The Seldinger Suprapubic Catheter Kit
Reducing risk, reducing cost
# Index

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Introduction

NTAC based in Manchester was launched to promote the uptake of innovative but under adopted technologies in the NHS that could make a real impact on patient care.

Margaret Parton, former Chief Executive of NTAC, said:
“The SPC How to why to Guide is the first example of the practical way in which NTAC is going to address the adoption by the NHS of innovative technologies, which are the vehicles for the transformation of the health service.
As well as a comprehensive introduction to specific technologies these guides, which have been designed for ease of navigation and use, will provide supporting clinical evidence, a business case, costing models and a road map for implementation.”

The first guide covers a new urological surgical technique using the Seldinger Suprapubic Catheter. This technique combines increased safety and ease of use facilitating the transfer of the technique from inpatient to outpatient settings resulting in reduced hospital stay for elderly, vulnerable patients.
The NHS Technology Adoption Centre (NTAC) launched in April 2009 their first "How to, Why to Guide" for the Seldinger Suprapubic Catheter (SPC).

Dr Odunayo Kalejaiye, Specialist Registrar for Urology, Taunton and Somerset NHS Foundation Trust, comments: “Finally SPC insertion has caught up with other blind procedures using the Seldinger approach. This is easy to use for all levels.”

The "How To, Why To Guide" provides a comprehensive introduction to the technology, with supporting clinical evidence, a business case, costing models and a road map for its implementation. The “How to Why To Guides” are designed to save hospital and clinic time, improve performance and providing patients with a better experience.

This booklet will explain the barriers to adoption, and how they were overcome together with the benefits this technology can bring to your organisation from the lessons learnt at NTAC’s three clinical implementation sites. The guide provides comprehensive, relevant information for clinicians, managers and other stakeholders on how to implement this technology.

There is full information on procurement and key policy areas that this technology may impact on, a full business case, and costing model that can be tailored to your trust’s requirements.

To view NTAC’s the "How to, Why to Guide" visit
www.technologyadoptioncentre.nhs.uk/how-to-why-to-guides.html
Executive Summary

Suprapubic catheterisation (SPC) is a surgical procedure traditionally performed in the operating theatre and is routinely used in urology to decompress the bladder in patients who present as an emergency with bladder outlet obstruction (BOO) and where a urethral catheterisation is unsuccessful, or undesirable, because of an enlarged prostate or urethral stricture. It is also electively indicated in patients unable to tolerate a long-term urethral catheter due to bladder spasm/discomfort/bypassing, and in patients with neurological diseases such as multiple sclerosis and spina bifida.

Although generally regarded as a safe procedure, initial insertion can carry a small but significant risk of bowel puncture, particularly in patients with a contracted bladder. Traditional methods are often daunting for both the surgeon and patient, due to the potential risks involved.

A new technique for safe introduction of Suprapubic Urinary Catheters

Suprapubic catheterisation can now be undertaken using a new technique with a low risk of trauma and complications, and at a lower cost, with the availability of a new insertion kit that employs the Seldinger technique - a well-established procedure in clinical practice.

Mediplus Ltd and the BioMed Centre in Bristol have developed a new catheter insertion kit using the Seldinger technique - a well established clinical procedure - to increase safety and reduce the number of insertions performed under general anaesthetic.

The Seldinger Suprapubic Catheter Kit consists of a long needle (16G), a guide wire, a trocar with an outer sheath and a choice of 8, 14 or 16 French silicone catheters.

The anaesthetised tract is created in the normal way, but the needle is left in the patient. The guide wire is then inserted through the needle into the bladder. It will curl upon the posterior wall preventing the trocar from being pushed in too far. The needle can then be removed. The trocar is then inserted in a controlled manner, helping to reduce user anxiety and ensuring it enters the bladder.

Clinical evidence

Suprapubic catheterisation has a number of advantages compared to urethral catheterisation. For example, the risk of urethral damage is eliminated, a suprapubic catheter is more patient-friendly, and bladder spasms occur less often because the suprapubic catheter does not irritate the outflow area of the bladder. What's more, suprapubic catheters are more sanitary because the catheter is away from the urethra/anal area, which can help reduce cases of urinary tract infections.

Traditional methods of suprapubic catheterisation are often daunting for both the surgeon and the patient. The new catheter insertion kit utilises the seldinger technique, already standard for vascular access and nephrostomy insertion, to safely place the catheter in the bladder.

In this section you will find relevant trial reports & supporting evidence, other useful reference papers, information about any ongoing trials and testimonials from those involved in the implementation projects.
Relevant trial reports & supporting evidence

Suprapubic bladder catheterisation using the Seldinger technique.
Nikhil Vasdev, Naveen Kachroo, Sunil Mathur, Robert Pickard:
Abstract
Background: Suprapubic catheterisation is normally performed blindly or ultrasound guided. We present an evaluation of a new Seldinger technique for suprapubic catheterisation in our department describing the technique and post procedure results.
Methods: 6 patients had suprapubic catheters introduced via the Seldinger technique using suprapubic Foley catheter introduction set, Mediplus Ltd, High Wycombe, UK. All clinicians completed a questioner at the end of the procedure rating their confidence in the new device compared to the standard technique across 5 domains using a simple scale.
Conclusion: Overall users of the device expressed greater confidence in application, patient comfort and safety of the new device compared to standard trochar placement. Given the current drive to minimise risk these devices appear to represent a significant advance over standard methods and merit consideration for routine use.

A new model for suprapubic catheterisation ; the mediplus Seldinger suprapubic catheter
Abstract
Insertion of a suprapubic catheter is one of the essential skills that all surgeons should master. It provides an alternative way to drain the bladder in cases where urethral catheterization is contraindicated or deemed difficult. It also has a role in elective cases where long-term drainage of the bladder is required. In this article, we discuss the MediPlus suprapubic catheter kit, which offers a new and potentially promising technique for safe introduction of the catheter into the bladder.

