MEMORANDUM – **Diamorphine hydrochloride powder for reconstitution and injection 5mg & 10mg ampoules – Supply Disruption alert (SDA/2020/003(U)**

6th May 2020

Dear Care Providers

This memo will help guide the transition process from subcutaneous (sc) diamorphine to sc morphine

There are two suppliers of diamorphine hydrochloride 5mg and 10mg injection in the UK, Wockhardt and Accord. The indication from both is that the supply of diamorphine 5mg and 10mg strengths will remain unpredictable for the foreseeable future.

Diamorphine hydrochloride 30mg ,100mg, 500mg are available but manufacturers are unable to support an increase in demand on these strengths.

Morphine sulfate solution for injection 10mg/ml has been identified by clinical experts as the first-line alternative and both primary and secondary care were advised to temporarily switch to morphine, where clinically appropriate, on 25th February 2020 (SDA/2020/003).

NHS England, NHS Improvement and the Department of Health and Social Care have been engaging with national clinical leads and suppliers of morphine and diamorphine to plan for a national change in usage from diamorphine to morphine, where the supply chain is more robust.

Given the continuing unpredictability of supply of diamorphine both primary and secondary care should now make the change to morphine permanent.

The small quantities of diamorphine 5mg and 10mg, which may still be available in the UK over the coming months, should be reserved for patients who cannot be treated with alternatives.

Morphine and diamorphine are **not equipotent**, and care should be taken when switching patients or amending guidelines, please see conversion examples below and Appendix A.

All healthcare professionals in primary and secondary care who prescribe, dispense or administer diamorphine hydrochloride injection 5mg and 10mg should also:

- identify a lead within their organisation to manage the delivery of actions advised in this document where possible
- review and update guidelines and protocols, moving to morphine sulphate injection as opioid of choice, where clinically appropriate, in place of diamorphine 5mg and 10mg
- identify and deliver required education and training to General Practice and community nursing teams and hospital clinical teams to support the switch over to morphine
- ensure no new patients are started on diamorphine hydrochloride 5mg or 10mg injection
- review patients currently receiving diamorphine 5mg or 10mg injection and manage the switch to an alternative opioid
- not switch patients to higher strengths of diamorphine injection as there is insufficient stock to support increased use

Conversion suggestions for palliative care indications:

To convert regular oral morphine to sc morphine sulphate infusion divide the total daily oral morphine dose by 2

- e.g. 20mg oral morphine sulphate M/R tablets twice daily = Total oral morphine dose 40mg per 24 hours
  40mg **÷ 2** ≈ 20mg s/c morphine in 24 hours

To convert sc diamorphine infusion to sc morphine sulphate multiply by 1.5

- e.g. 10mg s/c diamorphine in 24 hours
  10mg **x 1.5** ≈ 15mg s/c morphine sulphate in 24 hours

When patients are using already oral oxycodone because of an intolerance to morphine or renal impairment, convert to subcutaneous oxycodone rather than diamorphine or morphine sulphate. **See Appendix A**.

'When required' (PRN) doses should be based on previous effective PRN oral morphine doses:

- If already on an effective dose of PRN oral morphine then divide that dose by 2 to give the sc PRN dose:
  - E.g already on oral morphine (eg Oramorph®) 10mg – 15mg PRN one to two hourly then prescribe sc morphine sulphate 5mg-7.5mg, one to two hourly
- As a guide the oral PRN dose should be around 1/6th of the total 24 hour oral dose and the sc PRN dose should generally be around 1/6th of the total 24 hour sc dose (see Appendix A)
- If an already prescribed PRN dose is effective but is lower than a 1/6th of the total 24 hour dose there is no need to increase it.
- If the current oral morphine dose is not effective or seems low compared to the regular opioid dose seek advice from the palliative care teams

If opioid naïve (not been on PRN oral morphine):

- If opioid naïve use sc morphine sulphate 2.5-5mg given one - two hourly. (NB: In frail elderly or opioid naïve patients, initially sc morphine sulphate 1.25-2.5mg given one to two hourly).
- In renal impairment eGFR <30ml/min please seek advice from the specialist palliative care teams regarding dose reduction or use sc oxycodone 1-2mg one to two hourly.

If opioid naïve and continuous subcutaneous (sc) infusion (Syringe Pump) required:

In opioid naïve patients, if a patient needs regular morphine for pain or breathlessness, initially commence sc morphine sulphate 10mg over 24 hours. In renal impairment eGFR <30ml/min, please seek advice from the specialist palliative care teams or consider commencing sc oxycodone 5mg over 24 hours.

Any TWO of morphine, haloperidol, hyoscine butylbromide and midazolam can be mixed together in a syringe pump with water for injection. For further compatibility information consult specialist resources such as local palliative care team, Palliative Care Formulary or local guidelines.

