Labelling of injectable medicines, fluids and lines

Prepared by the CEC – Medication Safety Team

Adapted from the slide presentations developed by the Australian Commission for Safety and Quality in Health Care and Hunter New England LHD (Pru Clark)

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Labelling for Safety

• Labelling was introduced across Australia to improve patient safety (and it’s a world-wide issue)

• Major errors that forced this change were:
  – Delivery to wrong route (label the route)
  – Delivery of the wrong drug (label the container)
  – Delivery to the wrong patient (patient identifiers x 3)
  – Wrong amount, wrong strength (label the strength and concentration)
  – Oral solutions being given IV (use a specific oral/enteral syringe that cannot attach to a parenteral line)
Who developed the label set?

- NSW Therapeutic Advisory Group (TAG) commenced the work
- It was recognised as an Australia-wide issue
- Work was undertaken by the Australian Commission on Safety and Quality in Health Care (ACSQHC)
- Piloted across Australia in tertiary, metro’ and rural settings
- Checked with 13 peak professional health bodies

Label design and inclusions were based upon
- international literature
- Incidents, and
- AS4940: User-applied identification labels for use on fluid bags, syringes and drug administration lines.
Resources used to inform the presentation

- The Australian Commission for Safety and Quality in Health Care published the:
  1. *National recommendations for labelling of injectable medicines, fluids and lines (2nd Ed. February 2012)*
  2. *Explanatory Notes*
  3. *Frequently Asked Questions Fact Sheet*
  4. *Issues register*

Information in the Notes Pages refers to these items, please use the above as a reference source.

It is essential to refresh a saved browser address for the ACSQHC to ensure that you download the latest updates of these documents when visiting the site.
Labels are for drugs/fluids added to a container/receptacle/conduit; and for lines going into (out of) the patient!
A standard colour system is used to assist identification of the target tissue/intended route of administration*

<table>
<thead>
<tr>
<th>Target tissue</th>
<th>Route of administration</th>
<th>Colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intra-ARTERIAL</td>
<td>Intra-arterial</td>
<td>Red</td>
</tr>
<tr>
<td>IntraVENOUS</td>
<td>Intravenous</td>
<td>Blue</td>
</tr>
<tr>
<td>Neural tissue</td>
<td>Epidural / Intrathecal / Regional</td>
<td>Yellow</td>
</tr>
<tr>
<td>Subcutaneous tissue</td>
<td>Subcutaneous</td>
<td>Beige</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>Any other route not specified above</td>
<td>Pink</td>
</tr>
</tbody>
</table>

*Modified from Australian Standard AS4940
What should each container label include?

- Patient’s given name and family name
- The unique identifier (URN / MRN)
- DOB
- Each medicine:
  - Generic name
  - Amount of drug in units
  - Name of the diluent (fluid)
  - Total volume of fluid in the container (in mL)
  - Concentration (amount of drug/mL)
  - Date and time of preparation
  - Prepared by and checked by is signed appropriately

For IntraVENOUS Use Only

<table>
<thead>
<tr>
<th>Medicine</th>
<th>Amount (units)</th>
<th>Volume (mL)</th>
<th>Concentration (units/mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Prepared by: ____________________

Date: ____________________

Checked by: ____________________

Time: ____________________
Example of a miscellaneous label and an intravenous label

**Miscellaneous Label**

- **Patient:** Peter Smith
- **ID:** 123456
- **Medicine:** Olanzapine
- **Amount:** 10mg in 2mL
- **Concentration:** (5mg/mL)
- **Diluent:** Water for injection
- **Date:** 10/09/2010
- **Prepared by:** Sign 1
- **Time:** 19:00
- **Checked by:** Sign 2

**Intravenous Label**

- **Medicine:** Vancomycin
- **Amount:** 1000mg in 250mL
- **Concentration:** (4mg/mL)
- **Diluent:** 0.9% sodium chloride
- **Date:** 10/09/2010
- **Prepared by:** Sign 1
- **Time:** 16:00
- **Checked by:** Sign 2
Container Labels - Bag, bottle and syringe in large and small sizes.