Suprapubic catheter insertion is an outpatient procedure: cost savings resultant on closing an audit loop
Khan A, Abrams P. Bristol Urological Institute, Southmead Hospital, Bristol, UK. Study Type - Economic (case series) Level of Evidence 4
Abstract
Objective: to explore, by an audit, the regional practice of inserting a suprapublic catheter (SPC), and to prospectively determine the proportion of patients that can be successfully managed on an outpatient basis in one department.
Methods: both local and regional practice were determined by a retrospective analysis of the hospital database for all cases of SPC insertion between April 2005 and March 2006. In addition, a questionnaire was e-mailed to each of 11 urology departments. Locally, from August 2006 onwards, all patients scheduled for SPC insertion were referred to a new clinic, where the SPC was inserted using a new SPC kit and the Seldinger technique.
Results: locally, 66 patients (mean age 70 years, range 26-93) had a SPC inserted between April 2005 and March 2006; 49 had an elective procedure while 17 were emergency admissions. The median (range) hospital stay was 3.5 (1-85) days. Within the region, 480 SPCs were inserted in theatre during the same period, of which 52% (249) were inserted as elective inpatients, 11% (52) were inserted as a day case, and 37% (179) had SPCs as emergency admissions. A nurse-led outpatient service was available in two hospitals, where 89% of patients seen in the clinic had successful insertion under local anaesthesia, and only 11% were referred for insertion under general anaesthesia.
Between August 2006 and July 2007, 50 of 54 patients had a SPC inserted successfully in the new SPC clinic. There were no major complications. The cost benefits of adopting an outpatient management strategy were significant, at approximately GB 100,000 pounds/year in our hospital, 790,000 pounds/year in the region and 9,500,000 pounds/year for the UK.

Conclusion: an outpatient procedure for a SPC is safe and feasible in most patients, and its widespread use would produce considerable cost savings.

Testimonials

Mr Ruaraidh MacDonagh
Consultant Urological Surgeon, Taunton and Somerset NHS Foundation Trust.
"Suprapubic catheterisation employing the Seldinger technique makes catheter insertion technically easier and safer and consequently facilitates the training of junior clinical staff."

Prof Christopher Chapple, BSc, MD, FRCS (Urol), FEBU
Royal Hallamshire Hospital, Sheffield
"Having used it I would prefer it over all of the alternatives and we have switched over to using it'"

Angus MacCormick
Nurse Practitioner, Taunton and Somerset NHS Foundation Trust
"Suprapubic catheterisation using the Seldinger technique offers a safer alternative to the traditional procedure. The suprapubic catheter insertion clinic allows patients the opportunity to have the procedure undertaken under local anaesthetic, thus preventing the risks associated with general anaesthesia in a relaxed out-patient environment".

Odunayo Kalejaiye
Specialist Registrar, Taunton and Somerset NHS Foundation Trust
"Finally SPC insertion has caught up with other blind procedures using the Seldinger approach. This is easy to use for all levels."

Vivek Kumar
Specialist Registrar, Royal Hallamshire Hospital, Sheffield
"Safe and easy to use"

Altarf Mangera
SHO, Royal Hallamshire Hospital, Sheffield
"Less daunting for an inexperienced person such as myself"
Key Benefits of the Technology

The Seldinger Suprapubic Catheter Kit offers a number of benefits for both clinical staff and patients:

- **Greater control and accuracy.** A high degree of control allows accurate placement.
- **Reduced risk.** Low risk of trauma and tissue damage for the patient. The catheter rarely needs to be inserted under general anaesthetic - reducing the associated risks in an elderly at risk group of patients.
- **Greater confidence.** The bladder may be located with an 18G hypodermic needle, giving more confidence in inserting the trocar into the bladder, as the track has already been secured by the guide wire.
- **Improved insertion and removal.** The safety guide wire improves insertion and removal, guaranteeing insertion of the trocar along the anaesthetised track.
- **Reduces costs and hospital stay.** The procedure rarely needs to be undertaken as an inpatient, under general anaesthetic or in an operating theatre - reducing hospital stay, as well as reducing overall costs.
- **Frees up consultants’ time and enhances out of hours services.** Enables non-consultant grade clinical staff and suitably trained nurse practitioners to perform the procedure after training, thereby freeing up consultant time and allowing suitably trained staff to safely insert catheters during out of hours.
**Benefits vs. Barriers**

The following table outlines the main benefits and common barriers encountered during the NTAC Technology Implementation Project. They have been categorised by patient, clinical staff, Trust/Service Managers and other stakeholders. Although these examples are by no means exhaustive - this table aims to provide a succinct overview.

