

# encapsulate

## Welcome to 'encapsulate'

Welcome to the twelfth edition of **encapsulate**. This issue addresses the importance of avoiding error-prone abbreviations in prescribing, a critical element of safe prescribing practices. We introduce Voluven<sup>®</sup>, an artificial colloidal plasma volume substitute recently listed on the PBS. This issue also revisits the topic of complementary and alternative medicines, which over 60% of Australians now take, creating greater risks of adverse reactions and interactions with prescription medications.

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## Error-prone abbreviations and safe prescribing

One of the key principles of safe medication prescribing involves the use of clear, unambiguous and non error prone abbreviations. Failure to observe this has been identified as a factor contributing towards administration errors by nursing staff and dispensing errors by pharmacists.<sup>1</sup>

Despite this, the recent medication chart audit conducted in October identified the use of ambiguous and error prone abbreviations as a potential problem. This exposes patients to the risk of a medication error, as an abbreviation used by a prescriber may mean something quite different to the person interpreting the prescription. Abbreviations may not only be misunderstood but can also be combined with other words or numerals to appear as something altogether unintended.<sup>2</sup>

There are a number of principles that may be used by prescribers to help make prescriptions

as accurate and clear as possible. These include:

- Use plain English – Avoid jargon
- Write in full – Avoid using abbreviation and write in full where possible, including avoiding the use of Latin abbreviations
- Print all text
- Use generic drug names
- Never abbreviate any drug name
- Do not use chemical names or symbols
- Avoid fractions
- Avoid using acronyms

A detailed list of error prone abbreviations and suggested alternatives has been included with this edition of Encapsulate to provide further guidance to prescribers. It is important that nursing staff and pharmacists are aware of error prone abbreviations, and ensure that they clarify the intent with the prescriber if they are unsure.

### References

1. JCAHO. *Sentinel Event Alert – Medication errors related to potentially dangerous abbreviations: Joint Commission on Accreditation of Healthcare Organisations, 2001.*
2. NSW TAG. *Recommendations for Terminology, Abbreviations and Symbols used in the Prescribing and Administration of Medicines: New South Wales Therapeutic Advisory Group, 2006.*

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## Voluven<sup>®</sup>

Voluven<sup>®</sup> (6% hydroxyethyl starch 130/0.4) is an artificial colloidal plasma volume substitute indicated for the treatment and prophylaxis of hypovolaemia. The product consists of hydroxyethyl starch molecules of varying sizes. As the smaller molecules are initially excreted by the kidneys, the larger molecules are metabolized into smaller ones, meaning that Voluven<sup>®</sup> is able maintain its volume expansion effect for 4-6 hours without leading to accumulation. The haemodynamic benefits of Voluven<sup>®</sup> include less intra-operative and post-operative hypotension, less oedema and post-operative complications and less post-

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operative nausea, vomiting and oedema related pain. Voluven<sup>®</sup> also results in less serious adverse effects such as anaphylaxis compared to animal based products.<sup>1-3</sup>

The dosage of Voluven<sup>®</sup> is dependent on the patient's blood loss, haemodilution and the maintenance or restoration of haemodynamics. An initial volume of 10 to 20mL should be infused slowly, to enable the patient to be monitored for adverse reactions. The maximum daily dose of Voluven<sup>®</sup> is 33mL/kg. Contraindications to the use of Voluven<sup>®</sup> include fluid overload, renal failure with oliguria or anuria, patients who receive dialysis, intracranial bleeding, severe hypernatraemia or hyperchloraemia, and a known hypersensitivity to hydroxyethyl starches.<sup>4</sup>

Voluven<sup>®</sup> has been used extensively overseas, in Europe, for many years and gained TGA approval in 2006. Voluven<sup>®</sup> was made available on the PBS from 1 December 2009.

