NHS
Quality Improvement Scotland

Best Practice Statement ~ *June 2004*

Urinary Catheterisation & Catheter Care

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Copies of this best practice statement, and other documents produced by NHS QIS, are available in print format and on the website.

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Introduction

NHS Quality Improvement Scotland (NHS QIS) was set up by the Scottish Parliament in 2003 to take the lead in improving the quality of care and treatment delivered by NHSScotland. NHS QIS does this by setting standards and monitoring performance, and by providing NHSScotland with advice, guidance and support on effective clinical practice and service improvements.

Background to Best Practice Statements

While many examples of clinical guidelines exist there is a lack of reliable statements focusing specifically on nursing and midwifery practice.

The development of best practice statements reflects the current emphasis on delivering care that is patient-centred, cost-effective and fair, and will attempt to reduce existing variations in practice. The common practice that should follow their implementation will allow comparable standards of care for patients wherever they access services.

A series of best practice statements has been produced, designed to offer guidance on best practice relating to specific areas of practice and to encourage a consistent and cohesive approach to care.

Key Principles of Best Practice Statements

A best practice statement describes best and achievable practice in a specific area of care. The term 'best practice' reflects the commitment of NHS QIS to sharing local excellence on a national level. Best practice statements are underpinned by a number of shared principles below:

- Best practice statements are intended to guide practice and promote a consistent and cohesive approach to care.
- Best practice statements are primarily intended for use by registered nurses, midwives and the staff who support them, but they may also contribute to multidisciplinary working and be of guidance to other members of the healthcare team.
- Statements are derived from the best available evidence at the time they are produced, recognising that levels and types of evidence vary.
- Information is gathered from a broad range of sources in order to identify existing or previous initiatives at local and national level, incorporate work of a qualitative and quantitative nature and establish consensus.
- Statements are targeted at practitioners, using language that is accessible and meaningful.
- Consultation with relevant organisations and individuals is undertaken.
- Statements will be nationally reviewed and updated every 3 years.
- Responsibility for implementation of statements will rest at local level.
- Key sources of evidence and available resources are provided.

Use of Evidence in Best Practice Statements

The need to embrace evidence in its broadest sense has been acknowledged by NHS QIS in the development of best practice statements. Best practice statements represent a unique synthesis of research evidence, evidence complemented by audit, patient surveys and evidence derived from expert opinion, professional consensus and patient/public experience.

The process for developing these statements adopts a rigorous, transparent and consistent 'bottom-up' approach to articulating best practice that involves professionals and patients and is based on all types of available evidence.

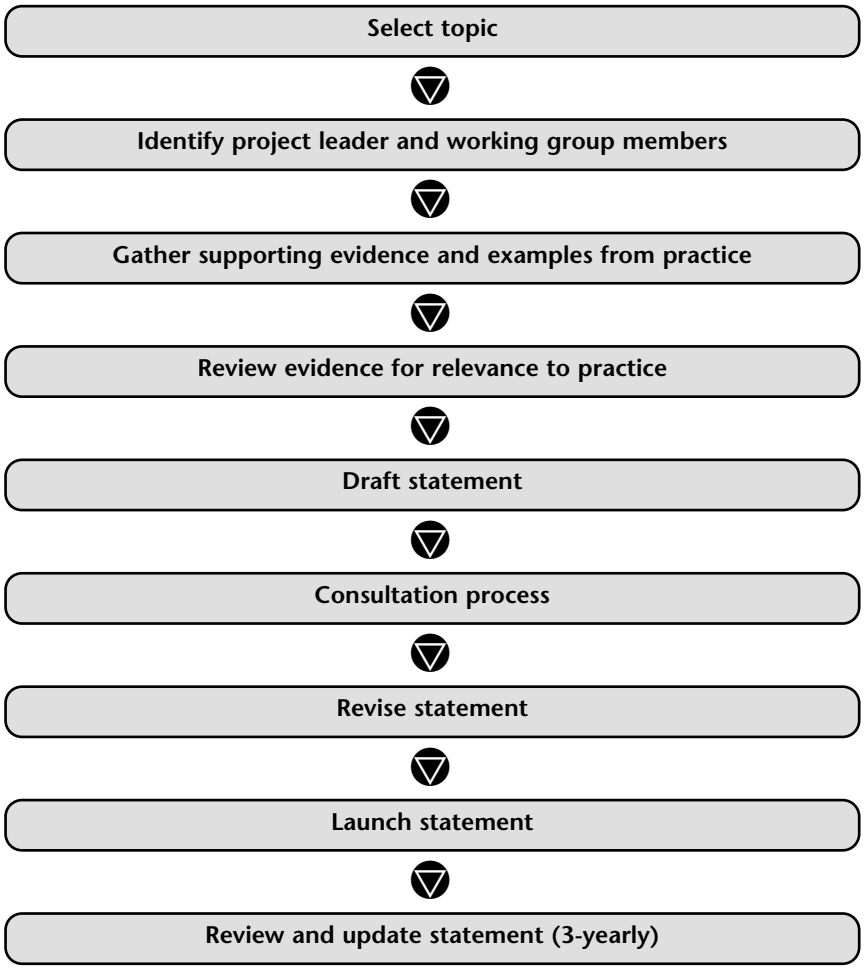
The following stages describe the process of identifying and reviewing evidence for inclusion in statements:

1. Define question
2. Review evidence from a range of sources including published literature, grey literature and other relevant sources, eg patient groups, manufacturers, professional groups
3. Integrate evidence with patient-related factors, eg issues of access, equity and ethics
4. Develop recommendations
5. Evaluate process and impact of recommendations.

Key Stages in the Development of Best Practice Statements

A systematic process has been followed as outlined below:

The development process began in May 2003 and was led by a working group and a multidisciplinary reference group of clinical and academic staff representing NHS Trusts across Scotland.



Best Practice Statement on Urinary Catheterisation & Catheter Care

Introduction

Urinary catheterisation is an intervention to enable emptying of the bladder by insertion of a catheter. When considering catheterisation for intractable incontinence, this intervention should only be considered after all other non-invasive management options have been explored and found to be unsatisfactory. The intervention is usually performed by healthcare staff in a variety of settings including acute care, primary care and long-term care. This statement has been developed to cover male and female catheterisation including children in all these settings. General principles of catheterisation and infection control apply to all patient groups; however, some patient groups will have particular needs, eg children and patients with spinal injuries. Staff working with these groups of patients must familiarise themselves with their unique needs.

Recent literature has indicated that considerable variation exists between hospitals in the proportion of patients catheterised in different specialties. Glynn et al (1997) found the overall rate of catheterisation in acute care was 26.3%, with a range of 12-40% dependent on specialty. The duration of catheterisation is also variable within healthcare settings and is often related to the reason for catheterisation. For example, it can be of short duration (1-7 days) for postoperative patients, intermediate duration (7-30 days) for the measurement of urine output in critically ill patients, or of long duration (more than 30 days) for those patients with complications related to intractable incontinence or those with intractable incomplete emptying of the bladder.

