Summary

This pathway lays down framework whereby patients deemed suitable and willing to undergo their operation in NHSL under day case spinal anaesthesia are provided with a pathway to facilitate this safely to enable them to leave hospital on the day of surgery. It provides guidance for healthcare professionals to enable them to provide and care for patients undergoing day surgery under spinal anaesthesia, as part of a package of continuing training and practice. The protocol describes a standardised evidence based method for day case spinal anaesthesia modelled on the British Association of Day Surgery (BADS) Guidelines\textsuperscript{1}, and incorporates criteria for discharge and overnight admission and patient follow up. Measures of patient satisfaction and audit are also outlined.

Introduction

The NHS plan in 2000 set a target of 75\% of elective surgery to be performed as day cases\textsuperscript{2}. Currently most units in the UK fall well below this level. Day surgery has a high level of patient satisfaction and avoids the expense of overnight hospital stay.
Modern low dose Spinal anaesthesia can be safely used for day surgery\(^3\). Advances in needle design and research into the choice and dosage of agents administered in spinal anaesthetics have enabled good intraoperative conditions to be provided for a range of operations below the umbilicus along with the prompt recovery of motor and bladder function in time for discharge on the same day of surgery. This pathway draws extensively on the evidence based BADS guidelines to produce the local pathway below. These guidelines will extend patient choice to include a spinal anaesthetic for day case procedures. The guideline will enable particular patients with comorbidities to undergo a spinal anaesthetic as a day case and thereby avoid potential perioperative airway, respiratory or circulatory complications related to general anaesthesia. Examples of patients for whom a general anaesthetic may pose more risks for, and necessitate an overnight stay, are those with high BMI, severe stable cardiorespiratory disease, known or predicted difficult airway or severe gastrooesophageal reflux.

Patient selection

Preadmission clinic and list booking.
As at present all patients will be preassessed at the nurse led preassessment NHSL clinic.
As at present all patients at preadmission will be given a leaflet explaining possible anaesthetic options in broad terms, including regional anaesthesia.\(^4\)
As at present patients will be seen by an anaesthetist if requested to do so either directly by the relevant surgical consultant or the preassessment nurses based on their proforma alerts and experience. At this stage the anaesthetist may discuss day case spinal anaesthesia with the patient however the decision on suitability will rest with the patient and anaesthetist on the day of surgery so patients will not be booked as day cases on this basis unless the list anaesthetist has preassessed the patient.
As at present if the patient does not meet the current day case criteria they will be booked as an overnight stay.
Any patient who is earmarked as potentially a candidate for day case spinal anaesthetic at preadmission by the anaesthetist or preassessment nursing staff must be booked onto the start of a list to enable sufficient time to reach the day case discharge criteria before the day surgery unit closes. (Appendix 1)

Patients are assessed by their anaesthetist on the day of surgery when the final decision is taken with them and the surgeon on suitability for a day case spinal anaesthetic or not. Day Surgery Unit staff should be informed at the earliest opportunity then that the patient will be receiving a day case spinal anaesthetic to enable them to plan for their care following first stage recovery as these patients may be in DSU longer than patients receiving general anaesthesia to allow for recovery of motor function, ambulation and micturition before discharge home.

Day Case Spinal – Anaesthetic Protocol

- Prerequisite that patient scheduled at the start of a list
- Patient selection (or confirmed) on preoperative visit by anaesthetist on day of surgery, liaising with surgeon and discussing with patient risks and benefits to ensure informed consent.
- Inform DSU staff that patient will receive day case spinal anaesthetic as longer second stage recovery likely. DSU will make bed manager aware that inpatient bed not required.
- “low dose” spinal anaesthetic—see below “recipes”
- Ensure anaesthetic cover available till 7pm to support DSU staff in discharge (list anaesthetist should alert evening CEPOD consultant if not discharged from DSU before they
leave hospital). Document arrangement on recovery section of anaesthetic chart with named contacts and page/telephone numbers.

Day case spinal anaesthesia requires either:

1. **Low dose Bupivicaine +/- Fentanyl**  
   This is a track record safe local anaesthetic, bupivicaine, to allow recovery of motor function and low dose short acting opioid, fentanyl, to give adequate surgical anaesthesia with no risk of late respiratory depression. However this recipe as below can only be utilised on morning lists as recovery of motor function may not occur on time to allow discharge before the DSU closes if administered in the afternoon. Maximum doses Up to 7.5mg of Bupivicaine (equivalent to 1.5ml of 0.5% heavy bupivicaine) Up to 25microgram of Fentanyl (0.5ml of 50mg/ml solution)

   or

2. **Priloketal® Prilocaine 2% Hyperbaric.** 20mg/ml in 5ml vial. Prilocaine is an amide local anaesthetic with a good safety record. This relatively novel formulation was approved by the Scottish Medicines Consortium in December 2010 for restricted use for spinal anaesthesia in ambulatory settings in adults. This drug does not require the addition of fentanyl as it produces a dense short duration block so can be used early on afternoon lists whilst still enabling discharge before DSU closes. With a short duration block sensory (offset median 110 and 132 mins with 40 or 60mg respectively) and omission of fentanyl side effect of itch is avoided and the rate of urinary retention may be decreased. The recommended dose 40 to 60mg will give ready to discharge at mean (SD) 208 (68) and 256 (85) respectively. Maximum dose 80mg. Local experience with this drug and formulation is limited as it is recently approved and now stocked. (5)

“Recipes”: Studies/doses suggested operations utilising Bupivicaine/Fentanyl

**Orthopaedics**

**Knee Arthroscopy**

Bupivicaine 5mg & Fentanyl 10microgram made up to 3ml with sterile saline shown to be effective in a small series of 15/15 patients. (6) This study published in 1997 built on previous experiments with differing doses of bupivicaine with and without fentanyl and coined the term “low dose spinal”. The study provided the impetus for introduction to DSU in Kings Lynn and largely the origins of the BADS practical guide.

**General Surgery**

**Inguinal Hernia Repair**

Bupivicaine 7.5mg & Fentanyl 25microgram made up to 3ml with sterile saline shown to be effective.

A double blinded study, of mesh and shouldice repairs including redos, compared 6mg and 7.5mg Bupivicaine with the same dose of 25ug Fentanyl. It randomised 40 patients into 2 groups. 1 patient in each group needed GA. 1 of these was for primary spinal block failure which could be expected up to 4 to 5% of the time and the other was for insufficient duration of spinal block, though upper range of operation times in both groups were over 100minutes, and no additional intraoperative local anaesthetic was used. 1 patient in each group required overnight stay. 4 patients in higher and 3 in lower dose group required catherisation with 1 in each group requiring catheter to be left in overnight (therefore in our institution some or all of these would require admission) though both patients requiring catheter to be left in had urological conditions. The time in minutes post
intrathecal injection to ambulate was 195 (125 to 345) (median and range), to micturate 268 (180 to 1440) and to discharge 417 (195 to 1320).

Suggest ilioinguinal block at start and/or surgeon infiltrating local perioperatively will minimise the need for supplemental rescue analgesia or GA. Combining a local block or infiltration may well enable a lower dose of Bupivicaine or Fentanyl to be used which may decrease risk of urinary retention though this risk seems to be also related to surgical procedure and coexisting urological conditions. A technique with local block and infiltration alone could be considered for primary repairs. (7)

Minor Urological Daycase Procedures
Bupivicaine 5mg & Fentanyl 12.5microgram made up to 3ml with sterile saline effective.
A study comparing different fentanyl doses in combination with 5mg bupivicaine found in a patient group given the above combination it was effective in all 15 patients with no additional analgesia or sedation. The time in minutes post intrathecal injection to ambulate was 167 ±21 (155 to178) (mean ,+/- 1SD and range), to micturate 174 ±20 (163 to 185) and to discharge 199 ±23 (186 to 211). (8)

Suggested method of administration
Preparation for anaesthesia as for GA with fasting as per hospital protocol and minimum monitoring as per AAGBI/RCA guidelines (9) and indwelling vascular access.
Position lateral or sitting at patients and anaesthetists discretion, suggest operative side down if lateral.
Strict asepsis with antiseptic skin prep being applied dispensed away from spinal trolley and allowed to dry first (alcoholic chlorhexidine Hydrex®). Consider double gloving.
Gown Mask Gloves and Hat. Lignocaine 1% to skin. Spinal needle – pencil point 25G (or less)

Either
0.5% heavy bupivicaine sterile wrapped draw up 1 to 1.5mls (5 to 7.5mg) with glass filter needle (50micron) with fentanyl up to 25 microgram (up to 0.5ml of 50microgram/ml solution) Note that fentanyl vials are non sterile wrapped therefore suggest assistant with clean hands should wipe neck of vial with “alcowipe” then allow to air dry before opening for anaesthetist to draw up fentanyl into 1ml syringe via 0.22micron bacterial grade filter, e.g. Millex –OR Ref SLG10250S, before adding to bupivicaine syringe using a new sterile needle.
Make up to not more than 3ml with sterile wrapped normal saline if desired to aid spread of block.

