



Best practice recommendations for bladder management in spinal cord-afflicted patients in South Africa

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Recent research on the standard of care and related quality of life of the spinal cord-afflicted community in South Africa (SA) has revealed significant gaps in practice, and challenges regarding levels of care and access to services and supplies specifically related to the neurogenic bladder.^[1]

There is evidence that people with disabilities experience poorer health outcomes than the general population. People with spinal cord afflictions (SCAs) are at higher risk of secondary conditions such as pneumonia, pressure ulcers and urinary tract infections (UTIs). These conditions frequently lead to hospitalisation, and can also result in increased costs for care, reduced employability, decreased quality of life and lowered life expectancy.^[2]

In response to this, the Continence Advisory Panel (CAP), under the auspices of the Southern African Spinal Cord Association (SASCA), has produced these best practice recommendations to further evidence-based bladder management (mainly in the spinal cord-afflicted) that ensures social continence and appropriate and safe drainage of the neurogenic bladder. The recommendations aim to prevent unwanted and costly bladder complications (i.e. infections, stones, renal reflux and scarring).

These recommendations have been drawn up in SA by clinicians working specifically in the field of rehabilitation medicine and SCA, with inputs from urology specialists, and reference to international guidelines. They have been adapted to the SA context, drawing from the best available international research and clinical expertise when making treatment decisions for individual SA patients.

These recommendations mainly follow those of the European Association of Urology (EAU) neuro-urology guidelines (www.uroweb.org/guidelines/neuro-urology/), which are endorsed by the SA Urological Association (SAUA). The 2018 edition of the EAU guidelines uses the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) group methodology across all guidelines, where for each recommendation there is an accompanying strength rating based on the overall quality of the evidence that exists for the recommendation, as per the Oxford Centre for Evidence-Based Medicine Levels of Evidence. Readers are

advised to consult these and other EAU guidelines that may address different aspects of the topics discussed.^[3]

These recommendations are in line with the CAP vision^[1] to:

- establish the standard of care for people living with SCAs (specifically relating to continence) who want to lead active and fulfilling lives
- improve access to continence care for South Africans through education, advocacy and service, thereby improving the standard of care, upholding their dignity and enhancing their quality of life.

These SA recommendations are intended to be used by consumers (SCA patients), clinicians, policy makers and funders, and should be read in conjunction with current international guidelines and evidence of clinical best practice and experience, many of which are referenced in this paper, in the interests of improving patient-centred decision-making and outcomes for all parties involved.

These recommendations should not be viewed as a rewriting of any accepted guidelines, but rather as an attempt to draw attention to current best practice principles as practised in SA. CAP does not intend to promote or impose any particular method or product on any individual patient, but we do view it as our responsibility to inform them of available alternatives, and the rationale for these recommendations.

Bladder management strategies

Bladder management strategies are long-term treatment plans with implications for maintaining health and quality of life. To make informed choices about the most appropriate method of bladder management, consumers, family members and/or carers require information about the risks and benefits of the available options.^[4]

These recommendations are consistent with well-entrenched principles reflected in international guidelines (mainly the EAU guidelines) and prescribed by the International Spinal Cord Society.^[5] Reference is also made to other publications, mainly from English-speaking countries, and published since the EAU guidelines.

Consumers with neurogenic urinary tract dysfunction, their family members and/or carers need specific information and training.

Consumers starting to use, or who are using, individually decided-upon bladder management strategies require:

- training, support and review from healthcare professionals, who are trained to provide support in the relevant bladder management systems and are knowledgeable about the range of products available
- access to a range of products and services that meet their needs.^[6]

Clean intermittent catheterisation (CIC) is accepted as the gold standard for the management of the neurogenic bladder worldwide. International literature also refers to clean intermittent self-catheterisation or intermittent self-catheterisation, or other similar terms. Appropriate techniques and selection of catheters are subject to specific patient care environments (i.e. sterile, aseptic, no-touch and clean techniques).^[7] The identification of a carer is an important consideration in cases where the consumer is unable to self-catheterise.

