

Administration of medicines – Clinical Calculations Assessment for Registered Healthcare Professionals Policy

Version 4

Version 4 November 2015

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V2		22.9.14	Updated	
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1. Introduction

1.1. Medicines administration forms a major part of many registered professional's role. Medicines are prescribed by a prescriber and dispensed by the pharmacist but responsibility for correct administration rests with the registrant. Each registered healthcare professional is accountable for his/her practice. It is important that the patient receives the correct medication at each medicines administration however; medication errors do occur and are a persistent problem associated with nursing practice. The Trust will ensure that this risk is minimised.

The Nursing and Midwifery Council (NMC 2010) state:

'Some drug administrations can require complex calculations to ensure that the correct volume or quantity of medication is administered. In these situations, it is good practice for a second practitioner (a registered professional) to check the calculation independently in order to minimise the risk of error. The use of calculators to determine the volume or quantity of medication should not act as a substitute for arithmetical knowledge and skill.

1.2. Mathematical proficiency is a pre-requisite to the performance of many healthcare functions such as medication calculations, intravenous regulation and fluid balance calculations, however medication errors resulting from poor numerical skills remains a nationally on-going problem.

2. Statement/Objectives

2.1. Safe and effective administration of medicines to patients requires a combination of professional competence, best available evidence and partnership (DH 2004) with each medicine administration. Calculations are one part of this complex area of practice and Lesar et al (2009) reported that more than one in six prescribing errors involved miscalculation of dose, wrong decimal point placement, incorrect expression of unit of measurement, or an incorrect medication administration rate.

Calculation skills assessment must be successfully undertaken 3 yearly by a practitioner responsible for administering medication and evidence of this success must be evidenced at the annual appraisal.

Calculations assessment should not be seen as a negative supervision tool but rather as an aid to support staff requiring help with numeracy skills and to improve safe care for patients.

2.2. Expected outcomes:

- Enhanced practitioner performance in medication dosage calculation assessments.
- Increased success by practitioners with clinical dosage calculations, as evidenced by fewer incidents related to clinical calculation errors.
- Potential for increase in patient safety related to a decrease in medication dosage calculation errors.

3. Roles and Responsibilities

3.1. Registered Professional

3.1.1. The NMC guidelines state principles for the administration of medicines.

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To minimise the number of errors caused by miscalculating dose, volume or rate of administration, the registered professional must be familiar with and apply a number of mathematical formulae. It is the responsibility of the practitioner to ensure that they are competent to undertake all aspects of medicines administration, including clinical calculations. They must ensure that they undertake a clinical calculations assessment 3 yearly.

- 3.1.2. The registered professional is responsible for the delegation of any aspects of the administration of medicinal products and they are accountable to ensure that the patient, carer or care assistant is competent to carry out the administration. This must include any clinical calculations.
- 3.1.3. The NMC (2010) also stipulates that two registrants should be involved in *complex* calculations and it is considered good practice for two to be involved in all but the most basic drug calculations.
- 3.1.4. The use of calculators in applying mathematical formulae is inevitable, particularly for more complex calculations. However, it is important to take extra care when using a calculator to prevent operator or machine error.
- 3.1.5. Any University students must never administer or supply medicinal products without direct supervision
- 3.2. It is the responsibility of the manager to ensure that the individual undertakes and passes the assessment 3 yearly to demonstrate competence. They must also ensure support and education is offered and undertaken where necessary using the flowchart in appendix 1.
- 3.3. It is the responsibility of the registered professional to ensure that s/he is competent to practice in their area of work and that they have the evidence to demonstrate this.

4. Principles

- 4.1. All healthcare professionals who administer medication must successfully complete a clinical calculations assessment every 3 years. This assessment could be reflective of the patient group the professionals work with eg critical care.
- 4.2. A Skilled Not Registered or Healthcare Support worker (SNR or HCA) can check medication but must hold a level 2 numeracy qualification. This task would be delegated to them under the Accountability and Delegation Framework and they would need to receive training and demonstrate competence prior to carrying out the task.

5. Procedure

5.1. The Clinical calculations assessment should comprise of 10 practicerelated questions. The candidate must undertake the assessment every 3 years and must achieve 100% to demonstrate competence. The assessment is available as ELearning and is available on the eLearning pages of OLM and

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should be managed and monitored by the line manager. You will need to log in and search for Clinical Calculations.

5.2. Paper assessments can be obtained on request from the Education and Training team. These paper based assessments must be managed and marked by the line manager.

