and /or length
- No traction is being exerted on the catheter
- Bladder spasms are not occurring
- A urinary tract infection is not present

Proper measures must be taken based on the cause.

Blockage:

There are several reasons why the catheter may become blocked:

- Constipation
- Catheter drainage openings have been closed by the bladder wall, for example as a result of suction
- Calcification
- Debris formation

A blockage can lead to urine retention, patient discomfort and leakage along the catheter. Calcification and debris formation are the most common causes of blockage (Getliffe K.A. 1996)¹.

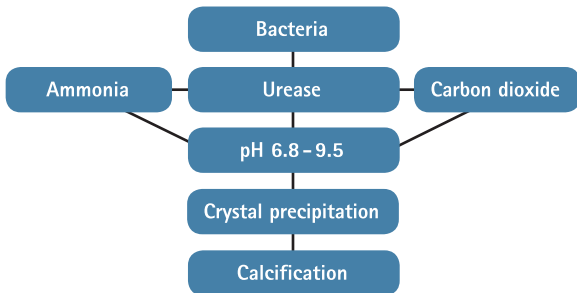
Calcification:

Calcification is the most common cause of blocked catheters (Getliffe K.A. 1996)¹. Bacteria in the urine, such as *Proteus mirabilis*, produce an enzyme called Urease. This splits urea into ammonia and carbon dioxide. This results in an increase in pH with the urine becoming alkaline, leading to ideal conditions for the development of crystals, for example magnesium ammonium phosphate and calcium phosphate.

These crystals form around the eyes, on the balloon and in the catheter's internal lumen.

Catheters wearers can be divided roughly into two categories:

1. Blockers: This group develops calcification within a few days or weeks
2. Non-Blockers: This group has no or hardly any calcification even after long period of weeks or months.



Debris Formation:

Debris formation can block the catheter. Causes of this are:

- Urothelial cells from the bladder wall
- Tumor cells
- Infection
- Blood resulting from illness, urological surgery or trauma

NB: Sufficient fluid intake promotes a good natural flush.

CATHETER LIFESPAN

Catheter blockage can result from a number of different causes, therefore, discovering the exact cause of the blockage is also important. Frequently changing an indwelling catheter can increase risk of infection and discomfort for the catheter wearer.

If the useful life of the catheter is threatened by biofilm, calcification or debris formation, interventions with the correct Uro-Tainer® rinse fluids, in addition to a healthy diet and sufficient fluid intake, can increase the catheter's lifespan.

It is advisable to record the date of the very first catheter placement and the reason for the removal in the management plan.

As a rule, a clear picture of the catheter's lifespan arises after three to five catheters are evaluated (Norberg B. et al 1983)⁶.

EVALUATING / MANAGING CALCIFICATION

Blockages resulting from calcification can usually be identified using a combination of following points:

pH indicator

Check urine pH regularly since an alkaline urine (indicated by a high pH) is a strong indication of possible calcification (Getliffe K.A. & Dolman M. 1997)⁷. pH can be measured using common pH strips.



Culture

Bacteria in the urine, such as *Proteus mirabilis*, in combination with alkaline urine create ideal conditions for the onset of calcification.

Inspection

If it is suspected that a blockage has resulted from calcification, checking the catheter by cutting it open along its length after it has been removed is recommended.

If the catheter's blockage is attributable to calcification, the right solution is **Uro-Tainer® Suby G**. If **Uro-Tainer® Suby G** does not provide a sufficient result, **Uro-Tainer® Solutio R** can be selected. Using the **Solutio R** no longer than 2 to 3 consecutive weeks and then switching back to **Suby G** is recommended; this, in connection with high acidity of **Solutio R**, may irritate the bladder wall.

The period during which the catheter is in place must be constantly monitored and documented.

The effectiveness of **Uro-Tainer® Suby G** or **Uro-Tainer® Solutio R** can then be evaluated and the management plan can be continued or corrected accordingly.



B. Braun Uro-Tainer® Suby G 100mL or Twin (2 x 30mLs)



Indication: A mildly hypotonic fluid that is less irritating as a result of the addition of magnesium. This fluid is specially designed to prevent phosphate crystallisation and dissolve existing calcification in indwelling catheters.

Recommend rinse frequency: 2 to 3 times per week depending on the scope of the problem, unless prescribed differently by the doctor. The fluid must remain in the catheter for 5 minutes.

Composition: Per 100mL: Citric acid monohydrate 3.23g, mild magnesium oxide, 0.38g, sodium bicarbonate 0.7g, edetate disodium $2H_2O$ 0.01g in water for injection. pH = 4.2

B. Braun Uro-Tainer® Solutio R 100mL or Twin (2 x 30mLs)



Indication: A mild hypotonic fluid that is specially designed for catheters with stubborn calcification where Suby G does not provide a sufficient result. This is due to its higher concentration of acetic acid and gluconolactone. In addition, this fluid minimises trauma when removing an indwelling catheter.

Recommend rinse frequency: 2 to 3 times per week depending on the scope of the problem, unless prescribed differently by the doctor. The fluid must remain in the catheter for 5 minutes.

Composition: Per 100mL: Citric acid monohydrate 6.0g, gluconolactone 0.6g, mild magnesium carbonate 2.8g, edetate disodium $2H_2O$ 0.01g in water for injection. pH=4

EVALUATING / MANAGING DEBRIS OR BIOFILM FORMATION

If the catheter is blocked and the blockage cannot be attributed to calcification, and there is a potential for bacterial colonisation or debris formation, this is a good indication that debris or biofilm formation is the cause of the blockage.

