

# Year 4 Geriatric Medicine

Undergraduate Handbook 2017



THE UNIVERSITY OF  
**AUCKLAND**  
Te Whare Wananga o Tamaki Makaurau  
NEW ZEALAND

**MEDICAL AND  
HEALTH SCIENCES**  
SCHOOL OF MEDICINE

# Welcome to the Department of Geriatrics

The Health Care of Older People attachment is based at one of Waikato, Rotorua, Auckland, Waitemata or Counties Manukau Campuses. You will be notified of your ward allocations on the first day.

## Older Persons’ Health

The Older Persons’ Health area comprises Geriatric Assessment, Treatment and Rehabilitation (In-patient) Services, liaison services to other inpatient department and to emergency units, a variety of community based services for older people, and Mental Health Services for the Older Person.

Care of older patients forms a significant component of general hospital/outpatient practice and, with the ageing of the population, the size of this component will increase. It is therefore important that all doctors are confident and competent when dealing with older people.

It is important to understand that illness in older people may present in atypical and non-specific ways. Presentations such as falls, acute confusion, incontinence, failure to cope and taking to bed are the rule rather than the exception. Older people with such presentations need meticulous history, examination and work-up.

The aim of “Rehabilitation” is to restore to full capacity a person whose abilities are impaired by diseases such as stroke, COPD, cardiovascular disease, arthritis, hip fracture or Parkinson’s disease. Older patients may have a combination of physical or psychiatric illness such as depression or dementia and there may be social deprivation and loneliness. Multiple pathology is a common feature of illness in old age. However, it is important to recognise that

many older people live independently in the community without significant health problems.

Illness and disability are not an inevitable consequence of growing older.

The need for accurate assessment of problems that may present atypically, and the fact that older people who become ill are at risk from complications of bed rest, such as loss of muscle strength and mobility, means that the processes of assessment, treatment and rehabilitation must be closely combined. There is an emphasis on interdisciplinary team work and the weekly case conference involving all disciplines to plan patients’ treatment and discharge is an important event. Family meetings are often held prior to discharge.

Domiciliary assessment by social worker, community gerontology nurse or doctor and community rehabilitation are an important part of the Unit’s activities. Follow-up visits are also a part of the Unit’s activities, particularly to ensure that people are managing well at home. Community rehabilitation in the patient’s own home is now possible.

Every inpatient has a daily programme with treatment from appropriate health professionals such as occupational therapist, physiotherapist, speech language therapist and dietician. Assessment and treatment of mobility and upper limb function is coupled with assessment of cognition, daily living activities, and assessment and treatment of speech and swallowing disorders. Clinical Pharmacists

assigned to the wards are an increasingly important part of dealing with polypharmacy. Some units may also have psychologist assessment available.

## Working with Older People

Older patients come into the Unit for treatment of illness, advice and assistance about appropriate levels of care. Rehabilitation assists them to function better in their environment.

Ill people tire easily and may take longer for activities such as bathing, meals, etc. You may be frustrated by not being able to spend time with your patient because he/she is at occupational therapy, physiotherapy, or having an x-ray. If they are having therapy, go with them and find out what is involved. If they are very tired, come back another time. It may be best to examine one physical system at a time and the whole examination may sometimes take several visits. Spend time getting to know your patients, they will appreciate your efforts.

If you are having difficulty getting access to patients, see the Clinical Nurse Coordinator first to ask for a special time.

## Attitudes and skills

Positive attitudes and skills of professionals working with older adults include being empathetic, patient and respectful with good, clear communication skills. There is an expectation of being a team player with a comprehensive and holistic approach to care of older adults.

Poor staff attitudes to older people can adversely influence the standard of treatment and care they receive. It is important that older people are not considered an imposition or inappropriate admissions. In particular, labels such as “social admissions” and “acopia” should never be used. So called social admissions have a high morbidity and mortality, much of which can be avoided by accurate diagnosis and prompt treatment. Similarly inaccurate terms such as “mechanical falls” are meaningless and deter appropriate diagnosis and management.



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## Acknowledgements

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## Disclaimer

Although every reasonable effort is made to ensure accuracy, the information in this document is provided as a general guide only for students and is subject to alteration. All students enrolling at the University of Auckland must consult its official document, the current Calendar of the University of Auckland, to ensure that they are aware of and comply with all regulations, requirements and policies.

We advise that the University of Auckland is not involved in the employment of completing health professional students and can make no guarantee of post-qualification registration or employment in New Zealand or any other country.

For an updated version please refer to the Department of Medicine on: [www.fmhs.auckland.ac.nz/som](http://www.fmhs.auckland.ac.nz/som)



# Assessment Treatment and Rehabilitation (AT & R) Units

### Aims:

- Continue to consolidate your skills in history taking, examination, problem orientation and management.
- See common problems in geriatric medicine, e.g. stroke, falls, confusion, incontinence, chronic illness and appreciate altered presentation in older adults.
- Begin to work with the rehabilitation team.
- See the range of domiciliary and institutional services outside the public hospital.
- Gain confidence with, and respect for, older people, i.e. coping with deafness, loss of memory, feelings about ageing, dying etc.
- Ensure the University educational learning objectives (detailed on page 6) are completed.

### Requirements:

In contrast to most medical runs, there is no miniCEX in geriatrics. During the four week attachment each student will be attached to one ward in the Geriatrics (AT & R) Unit and is expected to complete the following:

#### A. Rehabilitation Case

Our aim is for the student to become aware of the impact of illness on a person's activities of daily living. In addition to a full medical clerking (history and examination NOT including a rectal examination), the following format for writing up a Rehabilitation case has been developed.

#### Problem List

1. List the patient's problems and diagnoses, with the most serious at the top.
  - Please include dates, as appropriate.
  - A sentence or two may be required to briefly elaborate on the problem.
  - Any medications the patient is taking, as management for this problem should be mentioned here.
2. Fill out a MoCA (Montreal Cognitive Assessment) or other cognitive screening instrument and Activities of Daily Living Form (see later in handbook).
3. Comment on what each therapist has contributed to the management of your

patient in detail, i.e. Physiotherapy, Occupational Therapy, Speech Therapy, nursing and social work and where appropriate the dietician, cultural support worker and pharmacist contributions.

4. Briefly describe your patient's social situation, and then take all the foregoing information into account, briefly state your opinion of their prognosis, giving your reasons. This is complex and (often) difficult and you may need to discuss this with the registrar or consultant before committing your thoughts to paper.
5. Explain briefly on how the terms (1) impairment, (2) activity limitation (disabilities) and (3) participation restriction (handicaps) are *relevant to your case*.

The case report will need to be submitted prior to your ward supervising consultant before the completion of the attachment.

It pays to get started on this case early during your attachment, and have it completed in plenty of time.

The length of the report will somewhat depending on the complexity of the individual case, but in general should be between 1500 and 2000 words.

#### B. Student seminars

For some topics students will lead a seminar, for other topics seminars will be lead by Consultants or other Health Professionals.

The seminar topics will vary in the various hospitals, but potential topics may include:

- Ethics in geriatric medicine
- Frailty
- Falls (and immobility)
- Incontinence (faecal and urinary)
- Delirium
- Dementia
- Osteoporosis
- Stroke
- Elder Abuse
- Nutrition
- Pharmacology

The presentation should provide the basis for a group discussion, which all students and the Consultants can contribute. A good aim is for the presentation itself to be approximately 30 minutes, allowing 20 minutes or so for group discussion.

Include a case if possible as this enhances learning and discussion opportunities for the group. The aim is to provoke discussion, which will help us all learn, rather than test your academic ability.

Please check for the topics and the times on your timetable.

#### Student Seminar Learning Objectives

##### Ethics

By the end of the seminar, with emphasis on the understanding of patient autonomy, students will be able to:

1. Describe the main issues encompassing adherence to ethical practice principles, and in particular to patient autonomy
2. Describe how to assess a person's capacity to make decisions
3. Demonstrate understanding of components of the Protection of Personal and Property Rights (PPPR) Act (EPOA, Personal Orders, Welfare Guardian, Property Manager)
4. Be able to describe what advance directives, advance care plans and DNR orders are
5. Demonstrate understanding of the Health and Disability Commissioner (HDC) Code of Rights, in particular use of Right 7.

##### Frailty

By the end of the seminar students will be able to:

1. provide a working definition of frailty and sarcopenia
2. Describe adverse consequences associated with frailty
3. Describe the prevalence of frailty in a) community dwelling, and b) hospitalised older adults
4. Describe different tools available to screen for frailty
5. Describe key components of frailty management

##### Falls

By the end of the seminar students will be able to:

1. Describe the prevalence of, and main risk factors for falls in older adults
2. Describe potential adverse consequences of falling
3. Describe important aspects of medical history taking in someone who has fallen
4. Describe important components of physical exam
5. Describe evidence based falls prevention and management strategies

##### Urinary Incontinence

By the end of the seminar students will be able to:

1. Describe basic anatomical structures and neurological control of voiding
2. List five potentially reversible causes of urinary incontinence
3. Describe how to assess a patient with urinary incontinence
4. Name the four types of chronic urinary incontinence
5. Outline management for each of these four types

##### Faecal Incontinence

By the end of the seminar students will be able to:

1. Describe basic anatomic structures and neurological control of defecation
2. Name five causes of faecal incontinence
3. Outline some of the consequences of this problem
4. Describe how to assess a patient with faecal incontinence
5. Discuss management for five causes of this problem

##### Delirium

By the end of the seminar students will be able to:

1. List at least five risk factors for delirium
2. List ten common causes of delirium
3. Name five differences between delirium and dementia
4. Describe how to assess a patient with delirium
5. Outline key aspects of management

##### Dementia

By the end of the seminar students will be able to:

1. Discuss the differential diagnosis of cognitive impairment
2. Describe how to make a diagnosis of dementia
3. Name the five common types
4. Outline key aspects of dementia management

##### Pharmacology

By the end of the seminar students will be able to:

1. Describe briefly the main differences in pharmacokinetics in older adults
2. Describe briefly the main differences in pharmacodynamics in older adults
3. Describe why adverse drug reactions are more common in older adults
4. Describe the two definitions of polypharmacy
5. Describe the factors affecting medication compliance in older adults

##### Osteoporosis

By the end of the seminar students will be able to:

1. Describe the definition and risk factors associated with osteoporosis
2. Describe when to consider osteoporosis in a patient a) living in the community and b) in the hospital
3. Discuss how to manage osteoporosis and what factors need to be considered when initiating and monitoring therapy

##### Elder Abuse

By the end of the seminar students will be able to:

1. Describe the prevalence of elder abuse in New Zealand
2. Describe five forms of elder abuse
3. Describe the risk factors for elder abuse
4. Describe the principles of safe assessment for elder abuse
5. Describe the principles of management including appropriate referral pathways

### C. Clerking a new patient directly into hospital notes

In your clinical years it is vital that you get as much practice as possible in taking histories, performing clinical examinations, and in presenting histories and examination findings to your (usually senior) colleagues. These are essential skills in medical practice, and lack of adequate ability in these areas (in turn usually due to inadequate practice) is not infrequently a cause of students having problems with end-of-year assessments (e.g. OSCEs).

Thus, as part of the ward assessment, we expect you (under the supervision of the House Office and/or Registrar) to clerk a new patient (admission) into the notes at least ***once per week (full history and examination)*** and present that patient to either the registrar or Consultant on a ward round

### D. Attendance for teaching and assessment sessions

Teaching sessions by Consultants, Registrars and other Department staff as shown on the timetable given. There will be no mini-CEX examinations in the 4th Year geriatrics attachment in 2015.

Attendance at all formal teaching sessions and seminars is mandatory.

### E. Attendance of other sessions

Attend X-ray conference and Ward Conference or 'clinic' where appropriate, and if necessary, give a brief summary of your patient

### F. Home visit

Visiting older people in their own homes is an important part of our service. Home visits are done by Social Workers, Occupational Therapists, Physiotherapists, Community Gerontology Nurse Specialists, Registrars and Consultants.

Visiting an older person in their home is a privilege. It allows us an unrushed assessment and an opportunity to assess the environment and to talk to relatives and carers. Home visits are particularly useful for people who have cognitive impairment, who are suspicious or who are frightened by the unfamiliar environment of a hospital.

You will be expected to participate in at least one home visit. Completion of a home visit represents part of the requirements for this run. Please organize this at the beginning of the run.

### G. Allied health experience

In addition to the Home Visit above, attend therapy sessions (e.g. OT, PT, Speech) with your patient.

