The Participation Project - Learning Guide for Disability Support Workers

# Get ready to assist clients with medication

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## Key learning outcomes

After completing the activities in this guide, the learner will be able to:

Read numerical information on medication documents

Understand how to measure medication accurately

Understand how to convert medication measurements

Understand a range of words used when preparing to administer and when administering medication

## Introduction

This guide provides Direct Support Workers (DSWs) with activities they can use to revise the core skills needed to successfully participate in the unit of competency, HLTHPS006 ‘Assist clients with medication’.

In this Guide the DSW will learn about:

Reading labels

Calculating dates and times

Calculating quantities

Measuring dosages

Storing medications at specific temperatures

Medications come in many different forms, including:

Tablets

Capsules

Wafers/melts, pastilles or lozenges

Liquids (oral)

Topical skin preparations

Eye and ear drops

Nasal drops/sprays

Inhalants

Transdermal patches

## Medication names

The DSW must always check the medication name on the packaging before beginning to prepare the medication. The packaging might be a box, blister pack, Webster Pak or other kind of packaging.

The medication name on the packaging must be exactly the same as the medication name on the Medication Administration Records (MAR) of the person the DSW is supporting.

Medication names can:

Be similar to the names of other medications

Change over time

Be hard to learn, but you will get used to them

The DSW will learn about common names and medication groups during the ‘Assist clients with medication’ program.

NPS MedicineWise - For more information on medications, including pronunciations, search the NPS MedicineWise website: [www.nps.org.au](file:///C%3A%5CUsers%5Ccath.ralston%5CDocuments%5C1.%20PROJECTS%5CCath%27s%20projects%5CResource%20Development%5CDRAFT%20Resources%5C4.%20Get%20Ready%20to%20Assist%20Clients%20with%20Medication%5Cwww.nps.org.au).

## Numbers on medication labels and documents

Numbers are everywhere on medication labels and documents. The following medication label and document include examples of information the DSW needs to read and interpret.

Activity

Work with your trainer to find the following numbers on a medication box.

Number of tablets

Batch number

Expiry date

Dosage

Age

Temperature

Pregnancy

Barcode

Activity

Work with your trainer to find the following numbers on a MAR.

Page … of …

Date of Birth

Dose

Frequency

Month

Time

Days (1–31)

Commencement Date

Cease Date

## Dates

Read dates

When administering medication we need to check quite a few dates:

Expiry date – the medication should not be used after this date

Date of birth – the person’s date of birth is written on the MAR,
Secure Dose Administration Aid (SDAA), among other relevant charts and documents

Date the medication was opened

Date the medication was started – when the person started taking
the medication

Date the medication is to cease – when the person should stop taking the medication

Date the medication was prescribed – when the doctor said that the person needs to take the medication

Date of administration – when the person actually took the medication

In Australia, the date is usually written with the day first, the month second and the year third.

day month year

For example, today is the ninth January 2016

In everyday life we can write dates in different ways, but the order is always the same.

9/1/2016 or 09/01/2016

9-1-2016 or 09-01-2016

9 Jan 16 or 9 Jan 2016

When recording dates about medications, we always use the format d/m/yyyy, for example, 9/1/2016**.**

Expiry dates might only be the month and year, for example, Jan 2016 or 01 2016. Medication expires at the end of the month.

Activity

Work with your trainer to find the expiry date on 2 medication packets.

Write dates

There are a number of reasons why a DSW might need to write the date on a person’s record or medication. Here are some possible reasons:

* The instructions or prescription state, “Only take this for up to …months”
* The instructions or prescription state, “Discard contents … days after opening”
* The medication label states, “vial in use must only be stored at room temperature (25°C) for a maximum of 30 days”

The date must be written in the same format as the examples in the previous section.

Calculate dates

The DSW might need to calculate a date so that they know when to:

* Reorder medication
* Throw away (discard) medication after opening
* Ensure medication is only stored at room temperature (25°C) for the correct amount of time
* Take an action, such as, repriming the pump twice if a spray has not been used for 2 days

One week equals 7 days. This includes: Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday

One fortnight equals 2 weeks. 1 fortnight equals 14 days. This includes Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday and another whole week the same.

One year equals 12 months, 1 year equals 52 weeks. 1 year equals 365 days.

January has 31 days

February has 28 days – but there are 29 days in February in leap years

March has 31 days

April has 30 days

May has 31 days

June has 30 days

July has 31 days

August has 31 days

September has 30 days

October has 31 days

November has 30 days

December has 31 days

Activity

Question 1 - The medication packaging states, “Only take this medication for up to 6 months”. It was first used on the 8th January 2016. By what date must the person stop taking the medication?