Slide taken from the Hunter New England LHD educational resource for Labelling

CEC V1, 17 Aug 2012, update 9Oct2012
Special Order label

- Specialty areas may require this label, e.g. ICU and Radiology
- It is ONLY available as a “Special Order” from print companies
- It should only be stocked in areas where they are required
Identifying an additive in a bag of fluid

- Place labels on the FRONT of the bag
- Ensure visibility of the
  - name of base fluid
  - batch number
  - expiry date
  - volume gradations

Photo from HNE – LHD presentation ‘Label the injectable route’.
Burette labels for IntraVENOUS container and route

Photos: HNE LHD
How to place the container label on syringes

- Place label on the syringe - NOT the pump or device
- Ensure graduations on the syringe remain visible
- Apply parallel to the long axis of the syringe barrel, top edge flush with scale

- For smaller containers, the label may be ‘flagged’
- Maintain legibility when writing the label; it may need to be checked at handover and by the next shift
- Always label a flush (0.9% sodium chloride, aka ‘normal saline’) when drawn up in a syringe, unless you draw it up and give it as one uninterrupted process at the patient’s side

Photos and some text: HNE – LHD presentation 2012

0.9% Sodium chloride

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Potential to use a clear (Ophthalmic) label

- An ophthalmic label is a clear label with a long tail
- It is possible to place a container label under the large, clear body of the ophthalmic label
- The tail can then be wrapped around the container

Possible Uses:
- Use on small syringes where a large container label wouldn’t fit easily even if ‘flagged’.
- Use with a small syringe and a large container label to assist in identifying a number of medicines all in the one container, e.g. Palliative care
Rules for placing a label on a syringe

1. Prepare and label multiple syringes sequentially in independent operations (prepare one at a time and label the syringe before progressing to the next prep).

2. Label all injectable medicines drawn up in a syringe that leave your hand...IMMEDIATELY.

“Leaving the hand” means that you put down the syringe because you
- Are interrupted in completing this one task
- You travel to the patient to administer the medicine/liquid
- You place the drug down unlabelled and you are about to do something else

“Leaving the hand” does not include when you place the drug down in front of you (at the bedside) to perform hand hygiene, just prior to administration of the medicine/liquid. This is considered part of the one task of preparing the drug for administration.

Check:
1. Have I been interrupted?
2. Have I started a new task?
3. Am I travelling with the drug to then administer it? (Not at the patient’s direct bedside)

If yes to any of these, the syringe needs a container label. If you find an unlabelled syringe – it must be discarded.
Discarding Content

> Any unlabelled container holding a solution must be immediately discarded
> Any container, where there is doubt over content, must be discarded
> Any medicine remaining in the container at the end of a procedure must be discarded
Flush and bolus administration – repeat information

• Labelling is not required when
  – the preparation and bolus administration of a SINGLE medicine
  – is one uninterrupted process,
  – the syringe DOES NOT leave the hands of the person who prepared it
  – and that same person administers the medicine IMMEDIATELY.
Route labels – for naming lines and catheters

IntraVENOUS
Line change due

IntraVENOUS

IntraTHECAL
Catheter Inserted:
Date __ / __ / _____, Time __ : __

IntraTHECAL

Subcutaneous
Line change due

Subcutaneous

CENTRAL VENOUS
Line change due

CENTRAL VENOUS

EPIDURAL
Catheter Inserted:
Date __ / __ / _____, Time __ : __

EPIDURAL

Route

Route

Intra-ARTERIAL
Line change due

Intra-ARTERIAL

REGIONAL
Catheter Inserted:
Date __ / __ / _____, Time __ : __

REGIONAL

Medicine

Medicine

Medicine label for continuous, dedicated infusions
When to apply a medicine label to the line

> When running a dedicated, continuous infusion

> Lines for other infusions (e.g. intermittent) may be labelled for medicine content*

*Always ensure the label is removed on completion of infusion
Dispensers

Baypac - Metal

Stirling Fildes – Perspex single & double
1. **Injectable medicines drawn up in syringes for use during anaesthesia**

Medicines drawn up for anaesthesia must comply with AS/NZS 4375.