# Textbooks for Geriatrics

We strongly advise that you read all of the textbook that will be loaned to you for the duration of the attachment. Don’t worry – it is not too long and is very ‘user-friendly’.

## Recommended text books

### General Medicine

Kumar, P & Clark, M. (Eds.). (2012). *Kumar and Clark’s clinical medicine*. (8th ed.). Edinburgh; New York/ Elsevier Saunders.

*Clinical Examination - a systematic guide to physical examination*. Talley, N.J. & O’Connor, S.

### Medicine

*A guide to Physician Training*. (6th ed.) Sydney; Edinburgh: Churchill Livingstone Elsevier.

### Geriatric Medicine

Nicoll C, and Wilson J (2012). *Elderly Care Medicine* (8th Ed) Wiley-Blackwell.

Bowker, L.K., Price, J.D., & Smith, S.C. (2006). *Oxford Handbook of Geriatric Medicine*. Oxford: University Press.

### Reference Books

Fillit, H., Rockwood, K., Woodhouse, K.W., & Brocklehurst, J.C. (Eds.). (2010). *Brocklehurst’s textbook of geriatric medicine and gerontology*. (7th ed.) Philadelphia, PA: Saunders/Elsevier.

Jacoby, R. (2008). *Text Book of Old Age Psychiatry* (4thed.). Oxford; New York: Oxford University Press. “*Oxford textbook of old age psychiatry*”

### Psychiatry of Old Age:

Inouye SK, Westendorp RG, Saczynski JS. Delirium in elderly people. *Lancet* 2014, 383(9920):911-22

Fong T, Davis D, Growd on M, Albuquerque A, Inouye S. The interface between delirium and dementia in elderly adults. *Lancet Neurology* 2015, 14(8):823-32

### General reading and novels

Gawande, A. (2014) *Being Mortal: Medicine and What Matters in the End*. Decker Edge.

McCrum, R. (1999). *My year off*. NY:Broadway Books

Sackville-West, V. (1947). *All passion spent*. Harmondsworth: Penguin Books.

Lessing, D. (1984). *The Diaries of Jane Somers*. London: Joseph.

Sheila, H. (2002). *The man who lost his language*. London, Penguin Books.

Students are encouraged to make their own suggestions for the reading list.

# Guidelines for registrars

## Medical student teaching

Each of the wards has four or five Year Four Medical Students allocated to it for the four week attachment. Each student is expected to see as many patients as possible during this time.

The students are expected to complete one long case during the attachment. They are also expected to complete one Multidisciplinary discussion.

By the conclusion of the run it is hoped that all students will be conversant with history taking and examination of all systems. Planning their cases (to be clerked directly into the patient notes under registrar/HO supervision – see page 15) and long case study (to be handed into the supervising consultant by the end of the attachment) should allow this to be achieved.

The responsibilities of the Registrar are:

1. To befriend the students so that they feel welcome on the ward
2. To guide the students to patients with interesting symptoms and signs
3. To provide two bedside tutorials of 60 minutes per attachment – each ward has its own time slot for this, one of which is for students from two wards
4. To help them feel involved with routine ward activities, students should assist with ward admissions if time is available
5. To notify the co-ordinator for your unit and/or Professor Connolly (martin.connolly@waitematadhb.govt.nz) of any student who may be experiencing difficulties in their clinical work or poor attendance

We know from experience that the Registrar can greatly enhance the students’ ward experience. Remember the House Officer and Trainee Intern (if the ward has one) should also assist with student teaching.

Early in the year students occasionally say “We aren’t sure what we are meant to do on the wards”.

The answer is “To see as many patients as possible and to participate fully in ward activities, without disrupting ward routine or patient care”. The Registrar/House Officer is the person who should give guidance as to how this can be achieved.

# University learning objectives for clinical attachments

## Geriatrics

By the end of the clinical attachment students should be able to:

### Domain: Applied Science for Medicine

1. Apply key basic science principles to the evaluation of patients presenting with common conditions in older people.

### Domain: Clinical and Communication Skills

2. Evaluate older patients presenting with a range of common conditions and problems.
  - Elicit from patients with multiple medical problems a logical and comprehensive history
  - Assess the environmental and social issues that contribute to the medical issues
  - Undertake a detailed multisystem examination with special emphasis on the cognitive, locomotor and neurological components
  - Demonstrate respect for and confidence with older people and problems they may face
3. Formulate logical problem lists for a range of older patients.
  - Develop a differential diagnosis list that encompasses the multiple medical issues of a patient
  - Determine the most likely working diagnosis
  - Evaluate and select tests that will confirm or alter the working diagnosis
  - Interpret simple laboratory and radiology tests
4. Prepare basic management plans that include medical, rehabilitation and social issues.
  - Apply best available evidence to solve clinical problems
  - Identify issues of multiple medications
  - Identify issues specific to Māori patients
  - Identify and discuss areas of controversy in patient management
5. Explain the multidisciplinary team approach that is used in medical and rehabilitation for the older patient.
  - Summarise the range, together with their respective roles, of domiciliary and institutional services outside the public hospital
  - Explain how and when these services need to be incorporated into a management plan for the elderly patient
  - Outline the needs assessment process used with older patients

### Domain: Personal and Professional Skills

6.
  - Develop respect for patient autonomy and rights of the older patient, by acquisition/clarification of knowledge of legal and ethical aspects of care pertaining to older people
  - Identify the strengths and areas for improvement in both your communication and clinical skills when dealing with Māori patients

### Domain: Hauora Māori

7.
  - Engage in a culturally safe manner with Māori patients, whānau and communities
  - Reflect on own practice and systemic factors in relation to ethnic inequalities
  - Identify strategies to overcome barriers with a view to improving Māori health outcomes, particularly for older Māori

### Domain: Population Health

8. Suggest evidence based public health approaches that would reduce the burden of medical diseases in older people
  - Outline the medical conditions that significantly contribute to morbidity in the New Zealand context
  - Identify the patients’ experienced episodes of care in the wider context of the community and the health system

Older people are diverse yet some have a reduced ability to cope with environmental challenges. This results in a unique set of presentations that can easily be dismissed but which are often remediable. Many of their problems can be helped. During this run we would like you to gain confidence and skills in interviewing and examining older patients. This includes learning how to communicate with and take a history from patients who may be visual, hearing or cognitively impaired. We would like you to learn about common medical problems in older people and how these interact with their environment and social circumstances. You will have an opportunity to see how multiple problems can interact and how difficulties arising from chronic illness can be treated using a multidisciplinary approach. Above all we would like you to be enthusiastic about seeing patients, to be self motivated and to enjoy the attachment.

# Helpful hints to achieve learning objectives

## Master a neurological examination

**Learning experiences:** Bedside teaching, opportunities to practice with real patients (admissions, case history), liaising with fellow students regarding clinical signs

## Obtain, collate and document a complete history and examination of an older person

**Learning experiences:** Feedback from Ward Registrars / Consultants.  
**Assessment:** This includes the patient’s concerns, their significant medical problems, the opinions of others, significant ethical issues, the role of a member of the Multi Disciplinary Team and documentation of a plan of treatment/care.

## See patients in a variety of settings; identify some key learning issues

**Learning experiences:** Home Visit, accompany Ward staff in routine activities, Geriatrics tutorials/unit teaching/grand round, outpatient clinics.

## Master the features of the basic assessment and management of an older person with delirium or dementia

**Learning experiences:** Home Visit, accompany Ward staff in routine activities, outpatient clinics, family meeting(s) Geriatrics tutorials/unit teaching / grand round.  
**Assessment:** Often part of the written case study. Ward assessment by supervising consultant. It is likely that two students will be presenting seminars on ‘delirium’ and on ‘dementia’

## Display appropriate attitudes to older people and colleagues

**Learning experiences:** Feedback as needed.  
**Assessment:** Collated opinions of staff

## To help you achieve these objectives, you will have the opportunity to participate in or observe the following:

- Ward team meetings
- Family meetings (where appropriate)
- Assessment visits with relevant professionals
- Interviews and examination of patients in a variety of inpatient and outpatient settings
- Ward rounds and outpatient clinics

# Criteria for pass and potential distinction

You are advised to discuss your assessment with your supervising consultant towards the end of the run.

## To pass the run

To pass the run, you must pass all three assessments: ward assessment (including a home visit – see below); case history and seminar presentation. If you receive a “borderline pass” for one or more assessments you’ll be awarded a “borderline pass” for the attachment overall. This means that you’ve passed the attachment as long as similar problems haven’t occurred, or don’t occur, in other attachments this year.

If you receive a “fail” in one or more assessments you may fail the attachment outright.

## To achieve potential distinction

It is possible to achieve at “Distinction” level in this run. This decision is made at the end of each run after the results of all work are available and the opinions of all relevant tutors considered. Distinction is considered for students who have passed all objectives and who have achieved at a distinction level in at least two of the three areas of the assessment, one of which must be the CSR form.

## Geriatrics Prize

As of 2016 there will be an annual Geriatrics Prize of \$500. The short list for the prize will be generated from nominations from each DHB (two nominations per year for the larger DHBs, and one nomination per year for the smaller DHBs). There will be no additional requirements for students on the short list. The Head of Department of Medicine and the Professor of Geriatric Medicine will judge the prize and will forward their recommendation to the Board of Examiners for a final decision.

## Plagiarism

The University of Auckland will not tolerate cheating, or assisting others to cheat, and views cheating in coursework as a serious academic offence. The work that a student submits for grading must be the student’s own work, reflecting his or her learning. Where work from other sources is used, it must be properly acknowledged and referenced. This requirement also applies to sources on the world-wide web. A student’s assessed work may be reviewed against electronic source material using computerised detection mechanisms. Upon reasonable request, students may be required to provide an electronic version of their work for computerised review.

# Resources

Highly recommended viewing is ‘Barbara’s Story’ (33 mins) as it covers dementia, delirium, ethics, advanced care planning and the experience of an older person in hospital. URL: [youtu.be/DtA2sMAjU\\_Y](https://youtu.be/DtA2sMAjU_Y)

Look at the seven specific Geriatric Medicine scenarios that are found on the MBChB portal. URL: [www.fmhs.auckland.ac.nz/mbchb-portal](http://www.fmhs.auckland.ac.nz/mbchb-portal)  
By using key words from the following case histories in the MBChB portal under scenarios, diagnoses, medicines and/or learning points, then you can access information that will enable you to answer the questions listed.

All these resources will enhance your learning and can be used in student seminars and ward discussions with your team.

## Drugs

### Drugs – Case history one

An 84 year old man is admitted to the Assessment, Treatment & Rehabilitation Unit with dizziness for 4 months and increasing difficulty walking for the last 2 months. He has been living alone and is finding it increasingly difficult to look after himself. He has had several falls in the last 3 weeks and his back has been painful after the last fall. He had been on no medication until hypertension was diagnosed 6 months ago.

#### Medication on Admission

- Prochlorperazine 5mg TDS
- Cilazapril 5mg daily
- Madopar (Levodopa/benzserazide) 62.5mg TDS
- Paracetamol 500mg ii QID

#### Question

What role might his medications have played in his presentation?

### Drugs – Case history two

An 81 year old woman is admitted to hospital with a dense right hemiplegia, dysphasia and a reduced level of consciousness. This has occurred suddenly 3 hours before. The cardiac rhythm on ECG is atrial fibrillation. Other than a recent chest infection she has been in good health.

#### Medications

- Warfarin according to INR
- Roxithromycin 150mg BD for 2 more days [total of 7 days]

#### Question 1

What are the possible causes or precipitating factors of this woman’s presentation?

#### Question 2

What investigations would help clarify the cause?

### Drugs – Case history three

An 86 year old woman is admitted to an acute medical ward with fainting episodes. She also has shortness of breath and chest pain on exertion, and orthopnoea requiring 4 pillows. She has bilateral painful knees. There is a past history of stable angina.  
Medication on admission Atenolol 100mg daily Naproxen SR 750mg mane Aspirin 150mg mane

#### On examination

She appears rather drowsy. Pulse is 45/min and regular. BP 90/50 lying and 80/50 standing. She has a raised JVP, ankle oedema and crepitations at both lung bases. There is evidence of osteoarthritis of both knees.

#### On investigation

Serum creatinine raised to twice the upper limit of normal.

#### Question 1

What are the possible causes of her admission to hospital?

#### Question 2

How might her medications have contributed to these problems?