<table>
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<th>Benefits of new technology</th>
<th>Reasons for resistance to new technology</th>
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<tr>
<td></td>
<td>• Low risk of complications</td>
<td>• Lack of information</td>
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<td></td>
<td>• Low risk of trauma to urethra</td>
<td>• Lack of choice</td>
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<td></td>
<td>• Patient satisfaction</td>
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<td></td>
<td>• Avoids urethral catheterisation out of hours were contraindicated or undesirable.</td>
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<td></td>
<td>• Supports trial without catheter in retention patients</td>
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<td></td>
<td>• Promotes patient dignity and sexual function</td>
<td></td>
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<tr>
<td>Clinical Staff</td>
<td>• Safe procedure - uses Seldinger technique</td>
<td>• Resistance to change</td>
</tr>
<tr>
<td></td>
<td>• Reduces requirement for general anaesthetic and inpatient stay for at risk elderly patient groups</td>
<td>• Training required in new technique</td>
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<td>• Reduces demand on theatre capacity - allows insertion in the day case / outpatient setting</td>
<td>• Limited supporting clinical evidence for the new technique</td>
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<tr>
<td></td>
<td>• Low complication rates</td>
<td>• Limited research evidence for SPC</td>
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<td></td>
<td>• Low risk of trauma</td>
<td>• Cost per unit is 2 - 3 times that of the traditional catheter sets</td>
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<td></td>
<td>• High clinician confidence to undertake procedure safely, broadening indications for SPC insertion</td>
<td></td>
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<tr>
<td>Service/Trust Managers</td>
<td>• Reduced length of hospital stay</td>
<td>• Currently the cost per unit is 2 - 3 times that of the traditional catheter set</td>
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<td></td>
<td>• Reduced requirement for general anaesthetic</td>
<td>• Some service redesign will be necessary as some theatre cases will become day case / outpatient cases</td>
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<td></td>
<td>• Supports patient safety and governance initiatives</td>
<td>• Limited knowledge and information on the new technique and its utility</td>
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<td></td>
<td>• Reduces overall hospital costs - majority of procedures can be undertaken in the day case / outpatient setting</td>
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<td></td>
<td>• Supports safer practice out of hours</td>
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<td></td>
<td>• Supports compliance with access targets</td>
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<td></td>
<td>• Freed theatre capacity</td>
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<td></td>
<td>• Income generation from additional activity in released bed and theatre capacity</td>
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<tr>
<td>Influencers/Other Key Stakeholders</td>
<td>• Lack of direction from Professional bodies (BAUS, BAUN)</td>
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# SPC Who Benefits Guide

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<th>Who</th>
<th>Benefits</th>
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<tr>
<td><strong>Patients</strong>&lt;br&gt;Patients with chronic urine retention, patients in need of long term catheterisation. Patients with prostatic obstruction or urethral stricture.</td>
<td>Low risk of complications&lt;br&gt;Low risk of trauma to urethra&lt;br&gt;High patient satisfaction&lt;br&gt;Offers an alternative to urethral catheterisation out of hours&lt;br&gt;Supports trial without catheter in acute retention patients&lt;br&gt;Promotes patient dignity and sexual function</td>
</tr>
<tr>
<td><strong>Clinical Staff</strong>&lt;br&gt;Consultant/surgeons, career grade doctor or specialist trainee (registrar), nurse practitioners. In both secondary acute and specialist urology centres.</td>
<td>Improves safety of procedure - uses Seldinger technique&lt;br&gt;Procedure can be safely used during out of hours using appropriately trained clinical staff (specialist trainees or specialist urological nurses)&lt;br&gt;Reduces requirement for general anaesthetic&lt;br&gt;Reduces demand on theatre capacity - allows insertion in the outpatient setting&lt;br&gt;Reduces risk of infection &amp; complication rates which have a low risk, but highly significant impact&lt;br&gt;Reduces risk of trauma to urethra compared to urethral catheterisation&lt;br&gt;Increases clinician confidence to undertake procedure safely, broadening indications for SPC insertion</td>
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<tr>
<td><strong>Service/Trust Managers</strong>&lt;br&gt;Directorate/general managers of both secondary acute and specialist urology centres.</td>
<td>Reduces length of hospital stay&lt;br&gt;Reduced requirement for general anaesthetic&lt;br&gt;Supports patient safety initiatives&lt;br&gt;Reduces overall hospital costs - procedures can be undertaken in the outpatient setting instead of using the operating theatre&lt;br&gt;Supports safer practice out of hours&lt;br&gt;Supports compliance with 18-week target - reduced demand on theatre capacity and reduced likelihood of procedure cancellation in outpatient setting</td>
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**Procurement**

Suprapubic Foley catheterisation is available for procurement in the NHS Supply chain catalogue using the following catalogue codes:

- FSS577 14fg
- FSS584 16fg

You will be required to register at [http://www.supplychain.nhs.uk](http://www.supplychain.nhs.uk) to access the supply chain catalogue in order to purchase the kit.

**Technology manufacturers and suppliers**

Whilst it is not our role to recommend specific manufacturers, Suprapubic Foley catheter kits are currently only available from Mediplus Ltd.

**Impact on Key Policy Areas**

Implementation of the Seldinger Suprapubic Catheter Kit will have a positive impact on the key policy areas such as patient safety, access, out of hours care, length of hospital stay and resource management.
### Summary of Policy Affected

The following useful table gives an overview of how the technology will affect key policy areas and performance, from its impact on out of hours care and access targets, to all-important patient safety and satisfaction. Effective implementation of this technology can support the Trust's clinical governance frameworks & resource management.

The operating framework sets out a brief overview of the priorities for the NHS next year. It is accompanied by annexes which provide more detail on the priorities, how they are measured and how the new arrangements for managing the system will work.

To download the operating framework 2010-11: for the NHS in England - this includes Annexes A (Planning process timetable), B (Existing commitments) and C (Vital signs) visit: [www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_091445](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_091445)