Question 2 - The medication states, “Discard contents 14 days after opening”. It was opened on 12 November 2016. By what date must the medication be discarded?

Question 3 - The medication states, “Vial in use can be stored up to room temperature (25° C) for a maximum of 30 days”. The vial has been stored in the medication cupboard since 27 November 2016. By what date must it be discarded?

Reminder

Date order can be confusing at times because in some other countries they write the month first and the day second. In Australia we usually write the day first and the month second.

## Time

When administering medication, there are many reasons that DSWs need to be able to accurately read the time. For example, when they need to:

* Administer medication at a specified time or interval
* Record what time a medication was administered on the MAR
* Offer the person their medication again after 15 minutes if they initially refused it

To avoid confusion between the time in the morning and afternoon/evening, 24-hour time is always used.

Read 24-hour time

One day and one night together have 24 hours. The day starts at midnight (00:00) and finishes at one minute before midnight (23:59). Digital clocks can be set to display 24 hour time. For example, 16:30. This means 16 hours and 30 minutes. The numbers tell us how many hours and minutes after midnight.

Table 1 Equivalent times on 24-hour clocks and 12-hour clocks

| 24-hour times | 12-hour times |
| --- | --- |
| 0100 hours | 1 o’clock a.m. |
| 0200 hours | 2 o’clock a.m. |
| 0300 hours | 3 o’clock a.m. |
| 0400 hours | 4 o’clock a.m. |
| 0500 hours | 5 o’clock a.m. |
| 0600 hours | 6 o’clock a.m. |
| 0700 hours | 7 o’clock a.m. |
| 0800 hours | 8 o’clock a.m. |
| 0900 hours | 9 o’clock a.m. |
| 1000 hours | 10 o’clock a.m. |
| 1100 hours | 11 o’clock a.m. |
| 1200 hours | 12 midday |
| 1300 hours | 1 o’clock p.m. |
| 1400 hours | 2 o’clock p.m. |
| 1500 hours | 3 o’clock p.m. |
| 1600 hours | 4 o’clock p.m. |
| 1700 hours | 5 o’clock p.m. |
| 1800 hours | 6 o’clock p.m. |
| 1900 hours | 7 o’clock p.m. |
| 2000 hours | 8 o’clock p.m. |
| 2100 hours | 9 o’clock p.m. |
| 2200 hours | 10 o’clock p.m. |
| 2300 hours | 11 o’clock p.m. |
| 2400 hours | 12 midnight |

Convert 12-hour time to 24-hour time

Medication charts and records are always written in 24-hour time. The DSW needs to know how to convert 12-hour time to 24-hour time if they have:

An analogue clock

A digital clock set to 12-hour time

Activity

Thinking about Table 1 (link back provided in 3 sentences). Notice that in the morning, the time is the same on 12-hour and 24-hour clocks.

A 24-hour clock doesn’t use the same numbers twice. It doesn’t restart after midday. It carries on from 12.

After midday we add the hours and minutes on to 12 (because midday is 12 hours after midnight).

Think about these things as you look back to Table 1 Equivalent times on 24-hour clocks and 12-hour clocks.

Table 2 Helpful ways to convert from 12-hour time to 24-hour time

| 12-hour clock | Calculation | 24-hour clock |
| --- | --- | --- |
| 9 o’clock in the morning (a.m.) | Same because it’s a.m. | 0900 hours |
| 4 o’clock in the afternoon (p.m.) | $$4+12=16$$ | 1600 hours |
| 11 o’clock in the evening (p.m.) | $$11+12=23$$ | 2300 hours |
| 10:20 p.m. | $$10:20+12=22:20$$ | 2220 hours  |
| 6:30 a.m. | Same because it’s a.m. | 0630 hours |

Activity

For each of the following 12-hour times, tell your trainer the 24-hour time. Also, explain to them how you calculated the 24-hour time.

* 9 o’clock in the evening
* 1:30 p.m.
* 6 o’clock in the morning
* 3:45 p.m.
* 6:30 a.m.

Work out when to take medication

When a person is prescribed PRN (pro re nata) medication, the DSW might need to calculate what time the next dose needs to be taken.

