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Pharmaceutical Services Division, Ministry of Health Malaysia

Guideline On Syringe Labelling In Critical Care Areas

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GUIDELINE ON SYRINGE LABELLING IN CRITICAL CARE AREAS

Pharmaceutical Services Division Ministry of Health Malaysia

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GUIDELINE ON SYRINGE LABELLING IN CRITICAL CARE AREAS

BACKGROUND:

The quick administration of a wide variety of potent medications, often in high acuity situations and in environments with poor visibility and multiple distractions may contribute to medication errors. Therefore, consistency and clarity of syringe labelling are important elements in the prevention of medication errors as a result of look-alike-drugs, similarly coloured ampoules and frequent changes in use of various brands by different manufacturers.

Colour coding is the systematic standard application of colour to aid in the classification and identification of drug products. Under this system, medical personnel must apply the appropriate coloured labels to syringes containing the appropriate medication. The coloured labels are intended to provide visual cues so there will be a reduced risk of interclass drug error, that is to reduce the problem of accidental syringe swapping. A uniform colour coding will be a useful adjunct in identifying the specific drug use. However, **all medical personnel must read the labels of all drugs before they are administered.**

Thus, the Ministry of Health Malaysia has embarked on a colour coding system for user-applied syringe labels in critical care areas based on the Standard D 4774-94 by the American Society for Testing and Materials International (ASTM) and ISO 26825:2008 which is already used in North America, Australasia and United Kingdom. Hospital Kuala Lumpur has also adopted and adapted this system since 2009 in response to a few incidents of perioperative medication errors reported in 2008.

OBJECTIVE:

- 1. To standardise color coding for syringe labelling.
- 2. To prevent medication mix-ups, hence reduce drug administration errors.
- 3. To provide an easy-to-use classification, identification and differentiation system for syringes.

USERS:

This guideline applies to all healthcare providers who are involved in the management of critically ill patients. This includes personnel in the operating theatres, intensive care units (ICU), coronary care units (CCU) and other areas with critically ill patients.

WHEN TO USE:

These labels are for use when the medication is syringed out but not used immediately.

LABEL SPECIFICATIONS:

Label to be used in Accident & Emergency units and Operation Theatres (please refer Appendix 1):



Label to be used in other units with critically ill patients (please refer Appendix 2):



a) Drug name: Generic name as in MOH Drug Formulary

b) Drug Dilution / Concentration:

Dilution of drug shall be stated clearly by writing the amount of drug in mg, amount of diluent in mL and type of diluent as shown below:

Example:

 $\begin{array}{c} \textbf{Dilution:} \quad \underline{1} \\ \underline{(amount \ of \ drug)} \end{array} mg \ in \ \underline{250} \\ \underline{250} \\ \underline{250} \\ \underline{100} \\ \underline$

Final concentration shall be written as shown below:

Example:

(Conc.: <u>60</u> mcg/mL)

(please refer appendix to check units for respective drug) Units and symbols for concentration should be as below:

No.	Units	Symbols
i.	Milligram per millilitre	mg/mL
ii.	Microgram per millilitre	mcg/mL
iii.	Units per millilitre	unit/mL

c) Date and time of when the drug is prepared

d) Lettering:

- For drug name:
 - Lettering shall be in sentence case printed on upper part of label.
 - Background colour shall be used for maximum contrast.
 - Tall Man Lettering is used to distinguish look alike, sound alike medications from one another in order to avoid medication errors.
 - Font type : Arial
 - Font size: 10 point, Bold
- For others :
 - Font type : Arial Narrow
 - Font size : 8 point, Bold

e) Special labelling:

To denote a drug of **opposite action** or **antagonists** e.g. Neostigmine and Flumazenil, 1mm wide diagonal stripes of the designated colour, alternating with a 1mm wide white stripe is used. The stripes should run from lower left to upper right at approximately 45 degrees. The stripes should be omitted behind the drug name.

Example:

Flumazenil			
Dilution:	_ mg in	mL	
(Conc. : _		_mg/mL)	
Date :	Tim	e:	
Name :		R/N :	
Prepared by :	Che	ecked by :	

f) Prepared by and checked by:

Reconstituted medication must be counterchecked by different personnel. Initials of personnel shall be written on the space provided.

g) Size of label:

Recommended size:

- 1 cm (width) x 3 cm (length) for Accident & Emergency unit and Operation Theatre.
- 3 cm (width) x 5 cm (length) for other units with critically ill patients.

h) Type of material:

Quality of paper should enable the label to be written clearly.

i) Combination drugs:

Syringe labels for the following combination of drugs shall be prepared on a white background:

- i. Midazolam + Morphine
- ii. Midazolam + Fentanyl

Example:

Midazolam + Morphine			
Dilution:	_ mg in mL		
(Conc. : _	mg/mL)		
Date :	Time :		
Name :	R/N :		
Prepared by :	Checked by :		

PRECAUTIONS

The adoption of color coding system for pharmaceutical products should be done with great caution. Potential problems include:

- Color coding may offer a false sense of security and, in some instances, result in failure of the physician or other health professional to "**READ THE LABEL**".
- Color coding of drug classes can increase the chance of "intraclass" medication errors.
- It is not always possible to exactly reproduce the same colors from batch to batch or manufacturer to manufacturer.
- People with colour blindness may have some difficulty in identifying colours.