### Drugs – Case history four

A 90 year old man attends his GP for follow up as requested after a recent hospital admission with congestive heart failure (underlying causes thought to be ischaemic heart disease and hypertension). He brings in his yellow medication card which states his discharge medications as:

- Frusemide 120mg mane
- Enalapril 10mg mane
- Spironolactone 25mg mane
- Isosorbide mononitrate 60mg mane
- Aspirin EC 100mg mane

#### Question 1

What questions should the GP ask at this stage?

#### Question 2

What are the important things to examine?

#### Question 3

What should the GP and the patient be monitoring now and in the future with this condition and this combination of drugs?



Falls

Falls – Case history one

An 80 year old woman is seen at the Outpatient Clinic for further assessment of her falls. They have been occurring for at least a year. She seems to go down without warning but doesn’t lose consciousness. Usually she is just walking along the street and her legs seem to give way. Once she is down she cannot seem to get up, although if someone helps her up she seems to be OK after standing for a short while. She has a past history of depression and her medications include nortriptyline 50 mg nocte and diazepam 5 mg nocte.

On examination there is evidence of osteoarthritis of both knees.

**Question 1**

What are the possible causes and contributing factors to her falls?

**Question 2**

What would be your approach to management of her problems?

Falls – Case history two

An 82 year old man is seen at the Outpatient Clinic for further evaluation of falls which have been occurring approximately once a week for 3 months. They occur without warning and do not seem to be brought on by anything in particular. He thinks he must lose consciousness as he tends to come to on the floor not knowing what happened. He cut his head last time and had to have it sutured by his GP – this led to the present referral. He has been well in the past and is **on -no** medication.

**Question 1**

What are the possible causes of these episodes?

**Question 2**

What further information do you need to try to elucidate the cause and how might you get it?

**Question 3**

How would you investigate this problem?

Falls – Case history three

An 84 year old woman is admitted to the orthopedic ward with a transcervical fracture of the neck of the left femur. She was doing her Christmas shopping in a department store when she lost her footing on the escalator and fell to the bottom.

She lives alone and normally manages without outside help. She has never been in hospital before and her only medication is quinapril 20mg daily for high blood pressure.

She is taken to the operating theatre that night and the fracture reduced and internally fixed (a procedure that allows weight bearing immediately post op). Unfortunately, over the next 5 days, she does not readily mobilise post-operatively. Her knees give way and she clutches wildly at the nurses or physiotherapists assisting her attempts at mobilisation.

**Question 1**

What factors would suggest that this outcome is not consistent with her expected prognosis?

**Question 2**

What post-operative complications or problems could be contributing to this outcome?

**Question 3**

If there are no post-op complications, what else could be causing it?

Falls – Case history four

A 93 year old woman is referred to Older Persons’ Health for a home assessment. You are triaging the GP’s referral for degree of urgency with which the home visit should take place.

The referral states she is has been having frequent falls over the last five days. She lives with her husband who has difficulty helping her up when she falls. Her previous medical history includes diabetes mellitus with autonomic neuropathy and recurrent urinary tract infections. She has recently been started on a small dose of frusemide for swollen ankles.

**Question 1**

From the information you have so far, what are the possible causes and contributing factors to her falls?

**Question 2**

Should this referral be considered urgent enough to visit within 24 hours?

**Question 3**

What do you consider the most important things to further evaluate when she is seen at home?

Incontinence – Case history three

A 72 year old woman attends her GP with episodes of faecal incontinence. These occur several times a month and seem to be related to times when she has loose bowel motions. She has also wondered at times if she can feel ‘something coming down’ when she passes a bowel motion, especially if she has to strain. The problem has been present for about 6 months and she is becoming afraid to go out to social activities in case she ‘embarrasses herself’.

**Question 1**

What are the possible causes of the faecal incontinence?

**Question 2**

What examination should the GP do on this visit?

**Question 3**

What investigations should the GP arrange at this time?

Incontinence – Case history four

An 85 year old woman living in a rest home is referred for advice on management of her faecal incontinence. She has advanced Alzheimer’s disease and can’t give a history herself. The staff tell you the problem has been present for about 4 months now and is getting worse. The faecal incontinence occurs perhaps 3 times weekly. It is getting to the stage where they cannot manage her because of this problem and they are recommending she move to long term hospital care.

**Question 1**

What are the likely causes of the faecal incontinence?

**Question 2**

What further information might be helpful from the staff of the rest home?

**Question 3**

What will you particularly check on examination?

Incontinence

Incontinence – Case history one

A 79 year old woman living alone presents to the Continence Clinic with urinary incontinence of 3 months duration. It always seems to occur when she is trying to get to the toilet, but her bladder doesn’t seem to give her enough warning to allow her to get there in time. She also thinks she has to pass urine more often than is normal – about every hour during the day and at least 3 times at night. She had a stroke about 12 months ago and the frequency seems to date from that time. She also has osteoarthritis of the hips. She has been having more pain and difficulty walking from this recently.

**Question 1**

What is/are the likely cause(s) of the incontinence?

**Question 2**

What investigations would you consider appropriate?

**Question 3**

How might you manage her problem?

Incontinence – Case history two

An 85 year old man comes to live in a rest home. He has Parkinson’s disease and is no longer able to manage in his own home. He can transfer from bed to chair and walk with one assistant. He has had urinary incontinence for several months and before that had difficulty starting to pass urine and rather poor stream for some years. He seems to have no idea of when he is passing urine and at times seems to be constantly dribbling urine. He has recently commenced medication for depression (nortriptyline).

**Question 1**

What is/are the likely cause(s) of the incontinence?

**Question 2**

What will you check on examination?

**Question 3**

What suggestions do you have for management of the incontinence?

Parkinson’s

Parkinson’s – Case history one

A 70 year old man has noticed he is physically slowing down. His balance isn’t as good as it was – in particular there seems to be a tendency to fall forward when walking. At times it is as if his feet are stuck to the floor.

In addition there is a shake in his right hand, although this doesn’t seem to interfere with the function in this hand.

**Question 1**

What 3 of the 4 main features of Parkinsonism are demonstrated here?

**Question 2**

What are other recognised features of Parkinson’s disease that you might ask about or look for?

**Question 3**

If this is Parkinson’s disease, what are appropriate management options to consider for this man at this stage?

Parkinson’s – Case history two

A 75 year old woman has a problematic tremor in her right hand that she feels has been getting worse for around 12 months. It is also present at times in the left hand and the jaw but she hasn’t noticed it in her legs. It bothers her when she is watching TV at night but also seems to have made writing difficult. She has had a couple of falls this year but otherwise denies difficulty walking.

**Question 1**

What is the differential diagnosis of the tremor?

**Question 2**

What do you particularly want to look at on examination?

**Question 3**

What medications could you consider to help control the tremor?

Parkinson’s – Case history three

A 75 year old woman has had Parkinson’s disease for 10 years. She presents with decreased mobility, falls and ‘grimacing and fidgeting’. This is an inability to keep the limbs and head still which only occurs from time to time and is worst about half an hour after taking Sinemet. It is definitely different to her tremor and is noticed more by her husband than the patient herself. However, at these times her mobility is at its best. Later on, when her next tablet is due, she is very stiff and slowed up and it is at these times she is most at risk of falling.

She also has difficulty rolling over in bed at night and her husband has to help her out of bed 2-3 times a night when she gets up to pass urine.

**Medications**

- Sinemet (levodopa/carbidopa) 25/250 i QID
- Bendrofluazide 2.5mg mane

**Question 1**

What is the ‘fidgeting and grimacing’ and what is it due to?

**Question 2**

How might you alter the medication to minimise this but improve the Parkinsonian features [there are a number of options]?

**Question 3**

How might you alter her medication to specifically help her nighttime problems?

Parkinson’s – Case history four

A 78 year old man has had Parkinson’s disease for 8 years. He complains of becoming increasingly forgetful. His wife confirms this but also reports that he seems to be especially muddled at times and much clearer thinking at other times.

**Medications**

- Madopar (levodopa/benserazide) 125mg 5 times daily
- Benztropine 2mg BD Bromocriptine 5 mg TDS

**Question 1**

What is the differential diagnosis?

**Question 2**

What are the management options for the most likely causes?

Ethics

(to be used as a possible template for Ethics Seminar discussion)

Ethics – Case history one

An 83 year old man is found to have cancer of the rectum. He has had probable Alzheimer type dementia for three years. He had moderate memory impairment with an MoCA 15/30, occasional urinary and faecal incontinence, he constantly asks repetitive questions of his wife, restlessness, and needs guidance and supervision in most activities of daily living. He is very mobile (occasionally gets lost in town). The doctor feels that the cancer has not metastasised and that it may be curable. A colostomy would, however, be required. The doctor wishes to operate.

You are the man’s 63 year old wife and next of kin.

**Question 1**

What should you do?

**Question 2**

And why?

Ethics – Case history two

An 86 year old retired school teacher has been referred to the Unit by a Public Health Nurse. The patient is a recluse who lives in a 110 year old ramshackle villa. She is unkempt and the house is in gross disrepair. There are holes in the floor, two heaters with frayed electrical cords, most windows are broken and there is an outside toilet.

Every room shows considerable amounts of hoarded belongings including newspapers dating back 20 years, old furniture, rusting implements and rotting food in the refrigerator.

She is admitted and found to have an MMSE 28/30, interested in music and reading and with no obvious physical disabilities. There is no history of alcohol abuse, but it is likely her nutrition has been poor.

Her only relative is a great-niece who, like the neighbours, health department, social worker and general practitioner, feel she should be in a home. She refuses and insists on returning to her villa.

On the day of discharge, you are rung by neighbours and the niece, saying “she should not be sent home”.

**Question 1**

What should you do in this situation?

**Question 2**

What factors do you take into account in making your decision?

Ethics – Case history three

Mrs S has been in a Health Care of the Elderly ward for 3 weeks being “assessed” by all the disciplines. The conclusion by the doctors is that she has moderately advanced Alzheimer’s disease with significant loss of short term memory, impairment of judgment and lack of insight. Medical investigation has not suggested any other cause for her problems and she is otherwise a fit woman of 83 years. The nurses note she needs prompting to remember to do normal activities such as dressing and toileting. She will also put her clothes on in an unusual order if left to her own devices. She has a tendency to wander aimlessly during the day and has on two occasions had to be returned to the ward from the hospital grounds. The Occupational Therapist adds that she needs assistance to shower and did not cope at all well in the kitchen, even with making a cup of tea. She was endangering herself when attempting to use the stove.

Mrs S is adamant she is returning home to live. She cannot see any potential problems with this and will not contemplate a rest home which she sees as a “living death”. If any help is required she believes her daughter (long suffering, very worried about her mother and unable to say to her that she cannot help) will provide it.

The OT is adamant she is not safe to return home and should be “persuaded” to go to a rest home by whatever means are available (even legal); the nurses tend to agree about the potential lack of safety but feel her autonomous wishes should be respected.

**Question 1**

Do you agree?

**Question 2**

What are the ethical issues?

**Question 3**

What practical steps would you take towards sorting out the dilemma?

Ethics – Case history four

**Mrs F – aged 75**

She was admitted to hospital in January with increasing angina for six months and postural hypotension such that she was unable to cope at home. Last September, she was admitted with angina and syncope found to be due to intermittent bradycardia. A permanent pacemaker was implanted and she was discharged on anti-anginal medications. Two months later, she presented with symptoms of left ventricular failure requiring diuretic therapy.

On the present admission, she was experiencing 10-12 episodes of angina with minimal exertion and at rest, despite maximal anti-anginal therapy. However, this treatment produced symptomatic postural hypotension. Attempts to reduce the medication resulted in aggravation of her ischaemic symptoms. She had a past history of recurrent vertigo, thought to be due to vertebro-basilar insufficiency as she had been restricted by mild truncal ataxia prior to her current problems.

Her coronary anatomy does not favour stenting.

**Question 1**

Should Mrs F. be offered coronary artery bypass surgery to control her symptoms given that the risk of this procedure is likely to be high and there are limitations on health resources?

Patient autonomy, competence and choice

All adults irrespective of their age have the autonomy to make decisions for themselves. The law assumes that they are competent to do so until proven otherwise. In law the definition of competence implies the ability to understand and manipulate information, to communicate a choice, and express decisions that follow rationally from the information given taking into account the person's values and circumstances. Just because a person reaches a decision that you as their medical 'supervisor' do not agree with does not make them incompetent. The decisions that people reach depend on their values, culture, desires, personal history, etc. People are allowed to do 'dangerous things' without any assumption of incompetence (e.g. Formula One racing driving, hang gliding or even playing rugby).

