An Australian Government Initiative

WA DTSC
For health-care professionals

WA Dementia Training Study Centre



Training support • Skills development • Competency • Assessment • Scholarships • Education

Delirium

What is it,
Why is it important and
What do we do about it?

Malcolm Hare, Fremantle Hospital
PhD Candidate

Objectives

- Define delirium
- Differentiate delirium from depression and dementia
- Identify risk factors for delirium
- Describe negative outcomes associated with delirium
- Use the Confusion Assessment Method with AMT to identify likely delirium
- Identify appropriate non-pharmacological interventions
- Describe pharmacological management options

What is delirium?

- Short-term disturbance/“clouding” of consciousness (confusion) characterised by
  - Acute onset, fluctuating course
    - and
  - Inattention
    - and either (or both)
  - Disorganised thinking

  Altered level of consciousness

- Not better explained by evolving dementia
- Has a general medical cause (but may be hard to find initially)
- Hyper-alert, hypo-active or mixed

Other features

- Other features that may be present:
  - Disorientation
  - Memory impairment
  - Perceptual disturbance
  - Psychomotor retardation
  - Psychomotor agitation
  - Altered sleep/wake cycle

Who is affected – risk factors

- Predisposing risk factors
  - Intrinsic to the person:
    - Pre-existing
    - Health, history, lifestyle
- Precipitating risk factors
  - Result in or occur during acute care episode
    - New

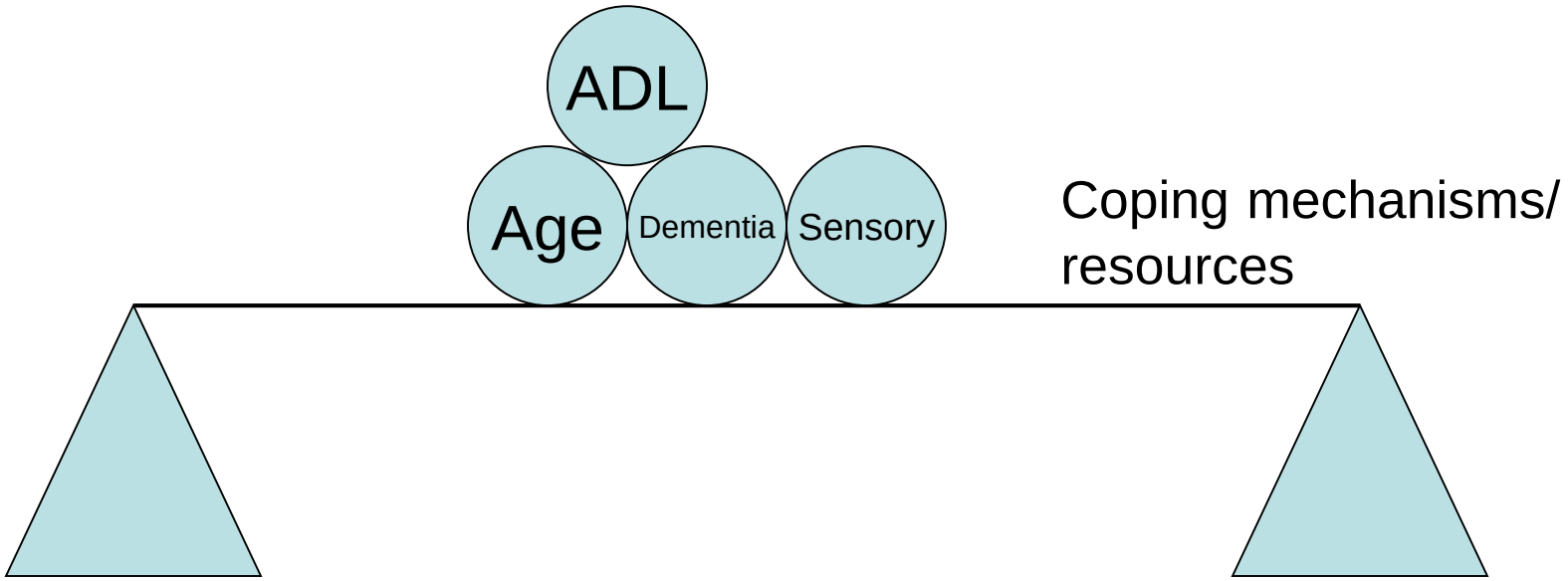
Who is affected – **Predisposing** risk factors