Time for the next dose = Time the previous dose was administered + number of hours between doses

Step 1. Record the time of the previous dose

Step 2. Add the number of hours between doses to the time of the administered dose

Table 3 A person needs paracetamol every 6 hours. They had their first dose at 0600 hours. This table explains how to calculate the times for follow-up doses.

| Dose | Calculation | Time of dose 24-hour form | Time of dose 12-hour form |
| --- | --- | --- | --- |
| First dose |  | 0600 hours | 6 a.m. |
| Second dose  | 0600 hours + 6 hours | 1200 hours | 12 noon |
| Third dose | 1200 hours + 6 hours | 1800 hours | 6 p.m. |
| Fourth dose | 1800 hours + 6 hours | 2400 ouhrs | 12 midnight |

Activity

Question 1. The person had their tablet at 2 p.m. and they need to have a tablet every 4 hours. What time do they need the next tablet? How do you say this in 24-hour time?

Question 2. A person refused their medication at 8.30 a.m., and they need to have it as soon as possible. The workplace policy says to wait for 15 minutes before offering the medication again. What time can the DSW offer the medication? How do you say this in 24-hour time?

## Measure medication

It is critical that DSWs administer the correct dose of medication because:

An overdose can have very dangerous side effects

An underdose probably won’t provide effective treatment for the person’s condition

Units of measurement

Medications are dispensed and administered in many different units of measurement.

Table 4 Units of measurement, their abbreviations and what they measure

| Name | Abbreviation | What it measures |
| --- | --- | --- |
| Grams | g | Weight |
| Milligrams | mg | Weight |
| Micrograms | mcg | Weight |
| Litres | l or L | Volume |
| Millilitres | ml or mL | Volume |

Liquid measurements

When we measure liquid, we usually measure its volume. We often think of volume measuring sound, but we also use the same word to measure the space in a container. Volume tells us how much space the liquid takes up. Volume is commonly measured in millilitres or litres.

There is a range of measuring tools a DSW can use to measure medication accurately. Where possible, select a measuring tool that uses the same units of measurement as the medication label or chart.

Some measuring tools look very similar, but have different units of measurement, for example, there are both 1 ml and 10 ml syringes and they look similar.

Always check the unit of measurement before pouring the medication.

The same amount of liquid can look different depending on the shape of measuring tools.

It is important to measure liquid medication accurately so that you give the correct dose. Always use a dosing spoon rather than a regular teaspoon because regular teaspoons are not all the same size.

Activity

Work with your trainer to measure different volumes using a range of measuring tools, for example, a dosing cup, a dosing spoon and a dosing syringe. Note - Always check the measurement at eye level and with the measuring tool held flat or on a flat surface for the most accurate reading.

Convert measurements

If a medication is not dispensed in the dosage required, the DSW needs to use numeracy skills to calculate and convert measurements to answer questions such as:

How many tablets does the person need?

How much liquid needs to be poured into the measuring cup?

Is the dose correct but written in a different unit of measurement?

A conversion chart can help to calculate the correct dose of medication.

Table 5 Conversion chart

| Initial measurement | Abbreviation | Equivalent amount | Abbreviation | What it measures |
| --- | --- | --- | --- | --- |
| 1 gram | g | 1000 milligrams | Mg | Weight |
| 1 milligram | mg | 1000 micrograms | Mcg | Weight |
| 1 litre | l | 1000 millilitres | ml | Volume |

Example of converting measurements. A person takes 1 gram of paracetamol each day. From the packet we know that each tablet is 500 milligrams.

Step 1. Convert grams to milligrams.

1 gram = 1000 milligrams

Step 2. How many tablets make 1000 milligrams? $500+500=1000$ or $1000÷2-500$

Therefore the person needs to have 2 tablets each day.

About decimals

A decimal number can be used to show a measure of medication when the unit of measurement is less than 1. A decimal number is part of a whole number.

Understanding a decimal number can help the DSW to convert measurements.

Whole numbers contain digits that are greater than zero. They come before the decimal point. A decimal point separates whole numbers from decimals.

Decimal numbers contain digits that have a value less than one. They start from tenths.

For example, let’s think about the number 265.239

The 2 represents hundreds

The 6 represents tens

The 5 represents units

Then there is the decimal point, which separates the whole numbers from the numbers that are less than 1.

The 2 represents tenths

The 3 represents hundredths

The 9 represents thousandths

When converting measurements, sometimes it is useful to imagine there is a decimal point and some zeros after a whole number.

For example, 1 gram can also be written as 1.0 gram or 1.000 gram. 1000 milligrams can also be written as 1000.0 milligrams.

