REGIONAL LOCAL HEALTH NETWORKS

Protocol (clinical)

Title: Treatment of hypoglycaemia in people with diabetes in residential aged care

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RMC LHN Aged Care Cabinet Governance Committee on: 23/06/2021
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Next review due: 24/11/2024

Summary This protocol outlines responsibilities and actions required by nurses and midwives to ensure the safety and quality of patient care.

Policy/procedure reference This protocol supports the SA Health Recognising and Responding to Clinical Deterioration Policy Directive, Controlled Substances Act 1984, SA Health Directive: High Risk Medicines Management.

Keywords Clinical, protocol, LHN emergency care

Document history Is this a new LHN protocol? **Y**
Does this protocol *amend or update* an existing protocol? **N**
Does this protocol *replace* an existing protocol **N**

Applies to This protocol applies to all residential and aged care medical, nursing, midwifery and aged care worker staff.

Objective file number 2021-08296

Version control and change history

Version	Date	Amendment	Amended by:
1.0	24/11/2021	Original version	Jane Giles, Advanced Nurse Consultant Rural Support Service - Diabetes Service

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Government of South Australia
SA Health

Regional Local Health Networks
Flowchart

Treatment of hypoglycaemia in residential aged care

Indications: Blood glucose (BG) less than 6.0mmol/L OR below the resident's BG target range **irrespective** of symptoms (see Leecare Diabetes Management Plan or Resident's Care Plan).
Residents with diabetes: at risk of hypoglycaemia (e.g. prescribed insulin and/or sulfonylurea).

A

Safe to swallow (i.e. awake and co-operative)

If using insulin pump, only disconnect if BG less than 2.0mmol/L.

GO TO B

Unconscious or unsafe to swallow

- Position resident on their side. If using an insulin pump - **disconnect** immediately.
- Do not leave the resident. Request assistance and notify registered nurse.
- Registered nurse to **NOTIFY** doctor on call immediately (i.e. CODE BLUE). **If no registered nurse or local doctor available, aged care staff to transfer resident to the emergency department OR call an ambulance.**
- Registered nurse to give 1mg glucagon IM (as prescribed or as standing drug order, once only).
- Manage airway whilst facilitating transfer via ambulance.

When conscious and safe to swallow, GO TO B

B

Give 15gm of fast acting carbohydrate as per individual Hypoglycaemia Action Plan based on special dietary requirements*

OR

60mL GTT 75® glucose drink (75gm per 300mL) from the regional LHN 'Hypo Kit'.

GO TO C

C

- Repeat BG 10 - 15 minutes after treatment.
- If BG is less than 6.0mmol/L OR lower than individualised target OR person still has symptoms and is assessed as:-
  - safe to swallow - **GO BACK TO B** and repeat
  - if BG remains less than 6.0mmol/L after 30 minutes or 2 oral cycles, registered nurse in-charge to NOTIFY doctor on call immediately (i.e. CODE BLUE). **If no registered nurse or local doctor available, transfer to emergency department OR call an ambulance.**
  - if unsafe to swallow - **GO BACK TO A.**
- When BG is above 6.0mmol/L **AND** symptoms are no longer present, give 15gm slow acting carbohydrate as per individual Hypoglycaemia Action Plan based on dietary requirements OR two (2) sweet biscuits from the regional LHN 'Hypo Kit'.
- Recheck BG in 30 minutes.

GO TO D

D

- If the Doctor was not notified, do so at appropriate time so diabetes treatment can be reviewed.
- **Recommence insulin pump as per medical instructions** (in type 1 diabetes, do not suspend/withhold insulin for more than 1 hour).
- Investigate cause of hypoglycaemia. Review carbohydrate intake. May need adjustment of insulin/diabetes medication.
- Continue to **administer insulin as prescribed**, withholding the next insulin dose may result in hyperglycaemia. Contact doctor for dose adjustment advice.
- Risk of recurrent hypoglycaemia - **undertake QID BG monitoring and include 0200 for first 24hrs.▲**
- If BG remains above 6.0mmol/L after first 24hours, resume routine BG monitoring.

***Alternatives for individual or regional LHN Hypo Kit** are dependent on resident's capacity to swallow and dietary requirements (e.g. texture-modified food, thickened fluids).

