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Preventing fatalities from medication loading doses: Guidance for Primary Care

Background

A loading dose is an initial large dose of a medicine used to ensure a quick therapeutic response. It is usually given for a short period before therapy continues with a lower maintenance dose. The use of loading doses of medicines can be complex and error prone. Incorrect use of loading doses or subsequent maintenance regimens may lead to severe harm or death.
The National Patient Safety Agency (NPSA) issued a Rapid Response Report (NPSA/2010/RRR018) in November 2010, with recommended actions aimed to reduce the number and severity of medication incidents involving incorrect prescribing or administration of loading doses and subsequent maintenance doses.

These actions included production of a critical list of medicines, where incorrect loading doses or subsequent maintenance doses are likely to cause harm and ensuring healthcare professionals in primary care are aware of when to challenge abnormal doses of medicines on the agreed critical list.

This guidance has been developed as a response to these recommended actions.

Critical List

Agreed critical list of drugs most likely to cause harm as a result of incorrect prescribing or administration of loading dose or subsequent maintenance dose are:

- **Amiodarone**
- **Digoxin**
- **Phenytoin**
- **Warfarin**

Best practice in the prescribing, supply and administration of drugs requiring loading dose

1. Where a loading dose is prescribed or recommended, ensure that details of on-going treatment and titration to maintenance dose are clear, and in line with national or local guidelines.
2. Challenge any abnormal prescribing or treatment recommendations (see page 2).
3. Where a change in dose has been prescribed or recommended, check with patient (or patient's representative), if appropriate.
4. Contact prescriber or specialist recommending treatment with any concerns.
5. Document any actions taken and information received.

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STANDARD DOSES FOR MEDICINES ON CRITICAL LIST

Drug and usual ADULT oral dose	When to query / challenge in Primary Care
Digoxin Loading dose (rapid digitilisation in secondary care): 0.75–1.5 mg over 24 hours in divided doses. Doses are adjusted for age, lean body weight, renal function and response. Maintenance dose: 62.5 – 250 micrograms daily, reduced in elderly, usual max 125 micrograms daily	**Challenge doses above 250 micrograms daily, or above 125 micrograms in patients over 70 years.** Check previous dose and confirm any changes with patient and/or prescriber.
Amiodarone Loading dose (initiate in secondary care) 200mg tds for 1 week, then 200mg bd for 1 week Maintenance dose:100 – 200mg daily	**Challenge any regular dose above 200mg daily.** Any regular dose above 200mg daily should be confirmed with Cardiology and documented in patient's notes or PMR.
Phenytoin Loading dose: iv only in secondary care Initial oral dose: 150 – 300mg daily increase gradually (with plasma level monitoring) to Maintenance dose: 200 – 500mg daily There may be wide inter-patient variability in phenytoin serum levels with equivalent dosage, so a wide range of doses is used.	**Challenge any dose above 500mg daily or any change in dose, especially a change greater than 50mg daily.** Check previous dose and confirm changes with patient or specialist prescriber.
Warfarin Loading dose (specialist use only): Day 1-3: usually 10mg, 10mg, 5mg OR in over 65 years / other risk factors 5mg, 5mg, 5mg then titrate as per INR. Maintenance dose (dependent on target INR) usually 3-9 mg daily. Warfarin doses may vary considerably between patients.	**Challenge any newly initiated doses of 5mg or above (other than Day 1-3 schedule)** **Only prescribe or supply 5mg tablets for doses 8mg or more – check anticoagulant booklet or check with patient** Always check on-going dose and INR results in anticoagulant book (or with patient) and advise patient of signs of adverse effects.

APPROVAL PROCESS

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Consultation process:	***Hull Integrated Governance Group*** ***Hull Prescribing Subcommittee*** ***HEY Working Group - NPSA/2010/RRR018***
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