- Dementia
- Age (>70)
- ADL impairment
- Visual/hearing impairment
- Drug/Alcohol use
- Cardiovascular conditions: heart failure, abnormal rhythm, hypertension
- Multiple medications
- Chronic illness

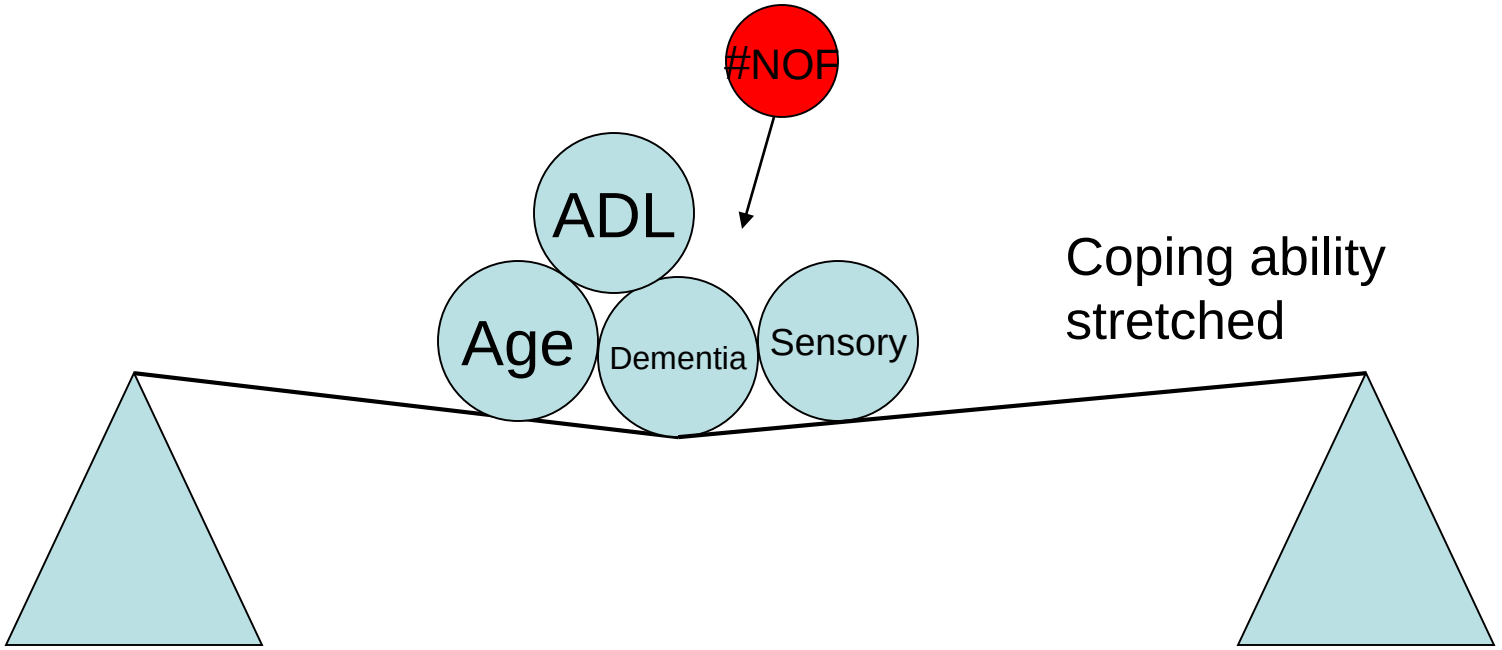
Who is affected – **Precipitating** risk factors

- Acute fracture
- Severe (acute) illness / infection
- Addition of multiple medications
- (Any) organ failure
- Pain
- Surgery / invasive procedures
- Adverse events
- Abnormal blood results (esp low Na^{+}, LFT, U&E, Ca^{++})
- Immobility / Use of restraints
- Use of IDC

