DoseGuard Dose Error Reduction Software

Competency Self Assessment

B BRAUN
SHARING EXPERTISE

OUR VISION

We PROTECT and IMPROVE the HEALTH of people around the world.

OVERVIEW

The World Health Organisation (WHO) Global Patient Safety Challenge on Medication Safety aims to address the weaknesses in health systems that lead to medication errors and the severe harm that results from them.

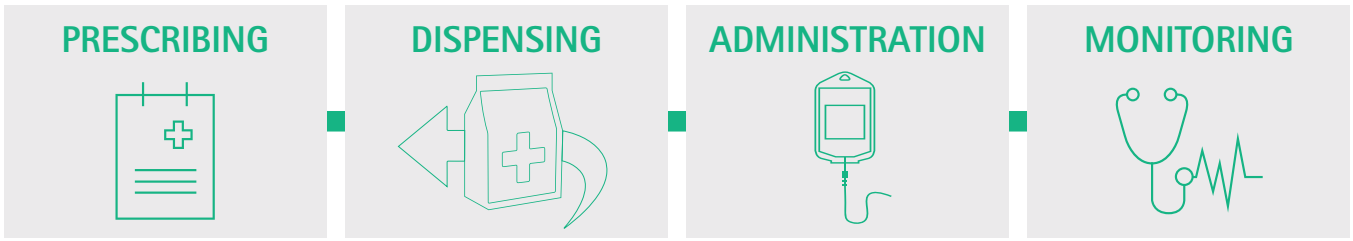
Here in the UK significant new work on medication safety aligned with the World Health Organisation's 'Medication Without Harm' challenge is being undertaken by NHS Improvement with the development of 'A Patient Safety Strategy for the NHS'.

WHERE DO MEDICATION ERRORS OCCUR[1]

Elliott, RA. et al. reported that within secondary care the number of errors reported: prescribing, 4,043,745 (8.5%); transition, 3,380,383 (7.1%); dispensing, 1,376,609 (2.9%); administration, 37,258,284 (78.6%) (38% of which are Intravenous (IV) infusion related) and monitoring, 1,368,644 (2.9%) with estimated costs to the NHS of £14.8 million causing 85 deaths and contributing to 1,081 deaths.

In reality, medication errors can be initiated at all four stages in the process and can also be detected and eradicated at all four stages. However, some errors, wherever they are initiated will reach the patient, at which point they have the potential to cause harm.

FOUR STAGES



Over 138,000 drugs errors reported each year to the National Learning and Reporting Service (NRLS) have caused patient harm with 78.6% of the errors occurring at the point of administration.

What are the most common types of medication error associated with infusion device.

No one individual factor causes a medication error, but the most common errors occurring with infusion devices are:

- RATE CALCULATION ERRORS
- INCORRECT DOSE UNITS
- WRONG INFUSION TIME
- INCORRECT INFUSION RATE

LEADS TO

- MEDICATION ERRORS
  - OVER-INFUSION
  - UNDER-INFUSION
- INCREASED RISK TO PATIENTS
- INCREASE RISK TO STAFF

Modern Infusion devices 'smart pumps' have been available in Europe since 2003 but uptake of this technology has been slow. Smart pumps contain inbuilt safety features (dose error reduction software (DERS) and infusion rate calculation software to prevent accidental over- or under-dosage[2]. DERS enables the infusion device to recognise an attempt to programme an infusion rate outside a pre-determined dosing range. Should this occur, the attempt is blocked and the user alerted.

As well as helping to protect the safety of the patient, DERS has the capacity to provide inherent benefits to all healthcare staff involved in the delivery of intravenous therapy, in particular the nursing staff. A combination of smart pump technology utilising standard concentrations of drugs reported a 73% reduction in administration errors relating to continuous infusion of medication[3].

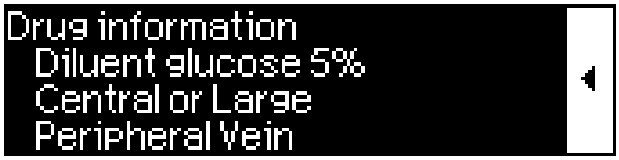
HOW DO YOU CHOOSE THE APPROPRIATE DRUG FOR YOUR CLINICAL AREA

1 When prompted select YES to initiate the drug library use.

2 Select correct drug library for the clinical environment you are working in (e.g. Critical Care for ITU/HDU and Theatres).

3 Select correct drug and concentration against the prescription and infusion being administered (in conjunction with local drug administration guidelines).