Scenario one

Mr Smith is an 88 year old man who is found lying on the floor of his very cold and unheated home in Invercargill in July. He is confused. He is admitted to hospital and found to be hypothermic and in congestive cardiac failure. He is very thin and appears biochemically to be malnourished (low calcium and albumin, mild iron deficiency anaemia, very low serum folate). He is warmed up slowly and his heart failure responds to standard medication. He eats well on the ward and his delirium gradually resolves over 10 days.

During this time you learn from his GP and his estranged son who lives in Auckland that Mr Smith is extremely rich but does not like spending money. He has tens of thousands of dollars in bonus bonds and a large bank account. He does not heat his home because of fear of spending money. This has been a life long trait. He does not trust doctors ever since the death of another son at the age of 2, 62 years ago. He therefore does not comply with his diuretics and ACE inhibitors that his GP prescribes. He tends to live on bread and jam and beans on toast again because of a dislike of spending money. He has suffered multiple falls in the last six months and his GP feels that these are due to poor lighting and loose carpets in his home. An occupational therapy assessment confirms that he is safe to mobilise on the wards but a home visit confirms environmental dangers and overall agrees that he is at risk of further falls.

His MoCA conducted 11 days after admission is 29/30. He tells you that he wishes to go home and that he does not wish any environmental modification (carpet safety, lighting, etc) to be carried out. He tells you that he will not take his diuretics and ace inhibitors once he goes home. He declines to allow you to contact his son further. He declines any offer of social service intervention (carers, meals on wheels, etc).

Your medical assessment is that he is at serious risk of further falls and possible fractures. He is also at risk of a worsening of his heart failure (indeed this will almost certainly happen) and of further malnutrition.

His son sends you an email suggesting that you ought to 'put my dad in a home'.

How do you proceed?

Scenario two

Mr E H is a 35 year old man who is in hospital in Kathmandu recovering from a bout of infective diarrhoea. You are his registrar. He has been slightly confused when very unwell but is now back to normal cognitively. He tells you that when he leaves hospital tomorrow he plans to join an expedition to climb Mt Everest using equipment from the mid 1950s. You deem that he is at risk of falls, fractures and possible death (particularly given that he intends to be in the summit party for which the historical average mortality rate is 16%). You deem that he is at risk of high altitude pulmonary oedema. You also are concerned about the possibility of hypothermia and (though to a lesser degree) about the possibility of malnutrition during the expedition.

Do you keep Mr E H in hospital against his will to prevent him from attempting the summit of Mt Everest?

Returning to Mr Smith, his decision is to return home and not comply with medical treatment with similar risks to Mr E H (probably somewhat less in

terms of death). Whether his desires are rational or not clearly depends on his understanding of risk (i.e. does he recognise the risk of falls and possibly consequences and risk of not taking medication for example). Given that he does, and bearing in mind his reasons for not taking medication (understandable lack of trust of doctors given the death of his two-year old son) then you would generally have to conclude that he is competent to make the decision. Remember people are competent until proven otherwise.

If he tells you he knows that he will be perfectly safe because he has contact every day with the Angel Gabriel who appears to him in a bowl of weetbix in the morning and assures him of his personal safety despite what the doctors say, then you would probably wish to change your view regarding his competence.

In order to assess capacity/competence a 'trigger' is needed.

Ordinarily a person does not have to justify his or her decision and thus there must be a valid reason to assess competence. This is an intrusive thing to do. Legally, any registered health practitioner whose 'scope of practice' includes the assessment of competence' can decide. In practice this usually means the SMO responsible for the care of the patient aided if necessary by geriatricians, psychiatrists, lawyers and social workers. On some occasions further specialist advice, for example from speech and language therapists, may be required.

Competence does not have to be 'complete and absolute' and does not have to be global. Just because a person has cognitive impairment or a psychiatric illness does not automatically mean that they are incompetent.

In an emergency a physician can treat a patient without gaining formal consent. In all other circumstances consent must be gained but this is very often tacitly assumed following discussion and information exchange between doctors and patient.

Scenario three

An 88 year old woman with a past history of fractured neck of femur (two years previously), pernicious anaemia (on B12 therapy) and controlled hypertension (on an ACE inhibitor) is admitted to an acute medical ward following a fall at her rest home. She suffered only minor bruising but was unable to summon help in the night and had spent 2-3 hours lying on the floor. Her MoCA on admission is 29/30 (she thought it was 27th February when in fact it was 28th) and on examination she is frail but otherwise well. She is unable to stand unaided, and only able to walk a few paces with her 4 wheeled walker, saying that she is frightened to mobilise in case she has another fall.

In accordance with routine ward policy she is asked her wishes about resuscitation and replies quite adamantly that in the event of a cardiac arrest she would not wish to be resuscitated. The day after admission you speak with her immediate family (two sons) who support her view on this. A 'Do Not Resuscitate' (DNR) order is attached to her notes.

She initially progresses well with physiotherapy, but on the morning of the 3rd day after admission she develops an acute confusional state (delirium) with an MoCA of 9/30, a pyrexia (38.4°C), a tachypnoea (26/ min), a sinus rate of 106/min, blood pressure 116/86mmHg, and oxygen saturations of 86% on air. Chest radiograph shows left basal consolidation.

You treat her with antibiotics, slow intravenous (IV) fluids and oxygen at 2 litres per minute via nasal prongs. Her 'vital signs' improve but she remains very confused.

Her sons, who arrive for routine visiting in mid afternoon, ask to see you and say that they wish you to stop the antibiotics, IV fluids and oxygen supplements because of their mother's expressed wishes not to be resuscitated.

How do you approach to the sons' request? Why?

This lady's wish "not be resuscitated" applies only to the event of cardiac arrest. She has not given her consent to declining any other form of treatment and indeed has cooperated with treatment so far agreeing to be admitted to hospital and cooperating with physiotherapy interventions. The likelihood of a successful outcome (i.e. full recovery) in pneumonia is quite high (in contrast to the poor chances of recovery from a cardiac arrest).

Her sons do not have any legal or indeed any ethical right to deny her treatment. This would be the case even if they enduring held enduring power of attorney for welfare as an enduring power of attorney does not give the attorney (the person acting on behalf of the individual) any rights to withhold or withdraw lifesaving treatment. More generally the attorney is legally bound to act in the best interests of the individual at all times.

It is quite likely that the sons in this situation simply do not understand the medical details and having seen their mother very confused and clearly unwell they are very distressed and assume that she is likely to die. You thus need to have a very detailed conversation with them giving them the medical outlook in a sympathetic and empathetic manner. It is more likely than not that they will then agree that you continue treatment and indeed encourage this. If they insist in their wish to have treatment withdrawn you would decline this request. To withdraw treatment in this situation would not only be unethical but would also be illegal and might result in significance consequences for you as a doctor (including being reported to the Medical Council, being removed from the medical register and possibly being reported to the police for manslaughter or even murder if the patient died).

The only person able to decline medical treatment is the patient themselves (providing they have capacity or an advanced directive).

Clearly the views of family must be ascertained and taken into consideration when making any decision, but the family does not have a "right" to decline intervention on behalf of their loved one.

Relatives or those holding Enduring Power of Attorney are not able to sign DNR orders or advanced directives in New Zealand or Right 7 subsection (4) of the HDC Code of rights gives guidance for those who lack capacity.

Where a consumer is not competent to make an informed choice and give informed consent, and no person entitled to consent on behalf of the consumer is available, the provider may provide services where -

- a. It is in the best interests of the consumer;  
*and*
- b. Reasonable steps have been taken to ascertain the views of the consumer;  
*and*
- c. Either -
  - i. If the consumer's views have been ascertained, and having regard to those views, the provider believes, on reasonable grounds, that the provision of the services is consistent with the informed choice the consumer would make if he or she were competent;  
*or*
  - ii. If the consumer's views have not been ascertained, the provider takes into account the views of other suitable persons who are interested in the welfare of the consumer and available to advise the provider.

Every consumer may use an advance directive in accordance with the common law.

Enduring power of attorney (EPOA)

Enduring Powers of Attorney are common in the New Zealand jurisdiction. They are a form of advance directive and must be specified on the correct form in the presence of a solicitor and witnessed. They assign authority to another person (the 'attorney' - often but not always a relative) to manage the affairs in the event of the patient losing capacity (permanently or temporarily) to do so themselves. There are two types of power of attorney: for property; and for personal care and welfare (including medical decisions).

The enduring power of attorney must be assigned while the person is still competent (beware of doing an enduring power of attorney in a person with advanced dementia that appears to have been signed by the person three months earlier). Enduring power of attorney has no effect whilst the person is competent (i.e. like a will whilst the person is alive). It must be activated by a 'relevant health practitioner' certifying lack of capacity and recommending the use of EPOA. In practice this is usually a consultant/SMO. Once activated the powers of attorney are wide but not all encompassing; i.e. they do not give the attorney 'carte blanche'. In particular they do not give the attorney the right to 'refuse consent to the administering to that person of any standard medical treatment or procedure intended to save that person's life or to prevent serious damage to that person's health'. The attorney is bound to act in the best interests of the person at all times. If a medical practitioner believes that the attorney is not acting in the person's best interest they not only have the right not to act according to the attorney's instructions but in fact are legally bound not to do so. It is essential when acting according to an attorney's wishes that the EPOA document is sighted and a copy kept in their notes.

Sources of information/websites:

Further sources of information regarding ethics, patient autonomy, competence and legal issues are listed below

[www.hdc.org.nz](http://www.hdc.org.nz)

[www.advancecareplanning.org.nz](http://www.advancecareplanning.org.nz)

[www.neac.health.govt.nz](http://www.neac.health.govt.nz)

[www.ageconcern.org.nz](http://www.ageconcern.org.nz)

[www.justice.govt.nz/family-justice](http://www.justice.govt.nz/family-justice) (under court matters)

[www.publictrust.co.nz](http://www.publictrust.co.nz)

[www.lawsociety.org.nz](http://www.lawsociety.org.nz)



# Stroke: an overview of management

## Epidemiology

Stroke is one the commonest causes of disability in the western world. The incidence of stroke in New Zealand is 1.3 / 1000 persons and increases dramatically with increasing age. Approximately 75% of all strokes occur in the over 65s and 50% in the 75+ age group. The age adjusted incidence of stroke is remaining static in NZ, but with the ageing population, the absolute numbers of strokes is expected to increase.

## Clinical presentation

Each stroke is different. The effect on an individual depends on their co-morbidity, type of stroke, age, social supports and their pre-existing personality and beliefs.

## “Stroke is NOT just a motor illness”

Whilst many present with a classic hemiplegia, or lesser degree of motor weakness, this is not always the case. Indeed the person’s disability (activity limitation), and handicap (participation restriction), may be more related to their other stroke related deficits, such as hemianopia, visuospatial problems or dyspraxia, rather than their motor weakness.

A person with a stroke may present with one or several of the following symptoms / signs:- hemianopia, hemiplegia, hemisensory disturbance, epilepsy, dysphagia (or pneumonia secondary to this), language difficulties, falls, acute confusion, loss of consciousness (uncommon without other focal findings) or difficulty walking.

## Definition of Stroke and TIA

The WHO definition of stroke has three key components:

1. Acute onset and
2. Focal neurological deficit and
3. The above are consistent with a single vascular territory insult.

A Transient Ischaemic Attack (TIA) is traditionally defined as an event having all 3 components above, but the symptoms disappear in less than 24 hours. In reality, most TIAs last only a matter of minutes and are at most 1-2 hours. Most of those lasting longer are small strokes and cause permanent neurological loss, even if clinical symptoms disappear. By definition, TIAs do not cause persisting disability.

A stroke is the same as a TIA, but lasts longer than 24 hours (or causes death within 24 hours).

## Risk factors for Stroke

These include:

- Increasing age
- Male sex
- Atrial fibrillation (of increasing importance with increasing age)
- Smoking
- Hypertension
- Ischaemic heart disease
- Family history of stroke
- Peripheral vascular disease
- Diabetes mellitus
- Carotid stenosis
- Rheumatic valvular disease
- Obstructive sleep apnoea

The most important treatable risk factors, from a public health perspective, include hypertension, atrial fibrillation and smoking. Carotid stenosis, hyperlipidaemia, oestrogen use and valvular disease may also be important and treatable at an individual level.