Risk factor interactions

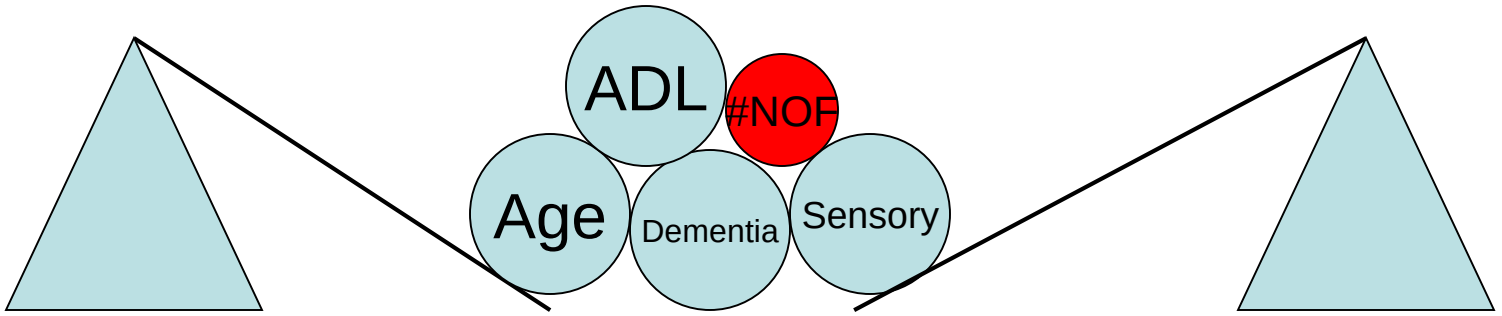


Risk factor interactions



Risk factor interactions

Coping mechanisms overwhelmed
→Compensation failure



Risk factor interactions

- The larger the burden of predisposing risk factors, the smaller the insult required for the individual's coping/compensating skills / mechanisms to be overwhelmed

  – The most effective intervention is Prevention

What causes delirium?

- Usually complex interaction of multifactorial causes potentiated by risk factors
- eg

Prescribed Medications	Medical conditions	Neurological conditions	Drug intoxication
Antibiotics Antidepressants Anticancer drugs Antipsychotics Anticonvulsants Digoxin Diuretics L-dopa Lithium Opiates OTC meds eg, cold and flu tablets, cough medicine NSAIDs Sedatives Steroids 3 or more medications used in combination	Burns Constipation Dehydration Febrile illness Hypoglycaemia Infection Intoxication or withdrawal (Alcohol and other drug) Major trauma Organ failure (any, but esp liver, kidney) Post-operative complications Post-operative hypoxia Septicaemia	Encephalitis Head injury Post-Ictal Epilepsy Recent stroke Space occupying lesion	Alcohol Amphetamines Cocaine Inhalants and solvents LSD (lysergic acid diethylamide Marijuana Overdose of prescribed medication Poisons

Risk factor Recap

- Two main types?
- Predisposing?
- Precipitating?

What's so bad about delirium?

- Often not recognised (ie "old = confused" rather than "confused = investigate cause")
- Leads to:
  - Falls
  - Pressure ulcers
  - Delayed rehabilitation
  - Longer hospital stay
  - Higher level of care
  - Higher health care costs
  - Permanent decline: reduced ADL, cognitive, social functioning, early death

Delirium Health care costs (2005 US $)

- Approx $295 extra cost per survival day
- Average for 11.8 million patients aged 65+ with 20% delirium rate
- One year cost: $143 to $152 billion
  - Hip fracture: $ 7 billion
  - Non-fatal falls: $ 19 billion
  - Diabetes $ 91.8 billion
- Actual cost: $38 billion
- Why?
- Early death!

Differential Diagnoses

	Delirium	Dementia	Depression
ONSET	**Acute**	*Chronic and insidious*	*Coincides with life changes, sometimes abrupt.*
ALERTNESS	**Altered level of consciousness**	*Alertness may fluctuate*	*Varies. May be unaffected*
MOTOR BEHAVIOUR	**Fluctuates; lethargy or hyperactivity**	*May vary*	*Psychomotor behaviour may be agitated or retarded or unaffected*
ATTENTION	**Impaired and Fluctuates**	*Usually normal*	*Usually normal, but may be distractible*

	Delirium	Dementia	Depression
AWARENESS	**Impaired, reduced**	*Normal*	*Clear*
DURATION	**Generally hours to days, can be months***	*Months* to years*	*2 weeks − to months*
PROGRESSION	**Abrupt**	*Slow but stable*	*Varies*
ORIENTATION	**Fluctuates in severity, usually impaired**	*May be impaired*	*May be selective disorientation*
MEMORY	**Recent and immediate impaired**	*Recent impaired*	*Selective or patchy impairment*