### Policy Areas & Performance Measures

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<th>Stakeholder</th>
<th>Policy areas affected</th>
<th>Performance measures affected</th>
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<tr>
<td>1) General Manager</td>
<td>Patient safety</td>
<td>Length of stay</td>
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<tr>
<td>2) Directorate Manager</td>
<td>Access targets (18-weeks)</td>
<td>Compliance with access targets/cancelled operations</td>
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<tr>
<td>3) Financial Manager</td>
<td>Out of hours care</td>
<td>Complication/adverse incident rates</td>
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<td>4) Clinical Director</td>
<td>Length of stay (i.e. reduces time in hospital)</td>
<td>Hospital costs</td>
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<td>5) Consultant Surgeon</td>
<td>Operating Framework - Resource management</td>
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<td>Financial effectiveness</td>
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<td><strong>Technology Users</strong></td>
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<tr>
<td>1) Consultant/Surgeon</td>
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<tr>
<td>2) Non-consultant grade doctors</td>
<td>Length of stay</td>
<td>Length of stay</td>
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<td>3) Nurse practitioners</td>
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<td></td>
<td>Complication rates</td>
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<td>Number of general anaesthetics administered</td>
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<td></td>
<td>Number of outpatient SPC procedures</td>
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<td>Number of procedures out of hours</td>
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<td></td>
<td>Future measure: Number of SPC procedures undertaken by non-consultant/medical grade staff</td>
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<td></td>
<td>Number of procedures out of hours</td>
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<tr>
<td><strong>Influencers</strong></td>
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<td>Influencers are interested in the following information:</td>
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<tr>
<td>1) BAUS</td>
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<td>Clinical evidence base</td>
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<tr>
<td>2) British Association of Urology Nurses (BAUN)</td>
<td></td>
<td>Complication rates</td>
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<tr>
<td>3) Procurement Hubs</td>
<td></td>
<td>Rates of general anaesthetic</td>
</tr>
<tr>
<td>4) Royal College of Surgeons 5) British Journal for Urology 6) Urology Networks 7) The National Institute for Health Research i4i Invention for Innovation Programme</td>
<td>Ratio of procedures undertaken by medical staff v nurse practitioner</td>
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<td>Out of hours procedures</td>
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<td>SPC v urethral catheterisation procedures</td>
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Patient safety

The Seldinger Suprapubic Catheter Kit, when introduced taking a systems approach can enable healthcare staff to define which parts of a clinical care process are affecting the safe care of the patient. These include a review of all the steps in the care pathway for a suprapubic catheter procedure in hospital.

This approach can highlight the steps where risks to patient safety can be improved. This enables the team to focus on the delivery of improved clinical care of the patient, but also on the systems that support clinical care such as training and out of hours care.

Further information and resources for improving patient safety can be found on the National Patient Safety Agency (NPSA) website: www.nrls.npsa.nhs.uk
The National Patient Safety Agency leads and contributes to improved, safe patient care by informing, supporting and influencing the health sector.

Health Foundation

The Health Foundation's work to improve the quality of healthcare in the UK is organised by five strategic aims. These are: building knowledge, developing leaders, supporting organisations, engaging clinicians and engaging patients.
To learn more about the Health Foundation's "Safer Patients Initiative" and the Health Foundation's "Safer Clinical Systems programme" visit www.health.org.uk/areas-of-work/improvement-programmes

Medicines and Healthcare Products Regulatory Agency

The Medicines and Healthcare products Regulatory Agency (MHRA) has prepared a booklet which provides a practical guide to medical devices for all health and social care professionals, and pharmacists working in acute, primary care, and social care sectors. To learn more about the MHRA - Devices in Practice - a guide for health and social care professionals visit www.mhra.gov.uk/Publications/Safetyguidance/Otherdevicesafetyguidance/CON007423

Access targets

Successful implementation of this technique for suprapubic catheterisation can reduce the number of procedures that need to be undertaken under general anaesthetic. This can in turn reduce demand on theatre capacity which can be made available for alternative and more complex procedures reducing waiting times and improving access.

Length of Stay

Successful implementation of the Seldinger Suprapubic Catheter Kit can facilitate the transfer of the majority of procedures to the day case / outpatient setting. This avoids inpatient admission with an average length of stay of 2 - 3 days in an elderly at risk group of patients, many of which have complex medical conditions.

“Innovation in Urology” - organisations across the NHS have been involved in improving the quality and timelessness of care for urology patients. All the ideas have been tried and tested
in NHS hospitals over the last few years are consolidated on this website. There are many contacts available so you can email or phone urologists, nurses and team members who have worked on these improvements and hear from them directly about what really happened and the problems they encountered. To learn more about Innovation in Urology, visit www.innovationinurology.nhs.uk/pathways/continence/continence.htm

Clinical Governance

Effective Implementation of the Seldinger Suprapubic Catheter kit can support Trusts’ clinical governance frameworks through improvement in the quality of service and quality of patient care. Effective implementation can be achieved through partnerships between professional groups, between clinical staff and managers with evaluation from patients and clinical staff.

The urology specialist nurse should play a key role in the implementation of this technology to maximise the benefits to patients and the service.

The clinical governance aspects of this technology should be clearly defined and communicated so that all staff understand its relevance to their work.

The Royal College of Nursing RCN represents nurses and nursing, promotes excellence in practice and shapes health policies. For more information on 'Clinical Governance: An RCN resource guide' visit www.rcn.org.uk/__data/assets/pdf_file/0011/78581/002036.pdf

Out of Hours Care

Successful implementation of the Seldinger Suprapublic Catheter kit will provide out of hours staff with access to the latest technique for safe suprapubic catheterisation in the emergency setting with the potential for better results for patients.

The establishment of a nurse led urology clinic offers junior doctors a safe environment to gain the experience they need to effectively meet their training needs so they can provide safe cover for patients who require suprapubic catheterisation out of hours.

Extending the provision of this procedure to suitably trained junior doctors and specialist nursing staff will relieve pressure on Consultant grade staff who can utilise this time to more effectively manage their caseloads and caring for patients requiring more complex procedures.

Resource Management

Successful implementation of the Seldinger Suprapubic Catheter Kit can facilitate the transfer of the majority of suprapubic catheter procedures to the day case / outpatient setting reducing the demand on inpatient bed days, theatre capacity, and can therefore promote financial effectiveness by reducing overall hospital costs.