Fast acting carbohydrate

- 150mL fruit Juice **OR** 180mL regular (not diet) soft drink **OR** 6 - 7 jelly beans.

Slow acting carbohydrate

- 1 slice of bread **OR** 1 piece of fruit **OR** 100mL of puree fruit **OR** 6 Jatz crackers.

Important points - observe pulse and BP with event

- Ensure adequate carbohydrate with meals to replenish the liver glucose stores.
- ▲If hypoglycaemia event was severe (e.g. BG less than 2.0mmol/L, unconscious or resident is assessed as unsafe to swallow) or was prolonged (greater than 45 minutes), the resident should be transferred to the emergency department (via ambulance if required) for further assessment.
- Restock the individual or regional LHN Hypo Kit used - discard all opened items.

1. Purpose and scope of use

This Protocol outlines the requirements for the management of hypoglycaemia in regional local health network (LHN) residential aged care (RAC) services. The protocol supports the attached 'Treatment of hypoglycaemia in people with diabetes in residential aged care' protocol.

The protocol aims to support the mechanisms that enhance and protect individual resident's human rights, decision making, choice and control, safety and wellbeing, citizenship and quality of life. The Supported Decision-Making in Aged Care – A Policy Development Guideline for Aged Care Providers in Australia provides further information on duty of care and dignity of risk.

It is the responsibility of nursing directors and senior nurses to ensure that all nursing staff are aware of this protocol and their responsibilities within it.

Credentialled diabetes educators, diabetes educators and diabetes link nurses will be responsible for informing directors of nursing, clinical service coordinators and general nursing and medical staff of any relevant changes in practice.

Registered nurses and midwives, enrolled nurses, student nurses, midwives and allied health staff are responsible for ensuring they are familiar with the protocol.

Individual staff members involved in the hypoglycaemia event are responsible for management, notification of the doctor, documentation and restocking of the hypo kit.

This protocol is not appropriate for residents who do not have diabetes and who present with hypoglycaemia from other causes. Seek specialist medical advice for residents without known diabetes.

Definition

The definition of hypoglycaemia should be tailored to the individual by their general practitioner, medical specialist, endocrinologist and/or credentialled diabetes educator.

The National Diabetes Services Scheme; Diabetes management in aged care: a practical handbook offers the definition of hypoglycaemia in RAC residents with diabetes who are treated with insulin and/or sulfonylureas, as a **blood glucose (BG) less than 6.0mmol/L irrespective of symptoms.**

Management aims for older people with diabetes living in RAC are not the same as those for many other older people with diabetes. The management aims are to:

- maintain the resident's quality of life
- avoid hypoglycaemia
- avoid hyperglycaemia
- support the resident to participate and manage parts of their day to day care
- facilitate the resident to access other preventative health care measures.

For older people with diabetes living in RAC, hypoglycaemia can have **catastrophic results,** such as:

- increase risk of heart attack and stroke-like symptoms
- increase the risk of falls and fractures
- hypothermia (if episodes are prolonged in cold weather)
- affect in cognitive function (including short-term memory)
- and reduction in quality of life.

Hypoglycaemia is a potentially life threatening emergency that requires immediate and appropriate treatment. All preventative strategies should be actioned to minimise the risk of hypoglycaemia.

Who is at risk?

Residents with diabetes who are treated with sulfonylureas or insulin are at risk of hypoglycaemia (low blood glucose).

Sulfonyureas are oral diabetes medications and their mode of action is to stimulate endogenous insulin secretion. The table below lists the generic and brand names of sulfonyureas available in Australia.

Generic Names	Brand Names
Glibenclamide	Daonil
Glibenclamide with Metfomin *(fixed-dose combination)*	Glucovance
Gliclazide	Glyade, Diamicron, Nidem
Glimepiride	Amaryl, Dimirel, Diapride
Glipizide	Minidiab