The anaesthetist can label a syringe with only the drug name and give it. He/she doesn’t need to label if they give the drug immediately (no travel, no interruption, no putting it down to do something else).

**NOTE:**

The Labelling Recommendations apply in the perioperative field when AS/NZS 4375 does not apply.

2. **Immediate emergency use**

Labelling during immediate emergency use can reduce error but labelling should not cause unnecessary delay.
EXEMPTIONS

3. **Medicine remains in the original container**
   When a medicine / fluid for injection is pharmacy or commercially prepared and in its original container, no added labelling is needed.

4. **Blood Product Labelling**
   Blood product labelling should be consistent with ANZSBT Guidelines for the Administration of Blood Components Oct 2004.

5. **Administration of liquid medicines by routes other than injection**
   Although the labelling principles are relevant to the enteral, rectal, intranasal and inhalational routes, the National Recommendations do not apply to these routes (however the ACSQHC is considering oral/enteral route labelling; stay tuned).
Perioperative environments
In an area where the patient has been identified and clinician signatures are logged:

- Such as the Operating Theatre, Angiography etc.
- The patient name and identifier are not required when:
  - a SINGLE patient is receiving an injectable medicine
  - there is NO POSSIBILITY that the identification of the patient is unknown, and
  - the medicine is prepared in the presence of the patient

This does not include recovery or ICU as there are/could be multiple patients present
Case report (unpublished):

- Pt tsf from ICU to OT with multiple infusions running
- Propofol, Actrapid, 0.9% sodium chloride, noradrenaline, morphine.
- Pt’s BP high, anaesthetist lowered the noradrenaline rate, then turned it off.
- 40 minutes into the case, the anaesthetist found that the pump labelled morphine had a bag of noradrenaline attached.
- So, no morphine running during the surgery AND the Pt received double the amount of noradrenaline.
- Labelling of the primary container (i.e. bag) rather than the pump would have prevented these errors.

Source
ACSQHC Explanatory Notes, User-applied Labelling Recommendations for Medicines, Fluids and Lines, page 6, August 2010
**Perioperative Labelling of Medicines and Fluids**

### Closed Practice Environment

**Label syringes** containing medicines used during anaesthesia for example:
- Morphine mg/mL
- Ephedrine mg/mL
- Ketamine mg/mL
- Atropine mg/mL
- Flumazenil mg/mL
- Suxamethonium mg/mL


**Label containers in the sterile field**
- Heparin 1000 units/mL
- 0.9% Sodium chloride
- Adrenaline 1000 microgram/mL
- Bupivacaine
- Morphine 10mg/mL

Use sterile labels and marker pens.

### Open Practice Environment

**Label all containers** (including syringes) containing medicines to continue beyond the operating room.

**Label lines** to identify route.

**Label lines** to identify medicine in a dedicated continuous infusion line, for example:
- Morphine
- Noradrenaline
Perioperative environments

Perioperative Area

• Where there is only one patient in the room and they have been formally identified, and
• Where the identity of clinicians is recorded on an operating room record or equivalent

THEN

• An abbreviated container label can be used, OR
• A pre-printed medicine label that includes units/mL
• The abbreviated container label/pre-printed medicine label is only for use in the perioperative area

ON TRANSFER to Recovery/ICU/Ward etc

• Ensure that all containers of medicines/fluids are labelled using the full container label (NOT the abbreviated container label or pre-printed medicine label)
• If continued use of a medicine/fluid is anticipated beyond the perioperative area, use a full container label.