Or
Priloketal® usually 2 to 3mls 2% (40 to 60mg) to max. 4ml (80mg)

Inject at fast rate of 1ml per second with side hole of needle orientated toward operative side/site
Control spread of solution with posture.
Test block from 5minutes post injection with cold, noting that block may take 20minutes to full effect though positioning can be carried out during this time if evidence of motor and sensory block developing. Priloketal quicker onset median 8mins to T10. With low dose bupivicaine spinals full motor block may not develop but surgical anaesthesia should be expected to be achieved in all cases. If desired the patient may have sedation though short acting agents such as low dose propofol Target Controlled Infusion should be employed. Oxygen may be administered by facemask perioperatively. Respiratory depression with intrathecal fentanyl may occur though its maximum effect is seen at
around one hour from administration with no late onset respiratory depression. Respiratory rates of 9 or 10 may be seen but extremely rarely is any treatment required. Commonly pruritus may occur in over 10% of patients with intrathecal fentanyl and they should be warned of this side effect. As with any spinal complete or partial failure may occur requiring repetition, intraoperative supplementation with local anaesthesia, parenteral opioids or General Anaesthesia as appropriate.

Local anaesthetic infiltration or blocks should if possible be administered by the surgeon or anaesthetist (e.g. ilioinguinal block, penile block, Transversus Abdominis Plane block, intrarticular) up to a total levobupivicaine dosage of 2mg/ml to give more prolonged post operative analgesia

Postoperative recovery and Discharge

DSU should be made aware by the list anaesthetist of any patients who have consented to day case spinal anaesthesia, and therefore will be able to plan for their slightly longer recovery on DSU. DSU staff should contact the bed manager at this point to cancel the inpatient bed.

In some NHS units first stage recovery is bypassed by patients who have received Day Case Spinal Anaesthesia however in NHSL first stage recovery care will be given in recovery area within current protocols, though it is anticipated that the median time spent per patient in first stage recovery may be much shorter than that required for similar patients who have received General Anaesthesia. No minimum time in the recovery room is stipulated before return to Day Surgery Unit though the documentation of first stage recovery and discharge from recovery must be completed as at present.

Day Surgery Unit recovery will be non time based, as at present, acknowledging the wide variation in time to full recovery from Day Case Spinal Anaesthesia. The present Modified Post Anaesthesia Discharge Scoring System (PADDS) at appendix 2 is suitable to be used for Day Case Spinal Anaesthesia, however it should be noted that patients require to score 2 for activity level having steady gait with no dizziness or attaining preoperative level of function and as the guideline states should have passed urine prior to discharge.

Mobilising: prior to mobilizing the patient should be able to report normal sensation in the legs and buttocks and be able to straight leg raise with normal power. The trolley should be fully lowered and an additional chair placed beside the trolley in case of any dizziness or unsteadiness precluding a swift return to the trolley. A DSU nurse should be present on first mobilization but should not provide any physical support for the patient in line with safe manual handling practice.

If the patient has not mobilized or passed urine 5 hours after the insertion of the spinal anaesthetic or by 5pm then the anaesthetist should be contacted by phone/page for advice and for an anaesthetist to attend and review. The list anaesthetist will have left contact details and arrangements on the recovery section of the anaesthetic chart. At this time the bed manager should be contacted to make arrangements for an inpatient bed in case it is required. If urinary catheterisation is required for failure to pass urine within the stipulated time or symptoms of urinary retention then a trained nurse or relevant surgical team doctor should perform this task. An in out catherisation should be performed if the residual volume is less than 500ml unless the catherisation was difficult or the patient has known urological problems in particular prostatic conditions. The relevant surgical team should be advised also if the patient requires admission.

At discharge from DSU specific to day case spinal patients:

1. provide patient information including leaflet (appx 2)
2. Fill in follow up questionnaire form details, in particular verify patient contact numbers and obtain permission for telephone follow up. (appx 3) Leave form in DSU Day Case Spinal Folder at desk to enable the subsequent telephone follow up by the named spinal nurse or her deputies.
3. It is not necessary to contact an anaesthetist prior to discharge however contact details should have been left on the recovery page of the anaesthetic chart if required.

Follow up and Audit: the “spinal” nurse

It is recommended that all patients receiving day case spinal anaesthesia are followed up to detect any related morbidity (e.g. post dural puncture headache, transient neurological syndrome). It is also highly desirable to measure patient satisfaction. The telephone follow up and the content and contact details on the post operative information leaflet should enable detection of much rarer events associated with spinal anaesthesia such as infection or haematoma.

Routine patient follow up will be accomplished by a structured telephone follow up by a nominated DSU “spinal nurse” (Geraldine Reilly) or her deputies using a questionnaire. (appx 4.)