Implementation project

Three NHS hospitals, Taunton and Somerset NHS Foundation Trust, Sheffield Teaching Hospitals NHS Trust and Central Manchester University Hospitals NHS Trust, have implemented the new Seldinger Suprapublic Catheter kit into their clinical practice with the aim of improving the quality of care for urology patients.
Explore this section and view information relevant and useful to you and your organisation

**Summary of Lessons Learnt**

- Suprapubic catheterisation can be carried out safely in the day case / outpatient setting for the majority of patients.
- The indications for SPC insertion can be increased as more clinical staff become familiar and competent in the technique.
- Suprapubic catheterisation can be safely inserted under local anaesthetic out of hours by suitably trained junior doctors.
- Nurse practitioners can be trained to safely undertake procedures in the outpatient setting.
- The number of Seldinger Suprapubic Catheter procedures undertaken under general anaesthetic with an inpatient stay can be reduced following implementation of this technique.
- Waiting times for this procedure can be reduced if this procedure is transferred to the outpatient setting.

**Service Improvement**

Since it was first implemented in June 2008, the new technology has significantly improved direct access to day case / outpatient services, resulting in a safe and simple suprapubic catheter procedure for the majority of patients. Initially funded from grants provided by NTAC to support its implementation, the permanent adoption of the modified suprapubic catheter procedure, as the intervention of choice for appropriate patients, was determined by successful business/governance case submission to ensure that the sustainability of the implementation is satisfied on clinical, operational and financial grounds.

**Summary of change**

The new technique can facilitate the development of a new protocol driven outpatient service for management of patients in urinary retention requiring suprapubic catheterisation.

- New pathway for management of patients referred for suprapublic catheter assessment.
- New protocol for the insertion of suprapubic catheter predominantly in the outpatient setting.
- Provision of fast track direct access where appropriate to a nurse practitioner for primary care referring clinicians.
- Reduction in number of inpatient suprapubic catheter procedures undertaken under GA.

**Change rationale**

There were 3 main objectives for this project:

1. To improve the quality and consistency of care provided for patients by the application of the new technique.
2. To reduce the number of general anaesthetics administered to an elderly patient group who frequently have complex medical conditions.
3. To reduce waiting times and improve access for patients.

The project was addressing perceived problems in the management of suprapubic catheterisation:

- Patients were frequently undergoing general anaesthetic for suprapubic catheter insertion.
- Patients were being admitted and utilising bed days for a procedure that could be carried out in the day case / outpatient setting.
- Patients presenting in A&E with acute retention, who might be considered for suprapubic catheterisation, were receiving indwelling urethral catheters.

The experience from the implementation sites indicates that outpatient suprapubic catheter insertion with Seldinger technique is not only a safe and simple procedure, but it helps avoid potential hazards associated with traditional blind techniques, especially in patients with a small bladder capacity or previous abdominal surgery. The new technique has facilitated the development of a dedicated outpatient service, freeing up theatre slots and so improving patient access to other surgical procedures.

**Impact of Change**

**Patient Pathway**

**Initial Process**

Patients requiring suprapubic catheter insertion present in three ways:

- By a referral to the urology outpatient department for those patients with less acute symptoms.
- By presenting themselves to A&E (Being sent to A&E by their GP following a referral to the on-call consultant urologist).
- Internal hospital referral.

**New Process**

- Referral direct to dedicated outpatient clinic for assessment and suprapubic catheter insertion.
- A+E presenting patient reviewed by on-call urologist, assessment undertaken and SPC procedure undertaken under local anaesthetic, if indicated in A+E or acute surgical admissions unit.
- Internal hospital referral with suprapubic catheter insertion on the wards under local anaesthetic.

**Workforce**

The successful implementation of the project required no directly related workforce changes.

**Impact on patients**

The number of patients requiring general anaesthetic and an inpatient stay within this elderly at risk patient group was reduced following introduction of the new Seldinger Suprapubic Catheter Kit technique.

Patients were asked to complete a simple questionnaire rating their satisfaction with the new procedure across five domains and reported low levels of discomfort and high levels of satisfaction with the new technique.
Impact on services
A recent published audit of regional practice of inserting suprapubic catheters in the SW region determined that in 2006 over half (52%) of patients underwent this procedure under general anaesthetic as an elective inpatient.
During the implementation period at our three hospital sites 79% of SPC procedures using the new technique were performed under local anaesthetic with 65% of these procedures performed in the day case / outpatient setting.

Impact on staff
Overall, the impact on staff has been very positive. Staff were asked to complete a simple questionnaire rating their satisfaction with the new procedure across six domains. Overall staff using the device expressed confidence in both application and safety of the new technique.

Impact on service delivery
Patients requiring suprapubic catheter insertion are predominantly elderly with complex medical conditions. Following introduction of the new technique less patients required a general anaesthetic and an inpatient stay (traditionally an average of 2 -3 days) relieving pressure on both theatre capacity and inpatient services.

Impact on costs
Successful implementation of this technique reduces the number of procedures requiring a general anaesthetic and inpatient stay freeing up additional theatre capacity and bed days to undertake other surgical procedures that will attract additional income and reduce waiting times.

Achieving change
The change was implemented with greatest benefits for patients and the service when:
- The concept had been clearly presented to the team.
- Consultant and management leads from urology had ownership of the project and were motivated to make the change.
- Successful implementation was possible where capacity was available in day case / outpatient clinics.
- A specialist urology nurse motivated to enhance their role, undertook training to carry out suprapubic catheterisation procedures in the outpatient setting.
- The new service was communicated to general practitioners.
- There was directorate leadership and management of the project, where the general manager was engaged, this resulted in support for change.
- Training and core competency assessment was undertaken for all core trainees.
- The service change was evaluated and results shared with the multidisciplinary team.
Communication

Communicating the new service to primary care: the new service was communicated to referring GP’s about the availability of a direct access outpatient clinic.