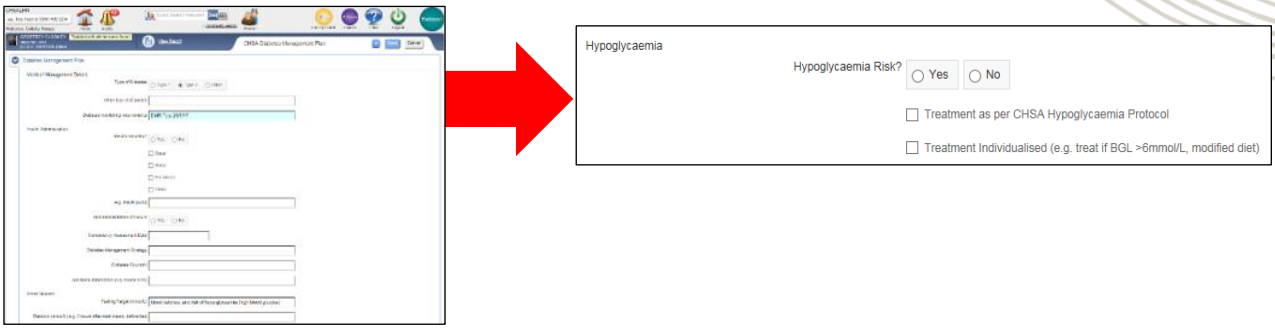
In RAC, all insulin's are administered via subcutaneous injection only. The mode of action of insulin is to increase/restore the resident's ability to metabolise glucose to keep his/her blood glucose in their target range. Insulin profiles vary in strength and duration of action.

Residents with diabetes who are not treated with sulfonylureas or insulin but are prescribed other oral diabetes medication or injectables, are NOT at risk of hypoglycaemia (low blood glucose).

Leecare Assessment and Diabetes Management Plan

All residents with diabetes require assessment of hypoglycaemic risk as part of the Leecare Admission and Annual Reviews procedures. If Leecare is not used, refer to the Resident's Care Plan.

The Leecare **Diabetes Management Plan** provides individualised information pertaining to the resident's oral diabetes medication and injectables (including insulin), blood/sensor glucose monitoring, ketone monitoring (if type 1 diabetes) and risk of hyperglycaemia (high blood glucose) and hypoglycaemia (low blood glucose).



Credentialled diabetes educator assistance is recommended on admission and/or annual review to support decision making by the resident, identify risk and duty of care, and recommend strategies to prevent/reduce adverse events. Outcomes and recommendations of the assessment should be documented in the Leecare Diabetes Management Plan or Resident's Care Plan.

Signs and symptoms of mild hypoglycaemia

Hypoglycaemia can develop quickly and the symptoms are not always recognised by the resident. Early signs and symptoms of hypoglycaemia include:

- sudden dizziness or weakness particularly in the legs
- trembling, shaking or loss of balance
- numbness or tingling around the mouth and face, difficulty speaking
- excessive sweating
- tachycardia (e.g. fast heart rate)
- headache
- hunger
- change in behaviour (e.g. irritable, angry, anxious, tearful, napping before meals)
- vagueness, lack of concentration, hallucinations or confusion.

If the early signs and symptoms of hypoglycaemia are not identified and treatment delayed, the BG will continue to fall.

Signs and symptoms of moderate to severe hypoglycaemia

Late signs and symptoms of hypoglycaemia include:

- behaviour change
- confusion
- slurred speech
- loss of coordination
- loss of consciousness, and/or
- seizure.

Causes and risk factors

Hypoglycaemia can be caused by:

> illness (e.g. vomiting, diarrhoea, loss of appetite)

> fasting

> too much insulin/diabetes tablets

> not eating enough carbohydrates (e.g. mismatch between rapid insulin and carbohydrate in meal

> missed or delayed meals (e.g. no carbohydrate or not eating immediately after injecting rapid insulin

> unplanned physical activity

> more strenuous physical activity than usual, OR

> excessive alcohol.

By avoiding the causes, the risk of hypoglycaemia for the resident can be reduced.

Assessing swallowing

Safe to swallow means that the resident is alert and co-operative and can swallow fluids safely.