The range of reasons for catheterisation and the varied duration of catheterisation indicate a need to address practice-based issues (Wilson, 2001). This is important because patients having a catheter inserted as part of their clinical care are in significant danger of acquiring a urinary tract infection (UTI). The risk of UTI is associated with the method and duration of catheterisation, the quality of catheter care and host susceptibility (EPIC, 2001).

UTI is the most common infection acquired in acute hospitals and in long-term care facilities. It accounts for about 30-40% of all healthcare associated infections (HAI) and contributes to the extra mortality and cost associated with these infections (Emmerson et al, 1996).

Up to 20% of patients with an indwelling urethral catheter develop asymptomatic bacteriuria, and 2-6% symptomatic UTI (Garibaldi, 1993). Catheter-associated bacteriuria is the source of organisms for 15% of all healthcare associated bacteraemias (Bryan and Reynolds, 1984). In addition to the 13-30% mortality rate associated with these bacteraemias, (Garibaldi et al, 1982), it has been suggested that bacteriuric patients have a three-fold increase in mortality compared with non-bacteriuric controls (Platt et al, 1982), although the reason for this is not clear.

Catheter-associated infection is also a problem in long-term care, such as care homes, where elderly residents are catheterised for prolonged periods and are at risk of acquiring recurrent UTI and the subsequent long-term complications associated with the infection. The risk of infection with routine catheterisation is 1-2% per procedure. The risk with an indwelling catheter is 5% risk per day accumulating (Tambyah et al, 2002).

Each hospital-acquired UTI results in an increased length of stay of 5-6 days in hospital and costs £1,327 to treat (Plowman et al, 1999). Patients who have catheters and develop UTIs in primary care settings have greater contact with their GP, visit the hospital more frequently for outpatient appointments and receive more visits from district nurses (Plowman et al, 1999).

As a result of the above, the Scottish Executive Healthcare Associated Infection Task Force identified urinary catheterisation and catheter care as a priority area for a best practice statement to be developed. Ensuring healthcare workers are utilising best practice will minimise trauma, discomfort and the potential for catheter-associated UTI in patients.

The statement reflects key principles of infection control outlined in the *Standards for Healthcare Associated Infection (HAI) Infection Control* (CSBS, 2001). Specific infection control issues related to catheterisation and catheter care are highlighted in Sections 2-6. Additional aspects of catheterisation and catheter care have been identified as areas of concern by catheter users themselves; accordingly, psychological support, catheter choice and lifestyle issues are all addressed.

Format of Statement

The statement is divided into 10 sections covering:

1: Decision to Catheterise
2: Infection Control
3: Intermittent Catheterisation
4: Indwelling Urethral Catheterisation
5: Supra-Pubic Catheterisation
6: Urine Sampling
7: Choice of Catheter and Drainage System
8: Catheter Care
9: Catheter Maintenance Solutions
10: Decision to Remove the Catheter.

Each section contains a table corresponding to the what, why and how of best practice, ie summarising the statement, the reason for the statement and how to achieve the statement or to demonstrate it is being achieved.

How Can the Statement be Used?

The best practice statement on urinary catheterisation & catheter care can be used in a variety of ways, although primarily it is intended to serve as a guide to good practice and promote a consistent and cohesive approach to care. The principles are devised for nursing and midwifery staff, however the statement highlights best practice which is relevant to all professional groups. The statement is intended to be realistic but challenging and can be used:

- as a basis for developing and improving care
- to stimulate learning among nursing teams
- to promote effective interdisciplinary team working
- to serve as a measure for quality in urinary catheterisation and catheter care
- to stimulate ideas and priorities for nursing research.

Who was Involved in Developing the Statement?

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Section 1: Decision to Catheterise

Key Point ~

1. *Intermittent catheterisation is the preferred alternative to indwelling catheterisation for individuals in whom bladder emptying is incomplete, providing this is safe and acceptable to them.*

Statement	Reasons for Statement	How to Demonstrate Statement is Being Achieved
When catheterisation is being discussed as a treatment option, intermittent catheterisation is always considered as the first option rather than indwelling catheterisation, providing this is a safe and acceptable alternative for the individual and carer(s).	Intermittent catheterisation is recognised as a safe and effective procedure (Bakke et al, 1997) and carries a reduced risk of infection compared to indwelling urinary catheterisation (Wyndaele, 1990; Bakke, 1991).	Assessment and decision to catheterise are clearly documented in patient records, including reason(s) for catheterisation and type of catheterisation chosen.
A full assessment of the individual and their needs is carried out before catheterisation. This includes identifying underlying cause(s) for their bladder emptying problem.	Assessment identifies the need for a catheter and the appropriate form or route of catheterisation. Long-term catheterisation, if required, should be perceived by users as a benefit to them.	There is documented evidence in health records or care plan of full assessment and dates when re-assessment of need for the catheter is due to take place.
The need for the catheter is reviewed at agreed intervals throughout the period of catheterisation.	To ensure that the catheter is removed at the earliest opportunity as appropriate to the individual's condition.	There is documented evidence in health records or care plan of the outcome of re-assessment and, if applicable, the date for planned removal of the catheter and plan for patient monitoring.
Psychological needs are addressed as part of the full assessment and access to specialist help/advice offered, if necessary.	Recognising the psychological impact of catheterisation and potential difficulties with body image and sexual functioning allows appropriate support to be offered to the individual (Wilde, 2003).	There is documented evidence in health records of re-assessment of all needs at agreed intervals or when circumstances change. There is documented evidence of any support or information offered.
The initial decision to catheterise involves the individual and carer(s) where appropriate (see Appendix 1 for consent issues).	People need sufficient information expressed in a way that they can understand before they can reach an informed decision.	There is documented evidence that appropriate information was given and the decision to catheterise was discussed, where possible. Written information is available in a variety of accessible formats.

Key Challenges ~

1. *Recognising individuals who may require additional support, such as children, elderly frail confused patients and individuals with learning disabilities or learning difficulties.*
2. *Ensuring that time and support is given to address specific individual needs and to ensure safe and effective management of the catheter.*

Section 2: Infection Control

Key Point ~

1. Good hygiene is an integral and important component of a strategy for preventing catheter-related urinary tract infections (UTIs).