#### References

1. Fenger-Eriksen, C., Rasmussen, H., Jensen, K., Anker-Moller, E., Heslop, J., Frokiaer, J., and Tonnesen, E. Renal effects of hypotensive anaesthesia in combination with acute normovolaemic haemodilution with hydroxyethyl starch130/0.4 or isotonic saline. *Acta Anaesthesiol Scand* 2005; 49: 969-974.
2. French, G.W.G., White, J.B., Howell, S.J., and Popat, M. Comparison of pentastarch and Hartmann's solution for volume pre-loading in spinal anaesthesia for elective Caesarean section. *Br J Anaesth* 1999; 83: 475-477.
3. Moretti, E.W., Roberston, K.M., El-Moalem, H., Gan, T.J. Intraoperative Colloid Administration Reduces Postoperative Nausea and Vomiting and Improves Postoperative Outcomes Compared with Crystalloid Administration. *Anesth Analg* 2003; 96: 611-617.
4. Approved Product Information. <http://www.mimsonline.com.au> [Accessed 17/11/2009].

## Complementary and alternative medicines within hospitals

The use of complementary and alternative medicines in hospitals was highlighted recently at the Australasian College for Emergency Medicine's Annual Scientific Meeting in Melbourne. According to Professor Mark Cohen of the Royal Melbourne Institute of Technology, over 60% of Australians take 'natural supplements' and approximately 40% consult with a complementary medicine practitioner, and the failure of hospitals to consider this can place patients at risk due to reduced access to therapy, adverse effects and interaction with prescription medications.<sup>1, 2</sup>

Some herbal, alternative and complementary medicines are known to interact with prescription medications, and it is important that these therapies are recognized by healthcare practitioners as clinically relevant. According to Professor Cohen, many surgical patients in Australian hospitals use alternative medications in the peri-operative period without informing, or being questioned by hospital staff, leading to the likelihood of under-reporting of adverse effects and interactions.<sup>1</sup> A thorough medication history should specifically include details about patients' use of alternative therapies so that the treating medical officer can make informed decisions about their therapy and to ensure accurate, timely and complete information is available about a patients use of medicines.

#### References

1. Australasian College for Emergency Medicine. Complementary medicine needs to be included in hospital-based care. <http://www.acem.org.au/infocentre.aspx?docId=57#d86> [Accessed 27/11/09]
2. Australasian College for Emergency Medicine. Drug-herb interactions. <http://www.acem.org.au/infocentre.aspx?docId=57#d86> [Accessed 27/11/09]

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## SAFE PRESCRIBING GUIDELINES - ERROR PRONE ABBREVIATIONS

Error Prone Abbreviation	Intended meaning	Why?	What should be used
o, 0, O	oral	Mistaken as number '0' causing 10-fold errors in dosing. Can also be mistaken as numbers '2', '6' and '8'.	oral
µg, mcg or ug	microgram	Mistaken as 'mg'	microgram
BID or bid	twice daily	Mistaken as 'tid' (three times a day)	bd
BT or bt	bedtime	Mistaken as 'bid' (twice daily)	bedtime
cc	cubic centimetres	Mistaken as 'u' (units)	mL
D/C	discharge or discontinue	Premature discontinuation of medications if discharge is intended	'discharge' or 'discontinue' as intended
E or e	eye or ear	Mistaken for 'ear' when 'eye' is intended, or for 'eye' when 'ear' is intended	'ear' of 'eye' as intended
gtt or gutte	drops	Latin abbreviation meaning 'drops' not universally understood	'drops' or 'eye drops' as intended
HS hs	half-strength bedtime, hours of sleep	Mistaken as bedtime Mistaken as half-strength	'half-strength' of 'bedtime' as intended
IJ, INJ	injection	Mistaken as 'IV' (intravenous) or 'intrajugular'	injection
IN	intranasal	Mistaken as 'IV' (intravenous) or 'IM' (intramuscular)	intranasal
IT	intrathecal	Mistaken as 'IV' intravenous	intrathecal
IU	international units	Mistaken as 'IV' (intravenous) or '10' (ten)	international units
m	morning	Mistaken as 'n' (night)	morning
n	night	Mistaken as 'm' (morning)	night
Oc or Occ	eye ointment	Mistaken for eye drops	eye ointment
mist	mixture	Latin abbreviation meaning 'mixture' not universally understood	mixture
o.d. or OD	once daily	Mistaken as 'right-eye' (OD – Ocular Dexter)	'daily' preferably specifying time of day e.g. 'morning', 'midday' or 'night'
OJ	orange juice	Mistaken as 'OD' or 'OS' (right or left eye); drugs meant to be diluted in orange juice may be given in the eye	orange juice