Uro-Tainer® PHMB

Uro-Tainer® PHMB is a catheter maintenance solution for reducing bacterial colonisation within the catheter.

What is PHMB?

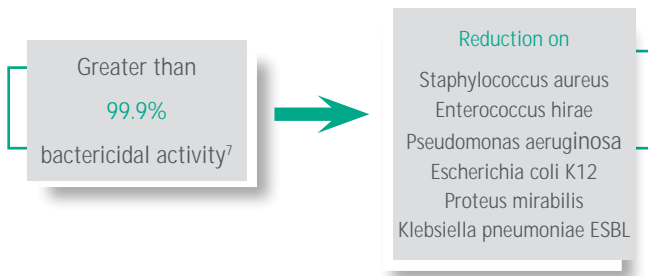
Protects Helps Minimises Bacteria

PHMB (known chemically as Poli Hexa Methyline Biguinide or Polihexanide) is active against gram – and gram + bacteria, fungi and yeast including MRSA, *Pseudomonas aeruginosa*, VRE etc.

Bacterial colonisation of urinary catheters is aided by the formation of biofilm, which protect the microorganisms and makes them difficult to eradicate^{9,10,11}. These are particularly hard to destroy as they can adhere strongly to the surface of the catheter. Studies have shown PHMB prevents the adhesion of bacteria and biofilm formation¹². Its cationic nature will destroy the cell membrane integrity, thus killing the bacteria^{12,13,14}.

Standard therapeutic doses of antibiotics may have little or no effect on bacteria in biofilm. Evidence suggests that physical removal i.e rinsing is the best method of biofilm removal⁹.

Uro-Tainer® PHMB is more effective than saline in reducing the bacterial load in the catheter.



If the catheter's blockage is attributed to debris formation, the right solution is Uro-Tainer® NaCl 0.9%

The period during which the catheter is in place must be constantly monitored and documented. The effectiveness of Uro-Tainer® PHMB or NaCl 0.9% can then be evaluated and the management plan can be continued or corrected accordingly.

B. Braun Uro-Tainer® PHMB



Indication: PHMB is recommended to help aid the removal of debris, mucus, light haematuria and provide bacterial decolonisation of the catheter.

Recommend rinse frequency: The regime varies from user to user; up to one or two irrigations per day may be required.

Composition: Polihexanide 0.02%. pH = 7

B. Braun Uro-Tainer® NaCl 0.9%



Indication: This isotonic fluid is used primarily for cleaning the bladder and catheters mechanically, e.g. in the case of debris formation in the bladder.

Recommend rinse frequency: 1 to 2 times per day depending on the scope of the problem, unless prescribed differently by the doctor.

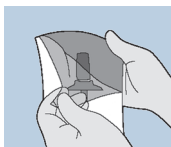
Composition: Sodium Chloride 0.9%. pH = 7

INSTRUCTIONS FOR USE



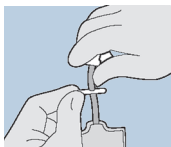
Step 1

If desired, warm the Uro-Tainer® in lukewarm water. In the meantime, wash your hands thoroughly.



Step 2

Cut open the plastic wrapper and remove the Uro-Tainer® from the package.



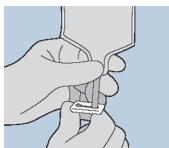
Step 3

Using the slide clamp, close off the Uro-Tainer® cannula.



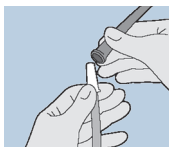
Step 4

Remove the safety ring and pull off the protective cap from the Uro-Tainer® catheter tip, without touching the catheter tip.



Step 5

Open the cannula by sliding the clamp back. Let a few drops of Uro-Tainer® fluid drip into the catheter so that all air is removed from the cannula.



Step 6

Connect the Uro-Tainer® catheter tip to the catheter.



Step 7

Let the fluid flow in by gravity. Let the fluid sit in the catheter for 5 mins by closing the clamp, unless the Uro-Tainer® is being used for mechanical rinsing (Polihexanide and NaCl 0.9%) If using PHMB or NaCl no need to wait for 5mins.



Step 8

Reopen the clamp and let the fluid flow back by holding the Uro-Tainer® down. When it is full, close the clamp and uncouple the Uro-Tainer® from the catheter.

Note:

If using Uro-Tainer® Twin repeat steps 7 and 8 when using the 2nd solution chamber.

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A special thanks goes to Maggie Rew, who wrote this booklet.

Maggie Rew, MBA, RGN, has many years nursing experience in urology and the field of catheter care. She has many publications to her name about the subject and teaches nurses and Doctors in London and at conferences around the country. Maggie is passionate about patients dignity, respect and their quality of life, and this area of nursing care greatly impacts all of those aspects. As nurse consultant for B. Braun Medical, the concept of Uro-Tainer® and Uro-Tainer® Twin was devised by Maggie following years of research on catheter blockage with encrustation, and the need to develop a product to improve the catheter patency and so give patients a better quality of life.

With B. Braun's reputation for the highest quality products and Maggie's reputation for the highest standards of nursing practice and catheter care knowledge, sharing expertise resulted in a highly successful product and highly satisfied patients.

OVERVIEW OF THE URO-TAINER® PRODUCT LINE

Product	Solution Type	Size	Box Qty	B. Braun Code
Uro-Tainer®	NaCl 0.9%	100 ml	10	FB99833
	Suby G	100ml	10	FB99839
	Solutio R	100ml	10	FB99841
	PHMB	100 ml	10	FB99965
Uro-Tainer® Twin	Suby G	2 x 30 ml	10	9746609
	Solutio R	2 x 30 ml	10	9746625

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