4 Acknowledge any safety advisories that may be associated with the drug being administered (e.g. give centrally).



WHAT PARAMETERS WILL SOME DRUGS REQUIRE PRIOR TO STARTING AN INFUSION

PRE-PROGRAMMED

Some drugs e.g. Amiodarone, Metronidazole, will have all the therapy limits pre-programmed. Please ensure you check all details are correct against the prescription.

WEIGHT REQUIRED – FIXED CONCENTRATION

Some drugs e.g. Aminophylline, Noradrenaline, will require the patient's weight to be inputted prior to setting up the administration rate. This can be either actual body weight or ideal body weight depending on the drug being administered. (check local policy).

VARIABLE CONCENTRATION

Some drugs such as Furosemide will require the dose and dilution to be entered. This is the final reconstituted values e.g. 40mg in 100ml to give a concentration of 0.4mg/ml.

Input amount of drug being added.

Input the final diluent volume of drug being administered in.

Ensure concentration is correct prior to proceeding.

INPUTTING REMAINING INFUSION DATA

If the infusion is not **pre-programmed** additional information may be required prior to commencing infusion. Please ensure the dose, rate, volume to be infused (VTBI) and time are completed correctly.

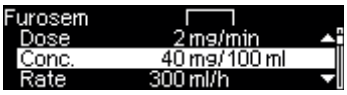
1

Enter dose

OR

Enter rate

=



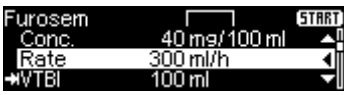
2

Enter VTBI

OR

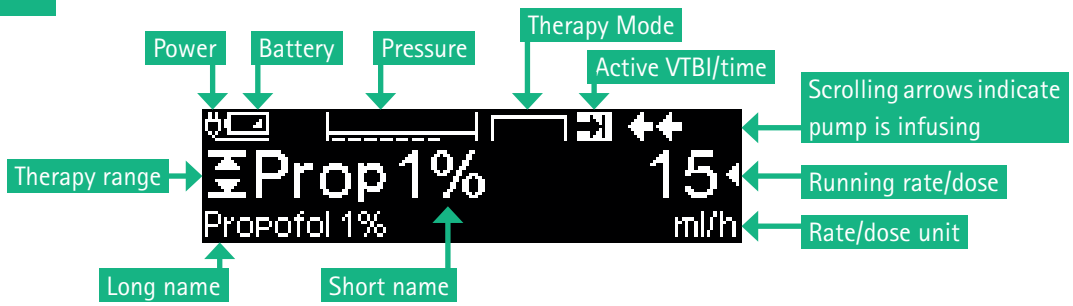
Enter time

=

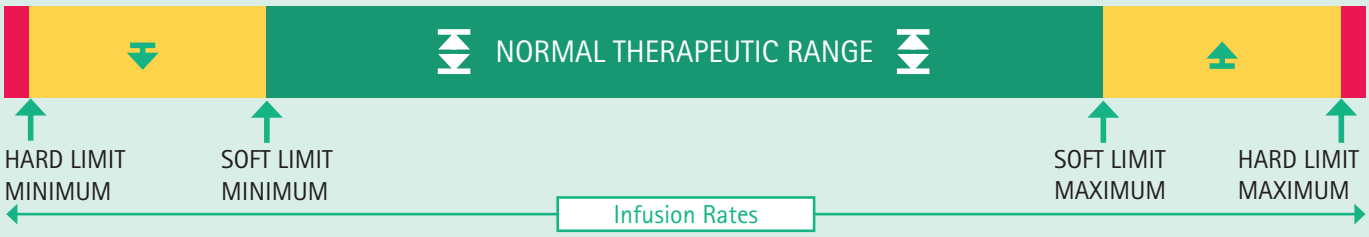


Once all fields are complete, commence infusion.

RUNNING DISPLAY

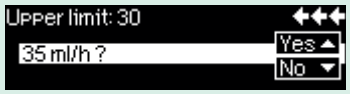


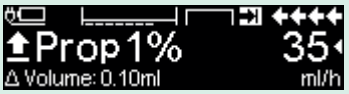
WHAT ARE SOFT AND HARD LIMITS, AND WHY ARE THEY IMPORTANT



HARD LIMITS: Rate changes that **exceed** the set hard limits will be rejected.

SOFT LIMITS: Rate changes that **exceed** the set soft limit will trigger an alert and require confirmation before continuing.





BOLUS FUNCTION

Understand why bolus feature is disabled for some drugs e.g. Insulin/NorAdrenaline.

Appreciate some drugs do have a bolus feature e.g. Fentanyl/Propofol and how to use this.

