

# CLIP

15 minute Worksheet

15  
min

## Procedures in Palliative Care

### 3: Spinal analgesia: problems with two drugs

Advanced level

Produced by  
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#### Aim of this worksheet

To recognise and manage the adverse effects of spinal diamorphine and bupivacaine

#### How to use this worksheet

- You can work through this worksheet by yourself, or with a tutor.
- Read the case study below, then work on the questions overleaf.
- The work page is on the right side, the information page is on the left.
- Work any way you want: you can try answering from your own knowledge (in which case fold over the information page), you can use the information page (this is not cheating- you learn as you find the information), or you can use other sources of information
- It should take you about 15 minutes. If anything is unclear, discuss it with a colleague.
- If you think any information is wrong or out of date let us know
- Take this learning into your workplace using the activity on the back page.

#### Case study

**Mary is a 28 year old woman, married with two small children. Six months ago, she was found to have an advanced cancer of the cervix and was treated with pelvic radiotherapy and started chemotherapy. Despite this, the tumour has persisted and she is now troubled with a bearing down feeling in her perineum, and a burning pain in both legs. Her pains have been diagnosed as tenesmus and a neuropathic pain. The pain has been severe for the past few weeks and has not responded to increasing doses of morphine, anticonvulsants, antidepressants or ketamine. She has had an intrathecal line inserted.**

## The effects of diamorphine and bupivacaine

*Sensory block:* this is not meant to be a catch but you could have ticked both boxes:

- you would expect a local anaesthetic to have this effect (remember trying to have a cup of tea after going to the dentist!). It will also block pain and temperature sensation.
- diamorphine will block the sensation of some types of pain, but not the other sensations.

*Muscle paralysis:* only bupivacaine will do this.

*Low blood pressure:* bupivacaine does this by blocking the sympathetic nerves causing blood vessels to dilate which drops the blood pressure. Diamorphine does not have this effect.

*Respiratory depression:* both drugs can cause this but by different mechanisms:

- diamorphine depresses respiration by an effect on the respiratory centre (=central effect)
- bupivacaine will do this if the drug reaches high enough to the block nerve supply to the respiratory muscles (=peripheral effect). This is an emergency since the patient will require ventilation
- unopposed action of systemic opioid. This can occur if pain relief is sudden. Therefore the usual practice is to reduce the systemic opioid dose by 30-50% before starting spinal analgesia.

*Urinary retention:* both can cause this, although the mechanism for diamorphine is unclear.

*Constipation:* only diamorphine can do this, and it seems to be a systemic effect, although it is unusual with intrathecal diamorphine because of the very low doses used eg. 5mg/24 hours..

*Itching:* this is an unusual effect of diamorphine caused by histamine release.

*Nausea:* this seems to be a central effect of diamorphine.

*Small pupils:* both drugs can produce this:

- it is a direct effect of diamorphine
- bupivacaine does it by blocking the sympathetic nerves (which normally widen the pupils)

*Red face:* this is another sympathetic blocking action of bupivacaine.

*Increased heart rate:* this can occur with lowered blood pressure due to bupivacaine.

*Slow heart rate:* this is seen in epidural administrations if the bupivacaine has been injected into a blood vessel in the epidural space- the effect is due to a direct effect on the heart. This is very unusual with intrathecal spinals.

*Convulsions:* caused by blood injection of bupivacaine, or due to the accumulation of epidural doses of bupivacaine. It is not seen in continuous intrathecal infusions.

*Antibacterial:* surprisingly, some work in Sweden has shown that bupivacaine is itself antibacterial, thereby reducing the risk of infection if it is used. Diamorphine does not have this effect.

## Side effects of diamorphine and bupivacaine

*My arms have gone weak:* Emergency. Suggests the bupivacaine has reached C6- breathing will stop very quickly and immediate resuscitation will be needed (Ambu bag, intubation, O<sub>2</sub> and IV line).

*I feel faint:* Urgent. Suggests the BP is dropping. Will need an IV line of 0.9% saline. Ephedrine 30mg may be needed IV if BP is very low (systolic <80mmHg)

*I'm desperate for a wee:* Soon. Suggests urinary retention and Mary may need a catheter.

*I feel awful:* Urgent. There may be many reasons for this complaint. Low BP is one. An unusual cause is bupivacaine toxicity (much more common with epidurals) with the risk of convulsions. Close monitoring is required.

