# Index

<table>
<thead>
<tr>
<th>Introduction</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional Requirements for Nurses Administering Cytotoxic or Immunotherapeutic Medication</td>
<td>4</td>
</tr>
<tr>
<td>Intravesical Chemotherapy</td>
<td>5</td>
</tr>
<tr>
<td>Procedure for a Single Postoperative Dose of Intravesical Chemotherapy</td>
<td>7</td>
</tr>
<tr>
<td>Procedure for a Course of Intravesical Chemotherapy</td>
<td>11</td>
</tr>
<tr>
<td>Intravesical Immunotherapy</td>
<td>15</td>
</tr>
<tr>
<td>Combined Interferon/BCG Therapy</td>
<td>21</td>
</tr>
<tr>
<td>Guidelines for Manual Bladder Irrigation (MBI)</td>
<td>22</td>
</tr>
<tr>
<td>Guidelines for Postoperative Continuous Bladder Irrigation (CBI)</td>
<td>26</td>
</tr>
<tr>
<td>References</td>
<td>29</td>
</tr>
</tbody>
</table>

## Appendices

- Appendix 1 Medication information on Mitomycin-C, Doxorubicin, Epirubicin | 31   |
- Appendix 2 Medication information on BCG                                 | 33   |
Introduction

Welcome to the first edition of Clinical Guidelines for Intravesical Instillations.

In 2011 the Australia and New Zealand Urological Nurses Society Inc (ANZUNS) agreed to develop clinical guidelines in this area. Anecdotally there were differences in practice and it was felt we needed a consensus document for our members to access. A project officer was appointed to develop the guidelines and report back at the Darwin conference in April 2012.

Trish White has edited this first edition, and our thanks also go to the following who kindly volunteered to peer review the document:

Jean Bothwell, Clinical Nurse Specialist Urology
Waitemata District Health Board, Auckland, New Zealand

Melinda Fieldsend, Urology Nurse Practitioner (Candidate)
Urology & Continence Department
Mater Health Services
South Brisbane, Queensland, Australia

Marco Hake Clinical Nurse Consultant
Urology/ Continence/ Stomal Therapy
WACHS-Great Southern Health Service
Albany Hospital, Western Australia

Marianne Lyon
Auckland District Health Board, New Zealand

Billy Allan, Chief Pharmacist
Hawke’s Bay District Health Board, Hastings, New Zealand

We would also like to thank our international colleagues, we were able to access expertise in this area from around the world through the Global Alliance of Urology Nurses. We would especially like to thank Jeff Albaugh in the USA and Lucinda Poulton the President of BAUN who were both happy to collaborate and share their resources.

The guidelines have been produced to assist urology nurses in the safe administration of intravesical instillations. They can be used as a guide to practice but are not definitive and local policy must be followed. Recommended evidence based best practice has been utilised as a basis for this guideline.

Alison Overton
ANZUNS President
April 2012
Professional Requirements for Nurses Administering Intravesical Cytotoxic or Immunotherapeutic Medicines

This guideline applies to Registered Nurses who meet the following criteria:

1. Experienced Urology Nurse working in a urology or oncology department
2. Demonstrates a clear understanding of urological anatomy, physiology and bladder cancer
3. Has completed a training programme, according to local policy, on the administration of cytotoxic medication including intravesical medication and health and safety requirements
4. Expert skills at urethral catheterisation in both male and females
5. Pharmacological knowledge of medications used in the treatment of bladder cancer
6. A register should be kept of all Registered Nurses certified in this procedure at your place of employment.

ANZUNS recommends nurses who are pregnant or trying to conceive should not handle cytotoxic medication, administer it or handle waste products.

Supporting evidence for ANZUNS Inc statement on professional requirements

It is recommended Registered Nurses are assessed annually to maintain competency in the administration of cytotoxic or immunotherapeutic medication.

Only Registered Nurses with specific education and training in the safe handling of anti-cancer medication and related waste should administer anti-cancer therapies.

Employers must ensure nurses involved in administering anti-cancer medication have access to education, training and environmental factors such as ease of access, light and space and other resources are addressed as a matter of necessity to ensure minimum professional and safety standards are met.

Employers must ensure that risk assessments have been conducted and recommended processes are in place to enable nurses to maintain their competency and scope of practice in this field.

Cancer Nurses Society of Australia (2010)

Cancer Nurses Section, New Zealand Nurses Organisation (2011)
Intravesical Chemotherapy

In 2007 there were 369 new registrations of bladder cancer in New Zealand which accounted for 1.87% of all cancer registrations (MOH, 2011). In Australia there were 2217 new registrations for bladder cancer and 925 deaths. These statistics put bladder cancer in the “Top Ten” of cancers in Australia.

Principles

This section applies to those patients with non muscle invasive bladder cancer, Ta, T1 and CIS.

The drugs commonly used for intravesical chemotherapy in Australia and New Zealand are Mitomycin C, Doxorubicin, Epirubicin and these are discussed further in the appendices.

Intravesical chemotherapy will be administered safely in accordance with your local policies, which may include:

- Administration of cytotoxic medications
- Catheterisation (it is assumed nurses administering intravesical chemotherapy are competent in catheterisation of both males and females. This guideline will not include step by step catheterisation instructions)
- Management of Anaphylaxis

The nurse will have completed a competency programme for intravesical chemotherapy.

Definitions of non-muscle invasive bladder cancer

**Ta**
- Non invasive papillary carcinoma

**T1**
- Tumour invades lamina propria

*Carcinoma in Situ (CIS)*
- High grade tumour confined to epithelium, but with a non papillary configuration. Appears as a reddened and velvety mucosa, but sometimes not visible. It can be local or diffuse.

Tumour Grading:
- Papillary urothelial neoplasm of low malignant potential (PUNLMP)
- Low grade papillary urothelial carcinoma - well differentiated
- High grade papillary urothelial carcinoma - poorly differentiated
Indications/ Treatment Recommendations

Transurethral resection (TURBT) is recommended for all patients with nonmuscle invasive bladder cancer.

For low risk disease – a single dose, instillation of chemotherapeutic agent is recommended immediately following TURBT.

For intermediate risk disease – induction course of intravesical BCG with maintenance immunotherapy or intravesical chemotherapy is recommended.

For high risk disease – BCG induction plus maintenance is recommended. (Brausi M., 2011)

Precautions/Contraindications

Please see appendices at end of this document for an outline of specific medications and precautions associated with them.

This section of the guideline will provide procedures for:

– Instillation of a single postoperative dose of intravesical chemotherapy

– Instillation of a course of intravesical chemotherapy
Single Postoperative Dose of Intravesical Chemotherapy

This may be administered immediately at the completion of surgery in theatre, and then completed in recovery. Alternatively, it may be the Registered Nurses responsibility on the postoperative ward.

