

From the Chief Medical Officer:  
Dr Henrietta Campbell CB

## **URGENT COMMUNICATION**

### **HSS(MD)46-2004**

All General Practitioners – for cascade to Practice Nurses and Sessional Doctors  
Directors of Primary Care in HSS Boards – for cascade to Out of Hours Services  
Prescribing Advisers in HSS Boards  
GP Advisers in HSS Boards  
Community Pharmacists  
Directors of Pharmaceutical Services in Boards and Trusts  
Directors of Nursing in Boards  
Directors of Nursing in Trusts – for cascade to Palliative Care Specialist Nurses  
Medical Directors of Trusts – for cascade to Consultants in:

- Oncology
- Anaesthetics
- Accident and Emergency
- Cardiology
- Medicine
- Palliative Care
- Haematology
- Psychiatry

Lead Clinician NICAN – Dr G Daly  
Directors of Public Health in HSS Boards  
Registration and Inspection Units in HSS Boards – for cascade to Local Nursing Homes  
Ulster Independent Clinic  
North West Independent Clinic  
Northern Ireland Hospice/Children's Hospice  
Foyle Hospice  
Southern Area Hospice Services  
Marie Curie Cancer Care  
Macmillan Cancer Relief  
Regional Medicines & Poisons Information Service

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Your Ref:  
Our Ref:  
Date: 29 December 2004

Dear Colleague

## **SUPPLY OF DIAMORPHINE INJECTION**

This is to alert you that stocks of diamorphine injection may reach a critical level in the next few weeks and to provide advice on how to manage the potential shortfall.

### **Background**

Diamorphine is used in myocardial infarction, acute pulmonary oedema and for the treatment of acute and chronic pain, eg, in cancer patients, and patients in intensive care units and accident and emergency departments. It is also used in the treatment of sickle cell anaemia and in people who are opioid-dependant. The product is available from two manufacturers, Chiron and Wockhardt UK. Chiron have informed the Department of Health in England that they currently have limited supplies, and are unable to say when they will be able to make more available. Limited supplies are also available from Wockhardt, who are expecting further stock of some strengths to be available from mid January. The supply situation is likely to remain uncertain for the immediate future.

## Action

HSS Trusts and Boards are asked to bring this alert to the attention of relevant healthcare professionals, including those working in out of hours services. Doctors, pharmacists, nurses and other healthcare professionals are asked to take every possible step towards conserving stocks of diamorphine injection for patients in whom the need is greatest. Wherever possible, the use of alternative medicines should be considered. All wastage should be avoided. Hospitals and community pharmacies should not over-order as this will aggravate the situation.

Alternative analgesics to diamorphine are available, in particular morphine. Clinicians will need to decide which product is most appropriate for each individual patient. Care is needed when switching from one opioid analgesic to another to ensure equipotent dosage. Healthcare professionals will therefore need to consider carefully the dose if patients need to be changed to an alternative drug. Since administration by syringe driver is the route of choice for many cancer patients, the availability of appropriate infusion pumps will also need to be considered.

## Interim clinical guidance

Interim clinical guidance has been developed in England (see attached Annex) and has been agreed in association with clinical experts for the main areas in which diamorphine is currently used.

## Further action

The Department of Health in England and the NHS Purchasing and Supply Agency are urgently exploring alternative international sources of diamorphine injection, and are taking steps towards ensuring that sufficient supplies of alternative medicines such as morphine are available.

Yours sincerely

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**JUDITH HILL (MISS)**  
CHIEF NURSING OFFICER

**NORMAN MORROW (DR)**  
CHIEF PHARMACEUTICAL OFFICER

This letter is available at [www.dhsspsni.gov.uk](http://www.dhsspsni.gov.uk) and also on the DHSSPS Extranet which can be accessed directly at <http://extranet.dhsspsni.gov.uk> or by going through the HPSS Web at <http://www.n-i.nhs.uk> and clicking on DHSSPS.

## **ANNEX**

### **Interim Clinical Guidance**

#### **Introduction**

- 1 The following guidance has been developed with advice from clinicians who are expert in the use of diamorphine in different situations.
- 2 Diamorphine is used in a number of situations. These include:
  - Acute trauma pain
  - Acute cardiac pain and left ventricular failure
  - Management of cancer-related pain in patients unable to take opioids orally
  - Postoperative pain
  - Some patients with chronic diseases (eg sickle cell anaemia)
  - Some people who are opiate dependent.
- 3 However, there are alternatives to diamorphine. Indeed, many countries do not use diamorphine at all. The following suggestions may help clinicians determine how they can manage patients with pain problems if diamorphine is not available.
- 4 Clinicians may wish to seek advice on the management of individual patients. Depending on the clinical situation, it may be appropriate to contact a pharmacist, an anaesthetist or consultant in pain medicine or a local hospice/ specialist palliative care team.