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Error Prone Abbreviation	Intended meaning	Why?	What should be used
OW	once a week	Not universally understood	'once a week' specifying which day
p/f	per fortnight	Not universally understood	'every two weeks' or 'per fortnight' specifying which date(s)
qd or QD	every day	Mistaken as 'QID' (four times a day) especially if the tail of the 'q' is mistaken as an 'i'	'daily' preferably specifying time of day e.g. 'morning', 'midday' or 'night'
pulv	powder	Latin abbreviation not universally understood	powder
Qhs	nightly at bedtime	Mistaken as 'qhr' (every hour)	'night' or 'daily at bedtime'
Qh	every hour	Mistaken for 'Qhs' (nightly at bedtime)	'hourly' or 'every hour'
QOD or qod	every other day	Mistaken as 'qd' (every day) or 'qid' (four times a day)	'every second day' or 'on alternate days'
Q6PM etc	every evening at 6pm	Mistaken as 'every six hours'	'6pm daily', 'every night at 6pm' or 'every day at 6pm'
SC or S/C	subcutaneous	Mistaken as 'SL' (sublingual)	subcutaneous
SL or S/L	sublingual	Mistaken as 'SC' (subcutaneous)	sublingual
Ss	sliding scale (insulin) or half (apothecary)	Mistaken as '55'	'sliding scale' or 'half' as intended
SSRI or SSI	sliding scale regular insulin or sliding scale insulin	Mistaken as 'selective serotonin reuptake inhibitor' Mistaken as strong solution of iodine (Lugols)	sliding scale insulin
TID	three times a day	Mistaken as 'BD' (twice daily)	tds
TIW	three times a week	Mistaken as 'TDS' (three times a day)	'three times a week' specifying which days e.g. 'on Mondays, Wednesdays and Fridays'
i/D	one daily	Mistaken as 'tid' (three times a day)	one daily
U or u	unit	Mistaken as the numbers '0' or '4' causing a 10-fold overdose or greater (e.g. 4U seen as '40' or 4U seen as '44'). Mistaken as 'cc' so dose given as volume instead of units (e.g. 4u seen as 4 cc)	unit
ung	ointment	Latin abbreviation not universally understood	ointment

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Error Prone Abbreviation	Intended meaning	Why?	What should be used
6/24 etc	every six hours	Mistaken as 'six time a day'	'every six hours', '6 hourly' or '6 hrly'
1/7	for one day	Mistaken as 'for one week'	for one day only
1/2	half	Mistaken as '1 or 2'	half
i, ii, iii, iv (roman numerals)	1, 2, 3, 4 etc	Mistaken for other abbreviations	1, 2, 3, 4 etc
Trailing zero after decimal place (e.g. 1.0mg)	1mg	Mistaken as 10 mg if decimal place not seen	Do not use trailing zeros for doses expressed in whole numbers
No leading zero before a decimal point (e.g. .5mg)	0.5mg	Mistaken as 5 mg if decimal place not seen	Use zero before a decimal place when the dose is less than a whole unit
Large doses without properly place commas (e.g. 100000 units)	100,000 units	100000 can be mistaken as 10000 or 1000000	For figures above 100, use words to express intent e.g. one hundred thousand units, otherwise use commas for dosing units at or above 1,000
10 <sup>6</sup>	one million	Not universally understood	Use 'one million' or '1,000,000'
X3d	for three days	Mistaken as '3 doses'	For three days
> or <	greater than or less than	Mistaken or used as the opposite of intended. '<10' mistaken as '40'	'greater than' or 'less than'
/ (slash mark)	Separates two doses of 'per'	Mistaken as the number '1'	'per' rather than a slash mark to separate doses
@	at	Mistaken as '2'	at
&	and	Mistaken as '2'	and
+	and	Mistaken as '4'	and
°	hour	Mistaken as zero e.g. q2° seen as q20	hour

Adapted from NSW TAG Recommendations for Terminology, Abbreviations and Symbols used in the Prescribing and Administration of Medicines (2006).