Equipment

- Protective equipment for the nurse: impervious protective gown, sterile gloves, eye protection, mask N95
- Catheterisation pack
- Catheter valve and medication container/connection device
- Medication in a prefilled syringe
- Skin barrier cream
- Cytotoxic rubbish bags and labels
- Protective sheets or plastic draw sheets
- Cytotoxic spill kit to be available at all times

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior to Surgery</td>
<td></td>
</tr>
<tr>
<td>Gain informed Consent</td>
<td>Shows patient has a good understanding and is well informed of procedure</td>
</tr>
<tr>
<td>Provide written information on procedure stating reasons for treatment</td>
<td></td>
</tr>
<tr>
<td>Outline risks, side effects and potential complications of both surgery and chemotherapy medication to be used</td>
<td></td>
</tr>
<tr>
<td>Check current medications and any known allergies</td>
<td>Prevent medication reaction</td>
</tr>
<tr>
<td>Order prescribed medication</td>
<td>Must be available on day of surgery, preferably within six hours of surgery</td>
</tr>
<tr>
<td>Withhold diuretics prior to surgery if requested by Urologist, this is an individual requirement and may differ</td>
<td>To prevent overdistention of bladder causing discomfort while patient retaining chemotherapy</td>
</tr>
<tr>
<td>Complete preoperative preparation</td>
<td></td>
</tr>
</tbody>
</table>

| Immediately prior to Administration of Chemotherapy                      |                                                                                                            |
| Check operation record, prescription and allergies                       | Prevent medication error and ensure treatment has not altered. Identify any potential complications from surgery, there may be specific instructions from Urologist. |
| Confirm patient identity according to your local policy                  | Two Nurses to check identity and prescription prior to administration of chemotherapy                      |
| Ensure patient privacy and dignity, single room if possible              | To prevent risk of contamination and provide privacy                                                     |
### Assess urine colour and consistency
It is important not to start chemotherapy with heavy haematuria in the postoperative patient as it could be an indicator of perforation following TURBT.
If frank, moderate or heavy haematuria is present treatment may be delayed until it lessens.
Heavy haematuria also has the potential to clot and block catheter.
Always consult with Urologist if unsure whether to proceed.

### Assess temperature
If febrile consult with urologist for confirmation to proceed.

### Assess pain level
If uncomfortable, anticholinergic medication may prevent bladder spasm which could cause catheter bypassing / leakage.
Check any increase in pain is not due to a blocked catheter.

### If bladder irrigation in place, turn it off but do not disconnect tubing. If not in place set up continuous bladder irrigation (CBI) tubing, and sodium chloride 0.9%

### Empty catheter drainage bag and record output
Maintain accurate intake and output records in these patients.

### Assemble required equipment as above

---

### Instillation Procedure

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place protective sheet under penis and above scrotum, or in females tuck it around the labia</td>
<td>To prevent skin contamination in case of spillage.</td>
</tr>
<tr>
<td>Wash hands and don protective equipment</td>
<td>To maintain sterility and to protect yourself from cytotoxic contamination.</td>
</tr>
<tr>
<td>Place sterile guard on top of protective sheet</td>
<td>To maintain sterility.</td>
</tr>
<tr>
<td>Cleanse catheter connection with prescribed solution as per local policy</td>
<td>Prevent infection.</td>
</tr>
<tr>
<td>Disconnect catheter from drainage bag and keep tip sterile</td>
<td>Catheter valve reduces the risk of spillage, If drainage bag or valve becomes contaminated replace with a new one</td>
</tr>
<tr>
<td>Attach catheter valve to assist in controlled instillation</td>
<td></td>
</tr>
<tr>
<td>Attach the medication container to the end of valve, open the valve.</td>
<td></td>
</tr>
<tr>
<td>Slowly instil medication, DO NOT USE FORCE.</td>
<td>Slow instillation allows you to assess patient for discomfort that could be bladder spasm or potential extravasation.</td>
</tr>
<tr>
<td>If painful you should STOP IMMEDIATELY</td>
<td></td>
</tr>
<tr>
<td>Either turn off valve or kink the catheter to prevent leakage while removing medication container</td>
<td>If not using a valve there is a risk of spillage at this point.</td>
</tr>
<tr>
<td>Clinical Guideline</td>
<td></td>
</tr>
<tr>
<td>-------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Instillation of Intravesical Solutions</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Event Description</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependant on postoperative instructions either:</td>
<td>See catheter removal selection below</td>
</tr>
<tr>
<td>- Remove catheter, OR</td>
<td></td>
</tr>
<tr>
<td>- Leave catheter in situ with the valve in the off position, reconnect drainage bag, leave sterile guard over genital area and apply cytotoxic sticker to the top of guard</td>
<td>Warn colleagues of potential for contamination</td>
</tr>
<tr>
<td>Apply a thin covering of barrier spray/cream to the patient’s skin around the genital area and upper/inner thighs</td>
<td>Protective barrier to skin to prevent contamination by chemotherapy</td>
</tr>
<tr>
<td>Dispose of contaminated waste in cytotoxic bag according to local policy</td>
<td></td>
</tr>
<tr>
<td>Apply cytotoxic label to catheter drainage bag</td>
<td>To warn colleagues of potential for contamination</td>
</tr>
<tr>
<td>Ensure the patient is aware of the length of time the medication needs to stay in the bladder</td>
<td></td>
</tr>
</tbody>
</table>
| Ensure patient comfortable and call button within reach, assess patient frequently for pain | Patient may not be aware of leakage if spinal anaesthesia has been given  
Patient may not be able to tolerate a full hour  
There is no benefit to turning the patient as fluid will be in contact with the whole epithelium |
| Periodically check for leakage  
Environmental spills should be treated as per local policy. Any bypassing or leakage requires immediate action; remove protective guards, pads or protective sheets and wash patient’s skin thoroughly with soap and water. | Prevent injury from spillage  
Refer to local cytotoxic policy, spill kit should be available at all times  
Warn colleagues of potential for contamination |

**One hour following instillation (or time prescribed)**

<table>
<thead>
<tr>
<th>Event Description</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unclamp catheter and ensure patency of catheter by ensuring urine is flowing freely</td>
<td>If any haematuria or clots are blocking the catheter a manual bladder irrigation may be required, use cytotoxic precautions</td>
</tr>
<tr>
<td>Turn on continuous bladder irrigation and flush through chemotherapy using minimum 1 litre of irrigating solution</td>
<td></td>
</tr>
<tr>
<td>Measure output and ensure bladder is empty, remove drainage bag containing urine, tie a knot in it and place in cytotoxic rubbish bag and dispose of according to local policy</td>
<td>Ensure bladder is empty, measure output</td>
</tr>
<tr>
<td>Apply new sterile drainage bag</td>
<td></td>
</tr>
<tr>
<td>Document chemotherapy administration on medication chart</td>
<td></td>
</tr>
<tr>
<td>Ongoing assessment of patient for pain and continue postoperative care</td>
<td></td>
</tr>
</tbody>
</table>