Statement	Reasons for Statement	How to Demonstrate Statement is Being Achieved
A clean environment is maintained in preparation areas and where stock is stored.	There are identified links between poor environmental hygiene and the transmission of micro-organisms that cause catheter-related UTIs (Garner and Favero, 1985; Dancer, 1999).	Polices and procedures which outline the technical requirements of infection control are in place and are adhered to.
Catheter equipment is stored unopened in a dry, cool, dark place. Advice is given to individuals on storing catheter equipment appropriately in their own home.	Storing catheter equipment unopened in a dry, cool, dark place prevents damage and ensures the integrity of the product.	There is evidence of stock rotation and that catheter equipment is appropriately stored.
Hand decontamination is appropriate for care (see Appendix 2).	Hand mediated transmission is a major factor in the current risk of infection to patients (Reybrouk, 1986; Larson, 1988; Gould, 1991; Bryan et al, 1995).	All relevant staff and carers have the opportunity to have up-to-date knowledge on hand decontamination.
Products conducive to effective hand decontamination are used. Effective hand-drying is carried out before catheter procedures.	The majority of transient micro-organisms are easily removed mechanically by washing with soap and water. Antiseptic soap solutions are only slightly more effective in removing transient skin flora (Sprunt et al, 1973; Aylliffe, 2000). Friction created while drying the hands further assists in the removal of organisms. Failure to dry hands properly can lead to cracked skin, which is a possible entry site for bacteria (Gould, 1991).	There is a documented audit of hand decontamination and/or any advice given to patients and carers.
Alcohol hand rub may be used for the rapid decontamination of visibly clean hands.	Alcohol hand rub is a suitable alternative in situations when clean water or towels are not readily available (Gould, 1991; Pratt et al, 2001).	Staff and carers have access to alcohol hand rub where appropriate.
Personal protective equipment (PPE), such as aprons and gloves, are selected following assessment of the level of risk associated with catheterisation/catheter care procedure	PPE is worn to prevent the transmission of micro-organisms to the patient and prevent the risk of contamination of the healthcare practitioners' clothing and skin (Garner, 1996; Wilson, 2001). PPE must be worn for all activities that have been assessed as carrying a risk of exposure to blood and body fluids (Ayliffe et al, 2000).	All staff have access to appropriate PPE. All staff have the opportunity to update their knowledge on the selection and use of PPE.

Section 3: Intermittent Catheterisation

Key Point ~

1. *Intermittent catheterisation is a technique that may be carried out by the individual themselves (intermittent self-catheterisation), by their carer(s) or by healthcare staff.*
2. *The bladder must have the capacity to store urine adequately between catheterisations.*
3. *Individuals and/or carers must be motivated and have the manual dexterity and the ability to carry out the procedure.*
4. *Intermittent catheterisation may be used as a technique to manage urethral strictures by acting as a dilating mechanism to prevent recurrence.*
5. *Individuals with continent stomas or bladder substitution use intermittent catheterisation to empty their 'formed' bladder regularly.*
6. *When patients are taught to carry out intermittent self-catheterisation, they are taught a clean procedure.*
7. *Catheters for intermittent use can either be single use pre-lubricated catheters or PVC reusable catheters which after use can be washed in warm soapy water, rinsed thoroughly and then left in a clean area to air dry and stored in a clean dry receptacle. These catheters can be used for approximately 1 week before being discarded (Cravens & Zweig, 2000).*

Statement	Reasons for Statement	How to Demonstrate Statement is Being Achieved
Intermittent self-catheterisation is the preferred alternative to indwelling catheters for individuals in whom bladder emptying is incomplete, providing they have the dexterity, ability and desire to manage the procedure. Intermittent catheterisation can be carried out by carers/partners or healthcare workers after appropriate training, and with patient consent, if the patient is unable to self-catheterise.	Intermittent self-catheterisation allows the patient to gain control of their bladder and gives them the opportunity to become self caring (Addison, 2001).This helps the patient to achieve a more positive body image. Intermittent catheterisation has a reduced incidence of infection compared with indwelling catheters (Bakke & Digranes, 1991).	Health records document: • full assessment of the individual's condition and motivation • planned review dates • patient consent and willingness to proceed. Health records document: • reasons for intermittent catheterisation being carried out • frequency of catheterisations • equipment used, ie size and type of catheter.
Where the procedure is being carried out independently by the patient, the use of sterile gloves is not necessary.	Research has shown that this is a safe technique and requires good hand washing, meatal cleansing and clean handling of the catheter prior to insertion (Bakke & Digranes, 1991).	Health records document that individuals have been taught to carry out a clean technique and can demonstrate this.
Advice is given to patients and carers on frequency of catheterisation, size of catheter to be used and on any documentation that requires to be kept regarding volumes obtained.	Regular, timely catheterisation prevents over-distension of the bladder and helps reduce infection.	Health records document: • choice of catheter size • size of catheter • additional aids required to carry out catheterisation safely.

Section 3: Intermittent Catheterisation (continued)

Statement	Reasons for Statement	How to Demonstrate Statement is Being Achieved
Individuals carrying out intermittent catheterisation as a way of managing urethral strictures are given guidance on the frequency of catheterisation and size of catheter to be used	Research has shown that following a regular regime of dilating the strictured area can prevent recurrence.	Health records document: • size and type of catheter to be used • frequency of catheterisation • regular review dates.
Where paid carers or healthcare professionals are taught to carry out intermittent catheterisation this technique is carried out as an aseptic procedure. If partners or close family members are carrying out the procedure on a one-to-one basis for the patient, this is a clean procedure.	When intermittent catheterisation is being performed by paid carers or healthcare professionals, following the same precautions and techniques as for indwelling catheterisation will reduce the risk of infection for the patient.	Health records document: • patient consent regarding the procedure • training needs and training of individual/carers.
Patients with continent stomas (Mitrofanoff) or bladder substitution, must during the day, carry out intermittent catheterisation every 2-3 hours using a standard length catheter. Patients will gradually learn to manage longer periods between catheterisations at night.	If the augmented or substituted bladder is not emptied regularly there is a risk of rupture. A standard length catheter must be used for both male and females to allow complete drainage of pouch bladder.	Health records state size of catheter used and advice regarding frequency of catheterisation. Information for patients and carers regarding emergency contacts, if difficulties are encountered, is also documented.