*Nurse- I can't wake Mary:* Emergency. The cause may be either respiratory depression or severe hypotension. If respiratory depression is caused by the morphine, IV naloxone will be required (400microgs diluted to 10mls, given slowly IV, then by infusion).

*I hate this numbness in my legs:* Soon. Numbness due to bupivacaine is uncommon if there is no previous nerve damage. If previous treatment or tumour has damaged nerves, numbness and weakness can occur at quite low doses of bupivacaine (eg. 6mls 0.25% per 24 hours intrathecal). The bupivacaine can be reduced and the diamorphine increased, or other drugs added such as clonidine. Sometimes pain relief can only be achieved at the expense of some numbness or weakness- not every patient is able to accept this.

Diamorphine is used rather than morphine because, in the UK, it is widely available in a form that is free of preservatives or additives (morphine is available in this form, but is not commonly stocked in the UK).

The commonest drugs to use are diamorphine and bupivacaine, often together. They are compatible.

**Write**

**Below are a number of effects of diamorphine or bupivacaine.**

**If you think a particular effect is due to diamorphine, put a ✓ in the diamorphine box, if not put a ✗ Do the same for bupivacaine.**

Effects	Diamorphine	Bupivacaine	Effects	Diamorphine	Bupivacaine
Sensory block	<input type="checkbox"/>	<input type="checkbox"/>	Nausea	<input type="checkbox"/>	<input type="checkbox"/>
Muscle paralysis	<input type="checkbox"/>	<input type="checkbox"/>	Small pupils	<input type="checkbox"/>	<input type="checkbox"/>
Low blood pressure	<input type="checkbox"/>	<input type="checkbox"/>	Red face	<input type="checkbox"/>	<input type="checkbox"/>
Respiratory depression	<input type="checkbox"/>	<input type="checkbox"/>	Raised heart rate	<input type="checkbox"/>	<input type="checkbox"/>
Urinary retention	<input type="checkbox"/>	<input type="checkbox"/>	Slow heart rate	<input type="checkbox"/>	<input type="checkbox"/>
Constipation	<input type="checkbox"/>	<input type="checkbox"/>	Convulsions	<input type="checkbox"/>	<input type="checkbox"/>
Itching	<input type="checkbox"/>	<input type="checkbox"/>	Antibacterial	<input type="checkbox"/>	<input type="checkbox"/>

**DISCUSS**

**With a colleague, discuss the treatment of the following problems Mary might complain of:**

Mary's problem	Is action needed as an emergency, urgently or soon?	What should you do?
"My arms have gone weak"		
"I feel faint"		
"I'm desperate for a wee."		
"I feel awful"		
"Nurse- I can't wake Mary"		
"I hate this numbness in my legs"		

## FURTHER ACTIVITY: Problems with two drugs

What observations would you make before starting a spinal line?

## FURTHER READING: Problems with two drugs

### Journal articles

- Anderson P. Intrathecal narcotics for the relief of pain from head and neck cancer *Archives of Otolaryngological Head Neck Surgeons* 1991; **117**: 1277-1280.
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- Nitescu P. Appelgren L. Linder LE. Sjoberg M. Hultman E. Curelaru I. Epidural versus intrathecal morphine-bupivacaine: assessment of consecutive treatments in advanced cancer pain. *Journal of Pain & Symptom Management*. 1990; **5**(1): 18-26.
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### Resource books

*Oxford Textbook of Palliative Medicine* 3rd ed. Doyle D, Hanks G, Cherny NI, Calman K eds. Oxford : Oxford University Press, 2003.

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**Current Learning In Palliative care**  
**An accessible learning programme for health care professionals**

**Fifty seven 15 minute worksheets are available on:**

- An introduction to palliative care (3 worksheets)
- Helping the patient with pain (9 worksheets)
- Helping the patient with symptoms other than pain (11 worksheets)
- Moving the ill patient (2 worksheets)
- Psychological needs (8 worksheets)
- Helping patients with reduced hydration and nutrition (8 worksheets)
- Procedures in palliative care (4 worksheets)
- Understanding and helping the person with alternative communication (learning disabilities) (5 worksheets)
- The last hours and days (4 worksheets)
- Bereavement (3 worksheets)

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Helping the Patient with Advanced Disease: a Workbook. Regnard C. ed.  
Oxford: Radcliffe Medical Press [www.radcliffe-oxford.com](http://www.radcliffe-oxford.com)