**If catheter is to be removed immediately following instillation**

<table>
<thead>
<tr>
<th>Event Description</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cytotoxic protective equipment to be worn if the bladder has not been irrigated, otherwise universal precautions sufficient</td>
<td></td>
</tr>
<tr>
<td>Place protective sheeting underneath patient</td>
<td></td>
</tr>
</tbody>
</table>
Remove catheter slowly, dispose of as per local cytotoxic policy, wash patient’s genital area with soap and water | Prevent contamination and urine flicking from the tip
---|---
Patient to stay in bed for one hour while medication is in place
Ensure patient comfortable and call button within reach, assess patient frequently for pain
Periodically check for leakage
Environmental spills should be treated as per local policy | Prevent spillage/contamination of chemotherapy
Patient to sit to void
Flush toilet twice
Advise patient to wash the genital area well with soap and water. | Increase in pain could be due to either urinary retention or bladder perforation
---|---
Assess success of trial without catheter as per local policy | Prevent potential contamination in laboratory services
Urine samples should not be sent to a laboratory in the next 72hrs unless urgent, any samples must be clearly marked as cytotoxic and caution needs to be taken by laboratory staff to prevent contamination
Encourage fluids up to 2-3L in the following 24hrs | This guideline has been developed from information in the following documents:

(BAUN, 2010), (Arrow Pharmaceuticals, 2010), (Bristol-Myers Squibb, 2010), (Pfizer, 2011), (WA Cancer and Palliative Care Network, 2010), (WDHB, 2010), (ADHB, 2012)
Clinical Guideline
Instillation of Intravesical Solutions

11

**Procedure for a Course of Intravesical Chemotherapy**

**Definition**

Patients with non invasive bladder cancer are often managed with TURBT then a course of intravesical chemotherapy. Regimes depend on the type of tumour and can differ. The aim is to achieve disease control and a decrease or eradication of tumours.

**Contraindications**

It is not to be given within two weeks of surgery if bladder injury sustained eg perforation

History of allergy or adverse reaction to medications

Specific medication contraindications are available in the appendices.

**Equipment**

- Protective equipment for the nurse: impervious protective gown, sterile gloves, eye protection, mask N95
- Catheterisation pack
- Lignocaine gel 2%
- Chlorhexidine
- Small gauge intermittent catheter or indwelling catheter if needed
- Catheter valve
- Medication in prefilled syringe, may need connection device
- Skin barrier cream
- Cytotoxic rubbish bags and labels
- Protective sheets or plastic draw sheets
- Cytotoxic spill kit to be available at all times

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prior to Treatment</strong></td>
<td></td>
</tr>
<tr>
<td>Gain informed Consent provide written information on procedure stating reasons for treatment Outline risks, side effects and potential complications of both surgery and chemotherapy medication to be used</td>
<td>Shows patient has a good understanding and is well informed of procedure</td>
</tr>
<tr>
<td>Check current medications, allergies and no prior adverse reaction to chemotherapy</td>
<td>Prevent medication reaction</td>
</tr>
<tr>
<td>Order prescribed medication</td>
<td>Must be available on day of treatment</td>
</tr>
<tr>
<td>Withhold diuretics prior to treatment if requested by Urologist, this is an individual requirement and may differ</td>
<td>To prevent overdistention of bladder causing discomfort while patient retaining chemotherapy</td>
</tr>
</tbody>
</table>
### Clinical Guideline
**Instillation of Intravesical Solutions**

| Obtain MSU the week prior to treatment | To rule out urinary tract infection and allow time to treat if urine positive |
| Dipstick urine on day of treatment | |

#### Immediately prior to Administration of Chemotherapy

| Check prescription and allergies | Prevent medication error and ensure treatment plan has not altered |
| Confirm patient identity according to your local policy | Two nurses to check identity and prescription prior to administration of chemotherapy |
| Assess patient for suitability to continue with procedure: Urine: colour, haematuria, clarity, dysuria General assessment: has there been any change in symptoms since previous treatment eg elevated temperature or rash | If UTI suspected withhold treatment and send MSU for culture and sensitivity and treat as per local policy, it may be safe to proceed but always consult Urologist if unsure If uncomfortable, anticholinergic medication may prevent bladder spasm which could cause leakage |
| Assess if patient will be able to retain chemotherapy or will a temporary catheter be required | To maximise amount of time chemotherapy will be able to be retained in the bladder |
| Assemble required equipment as above and ensure it is located conveniently | |

#### Instillation Procedure

| Place protective sheet under penis and above scrotum, or in females tuck it around the labia | To prevent skin contamination in case of spillage |
| Wash hands and don protective equipment | To maintain sterility and to protect yourself from cytotoxic contamination |
| Prepare sterile field and equipment | |
| Place sterile guard on top of protective sheet | To maintain sterility |
| Clean genital area with chlorhexidine | Decrease risk of infection |
| Insert lignocaine gel if prescribed and wait two to three minutes before proceeding with catheterisation | Increase patient tolerability of treatment |
| Insert small gauge intermittent catheter, or indwelling catheter if plan is to leave it in situ for treatment Follow your local catheterisation policy | Maintain aseptic technique to decrease risk of infection |
| Ensure catheter is within bladder and drain all urine | To improve medication efficacy |
| Observe for evidence of haematuria. | If signs of traumatic catheterisation present then remove catheter and abandon treatment as this would increase the risk of systemic absorption If only slight haematuria then safe to proceed |
| Attach the medication container to the end of catheter and slowly instil medication, DO NOT USE FORCE. If painful you should STOP IMMEDIATELY | Slow instillation allows you to observe patient for discomfort that could be bladder spasm or potential extravasation. There is no benefit to turning the patient as fluid will be in contact with the whole epithelium |
Dependant on patient requirements either:
- Remove catheter slowly, dispose of as per local cytotoxic policy, wash patient’s genital area with soap and water OR
- Leave catheter in situ and clamped

<table>
<thead>
<tr>
<th>If any leakage occurs wash thoroughly with soap and water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apply a thin covering of barrier spray/cream to the patient’s skin around the genital area and upper/inner thighs</td>
</tr>
<tr>
<td>Dispose of contaminated waste in cytotoxic bag according to local policy</td>
</tr>
<tr>
<td>Periodically check for leakage</td>
</tr>
<tr>
<td>Environmental spills should be treated as per local policy. Any bypassing or leakage requires immediate action; remove protective guards, pads or protective sheets and wash patient’s skin thoroughly with soap and water.</td>
</tr>
</tbody>
</table>

| Prevent injury from spillage |
| Refer to local cytotoxic policy, spill kit should be available at all times |
| Warn colleagues of potential for contamination |