Key Challenges ~

1. *Maintaining awareness of the specific needs of patients with blood clotting disorders or those being managed on anticoagulants.*
2. *Ensuring that patients with dexterity or positional problems receive aids and advice to assist them to carry out safe and successful catheterisation.*

Section 4: Indwelling Urethral Catheterisation

Key Points ~

1. *After assessing the reason for catheterisation, as small a catheter as possible should be used, allowing for good drainage.*
2. *Whilst an aseptic technique should always be used to cleanse the urethral meatus, there is no advantage in using any specific antiseptic solutions as cleansing agents (Kunin, 1997; Ward et al, 1997). See Section 8, Key Point 1.*

Statement	Reasons for Statement	How to Demonstrate Statement is Being Achieved
An aseptic technique using sterile gloves is used during this procedure.	The use of an aseptic technique during insertion of the catheter reduces the risk of infection.	Procedural guidelines and catheterisation training are available for staff.
Cleansing of the urethral meatus is carried out prior to catheterisation.	Meatal cleansing reduces the risk of the introduction of infection during the catheterisation procedure (Wong, 1983; Epic Guidelines, 2003).	Appropriately packaged (sterile) cleansing solutions are available and used.
Lubricating gel incorporating local anaesthetic gel from a single-use container is used for both male and female catheterisation.	The use of a lubricating, local anaesthetic gel reduces the risk of trauma to the urethra and improves patient comfort during the procedure. Single-use containers also reduce infection risk (Muctar, 1991).	Appropriate products are readily available for use. Health records document patient preference and type of lubricating gel used.
Following assessment, as small a catheter as possible is used allowing for good drainage. During routine indwelling urethral catheterisation catheter sizes 12ch, 14ch, and 16ch can be used for adult male and female patients. Paediatric use is between size 6ch and 10ch. Consideration is given to user sensitisation to latex products.	Smaller catheters minimise urethral trauma and improve patient comfort. Larger diameter catheters are associated with increased irritation of the bladder which can predispose to bladder spasm and bypassing. They may also increase the risk of urethral trauma.	Appropriate products are readily available for staff and patients (Appendix 3 – Catheter Selection).

Section 4: Indwelling Urethral Catheterisation (continued)

Statement	Reasons for Statement	How to Demonstrate Statement is Being Achieved
When a Foley-type catheter is being inserted, the catheter is well advanced into the bladder before the retaining balloon is inflated with sterile water. Ensure urine is draining from the catheter before the balloon is inflated.	Inflating the balloon before the catheter is properly inserted can cause trauma to the urethra and bladder neck. Sterile water must be used to fill the balloon as fluid may leak via the balloon membrane (Getliffe & Dolman, 2003).	Any adverse events post-catheterisation are documented.
Manufacturer's instructions are followed regarding the amount of water required in the balloon. Catheters with 10ml balloons should be used wherever possible.	This maximises the drainage capacity of the catheter and ensures retention of the catheter in the bladder. Use of catheters with 30ml balloons must be avoided in long-term catheterisation. The smaller balloon size of 10ml reduces trauma, irritation and residual urine.	Health records document: • size, type, lot number, and expiry date of the catheter • volume of sterile water in the balloon • drainage system used and reasons for choice.
When catheterisation is complete, the catheter is connected to the closed drainage system of choice. Catheters and attached drainage systems are properly secured in a comfortable position for the individual after insertion.	This ensures good positioning of the catheter. A closed, linked, drainage system reduces the risk of infection via the catheter (Thornton & Andriole, 1970; Wilson et al, 1997). This prevents movement and urethral traction and leads to improved comfort for the individual and good bladder drainage.	Patients and carers are aware of correct procedures and the variety of products available.

Key Challenges: Male Catheterisation ~

1. *Ensuring that the foreskin is returned to the original position after the catheterisation procedure.*
2. *Ensuring that the penis is held away from the abdomen during catheterisation to allow the smooth passage of the catheter.*

Section 5: Supra-Pubic Catheterisation

Key Points: Indications for Use of Supra-Pubic Route of Catheterisation ~

1. *Where urethral catheterisation is not possible, ie urethral stricture problems.*
2. *Where it is the patient's preferred choice.*
3. *Post-operatively for bladder drainage or to monitor residual urine volumes.*
4. *Improved patient comfort for wheelchair-dependent patients and easier management of catheter changes.*
5. *Where limb contractures make urethral catheter insertion and management difficult.*
6. *Intractable bypassing of urethral catheter following long-term use (mega urethra).*

Statement	Reasons for Statement	How to Demonstrate Statement is Being Achieved
An aseptic technique is used during the initial insertion of the catheter as well as during subsequent changes of the catheter.	This reduces the risk of infection.	Procedural clinical guidelines are available for staff. Appropriately trained personnel are available to carry out the procedures.
The size of catheter used should be no smaller than 16ch in adults with 10ml balloon. After further clinical assessment, some adult patients may require larger lumen catheters. Children should be managed with 3ml balloon catheters and lumen size should be determined by assessment of the child.	This allows the maintenance of a good tract between the skin and bladder. This reduces the risk of frequent blockages of the catheter lumen and assists drainage.	Health records document: • size, type, lot number, and expiry date of the catheter • reasons for increasing the size, if appropriate • volume of sterile water in the balloon.
The manufacturer's guidelines are followed regarding the choice of catheter suitable for use in the supra-pubic route. Foley-type catheters with retaining balloons provide easier management during changing.	Certain types of catheter are unsuitable for use via the supra-pubic route and could cause problems on removal.	In-service education includes information on suitable catheters available.
Individual choice is considered regarding the length of the catheter inserted supra-pubically.	Longer catheters may be easier for some individuals to manage, whilst others will prefer the option of a shorter, more discreet catheter.	Health records document: • individual choice • size, type, lot number, and expiry date of catheter inserted • volume of sterile water in the balloon.

Section 5: Supra-Pubic Catheterisation (continued)

Statement	Reasons for Statement	How to Demonstrate Statement is Being Achieved
Lubricating gel is used at time of catheter changes.	To allow smoother passage of catheter and reduce trauma.	Documentary evidence of type of lubricant used.
The drainage system used is manageable for individuals and carers where appropriate.	The correct choice of system allows for good drainage thereby reducing bypassing and blockage problems.	There is evidence of regular in-service education which provides current information on product availability and developments.
The choice of appliance is regularly re-assessed.	To ensure that chosen systems are appropriate for individual lifestyle.	Individuals and carers have up-to-date information on product availability.

Key Challenges ~

1. *If the catheter becomes dislodged it should be replaced within 30-45 minutes or the tract may be difficult to re-catheterise. Community patients and carers in the community should have an emergency contact number.*
2. *Extreme care should be taken with patients who are on anticoagulant therapy or who have blood clotting disorders.*
3. *If catheter becomes blocked or dislodged within first 2 weeks of initial insertion expert medical advice should be sought.*

Section 6: Urine Sampling

Key Point ~

1. *Breaking the closed drainage system to obtain a urine sample increases the risk of catheter-related infection. The use of drainage bags incorporating a sample port removes the need to break the closed system.*

Statement	Reasons for Statement	How to Demonstrate Statement is Being Achieved
Urine samples are only taken from catheters for a valid reason, such as suspected infection.	Providing the patient is asymptomatic, treatment for colonisation is not indicated (Warren, 1997).	All staff have the opportunity to update their knowledge on all aspects of sampling.
Samples are collected from the bag sample port; the closed system is not broken to collect urine samples.	Breaches in the closed system, such as taking a urine sample, increase the risk of catheter-related infection (Wilson et al, 1997; Kunin, 1997; Platt et al, 1983). A key practice for preventing catheter-associated infection is ensuring that the closed drainage system remains closed (Warren, 1997).	All staff have access to equipment for obtaining catheter specimens of urine.
Prior to obtaining a catheter sample of urine, the port is cleaned with an isopropyl alcohol 70% impregnated swab and allowed to dry thoroughly.	Alcohol-impregnated wipes are effective for rapid disinfection (Ayliffe et al, 2000). Allowing the cleaned area to completely dry facilitates coagulation of the organisms (Horton & Parker, 1997).	Audit of practice includes sampling technique.

