Target groups: Anaesthetists, Theatre & Day Surgery Unit Nursing staff
Key words: Day Case Surgery Spinal Anaesthetic Prilocaine Priloketal Chlorprocaine Ampres Intrathecal

NHS Lanarkshire Wishaw General Hospital
Day Case Spinal Pathway

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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(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(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 intra-operative 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 co-morbidities to undergo a spinal anaesthetic as a day case and thereby avoid potential peri-operative 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 gastro-oesophageal reflux.

Patient selection: Pre-assessment and list booking.

All patients presenting for surgery will be pre-assessed at the nurse led pre-assessment clinic, and will be given a leaflet explaining possible anaesthetic options in broad terms, including regional anaesthesia. (4) If the patient does not meet the day case criteria at pre-assessment, they will be booked as inpatient.

Certain patients may be seen by an anaesthetist prior to their admission date. During this consultation, the potential option of a spinal anaesthetic may be discussed with the patient. However, they should be told that the final decision will be made on the day of admission, after meeting with the list anaesthetist.

Any patient who is earmarked as potentially a candidate for day case spinal anaesthetic at pre-admission, by the anaesthetist or pre-assessment nursing staff, must be booked onto the start of a list, if the list is in the afternoon, to enable sufficient time to reach the day case discharge criteria before the day surgery unit closes.

The patient will be assessed on the day of surgery by their anaesthetist, when the final decision is made on anaesthetic technique. If the patient is to receive a day case spinal, DSU staff should be informed as soon as possible, to allow plans to be made for their post-operative care.

Anaesthetic Protocol

- Prerequisite that patient scheduled at the start of a list if in the afternoon
- 'Day Case Spinal' 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 is likely. DSU will make bed manager aware that inpatient bed not required.
- "Low Dose Spinal Anaesthetic" or short-acting agent
- Ensure anaesthetic cover available until 8pm to support DSU staff in discharge. If the patient has not been discharged from DSU prior to the list anaesthetist leaving the hospital, the CEPOD consultant should be informed. Document arrangement on recovery section of anaesthetic chart with named contacts and page/telephone numbers.

Low dose/short-acting spinal anaesthesia for day case surgery can be provided with either:

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.

Bupivicaine should only be used on morning lists, to allow recovery of motor function before DSU closes.

The maximum doses that should be used as part of the day case spinal protocol are:
Up to 7.5mg of Bupivicaine (equivalent to 1.5ml of 0.5% Heavy Marcain)
Up to 25mcg of Fentanyl (equivalent to 0.5ml of 50mg/ml solution)

With lose dose bupivicaine spinals, full motor block may not be achieved, however, surgical anaesthesia should be expected. It may take up to 20 minutes for full effect to be seen.

Anaesthetists should note that audit of our cases during Covid showed spinals were utilised for longer procedures as Day Cases on the background of a lack of inpatient beds but that use of higher doses of heavy bupivacaine than above to facilitate these surgeries are associated with an increased risk of admission due to residual block especially when inserted in the afternoon.

Or

Priloketal® Prilocaine 2% Hyperbaric. 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, therefore 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, the side effect of itch is avoided and the rate of urinary retention may be decreased.

The recommended dose range of Priloketal is 40mg to 60mg, with a maximum licensed dose of 80mg. (5) Recent local experience with Priloketal suggests that 40mg to 60mg provides a sufficient duration of block for the commonly performed day case procedures within the department.

Or

Ampres® Chloroprocaine hydrochloride 1%. Chloroprocaine is an ester local anaesthetic with a rapid onset and offset of action. Although used in the past, this new preservative-free formulation has only been recently (October 2021) been approved for restricted use in Scotland by the Scottish Medicines Consortium (6). The approved indication is for spinal anaesthesia in adults where the planned surgical procedure should not exceed 40 minutes.