<table>
<thead>
<tr>
<th>Ensure the patient is aware of the length of time the medication needs to stay in the bladder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encourage patient to drink 400mL of water half an hour before designated time to void or drain IDC</td>
</tr>
</tbody>
</table>

**One – two hours following instillation (or time prescribed)**

<table>
<thead>
<tr>
<th>Prevent spillage or contamination</th>
</tr>
</thead>
<tbody>
<tr>
<td>After 1 hour instruct patient to void</td>
</tr>
<tr>
<td>Advise caution with handling urine for six hours following treatment</td>
</tr>
<tr>
<td>- Patient to sit to void</td>
</tr>
<tr>
<td>- Flush toilet twice</td>
</tr>
<tr>
<td>- Advise patient to wash the genital area well with soap and water after voiding</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Provides accurate documentation, continuity of treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Document administration on drug chart in patient record</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Encourage patient to drink 2-3L for 24 hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure patient knows how to seek advice for any unexpected symptoms to allow timely treatment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ensure ongoing continuity of treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before the patient leaves make sure he/she is aware of their ongoing treatment plan.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>to prevent contamination to prevent potential contamination in laboratory services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urine samples should not be sent to a laboratory in the next 72hrs unless urgent, any samples must be clearly marked as cytotoxic and caution needs to be taken by laboratory staff during handling</td>
</tr>
</tbody>
</table>
Patients with catheter left in situ following instillation

| If the catheter has been left in for treatment period, after instillation it is spigotted for designated time. An incontinence pad and net pads can be fitted to prevent major spillage. Once treatment time elapsed, remove spigot and empty urine into drainage bag and remove catheter and proceed with instructions in above section, OR apply leg bag if catheter is to remain in place. Dispose of all equipment into cytotoxic waste rubbish bag as per local policy. | Prevent contamination |

Management of spillage/contamination of cytotoxic medication

Prevention of leakage or spills should be a priority when administering intravesical chemotherapy. If contact does occur with the patient’s skin, immediately place absorbent cloth over the area then wash immediately with soap and water and reapply barrier cream. Place the cloth in cytotoxic waste bag.

A chemotherapy spill kit should be available at all times and contain protective clothing (long sleeved gown, overshoes, goggles, gloves, absorbent pads/granules, bleach.

All clinical equipment should be disposed of according to local cytotoxic waste policy including heavily contaminated linen, gowns etc.

Contamination of eyes/mucous membranes: irrigate with copious amounts of sodium chloride 0.9%, (do not use sodium bicarbonate) remove contact lenses prior to irrigation if wearing these; seek medical advice, report incident. Observe eyes for several days for signs of corneal injury.

Ingestion: seek immediate medical advice

Linen: change immediately and dispose of in cytotoxic bag

Clothes: Remove immediately and deal with skin contamination then wash clothes on hot cycle

Incidents should be reported according to your place of employments protocol.

This guideline has been developed from information in the following documents:

(BAUN, 2010), (Arrow Pharmaceuticals, 2010), (Bristol-Myers Squibb, 2010), (Pfizer, 2011), (WA Cancer and Palliative Care Network, 2010), (WDHB, 2010), (ADHB, 2012)
Intravesical Immunotherapy Bacillus Calmette-Geurin (BCG)

Intravesical immunotherapy is superior to intravesical chemotherapy in reducing recurrence and preventing or delaying progression of non invasive transitional cell carcinoma and CIS. (AUA, 2010) (EUA, 2011)

Action

It is a freeze dried preparation of an attenuated strain of Mycobacterium bovis. When administered into the bladder as a cancer therapy, BCG promotes a local acute inflammatory and sub-acute granulomatous reaction with macrophage and leukocyte infiltration in the urothelium and lamina propria of the urinary bladder. The local inflammatory effects are associated with an elimination or reduction of non-muscle invasive cancerous lesions of the urinary bladder. The exact mechanism of action is unknown.

Principles

Used in patients with a diagnosis of non muscle invasive transitional cell carcinoma of CIS.

The aim is to reduce risk of progression and disease free interval.

Contraindications (also see manufacturers instructions in appendices)

BCG should not be administered within two weeks of instrumentation or tumour resection, or patients with active tuberculosis or a prior history of tuberculosis, HIV positive, currently having radiotherapy or chemotherapy.

Check patient is cognitively able to follow pre and post treatment procedures or they must have a person with them who can supervise them.

Check for a history of rheumatic fever or artificial valve replacements as cardiologist may prefer to have antibiotic cover for procedure.

Check allergies and check they have not had any prior adverse reactions to intravesical chemotherapy, immunotherapy or seasonal influenza vaccinations, check they are not on concurrent immunosuppressant therapy.

Pregnant or nursing mothers

Children
**Procedure for a course of Intravesical Immunotherapy**

**Equipment**

- Protective equipment for the nurse: impervious protective gown, sterile gloves, eye protection, mask N95
- Catheterisation pack
- Lignocaine gel 2%
- Chlorhexidine
- Small gauge intermittent catheter or indwelling catheter if needed. Catheter size selection is based on the patient’s clinical assessment but aim for smallest possible gauge
- Catheter valve
- BCG in prefilled syringe, with cap applied
- Connection device to attach BCG syringe to catheter to minimise spillage
- Skin barrier cream
- Hazardous rubbish bags
- Protective sheets or plastic draw sheets
- Cytotoxic spill kit to be available at all times
- Bleach (a commercial household product is adequate)

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prior to Treatment</strong></td>
<td></td>
</tr>
<tr>
<td>Gain informed Consent provide written information on procedure stating reasons for treatment Outline risks and side effects of BCG</td>
<td>Shows patient has a good understanding and is well informed of procedure</td>
</tr>
<tr>
<td>Check current medications, allergies and no prior adverse reaction to chemotherapy</td>
<td>Prevent medication reaction</td>
</tr>
<tr>
<td>Order prescribed BCG</td>
<td>Must be available on day of treatment and BCG should be administered within two hours of mixing</td>
</tr>
<tr>
<td>Withhold diuretics prior to treatment if requested by Urologist, this is an individual requirement and may differ</td>
<td>To prevent overdistention of bladder causing discomfort while patient retaining chemotherapy</td>
</tr>
<tr>
<td>Obtain MSU the week prior to treatment</td>
<td>To rule out urinary tract infection and allow time to treat if urine positive If UTI suspected withhold treatment and send for culture and sensitivity and treat with antibiotics as per local policy</td>
</tr>
<tr>
<td>Dipstick urine on day of treatment</td>
<td></td>
</tr>
<tr>
<td><strong>Immediately prior to Administration of BCG</strong></td>
<td></td>
</tr>
<tr>
<td>Check prescription and allergies</td>
<td>Prevent medication error and ensure treatment plan has not altered</td>
</tr>
<tr>
<td>Confirm patient identity according to your local policy</td>
<td>Two nurses to check identity and prescription prior to administration of BCG</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Assess patient for suitability to continue with procedure: Urine: colour, haematuria, clarity, dysuria General assessment: has there been any change in symptoms since previous treatment eg elevated temperature or rash</td>
<td>If uncomfortable, anticholinergic medication may prevent bladder spasm which could cause leakage Specifically no haematuria in the 24hrs prior to instillation</td>
</tr>
<tr>
<td>Assess if patient will be able to retain medication or will a temporary indwelling catheter be necessary.</td>
<td>To maximise amount of time BCG can be retained in the bladder Patients with high residuals need catheterising for two hours, then draining before IDC removed as they have delayed emptying and a longer dwell time of BCG can lead to severe flu like symptoms</td>
</tr>
<tr>
<td>Assemble the required equipment as above and ensure it is located conveniently</td>
<td></td>
</tr>
</tbody>
</table>