#### **Acute care**

- 5 For some patients with acute pain it may be possible to use other approaches to analgesia in place of diamorphine:
  - Injectable morphine or non-steroidal agents are frequently used in trauma and injury.
  - Morphine is used in many parts of the world for acute cardiac pain. Intravenous morphine can be substituted for intravenous diamorphine, but it is important to conform to the attached table of equivalent doses.
  - In the very acute injury situation, Entonox may be a useful adjunct.
  - Nerve blocks can also be useful e.g. femoral nerve block in fractured neck of femur.
  - For breakthrough pain oral morphine or oxycodone preparations are effective.

#### **Post-operative pain**

- 6 If an alternative to diamorphine is required for post operative epidural analgesia, advice should be sought from an anaesthetist or the acute pain team.

#### **Community and in-patient wards**

- 7 When patients bring a stock of parenteral diamorphine in with them from home these can be used, provided that regulations on the handling of controlled drugs are adhered to.

## Patients receiving subcutaneous diamorphine by syringe driver

- 8 For patients receiving subcutaneous diamorphine by syringe driver who need to continue on subcutaneous analgesia, there are several options. These include:
- Subcutaneous morphine
  - Subcutaneous oxycodone
- 9 The attached table should be used to establish the equipotent analgesic dose - to give an example: A patient receiving diamorphine sc 60mg/24 hrs should be converted to:

Either morphine sc 90mgs/24hrs  
or  
oxycodone sc 60mgs/24hrs

However, it is important that patients should be kept under close observation during conversion, as equipotent doses vary between patients.

- 10 When converting from diamorphine to other subcutaneous drugs consideration will need to be given to:
- Drug compatibility - Drugs are frequently mixed in the same syringe driver (eg antiemetic and an opioid). Some combinations are incompatible (for example cyclizine is incompatible with oxycodone and precipitation occurs). In some circumstances two separate syringe drivers may be needed.
  - Volume of infused drugs - As morphine and oxycodone are less soluble than diamorphine the volume of infusion may be larger. This can be managed in several ways, depending on the volume required and the type of syringe driver being used. It may be possible to use a larger syringe (eg. 20mls rather than 10mls) or alternatively it may be possible to run the syringe over 12 hours rather than 24 hours. In some cases two syringe drivers might be needed in parallel. It is recommended that advice be sought, if needed, from a local specialist palliative care team or on-call hospital pharmacist.
- 11 When a patient has a mixture of drugs in a subcutaneous syringe driver, it is possible to run the diamorphine infusion from a second separate driver, so that if other drugs (e.g. antiemetic) need to be changed, then the diamorphine is not wasted.
- 12 When a patient cannot swallow, a fentanyl patch at equipotent dose can be used to maintain analgesia, rather than a syringe driver. It is important to note that steady state levels of fentanyl are only achieved after 15 – 18 hours so the transfer needs to be managed with care. A patient receiving diamorphine sc 60mgs/24 hrs might be changed to a transdermal fentanyl 50micrograms/hr patch. For patients on lower doses of diamorphine 25 micrograms/hr may be appropriate. Adequate analgesia needs to be continued until a stable blood level is achieved.
- 13 Levomepromazine and haloperidol are used for anti-emesis in the dying; their long half-life means they can be given by single subcutaneous injection daily.

## **Comments on this guidance**

All comments on this interim guidance are welcome. Please send to [Sue.Hawkett@dh.gsi.gov.uk](mailto:Sue.Hawkett@dh.gsi.gov.uk) . It will be updated in the light of such comments and re-circulated as necessary. The guidance has been endorsed by Dr John Wiles, Chair of the Association for Palliative Medicine and by Dr Peter Simpson, President of the Royal College of Anaesthetists.