ACSQHC, Explanatory Notes, page 15
Sterile Field

1. In the Operating Room

2. Where else?
Sterile field (i.e. aseptic conditions)

- Any container holding medicines or fluids on the sterile field must be identifiable.
- Sterile markers must be available for use in the sterile field.
- Select a sterile pre-printed medicine/fluid label, where available, OR
- Use an abbreviated container label (below) only intended for use when patient identification is established and other means of recording signatories are available (e.g. operating room checklist, angiography record sheet, etc).

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CEC V1, 17 Aug 2012, update 9Oct2012
National Recommendations for
User-applied Labelling of
Injectable Medicines,
Fluids and Lines*

Discussion

*To be read in conjunction with:
National Recommendations for User-applied Labelling of Injectable Medicines, Fluids and Lines, August 2010
Copyright – Australian Commission on Safety and Quality in Health Care 2010
So why are we doing this again?

Medication and IV fluid errors are No 2 in the IIMS notifications, with 11,171 reported from 1 January - 30 June 2010. 
Source: Clinical Incident Management in the NSW Public Health System: January-June 2010

Analysis highlighted that inadequate labelling of prepared injectable medicines and fluids was identified as a major RISK to patients.

When harm or death occurred, the patient, family, nurse and doctor are all affected.
Situation: Medication administration errors
Case Report

A patient was given lignocaine with adrenaline solution IV, when it was meant only for local anaesthetic infiltration.

This syringe had been drawn up and placed in a kidney dish alongside IV morphine and midazolam for procedural sedation.

(unpublished)

The following 8 slides were produced at the request of NSW-based Patient Safety Managers to help clinicians identify where labelling error might occur and how to avoid these errors.
What does ‘leaving your hands’ mean?

“All containers (bags/syringes) containing medicines or fluids must be labelled on leaving the hands of the person preparing the medicine” ACSQHC.

1. If you draw up the drug at the Patient’s bedside and put it down to do a different task – it has left your hand
2. If you make up the drug in the treatment room, (hold it or place it in a kidney dish) and walk to the Pt’s bedside - it has left your hand

The potential for interruption and deviation from the task of administering the drug is HIGH

IIMS and RCAs (DEATHS/major harm) HAVE resulted when an unexpected interruption occurred and an unlabelled drug was administered...INCORRECTLY

Q. Could this happen to you or to your patient / another patient?
Preparing IV medications away from the direct patient bedside

Scenario A process

• An EEN takes 3 med charts for the one patient into the treatment room
• He gathers the 3 x IV drugs that need to be given at 11.00hrs along with WFI x 3 to reconstitute the drugs and 3 x 10mL sterile 0.9% sodium chloride ampoules for flushing
• The RN meets him in the Tx room, checks the chart, drugs, WFI & 0.9% sodium chloride
• The EEN makes up the first drug, draws up the flush and goes to the Pt’s bedside.
• The pt’s ID is checked.

• Should the nurse give this medication?

NO, a container label needed to be placed on the drug syringe and a 0.9% sodium chloride label needed to be placed on the syringe for flush, and
(a) It wasn’t prepared at the bedside
(b) The nurse travelled with the drug, there is the POTENTIAL to put it down & for it to be given to the wrong pt

What else could have gone wrong? The drug/flush could be mixed up

NOTE: there are at least 41 discreet steps in this process
Preparing IV medications away from the direct patient bedside

**Scenario B process**
RN takes med chart for Pt 1 to the treatment room, obtains single IV AB (cefepime 1gram over 3-5mins) and WFI and sterile sodium chloride 0.9% flush.

EN checks the chart, drug, fluid, drug preparation and leaves

RN keeps IV cefepime syringe in kidney dish, N/Saline 10mL flush is in her other hand

Goes to the bedside, checks patient identity, ADEs, checks indication with patient and places flush and AB on the table. Cleans hands, administers the cefepime and then turns back, takes a 10mL syringe, thinking it is the flush and flushes the line

Has the fluid left her hands?? A little.... Could there have been a mix-up? I don’t think so.. But...