### BCG Instillation Procedure

| Place protective sheet under penis and above scrotum, or in females tuck it around the labia | To prevent skin contamination in case of spillage |
| Wash hands and don protective equipment | To maintain sterility and to protect yourself from cytotoxic contamination |
| Prepare sterile field and equipment | |
| Place sterile guard on top of protective sheet | To maintain sterility |
| Clean genital area with chlorhexidine | Decrease risk of infection |
| Insert lignocaine gel and wait two to three minutes before proceeding with catheterisation | Increase patient tolerability of treatment |
| Insert intermittent catheter, or indwelling catheter if plan is to leave it in situ for treatment Follow your local catheterisation policy | Maintain aseptic technique to decrease risk of infection |
| Ensure catheter is within bladder and drain all urine | To improve medication efficacy |
| Observe for evidence of haematuria. | If signs of traumatic catheterisation present then remove catheter and abandon treatment as this would increase the risk of systemic absorption |
| Attach the medication container to the end of catheter according to manufacturer instructions and slowly instil medication, DO NOT USE FORCE. If painful you should STOP IMMEDIATELY | Slow instillation allows you to observe patient for discomfort that could be bladder spasm or potential extravasation. There is no benefit to turning the patient as fluid will be in contact with the whole epithelium (BAUN, 2010) |
Dependant on patient requirements either:
- Remove catheter carefully, OR
- Leave catheter in situ and clamped. After instillation spigot, an incontinence pad and net pads can be fitted to prevent major spillage.

| If any leakage occurs wash thoroughly with Sodium Chloride 0.9% or soap and water
| Dispose of contaminated waste in a hazardous bag according to local policy
| Environmental spills should be treated as per local policy.

Prevent injury from spillage
Refer to local cytotoxic policy, spill kit should be available at all times
Warn colleagues of potential for contamination

Ensure the patient is aware of the length of time the BCG needs to remain in the bladder

Patient may mobilise in the department
Some allow the patient to go home at this point and void there
Patient must never forcibly retain BCG solution as this can lead to systemic side effects.

Encourage patient to drink 400mL of water half an hour before designated time to void or drain IDC

<table>
<thead>
<tr>
<th>Two hours following instillation (or time prescribed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>After 2 hours instruct patient to void</td>
</tr>
<tr>
<td>Advise caution with handling urine for six hours following treatment</td>
</tr>
<tr>
<td>- Patient to sit to void</td>
</tr>
<tr>
<td>- Pour two cups of undiluted bleach into toilet and leave for 15-20 minutes then flush</td>
</tr>
<tr>
<td>- Advise patient to wash the genital area well with soap and water.</td>
</tr>
</tbody>
</table>

Prevent contamination

Document administration on drug chart in patient record

Provides accurate documentation, continuity of treatment

Encourage patient to drink 2-3L/24hrs for one week and avoid tea, coffee, alcohol and cola drinks as they may increase bladder irritation

Ensure patient knows how to seek advice for any unexpected symptoms to allow timely treatment

Urine samples should not be sent to a laboratory in the next 72hrs unless urgent, any samples must be clearly marked as infectious and caution needs to be taken by laboratory staff to prevent contamination

Before the patient leaves make sure he/she is aware of their ongoing treatment plan.

Ensure continuity of treatment
Patients with catheter left in situ following BCG instillation

<table>
<thead>
<tr>
<th>Patients with catheter left in situ following BCG instillation</th>
<th>To prevent spillage or contamination</th>
</tr>
</thead>
<tbody>
<tr>
<td>If the catheter has been left in for the treatment period, after instillation it is spigotted for two hours. An incontinence pad and net pads can be fitted to prevent major spillage. After two hours remove spigot and empty urine into drainage bag and remove catheter and proceed with instructions in above section, OR apply leg bag if catheter is to remain in place. Dispose of all equipment into hazardous waste rubbish bag as per local policy.</td>
<td></td>
</tr>
</tbody>
</table>

Patient Information should include:

- Purpose and action of BCG
- Risks and side effects and what to do if they occur
  - Cystitis and dysuria, approximately 50% will experience bothersome LUTS (Boyd, 2003)
  - Haematuria
  - Flu like symptoms
  - Fever, night sweats
  - Pneumonitis
  - Fatigue
  - Joint Pain
  - Granulomatous Prostatitis, orchitis
  - Reduced bladder capacity
  - BCG Sepsis
- Specific instructions on UTI management: Inform their health profession if symptoms appear, some antibiotics including fluoroquinolones, macrolides, tetracyclines and aminoglycosides are contraindicated and can render the BCG ineffective. GPs need to be informed of this potential problem.
- Inform patients treatment with BCG can raise PSA levels
- Management plan – frequency of treatment and cystoscopy surveillance
- Fluid recommendations – drink 2-3L daily following treatment and no fluids four hours prior to treatment
- Omit diuretics if a morning treatment is planned, take them afterwards
Sexual activity – no intercourse for 48hrs after treatment. Either refrain or wear condoms at other times.

Instructions on voiding post treatment

Influenza vaccines should be administered at least six weeks prior to BCG therapy

Management of spillage/contamination

Prevention of spills should be a priority when administering BCG. If contact does occur with the patient’s skin, immediately place an absorbent cloth over the area then wash immediately with soap and water. Place the cloth in a hazardous waste bag

Chemotherapy spill kit should be available at all times and contain protective clothing (long sleeved gown, overshoes, goggles, gloves, absorbent pads/ granules, bleach.

All clinical equipment should be disposed of according to the local hazardous waste policy including heavily contaminated linen, gowns etc.