The prevalence of complications can be decreased by adequate patient education, use of non-traumatising techniques and adequate precautions to prevent infections.^[8]

Recommendations (phased approach)

Spinal cord services for SCA in SA vary in terms of logistics and intensity. Levels of care are delivered at different institutions and according to different educational standards.^[9]

Care pathways are therefore (for practical purposes) divided into three phases in the management of the neurogenic bladder in the SA context. This approach is based on the consensus opinion of clinicians working with SCA patients, in consultation with peers, and best evidence-based practice, defined by Sackett *et al.*^[10] as ‘the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients’.

Of utmost importance in all three phases is the prevention of catheter-associated UTIs, through correct staff and patient supervision/training and monitoring, education in hand hygiene and the maintenance of the clean closed-loop/circuit principle with indwelling catheters (IDCs).

CIC is the gold standard for all three phases. The average frequency of catheterisation is 4 - 8 times per day. It has also been proven to be the preferred method of catheterisation in patients with neurogenic bladder dysfunction.^[8]

The primary aims (and their order of prioritisation) when treating neuro-urological disorders are:

- protection of the upper urinary tract
- improvement of urinary continence
- restoration of (parts of) the lower urinary tract function
- improvement of the patient’s quality of life.

Phase 1: Early/acute management

After injury, the initial monitoring of physiological stability, including urine output, and timely catheterisation, are of utmost importance.

Awareness of urinary retention immediately post-injury (catheterisation), preservation of the urethra (limiting prolonged transurethral catheterisation) and continence (to prevent pressure sores) are the focus in this phase.

Prolonged indwelling urethral catheterisation is a major cause of iatrogenic urethral strictures in SCA males. Urethral strictures can cause serious problems for SCA patients wanting to be managed with CIC or condom and urinary bag drainage, and should therefore be prevented at all costs. Attempts at reconstructive surgical repair are far less successful than in the neurologically intact population. A urethral stricture can affect the SCA patient’s management for the rest of his life.

The option of a suprapubic catheter also needs to be considered. Alternatively, aseptic CIC (even in intensive care settings) is a worthwhile option, if staff allocation and expertise allow for this. In the aseptic technique, the catheter remains sterile, the genitals are disinfected and sterile lubricant is used.^[8]

If the staff/healthcare professional(s) have little or no experience in SCA management, the help of a urologist (with an interest in SCA urology) should be sought to assist in its correct management. The same principle applies to any complications related to neurogenic bladder management (e.g. traumatic catheterisations or possible renal/bladder injuries).

The early detection and treatment of UTIs is vital in this phase, as this can prevent long-term damage.

Further important considerations during this phase are the extent of the patient’s disability, cost-effectiveness, technical complexity and possible comorbid complications.

Phase 2: Rehabilitation (preferably in a specialised centre)

Establishing the suitability of the patient with SCA for CIC needs to be the top priority in this phase, if it has not already been implemented. Care needs to be taken in patient selection, as patient insight and compliance are vital for success in intermittent catheterisation (Table 1).

The dexterity and mental capacity of the SCA patient, and/or the availability of a willing caregiver to perform the catheterisation, must be paramount factors in the decision-making process. Avoid intermittent catheterisation in individuals with SCA with one or more of the following:^[11]

- inability to catheterise themselves
- a carer who is unwilling to perform catheterisation
- abnormal urethral anatomy, such as stricture, false passages or bladder neck obstruction
- bladder capacity <200 mL
- poor cognition, little motivation, inability or unwillingness to adhere to the catheterisation time schedule
- high fluid intake regimen
- adverse reaction to passing a catheter into the genital area multiple times a day

Table 1. Evidence and recommendations for catheterisation in patients with SCAs^[3]

Summary of evidence	LE
Intermittent catheterisation is the standard treatment for patients who are unable to empty their bladder.	3
Recommendation	Strength rating
Use intermittent catheterisation, whenever possible aseptic technique, as a standard treatment for patients unable to empty their bladder.	Strong
Thoroughly instruct patients in the technique and risks of intermittent catheterisation.	Strong
Avoid indwelling transurethral and suprapubic catheterisation whenever possible.	Strong

SCA = spinal cord affliction; LE = level of evidence.

- tendency to develop autonomic dysreflexia with bladder filling/ urethral instrumentation, despite treatment.

It is recommended that a choice of either single-use hydrophilic or gel reservoir catheters for intermittent self-catheterisation should be offered.^[12] The gold standard in CIC remains a new sterile catheter, because of the decreased risk of infection.^[13]

Numerous general medical and social factors also need to be considered when dealing with urinary incontinence (a checklist might be of benefit in this).^[14] A dedicated multidisciplinary approach with all SCA patients is vital to attaining a good outcome and long-term success.