Section 7: Choice of Catheter and Drainage System

Key Points ~

1. *Catheters are manufactured in three lengths: female length (20-26cm); standard length (40-45cm); and paediatric (30-31cm). Obese or chair-bound females may require or prefer a standard length catheter.*
2. *Catheter balloon sizes come in three different volumes: 3-5ml for paediatric use; 10ml for adult routine drainage; and 30ml for post-urological procedures only and not for routine catheterisation. Balloons must be filled with the exact amount of sterile water.*
3. *Over or under inflation of the balloon can cause distortion which can deflect the catheter tip and interfere with drainage or cause irritation.*
4. *Catheter valves are now widely used as a means of draining the bladder intermittently and can give patients greater comfort and independence (Getliffe & Dolman, 2003).*

See Appendix 3 for more detailed advice regarding catheter selection.

Statement	Reasons for Statement	How to Demonstrate Statement is Being Achieved
Initial assessment with patient and carers determines choice of catheter and drainage systems.	The reasons for, and duration of, catheterisation and patient preference will influence choice of catheter and drainage system.	There is documented evidence of initial assessment and review date and type of catheter and drainage system used.
Re-assessment of initial choice of equipment takes place at mutually agreed times.	To ensure ongoing suitability of catheter and drainage system for the individual's needs. Circumstances may change during period of catheterisation and new more suitable products may become available.	Health records document: • catheters used • choice of drainage system(s) • intended review dates.
Individuals (and carers where appropriate) are involved in decision-making regarding type of catheter and drainage systems. Catheter valves and drainage bags of all types should be considered to suit the patient's lifestyle and needs. Not all patients are suitable for valve usage. A 'belly bag' can be considered for patients with Foley-type catheters.	Individuals may utilise more than one drainage system to meet their needs at different times. There is now a wide choice of drainage bags for individuals ranging from small capacity to very large and short or longer length. Can be worn around the waist. Has larger capacity, up to 1000cc, so eliminates the use of night drainage bags and closed system is maintained.	Health records document: • patient preference • lifestyle issues affecting choice of drainage system • suitability for 'belly bag'.

Key Challenge ~

1. *Catheter valves are not always suitable for patients with detrusor instability, patients with lack of bladder sensation or confused patients.*

Section 8: Catheter Care

Key Points ~

1. *Frequent, vigorous meatal cleansing with antiseptic solutions is unnecessary and may increase risk of infection (Kunin, 1997; Garibaldi, 1998).*
2. *Daily bathing or showering is encouraged.*
3. *A closed drainage system is maintained as far as possible.*

Statement	Reasons for Statement	How to Demonstrate Statement is Being Achieved
Indwelling catheters are connected to a closed drainage system. The closed system is maintained as much as possible.	Maintaining a closed drainage system reduces the risk of catheter-related infection (Kunin, 1997).	Appropriate training and equipment are available for staff.
Urine drainage bags are emptied regularly (usually when two-thirds full) and positioned below the level of the bladder*. Body worn drainage bags are changed weekly. Bedside-type drainage bags should be supported above floor level.	Ensures the maintenance of flow of urine and maximum drainage by gravity, and helps to prevent harmful reflux. Trauma to the neck of the bladder may be caused by downwards pull of the catheter if the bag is left to become too full or is not adequately supported.	Local policies and appropriate training available for staff.
A separate clean container is used for each individual at the time of bag emptying. Contact between drainage tap and container is avoided. Gloves are worn to empty drainage bags and changed after hand washing between each individual. Leg bags may also be emptied directly into the toilet. When an overnight bag is required a new, single-use 2 litre bedside bag is used and is emptied and discarded each morning.	This reduces risk of cross-infection and catheter-related infection.	Audit of practice includes bag emptying technique and products used.

* Footnote: A 'belly bag' can be worn around the patient's abdomen and does not require to be positioned below the level of the bladder.

Section 9: Catheter Maintenance Solutions

Key Points ~

1. *Some patients may benefit by using catheter maintenance solutions to prolong the life of their catheter, avoiding the trauma of re-catheterisation.*
2. *Antibiotic solutions are not effective in treating catheter-associated urinary tract infections.*

Statement	Reasons for Statement	How to Demonstrate Statement is Being Achieved
Catheter maintenance solutions are only used following thorough assessment.	There are many potential causes of catheter blockage, and treatment should be based on clinical evidence.	Records maintained of catheter history including: • problems associated with bowel habit • debris in urine • crystals on catheter tip at removal • urinary pH.
Where assessment indicates that a catheter maintenance solution may be beneficial, the solution used is appropriate to the condition being treated (Appendix 4). Where a catheter maintenance solution is used, the effect of the treatment is assessed and ongoing care planned accordingly.	Each catheter maintenance solution is licensed for use in the treatment of specific conditions.	Catheter maintenance solution is selected in accordance with catheter history. Indications and cautions related to use of catheter maintenance solutions are included in all catheter training. Records maintained of solution used, effect on catheter drainage, any adverse reactions and ongoing catheter history as before.

Key Challenge ~

1. *Administration of catheter maintenance solutions requires breakage of the closed drainage system increasing the risk of introducing infection.*

Section 10: Decision to Remove the Catheter

Key Point ~

1. The time frame for removal of urinary catheters is dependent on clinical judgement and findings.

Statement	Reasons for Statement	How to Demonstrate Statement is Being Achieved
Catheters are only removed following thorough assessment of the individual's ongoing condition and after consultation with the individual and healthcare staff responsible for their care.	There may be clinical reasons why the catheter must remain in situ, eg to protect the patient's upper renal tract.	Health records document catheter history and original reason for insertion of catheter.
Where an assessment indicates a catheter may be safely removed, the individual's condition after removal is carefully monitored and action taken if problems arise.	Some individuals may be unaware of large residual volumes of urine in the bladder. Urine retention is possible following removal of indwelling catheter.	Health records document voiding pattern and, if appropriate, monitoring of urea levels. If available, a portable bladder scanner* should be utilised to measure residual volumes in the first few days after catheter removal and action taken, if problems arise.