Contamination of skin: mop up excess with absorbent pad, irrigate with sodium chloride 0.9%, and wash with soap and water, report the incident according to local policy

Contamination of eyes/mucous membranes: irrigate with copious amounts of sodium chloride 0.9%, remove contacts prior to irrigation if wearing them, and seek medical advice, report incident according to local policy

Ingestion: seek immediate medical advice

Linen: change immediately and launder as soiled linen

Clothes: Remove immediately and deal with skin contamination then wash clothes on hot cycle in dilute bleach solution

This guideline has been developed from information in the following sources:

(BAUN, 2010), (Merck Sharp & Dohme, 2011), (Sanofi-Adventis, 2009), (WDHB, 2010), (WA Cancer and Palliative Care Network, 2010), (ADHB)
BCG/Interferon Combination Therapy

Indications

Patients who are at high risk of disease recurrence and/or progression after failing BCG treatment

Patients who are BCG intolerant or refractory

Patients where BCG alone is inappropriate due to co-morbidities and is unfit for or refuse cystectomy

Method of Action

Treatment interferes with cancer cells and stops growth and division

Stimulates the immune system by encouraging killer T cells and other cells to attack cancer cells

Encourages cancer cells to send out chemicals that attract immune system cells to them

Treatment

Six week induction course of Interferon alpha 2b plus reduced dose of BCG followed by maintenance doses at three, six and twelve month intervals.

Instillation and instructions as the same as for BCG although because Interferon is water soluble patients are advised only to drink as their thirst dictates in the first 24 hours.

Side Effects

Similar to BCG although patients get more flu-like symptoms, especially joint pain. (ADHB)

Further Reading

The Journal of Urology Vol 166, Issue 4, October 2001 Pages 1300 – 1305
Guidelines for Manual Bladder Irrigation (MBI)

Catheter associated urinary tract infection (CAUTI) is a potential problem in all catheterised patients. It is the most common health care associated infection worldwide (Hooten, 2010). There is mounting evidence to recommend against routine irrigation of catheters with sodium chloride 0.9% or manual bladder irrigation when a catheter is blocked.

Supporting evidence

- Routine bladder washouts should only be attended if there is a clinical indication for doing so eg clot evacuation (ANZUNS, 2009)
- Bladder irrigation/washouts did not prevent catheter associated infection (Wilson, 2011)
- Bladder irrigation, instillation and washout should not be used to prevent catheter-associated infection (Nursing Times, 2007)
- Catheter irrigation with sodium chloride 0.9% should not be used routinely to reduce catheter associated bacteruria, CAUTI or obstruction in patients with long-term indwelling catheterisation (Hooten, 2010)
- If obstruction occurs and it is likely that the catheter material is contributing to obstruction, change the catheter. Further research is needed on the benefit of irrigating the catheter with acidifying solutions and this remains an unresolved issue. Unless obstruction is anticipated with bleeding following prostate or bladder surgery bladder irrigation is not recommended. Routine irrigation of the bladder with antimicrobials is not recommended (Gould, 2010)

ANZUNS Inc Recommendation

If a urethral catheter is blocked it should be removed and changed.

We do not recommend the use of regular bladder irrigation to prevent CAUTI or encrustation of catheter. An individualised catheterisation plan should be implemented to manage the frequency of catheter changes to suit the patient, ie before blockage of catheter becomes an acute event.

Catheter irrigation may be carried out following urological surgery when it is anticipated the cause for catheter blockage is related to haematuria or clot retention.
Clinical Guideline
Instillation of Intravesical Solutions

23

Procedure for Manual Bladder Irrigation (MBI)

Bladder washout is the instillation of fluid into the bladder via a catheter using a 50 mL catheter tip syringe to flush away debris particularly haematuria and blood clot following surgery. Clot formation may be related to trauma, following surgery and catheter irritation.

As already highlighted it is suggested in the literature that the best management for blocked catheters are regular changes to pre-empt blockage and allow for planned catheter management.

Indications
Retention of urine due to catheter blockage secondary to haematuria +/- clots or prostatic tissue causing bladder distention and abdominal discomfort.

Standard
Bladder irrigation shall be performed safely as a last resort for clearing catheter blockage. It carries a high risk of infection. Catheters that are infected must be changed and not flushed.

Health Professional
Registered Nurse
Registered Midwife
Enrolled Nurse with competency in procedure

Manipulation of the catheter in the postoperative urology patient should only be performed by an experienced urology Registered Nurse or Doctor. This involves deflating the balloon and manipulating the catheter in and out to remove any blockages while performing bladder washout.

Infection
The possibility of introducing a urinary tract infection is very high, so aseptic technique must be strictly adhered to – e.g. handwashing, wear plastic apron to prevent splashing and cross contamination.

Assessment
Always note reasons for catheter changes on care plan. By recording details, patterns can emerge and a catheter management plan developed to prevent blockage.

Fluid Intake
Increasing fluid intake does not have an effect on the prevention of catheter blockage however an increased fluid intake will result in dilute urine which allows the use of a smaller gauge catheter which in turn reduces the risk of urethritis. It will also reduce the risk of constipation which can contribute to leakage and blockage.

Consensus opinion is that cranberry juice can aid in the prevention of encrustation due to E Coli, further studies are needed. (Jepson, Cochrane Review, 2010)
**Solutions**
Warm solution to body temperature to prevent bladder spasm. Chlorhexidine irrigation is not recommended. Sodium Chloride 0.9% is to be used to irrigate catheters that block. It is very effective for patients with reconstructed bladders where there is a large amount of mucous produced.

**Equipment**
Bladder Irrigation pack
Sterile Sodium Chloride 0.9% for irrigation – warmed to body temperature
50mL catheter tip syringe
PPE – gown, goggles, mask
Protective Sheet
Disposal bag
Alcohol wipe or chlorhexidine