If IDC is decided upon, a silastic catheter must be used, and changed every 4 - 6 weeks. Latex catheters should not be used for long-term catheterisation.

If condom and bag drainage is the choice determined on, the general changing interval is 1 - 3 days.

Important factors during rehabilitation phase

Minimum investigations to appropriately assess the neurogenic bladder:

- A urodynamic study (UDS) needs to be performed approximately 3 months post injury, or at the discretion of the treating SCA physician/urologist. The UDS is an essential tool in neurogenic bladder assessment, and is crucial in deciding what choice of bladder management is selected. It is internationally accepted that reflex neurogenic activity of the SCA bladder has usually returned 3 months post injury. A patient in whom normal sensory voiding (with acceptable residual urine) returns within a few weeks of the injury does not need a UDS (Table 2).

- Uroflowmetry or genitourinary ultrasound assessment of post-void residual urine should be repeated at least two or three times in patients who are able to void.
- Abdominal X-ray (AXR), including the pelvis, and ultrasound of kidneys and bladder should be performed. An intravenous pyelogram is an optional investigation. The initial ultrasound and AXR can be done as an inpatient.
- A CT scan, with or without contrast, is an important investigation in suspected upper tract pathology.

Assisted bladder emptying (caution)

Triggered reflex voiding is not recommended, as there is a risk of pathologically elevated bladder pressures. Only in the case of absence of, or surgically reduced, outlet obstruction may it be an option.

Caution: bladder compression techniques to expel urine (Crédé) and voiding by abdominal straining (Valsalva manoeuvre) create high pressures and are potentially hazardous, and their use should be discouraged.

Pharmacological considerations

Urological drugs initiated during this phase are to be prescribed by an experienced SCA clinician, or in consultation with a urologist (Table 3).

Bowel management

A consistent and effective bowel management programme is essential to the urological health of SCA patients, as constipation/ faecal impaction will negatively affect their general wellbeing, and specifically urological outcomes.

Table 2. Evidence and recommendations for urodynamics and uro-neurophysiology^[3]

Summary of evidence	LE
Urodynamic investigation is the only method that can objectively assess the (dys)function of the LUT.	2a
Video-urodynamics* is the optimum procedure for urodynamic investigation in neuro-urological disorders.	4
Specific uro-neurophysiological tests are elective procedures and should only be carried out in specialised settings.	4
Recommendation	Strength rating
Non-invasive testing is mandatory before invasive urodynamics is planned.	Strong
Perform a urodynamic investigation to detect and specify lower urinary tract (dys)function, use same-session repeat measurement, as it is crucial in clinical decision-making.	Strong
Use video-urodynamics for invasive urodynamics in neuro-urological patients. If this is not available, then perform a filling cystometry continuing into a pressure flow study.	Strong
Use a physiological filling rate and body-warm saline.	Strong

LE = level of evidence; LUT = lower urinary tract.
 *Video urodynamics combines filling cystometry and pressure flow studies with radiological imaging. Currently, video urodynamics is considered to provide the most comprehensive information for evaluating neuro-urological disorders.

Table 3. Summary of evidence and recommendations on drug treatment^[3]

Summary of evidence	LE
Long-term efficacy and safety of antimuscarinic therapy for neurogenic detrusor overactivity is well documented.	1a
A significant reduction in adverse events was observed for intravesical administration of oxybutynine compared with oral administration.	1a
Maximise outcomes for neurogenic detrusor overactivity by considering a combination of antimuscarinic agents.	3
Recommendations	Strength rating
Use antimuscarinic therapy as the first-line medical treatment for neurogenic detrusor overactivity.	Strong
Offer intravesical oxybutynin to patients with neurogenic detrusor overactivity with poor tolerance to the oral route.	Strong
Prescribe α-blockers to decrease bladder outlet resistance.	Strong
Do not prescribe parasympathomimetics for underactive detrusor.	Strong

LE = level of evidence.

Autonomic dysreflexia

The early detection and management of autonomic dysreflexia is imperative in the SCA population, as this condition can be potentially life-threatening. This usually occurs only in lesions above T7 (potentially ‘unsafe’ bladder).