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APPENDIX 1

APPENDIX 1

LABELS TO BE USED IN ACCIDENT & EMERGENCY UNITS AND OPERATION THEATRES

No.	Drug Class	Colour	Examples
1.	Induction Agents	Process Yellow C (RGB 255.255.0)	(i) Propofol Propofol mg/mL (ii) Ketamine Ketamine mg/mL (iii) Thiopentone (iii) Thiopentone (iv) Thiopentone mg/mL (v) Etomidate (v) Dexmedetomidine Dexmedetomidine mg/mL
2.	Tranquilizers (Hypnotics)	Orange 151 (RGB 255.102.0)	(i) Diazepam Diazepam mg/mL (ii) Lorazepam Lorazepam mg/mL

No.	Drug Class	Colour	Examples
			(iii) Midazolam Midazolam _{mg/mL}
3.	Hypnotic antagonists	Orange 151 (RGB 255.102.0) with white diagonal stripes	(i) Flumazenil
4.	Muscle Relaxants	Fluorescent Red 805 (RGB 253.121.86)	(a) Depolarising (i) Suxamethonium Suxamethonium mg/mL (b) Non-depolarising (ii) Vecuronium VEcuronium mg/mL (iii) Atracurium mg/mL (iv) Pancuronium PANcuronium mg/mL (v) Rocuronium

No.	Drug Class	Colour	Examples
5.	Relaxant Antagonists	Fluorescent Red 805 (RGB 253.121.86) with white diagonal stripes	(i) Neostigmine
6.	Narcotics	Blue 297 (RGB 233.299.227)	(i) Morphine Morphine mg/mL (ii) Fentanyl Fentanyl mcg/mL (iii) Remifentanil Remifentanil mg/mL
7.	Narcotic Antagonists	Blue 297 (RGB 233.299.227) with White Diagonal Stripes	(i) Naloxone Naloxone mg/mL
8.	Anti- cholinergic Agents	Green 367 (RGB 163.217.99)	(i) Atropine Atropine mg/mL (ii) Glycopyrrolate Glycopyrrolate mcg/mL

No.	Drug Class	Colour	Examples
9.	Vasopressors &	Violet 256	(a) Vasopressors
	Inotropes	(RGB 222.191.217)	(i) Adrenaline
			Adrenaline
			mg/mL
			(ii) Noradrenaline
			Noradrenaline mg/mL
			(iii) Ephedrine
			Ephedrine mg/mL
			(iv) Phenylephrine
			Phenylephrine mg/mL
			(b) Instrongs
			(v) Dopamine
			DOPamine mg/mL
			(vi) Dobutamine
			DOBUTamine
			mg/mL
10	Hunotoncius	Violot 256	(i) Nitropruosido
10.	Agents	(RGB 222 191 217)	(i) Nitroprussiae
	Agents	with white diagonal	nitroPRUSSIDe
		stripes	mg/mL
		-	

No.	Drug Class	Colour	Examples
			(ii) Nitroglycerine
11.	Local Anesthetics	Grey 401 (RGB 194.184.171)	(i) Lignocaine LIGNOcaine mg/mL (ii) Bupivacaine BUPIvacaine mg/mL (iii) Ropivacaine ROPIvacaine mg/mL
12.	Combination drugs		(i) Midazolam + Morphine Midazolam + Morphine mg/mL (ii) Midazolam + Fentanyl Midazolam + Fentanyl mg/mL

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APPENDIX 2

APPENDIX 2

LABELS TO BE USED IN OTHER UNITS WITH CRITICALLY ILL PATIENTS

No.	Drug Class	Colour	Examples
1.	Induction Agents	Process Yellow C (RGB 255.255.0)	(i) Propofol
			Propofol Dilution: mg in mL (Conc.:mg/mL)
			Date: Time: Name: R/N: Prepared by: Checked by:
			(ii) Ketamine
			Ketamine Dilution:mg inmL
			Prepared by: Checked by:
			(iii) Thiopentone
			Thiopentone Dilution:mg inmL_ (Conc.:mg/mL) Date: Time: Name: R/N: Prepared by: Checked by:
			(iv) Etomidate
			Etomidate Dilution: mg in mL (Conc.:mg/mL) Date: Time:
			Name: R/N: Prepared by: Checked by:

No.	Drug Class	Colour	Examples	
			(V) De Dexme Dilutio (Cor Date: Name: Prepar	exmedetomidine n:mg inmL
2.	Tranquilizers (Hypnotics)	Orange 151 (RGB 255.102.0)	(i) Diazep Dilutio (Cor Date: Name: Prepar	azepam ammg inmL Icc.:mg/mL) Time: R/N: ed by: Checked by:
			(ii) Lo Loraze Dilutio (Cor Date: Name: Prepar	pam mL n:mg inmL mg/mL Time:
			(iii) Mi Midazo Dilutio (Cor Date: Name: Prepar	dazolam

No.	Drug Class	Colour	Examples
3.	Hypnotic antagonists	Orange 151 (RGB 255.102.0) with white diagonal stripes	(i) Flumazenil Flumazenil Dilution:mg inmL (Conc.:mg/mL) Date: Time: Name: R/N: Prepared by: Checked by:
4.		RGB 253.121.86)	(c) Depolarising (i) Suxamethonium Suxamethonium Dilution:mg inml Conc:mg/mL) Date: Time: Name: R/N: Prepared by: Checked by: (d) Non-depolarising (ii) Vecuronium Vecuronium Dilution:mg inmL (conc:mg/mL) Date: Time: Name: R/N: Prepared by: Checked by: (ii) Atracurium Dilution:mg inmL Date: Time: Name: R/N: Prepared by: Checked by:

No.	Drug Class	Colour	Examples
			(iv) Pancuronium PANcuronium Dilution:mg inmL
			ROcuronium Dilution:mg inmL_ (Conc.:mg/mL) Date: Time: Name: R/N: Prepared by: Checked by:
5.	Relaxant Antagonists	Fluorescent Red 805 (RGB 253.121.86) with white diagonal stripes	(i) Neostigmine NEostigmine Dilution: mg in Dilution: mg in (Conc.: mg/mL) Date: Time: Name: R/N: Prepared by: Checked by: (ii) Pyridostigmine Dilution: mg in mg/mL) Date: Time: Name: R/N: Name:
			Prepared by: Checked by:

No.	Drug Class	Colour	Examples
6.	Narcotics	Blue 297 (RGB 233.299.227)	(i) Morphine Morphine Dilution:mg inmL
7.	Narcotic Antagonists	Blue 297 (RGB 233.299.227) with White Diagonal Stripes	(i) Naloxone Naloxone Dilution:mg inmL

No.	Drug Class	Colour	Examples
8.	Anti- cholinergic Agents	Green 367 (RGB 163.217.99)	(i) Atropine Atropine Dilution:mg inmL
9.	Vasopressors & Inotropes	Violet 256 (RGB 222.191.217)	(i) Adrenaline

No.	Drug Class	Colour	Examples
			(iii) Ephedrine Ephedrine Dilution: mg in mL (Conc.:mg/mL) Date: Time: Name: R/N: Prepared by: Checked by:
			(iv) Phenylephrine Phenylephrine Dilution:mg inmL
			DOPamine Dilution:mg inmL
			(VI) DOBUtamine DOBUTamine Dilution:mg inmg/mL) Date: Time: Name: R/N: Prepared by: Checked by:

No.	Drug Class	Colour	Examples
10.	Hypotensive	Violet 256	(i) Nitroprusside
	Agents	(RGB 222.191.217)	
	-	with white diagonal	nitroPRUSSIDe
		stripes	
			(Conc.:mg/mL)
			Date: Time:
			Name: R/N:
			Prepared by: Checked by:
			(ii) Nitroglycerine
			nitroGLYCERINe
			Dilution: mg in mL
			(Conc.:mg/mL)
			Date: Time:
			Name: R/N:
			Prepared by: Checked by:
			(iii) Labetalol Labetalol Dilution:mg inmL
			Name: R/N: Prepared by: Checked by:
			(iv) Esmolol
			Dilution:mg inmL
			(Conc.:mg/mL)
			Date: Time:
			Name: R/N:
			Prepared by: Checked by:

No.	Drug Class	Colour	Examples
11.	Local Anesthetics	Grey 401 (RGB 194.184.171)	(i) Lignocaine
12.	Combination drugs		(i) Midazolam + Morphine Midazolam + Morphine Dilution:mg inmL (Conc.:mg/mL) Date: Time: Name: R/N: Prepared by: Checked by:

No.	Drug Class	Colour	Examples
			(ii) Midazolam + Fentanyl
			Midazolam + Fentanyl Dilution: mg in mL (Conc.:mg/mL)
			Name: R/N:
			Prepared by: Checked by:



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