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explain the procedure and its purpose to the patient and obtain informed consent. Ensure privacy.</td>
<td>Shows patient has a good understanding and is well informed of procedure</td>
</tr>
<tr>
<td>Position patient in a comfortably, place protective sheet under patient</td>
<td></td>
</tr>
<tr>
<td>Wash your hands as per infection control guidelines</td>
<td>High risk of infection with bladder irrigation</td>
</tr>
<tr>
<td>Prepare equipment on sterile field on trolley, open packs, pour sodium chloride 0.9% into sterile jug and onto swabs, put on PPE</td>
<td></td>
</tr>
<tr>
<td>Using forceps and swabs, cleanse urinary meatus wiping away from meatus, clean length of catheter.</td>
<td>Prevent bacterial contamination into urethra</td>
</tr>
<tr>
<td>Disinfect end of catheter with alcohol wipe, disconnect catheter from drainage bag and place tip of drainage bag in a sterile towel to maintain sterility.</td>
<td>May have to change drainage bag following procedure if contaminated</td>
</tr>
<tr>
<td>Change gloves</td>
<td></td>
</tr>
<tr>
<td>Place sterile drape under catheter connection, place sterile plastic dish under the catheter outlet.</td>
<td>Maintain aseptic procedure</td>
</tr>
<tr>
<td>Draw up sodium chloride 0.9% into the syringe and attach to the outlet of the catheter.</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td></td>
</tr>
<tr>
<td>• Gravity flow washout - gently instil the solution, remove syringe and allow to drain by gravity into dish, OR</td>
<td></td>
</tr>
<tr>
<td>• Syringe washout - if there is no flow reattach the syringe and aspirate the bladder using some force. This is more effective and often needs repeating several times to ensure debris are cleared.</td>
<td></td>
</tr>
<tr>
<td>Avoid suctioning bladder mucosa on aspiration.</td>
<td></td>
</tr>
<tr>
<td>Continue with irrigation until the blockage is cleared and 2 syringes clear of debris or clot are obtained.</td>
<td></td>
</tr>
<tr>
<td>If blockage unable to be cleared catheter may need to be changed. Seek advice if unsure.</td>
<td></td>
</tr>
<tr>
<td>Prevent contamination of urinary tract</td>
<td></td>
</tr>
<tr>
<td>Wipe the end of urine drainage bag with alcohol wipe and reattach to catheter being careful not to contaminate the system, if contaminated change the bag</td>
<td></td>
</tr>
<tr>
<td>Prevents ongoing irritation at bladder neck and accidental dislodgement</td>
<td></td>
</tr>
<tr>
<td>Ensure the catheter is well secured as per local policy</td>
<td></td>
</tr>
<tr>
<td>Remove gloves and dispose of equipment appropriately.</td>
<td></td>
</tr>
<tr>
<td>Wash your hands.</td>
<td></td>
</tr>
<tr>
<td>Leave your patient clean and dry.</td>
<td></td>
</tr>
<tr>
<td>Assess the patient’s response to the procedure, pain, the quality and amount of drainage and document accurately in the patient record.</td>
<td></td>
</tr>
</tbody>
</table>
Guidelines for Postoperative Continuous Bladder Irrigation (CBI)

Definition
Clot retention is a possible complication following urological surgery on the lower urinary tract, particularly prostate and bladder surgery. Continuous Bladder Irrigation is a procedure in which sterile sodium chloride 0.9% is used to prevent clot retention by continuously irrigating the bladder via a three way catheter. Bladder irrigation is required due to the vascular nature of the prostate and the potential for this gland to bleed in the postoperative period.

Health Professional
Registered Nurse or Midwife who has been trained in the management of CBI and care of postoperative urology patients.
Enrolled Nurse with competency in procedure

Infection
The possibility of introducing a urinary tract infection is very high, so aseptic techniques must be strictly adhered to.

Solutions
Sodium chloride 0.9% is the irrigation fluid of choice, it is recognised that it is the mechanical action that removes and dislodges clot rather than the sodium chloride itself.
Water is not used for irrigation, because in theory it may be absorbed via open veins at the surgical site resulting in hyponatraemia or water overload and this may cause dilution of electrolytes in the circulatory system.
Glycine is used in the perioperative period, but is usually completed and sodium chloride 0.9% commenced before arrival in the ward.

TUR Syndrome
Only occurs rarely during or following surgery, often associated with large prostates and long operating time. Glycine irrigation fluid is absorbed into open veins which have a lower pressure than the irrigation fluid in the bladder. This facilitates the absorption of glycine which is non ionic and hypo-osmolar, into the circulatory system, causing fluid overload and low plasma potassium and sodium which can lead to cardiac arrest. Patients with TUR syndrome may present with confusion, disorientation, visual disturbances and seizures due to electrolyte imbalance. This is an emergency.

Clot Retention
Signs and symptoms may include: severe lower abdominal discomfort, pain and distension, the feeling of a need to defaecate, leakage of urine/blood around the catheter, bladder distension, catheter tubing filled with clot and system not draining.

Steps to be taken to assess and manage non drainage of a catheter:
1. Check the drainage bag for:
   a. Amount – is it draining?
   b. Colour
c. Consistency
d. Position
e. Milk tubing and temporarily turn off irrigation.

2. Check the irrigation for the:
   a. Remaining volume? Is it empty?
   b. The height of stand
   c. Level of fluid in chamber.

3. Assess the catheter and the tubing for:
   a. Patency
   b. Kinking
   c. Traction
   d. Leakage

4. Assess patient and fluid balance for signs of fluid retention.

5. Percuss and/or palpate patient’s bladder to assess clinically for retention, do not rely on a bladder scanner.

6. Ascertain the patient’s degree of discomfort by:
   a. Asking the patient to rate the discomfort on a 1 – 10 scale
   b. Compare it with the previous rating
   c. **Remember during assessment, take into account that spinal anaesthesia affects the degree of pain in the post-operative patient**

8. Consider if there was a previous history of catheter blockage eg during the post op period.

9. If no evidence of clot retention, adjust the clamps to ensure continuous flow rate continuing to monitor output and patient’s symptoms.

10. Consider the size of IDC. It may be too narrow a gauge, it should be >20Fr.

11. If the blockage is due to clot/mucous retention:
   a. Turn off the CBI
   b. Perform manual bladder irrigation as above
   c. Once clear, reconnect CBI

12. Ongoing assessment, observe the urinary output to be certain it is running well. Note:
   a. Amount
   b. Colour
   c. Consistency (presence or absence of clots)

13. Initiate steps to prevent subsequent clotting.

14. Ensure the irrigation flow is at maximum rate and bladder draining well, titrate flow as necessary.

15. Ensure the patient is comfortable and not distressed.

16. If ongoing bleeding, consider traction after discussion with Medical Staff.

17. If urine does not clear, clot evacuation in theatre may be necessary.
**Equipment required to set up CBI**
Three-way Foley catheter should be in-situ
Two 1 litre bags of Sodium chloride 0.9%
One Y-type irrigating set
4 litre urinary drainage bag
IV pole
Ordinary clean gloves should be adequate providing good technique
Protective sheet