## Stroke care can be arbitrarily divided into three phases:

1. Acute
2. Rehabilitation
3. Adaptation and adjustment

There is considerable overlap between these phases and in reality, rehabilitation and adaptation/adjustment phases begin on day one. However for teaching purposes, it is useful to artificially separate the phases.

### 1. Acute Phase

The aims of this phase include at least:

- a. Accurate diagnosis
- b. Acute treatment to reverse (and/or limit) the neurological damage
- c. Prevention of complications
- d. Nursing care for dependent patients
  - » Begin rehabilitation, including provision of information about stroke to patients and their family.

### (a) Accurate Diagnosis

A full history and examination is essential for detecting all the stroke related deficits and co-morbid conditions. From the bedside clinical examination, it is usually possible to classify the type of stroke into one of 4 categories (Bamford et al) as in Table 1.

### Investigations

Part of the diagnostic workup includes some limited investigations:

1. History (acute onset)
2. Clinical examination: (neurological deficits consistent with a vascular territory).
3. Full blood count, ESR.
4. Blood glucose (immediately on arrival to hospital, NOT the following day)
5. Electrolytes and renal function
6. CXR sometimes required if has respiratory or cardiac symptoms
7. serial ECGs to detect AF and other cardiac abnormalities
8. Neuro-imaging – All stroke patients should have neuro-imaging early. A CT head scan is a reliable first investigation to distinguish haemorrhage from infarction and should be done as soon as possible after the stroke onset. Scans done later than 10-14 days may erroneously describe a resolving haemorrhage as an infarct. However early scans may underestimate the volume of neurological damage. MRI scans (including DWI sequence) are good for detecting acute brain injury from stroke, but are generally not as readily available. Specific MRI sequences may detect the presence of old bleeding (T2\*)

Other tests including syphilis serology, antiphospholipid antibodies and coagulation tests may be appropriate, depending on circumstances.

### (b) Acute treatment

Acute stroke treatments aim to:

1. Reverse the underlying pathological process and/or
  2. For ischaemic strokes, limiting the brain dysfunction by salvaging neurones in the ischaemic “penumbra” zone.
- Proven strategies include the following:
- a. Aspirin: To reduce progression or reverse the arterial occlusion. Aspirin has been shown to have a definite benefit when used acutely within 24-48 hours.
  - b. Thrombolytic agents (Tissue plasminogen activator- tPA) To lyse the intra-arterial thrombus and restore cerebral blood flow. tPA: Benefit with early treatment (within 4.5 hours from onset of symptoms). Thus “Brain attacks” (strokes) need the same

urgency of response as “heart attacks” (MI).

Strategies such as calcium channel blockers, corticosteroids, n-methyl D aspirates (NMDA) antagonists and neuroprotective agents have not been shown to work as yet.

### (c) Complications

Complications (both neurological, and as a result of immobility) need to be anticipated and prevented. This task begins during the acute phase, and continues into rehabilitation and adaptation phases. Some of the complications include:

- Immobility and deconditioning
- Pneumonia (may be aspiration pneumonia)
  - » aspiration pneumonia may be avoided by early identification and appropriate management of those with impaired swallowing (gag reflex is NOT predictive of swallowing ability)
- Dysphagia
- Incontinence
  - » both unstable bladder and urinary retention need to be considered
- Dehydration
  - » ensure adequate hydration (may not be able to reach glass of water) and nutrition. The presence of dysphagia may require alternative means of feeding and fluid intake
- Under nutrition and muscle catabolism
- Pressure sores
  - » regular turning, early mobilisation, position changes and low pressure mattresses help
- Loss of dignity/morale/hope
- Death
- Depression
- Constipation- pre-empt with regular fluids, laxatives
- Pulmonary embolus/DVT
  - » early mobilisation and aspirin (ischaemic strokes only) are effective. LMWH reduces risk of DVT/PE, but this benefit is negated by an increased early risk of haemorrhagic transformation. LMWH should be considered on a case by case basis, and reviewed again after 7 days if leg paresis or other risk factors persist.
- Loss of independence by becoming “institutionalised”

continued >>

Table 1: Types of stroke

Type	Type in full	Definition	Mortality at 6 months	Functional outcome	Risk of recurrence
TACI	Total Anterior Circulation Infarct	Hemiparesis (2/3 of face, arm and leg), hemianopia and 1 other cortical sign	High, 56%	Poor, <5% independent	lower
PACI	Partial Anterior Circulation Infarct	In between TACI and LACI	10%	55% independent	high early
LACI	Lacunar Infarct	Pure motor, pure sensory, or sensory-motor stroke	7%	66% independent	constant over time
POCI	Posterior Circulation Infarct	Brainstem and/ or occipital signs	14%	68% independent	high early and continues

These categories are helpful for both prognosis and for determining risk of recurrence.

At the bedside, it is not possible to differentiate between cerebral infarction and haemorrhage (80-85% of all strokes are infarcts, 10-15% primary intracerebral haemorrhage, and 5% subarachnoid haemorrhage) – urgent imaging of the brain is required. Standard of care would be CT head within 4 hours as a minimum. CT head is a mandatory prerequisite for thrombolysis therapy.

- Blood pressure control
  - › a contentious issue. Cerebral autoregulation is impaired immediately post-stroke so it is vital that sudden drops in blood pressure are avoided. Blood pressure tends to fall spontaneously in the first days. Treatment is best avoided in the acute phase (except for extremes of BP), but after the first 7 days, antihypertensives are very important for secondary prevention.

**(d) Secondary prevention**

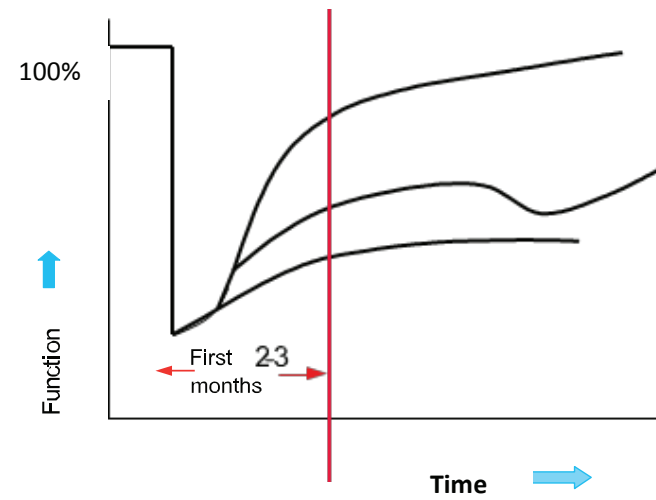
Secondary prevention of further strokes is important. These need to be tailored to the individual, their prognosis, their comorbidities and their stroke type. However key measures to be considered include:-

- Lifestyle measures
  - › Stop smoking
  - › Regular exercise
  - › Maintain a healthy weight, avoiding obesity
  - › Avoidance of excess salt intake
- Medications
  - › Antiplatelet agents such as Aspirin, dipyridamole, and clopidogrel
  - › Treatment of hypertension is critical for all types of strokes after the first 7 days
  - › Cholesterol lowering medications (e.g. simvastatin, atorvastatin)
  - › Warfarin or Direct Oral Anticoagulants (DOAC), eg Dabigatran, for atrial fibrillation and other cardioembolic strokes.
  - › Tighter control of diabetes
  - › Carotid imaging (e.g. Duplex Ultrasound) for carotid stenosis in selected patients. (worth discussing with patient whether they would have endarterectomy before requesting, if not interested in major operation then may decide not to order test)
- Surgical interventions
  - These interventions should be started as soon as practical. In particular, TIA patients should be investigated and secondary prevention started early (within 24 hours preferably) as this reduces the chance of early stroke recurrence (EXPRESS trial, Lancet 2007)

**2. & 3. Rehabilitation and adaptation phases**

Recovery takes TIME. The natural history of most stroke deficits is that some spontaneous recovery occurs, with most occurring within the first 12 weeks. (Figure1)

Figure 1: functional recovery curves after stroke



Prognosis for functional recovery (note this may differ from prognosis for mortality) is dependent on the initial severity of the stroke. Some predictive factors in stroke recovery include:

Good outcomes	Poor outcomes
Lives with partner	Increasing age
Previously independent	Duration of unconsciousness
Frequent social contacts	Confusion persisting at two weeks
Absence of visual field loss at 2 weeks	Conjugate gaze deviation at 2 weeks
Normal speech at two weeks	Urinary incontinence at two weeks
Positive mood at two weeks	Sensory neglect at two weeks
No perceptual difficulties at two weeks	
Able to perform personal and domestic activities at two weeks	
Presence of isolated limb movements at two weeks	
Normal position sense at two weeks	

**WHO Classification of Functioning (previously impairment, disability and handicap) – definitions**

Impairment – refers to the damage or dysfunction of an organ or part of the body eg. hemianopia or congestive heart failure.

Activity limitation (previously termed Disability) – refers to the way an impairment (e.g. hemiplegia) affects the function of an individual (difficulty walking is one disability caused by hemiplegia).

Participation restriction (previously termed Handicap) – refers to the way in which the combinations of impairments and disabilities interfere or impede an individual from carrying on their normal lifestyle (e.g. hemiplegia causes less additional handicap to an already bed bound person with severe arthritis than to a previously fit tramp).

The aim of stroke rehabilitation is to get the person back to his/her original level of functioning (or better) or if this is not possible, it is to minimise their disabilities. This is done using a multifaceted approach which aims to (1) minimise their impairments (eg. treat their pneumonia), (2) maximise activities (eg. regain normal balance and gait through physiotherapy), and (3) maximise participation (eg. reduce social isolation from no longer being able to drive a car, by provision of taxi vouchers, or involvement in local bridge club). Minimising their impairments in isolation is not sufficient.

Disabilities may be overcome by relearning to do tasks normally (e.g. physiotherapist helping patient to regain normal walking pattern), the provision of aids or “tools” (e.g. walking with use of walking stick and leg calliper) or by adaptive approaches (e.g. minimising the impact of not being able to walk, by the use of a self propelling or electric wheelchair). These varied approaches to disability will be tried at different stages of rehabilitation, depending on progress to date and the amount of residual disability expected.

The adaptation phase is probably the most important to the patients and their families, but least understood by doctors. Patients have to overcome residual disabilities, and try to live in the world outside the sheltered hospital environment. It takes months or years for people to adapt, both physically and psychologically, to their new level of functioning.

Some techniques used in the recovery phase may be at odds with the goals in the adaptation phase (e.g. physio tries to encourage a normal, symmetrical walking pattern in recovery phase, whereas in the adaptation phase, utilisation of an extended hemiplegic leg enables a functional, but abnormal gait.) The technique used will depend on progress made to date, prognostic indicators present and the setting of realistic goals. These goals need to be set by the rehabilitation team in conjunction with the patient

and need constant re-evaluation.

The importance of detecting all significant impairments caused by the stroke cannot be over emphasised. A full neurological examination (stroke is not just a motor illness) and global assessment of the individual as a whole person are both essential. Failure to detect impairments (e.g. sensory neglect) results in the patient having the label of “not trying” or “impulsive”.

**Common problems that arise include:**

**Motor deficits**

It is important to determine both the degree and pattern of power loss. Weakness after a stroke is not uniform, but tends to be worst in extensors of the arm and flexors of the leg. Tone varies from flaccid (commoner in the early stages) to severe spasticity and the tendency to develop contractures.

Spasticity is not uniform throughout all muscle groups (worse in the antigravity muscle, flexors in arms, extensors in leg) nor is it constant over time. It may be aggravated by many factors including pain, anxiety, and poor positioning. Important ways of reducing high tone include appropriate positioning of limbs, resolving concomitant medical problems (e.g. constipation, pressure areas, painful shoulder etc), use of serial splinting, application of either heat or cold to the limb or combination of these techniques. Increased tone (rather than weakness) was previously thought to be one of the major reasons for impaired function, but this is no longer thought to be the case.

Apraxia (or dyspraxia) is a disorder of sequencing/planning of motor tasks, that seems out of proportion to the degree of weakness etc present. It is defined as “disturbance in the programming and execution of learned, volitional purposive movement”. Gait dyspraxia, dressing dyspraxia and speech dyspraxia are some types of dyspraxia found.

**Sensory deficits**

**Visual and hearing**

Many stroke patients are old and many have co-existing visual and hearing impairment. These need to be detected. One of the commonest reasons for difficulty in hearing following a stroke is that their normal hearing aid was not brought into hospital!