Phase 3: Post discharge/rehabilitation

It is widely accepted that urinary tract morbidity ranks as a major cause of hospital readmission in individuals with SCA, and is still a leading factor in mortality in this population. Adequate phase 1 and 2 management will improve the prognosis.

Discharge planning is an important part of the rehabilitation phase, and must include regular follow-up at a specialised unit or by a urologist. Earlier follow-up for high-risk patients (especially on CIC) is strongly advised if any doubt exists regarding compliance or high-risk behaviour (Table 4).

The importance of early identification of potential SCA complications (of which incontinence is a high-risk indicator) cannot be underestimated. The correct management of these is an important step in the cost-effective and morbidity-saving chain of events. For instance, the prevention of one pressure sore (which often follows incontinence) can relate to a cost saving of approximately ZAR500 000.

Many surgical interventions exist that can improve/restore continence in SCA patients (e.g. onabotulinum toxin A, sacral anterior root stimulators, urinary diversions, artificial sphincters, bladder neck procedures, etc.). These fall outside the framework of these recommendations, and need specialist and individualised decision-making and management plans (Tables 5 and 6).

The biggest challenge in phase 3 is the absence of readily available resources. The Patient Rights Charter of SA stipulates the right to basic medical care. In the SCA field, this means the right to the provision of adequate basic medical care that includes the supply of sundries (for human dignity and health). This therefore relates to both the provision of expertise (especially in rural areas) and that of basic urological equipment, sundries and

medication. The changing of urological (and bowel) management by inexperienced, well-meaning staff poses a grave danger to the health of SCA patients.

Overriding principles for decision-making

Treatment options

A practical and systematic approach needs to be taken by SA clinicians working in the field of SCA. Decision-making on the correct management/treatment options needs a dedicated team of SCA clinicians in all three phases set out above, and treatment needs to be individualised. Input from a urologist with interest in SCA is imperative, to widen the range of options open to patients.^[15]

Treatment options currently available/used in the SA context include the following:

- spontaneous voiding
- timed voiding (with/without condom and bag)
- intermittent catheterisation
- condom and bag (without sensation)
- chronic indwelling catheter
- suprapubic catheter
- intravesical onabotulinum toxin A
- transurethral sphincterotomy
- sacral nerve stimulation (InterStim)
- bladder augmentation
- urinary diversion.

The safety (risk v. benefit) of any of these options needs to be evaluated/weighed up for each individual patient. The objective is to achieve the least invasive and most effective/safest option. The use of medication in any of the above options must be carefully considered. Discussion of possible options with the spinal cord-afflicted individual is mandatory. Individual health status, patient insight/compliance, social environment and circumstances need to be taken into consideration in this decision. It is not within the scope of these recommendations to go into the detail of every step of

Table 4. Summary of evidence and recommendations for follow-up^[3]

Summary of evidence	LE
Neuro-urological disorders are often unstable and the symptoms may vary considerably; therefore, regular follow-up is necessary.	4
Recommendations	Strength rating
Assess the upper urinary tract at regular intervals in high-risk patients.	Strong
Perform a physical examination and urine laboratory test every year in high-risk patients.	Strong
Any significant clinical changes should instigate further, specialised, investigation.	Strong
Perform urodynamic investigation as a mandatory baseline diagnostic intervention in high-risk patients at regular intervals.	Strong

LE = level of evidence.

Table 5. Summary of evidence and recommendations for minimal invasive treatment^[3]

Summary of evidence	LE
Botulinum toxin A has been proven effective in patients with neuro-urological disorders due to MS or SCA in multiple RCTs and meta-analyses.	1a
Bladder neck incision is indicated only for secondary changes (fibrosis) at the bladder neck.	4
Recommendations	Strength rating
Use botulinum toxin injection in the detrusor to reduce neurogenic detrusor overactivity in multiple sclerosis or spinal cord injury patients if antimuscarinic therapy is ineffective.	Strong
Bladder neck incision is effective in a fibrotic bladder neck.	Strong

LE = level of evidence; MS = multiple sclerosis; SCA = spinal cord affliction; RCT = randomised controlled trial.