As with prilocaine, chloroprocaine produces a dense short duration block and therefore does not require the addition of fentanyl, enabling same day discharge even with early afternoon use. In a study comparing chloroprocaine with prilocaine for knee arthroscopy, median time to onset was 2 minutes, and median time to complete recovery of motor and sensory block was 60 and 120 minutes respectively using a 40mg dose (7).

Particular notes of caution include: avoiding use in patients with known hypersensitivity to ester-type local anaesthetics or para-aminobenzoic acid based metabolites; and use in patients with known pseudocholinesterase deficiency (including those with severe liver impairment).

The recommended dose is 40 – 50mg with a maximum dose of 50mg, to achieve an upper sensory level of T10. Close communication with surgical colleagues and accounting for surgical preparation time is required in order to facilitate optimum use of this agent. (i.e. Surgeon in theatre scrubbed with theatre team ready to position patient immediately after spinal)

Suggested method of administration

The patient should be prepared as for GA, with fasting as per hospital protocol. The minimum standards for monitoring, as per AAGBI guidelines, are essential; and patent IV access should be obtained prior to the spinal anaesthetic.

The patient can be positioned either lateral or sitting, depending on the anaesthetist's preference. If the patient is positioned lateral, it is suggested that the operative side should be down. The local anaesthetic should be injected at a fast rate of 1ml per second, with the

side hole of the needle orientated toward the operative site. The spread of anaesthetic can be controlled with posture as required.

If desired the patient may have sedation. 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, although 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.

The use of local anaesthetic infiltration or blocks are encouraged, 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 along with an estimate of recovery time depending upon agents used to allow discharge planning. DSU staff should contact the bed manager at this point to cancel, if booked, the inpatient bed.

In some NHS units first stage recovery is bypassed by patients who have received Day Case Spinal Anaesthesia. In NHSL, first stage recovery care will be given in the recovery area within current protocols, although 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. The standard documentation of first stage recovery and discharge from recovery must be completed as at present.

Day Surgery Unit recovery will continue to be criteria based, rather than time based, acknowledging the wide variation in time to full recovery from Day Case Spinal Anaesthesia. The present Modified Post Anaesthesia Discharge Scoring System (PADDS) (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.

Prior to mobilising 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 mobilisation but should not provide any physical support for the patient in line with safe manual handling practice.

If the patient has not mobilised or passed urine 5 hours after the insertion of the spinal anaesthetic, or by 5pm, the anaesthetist should be contacted for advice. 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 catheterisation should be performed if the residual volume is less than 500ml unless the catheterisation 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.

On discharge from DSU, the patient should be provided with the day case spinal Patient Information Leaflet (Appendix 2). The patient's details should be filled out on the follow-up questionnaire, and the process of telephone follow-up at 48 hours should be discussed with the patient. The patient should be told to contact the DSU, or the on-call anaesthetist, if they have any concerns regarding their spinal anaesthetic.

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, combined with the provision of a Patient Information Leaflet on discharge, 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. (Appendix 4). This should take place at 48 hours, with further contact made at 96 hours, if required. If unable to contact the patient by telephone, this should be recorded on the follow-up proforma, with the date and time that contact was attempted.

The first point of contact for the 'spinal nurse' for any problems identified on follow-up should be the anaesthetist who inserted the spinal, or their supervising consultant. If they are unavailable, the "Senior On" or CEPOD consultant anaesthetist should be contacted. The weekly anaesthetic rota will be available in DSU. This escalation pathway should also be used when patients contact the DSU for advice. In cases where patients contact the DSU, details of the phone consultation, advice given or escalation measures taken, should be documented on a progress sheet and stapled to the follow-up questionnaire. The date and time of the phone call should be clearly recorded.

In the case of a suspected neurological emergency, emergency admission should be arranged under the parent surgical team. The surgical team should be informed and given instructions on the immediate management of the patient. On arrival in the hospital, the patient should be reviewed promptly by a senior member of the anaesthetic team.

The results of the routine follow up and any major adverse events will be collated and distributed annually.