	Delirium	Dementia	Depression
THINKING	**Disorganised, distorted, incoherent, slow or accelerated.**	*Difficulty with abstraction, thoughts impoverished, difficulty finding words, poor judgement*	*Intact, but may voice hopelessness and self depreciation*
PERCEPTION	**Distorted, illusions, delusions and hallucinations, difficulty distinguishing reality**	*Misperceptions often present*	*Intact; delusions, hallucinations absent except in severe cases*
STABILITY	**Variable, hour to hour**	*Fairly Stable*	*Some variability*

	Delirium	Dementia	Depression
EMOTIONS	**Irritable, aggressive, fearful**	*Labile. Apathetic, irritable*	*Flat, unresponsive, or sad; may be irritable*
SLEEP	**Often disturbed; nocturnal confusion & wakefulness**	*Often disturbed; nocturnal wandering and confusion*	*Early morning awakening*
OTHER FEATURES	**Physical/ medical cause may not be obvious**		*Past history of mood disorder*

Identifying delirium

- AMT: 10 questions derived in 1972 by Hodkinson (<8/10 suggests impairment)
- CAM: Confusion Assessment Method developed in 1990 by Inouye et al

AMT

- 1. How old are you?
- 2. What is the time (to the nearest hour)?
- 3. Address for recall at the end of test – this should be repeated by the patient – 42 West Street
- 4. What year is it?
- 5. What is the name of this place?
- 6. Can the patient recognise two persons (eg. nurse/doctor)
- 7. What was the date of your birth?
- 8. When was the First World War?
- 9. Who is the present Prime Minister?
- 10. Count down from 20 to 1 (no errors, no cues)

Hodkinson HM. (1972). Evaluation of a mental test score for assessment of mental impairment in the elderly. Age Ageing, 1:233-8.

AMT4

- **1. How old are you?**
- 2. What is the time (to the nearest hour)?
- 3. Address for recall at the end of test – this should be repeated by the patient – 42 West Street
- **4. What year is it?**
- **5. What is the name of this place?**
- 6. Can the patient recognise two persons (eg. nurse/doctor)
- **7. What was the date of your birth?**
- 8. When was the second World War?
- 9. Who is the present Prime Minister?
- 10. Count down from 20 to 1 (no errors, no cues)

Swain & Nightingale.

Confusion Assessment Method (CAM)

CAM

- Validated in a wide variety of settings
- Uses observations from an interview with patient - framed around cognitive assessment (eg MMSE, AMT)and other information from family/carer: recent history
- Simple algorithm to assess four cognitive features that are most useful/accurate in distinguishing delirium

Confusion Assessment Method (Diagnostic Algorithm)

Feature 1: *Acute Onset, Fluctuating Course*

Shown by positive responses to both of the following questions (in hospital, usually obtained from a family member):

Is there evidence of an acute change in mental status from the patient's baseline?

Eg ***In hospital, look at presenting story:-*** *"Increasing confusion over last few days/weeks";*

"Patent/family not coping at home or hostel/NH staff not coping with worsening behaviour"

Family/patient states patient "not themselves"

MMSE score <24 or reduced by >2 from recent previous / baseline

AMT score < 8/10 or reduced by > 2 from recent previous

AMT4 score <4/4 OR you feel the patient is confused, but no known Hx of cognitive impairment

Does the (abnormal) behaviour fluctuate during the day, that is, tend to come and go, or increase and decrease in severity? NOTE: this also applies to the following elements.

Confusion Assessment Method (Diagnostic Algorithm)

Feature 2: *Inattention*

Shown by a positive response to the following question:

Did the patient have difficulty focusing or shifting attention, for example, being easily distractible, or having difficulty keeping track of what was being said?