Prof Mike Richards, National Cancer Director, London.  
Baroness Finlay of Llandaff, Professor for Palliative Medicine, Cardiff

23 December 2004.

## **Note: diamorphine for the management of addiction**

For doctors prescribing diamorphine for the management of addiction **ONLY** (i.e., under Home Office licence), additional advice will be sent separately. For any further enquiries, following receipt of the additional advice, please contact Dr Mark Prunty at the Department of Health in England by email at [Mark.Prunty@dh.gsi.gov.uk](mailto:Mark.Prunty@dh.gsi.gov.uk) (telephone - 0207 972 3707) or Dr Ian McMaster, DHSSPS, Castle Buildings, Stormont, Telephone No: 02890522421.

## Opioid Potency Ratios

Approximate equivalent doses of strong opioid analgesics.

	Route	Period	Opioid naive	TSD	Incremental doses (mg)					Relative potency to oral morphine (24h)
Morphine	oral	4h	5mg	10mg	15	20	30	45	60	1
Morphine SR	oral	12h	15mg	30mg	45	60	90	135	180	1
Morphine	<b>SC</b>	4h	2.5mg	5mg	7.5	10	15	22.5 (25)	30	2
Morphine	<b>CSCI</b>	24h	15mg	30mg	45	60	90	135	180	2
Diamorphine	<b>SC</b>	4h	1.6mg (2.5mg)	3.5mg (5mg)	5	6.6 (7.5)	10	15	20	3
Diamorphine	<b>CSCI</b>	24h	10mg	20mg	30	40	60	90	120	3
Oxycodone	oral	4h	2.5mg	5mg	7.5	10	15	22.5 (25)	30	2
Oxycodone SR	oral	12h	7.5mg (10mg)	15mg (20mg)	22.5 (20)	30	45 (40)	67.5 (60)	90 (80)	2
Oxycodone	<b>CSCI</b>	24h	10mg	20mg	30	40	60	90	120	3
Fentanyl	patch	-	25µg/h				50µg/h	75µg/h	100µg/h	150
Fentanyl	<b>CSCI</b>	24h	0.2mg	0.4mg	0.6 (0.5)	0.8 (0.75)	1.2 (1)	1.8 (1.5)	2.4 (2)	150
Alfentanil	<b>CSCI</b>	24h	1mg	2mg	3	4	6	9	12	30

**KEY** CSCI = Continuous sub-cutaneous infusion SC= Subcutaneous injection

**NOTE** Buprenorphine has been added to the formulary since this table was prepared.

### General notes

When converting between strong opioids, considerable inter-patient variation will occur.

- Always reassess the patient carefully and anticipate the need to titrate the dose either upwards or downwards.
- If converting from a less sedating opioid (e.g. fentanyl or alfentanil) to morphine or diamorphine at doses that equate to 180mg oral morphine in 24h or greater, consider reducing the morphine/diamorphine dose by anything up to 30% (even more for very high doses), as the sedative effects may be much greater for an 'equianalgesic' dose.
- Incomplete cross-tolerance is sometimes seen between any two opioids; at doses higher than those given in the tables, consider reducing the new opioid dose by anything up to 30-50%

### Conversion tables

All doses in the tables are in milligrams unless otherwise specified.

Doses in *(italics)* are nearest that can be achieved from preparations available, or are closest convenient.

TSD (typical starting dose) is for patients progressing from a regular weak opioid.

### Potency ratios

Note that potency ratios are quoted, not equivalence ratios i.e.

- morphine **SC** 2:1 morphine **PO**
  - morphine **SC** is twice as potent as orally
  - morphine **SC** 1mg ≈ morphine **PO** 2mg

### Additional Information

Potency ratios reported for these drugs vary widely; the main conversion table is internally consistent with the following potency ratios:

- morphine **SC** 2:1 morphine **PO**<sup>638</sup>
- diamorphine **SC** 3:1 morphine **PO**<sup>638</sup>
- fentanyl patch 1:1 fentanyl **SC**<sup>647</sup>
- fentanyl patch 150:1 morphine **PO** (150:1 data sheet *Durogesic*; 100:1)<sup>667</sup>
- fentanyl **SC** 75:1 morphine **SC** (85:1; 68:1)<sup>645,647</sup>
- oxycodone **SC** 1.5:1 morphine **SC** (1.2-1.9:1)<sup>626</sup>
- oxycodone **PO** 2:1 morphine **PO** (2:1 data sheet *OxyContin*; 1.5:1)<sup>624,625</sup>
- alfentanil **SC** 10:1 diamorphine **SC**<sup>676</sup>
- fentanyl 5:1 alfentanil (4-10:1)<sup>681</sup>

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