Communicating the new protocol to junior medical staff: the urology on-call team includes general surgery core trainees who work on rotation. The turnover of this team, and registrars in both urology and A&E, meant it proved challenging to ensure all junior staff understood and received training in the new protocol.

Measurements of success

- Audit of Patient and Staff satisfaction with new procedure and service.
- Complication rates.
- Proportion of patients requiring general anaesthetic and inpatient stay.
- Proportion of patients undergoing procedures in the day case / outpatient setting.
- Proportion of core trainees competent in new technique.
- Reduction in hospital stay.
- Baselining - a comparison with the previous year to determine the change in the number of procedures undertaken, where they were performed, and whether it was still under general anaesthetic.

Copies of the Medical Audit Sheets can also be downloaded from the resources on the website www.technologyadoptioncentre.nhs.uk/the-suprapubic-foley-catheter-kit/implementation-project.html
Supra Pubic Catheter Kit (Medical Staff)
Audit Form

Patient ID

Patient Initials

Date of Procedure

Time of Procedure

hr/min (24hr)

Duration of procedure

mins

Length of stay

hours

Surgeon (Grade)


Indication:

Urinary retention

Chronic catheterisation

Day Case

Inpatient

General Anaesthetic

Yes

No

Observations

Was the procedure uneventful

Yes

No

If no please comment:


How many times have you undertaken this procedure?

Never

1 to 2

2 to 5

>5

Instructions: Please mark a X on the line at the point that best represents how you feel.

Please rate the difficulty of the technique?

Very easy

0

Very difficult

10

Please rate your comfort with this technique?

At ease

0

Very Uncomfortable

10

How do you feel about using this technique in the future?

Looking forward

0

Dread

10

How satisfied were you with the technique?

Very satisfied

0

Very dissatisfied

10

How satisfied were you with the outcome for the patient?

Very satisfied

0

Very dissatisfied

10
Supra Pubic Catheter Kit - Patient Questionnaire

Patient ID
Patient Initials
Date of Procedure
Time of procedure hr/min (24hr)

Questions

Have you had this type of catheter procedure before?
Never  Once > once  often

Instructions: Please mark a X on the line at the point that best represents how you feel.

Please describe your pain during this procedure.

No Pain

Never again 10

Was the procedure straightforward?

Very easy

Very difficult 0 10

If required, how do you feel about undergoing this type of catheter procedure in the future?

Keen

Never again 0 10

How comfortable is your catheter?

Very Comfortable

Very Uncomfortable 0 10

How satisfied were you with this procedure?

Very satisfied

Very dissatisfied 0 10
Systemic Adoption Issues

The introduction of the new technology within the three implementation sites demonstrated the need for only limited service redesign.

Key systemic adoption blockers

Implementation has proven that the new technology can deliver clear benefits. However, it has also highlighted several key barriers to adoption to be addressed. These include the increased cost of consumables, the current limited clinical evidence base for the technology, and the relatively small number of patients that will benefit from implementation.

Key systemic changes

The new procedure enables a greater number of procedures to be undertaken in the outpatient setting under local anesthetic, reducing demand for inpatient theatre and bed capacity.

What’s more, there is an opportunity for referrals to be managed and assessed by a junior doctor or suitably trained nurse practitioner and for suprapubic catheter insertion to be undertaken by suitably trained urology nurse specialists. As a result, the majority of suprapubic catheter procedures can be performed safely under local anaesthetic in the day case / outpatient setting.

It is clear that developing a Seldinger Suprapubic Catheter service within a nurse led outpatient clinic would maximise the benefits to patients and the service. With junior medical staff trained in the clinic, they can then provide suprapubic catheter insertion out of hours for patients presenting with acute bladder outflow obstruction when urethral catheterisation is contraindicated or undesirable.
Business Case

The prospect of developing a Business Case can be daunting. The structure and approach described here can be used and adapted as necessary to ensure that the case is robust and offers the best chance of success. Developing a robust Business Case will help to clarify the current position and determine what is required to improve existing services or develop a new one.

A Business Case template and costing model has been provided that can be tailored and can be used to secure approval, particularly where additional investment is required, and provides information to demonstrate a clear rationale, the benefits to patients, the service and the Trust, financial effectiveness and affordability. This template reflects the findings from the implementation sites and outlines the main chapter headings and areas to consider when constructing a Business Case for the Seldinger Suprapubic Catheter Kit. The level of detail required will depend on the scale and complexity of the proposal, the approvals route and the intended audience.

As a minimum it should provide a concise and robust case to persuade someone who is unfamiliar with the service that investment is justified. In addition, some Trusts have standard templates or report formats, which will also determine how information should be presented.

Seldinger SPC Cost Savings Model

A major objective of implementing the Seldinger SPC kit was to improve safety and reduce the requirements for a general anaesthetic and associated hospital stay. To achieve this there is a need to evaluate current and projected service requirements to calculate the effects of using the new technique on physical and financial resources.

A Cost Savings Model has been developed by the NHS Technology Adoption Centre with the support of the NHS Purchasing and Supply Agency (PASA) to assist managers and clinicians to calculate the potential impact of introducing the new Seldinger SPC technique on:

- Bed days
- Theatre Sessions
- PBR (Payment By Results) Income

The cost savings model can be easily customised to take account of local factors such as length of stay, bed day costs and tariff, for example.