Table 6. Summary of evidence and recommendations for surgical treatment^[3]

Summary of evidence	LE
Bladder augmentation is an effective option to decrease detrusor pressure and increase bladder capacity, when all less-invasive treatment methods have failed.	3
Urethral sling placement is an established procedure, with acceptable medium- to long-term results, in women with the ability to self-catheterise.	3
Artificial urinary sphincter insertion is a viable option, with acceptable long-term outcomes, in males. The complication and re-operation rates are higher in neuro-urological patients; therefore, patients must be adequately informed regarding the success rates as well as the complications that may occur following the procedure.	3
Recommendations	Strength rating
Perform bladder augmentation in order to treat refractory neurogenic detrusor overactivity.	Strong
Place an autologous urethral sling in female patients with neurogenic stress urinary incontinence who are able to self-catheterise.	Strong
Insert an artificial urinary sphincter in male patients with neurogenic stress urinary incontinence.	Strong

LE = level of evidence.

the possible options. The approach is in line with the international, commonly used clinical guidelines.^[11,16]

Urinary tract infection prevention

UTIs present in challenging or insidious ways in the spinal cord afflicted population. Clinical experience in recognising a symptom complex in these patients is helpful, and will reduce the inappropriate use of antibiotics.

The routine use of urinary dipsticks for screening for UTIs is not advised. Routine use of antibiotic prophylaxis is discouraged and reserved for exceptional cases when all other avenues have been explored. Investigation of underlying contributing factors (bowel, bladder emptying and structural abnormalities) is mandatory.

General rules applicable to the use of antibiotics in the neurogenic bladder

- Treat bacteriuria only if symptomatic (bacterial colonisation does not require treatment).
- Urine microscopy, culture and sensitivity (MCS) is mandatory prior to initiating antibiotics in symptomatic patients, but it should not delay prompt treatment.
- Choose antimicrobials with as little impact on bowel flora as possible.
- Adjust antibiotics according to sensitivity of organism.
- Treat proven infections for at least 5 days. Re-infections are treated for 7 - 14 days.
- Repair structural and functional risk factors.
- Prophylaxis only to be used in recurrent infections and in consultation with experienced clinicians/urologist.
- Patients with indwelling catheters should not be given routine antibiotic prophylaxis.

Clean intermittent catheterisation practices

Current view

Intermittent catheterisation was introduced in the 1970s and is now considered the gold standard for the management of neurogenic bladder dysfunction.

International guidelines (e.g. by the EAU and the National Institute for Health and Care Excellence) do not explicitly recommend single-use over multiple-use catheters, but propose a patient-oriented choice, with specific reference to patient-specific requirements. We subscribe to this recommendation, as it aligns with our obligations as medical

practitioners, and to the relevant health legislation. We believe that patients with SCA need to be empowered to live as independently as possible, with the provision of adequate and appropriate continence care products to ensure quality of life, medical stability and safety.

The EAU recommends that intermittent catheterisation, whenever possible with an aseptic technique, should be standard treatment for patients who are unable to empty their bladder. Indwelling transurethral and suprapubic catheterisation should be avoided wherever possible.^[3]

Aseptic CIC is defined by the EAU as comprising genital disinfection and the use of sterile catheters and instruments/gloves.^[3]

CIC should be implemented in spinal cord-afflicted patients as soon as possible after the SCA occurs.

CIC is dependent upon:

- adequate hand function/dexterity
- absence of cognitive impairment
- full co-operation of the patient.

Spinal cord-afflicted patients require education and training in the technique and risks of CIC. This training should include:

- hand hygiene
- technique of self-catheterisation
- cleaning and storage of catheter (if re-used)
- recognition and awareness of signs and symptoms of UTI, and how to access medical advice and treatment
- understanding of adequate fluid intake per 24 hours
- correct size of a catheter, in adults, between 12 and 16 Fr.

Optimal bladder drainage at regular intervals, to prevent bladder over-distension, is crucial for the mental health and quality of life of people with SCA.^[17,18]

There is a lack of uniformity and standardisation in nursing practice in terms of performing CIC.^[13]

Rationale for single-use hydrophilic intermittent catheters

Cardenas *et al.*^[19] report that the use of a hydrophilic-coated catheter for CIC is associated with a delay in the onset of the first antibiotic-treated symptomatic UTI, and a 21% reduction in the incidence of symptomatic UTI in patients with acute spinal cord injury (SCI) during acute inpatient rehabilitation. Using a hydrophilic-coated catheter minimises UTI-related complications, treatment costs and

rehabilitation delays, and reduces the emergence of antibiotic-resistant organisms.