Unsafe to swallow means that the resident is either;

> unconscious

> fasting

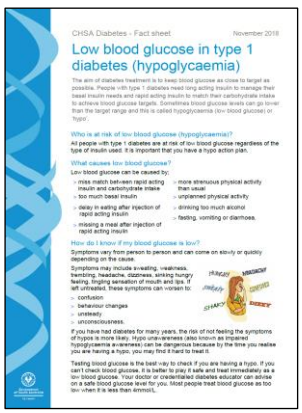
> has previous swallowing difficulties (e.g. restricted oral intake of texture-modified food or thickened fluids)

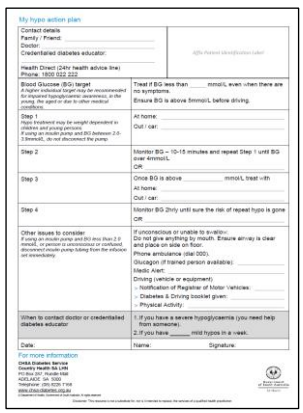
> shows current signs of inability to swallow (e.g. dribbling is noted, cannot cough).

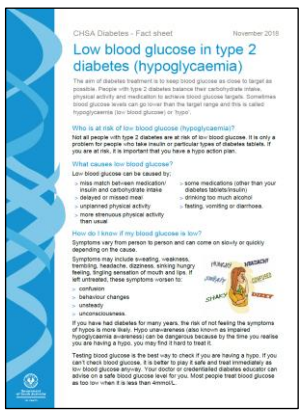
Oral treatment of any kind in the above situations is not safe (this includes the use of honey, thickened fluids, glucose gels etc.).

Hypoglycaemia Action Plans and Hypo Kits

Hypoglycaemia Action Plans can be developed with the resident to identify the residents' choice in target BG, definition of hypoglycaemia (with or without signs and symptoms) and preferred treatment with reference to any special dietary requirements (e.g. texture-modified food or thickened fluid).


Low blood glucose in type 1 diabetes (hypoglycaemia)


My hypo action plan


Low blood glucose in type 2 diabetes (hypoglycaemia)


My hypo action plan

Credentialled diabetes educator assistance is recommended to support decision making by the resident, identify risk and duty of care, recommend strategies to prevent/reduce adverse events and develop the Hypoglycaemia Action Plan based on the resident's choice and the contents and storage of the **individualised Hypo Kit**. Examples of individual Hypo Kits are below.

The **regional LHN Hypo Kit** refers to a clear plastic container that contains oral treatment for hypoglycaemia and can be used if an individualised Hypo Kit is unavailable. It is recommended that the regional LHN Hypo Kit be kept next to the blood glucose monitoring equipment or with the emergency trolley and immediately restocked after use.

The contents of the regional LHN Hypo Kit is:

> Hypo flowchart on inside of lid

> 1 GTT 75® glucose drink bottle (75gm per 300mL)

> 60mL measure cup

> 2 packets of Arrowroot 2 biscuit serves (15g CHO each)

A **GlucaGen Hypo Kit** - GlucaGen® (glucagon) will also be available in the emergency trolley and can be prescribed by the treating doctor for the resident at risk of hypoglycaemia.

The GlucaGen Hypo Kit contains Glucagon 1mg/mL for intramuscular or subcutaneous injection and is indicated in severe hypoglycaemia. **Glucagon** is a hormone that increases blood glucose levels and its mode of action is to trigger the release of glucose from stored carbohydrate (glycogen) in the liver into the blood.

1mg Glucagon IM as per medication order is given once only by a registered nurse. Glucagon will only work to increase the blood glucose if there is an adequate store of glycogen in the liver.

1.1 Indication

The protocol should be used for all residents with diabetes who are treated with sulfonylureas or insulin and who have a BG less than 6.0mmol/L OR below the resident's BG target range irrespective of symptoms (see Leecare Diabetes Management Plan or Resident's Care Plan).

If a person complains of symptoms and BG is greater than 6.0mmol/L, treat with a 15gm carbohydrate snack.

1.2 Protocol flowchart

Assess if resident is safe to swallow and follow the flowchart accordingly. A staff member must stay with the person until the hypoglycaemia event has resolved.

Safe to swallow, e.g. awake and co-operative

> Residents are treated with 15gm of fasting acting carbohydrate either from their individualised Hypo Kit or if unavailable, from the regional LHN Hypo kit.

  The regional LHN Hypo Kit contains the GTT 75® glucose drink. 15gm of carbohydrate = 60mL of GTT 75® glucose drink (75gm per 300mL).

> If the resident is using an insulin pump and the BG is between 2.0 - 3.9mmol/L, do not disconnect the pump. Treat hypoglycaemia as per protocol. Only disconnect the insulin pump if BG less than 2.0mmol/L.

