TITLE: Labeling and Colour Coding of Medications: Patient Safety

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RESEARCH QUESTION:

What are the guidelines for labeling or colour coding of medications or devices used to administer medications to reduce the risk of medication errors?

METHODS:

A limited literature search was conducted on key health technology assessment resources, including PubMed, the Cochrane Library (Issue 4, 2008), University of York Centre for Reviews and Dissemination (CRD) databases, ECRI, EuroScan, international health technology agencies, and a focused Internet search. Results include articles published between 2003 and October 2008, and are limited to English language publications only. Filters were applied to limit the retrieval to systematic reviews, health technology assessments, meta-analyses, and randomized controlled trials. Internet links are provided, where available.

RESULTS:

The literature search identified one set of clinical practice guidelines. Additional articles of potential interest are included in the appendix.

Guidelines and recommendations

1. *Best practice guidance on labelling and packaging of medicines.* [MHRA guidance note no. 25]. London (UK): Medicines and Healthcare products Regulatory Agency (MHRA); 2003. Available: http://www.mhra.gov.uk/home/groups/comms-ic/documents/publication/con007554.pdf (accessed 2008 Oct 31).

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APPENDIX – FURTHER INFORMATION:

Clinical trials

2. Shah AN, Frush K, Luo X, Wears RL. Effect of an intervention standardization system on pediatric dosing and equipment size determination: a crossover trial involving simulated resuscitation events. *Arch Pediatr Adolesc Med* 2003;157(3):229-36. PubMed: PM12622671

Observational studies

3. Filik R, Purdy K, Gale A, Gerrett D. Labeling of medicines and patient safety: evaluating methods of reducing drug name confusion. *Hum Factors* 2006;48(1):39-47. PubMed: PM16696255

4. Haslam GM, Sims C, McIndoe AK, Saunders J, Lovell AT. High latent drug administration error rates associated with the introduction of the international colour coding syringe labelling system. *Eur J Anaesthesiol* 2006;23(2):165-8. PubMed: PM16426472

Review articles

5. Venkatraman R, Durai R. Errors in medicine administration: how can they be minimised? *J Perioper Pract* 2008;18(6):249-53. PubMed: PM18616203

6. Hellier E, Edworthy J, Derbyshire N, Costello A. Considering the impact of medicine label design characteristics on patient safety. *Ergonomics* 2006;49(5-6):617-30. PubMed: PM16717013

Additional references

7. Webster CS, Merry AF. Colour coding, drug administration error and the systems approach to safety. *Eur J Anaesthesiol* 2007;24(4):385-6. PubMed: PM17054811

8. Deboer S, Seaver M, Broselow J. Color coding to reduce errors. *Am J Nurs* 2005;105(8):68-71. PubMed: PM16062063

9. Rupp SM. Color-coding of syringes may not enhance safety. *Reg Anesth Pain Med* 2005;30(6):589-90. PubMed: PM16326347

10. Sagadai S, Umakanth P. Color-coded syringes to reduce the incidence of syringe swaps. *Reg Anesth Pain Med* 2005;30(6):589. PubMed: PM16326348

11. Sagadai S, Umakanth P. Colour coding prefilled syringes. *Anaesthesia* 2005;60(6):628. PubMed: PM15918847

12. Vidgeon S, Gallagher T. Labelling of prefilled syringes of emergency drugs. *Anaesthesia* 2005;60(7):723. PubMed: PM15960736

13. Bonnici F. Making insulin usage safer--the universal colour code. *S Afr Med J* 2004;94(5):343-4. PubMed: PM15211949

14. Rand CM, Conn KM, Crittenden CN, Halterman JS. Does a color-coded method for measuring acetaminophen doses reduce the likelihood of dosing error? *Arch Pediatr Adolesc Med* 2004;158(7):625-7. PubMed: PM15237060

15. Foster P. Drug syringe labelling. *Anaesthesia* 2003;58(1):99-100. PubMed: PM12492690

16. Sood D, Singh MR, Grewal A, Saini S, Singh I. Volume and colour coding for syringes. *Anaesthesia* 2003;58(3):290. PubMed: PM12603471

17. Kingsland J. Colour-coded cures. *New Sci* 2005;186(2503):42-7. PubMed: PM16178100

18. Loader J. Confusion relating to drug syringe labels. *Anaesthesia* 2004;59(1):98. PubMed: PM14687120

19. *The role of color coding in medication error reduction.* [Report 5 of the Council on Scientific Affairs (A-04)]. Chicago (IL): American Medial Assocation (AMA); 2004. Available: http://www.ama-assn.org/ama/pub/category/13662.html (accessed 2008 Oct 31).

20. *APA statement on the use of color coding.* Washinton (DC): American Psychological Association; 2005. Available: http://www.apa.org/ppo/issues/apacolorcoding.pdf (accessed 2008 Oct 31).

21. The Royal College of Anaesthetists, Association of Anaesthetists Great Britain and Ireland, The Faculty of Accident and Emergency Medicine, The Intensive Care Society. *Syringe labelling in critical care areas*. London (UK): Association of Anaesthetists Great Britain and Ireland; 2003. Available: http://www.aagbi.org/publications/guidelines/docs/syringelabels03.pdf (accessed 2008 Oct 31).
2004 update available: http://www.rcoa.ac.uk/docs/syringelabels(june).pdf (accessed 2008 Oct 31).

22. Shultz J, Harvie M, McDonald D, Manley J, Cole M. Standardizing the storage and labeling of medications: Part 1. *CJHP* 2007;60(2):123-5. Available: www.ismp-canada.org/download/cjhp0704.pdf (accessed 2008 Oct 31).

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