OTHER INFORMATION

Understand how to deal with requests for drug administration outside the parameters of the drug library. (Check with prescriber, and come out of the drug library selecting "No" to "use drug library" screen).

Feedback any problems with the drug library to your management e.g. a drug not available which may be useful, problems with limits.

COMPETENCY SELF ASSESSMENT

Very soon, your B. Braun infusion pumps will be uploaded with an additional feature known as DoseGuard. This will involve a small amount of training to help you understand the benefit and how to use the library effectively. Please work through the workbook, it will take you no longer than 30 minutes to complete. Your B. Braun trainer and Drugs Library Advocate (DLA) from the trust will be able to assist you with practical aspects.

SELF-ASSESSMENT OF COMPETENCE SHOULD BE MEASURED AGAINST THE FOLLOWING STATEMENTS:

These statements are designed to indicate competence to use this device. Responsibility for use with the user, so if you are in any doubt regarding your competence to use Space infusion devices or DoseGuard, you should seek education to bring about improvement. Various methods include, self-directed learning, coaching and if required, further formal training may be initiated.

Consider local resources; product operating manual; short instructions for use; medical devices ward file; the intranet; discussion with colleagues; medical device coordinators or the wards super user.

QUESTIONS TO ASK YOURSELF, CAN YOU:	SIGN:	DATE:
1. State the clinical application of DoseGuard		
2. Explain the safety checks and precautions to be taken prior to use		
3. Demonstrate the set-up and drug selection process (including a change of Care Unit where appropriate)		
4. Demonstrate the set-up process when a drug is set to run in 'Dose Rate Calculation' mode or when the drug concentration is underfined within the library		
5. Explain the difference between the drug 'Long Name' and 'Short Name'		
6. Demonstrate an understanding of the default values within the library (rate, concentration, volume, infusion time, pressure level)		
7. Explain the function of a 'Hard Limit' and a 'Soft Limit'		
8. Explain the information displayed on the screen whilst the pump is running		
9. Explain the meaning of the DoseGuard status symbols displayed whilst the pump is running		
10. Demonstrate and explain the information displayed on the screen when a breach of 'Hard Limit' or 'Soft Limit' is attempted		
11. Demonstate the correct way to end/change a prescribed infusion		

I certify that I am aware of my professional responsibility for continuing professional development and realise that I am accountable for my actions. With this in mind I make the following statement:

I am competent to use the DoseGuard software, and I am aware of the support material available to me.

PRINT: .....

SIGN: .....

DATE: .....

COMPETENCY ASSESSMENT

This form is to be completed by yourself and your Unit/Wards Super User (Cascade Trainer) during your assessment. The assessment is designed to establish that self competence has being achieved within your clinical practice.

The submission of personal or business data (e-mail addresses, names, addresses) is done on an explicitly voluntary basis. This data will not be transmitted to B. Braun Medical Ltd or any third party unless you explicitly indicate that this is your wish. The data collected will be stored in line with your NHS Trust policy.

If you have any further questions or queries then please do not hesitate to ask your B. Braun Education Link or your B. Braun Clinic Super User.

TRAINEES NAME: .....

SIGNED: ..... DATE: .....

ASSESSORS NAME: .....

SIGNED: ..... DATE: .....

This space is designed for your Trainer to note any action points, (if required) for further practice following your assessment.

Your Trainer may also set a date that you may be required to attend an annual update or complete a further self assessment.

REVIEW DATE	NOTES/TRAINING UPDATE REQUIRED:

References

1. Prevalence and Economic Burden of Medication Errors in the NHS in England. Elliott, RA., Camacho, E., Campbell, F., Jankovic, D., Martyn St James, M., Kaltenthaler, E., Wong, R., Sculpher, MJ., and Faria, R. 22 February 2018. http://www.eepru.org.uk/wp-content/uploads/2018/02/eepru-report-medication-error-feb-2018.pdf
2. Supporting Safer Medication: Reducing the Risk of Injectable Medicines, Chapter 5, Smart pumps - technology for patient safety (page 31 - 36), Upton DR., 2015, http://www.eprescribingtoolkit.com/wp-content/uploads/2013/11/Supporting-Safer-Medication.pdf
3. Standard drug concentrations and smart-pump technology reduce continuous-medication-infusion errors in pediatric patients. Larsen, GY., Parker, HB., Cash, J., O'Connell, M., Grant, MC. July 2005. http://pediatrics.aappublications.org/content/pediatrics/116/1/e21.full.pdf

B. Braun Medical Ltd | Thorncliffe Park | Sheffield | S35 2PW
Tel 0114 225 9000 | www.bbraun.co.uk

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