1. There could be another syringe at the bedside
2. Just that morning, the ward ran out of the orange and white oral/enteral syringes
3. The ‘other’ syringe could have ventolin in it, ready for nebulising
4. The nurse erroneously injects the ventolin instead of the sodium chloride flush.......
Clinical Scenario - Preparing parenteral medications away from the direct patient bedside

Scenario C - the process

A new graduate RN is preparing 3 x IV antibiotics for one of 8 patients: she had

1. Reviewed the 2 medication charts but missed checking the allergy status on the medication chart due to 2 interruptions
2. The Patient was alert but uncooperative and confused.
3. The RN prepared each medication separately, the EEN was not available but did check ampoules, med chart etc as they were set out by the RN
4. 3 x IV blue container labels were completed for the 3 IV antibiotics BUT not placed on the syringes as they were prepared. The nurse was unsure which IV antibiotic was which – did it really matter? They could all be given by IV push, couldn’t they???
5. Both nurses went to the patient’s bedside, checked the patient’s ID wristband and chart (there was no allergy band), checked the route label with the container label (both matched as intraVENOUS) and then gave the drugs.

**What are the possible issues?**
Clinical Scenario - Preparing parenteral medications at the Patient BEDSIDE

**Scenario D process**

RN cleans bedside table area, performs hand hygiene appropriately, reviews med chart and obtains 1 x IV antibiotic for IV push and a 10mL sterile sodium chloride 0.9% IV flush.

The drug, flush, med chart and the patient are all checked appropriately, including ADEs.

The nurse prepares the drug and then the flush, puts them down. Then picks up the IV AB and administers it. Then turns back, locates the 10mL flush syringe and gives it......BUT it wasn’t a 10mL sodium chloride flush – it was ...............????
Clinical Scenario - Preparing parenteral medications away from the direct patient bedside

**IDEAL Situation**

RN is preparing 2 x IV meds and 1 x IM med for one patient. The RN had
1. Received a comprehensive handover at the bedside
2. Reviewed the patient’s 2 medication charts and their ADE/allergy status
3. The Patient was able to participate, stating new IV cannula site was tender, not red, not leaking, not swollen. Old site is clean, dry, not red
4. 2<sup>nd</sup> independent med/fluid checks done by EEN
5. The RN prepared each medication separately and labelled each med as it was prepared.
6. Each IV flush was checked, then drawn up and labelled with the ‘0.9% sodium chloride flush’ label
7. Both nurses went to pt’s bedside, checked with the pt regarding due meds and allergy/ADR status, checked Pt’s ID wristband and the prescription, ensuring the IM med was for IM administration and that the IV meds could be given IV push, matched the IntraVENOUS container label with the labelled IntraVENOUS route.
8. Both IV drugs were flushed well after each administration.
SAFE it again SAM.... In conclusion

Why label a syringe? It’s left your hand and ....

1. You know what it is
2. You know who it is for
3. It’s been checked, twice
4. The right patient gets the right drug/fluid (matched)
5. You don’t harm anyone

When should I label a syringe?

1. If you are away from the patient’s bedside
2. If you get interrupted
3. If you put the medicine down to do another task
4. You have to travel to reach the patient

There are many IIMS (and RCAs) where a nurse/doctor prepared a syringe of drug and meant to give it immediately .....  
• BUT it left their hands/they were interrupted...
• The patient received a wrong drug and was harmed or died...
• Labelling helps prevent this.
> All medicines and fluids **added to or removed from** the manufacturer’s or hospital pharmacy’s original packaging must be identifiable using a container label.

> All lines and catheters for administering injectable medicines and fluids are labelled to identify the correct route of administration and are colour coded according to target tissue.

> All containers (e.g. bags and syringes) containing medicines must be labelled if
  – more than one medicine at a time is prepared
  – the container leaves the hands of the person preparing the medicine
  – the process of administration is interrupted to do a different task and is not administered immediately
  – travel occurs from preparation area to the patient

> Any medicine or fluid that cannot be identified should be considered unsafe and discarded.

**END MESSAGE**

*Use labels, they help prevent common errors that can hurt or kill patients.*