Note - When recording medication, always include a zero in front of the decimal point, if the measurement is less than 1. For example, 0.1 milligrams, 0 .5 grams, 0.05 litres

Converting measurements using decimals

From larger measurements to smaller measurements

To convert grams to milligrams, multiply by 1000. For example, 1.0 gram multiplied 1000 equals 1000.0 milligrams

To convert milligrams to micrograms, multiply by 1000. For example, 2.5 milligrams multiplied by 1000 equals 2500 micrograms

From smaller measurements to larger measurements

To convert micrograms to milligrams, divide by 1000. For example, 37 micrograms divided by 1000 equals 0.037 milligrams

To convert milligrams to grams, divide by 1000. For example, 2000.0 milligrams divided by 1000 equals 2.0 grams

Putting this all into practice. To work out what to do, you need to ask yourself 3 questions.

Question 1 What dosage of the medication does the person need?

Question2 Do the tablets or capsules have the same unit of measurement as listed on the person’s MAR? If the answer is yes, then go to question 3. If the answer is no, then convert the total dose needed to the same unit of measurement as the tablets or capsules, and then go to question 3.

Question 3 How many tablets are needed? Work this out by dividing the total dose by the dose of one tablet

Example 1

The DSW needs to administer 150 milligrams and each tablet is 50 milligrams.

Answer to question 1 - The dosage is 150 milligrams

Answer to question 2 - The measurements are in the same unit

Answer to question 3 – The number of tablets is 150 divided by 50, which equals 3.

Therefore, the person needs 3 tablets.

Example 2

The DSW needs to administer 1 gram, and each tablet is 500 milligrams.

Answer to question 1 - The dosage is 1 gram

Answer to question 2 - The measurements are in different units, so we need to convert milligrams to grams. 500 divided by 1000 = 0.5 grams

Answer to question 3 – The number of tablets is 1 divided by 0.5, which equals 2

Therefore, the person needs 2 tablets.

Reminder about fractions and percentages

What is the difference between 1 and one tenth?

1 is a whole. This can also be written as $1/1$ or $10/10$ or 100%

One tenth is written as $1/10$. This is the same as 10%

Liquid medications

Liquid medication can be measured in both weight and volume.

* The total amount of liquid is expressed as a volume; millilitres or litres
* Ingredients are expressed as a weight; micrograms, milligrams or grams

Activity

Work with your trainer to use some different sized measuring tools to measure liquid medications. This can include different sized syringes and dosing cups.

Activity

Work with your trainer to look at some liquid medications. Firstly, read the volume of liquid in each. Next, read the weight of each ingredient listed.

## Ratios

DSWs need to be able to read and calculate ratios. They might use these skills to:

Dilute medication according to dosage instructions

Help to monitor a person’s medication usage

A ratio represents a relationship between two numbers. For example, when you make a glass of cordial you might use 100 millilitres of cordial to 400 millilitres of water. We can say the ratio of cordial to water is $100∶400$.

In the example below, the ratios represent the number of preventers used in relation to the number of relievers.

For example, a DSW is asked to monitor the ratio of preventer medication to reliever medication used by the person they support during one month.

If the person uses:

1 preventer medication and 1 reliever medication for the month - the ratio is $1∶1$ (1 preventer to 1 reliever)

12 preventer medications and 3 reliever medications for the month - the ratio is
$12∶3$ (12 preventer to 3 reliever)

Convert the ratio to the simplest form

We simplify ratios to find the smallest numbers possible that still represent the same relationship between the numbers. When we do this, the numbers on both sides of the ratio must be whole numbers, that is, not fractions or decimals.

Step 1 Divide both numbers by the smaller number. If you get a whole number answer on both sides, the ratio is simplified. You don’t need to do step 2.

Think about the cordial example. $100÷100=1$ and $400÷100=4$. The simplified ratio is $1∶4$

If you don’t get a whole number answer on both sides, you need to do step 2.

Step 2 Firstly, dind the highest common divisor. This is the largest number that both numbers in the ratio can be divided by and leaves you with a whole number on both sides. Next, divide each number by the highest common divisor.

Hint - To find the highest common divisor, half the smaller number. Then:

* If it’s a whole number, see if it goes into the larger number.
* If it does, then this is the highest common divisor.
* If not, try using the next whole number down; does it go into both numbers?
* If not, keep subtracting 1 until you find it.

Let’s practice converting a ratio to the simplest form.

Simplify the ratio $12∶9$.

Step 1 $12÷9 = 1.33$ This is not a whole number

Step 2 The highest common divisor is 3

 $12÷3=4 $ and $9÷3=3$

The simplified ratio is $4∶3$

Activity

Simplify the following ratios.

Question 1 We have 16 participants to 4 support workers. What is the simplified ratio of participants to support workers?

Question 2 A person uses 20 preventer medications and 8 reliever medications. What is the simplified ratio of preventer to reliever?