* Footnote: While the use of ultrasound bladder scanners is not as precise as in/out catheterisation, there is minimal risk of infection and this method is preferred by patients (Alnaif & Drutz, 1999; Goode et al, 2000). Some training in usage may be required.

Glossary of Terms

anti-cholinergic	Medication that reduces bladder spasm.
assessment	A thorough review of the patient's condition,by questioning, observation, physical examination and investigations.
adverse event	An unfavourable incident or situation, which occurs in a particular place during particular interval of time.
aseptic technique	A method of carrying out sterile procedures so that there is minimum risk of introducing infection. Sterile equipment is used and sterile gloves worn or a no-touch technique is used.
audit	Systematic review of procedures used for diagnosis, care and treatment against set standards, examining how associated resources are used and investigating the effect care has on the quality of life for the patient.
augmented or substituted bladder	When the bladder has been enlarged or reformed using a segment of bowel.
autonomic dysreflexia	A syndrome that affects those with a spinal cord lesion above the mid-thoracic level. Characterised by acute and rapid onset of hypertension triggered by painful stimuli below the level of the injury.
bacteraemia	When bacteria are present in the bloodstream.
biofilm	A layered culture of microrganisms growing on a surface that they have created themselves by secreting polysaccharides and glycoproteins.
catheter valve	A valve connected to the outlet from the catheter allowing the bladder to be drained intermittently by opening the valve at regular intervals.
calculi	'Stones' formed by an accumulation of salts/debris in the bladder.
carer	A person who may be paid or unpaid, who regularly helps another person with all forms of care, often a relative or friend. This term incorporates spouses, partners, parents, guardians, paid carers, other relatives, and voluntary carers who are not health professionals.
continent	Being able to control the passing of urine.
CSBS	Clinical Standards Board for Scotland.

decontamination	A process which removes or destroys contamination and thereby prevents micro-organisms or other contaminants reaching a susceptible site in sufficient quantities to initiate infection or any other harmful response.
haematuria	Blood in the urine.
immuno-compromised	A condition in which the immune system is not functioning normally.
Mitrofanoff (or Indianna)	Formation of a vascularised continent catheterisable channel to allow access to the bladder or neobladder.
pH	A scale which gives the acidity or alkanility of the urine. pH 7 is neutral. pH less than 7 is acidic. pH greater than 7 is alkaline.
PPE	Personal protective equipment, eg disposable aprons and gloves.
source isolation room	Room where an individual is cared for in isolation due to risk of infection.
urethral strictures	Narrowing of urethra causing inhibition of urinary flow.

Appendix 1: Patient Consent and Gender Issues

1. Informed patient consent must be obtained before catheterisation is carried out.

2. Consent should be seen as a process, not a single event. Patients can change their minds and withdraw their consent at any time.

3. The Adults with Incapacity (Scotland) Act (2000) protects the interests of adults who are incapable of taking a decision, because of mental disorder or because of physical disability which affects their ability to communicate. Section 47 sets out what must be done to obtain the general authority to treat.

4. An important issue about consent is that the patient understands and agrees to the healthcare intervention. The nature of this agreement will depend on the nature of the proposed intervention and on local policies. Agreement does not necessarily need to be in writing but health records must document the fact that the patient understands the process of catheterisation and the need for it and consents verbally to the procedure.

5. In Scottish Law, when someone reaches their 16th birthday, they gain the legal capacity to make decisions for themselves. However, even under the age of 16, a young person can have the legal capacity to make a decision on a healthcare intervention, provided that they are capable of understanding its nature and possible consequences.

6. Patients are entitled to request that the procedure of catheterisation be carried out by a specific gender of healthcare professional to fit in with their cultural or personal preferences. These issues should be addressed at the time of obtaining consent and information giving.

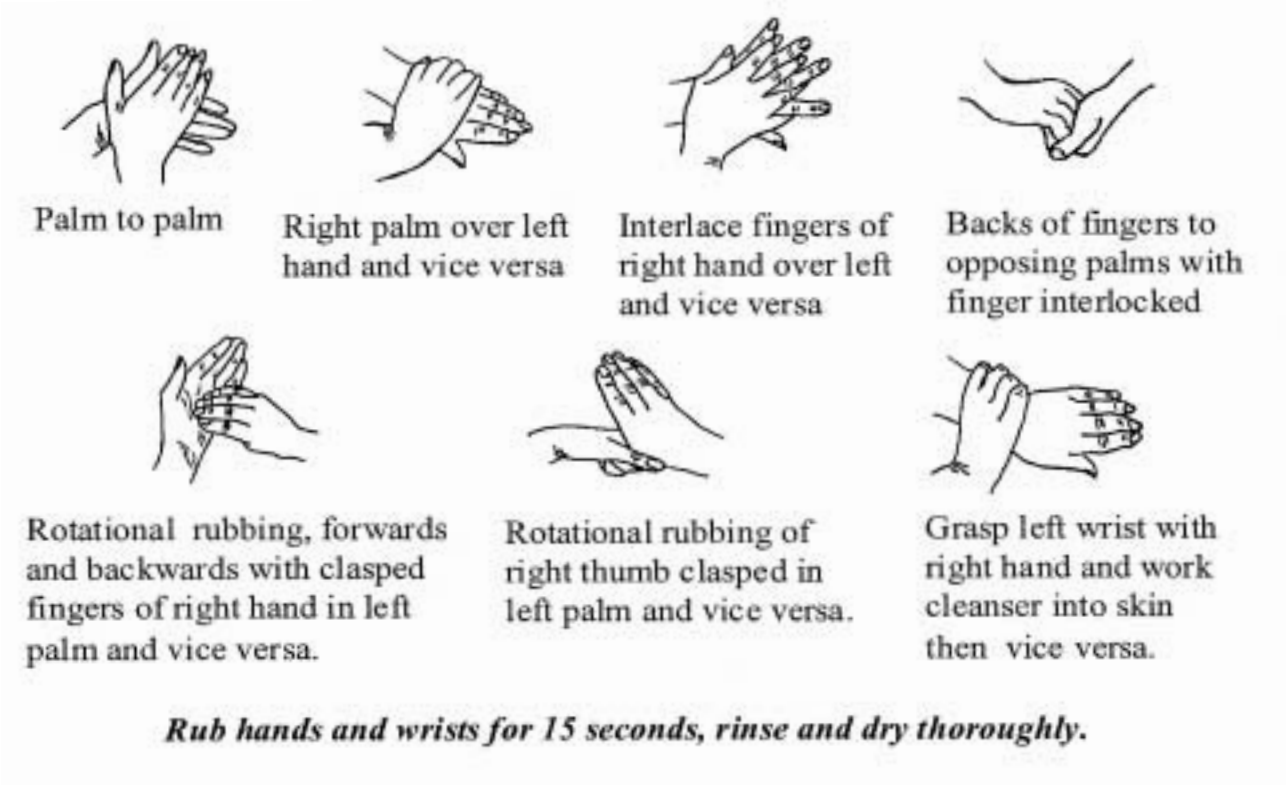
Scottish Executive Health Department, 2003. A Guide to Consent for Health Professionals in NHSScotland.