In a recently published meta-analysis regarding intermittent catheter usage, Li *et al.*^[20] reviewed five randomised controlled trials with a total of 462 subjects with SCI/SCA. There was a significantly lower incidence of reported UTIs in the hydrophilic-treated (disposable) group when compared with the non-hydrophilic-treated (uncoated disposable and multiple use) group. Haematuria was also significantly less common in the hydrophilic catheter group than in the non-hydrophilic catheter group. Their meta-analysis found that UTIs and haematuria are less frequently associated with the use of hydrophilic-coated catheters for intermittent catheterisation in patients with SCI.

Chartier-Kastler *et al.*^[21] report that compact catheters, designed as they are for further discretion, offer a 28% increase in quality of life over non-compact intermittent catheters. Given evidence of fewer UTIs, less haematuria and better quality of life, compact hydrophilic-coated intermittent catheterisation appears to be the best treatment option. Clinicians will need to base their decision about catheterisation technique on clinical judgement, in conjunction with the user's preference.

There are no clear guidelines about the appropriate length of time for catheter use if the patient is re-using an uncoated catheter. Although a widespread practice, there is no consensus on how many times a single-use catheter should be re-used, and the practice is regarded as off-label use. Guidelines do, however, refer to clean techniques that imply cleaning and storage of these catheters for an indeterminate number of times, although again there is no scientific evidence for an acceptable number of re-uses. There are also insufficient data for recommending a cleaning method for multiple-use catheters.^[22]

Several studies have investigated the advantages and disadvantages of re-usable catheters in the home setting, where catheterisation is performed by the patient or a caregiver. Available data on intermittent catheterisation do not provide convincing evidence that either single or multiple uses are superior in all clinical settings.

Currently, clinicians need to base their decisions about which technique and type of catheter to use on clinical judgment, in conjunction with specific patient requirements or choice. Differential costs of catheters and techniques may also influence decision-making.^[13] It has not been conclusively proven which type of catheter (hydrophilic/coated v. non-coated) used for intermittent catheterisation is better able to reduce the risk of symptomatic UTI.^[23]

A 2014 Cochrane Review by Prieto *et al.*^[24] compared types of catheter design, aseptic catheterisation techniques v. clean technique, single-use (sterile) catheters v. multiple-use (clean) catheters, self-catheterisation v. catheterisation by others and other strategies designed to reduce UTI incidence and other complications in adults and children using intermittent catheterisation for incomplete bladder emptying. Despite a total of 31 trials, it was concluded that there was still no convincing evidence that the incidence of UTI is affected by any of these strategies.

The conclusion made by the 2014 Cochrane Review strongly influenced healthcare providers and agencies to recommend the re-use of catheters. However, concerns raised by many clinicians regarding these conclusions led to an independent appraisal by Christison *et al.*^[25] of the data and analyses presented, which identified crucial discrepancies in data extraction and analyses within this review. In contrast to Prieto *et al.*'s^[24] conclusion, their analyses revealed a trend favouring single over multiple use of catheters. After raising these concerns with Cochrane's acting editor-in-chief, the

most recent version of the 2014 Cochrane review has been withdrawn from publication.

Results from a recent meta-analysis by Rognoni *et al.*^[26] confirmed the finding that hydrophilic-coated catheters are associated with a reduced risk of UTI among patients using intermittent catheterisation. On the other hand, a risk reduction for haematuria associated with hydrophilic-coated catheters in general was not demonstrated. However, the conclusions of the study are compromised by several limitations, such as the heterogeneity of outcomes and definitions, the lack of available high-quality randomised controlled trials and a higher dropout rate related to hydrophilic catheters. In view of these limitations, uncoated catheters may still maintain a place in clinical practice. There are limitations and gaps in the evidence base and the designation of non-coated catheters as single-use devices.

More importantly, single-use hydrophilic-coated catheters increase social participation by saving time, increasing independence and reducing the burden related to CIC.^[17, 27]

It is recommended that a precautionary principle should be adopted, and that patients should be offered a choice between hydrophilic and gel reservoir catheters.^[23]

Vulnerable patient groups

Vulnerable patient groups using CIC that should be considered for hydrophilic-coated intermittent catheters include the following:

- patients in hospitals, nursing homes or rehabilitation centres
- immunosuppressed patients
- patients with recurrent UTIs or haematuria.