Eg *Easily distracted (stops talking or stops listening in the middle of a sentence)*
Fixated on a subject ("where is my handbag/tissue/son")
Having difficulty keeping track of what was being said?
Repeating answer to an earlier question
"Poor historian"

Scale: 0 = unrousable or too agitated to interact, 10 = easily engaged throughout assessment (ie normal conversation)

Confusion Assessment Method (Diagnostic Algorithm)

Feature 3: *Disorganized thinking*
Shown by a positive response to the following question:

Was the patient's thinking disorganized or incoherent
eg rambling or irrelevant conversation
unclear or illogical flow of ideas
unpredictable switching from subject to subject
unclear speech, incomprehensible sounds

Feature 4: *Altered Level of consciousness*
Shown by any answer other than "alert" to the following question:

Overall, how would you rate this patient's level of consciousness?
alert [normal],
vigilant [hyper-alert],
lethargic [drowsy, easily aroused],
stuporous [difficult to arouse], or
comatose [unrousable]

CAM Algorithm

- Delirium is probably present if you answer Yes to Features 1 and 2 and either or both Features 2 and 3
- ie
- **1. Acute onset, fluctuation and 2. inattention**

- **PLUS** 3. disorganised thinking
  AND/OR 4. altered conscious state
- Maintain a high index of suspicion – we usually miss delirium

Other features that may be present

- Disorientation (Most often to time & place)
- Memory impairment (difficulty remembering instructions, events, interactions)
- Perceptual disturbance (hallucinations, illusions, misinterpretations)
- Psychomotor retardation (decreased motor activity - sluggish, staring into space)
- Psychomotor agitation (Increased motor activity - restless, picking)
- Altered sleep/wake cycle (daytime sleepiness, night insomnia)

CAM recap

- What are the elements in the CAM?
- Your own experiences?
- Questions?

Prevention

- Identify risk factors
- Apply measures to remove, modify or minimise the impact of risk factors
  - Eg Hearing deficit: ensure hearing aids applied, working, battery OK
  - (see handout)

Prevention

Risk Factors	Prevention/Management Strategies
Age ≥65 years	• Encourage independence with activities of daily living. • Educate the patient and their carer/family about the recognition, risks and management of delirium.
Pre existing cognitive impairment	• Help to maintain orientation: • Provide ward lighting that is appropriate for the time of day. • Avoid room changes. • Encourage family members to be involved in patient care. • Provide clocks and calendars that the patient can see. • Provide simple, clear single step instructions
Visual/Hearing impairment	• Ensure that spectacles are clean and in place and that hearing aids are functional and in place when required.
Use of restraints (bed rails and heart tables)	• Avoid/minimise use of restraints. • Follow local restraint policy.

Prevention

Risk Factors	Prevention/Management Strategies
Addition of 3 or more medications to regular prescription Polypharmacy	•Regular medication review. •Avoid psychoactive drugs if possible.
Severe illness 1.• Surgery (e.g. acute # NOF) 2.• Infection 3.• Hypoxia 4.• Abnormal sodium 5.• Dehydration 6.• Renal impairment	•Manage discomfort and pain. •Orientate and reorientate the patient to where the patient is, why they are here, time of day etc. •Monitor oxygen saturation levels and bloods for abnormalities. •Assist with eating and drinking to ensure adequate diet and hydration.
Sleep deprivation	•Provide a quiet environment, especially at night. •Encourage being awake during the day time. •Promote night time sleep patterns.

Management

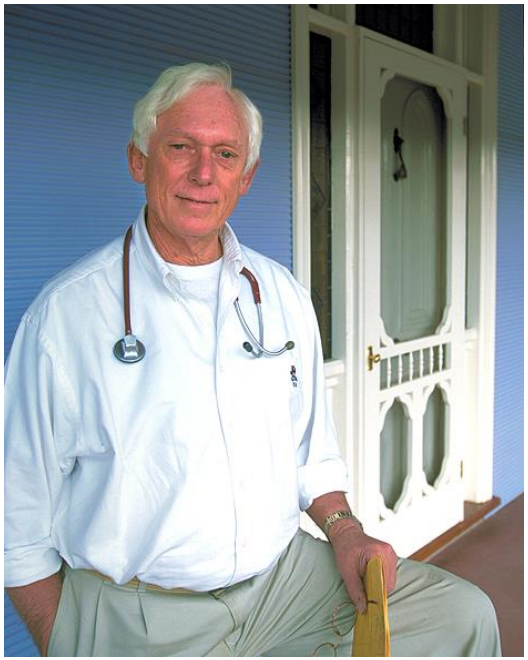
- Identify cause(s)
- Non-pharmacological management
- Last resort – pharmacological therapy