Appendix 2: Hand Decontamination Guide

	Level 1: Social Hand Wash	Level 2: Hygienic Hand Wash	Level 3: Surgical Scrub
When to Wash	**Before** • Commencing/leaving work. • Eating/handling of food/drink. • Preparing/giving medications. • Patient contact. • Handling urine drainage systems. **After** • Any visible soiling of hands. • Visiting the toilet. • Patient contact. • Handling laundry/equipment/waste. • Blowing/wiping/touching the nose. • Handling raw meat/unwashed vegetables. • Removing gloves. • Handling urine drainage systems.	**Before** • Aseptic procedures. • Contact with infants or immuno-compromised patients. • Leaving source isolation rooms. **After** • Contact with isolated patients. • Clinical use in high risk areas, eg infant nurseries/special care baby units, infectious diseases units, intensive care/therapy units and wards/departments during outbreaks of infection.	**Before** • Surgical/invasive procedures.
Why Wash	To render the hands physically clean and to remove micro-organisms picked up during activities (transient micro-organisms).	To remove or destroy micro-organisms and to provide residual effect.	To remove or destroy transient micro-organisms and also to substantially reduce those which normally live on the skin (resident micro-organisms).
How to Wash	Using soap, preferably liquid, wash hands as shown in the Hand Wash Guide (see page 19).	Using an approved antiseptic hand cleanser or soap followed by an alcohol based hand rub, wash hands as shown in the Hand Wash Guide.	Using an antiseptic hand cleanser, carry out a Level 2 hygienic hand wash for 1 minute followed by a further 2 minute wash as shown in the Hand Wash Guide. Or, for persons sensitive to antiseptic cleansers, wash with an approved non-medicated liquid soap followed by two applications of alcohol hand-rub applied as shown in the Hand Wash Guide.

Hand Wash Guide

A good technique which ensures that all areas of the hands are covered is essential for an effective hand wash and is more important than the cleansing agent used. The hands should be wet before applying soap or antiseptic cleanser.



Appendix 3: Catheter Selection

Catheters should be comfortable, easy to insert and remove, and must minimise secondary complications such as tissue inflammation, encrustation and colonisation by micro-organisms. Recent research has shown no significant difference in the incidence of bacteriuria comparing latex with silicone catheters, however many practitioners have strong preferences for one type of catheter over another. This is often based on good clinical experience and wide usage of different catheter materials (EPIC Guidelines, 2001). The smallest gauge catheter suitable for patients' needs should be used and, if Foley-type catheters are used, balloons should only be of 10ml size.

Studies comparing the use of silver-coated (silver alloy or silver oxide) catheters with silicone hydro gel or Teflon latex suggest that silver alloy catheters are associated with a lower incidence of bacteriuria (EPIC Guidelines, 2001). The impact of silver alloy coated catheters on reducing the incidence of UTIs has been shown to be from 30-70% (Liedberg & Lundberg, 1990; Lai & Fontecchio, 2002). These catheters are now available in the UK and are designed to be used for a maximum of 28 days.

Catheter Material	Recommended Usage	Advantages	Disadvantages
Polyvinyl chloride (PVC)	Short-term only, maximum of 7 days.	Large internal diameter allows good drainage postoperatively.	Uncomfortable for long-term use. Rigid and inflexible.
Polyvinyl chloride non-balloon	Intermittent catheterisation, can be reused.	Suitable for single use for administration of instillations.	Must be rinsed thoroughly after use for ICSC. Soap deposits can cause urethral irritation.
Teflon coated with latex core*	Short-term, up to 28 days.	Smoother on external surfaces for insertion – reduces tissue damage. More resistant to encrustation.	If left in situ too long Teflon coating may wear thin. Unsuitable for patients allergic to latex.
Silicone	Long-term, up to 12 weeks, follow manufacturer's recommendations.	Wide lumen for drainage. Suitable for patients with latex allergy.	'Cuffing' of balloon can occur on deflation can be more difficult to remove suprapubically.
Hydrogel coated latex	Long-term use, up to 12 weeks.	More compatible with body tissue, less trauma.	Does contain latex – unsuitable for patients allergic to latex.
Silicone elastomer-coated latex (silicone bonding to outer and inner surfaces)	Long-term use, up to 12 weeks.	May help to reduce potential for encrustation.	Unsuitable for patients allergic to latex.
Hydrogel coated silicone	Long-term use, up to 12 weeks.	Suitable for patients with latex allergy.	Rigid; may be uncomfortable for patients.

* The use of uncoated latex catheters is not recommended even in short-term use. Latex has been shown to cause discomfort and tissue trauma due to what can become an unsmooth surface. Also, the incidence of latex allergies seems to be increasing in both patients and staff who may have been exposed to latex products (HSE Latex and You, INDG 320 C100 06/03).

Appendix 4: Catheter Maintenance Solutions

Clinical evidence for the use of catheter maintenance solutions is limited. Many of the research papers involve a small number of patients, raising questions about the general application of findings to wider patient groups. However, catheter maintenance solutions have undergone the rigorous trials necessary to obtain their product licences and are available on prescription for use in treating specific conditions.

Antibiotic solutions are not effective in treating catheter-associated urinary tract infection (see notes/cautions). However, for some patients there may be benefit in using catheter maintenance solutions to prolong the life of their catheter, thereby avoiding the trauma of recatheterisation. The appropriate solution should be chosen by identifying the likely cause of the blockage. In a first time blockage, where there is no evidence of the cause of the blockage, the catheter should be removed, examined, and the urine tested to explore the possible causes of blockage. The findings should be recorded. This will give a basis for obtaining a prescription for an appropriate catheter maintenance solution.

Where a catheter has blocked with struvite crystals, formed in alkaline urine, regular pH monitoring should be undertaken, to predict future blockages. An individual maintenance programme can then be planned.

Caution should be exercised in the use of any catheter maintenance solution as there is evidence that all solutions increase the shedding of epithelial cells within the bladder.