References

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2. NHS Plan 2000 at www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/Browsable/DH_4112374
3. Day Surgery: Revised Edn. 2005 AAGBI www.aagbi.org/publications/guidelines/docs/daysurgery05.pdf
4. Patient Information Leaflet, You and your anaesthetic 3rd Edition May 2008 at www.youranaesthetic.info
5. Priloketal® Prilocaine 2% hyperbaric solution. Local Anaesthetic for Spinal Anaesthesia Technical Monograph.
6. Scottish Medicines Consortium. SMC 2373: chloroprocaine hydrochloride 10mg/mL solution for injection (Ampres®). https://www.scottishmedicines.org.uk/media/6333/chloroprocaine-hydrochloride-ampres-final-sept-2021-for-website.pdf (accessed 10/11/21).
7. Wesselink E, Van Den Hurk G, Van Der Vegt R, Slagt C, Van Der Aa J, Boer C, et al. Chloroprocaine versus prilocaine for spinal anaesthesia in ambulatory knee arthroscopy: A double-blind randomised trial. Regional Anesthesia and Pain Medicine. 2019;44 (10 Supplement 1):A82-A3.

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

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

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

In addition to the above,

1. 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.
2. Patients should have no residual sensory or motor weakness related to their spinal anaesthetic prior to discharge (excludes effect from other regional anaesthesia blocks inserted for post operative analgesia) scoring 2 for activity level.

Planned Care Improvement Programme, January 2008, Review: January 2009

Appendix 2: Day Case Spinal Anaesthesia Post op. Patient Info. Leaflet (WGH version)

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 Wishaw General Hospital switchboard on **01698 361100 and ask for the on call anaesthetist**.

Appendix 3: "Recipes" - Studies/doses suggested operations utilising Bupivicaine/Fentanyl

Orthopaedics: Knee Arthroscopy

Bupivicaine 5mg & Fentanyl 10microgram made up to 3ml with sterile saline has shown to be effective in a small series of 15/15 patients. 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.

Ben-David B etal. Intrathecal fentanyl with small-dose dilute bupivicaine: better anaesthesia without prolonging recovery Anaesth. & Analgesia 1997; 85(3): 560-66

General Surgery: Inguinal Hernia Repair

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

Gupta A etal. Low-dose bupivicaine plus fentanyl for spinal anaesthesia during ambulatory herniorrhaphy: a comparison between 6mg and 7.5mg of bupivicaine. Acta Anaesth Scand 2003; 47(1):13-9

Urology: Minor Day Case 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 $\pm$21 (155 to178) (mean ,+/- 1SD and range), to micturate 174 $\pm$20 (163 to 185) and to discharge 199 $\pm$23 (186 to 211).

Goel S, Bardwarj N, Grover V. Intrathecal fentanyl added to intrathecal bupivicaine for ambulatory surgery: a randomised study. Euro J of Anesthy 2003; 20:294-297

Appendix 4: Day Case Spinal WGH Follow up questionnaire.

NHS Lanarkshire

DAY SURGERY UNIT

WISHAW GENERAL **SPINAL ANAESTHETIC**

PATIENT LABEL

Date of surgery -	**Anaesthetist -**	**Surgeon -**
Pt. Home Phone No.	**Mobile**	**NOK Number**

Complete above details prior to discharge from DSU and place in "DSU Spinals" folder at DSU desk for follow up phone calls.

1st Phone Call - 48hrs **If no reply document date/time & retry next day.**
2nd Phone Call - 96hrs: if required

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 PAIN SCORE 1 2 3 4 at 96 hours

Patients own description of headache first

_____

Then 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 since spinal? Y/N
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/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 an emergency 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 satisfied / quite satisfied / satisfied / slightly unsatisfied or very unsatisfied
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 you 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 preceded by date and time followed by name, designation and signature. Use continuation sheet if necessary. Attach to this form until filed