Identify causes

- **General**
  - hypoxia
  - pain
  - dehydration
  - hypotension
  - hypoglycaemia
  - major electrolyte disturbance
  - infection
  - urinary retention
  - constipation and faecal impaction
  - Polypharmacy
  - Is an alcohol withdrawal syndrome possible? If yes, refer to local policy and guidelines for Alcohol Withdrawal, Assessment and Management

Identify causes

- **Medical**
  - Screen for common causes
    - Vital signs
    - Urinalysis
    - Bloods: FBC, LFT, U&E, Glucose, Serum Calcium, Phosphate, Cardiac enzymes
    - ECG
    - Identify and remove possible precipitating medications
    - Radiology: Chest X-Ray
  - Further Investigations
    - See handout



Non-pharmacological Management

- Establish cognitive function – eg AMT, MMSE.
- On change in cognition/behaviour = ward urine analysis.
- Provide adequate oxygenation. Keep patient warm, give adequate fluids.
- Re-orientate often. Have highly visible clocks, calendars, personal items, day clothes.
- Glasses and hearing aids in situ.
- Adequate pain relief (regular pain medication).
- Avoid catheterization (regular bladder assessment).
- Avoid constipation (regulate bowel function).
- Encourage activity and independence with ADLs.

Non-pharmacological Management (cont)

- Avoid physical restraints.
- Encourage regular sleep patterns: attempt to keep patient awake and occupied during the day; appropriate lighting, minimal disturbance, reduce noise and activity at night.
- Encourage interaction with family, educate them about delirium, provide information to carers.
- Prevent complications (eg one-to-one special for high risk such as falls, invasive lines; careful and active pressure area management etc)

Pharmacological Management

- ONLY AFTER ALL NON-PHARMACOLOGICAL INTERVENTIONS
- Small, regular dose of haloperidol (0.25 to 0.4 mg Q4H prn) Olanzapine 2.5mg or Risperidone 0.25mg if extrapyramidal signs
- Lorazepam ONLY for severe agitation and distress OR ALCOHOL WITHDRAWAL.
  IN GENERAL, avoid benzodiazepines as they increase the risk for delirium

RECAP

Define / Identify delirium

Risk factors

Management

Quiz!

- How many questions in the AMT?
- What is the cut-off for likely cognitive deficit?
- What does CAM stand for?
- What 4 items does it include in its algorithm?

Question	Answer
You ask the resident for her phone number. After probing, it is clear she doesn't know	Memory impairment
During the interview the patient dozes off while you are asking questions	Altered level of consciousness (lethargic)
As you ask the resident a question, he keeps repeating the answer to a previous question.	Inattention
The resident's breakfast tray comes in. She says angrily, "why are they bringing me porridge for dinner?"	Disorientation

Question	Answer
• The patient startles easily at any sound or touch. His eyes are wide open	• Altered level of consciousness (hyper-alert; vigilant)
• You ask the resident why she was in another resident's room. She says "I have to get to the yellow brick road"	• Disorganised thinking
• As you start talking to the patient her eyes are roving around the room. You say her name and touch her arm: she looks at you, then looks away and around the room while you repeat the question – she doesn't answer.	• Inattention
• As you talk to the resident, she keeps looking over at the bedside. She suddenly exclaims "What is that man doing there?" (there's no-one there)	• Perceptual disturbance (visual hallucination)

Question	Answer
• The patient complains about all the birds flying around the room	• Perceptual disturbance (visual hallucination)
• While you talk to the resident, he is continuously rolling over in the bed, sitting, up, covering and uncovering himself	• Psychomotor agitation
• The patient stays motionless in bed, and moves very slowly when asked to do something.	• Psychomotor retardation

Online Resources:

- http://cra.curtin.edu.au/wadtsc/wadtsc_dementiatrainingresources.html
- www.health.vic.gov.au/acute-agedcare

The End!

- Questions?

Disclaimer

- The Western Australian Dementia Training Study Centre (WA DTSC) has been established as part of the Australian Government's Dementia Initiative.
- The WA DTSC is one of four Centres nationally that promote dementia studies in Australian graduate and undergraduate curriculum as well as providing tertiary dementia career pathways.
- The views expressed in this work are the views of its author(s) and not necessarily those of the Commonwealth of Australia. Despite any permitted use of Graphic Design Guidelines for Training Partner and Projects copyright material, the reader needs to be aware that the information contained in this work is not necessarily endorsed, and its contents may not have been approved or reviewed, by the Australian Government Department of Health and Ageing.