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Appendix A

If more information is required please seek help from specialist palliative care

Opioid dose conversion chart, syringe driver doses, rescue / prn doses and opioid patches

Use the conversion chart to work out the equivalent doses of different opioid drugs by different routes.
The formula to work out the dose is under each drug name. Examples are given as a guide

Oral opioid mg /24 hour (Divide 24 hour dose by six for 4 hourly prn oral dose)		Subcutaneous infusion of opioid Syringe driver (SD) dose in mg per 24 hours (or micrograms for alfentanil where stated)				Subcutaneous prn opioid Dose in mg every 4 hours injected as required prn NB Alfentanil in lower doses in micrograms				Opioid by patch Dose microgram/hour	
Morphine **Non24 hour**	**Oxycodone** **24 hour**	**Diamorphine** **sc 24 hour**	**Morphine** **sc 24 hour**	**Oxycodone** **sc 24 hour**	**Alfentanil** **sc 24 hour** (500microgram/mL)	**Diamorphine** **4 hour**	**Morphine** **4 hour**	**Oxycodone** **4 hour**	**Alfentanil** **2 to 4 hour** (500microgram/mL)	**Fentanyl** normally change every 72 hours	**Buprenorphine** **(Please note these are Non Formulary)**
	Calculated by dividing 24 hour oral morphine dose by 2	Calculated by dividing oral morphine dose by 3	Calculated by dividing oral morphine dose by 2	Calculated by dividing oral oxycodone dose by 2	Calculated by dividing 24 hour oral morphine dose by 30	Prn dose is one sixth (1/6th) of 24 hour subcutaneous (sc) syringe driver dose plus opioid patches if in situ. *NB **Alfentanil injection is short acting**. Maximum 6 prn doses in 24 hours. If require more seek help*				Conversions use UK SPC	
20	10	5	10	5	500mcg	1	2	1	100mcg	(6)	B 10
45	20	15	20	10	1500mcg	2	3	2	250mcg	12	B 20
90	45	30	45	20	3mg	5	7	3	500mcg	25	T 35
140	70	45	70	35	4500mcg	8	10	5	750mcg	37	T 52.5
180	90	60	90	45	6mg	10	15	8	1mg	50	T 70
230	115	75	115	60	7500mcg	12	20	10	1.25mg	62	T70+35
270	140	90	140	70	9mg	15	25	10	1.5mg	75	T70 + 52.5
360	180	120	180	90	12mg	20	30	15	2mg	100	T 140
450	225	150	225	110	15mg	25	35	20	2.5mg	125	-
540	270	180	270	135	18mg	30	45	20	3mg	150	-
630	315	210	315	160	21mg	35	50	25	3.5mg	175	-
720	360	240	360	180	24mg	40	60	30	4mg	200	-

Equivalent doses if converting from oral to sc opioid

Calculation of breakthrough/ rescue / prn doses

Oral prn doses:

- Morphine or Oxycodone: 1/6th of 24 hour oral dose

Subcutaneous:

- Morphine & Oxycodone: 1/6th of 24 hour sc syringe driver (SD) dose
- Alfentanil: 1/6th of 24 hour sc SD dose
  Short action of up to 2 hours

Seek help If reach maximum of 6 prn doses in 24 hours

(For ease of administration, opioid doses over 10mg, prescribe to nearest 5mg)

Renal failure/impairment GFR<30mL/min: Morphine/Diamorphine metabolites accumulate and should be avoided.

- **Fentanyl patch** if pain is stable.
- **Oxycodone** orally or by infusion if mild renal impairment
- If patient is dying & on a fentanyl or buprenorphine patch top up with appropriate sc **oxycodone** or **alfentanil** dose & if necessary, add into syringe driver as per renal guidance
- **If GFR<15mL/min** and **unable to tolerate oxycodone** use **alfentanil** sc

If unsure please seek help from palliative care

Fentanyl and buprenorphine patches in the dying/moribund patient

- **Continue fentanyl and buprenorphine patches in these patients.**
  - Remember to change the patch(es) as occasionally this is forgotten!
  - Fentanyl patches are more potent than you may think

If pain occurs whilst patch in situ

- Prescribe 4 hourly prn doses of subcutaneous (sc) morphine unless contraindicated.
- Use an alternative sc opioid e.g. **alfentanil** or **oxycodone** in patients with
  - **poor renal function**,
  - morphine intolerance
  - where morphine is contraindicated
- **Consult pink table when prescribing 4 hourly prn subcutaneous opioids Adding a syringe driver (SD) to a fentanyl or buprenorphine patch**

If 2 or more rescue/ prn doses are needed in 24 hours, start a syringe driver with appropriate opioid and continue patch(es). The opioid dose in the SD should equal the total prn doses given in the previous 24 hours up to a maximum of 50% of the existing regular opioid dose. Providing the pain is opioid sensitive continue to give prn sc opioid dose and review SD dose daily.

*E.g. Patient on 50 micrograms/hour fentanyl patch, unable to take prn oral opioid and in last days of life. Keep patch on. **Use appropriate opioid for situation or care setting.** If 2 extra doses of 15 mg sc morphine are required over the previous 24 hours, the initial syringe driver prescription will be morphine 30mg/24 hour. **Remember** to look at the **dose of the patch and the dose in the syringe driver** to work out the **new** opioid breakthrough dose **each time a change is made**.*

Always use the chart above to help calculate the correct dose


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Clinical Commissioning Group

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