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explain the procedure and its purpose to the patient and obtain verbal consent.</td>
<td>Shows patient has a good understanding and is well informed of procedure</td>
</tr>
<tr>
<td>Assemble the equipment</td>
<td></td>
</tr>
<tr>
<td>Wash your hands</td>
<td></td>
</tr>
<tr>
<td>Ensure patient privacy</td>
<td></td>
</tr>
<tr>
<td>Attach the bags of sodium chloride 0.9% to the irrigating set using aseptic technique and prime the tubing.</td>
<td>The IV pole must not be too elevated as this causes excessive gravitational pressure and can worsen bleeding.</td>
</tr>
<tr>
<td>Wash your hands and don gloves</td>
<td>Prevent infection</td>
</tr>
<tr>
<td>Attach the irrigation tubing to the irrigation port of the catheter.</td>
<td></td>
</tr>
<tr>
<td>Release the clamp and regulate the flow according to the amount of haematuria or debris (irrigation output should be rose coloured or less).</td>
<td>Irrigation output should be rose coloured or less</td>
</tr>
<tr>
<td>Change Sodium Chloride 0.9% bags regularly as required</td>
<td>The irrigation needs to be closely watched as the catheter may block if the irrigation stops because the bag is empty.</td>
</tr>
<tr>
<td>Discard all rubbish appropriately and wash hands</td>
<td></td>
</tr>
<tr>
<td>Assess the patient’s response to the procedure, the quality and amount of drainage and document accurately in the patient record.</td>
<td>Ongoing assessment and evaluation needed to prevent catheter blockage</td>
</tr>
</tbody>
</table>
References


WA Cancer and Palliative Care Network, (2010). Guidelines for the administration of intravesical cytotoxic and immunotherapeutic drugs within the hospital setting. Perth, Western Australia: Health Networks Branch.


Appendix 1

Drugs commonly used for intravesical chemotherapy in Australia and New Zealand.

Information obtained from both New Zealand and Australian licensing agencies – Medsafe in New Zealand and the Therapeutic Goods Administration in Australia.

The recommended dosages are the manufacturer’s instructions. Dose may vary according to local policy.

Mitomycin-C

*Action:* Mitomycin is an antibiotic isolated from the broth of Streptomyces caespitosus which has been shown to have anti-tumour activity.

*Dosage:* For the treatment of bladder tumours the reconstituted 20mg dose is further diluted to 50mL with sterile Water for Injection and immediately instilled directly into the bladder via a catheter and retained in the bladder as long as possible, preferably two hours. Either a single postoperative dose or weekly for six weeks according to local policy.

*Specific Recommendations:* Watch for the following potential side effects: Genitourinary irritation, including dysuria, cystitis, nocturia, increased frequency of micturition, haematuria, and other symptoms of local irritation, rash and pruritus on hands and genital area. Reports of bladder fibrosis/contraction, which in rare cases have required cystectomy, have been received postmarketing. Bladder necrosis and penile necrosis have been reported following intravesical administration. (Bristol-Myers Squibb, 2010)

This drug is light sensitive and only stable for 24 hours.

Mitomycin consumer medication information

Epirubicin

*Action:* The mechanism of action of epirubicin hydrochloride has not been fully elucidated but is probably related to its ability to bind DNA. Cell culture studies have shown cell penetration, localisation in the nucleus and inhibition of nucleic acid synthesis and mitosis. In bladder cancer, Epirubicin is indicated in the prophylaxis of recurrence after transurethral resection of stage T1 papillary cancers and stage Ta multifocal papillary cancers (Grade 2 and 3).

*Dosage:* For the treatment of papillary transitional cell carcinoma of the bladder, a therapy of 8 weekly instillations of 50 mg (in 25 to 50mL of saline solution) is recommended. In the case of local toxicity (chemical cystitis) a dose reduction up to 30 mg is advised. For carcinoma *in situ*, depending on the individual tolerability of the patient, the dose may be increased up to 80 mg.
For prophylaxis of recurrences after transurethral resection of superficial tumours, 4 weekly administrations of 50 mg followed by 11 monthly instillations at the same dosage are recommended.

*Specific Recommendations:* Generally, the instillate should be retained in the bladder for one hour. To avoid undue dilution with the urine, the patient should be instructed not to drink any fluid in the twelve hours prior to instillation.

To avoid undue dilution with the urine, the patient should be instructed not to drink any fluid in the twelve hours prior to instillation.

*Contraindications for intravesical use are:*

- invasive tumours that have penetrated the bladder wall,
- urinary infections,
- inflammation of the bladder,
- catheterisation problems.

(Arrow Pharmaceuticals, 2010)

Epirubicin hydrochloride consumer medication information
http://www.nps.org.au/search_by_medicine_name/cmi/Pharmorubicin/pfcpharv.pdf

**Doxorubicin**

*Action:* Doxorubicin is an anti-euplastic antibiotic which may act by forming a stable complex with DNA and interfering with the synthesis of nucleic acids. Doxorubicin administered intravesically can be used for the treatment of superficial bladder tumours or as prophylaxis to reduce recurrence after trans-urethral resection.

*Dosage:* The recommended doxorubicin dose for topical intravesical treatment of superficial bladder cancer is 30 to 50 mg in 25 – 50mL of saline solution per instillation, with the optimal concentration being in the 1.0mg/mL range. In the case of local toxicity (chemical cystitis), the dose should be instilled in 50-100 mol of saline solution.

*Specific recommendations:* Generally, the instillate should be retained in the bladder for 1-2 hours. To avoid undue dilution with urine, the patients should be instructed not to drink any fluid in the twelve hours prior to instillation (this should limit urine production to approximately 50 mol/hour). The patient should be instructed to void at the end of the instillation. Instillations can be repeated at intervals which can vary from one week to one month, depending on whether the treatment is therapeutic or prophylactic. The systemic absorption of doxorubicin following intravesical instillation is very low.

*Contraindications for intravesical use are:*

- invasive tumours that have penetrated the bladder wall;
- urinary infections;
- inflammation of the bladder;
- catheterisation problems (e.g. due to massive intravesical tumours).
• Haematuria

Adriamycin consumer medication information

Appendix 2

Drugs commonly used for intravesical immunotherapy in Australia and New Zealand.

Bacillus Calmette-Guerin (BCG)

Action: It is a freeze dried preparation of an attenuated strain of *Mycobacterium bovis*. When administered into the bladder as a cancer therapy, BCG promotes a local acute inflammatory and sub-acute granulomatous reaction with macrophage and leukocyte infiltration in the urothelium and lamina propria of the urinary bladder. The local inflammatory effects are associated with an elimination or reduction of non-muscle invasive cancerous lesions of the urinary bladder. The exact mechanism of action is unknown.

Contraindications:

• Known allergy
• 14 days since TURBT or traumatic catheterisation
• Traumatic catheterisations.
• Haematuria in previous 24 hours prior to instillation
• Immunosuppressed patients should not receive as risk of systemic infection
• Congenital or acquired immune deficiencies, whether due to a concurrent disease (e.g. AIDS, leukaemia, lymphoma) or immunosuppressive therapy (e.g. corticosteroids, cancer therapy [cytotoxic drugs, radiation, etc]) because of the risk of disseminated BCG infection
• Patients with urinary tract infection should not receive BCG
• If patient has a fever, cause should be found and treated prior to administration of BCG
• Patients with active tuberculosis should not receive BCG


OncoTICE consumer medication information

ImmuCyst consumer medication information