Economic considerations

By reducing the number of UTIs through the introduction of CIC, it has been possible to halve the incidence of renal failure and mortality in people with SCAs. The additional costs of CIC are possibly offset by the lower rate of UTIs, and the fact that care for a permanent catheter is no longer necessary.^[28]

The choice of catheter type for intermittent catheterisation is currently influenced by economic considerations, in the selection of the re-use of non-coated, single-use non-coated, or hydrophilic-coated catheters. No economic analysis has yet been conducted in SA comparing any of these techniques, although re-use of single-use catheters is currently most prevalent.

Birmingham *et al.*^[23] performed a cost-effectiveness analysis using data from trials with various intermittent catheter types, finding a slight difference among them in the risks of symptomatic UTIs. The analysis, however, focused only on the acute treatment of symptomatic UTIs, and did not consider their lifetime downstream sequelae, such as renal function. However, this analysis did not include the largest study in hospitalised SCI patients, which had previously compared UTI incidence rates for single-use hydrophilic-coated and uncoated catheters.^[19]

Clark *et al.*^[29] used a probabilistic decision analysis to investigate the cost-effectiveness of hydrophilic catheters v. uncoated catheters using a lifetime perspective. Hydrophilic catheters were estimated to be a more cost-effective solution when compared with uncoated catheters with a relatively low incremental cost-effectiveness ratio in the UK context.

Consideration of the patient's quality of life and needs, their therapeutic goals and economic status must become the measure of care. To this end, a system of ongoing exchange and regular discussion should be established with all those involved in the care process, e.g. patients, health insurance funds, specialist physicians and providers and manufacturers of medical technical aids.

There have been no studies taking into account economic considerations for the SA healthcare environment regarding SCA care, and therefore inadequate data exist to make recommendations on the cost-effectiveness of bladder management strategies in SA.

Conclusion

Management of the urinary tract in people with SCA is continuing to evolve. Unfortunately, the scientific evidence base on which treatment decisions must be made is inconclusive. It is therefore important that clinicians take heed of the lessons that have been learnt in SCI centres over the decades, but, at the same time, continue to question the accepted wisdom and subject it to scientific challenge.

The care of this group of patients is hugely rewarding for the treating clinical team, as high-quality urinary tract management has a major positive impact on a patient's quality of life, their health outcome and the cost-effectiveness of treatment. On an international scale, there is an urgent need to devise cost-effective SCI management regimes that translate the results of the best SCI centres into the healthcare systems of the developing world.^[23]

It is the recommendation of CAP that bladder management decision-making in the spinal cord-afflicted population in SA needs specialised care. A phased approach will improve the attention to detail in our resource-challenged environment. This includes appropriate early care (phase 1), expert assessment of the neurogenic bladder and initiation of appropriate choice of long-term strategy (phase 2) and mandatory follow-up regimes for long-term care (phase 3). This approach will equate to improved long-term positive outcomes.

Medical practitioners should promote confirmed safe, non-infecting and non-traumatic techniques for bladder management. In SA, the Health Professions Act No. 56 of 1974^[30] requires practitioners to provide patients with information on the treatment options available, and to obtain their informed consent for the treatment subsequently chosen. Part of this process is a discussion about the benefits, risks and costs of the options available.

Effective communication between healthcare professionals and patients is essential, where treatment and care should consider patient needs, preferences and circumstances.^[31] The National Health Act No. 61 of 2003^[32] also requires that practitioners should offer 'the best possible care at a cost-effective rate.'^[33] Cost-effectiveness and low cost are not equivalent terms. The issue is rendered more difficult by the fact that we lack measurements of the total treatment and care pathway savings in the medium to longer term that would result from deciding against inferior care. Reduced complications and comorbidities, and earlier return to normal activities, are examples of such unmeasured outcomes.

*The Continence Advisory Panel (CAP) is an interest group of the Southern African Spinal Cord Association (SASCA).

These recommendations were reviewed externally by the SA Urological Association and international experts in the management of the spinal cord-afflicted and the neurogenic bladder.

These recommendations will be reviewed every 3 years, or earlier should further evidence demand such a review.

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