Visual deficits resulting from the stroke include homonymous hemianopia (or quadrantanopia) and visual inattention. Both can be detected by a standard bedside confrontation test. The latter by using simultaneous, bilateral testing. Failure to detect these deficits may result in practical difficulties such as walking into door frames on the affected side, reading difficulties, and have major implications for driving a car.

**Proprioception and other sensory impairments**

Subjective sensory phenomena following a stroke are common. Hypoaesthesia, hyperaesthesia and dysaesthesia (abnormal interpretation of touch stimuli) commonly occur. Sensory inattention (or extinction) is a similar phenomenon to the visual inattention described above and may be a form of neglect. Proprioceptive loss causes significant problems post-stroke. Accurate position sense is needed for control of posture, balance and gait. Failure to detect this abnormality sometimes results in the patient being labelled as “clumsy”, “drunk” or “not trying”. The “thumb finding test” is useful for detecting problems, but needs careful interpretation.

**Pain**

Many stroke patients complain of pain. A few may have a Central Post Stroke Pain (CPSP) syndrome (previously called “thalamic” pain) which typically presents several weeks or months after the stroke and treatment is difficult.

More common is a painful shoulder. This is usually associated with subluxation of the glenohumeral joint and stretching of the joint capsule but can be severely aggravated by carers or health professionals not taking appropriate care in handling. Never pull a stroke patient up by the distal

arm or hand but assist the patient by placing your hand proximally behind the scapula. The arm should be supported (by pillows etc) at all times. The arm should not be allowed to drop down beside the chair whilst sitting, causing sudden wrenching of the shoulder ligaments.

**Visuospatial problems after a stroke**

These are probably the least understood (by patients, carers and health professionals alike) of all the deficits caused by stroke, yet are of major importance in effectively rehabilitating the person with a stroke.

To function effectively, you need an accurate image of your immediate surroundings, as well as the relationship of your body, and its parts, to the world around it.

Visuospatial deficits include not only altered spatial relationships, but also concepts of distance, relativity (under/over, larger/smaller), time, speed, sense of direction (geographical apraxia) and sense of horizontality/verticality.

Space, or spatial relationships, may be thought of as either personal, peri-personal or extra-personal. Formal testing of these in hospital, with the pen and paper tests outlined below, may only look at the first two domains and ignore the latter.

As with other stroke related deficits, visuospatial problems get worse when the patient is anxious, under time pressure, is tired or when there is “clutter” (distracters – eg functions adequately with clear kitchen bench, but unsafe when benchtop is cluttered by other objects).

As with other visuospatial problems, difficulties with distance and velocity (distance / time) judgments may be unilateral.

NB The term “neglect” is frequently used by staff, when referring to some of these problems. However patients, families and carers may interpret “neglect” as either (1) staff have been neglecting, or (2) the family are being accused of neglecting the patient, each with its negative connotations – be aware of how the term is used and interpreted. The term “inattention” is an alternative term to use with patients or families.

**Terminology**

**Inattention** ability to detect unilateral stimulation on the affected side, but inability to detect simultaneous visual/tactile stimuli on affected side(ie only appreciates stimuli in unaffected visual field or limb when both sides tested together). Remember that most of our functioning is bilateral so this finding is of major functional consequence, even though a soft neurological sign.

**Neglect** (see above) – ignoring, or lack awareness of, one side of body, particularly when distracted. In contrast to inattention, patients with neglect often lack awareness of the affected side even when touched, until prompted. Neglect may also apply to their external space and ignore one side of their external environment.

**Agnosia** a general term meaning the inability to interpret correctly sensory input. There are different types of agnosia:

- **Tactile agnosia:** a coin is placed in their hand and person is aware that it is there, but cannot discern (with eyes closed) size, shape and texture and therefore cannot interpret what the object is
- **Sensory agnosia:** another term for neglect above
- **Left/right agnosia:** L and R discrimination is impaired
- **Body Image agnosia:** - we all have a mental image of the component parts of our body, built up from visual, tactile, postural and other sensations. When this is altered, the person may deny that a limb(s) exists (agnosognosia) or that it belongs to him (“Whose thumb is this?” – “It’s yours!”).



Detection of post-stroke problems

Some tests that can be used to detect these problems:

Pen and paper tests

Get the person to draw a:

- 1. **Line drawing of a house (see images to right).**  
(visual neglect and constructional abilities)
- 2. **A stick man**  
(tests constructional abilities as well as body image and visual neglect)
- 3. **A clockface**  
(shown to be predictive of outcome after a stroke) – tests cognition as well as spatial functioning.
- 4. **Line Bisection test:** 200 mm horizontal line and patient asked to mark the centre point of it. Scored by the distance from the midline.
- 5. **Star Cancellation test:** (see example). Patient is asked to cross out all the small stars – this test probably more sensitive as it adds a degree of clutter.

**NB:** These pen and paper tests are tests of peri-personal space and have limitations.

Thumbfinding

Patient shown how to grasp thumb on affected hand with other hand. Then, with eyes closed, limb is moved and patient asked to grasp thumb again. This tests proprioception, as well as body image.

Observation in sitting

Much can be gleaned by simple observation of sitting posture (e.g. slumped to one side), position of limbs at rest (e.g. arm dangling over side of chair with no apparent awareness and ability to find the speaker when spoken to from their paretic side).

An orange, an apple, a newspaper and a cardigan! Not the standard neurological equipment but functional. The orange and apple can be used for visual fields, inattention and neglect as well as L/R discrimination, the newspaper for visual neglect (as well as dysphasia) and the cardigan for dressing problems and body image.

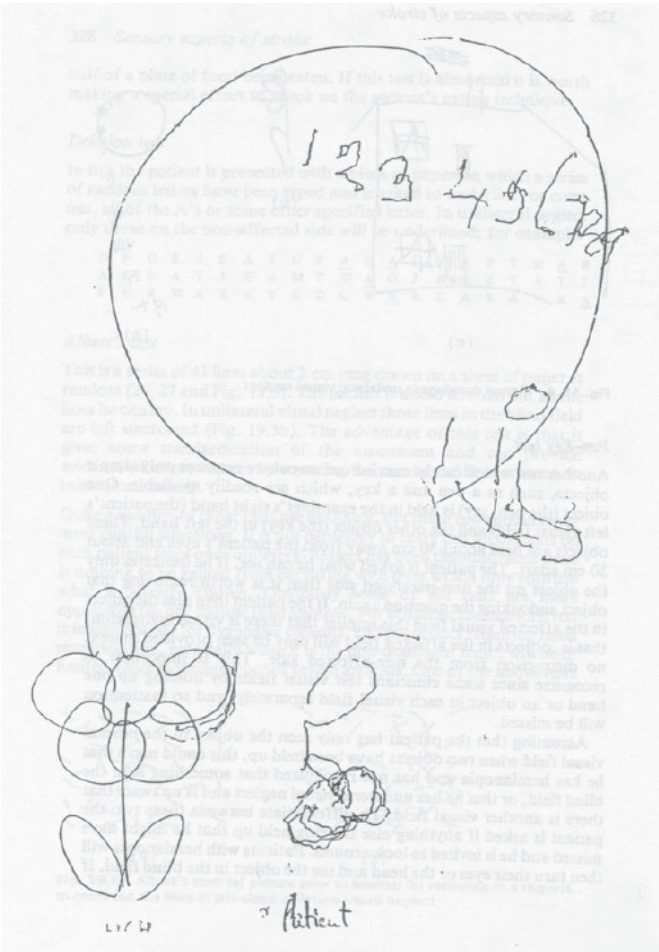
Functional tasks

Rehabilitation is about regaining abilities to do normal day to day tasks as well as leisure activities. The most important tests of visuospatial functioning are functional ones and include observation during day to day activities such as dressing, games and leisure activities and in the kitchen, looking for bilateral use of limbs, neglect of one side, inability to complete task due to apraxia and sequencing problems. In reality, it does not matter if they cannot complete pen and paper tests above, but can do their basic and instrumental ADLs.

**NB:** Always think about driving. It is a very challenging visuospatial task requiring accurate and prompt spatial, velocity (space over time) and distance judgements! It also involves multitasking.

Refer to medical practitioners’ nzta.govt.nz website for formal restrictions of driving. “Medical aspects of fitness to drive” (nzta.govt.nz)

Image: Severe left-sided neglect and constructional apraxia



A drawing by a patient.

Image: Star Cancellation Test



Source: [http://www.strokengine.ca/family/sct\\_family](http://www.strokengine.ca/family/sct_family)

Communication: Dysphasia, Dysarthria and Dysphonia can result from a stroke

**Dysphasia** is a communication or language disorder (not just speech), resulting from a cortical stroke. It is common (about 30% of strokes) and causes considerable frustration for both the patient and the carer. Dysphasia can potentially affect an individual in a significant range of possibilities including difficulties communicating basic needs and potentially leading to social isolation or marital difficulties. The dysphasic patient may be inappropriately labelled as “confused”, “dementing” or “not trying”, rather than correctly identified as having a language problem. In simplistic terms dysphasia can be subdivided into disorders of perception and understanding of language (receptive dysphasia) and disorders of production of language (expressive dysphasia). Fluency (and non- fluency), word content and use of jargon are also useful to describe dysphasias. Remember that language not only affects verbal communication, but also written language, pictures, gesture and intonation. It is quite rare to have ‘pure’ receptive or expressive dysphasia, with most people having a mixed pattern with one being more prominent than the other.

**Dysarthria** is a disorder of articulation and is a neuromuscular problem resulting in slurred indistinct speech. Language control is retained and so understanding, writing and reading is intact.

**Dysphonia** is an abnormality of production of the vocal sounds at the level of the larynx, nose and mouth. It can be difficult to distinguish from dysarthria.

Dysphagia

Dysphagia is common post stroke, and in this context refers to swallowing impairment of the upper digestive tract. The following have been found to be independent predictors of dysphagia on initial presentation: age over 70, male gender, disabling stroke, incomplete oral clearance, palatal weakness or asymmetry and impaired pharyngeal response (Mann and Hankey, 2001).

Swallowing screen for patients with an acute stroke

Able to be completed by trained nursing staff as well as speech language therapists.

Swallowing difficulties are common (30-50%) after an acute unilateral hemispheric stroke. The natural history of these is to resolve over the next 10-14 days.

Most acute and geriatrics’ wards now have a nurse trained to assess swallow to avoid patient staying NBM till SLT review is possible.

Previous strokes, brainstem or bilateral strokes, increase the risk of having swallowing difficulties.

Be aware that some patients aspirate silently.

If swallowing problems are not recognised, then aspiration pneumonia may develop.

- at best, may cause increased morbidity and delay rehabilitation
- at worst, may cause death

Alternative means of maintaining both nutrition and hydration need to be instituted whilst swallowing difficulties persist.

Dysphagia after a stroke usually causes difficulty with both liquids and solids.

How can we detect swallowing difficulties at the bedside?

There is no gold standard, but some clinical findings are helpful. These include:

History

- Coughing after thin liquids, or after meals.
- Dysarthria
- Recurrent chest infections

Examination Findings

One or more of the following:

- Drowsiness or reduced level of consciousness
- Moist phonation, breathing or cough
- Ineffective cough (lacks explosive quality)
- Drooling of saliva
- Dysarthria

NB. The gag reflex has very poor predictive value (both positive and negative) for detecting swallowing difficulties. The cough is the protective reflex for the airway.

Dry Swallow

- Can they initiate a swallowing reflex?
- Is it delayed?
- Is there prompt and complete elevation of larynx (thyroid cartilage moves up)?

Only if the above tests suggest that swallowing is safe, then proceed onto the below

Test swallow with sips of cold water (patient needs careful positioning in the upright position)

- Control of bolus in mouth?
- Initiation of swallow reflex?
- Prompt and complete laryngeal rise?
- If any of the following occur post swallow, they may indicate laryngeal penetration:- Coughing, moist phonation, moist sounding respirations?
- Repeat test sip of water several times, with cough in between, as aspiration may be volume dependent.
- Is there any temporary oxygen desaturation after swallowing (patient breathing room air)?

If there are swallowing difficulties after a stroke, or you are in doubt, then you need to:

1. Have an **immediate** plan for managing hydration. This may include NBM, subcutaneous or intravenous fluids, or nasogastric tube for food and fluids. Other dietary options of thickened fluids, puree should only be decided upon in conjunction with the SLT
2. **Refer to the Speech Language Therapist** for help with both assessment and ongoing management.