Note: Download a local copy of the Cost Savings Model from the resources on website hwww.technologyadoptioncentre.nhs.uk/the-suprapubic-foley-catheter-kit/business-case.html#SPC BUSINESS CASE Business Case Format

Please enable macro’s to make full use of the Cost Savings Model tool. This tool currently runs from the Website when using Internet Explorer 7 - users who have earlier versions of Internet Explorer should download a local copy of the file.
Seldinger SPC Cost Savings Model format

### SECTION 1 - PLEASE FILL IN THE FOLLOWING INFORMATION FOR ALL SPC PROCEDURES FROM APRIL 2008 TO MARCH 2009

**Please complete all white cells with the requested information.**

**Current Procedure Details:**
- Current Inpatient SPC procedures per annum (General Anaesthetic)
- Current Day Case/Outpatient SPC procedures per annum (Local Anaesthetic)
- Total number of SPC procedures per annum

**Projected SPC Procedures %’s:**
- Projected % Inpatient SPC procedures per annum (General Anaesthetic)
- Projected % Day Case/Outpatient SPC procedures per annum (Local Anaesthetic)

**Length of Stay Details:**
- Average length of stay in days for inpatient SPC procedures (Default entered)
- Length of Stay: 2.3

**Projected Bed Day Savings Details:**
- Projected bed days saved per annum
- Projected bed day cost (Default entered)
- Projected annual bed day savings
- Projected bed day savings: £250

### SECTION 2 - ACTIVITY AND INCOME MODEL

Please select an option to calculate the potential savings/income available from adopting the Seldinger SPC kit:
- Calculate potential theatre sessions saved
- Calculate potential additional gross income

**Savings Methodology - Additional Gross Income**

**New Activity Details**
- HRG Description
- Average length of stay for new activity (National average entered)
- Elective spell tariff (2008/09)

**Projected Income Details**
- Projected bed days released per annum
- Projected gross income

---

__NTAC would like to understand the impact of this technology nationally. Please click here if you are happy to share your cost and activity data with NTAC. All data submitted and used for analysis will be anonymised by NHS PASA.__

---

This model has been created with the support of the NHS Purchasing and Supply Agency.
Business Case Format

• Executive Summary
• Strategic Context
• Case for Change
• Objectives
• Future Service Requirements
• Options Appraisal
• Capital Implications and Equipment
• Revenue Implications
• Preferred Option
• Affordability
• Timescale and Deliverability
• Risk Analysis and Management
• Conclusion and Recommendations

To download a copy of the SPC Business Case guidance please visit www.technologyadoptioncentre.nhs.uk/assets/_files/documents/apr_09/nhs__1240054512_NTAC_Template_Business_Case__.pdf

Strategic context

This section sets the scene for the case for change and demonstrates how the proposal fits with and contributes to achieving relevant national and local NHS policy and priorities, as well as relevant research and professional body reports/guidance. It is critically important to provide evidence on how the current service and proposal is aligned with the Trust's short and long-term strategic plans and objectives for the coming year. If it is inconsistent or a poor fit it may be wise to question whether to proceed.

Case for change

A significant element of the case is to provide an overview of the key pressures driving the case for change. Tools that are widely used to establish a clear understanding of the current service, what may be required in the future and indicate potential options are PEST and SWOT analyses.

Using these techniques it will be possible to distil the key drivers for change and highlight the consequences of doing nothing.

Objectives

Establish a clear set of objectives that will be used to judge the success of the investment.

Future service requirements

Future service requirements can be determined through service redesign, activity, performance and capacity modeling.
The potential for improvement through service redesign should be examined such as changing working practices, improving patient pathways and consideration given to whether services could be delivered in the outpatient setting.

The first step in activity modeling is to establish an accurate baseline by identifying activity by Health Resource Group (HRG) and attendance by point of delivery (elective, non-elective, day case, outpatient, new or follow-up attendance).

Current performance in terms of average length of stay, day case rates and a description of current facilities should be included.

The timeframe re-modeling services should be developed. When projecting activity both demand and capacity factors need to be taken into account.

The extent to which greater clinical efficiency can improve performance should then be factored in.

Current performance should be benchmarked.

Ensure that assumptions regarding performance improvement are consistent with those included in the Trust Business Plan or other short-term strategic plans.

The capacity required (number of inpatient beds, day case trolleys/chairs, theatre sessions, outpatient sessions etc) to support the future service are derived from the service model, activity modelling and projected performance improvements.

**Options appraisal**

Options appraisal is an objective way of comparing the costs and benefits of different options. There are four main stages; developing options, scoring the non-financial benefits, identifying the capital and revenue implications and finally identifying the preferred option.

Additional income should be calculated from the activity forecasts. NHS activity by HRG or attendance is multiplied by the relevant national tariff and where appropriate take account of the estimated contribution to corporate services to give a net income figure.

The final step is to select a preferred option by weighing up the relative benefits and costs of each option. The preferred option is likely to be the option that offers the most benefits for the least cost.

**Affordability**

Demonstrating that the case is affordable will be critical to its success. Affordability analysis examines the price impact of the development taking account of the revenue funding available and existing commitments.

Additional income is compared with additional revenue costs to determine affordability. If there is a mismatch between income and costs it will be necessary to reduce the scope of the case, expand the timeframe or consider whether additional funding can be sought from other sources.

**Timescale and deliverability**
Outline a realistic timeline and implementation plan indicating the main phases and tasks of the project, including completion dates and individuals responsible.

**Risk analysis and management**

A risk management strategy will help to gain an understanding of the uncertainties and unwanted consequences of the proposal. Identifying the main risks, evaluating their impact should the risk occur, and outlining the actions necessary to mitigate against them will improve the likelihood of the project's success.

**Writing up**

A Business Case should be a clear and concise document containing section headings, sub-headings and numbered paragraphs to enable the reader to pinpoint specific text. Detailed supporting information should be relegated to the appendix. Avoid jargon and highly technical language and provide a clear explanation or glossary for clinical or professional terminology.