If the “spinal nurse” requires an anaesthetic opinion or review of a patient problem identified on phone follow up the anaesthetist who inserted the spinal (or their supervising consultant) should be contacted by phone/pager in the first instance. If they are unavailable the “senior on” consultant anaesthetist, or if none rota’d the CEPOD consultant anaesthetist, should be contacted by telephone or in person for advice. The weekly anaesthetic rota will be available at DSU to assist in this process. The anaesthetic consultant may elect to review the notes and /or phone the patient themselves and/or arrange for anaesthetic review (+/- epidural blood patch) as day patient or exceptionally arrange emergency inpatient readmission under the parent surgical team in the event of a suspected neurological emergency such as spinal haematoma or abscess. The anaesthetist should inform the on call surgical team with instructions on the immediate management and investigations to be arranged on or before the patient’s arrival and timescale for review by a senior member of the anaesthetic team on the patient’s arrival.

The results of the routine follow up and any major adverse events will be collated and distributed annually. Audit data since the start of the pathway in 2009 has yielded high patient satisfaction scores with no major adverse events.

Based on audit data and patient and staff feedback the pathway will be revised no later than end May 2016.

References


Appendices

Appendix 1: Current NHSL Discharge Protocol for Day Surgery Patients: Modified PADSS

**Discharge Protocol for Day Surgery Patients**

In the day surgery unit, we recognise that individual patients recover at different rates following anaesthesia and surgery therefore keeping patients for a fixed time in recovery makes no sense. We now assess recovery from anaesthesia in individual patients objectively against five validated criteria. Once these criteria have been met, the patients can be discharged. Delaying patient’s discharge once they have satisfied the criteria does not benefit the patient, nor does it help the smooth running of the unit.

**Modified Post Anaesthesia Discharge Scoring System**

<table>
<thead>
<tr>
<th>Component</th>
<th>Criteria</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vital signs</td>
<td>BP and pulse within 20% of preadmission baseline</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>BP and pulse 20%–40% of preadmission baseline</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>BP and pulse 40% of preadmission baseline</td>
<td>0</td>
</tr>
<tr>
<td>Activity level</td>
<td>Steady gait, no dizziness, or meets preoperative level</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Requires assistance</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Unable to ambulate</td>
<td>0</td>
</tr>
<tr>
<td>PONV</td>
<td>Minimal: successfully treated with PO medication</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Moderate: successfully treated with IM medication</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Severe: continues after repeated treatment</td>
<td>0</td>
</tr>
<tr>
<td>Pain</td>
<td>Pain should be controllable by oral analgesics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Acceptability</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>Bleeding</td>
<td>Minimal: does not require dressing change</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Moderate: up to two dressing changes required</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Severe: more than three dressing changes required</td>
<td>0</td>
</tr>
</tbody>
</table>

Maximal score is 10; patients scoring 9 are fit for discharge.

In addition to the above, patients who have undergone gynaecological or urological procedures, or who have had a spinal anaesthetic should demonstrate the ability to pass urine prior to discharge.

*Planned Care Improvement Programme, January 2008, Review: January 2009*
Patient Information: Post-op spinals

You have had a spinal anaesthetic which occasionally causes side effects which may only appear after you have left hospital. This leaflet lets you know: what you may do after your spinal anaesthetic, what side effects you may experience, how to treat them and what to do if they persist.

If you have had a day case procedure, when you get home you should rest for most of the day. Do not drink alcohol, operate machinery or attempt to drive until the day after your operation at the earliest. The day after a spinal anaesthetic you may be as active as you wish.

Back pain: Spinal anaesthetics do not normally cause back pain however your lower back may be tender for a few days on the skin where the spinal injection was put in.

Headache: You may get a headache. If you do develop a headache, drink plenty of fluids (not alcohol) and take pain relieving tablets at the recommended dose (you will have already been given these to take home). There are many reasons unrelated to your anaesthetic for having a headache however about 1 in every 200 people develop a severe headache after a spinal anaesthetic. This typical post spinal headache is worse on standing up and rapidly relieved by lying down. If you have a severe headache which even after painkillers prevents you from carrying out your normal activities or is unusual for you then please telephone us on the numbers below for advice and help.

Pins and needles: rarely, you may experience pins and needles in the lower body and legs which should only last for a few hours. Very rarely, in less than 1 in every 10,000 cases, there may be prolonged pins and needles. If you experience prolonged pins and needles, please let us know straight away also.

Difficulty passing urine: This may occur after certain operations after spinal or general anaesthesia. You will not be sent home until you can pass urine but if you develop this after you have gone home, please let us know straight away. You may have to come back to the hospital for us to help you.