Urinary incontinence

This is a common sequel of stroke but the aetiology is multifactorial. Imagine the following: An elderly lady who has some minor stress and urge incontinence at home but she controls this with regular toileting. She is admitted with an acute hemiplegic stroke and is drowsy on admission. She does not know where the toilet on the ward is, has an expressive dysphasia so is unable to tell the nurses of her need to micturate, is unable to stand so can not get there herself, and is unable to use the call bell because it has been placed beside her hemiplegic arm. To add insult to injury, she is given a diuretic to control her heart failure making the urinary urgency worse. Naturally, she becomes incontinent and loses all her dignity. Her incontinence can be tackled at each of the levels above and, in many cases, is avoidable or at least treatable once established.

Emotional changes

- 1. These are less well documented but several changes can be noted. Stroke is so named because they are “struck down” with devastating consequences to their previous lifestyle. There is a natural grieving process to go through similar to bereavement.
- 2. Anxiety about their ability to cope alone at home again.
- 3. “Emotionalism” (or emotional liability) where the patient cries (or laughs) at very slight provocation (threshold for crying is lowered post stroke). The floodgates often open if asked if they have that symptom! It is not necessarily a reflection of underlying depression, but may be in a few people.
- 4. Cognitive impairment: Delirium can occur, needs to be recognised and treated, and normally resolves with time. Specific (rather than global) cognitive problems do occur as a result of a single stroke. Profound short term memory loss can occur with some thalamic infarcts, whereas perceptual problems may make a person appear confused.
- 5. Depression: Occurs in 20-30% of patients. To be distinguished from 1 above. For many some form of treatment (counselling or pharmacological treatment) may be necessary.
- 6. Apathy. Some patients seem to lose their internal “starter motor” or drive

Family

“Stroke is a family illness” and it is they who have to bear the brunt of caring for a disabled patient in the long term. The transition period from hospital to home can be particularly difficult. Families also struggle with this transition and then again when the person is discharged from active rehabilitation programmes (outpatient). At this stage formal rehabilitation is completed, the patient is at home and they are left with the feeling that “nothing more can be done”.

However much can be done to lighten the load, by providing ongoing support, attending to ongoing medical problems and linking with appropriate community groups or services.

Specific problems which may develop at home (and need to be anticipated prior to discharge)

- Depression
- Isolation/few social contacts (40-50% have very limited social activities after their stroke, despite a good ‘motor’ recovery)
- Marital discord
- Sexuality
- Driving (perceptual difficulties, hemianopia, neglect, inattention, contraindicate driving)
- Employment

Some suggested reading

NZ Clinical guidelines for stroke the management. NZ Stroke Foundation & NZGG, Wellington, 2010.

(NZ guidelines group website, www.nzgg.org.nz ) Under cardiovascular in the guidance library.

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Delirium

Delirium (“Acute Confusional State”, “Acute Organic Brain Syndrome”) is one of the oldest conditions known to medicine, yet remains one of the least well understood. The lack of an agreed definition of delirium has been an obstacle to research into this condition. In *Diagnostic & Statistical Manual of Mental Disorders, Fifth edition*, the essential criteria for delirium are disturbance in attention and awareness, change in cognition and development over a short period of time with tendency to fluctuate over course of day. Delirium is an important condition because it is common, causes significant suffering, prolongs and complicates treatment for other conditions, and carries significant morbidity and mortality risks with it. Delirium represents **acute brain failure**, the cerebral correlate of acute heart failure or acute renal failure. It should be treated with equal respect and concern as with these conditions!

Recent studies estimate that about 25% of older adults are delirious on admission and this may rise to about 55% during the course of admission. Older patients post NOF surgery consistently have higher rates of delirium (up to 60%) during their admission.

Studies that have examined the level of awareness by medical and surgical staff of delirium in their patients have found that it often goes undetected or unrecorded. There may be several reasons for this:

- It is difficult to detect a fluctuating condition that is often worse at the end of the day if your main contact with the patient is during a morning ward round.
- It is easy to rationalise cognitive impairment as “not the main problem” or “normal for this person” or “older people are often confused”.
- Delirium is often hypoactive and results in slightly sleepy, confused people who are ‘no trouble to anyone’.

Clinical features

- 1. Delirium is characterised by global disturbances of cerebral function.

The core features include inattention, disorganized thinking, acute onset, fluctuating course and altered level of consciousness.

These features are part of screening tools such as the confusion assessment method(CAM) and 4A Test(4AT).

Other features can include:

- Distressing emotions, typically fearfulness and irritability
- Disordered perception and persecutory ideation (if not delusions)
  - › people are more likely to experience shadowy figures with guns rather than fairies gathering flowers
- Disturbed sleep/wake cycle
- Motor features such as tremor, dysarthria or semi-purposeful repetitive movements such as repeatedly plucking at bedsheet or clothing
- Autonomic features such as sweating and tachycardia
- 2. Delirium nearly always appears acutely and in the context of a precipitating illness or event. However, sometimes the trigger(s) may not be found.
- 3. Some degree of fluctuation is so characteristic that the diagnosis must be doubted if variability is not observed. Any of the above symptoms may fluctuate.
- 4. Symptoms are usually most manifest in the evening and night-time. Often referred to as ‘sundowning’.

On mental state examination the most striking features are: fluctuating awareness (“clouding of consciousness”), disorientation, and perceptual abnormalities (vivid dreams which the patient may have difficulty distinguishing from reality, visual distortion/misinterpretations, illusions or hallucinations). Other features are reduced registration and short-term recall with subsequent amnesia or dream-like partial memory for the delirious period; also impaired insight, and agitation. In hospital, the doctor is likely to be called only if the patient is agitated,

aggressive or psychotic. It is the quietly confused and perplexed individual sitting in bed plucking at the blankets who is usually missed on a busy ward – the hypoactive type.

Note that pre-existing cognitive impairment is a significant predisposing or risk factor for delirium. Thus a patient with dementia may well have superimposed delirium which can easily be missed if he or she is merely regarded as “confused”, without medical and nursing staff thinking more carefully about it. A careful history from a reliable informant should be able to tell you if the patient’s global cognitive function is worse than normal.

The term “Subacute Confusional State” is sometimes used for states of fluctuating lucidity that persist over weeks or months, e.g. in some cases of endocrine or metabolic disturbance. Do not make the mistake of assuming that because the probable trigger has been treated that any remaining confusion is not delirium. For example, delirium can persist for some weeks after the triggering UTI has been treated with antibiotics and hyponatraemia resolved.

Causes

The causes of delirium are legion. In older patients attending a medical service the approximate order of frequency of underlying causes are:

- Infection
- Toxic (drugs – both in overdose and when prescribed normally)
- Hypoxia
- Metabolic disorders
- Post-stroke or MI
- Alcohol withdrawal (or intoxication)
- Virtually any CNS disease, such as Parkinson’s Disease
- Epilepsy
- Subdural haematoma

In addition, aggravating factors often found in the older patient are sensory deprivation, unfamiliar environments (‘re-location confusion’), co-existing noxious stimuli such as pain, sleep deprivation and underlying dementia. A complete list of causes can



be found in any comprehensive medical or psychiatric text book. A good way to think about delirium is that any of us could become delirious if our brain physiology was under enough pressure. The very young and the very old are at more risk of delirium. The underlying causes listed above act to lower our threshold for delirium and, together with aggravating factors, can then push us over the threshold so that symptoms occur.

Management

1. **Maintain the patient’s physical condition**  
Ensure adequate hydration, nutrition and personal hygiene including bowel and bladder function. A confused patient will need to be encouraged to eat and drink normally and possibly helped with other activities of daily living.  
  
Ensure basic medical observations are stable – pulse, BP, O2 saturation and temperature.
2. **Make the environment easy for the patient**  
Maximise visual input – adequate lighting, wearing glasses.  
  
Maximise auditory input – wearing hearing aids, reduce competing noise, use of ‘hearing wizard’ or other devices common on many geriatric wards.  
  
Avoid change in the environment as much as possible.  
  
Try to enlist the help of family and keep the number of different staff involved to a minimum to aid familiarity.  
  
Use familiar items.  
  
Ensure everything in the room and ward is adequately signposted. Aid orientation by providing a bedside clock and calendar. Repeat information regularly.  
  
Always introduce yourself and your purpose fully.
3. **Avoid potential conflict**  
Treat patient appropriately given their culture, age, likes and dislikes.  
  
Consider carefully the need for painful or unpleasant interventions. When such intervention is necessary be prepared to repeat explanations.
4. **Medications**  
Avoid drugs with known propensity to exacerbate or cause delirium e.g. drugs with central anticholinergic action, drugs that sedate and lower the patient’s ability to think clearly. However, do not suddenly withdraw any chronically used psychotropic drug unless there is a very good reason to do so as this sudden withdrawal could worsen the delirium.  
  
If alteration in sleep pattern is prominent, night-time sleep may be promoted with an appropriate dose of a short-acting hypnotic (eg. Lorazepam 0.5-1mg, Zopiclone 3.75-7.5mg)

- Only use psychotropic drugs if patient is at risk of harm or is at risk of harming others. Low dose Haloperidol (0.25 – 1mg/day) is an antipsychotic drug that can be prescribed either as needed (PRN) or regularly for 7 days or less. Alternatively use Risperidone (0.5-1.0mg/day) or if has Parkinsons disease then use Quetiapine. Review daily the use of any antipsychotic prescribed
5. **Minimise risks to patient**
  - Falls prevention.
  - Pressure areas/skin tears
  - Violence towards staff, patients or family
  - Wandering
  - Attempts to leave hospital
  - Significant disturbance to other patients
6. **When to refer to liaison psychiatry or mental health services for older adults(MHSA):**
  - if the diagnosis is difficult to make
  - if the delirium is very severe in terms of symptoms (especially psychosis)
  - if the delirium is very prolonged or otherwise treatment-resistant
  - if there are significant risks that are difficult to manage
7. **Liaise with Family**  
It is important to liaise with the patient’s family in terms of education about delirium and offering reassurance. Many DHBs have brochures or other resources for this purpose. Engaging with family to help with patient orientation is also useful where possible.
8. **Worsening of a patient’s delirium may reflect deterioration in the underlying condition or the advent of a new complication and therefore a full clinical review is essential.**

Prognosis

This varies as to the underlying pathology, but untreated delirium carries a high mortality, especially in the older patient.

Full recovery of cognitive function may not occur in up to half the cases, leaving the patient more cognitively impaired than they were prior to the delirium.

Delirium in the older patient is a major risk factor for later diagnosis of dementia.

Dementia

Definition and description

The word ‘dementia’ is a descriptive term and refers to an acquired clinical syndrome rather than a specific disease. It is not a normal part of aging! It can be succinctly thought of as the syndrome of “chronic brain failure”. It affects cognitive domains to do with memory, thinking, and behaviour thereby affecting the ability to perform everyday activities.

A complete definition from the WHO is:

Dementia is a syndrome – usually of a chronic or progressive nature – in which there is deterioration in cognitive function (i.e. the ability to process thought) beyond what might be expected from normal ageing. It affects memory, thinking, orientation, comprehension, calculation, learning capacity, language, and judgement. Consciousness is not affected. The impairment in cognitive function is commonly accompanied, and occasionally preceded, by deterioration in emotional control, social behaviour, or motivation.

(WHO Fact Sheet No.362, March 2015)

According to DSM-5 (Diagnostic and Statistical Manual of Mental Disorders, Fifth edition), dementia has been renamed as major neurocognitive disorder (NCD), however dementia is still an acceptable term to use in clinical practice. According to DSM-5 diagnosis of major NCD requires; evidence of significant cognitive decline from a previous level in one or more cognitive domains that is sufficient to interfere with independence in activities of daily living.

If a person has cognitive impairment but with no significant impairment in their day to day activities then this is termed ‘Mild Cognitive Impairment’ (MCI).. Although MCI is a major risk factor for the development of dementia with about 10% progressing to dementia per year, some people with MCIdo not go on to develop a dementia. Interestingly in a community sample 28% of people with MCI returned to normal with no cognitive impairment after 2 years.

(Brodaty H et al. Alzheimer’s & Dementia:2013;9(3):310 -317.)

Dementia symptoms tend to follow a relatively typical course over on average 8-10 years from onset to death (but wide variation in duration).

Early symptoms

Forgetfulness; difficulty in coping with new situations; loss of interest in previous activities; indecisiveness; poor concentration; blunted or depressed affect.