## Temperature

In Australia, temperature is measured in degrees Celsius. The symbol for this is °C.

A healthy body temperature is approximately 36.5°C

Water freezes at 0°C and boils at 100°C

Air-conditioned buildings in Australia are usually between 20°C and 24°C

Some medications need to be stored at, above or below a specified temperature. For example, a label might say:

Store medication at room temperature (between 15°C and 30°C)

Keep the blister pack of tablets in a cool dry place where the temperature stays below 25°C

Keep the bottle of tablets in a cool dry place where the temperature stays below 30°C

Activity

Use a thermometer to measure and record the temperature of:

The air in a fridge

The air in an office

Cold tap water

Hot tap water

The air outside

Activity

Work with your trainer to look at some medication packages. Find out what temperatures these medications need to be stored below.

## Practice activities

Activity 1

Work with your trainer to read a Difenac label and answer the questions.

What is the expiry date?

How many tablets can an adult have for the first dose?

How often can an adult have a Difenac tablet?

What is the maximum number of tablets an adult can have in 24 hours?

How old must a child be to safely take Difenac?

Can a woman who is 8 months pregnant safely take Difenac?

What temperature should Difenac be stored below?

How much diclofenac potassium is in each tablet?

Activity 2

Work with your trainer to read a Nasonex label and answer the questions.

How many sprays are in the bottle?

How much liquid is in the bottle?

What is the expiry date?

How many sprays can an adult have each dose in each nostril?

How often can an adult have a dose of Nasonex?

How old must a child be to safely use Nasonex?

What temperature should Nasonex be stored below?

How much mometasone furoate is there in each spray?

Activity 3

Work with your trainer to read a Actilax Mixture label and answer the questions.

What date was the medication dispensed?

How many millilitres (ml) are in each dose?

How much did the Actilax Mixture cost?

How many grams of active ingredient are in each millilitre?

How much liquid mixture does each bottle hold?

How many bottles are there in the box?

What is the Pharmacy Script number?

What does Nil Rpt mean?

Activity 4

Work with your trainer to read a Valproate label and answer the questions.

What date was the medication dispensed?

How many milligrams are in each dose?

How much did the Valproate cost?

How many tablets are there in each box?

What is the Pharmacy Script number?

How many more times can the pharmacy dispense the medication on this prescription?

Activity 5

Work with your trainer to read a MAR and the medication labels listed on it. Then answer the questions.

What is the person’s date of birth?

What is the start date of the treatment period?

What is the end date of the treatment period?

What time should the person have their medication in the morning on 08/08/2016?

What time should the person have their medication applied in the middle of the day on 03/08/2016?

What time should the person have their last medication on 18/08/2016?

How many milligrams of fexofenadine hydrochloride are there in each Telfast tablet?

How much triamcinolone acetonide is in the Tricortone cream?

Activity 6

Work with your trainer to read a Webster pak and answer the questions.

What date was the person’s photo taken?

What is the expiry date of the Webster pak?

What date was the Webster pak issued on?

What time does the person have Apo-Rabeprzle?

How often does the person have Oroxine?

How many micrograms of active ingredient does each Oroxine tablet contain?

Activity 7

Work with your trainer to read a Tea Tree Antiseptic cream label and answer the questions.

How much cream does the tube of medication hold?

How many milligrams of Melaleuca Oil are there in each gram of cream?

## Glossary

| Term or acronym | Meaning |
| --- | --- |
| a.m. | Morning (between midnight and 12 midday) |
| b.d. | Two times a day |
| B/N | Batch number |
| DoB | Date of birth |
| Exp | Expiry date |
| Expiry date | After this date the medication can’t be used |
| i | One (1) dose/tablet |
| ii | Two (2) doses/tablets |
| mane  | To be taken in the morning |
| MAR  | Medication Administration Record |
| nocte | To be taken at night |
| p.m. | afternoon and evening (between12 midday and midnight) |
| PRN | Pro re nata - As needed |
| q.d.s | Four (4) times a day |
| q.i.d. | Four (4) times a day |
| S2 – S8 | Schedule 2 – Schedule 8National classification system for medicines and poisons |
| S4 | Schedule 4 medication, prescription valid for 12 months |
| S8 | Schedule 8 medication, prescription valid for 6 months |
| SDAA | Secure Dose Administration Aid, for example, blister packs, sachets –Webster-paks, MedicoPaks, DoseAids |
| Stat | Immediately/once only |
| t.d.s. | Three (3) times a day |
| t.i.d. | Three (3) times a day |
| Transdermal | Medication that is applied to the skin |

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