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'……..the common causes of medication errors. These include failed communications, poor drug distribution practices, dose miscalculations, drug and drug-device related problems, incorrect drug administration and lack of patient education. Familiar errors, such as 10-fold overdoses resulting from the omission of a zero before a decimal point…'
*American Pharmaceutical Association, 1999*

"The competence and confidence of nurses in making drug calculations has been a cause for concern. The user-friendliness of drug preparation and widespread use of electronic drip counters may have resulted in 'de-skilling'. The consequences for patients can be serious if drug calculations are incorrect.

"In June 2000, a UKCC council meeting expressed concern at the lack of basic maths skills among nurses: the risk of error was felt to be unacceptably high, particularly in paediatric nursing."
*Haigh S. How to calculate drug dosage accurately: advice for nurses. Professional Nursing*

**Oxfordshire Skills *for* Health's**

# Nursing calculations

## A different approach to learning maths

- Correct measurement of drug dosages is vital
- Remedial and catching up classes in mathematics are essential
- This is an area of difficulty for many trained nurses
- Mathematics is seen to be difficult and the prerogative of 'clever' people

*Susan Starkings: Drug Calculation and the Mathematics required for Nursing MSOR Connections Nov 2003 Vol 3 No 4*

"Some dose related incidents have reported medications being dispensed which have exceeded the recommended therapeutic range, other incidents report of patients/clients receiving double the dose prescribed, in one of these it contra-indicated against the patient's blood pressure monitoring.
A nurse administered an injection; after it was given she was not sure if the dose was correct. Staff were advised to observe for any reactions."
*North Staffordshire Primary Care Trust 2003*

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OSfH's **Nursing Calculations** programme offers health workers a new way to review and improve their skills and practices around drug and other healthcare calculations.

## What's different about the programme

- Centred on the learner, not the teacher
- Focused on work practices, not maths theory
- Action learning / collaborative enquiry, not classroom chalk and talk
- Tailored to the needs of the participant, the department and the trust

## *Programme structure*

**Participants** join the programme to consolidate healthcare calculation skills.

Participants meet **programme facilitator** (workplace numeracy specialist) to

- preview the programme structure – identify learning opportunities
- identify individual area(s) of interest – e.g. intravenous infusions, metric conversion
- establish current levels of maths skills, confidence

Participants are grouped as a **learning set** to investigate work practices involving calculations, facilitated by the workplace numeracy specialist.

**Learning set** embarks on collaborative enquiry, addressing five key questions

1. Am I applying the right knowledge and skills? (*Personal competence)*
2. Are we using the right systems and procedures? (*Collective competence)*
3. How does our equipment affect our practice? (*Equipment)*
4. What mechanisms do we have in place to support good practice? (*Support)*
5. How can we improve our practice? (*Improvement)*

Learning set **sessions** include

- group discussion
- personalised maths learning (assessment, input, practice, feedback)
- action planning (linking learning to practice)

On the programme, participants are encouraged to recognise a wide range of **learning opportunities**, including workplace activities and interactions and life outside work.

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Participants reinforce learning on the link between maths competence / confidence and safe working practices by producing a short template-based **report to management** on practices around nursing calculations in their work area.

## Programme outcomes

**Enhanced** key skills for nursing calculations

**Introduction** to report writing

**Greater** confidence with maths

**More** awareness of work practices

**Improved** work practices

**Improved** organisational competence

**Greater** personal confidence and empowerment

***Flexible***

OSfH tailor **Nursing Calculations** to the requirements of individual participants, departments, trusts. The programme is flexible regarding

- Number of participants
- Number of sessions
- Length of sessions
- Content of sessions
- Support offered to individual participants within and outside of sessions
- Support offered to departments / trust

***To find out more, please contact***

Alexander Braddell, Programme Manager *Oxfordshire Skills for Health*
alex@bscity.fsnet.co.uk

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How can we best support
- the safe administration of drugs
- nurses' ability to make drug calculations
- the learning of a 'difficult' skill?

We know that even when classroom learning is successful, all too often it makes little if any impact on behaviour.

Oxfordshire Skills *for* Health have developed a new style of maths learning for nurses (and healthcare assistants) who feel uncomfortable with maths.

OSfH's Nursing Calculations programme is based on an action learning / collaborative enquiry model.

Instead of focusing on 'difficult' learning for people who are 'bad at maths' the programme brings participants together as a learning set to identify and implement practice improvements.