> If BG remains less than 6.0mmol/L after 2 cycles of oral treatment or 30 minutes (resident is conscious), suspect prolonged hypoglycaemia. The registered nurse is to notify the doctor on call immediately (i.e. CODE BLUE). If no registered nurse or local doctor available, the aged care staff are to transfer the resident to the emergency department OR call an ambulance.

Unconscious or unsafe to swallow, e.g. uncooperative, impaired conscious state, history of swallowing difficulties.

> If resident is using an insulin pump and BG less than 2.0mmol/L, disconnect insulin pump tubing from the infusion site immediately. In type 1 diabetes, do not withhold insulin for more than 1 hour.

> The registered nurse is to notify the doctor on call immediately (i.e. CODE BLUE). If no registered nurse or local doctor available, the aged care staff are transfer the resident to the emergency department OR call an ambulance.

> The registered nurse is to administer IM Glucagon as per regional LHN standing order (one dose only). To access the standing order go to: https://sagov.sharepoint.com/sites/CHSA/clinical/drugtherapeutics/Pages/CHSA-Standing-Drug-Orders.aspx

> Registered nurse to notify doctor after administration of IM Glucagon (e.g. by phone) and updated on the resident's BG and conscious state.

> If Glucagon 1mg/mL is administered via intramuscular or subcutaneous injection, the resident may feel nauseous and/or vomit. Always give adequate follow up oral carbohydrate after Glucagon as glycogen stores in the liver need to be replenished.

1.3 Treatment post hypoglycaemia

Repeat episodes of hypoglycaemia are common.

Following a hypoglycaemic event, the resident's diabetes management must be reviewed by the doctor and wherever possible, identify any avoidable causes.

Beware of recurrent hypoglycaemia. If the resident is to remain in RAC, monitor BG QID (including a check at 0200hrs) for first 24hrs. If BG remains above 6.0mmol/L after first 24hours, resume routine BG monitoring as per Leecare Weights and Vital Signs Chart or the Resident's Care Plan.

If hypoglycaemia was severe (e.g. BG less than 2.0mmol/L, unconscious or assessed as unsafe to swallow) or prolonged, the resident is to be up transferred to emergency department via an ambulance for hourly BG monitoring.

If the resident is up transferred to an Emergency Department and returns to the RAC, monitor BG QID (including a check at 0200hrs) for first 24hrs. If BG remains above 6.0mmol/L after first 24hours, resume routine BG monitoring.

On insulin

a) If the cause is identified and found to be avoidable (e.g. missed meal, reduced carbohydrate intake), insulin dose adjustment is not required unless loss of appetite is persistent or there is a risk of a repeat hypoglycaemic event.

b) If the cause is not identified or cannot be corrected;

- if hypoglycaemia has occurred within 4 hours after a mealtime - reduce rapid acting insulin dose related to that mealtime on the next day
- if hypoglycaemia has occurred outside 4 hours after a meal - reduce basal insulin dose.

c) If eating normally, **do not withhold subsequent mealtime or basal insulin post hypoglycaemia**. However, if there is reduced carbohydrate intake (e.g. risk of repeat hypoglycaemia), consider reducing the mealtime insulin dose.

On a sulfonylurea, seek advice on management if hypoglycaemia if recurrent or prolonged:

a) Withhold oral diabetes medication until recovered and review the dose or consider alternate therapy.

1.4 Evaluation and audits

This protocol will be monitored via an auditing process. Health units may be asked to complete an audit for a designated period of time each year.