Solution	Product Licence	Practice Notes/Cautions
Citric acid 3.23% (pH 4)	For the dissolution of struvite crystals which form on the catheter tip under alkaline conditions (pH 7.5-9.5).	Charting of urinary pH over time will allow development of an individual catheter care plan.
Citric acid 6% (pH 2)	Stronger citric acid solution for more persistent crystallisation.	Strongly acidic – potential mucosal irritation.
Mandelic acid 1% (pH 2)	For the reduction of micro-organisms which produce urease creating alkaline conditions (mostly proteus species). Acidic pH also counters the effect of proteus on the urinary pH.	Strongly acidic – potential mucosal irritation. Evidence shows that 19 days treatment of twice daily instillations are required to effect treatment, but the licence is for maximum 14 days' use.
Sodium chloride 0.9%	For the washing of debris (blood, mucus, pus) from the catheter.	Will not dissolve crystal formation.
Chlorhexidine 0.02%	For the treatment of pseudomonas infections.	Limited value as the infections will exist in a biofilm which resists surface washing of antibiotics. Likely to lead to flourishing of resistant organisms.

Footnote: Catheter maintenance solutions should not be used in patients with spinal injury due to the possibility of autonomic dysreflexia (see page 23).

Appendix 5: Problem Solving

Catheter Problem	Possible Reasons	Possible Solutions
Urine not draining into bag.	Incorrectly sited catheter; it may be in the urethra and not fully into the bladder.	Deflate retaining balloon and gently reposition.
	Incorrect positioning of the drainage bag above the level of the bladder can prevent good flow of urine.	Check tubing and ensure drainage bag is below level of bladder.
	Drainage tubing may be kinked.	
	Catheter may be blocked by debris.	Gentle flush of catheter with sterile water or saline solution.
Haematuria.	Trauma post-catheterisation.	Observe output and document severity of haematuria. Seek medical advice if haematuria persists.
	Infection.	
	Prostatic enlargement.	Encourage fluid intake.
	Calculi.	
	Carcinoma.	
Bypassing of urine around catheter.	May indicate presence of infection.	Obtain a catheter specimen of urine using the sampling port.
	Bladder spasm/instability.	Consider use of anti-cholinergic medications.
	Constipation.	Increase fluid intake and dietary fibre intake.
	Incorrect positioning of drainage system.	Check drainage bag is in correct position, ie below level of the bladder.
Pain or discomfort.	The 'eyelets' of the catheter may be occluded by urothelium due to hydrostatic suction.	Raise the drainage bag above the level of the bladder for 10-15 seconds only.
	May be indication of infection.	Obtain catheter specimen of urine.
Catheter retaining balloon will not deflate.	Valve port and balloon inflation channel may be compressed.	Check no external compression problems.
	Faulty valve mechanism.	Valve port should always be aspirated slowly. If done forcefully, the valve mechanism may collapse.
		Deflation can sometimes be achieved by injecting an additional small volume of sterile water then slowly aspirating again.
		If attempts fail, medical advice must be sought. Cutting of the catheter along its length is not safe practice and may result in retraction of the catheter into the bladder.

Key Challenge ~

1. *Patients with a spinal cord lesion above the mid-thoracic level can be affected by a syndrome known as autonomic dysreflexia. If this is not recognised early enough or left untreated it can be fatal. One of the most common causes of this syndrome is a distended bladder mainly due to catheter blockage. This must be relieved as soon as possible and the patient placed in an upright sitting position and their blood pressure monitored at five minute intervals.*

N.B. ***Please see Appendix 6 for further help and advice regarding this condition.***

Appendix 6: Autonomic Dysreflexia

Autonomic dysreflexia (also known as autonomic hyperreflexia) is one of the most serious life threatening conditions that affect people with spinal cord injury at or above the level of the 6th thoracic vertebrae.

The syndrome develops secondary to any noxious stimulus below the level of injury. As the spinal cord is damaged, signals cannot pass normally to the brain, therefore, the body produces exaggerated abnormal nerve signals which cause problems above and below the level of the spinal injury. Below the injury, blood vessels go into spasm causing the blood pressure to rise. Above the level of injury, the body senses the high blood pressure and tries to relax the blood vessels (can only influence the blood vessels above the level of injury) which causes flushing and blotchiness of skin and pounding headache.

Symptoms may be mild or severe and patients may present with one or more of the following:

Pounding headache
Flushing and/or blotching above the level of cord damage
Pallor below the level of injury
Slowed heart rate
Profuse sweating (above level of injury)
Palpitations
Goosebumps
Blurred vision or seeing spots before your eyes
Stuffy nose
Feeling of doom and gloom, anxiety, apprehension
Elevated blood pressure.

N.B. Under normal circumstances a tetraplegic person may have a low blood pressure (eg 90/60). A rise of 20mmHg can be quite significant; therefore if the BP rises to 120/80mmHg it could become an emergency situation. Hypertension may be severe enough to lead to seizures, stroke or ultimately death.

Bladder problems are the most common cause of autonomic dysreflexia.

- Overfull bladder
- Kidney or bladder stones
- High pressure voiding
- Urinary tract infection
- Blocked catheter
- Defective drainage system (eg kinked tubing or leg bag too full).

Treatment

Identify the source of the noxious stimulus. Removing the stimulus will cause the symptoms to settle.

Reduce the blood pressure by returning the patient to bed and place in a sitting position. (If bladder problems suspected only sit patient to 45 degrees. Sitting at 90 degrees may cause increased pressure on the full bladder.)

Check Bladder

If patient is not catheterised and bladder appears full, catheterise immediately and leave on free drainage. Catheter should be lubricated with an anaesthetic gel prior to insertion.

If catheterised, empty leg bag and untwist any kinked tubing. If catheter appears blocked, change catheter immediately. DO NOT ATTEMPT A BLADDER WASHOUT; this will only distend the bladder further with potentially fatal consequence.

If infection is suspected commence antibiotic therapy.

Check bowel and check for other potential causes and treat appropriately.

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Personal Notes/Local Contacts

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Our Commitment

Our work will be undertaken in line with the following values:

- **patient and public focus**
  - promoting a patient-focused NHS that is responsive to the views of the public

- **independence**
  - reaching our own conclusions and communicating what we find

- **partnership**
  - involving patients, carers and the public in all parts of our work
  - working with and supporting NHS staff in improving quality
  - collaborating with other organisations such as public bodies, voluntary organisations and manufacturers to avoid duplication of effort

- **evidence-based**
  - basing conclusions and recommendations on the best evidence available

- **openness and transparency**
  - promoting understanding of our work
  - explaining the rationale for our recommendations and conclusions
  - communicating in language and formats that are easily accessible

- **quality assurance**
  - aiming to focus our work on areas where significant improvements can be made
  - ensuring that our work is subject to internal and external quality assurance and evaluation

- **professionalism**
  - promoting excellence individually and as teams and ensuring value for money in the use of public resources (human and financial)

- **sensitivity**
  - recognising the needs, opinions and beliefs of individuals and organisations and respecting and encouraging diversity

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