**Fitness for Purpose Checklist**

Consideration of the following questions can act as a quick checklist to ensure that the proposal is worth doing and achievable:

- Is the need clearly stated?
- Does the proposal contribute to the achievement of NHS policy and priorities and Trust objectives and plans?
- Are the benefits clearly stated?
- Is it clear how the benefits will be realised?
- Are the demand and capacity and income forecasts robust?
- Are the capital and revenue costs robust?
- Is it clear why the preferred option has been selected?
- Is it affordable?
- Are the risks and plans to mitigate against them explicitly stated?
- Do the main stakeholders support it?
- Does the team have the capacity and capability to deliver it?

**Approval**

The scale and nature of your proposal will determine the route of approval. If it is affordable within the Directorate budget the General Manager may be prepared to agree the proposal. However, larger, more complex cases that require capital or revenue investment are likely to need Executive level approval. Meeting dates and deadlines for papers can then be used to determine the process and timescale for developing the Business Case.

**Resources**

The complexity of the case will determine who will need to be involved, support from the line manager is essential and help from information analysts, finance, estates and planning staff may be required.
The Seldinger Suprapubic Catheter Kit

This section of the ‘How To, Why To Guide’ draws on all the aspects of the research, evidence and implementation projects for The Seldinger Suprapubic Catheter Kit. What follows are management tools to be able to support implementation across other NHS organisations.

Technology Delivery Principles

The NHS Technology Adoption Centre's programme supports the following set of key principles with the objective of delivering service transformation through sustainable technology implementation and adoption. You can use the matrix below to find out how implementation of the Seldinger Suprapubic Catheter Kit supports these care delivery principles.

<table>
<thead>
<tr>
<th>Technology Delivery Principles</th>
<th>Technology Adoption Centre</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Addresses health inequity and inequality</td>
<td>2 Supports individual wellbeing</td>
</tr>
<tr>
<td>3 Care provided in the right setting</td>
<td>4 Access and choice</td>
</tr>
<tr>
<td>5 Timely, convenient and responsive services</td>
<td>6 High quality clinical outcomes</td>
</tr>
<tr>
<td>7 Operational capacity and capability</td>
<td>8 Efficient and effective delivery of services</td>
</tr>
<tr>
<td>9 Financial effectiveness</td>
<td></td>
</tr>
</tbody>
</table>

Technology Implementation Framework

The Technology Implementation Framework is aimed to be of benefit whether an organisation is supporting incremental improvement or promoting truly transformational change through the optimal implementation of new medical technologies. However, both risks and rewards are greater in the later scenario, and hence it is critical that the implementation process is planned and developed with a good understanding of the wider organisational environment.

At its broadest, a framework for supporting implementation will extend beyond the individual specialty or directorate, addressing elements that affect the wider organisation. Leadership for the programme itself must be supplemented by a multidisciplinary approach within participating teams. The change resulting from a transformational implementation programme will have an impact beyond its operational scope, affecting other services in the organisation.

In order to deliver maximum benefit, the early stages of implementation must include service change planning and capacity and capability assessment. If not already in place, there are
elements of good practice from these areas that should be incorporated within the various phases of the implementation programme.

The following framework identifies core components (success factors) that will need to be an integral part of the implementation programme itself.

Roadmap: Creating Sustainable Change

The aims and the objectives of the Roadmap are:

- To help your organisation feel more prepared for the implementation and to ensure you get most out of the technology
- To help to identify needs, system requirements and areas of application
- To align change to your business plans & strategic objectives
• To think about potential tools and resources that will support implementation
• To identify the sources of, and access to, available support
• To support service optimisation and sustainable technology implementation
Key contacts for the Seldinger Suprapubic Catheter Kit

Many participated in making this project a success, especially the project teams as listed below.

On this page, you can access the learning gathered from the urologists, nurses and managers who have worked on this project. There are contacts available so you can hear from them directly about what really happened and the challenges they encountered.

Implementation Teams:

Taunton and Somerset NHS Foundation Trust
Mr Ruariadh MacDonagh - Consultant Urological Surgeon
Angus MacCormick - Nurse Practitioner
Helen Parsons - Assistant General Manager
Odunayo Kalejaiye - Specialist Registrar
Visit the Taunton and Somerset NHS Foundation Trust website www.tsft.nhs.uk

Sheffield Teaching Hospitals NHS Trust
Professor Christopher Chapple - Consultant Urological Surgeon
Helen Brown - General Manager
Mr Richard Inman - Consultant Urological Surgeon
Sue Beaumont - Urology Outpatients Manager
Sharon Grady - Deputy Urology Outpatients Manager
Jane Ingram - Directorate Manager for Theatres
Visit the Sheffield Teaching Hospitals NHS Trust website www.sth.nhs.uk

Central Manchester University Hospitals NHS Trust
Mr Ian Pearce - Consultant Urological Surgeon
Mr David Wolferstan - Directorate Manager
Visit the Central Manchester University Hospitals NHS Trust website www.cmmc.nhs.uk
Other useful reference papers


NHS Technology Adoption Centre
1st Floor
Postgraduate Centre Annexe
Manchester Royal Infirmary
Oxford Road
Manchester
M13 9WL
Telephone: 0161 276 5263
Fax: 0161 276 5491
Visit the NHS Technology Adoption Centre website: http://www.technologyadoptioncentre.nhs.uk

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To register with the NHS Technology Adoption Centre for all the latest email updates, on the work the Centre does, please go to http://www.technologyadoptioncentre.nhs.uk/newsletter.html
For further information please contact:
your local representative
or Mediplus office at +44 (0)1494 551200 or
scath@mediplus.co.uk

www.mediplus.co.uk