We will phone you about 48 hours after your surgery but if you have any concerns at any time with regard to your spinal anaesthetic, please contact the Day Surgery Unit between 8am and 7pm Monday to Friday on 01698 366771 and ask for the spinal nurse. Outwith these times phone switchboard on 01698 361100 and ask for the on call anaesthetist.
Appendix 3: Day Case Spinal WGH Follow up questionnaire.

<table>
<thead>
<tr>
<th>DAY SURGERY UNIT</th>
<th>WISHAW GENERAL</th>
<th>SPINAL ANAESTHETIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of surgery</td>
<td>Anaesthetist</td>
<td>Surgeon</td>
</tr>
<tr>
<td>Pt. Home Phone No.</td>
<td>Mobile</td>
<td>NOK Number</td>
</tr>
</tbody>
</table>

Complete above details prior to discharge from DSU and place in “DSU Spinals” folder at DSU desk for follow up phone calls. Form to remain in DSU folder for 2 weeks post op and then returned to medical records for filing in case notes.

1st Phone Call - 48hrs

Q1. Do you have or have you had a HEADACHE since discharge?
Yes: enquire all below:  
No: go to Q2

PAIN SCORE 1 2 3 4 at 48hours

Patients own description of headache
first_________________________________________________

Enquire specifically:

Constant or Intermittent?
Interfering with any activities?
Aggravating factors (standing up?)
Relieving factors (lying down?)
Improving since discharge or worsening?
Any other symptoms associated e.g. Nausea, Vomiting, Photophobia, Neck Pain, fever?

Ever had this type of headache before?

Any analgesia taken: record name, dose, regularity_________________________________________

If strong postural component (i.e. worse on standing up and rapidly relieved by lying down) then likely Post Dural Puncture “spinal” Headache. May also have neck pain, photophobia and nausea. Reassure and give advice re likely cause, regular analgesia with supplied medications, adequate oral fluids, avoid alcohol but caffeine may help, advice regarding lying flat for short term relief and planned follow up call. If later follow up call and headache persistent and at all troublesome for patient contact anaesthetist.
If associated with fever and/or vomiting then advise Anaesthetist who may call or advise hospital review.
Q2. First counsel that pain associated with surgical site/procedure and minor back discomfort at skin insertion site is to be expected. Have you had any new onset of back, buttock or leg pain unassociated with surgical site since spinal? If yes record onset, site, severity, improving or worsening, associated numbness, paraesthesiae (pins and needles), or weakness. Enquire as to bowel and bladder function. Other symptoms? Transient Neurological Symptoms are characterised by pain in buttocks, thighs and legs after an initial full recovery from Spinal anaesthesia, it is expected with an incidence of less than 1% but should not be associated with progression or bowel, bladder or motor deficits. If new onset pain and unexpected pain presenting with progressive sensory, bowel, bladder or motor deficit speak personally to anaesthetist responsible above (or if unavailable to rota’d Senior On or CEPOD Anaesthetic Consultant) for advice regarding urgent hospital review by anaesthetic team.

Q3 Patient Satisfaction
A. Did you experience any pain or discomfort during the insertion of the spinal? Y/N If Yes pain score 1 2 3 4 and detail please.

B. Did you experience any pain or discomfort at the operative site during your operation? Y/N If Yes pain score 1 2 3 4 and detail please.

C. If you were having the same or similar surgical procedure again and were offered the choice of a Spinal +/- sedation or General Anaesthetic (being completely unconscious) which would you choose? Spinal or General Why?__________________________________________________________

D. Overall I was very unsatisfied/slightly unsatisfied/satisfied/quite satisfied or very satisfied with my care during my day case procedure

E. If a close friend or close family member was attending as a day patient for a similar operation would you recommend a spinal anaesthesia versus a general anaesthetic?
Yes definitely recommend a spinal anaesthetic versus GA
Yes probably recommend a spinal anaesthetic versus GA
Neutral would neither recommend nor discourage against or toward either
Probably recommend GA against spinal
Definitely recommend GA vs. Spinal

Any comments on your care.

ACTION –If contact anaesthetist ensure you detail below who you spoke to, when and their agreed plan for follow up or review
If negative replies to Q1 & 2 i.e. asymptomatic → DISCHARGE
If Transient Neurological Symptoms → CONTACT ANAESTHETIST
If disabling headache despite analgesia → CONTACT ANAESTHETIST
If headache at 48 hour follow up → PHONE IN 48 HRS
If still headache at further follow up → CONTACT ANAESTHETIST

Please enter free text below preceded by date and time followed by name, designation and signature please. Use continuation sheet if necessary. Attach to this form until filed.