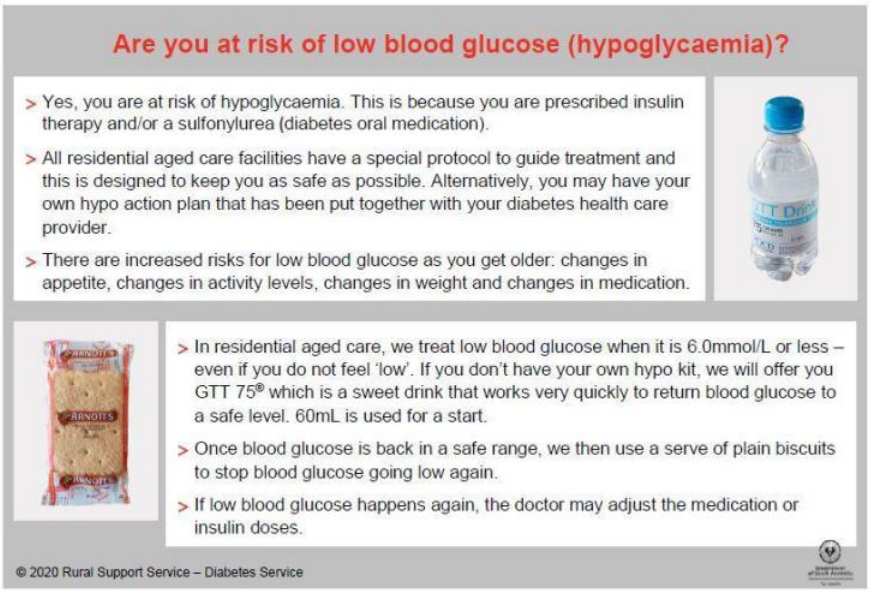
1.5 Staff orientation and training

Staff training is recommended at orientation and at increments that maintains competency.

Moodle presentation is available at *(in development)*
https://www.saheducation.com/moodle/course/view.php?id=502

1.6 Resident education support

The ‘Hypo Info Card’ can be used to support education of residents and their families about the risk of hypoglycaemia in residential aged care and the treatment used. Having an informed resident will lower their anxiety about their care.



The ‘Hypo Info Card’ can be found at https://sagov.sharepoint.com/sites/CHSA/clinical/diabetes/Pages/Protocols-%26-Procedures.aspx may be printed in an A4 or A5 size to aid residents with impaired vision.

1. Attached documents

Treatment of Hypoglycaemia in Residential Aged Care - Flowchart, 2020
Supported Decision-Making in Aged Care – A Policy Development Guideline for Aged Care Providers in Australia
Diabetes management in aged care: a practical handbook; National Diabetes Service Scheme 2020

2. References

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Australian Government Department of Health and Ageing. Guiding Principles for Medication Management in Residential Aged Care Facilities. Canberra: Commonwealth of Australia. Available online at http://www.health.gov.au/internet/main/publishing.nsf/content/nmp-pdf-resguide-cnt.htm
Royal Australian College of General Practitioners. A Best Practice Guide for Collaborative Care between General Practitioners and Residential Aged Care Facilities. Melbourne: RACGP. Available online at https://www.racgp.org.au/download/Documents/PracticeSupport/Best%20practice%20guides/bpg-collaborativecaregpsracfs.pdf
Australian Resuscitation Council, 2016, Guideline 3 – Recognition and First Aid Management of the Unconscious Person. Available online at https://resus.org.au/guidelines/

3. Accreditation standards

National Safety and Quality Health Service Standards ***(2nd edition)***

1	2	3	4	5	6	7	8
☒	☒	☐	☒	☒	☒	☐	☒
Clinical Governance	Partnering with Consumers	Preventing & Controlling Healthcare Associated Infection	Medication Safety	Comprehensive Care	Communicating for Safety	Blood Management	Recognising & Responding to Acute Deterioration

Aged Care Quality Standards ***(includes home care clients)***

1	2	3	4	5	6	7	8
☒	☒	☒	☒	☒	☐	☐	☐
Consumer Dignity & Choice	Ongoing Assessment & Planning with Consumers	Personal Care & Clinical Care	Services & Supports for Daily Living	Organisation's Service Envorinment	Feedback & Complaints	Human Resources	Organisational Governance

National Disability Insurance Scheme (NDIS) Practice Standards

CORE MODULE				SUPPLEMENTARY MODULES	
1	2	3	4	1	2
☒	☒	☒	☒	☐	☐
Rights and Responsibilities	Governance and Operational Management	Provision of Supports (to participants)	Provision of Supports (environment)	High Intensity Daily Personal Activities Module	Early Childhood Supports Module

4. Consultation

Version	Consultation
1.0	SA Health Metropolitan Diabetes Services, Nurse Practitioner-Diabetes - Mt Gambier, Diabetes Specialist Nurse Network, RLHN Executive Medical Directors, RSS Aged Care Lead, RAC nurses, RLHN RAC Directors of Nursing, Clinical Pharmacists, Drug & Therapeutics Advisory