Identified areas such as ICU will have their own calculations assessments and these will be managed as set out in this policy by the manager

- 5.3. Line managers must ensure that successful clinical calculations assessments have been completed. Candidates must demonstrate a 100% pass within the last 3 years at each annual appraisal.
- 5.4 Candidates are permitted to use a calculator.
- 5.5 Candidates who score **less than 60%** should not administer medicines until they have scored 100% in the calculations assessment and should undertake the support as set out in section 7.
 - The relevant managers must be informed and the candidate's performance must be managed by a senior clinical manager.
 - The reasons for unsuccessful completion should be explored and if required the candidate should be offered numeracy assessment, available from the Vocational Qualification team based in the Horizon Centre.
- 5.6. If a score of **between 60 and 90%** is achieved the candidate can choose to re sit the test or to review their skills using the suggested resources in section 7. The re sit should take place with 4 weeks of the original assessment (see Appendix 1- flowchart).
- 5.7 At the **second attempt**, if the candidate scores between **60 and 90%** then a third attempt is allowed. If the score is less than 60% at the second attempt then prior to a third attempt:
 - Managing Poor Performance Policy should be followed.
 - A formal hearing with a senior and responsible professional lead will decide a plan and completion of required pro-forma.
 - The Clinical Manager will provide a performance management report.
 - A report of test results is given to the candidate and support offered.
 - The candidate is informed that next step could be referral to NMC
- N.B. The candidate will remain unsafe to carry out drug rounds unsupervised.
- 5.8 **Up to 4 attempts are allowed**. Only if indicated by manager and signs of improvement and learning evident is a 5th and FINAL ATTEMPT will be allowed.
- 5.9 Should the candidate fail to achieve the desired competency assessment then, there will be a
 - Formal Hearing with a senior and responsible healthcare lead and HR for Capability Procedure
 - View sought on ability to practice as a registrant.
 - Referral to NMC Fitness to Practice Committee

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- Potential dismissal / demotion (Demotion will be subject to the Trust redeployment policy)
- 5.10. It is important that registrants acknowledge any limitation in their knowledge and competence. The Trust must be assured that the registrant is able to administer medicines safely.

6. New Registered Professional staff

- 6.1. All new registrants who attend for interview will have been made aware in the letter from Recruitment and Selection, that at the time of the interview they will be expected to complete a clinical calculation assessment and demonstrate numeracy skills at level 2.
- 6.2 The appointing manager will have received in the recruitment pack the calculation paper and an answer paper to enable the paper to be marked at the end of the interview process; results from the test will form part of the interviewer's decision to appoint.
- 6.3 Applicants scoring less than 60% in the calculation paper will not be eligible to work in a clinical capacity. Applicants scoring 60% or more but less than 100% may be eligible for recruitment at the manager's discretion, but on condition of successful completion of the test within a specified time frame. These candidates will re-sit a calculation paper as part of their clinical induction in the first month before undertaking drug administration. Applicants required to re-sit a calculation paper at induction will be signposted to resources or websites available for revision.
- 6.4. Successful applicants will be informed of their assessment results in the appointment letter. A record of this information should be held by the appointing Manager.

7. Training and Education

Staff requiring additional support should discuss this with their manager and follow the flow chart in appendix one. Support and advice is also available from the medicines management team or a member of the Education and Development team. Training and education is available at 3 levels:

1. Basic Support. Basic practice and support for numeracy is available from several recommended websites:

The BBC Skillswise pages: www.bbc.co.uk/skillswise/maths

Learning and Skills improvement service: http://www.move-on.org.uk/index.asp

2. Intermediate Support. There is a Clinical Calculations package available and this can be obtained from the Clinical Education Team in the Horizon Centre.

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3. Further Support. If further support and/or education are required, Numeracy and Literacy assessments and support to achieve a Level 2 qualification are available from the Vocational Qualification team, based in the Horizon Centre. A level 2 qualification is equivalent to GCSE Grade C so most people will find this very useful to gain new skills and experience modern teaching techniques which may be easier to put into practice than those learnt some time ago.

8. Monitoring, Audit and Review Procedures

This policy will be monitored and audited on a regular basis. A full review will take place every 2 years by The Lead for Clinical and Placement Education and medicines management team unless legislative changes determine otherwise.

9. References

Department of Health (2004) Building a safer NHS for patients: Improving Medication Safety. London

Lesar TS, Briceland L, Stein DS. Factors related to errors in medication prescribing. JAMA. 1997;277:312–7.

NMC (2010) Standards for medicine management. London NMC.

Torbay and southern Devon Health and Care Trust Services Medicines Policies.

Appendix 1 - DRUG CALCULATIONS TEST - PROCESS FOR SCORE < 60%