Later symptoms

Greater memory disturbance; disorientation; behaviour muddled, inappropriate or restless; concrete thinking; inability to handle complex ideas; poor judgment; loss of social graces; insight poor.

Advanced symptoms

Total disorientation; little purposeful activity; incoherent speech or mute; double incontinence; neurological signs.

Dementia is one of the major causes of disability and dependency among older people throughout the world.

“The costs of health and social care for people with dementia exceed those for cancer, heart disease and stroke combined”.

Prof Steve Iliffe, University College London, 2014.

It has a significant effect not only for the people who have it, but also for their caregivers and families.

Classification

The traditional separation into senile and pre-senile dementia based on age of onset before or after 65 years has lost some of its importance as the same disease entities are recognised in both age groups. However, it is true that dementia before the age of 55 tends to have a strong genetic component, even to the point of autosomal dominant inheritance.

Another traditional separation has been into cortical versus subcortical dementia based upon where the main site of pathology is located. However, this is also too simplistic as it is difficult to define a symptom profile that is purely subcortical or cortical, and even if one could, finding a patient with only those symptoms is even more difficult.

Various attempts have been made to get around these difficulties in classification. The various diagnostic entities are distinguished from one another on a mixture of principles:

- Some are identified by pathology e.g. Alzheimer’s disease
- Some by aetiology e.g. alcoholic dementia
- Some by clinical picture e.g. fronto-temporal dementia
- Some by all three e.g. Huntington’s disease

In practice, Alzheimer’s disease, Vascular dementias, Lewy Body dementia, Alcohol-related dementias and Frontal Lobe dementias are the most common. An exhaustive list of the possible causes of dementia (numbering around 80) may be found in any thorough medical or psychiatric textbook. Sometimes the term “mixed dementia” is used to reflect the overlap in different aetiologies such as in a dementia caused by a combination of Alzheimer’s disease and vascular dementia.

Demography

Prevalence: 11-14/1000 (approximately 1% of all adults).

Approximate overall prevalence		
>age 65	5%	
>age 80	20%	
>age 90	30%	

Interestingly age-specific prevalence rates of dementia are falling in high income countries as seen in recent data particularly from European studies. This possibly reflects improvements in education levels, healthcare and lifestyle in these countries. However this decline is not enough to offset the overall increase in the prevalence of dementia due to the demographics of the increasing numbers of older adults.

In the developing world both incidence and prevalence of dementia are on the rise.

In NZ in 2014 there were about 50,000 people with dementia and this is predicted to rise to 147,000 in 2050.

85% of people with dementia live at home.

Alzheimer’s Disease (AD)

This is the most common cause of dementia and may contribute to 60-80% of cases in older adults. The diagnosis is based on a history of gradual onset of memory impairment with gradual decline in function, and in the absence

of other causes of dementia as detected by history, examination or investigation.

Structural brain imaging (CT or MRI) findings of marked cerebral atrophy, especially of the medial temporal lobe/hippocampus, is suggestive but not diagnostic. We currently lack a good diagnostic test, but several research tests are in development.

The pathology defies precise definition, partly because `normal ageing' can share many of the same features. The characteristic features are:

1. Numerous senile plaques in cerebral cortex, hippocampus and certain subcortical nuclei. Plaques are extracellular, comprising an insoluble beta-amyloid core surrounded by both living and dead cells.
2. Neurofibrillary tangles (NFTs) in hippocampus and cerebral cortex. NFTs are made up of paired helical fragments from microtubules – a tau protein” pathology. NFTs begin inside cells, then the cell dies.
3. Beta-amyloid protein deposits in blood vessel walls within the cortex or the meninges overlaying the cortex.
4. Frequent granulo-vacuolar degeneration (small granules that stain with silver) and abundant Hirano bodies (larger and stain with eosin) in the hippocampus – these are of uncertain significance.
5. Accompanying these changes is a significant loss of nerve cells- 30% or more. An important cell-type lost is the acetylcholinergic cell group projecting from the nucleus basalis of Meynert(one of the forebrain nuclei below the basal ganglia) to the whole cortex.

Risk factors include: age, female sex, smoking, Downs syndrome, head injury, having the apolipoprotein E4 phenotype, first-degree relative with AD (RR 2-3x).

Current opinion is that cerebrovascular disease contributes to the pathological changes outlined above and thus results in clinical Alzheimer’s disease. Hence the recommendation to prevent/ manage any vascular risk factors as a way of decreasing an individual’s risk of developing dementia.

### Vascular Dementia (VaD)

Vascular disease can damage cerebral tissue through large or small vessel atherosclerosis, embolus, vasculitis, amyloid angiopathy or intracranial haemorrhage. The vascular dementias may make up around 10 – 20% of all dementia and are often mixed with other causes such as Alzheimer’s disease. Risk factors are the same as for other arteriopathic diseases.

**Associated clinical syndromes include:**

**Multi-infarct dementia**

A number of areas of brain infarction, usually caused by disease of extra-cerebral vessels. Dysphasia, dyspraxia, agnosia and focal UMN neurological signs are frequently part of the dementia. Decline tends to be step-wise.

**Strategic infarct dementia**

A single lesion in a strategically important area such as the thalamus may give rise to a dementia. A large single stroke in cortex can also cause such a “single-infarct dementia”.

**Subcortical Ischaemic Vascular dementia**

Diffuse white matter ischaemia with demyelination, either adjacent to the ventricles or in deeper white matter can give rise to dementia. This tends to be associated with long-term hypertension and reflects hyalinisation of the penetrating arterioles that supply these brain regions. On CT or MRI these lesions are visible and may be termed “leukoariosis” or “white matter disease”, although it should be noted that this descriptive term can be caused by other pathologies as well, such as the spotty demyelination caused by Multiple Sclerosis.

**Clinical features consistent with a probable vascular dementia include:**

- Early presence of gait disturbance, unsteadiness and falls
- Early urinary frequency and urgency
- Pseudobulbar palsy (cranial nerve territory paralysis of cortical origin) or other focal UMN neurological signs
- Affective lability, including “catastrophic reactions” or blunted affect
- Slowing of thought and movement is classically associated with subcortical disease from white matter lesions, as is apathy
- Patchy cognitive loss rather than across-the-board losses, sometimes associated with insight into the process
  - › Males more affected than females (unlike Alzheimer’s), related to higher prevalence of vascular risk factors
  - › Other vascular disease concurrently
  - › If strokes are involved, sudden onset and stepwise progression.

A vascular dementia is very unlikely if there is early onset of memory loss and progressive worsening of other cognitive functions in the absence of both focal neurological signs and cerebrovascular lesions on CT or MRI. However, as noted previously vascular damage often co-exists with other forms of dementia, particularly Alzheimers.

This raises an important point that, in defiance of “Occam’s Razor”, dementia may more commonly be due to mixed pathology than to single illnesses. That is why one should always be suspicious of estimates of the percentage of all dementias caused by one disease, and by

overconfident diagnoses.

### Lewy Body Dementia (LBD)

Lewy (usually pronounced “Lev-ee” by German speakers and “Lewie” by everyone else) bodies are the pathological entity found in the Substantia Nigra in Parkinson’s disease. They have an eosin staining halo and a core with ubiquitin and synuclein inclusions. Since 1990 it was realised that some dementias in older patients have prominent Lewy Bodies in the brainstem and cortex. It seems as though at least 15% of patients with dementia may be of the Lewy Body type.

There may be a spectrum of disorders with classical Parkinson’s disease at one end and pure cortical Lewy Body disease at the other. Lewy Bodies are also commonly seen in patients with pathological features of Alzheimer’s disease, so mixed pathology is quite possible. Thus Alzheimer’s and Lewy Body dementias may also be extremes on a spectrum.

**Clinical features of LBD include:**

- Fluctuating cognitive impairment affecting both memory and higher cortical function. The fluctuation is like a delirium, can affect any of the symptoms listed here, and can also affect the level of consciousness causing absence seizure-like periods.
- Visual hallucinations are common, often with persecutory delusions and sometimes auditory hallucinations
- Parkinsonism and a sensitivity to neuroleptic medication side-effects
- Repeated falls
- Despite clinical features like a delirium, symptoms persist for months
- The syndrome often progresses relatively rapidly to end-stage dementia.

### Frontotemporal Dementia (FTD)

Previously known as “Pick’s disease”. This type of dementia is characterised by symmetrical or asymmetrical atrophy of the frontal and/or temporal lobes without the classical pathology of Alzheimer’s disease. FTD’s may account for around 2-5% of all dementias. It is a common cause of early onset dementia occurring at a similar frequency to Alzheimer’s disease in patients younger than 65 years.

Can be subdivided according to the type of abnormal inclusions seen histopathologically, either tau or ubiquitin proteins.

There are two main variants of FTD, behavioural (bvFTD) or language (eg. progressive nonfluent aphasia(PNFA), semantic dementia(SD)).

The exact presentation depends in part upon which of the frontal or temporal lobes the disease begins in, but the main clinical features include:

- Insidious onset, slow progression
- Early loss of social awareness with disinhibition and loss of empathy
- Rigidity and inflexibility, distractibility and impulsivity
- Stereotyped and perseverative behaviour
- Hyperorality
- Apathy and emotional unconcern
- Depression, anxiety and hypochondriasis may be features
- Preserved abilities of spatial orientation and praxis and may have relatively preserved memory. Patients often score well on standard cognitive testing.

### Less common causes of dementia

These include Huntington’s disease, Normal Pressure Hydrocephalus, Hypothyroidism, Neurosyphilis, Vitamin B12 and folate deficiency, head trauma, alcohol-related dementia (both thiamine (B1) deficiency and direct alcohol toxicity), Creutzfeldt-Jacob disease, HIV related dementia and “Parkinsons-plus” dementias such as Progressive Supranuclear Palsy. You will note that some of these syndromes appear to be potentially reversible. Although reversible dementia is rare, we always check for some of the commonest remediable causes such as hypovitaminosis B12 or, in alcoholics, hypovitaminosis B1.

### Principles of dementia management

1. Is any specific treatment indicated for potential reversible causes?
2. Are physical problems making the symptoms worse? e.g., deafness, cataracts or other visual impairment, heart failure, anaemia, hypoxia.
3. Are medications making the symptoms worse?

Drugs which can cause or worsen confusional symptoms include:

  - Many psychotropic medications (especially those with marked anticholinergic action, and benzodiazepines)
  - Anticonvulsants
  - Opiate analgesics (common after surgery)
  - Levodopa and other anti-Parkinsonian drugs

- Anticholinergics
- Centrally acting antihypertensives
- Digoxin (even at therapeutic serum levels)
- Nonsteroidal anti-inflammatories
- H2 receptor antagonists
- Steroids

Note: as the dementia advances the patient becomes more susceptible to confusional side-effects of drugs.

4. Is treatment of any psychiatric complications indicated? e.g. depressive states, anxiety states, delusions, hallucinations.
5. Cognition enhancing drugs (cholinesterase inhibitors or Memantine) are symptomatic treatments not cures. In NZ there are only two cholinesterase inhibitor drugs subsidized, Donepezil and Rivastigmine skin patches. At best, they restore some function temporarily and slow the worsening of symptoms in about 40-50% of cases for a mean of 9-12 months. These drugs do not affect underlying cell loss and have no effect on mortality.
6. Managementof any behavioural complications. Note that “management” does not only imply “drug management”! Problems include restlessness/agitation (often worse later in the day and termed “sundowning”); resistiveness/aggression (verbal or physical); sleep disturbance; wandering; becoming demanding; hoarding; sexual disinhibition, stripping clothes; inappropriate toileting.
- In all cases try to identify what triggers the behaviour so that precipitants can be avoided if possible, e.g. pain, faecal/ urinary retention, akathisia, thirst, hunger or boredom. A “challenging behaviour” may be best interpreted as a communication of an unmet need or a problem in the environment rather than a symptom of disease to be suppressed.

If psycho-social interventions fail, medication may be helpful. The usual drugs tried are antipsychotics such as Risperidone. Sometimes other psychotropics may be used e.g. SSRIs or short-acting benzodiazepines. Very small doses can be effective. Side effects (sedation, falls, loss of function, increased ‘confusion’ or even paradoxical worsening of behaviour) are very common. Medication is seldom, if ever, indicated for uncomplicated wandering because success can only be achieved by rendering the patient “off-legs”! Other syndromes that respond poorly to drugs are calling out, any infrequent challenging behaviour, apathy and generalised disinhibition. Drug treatments need to be reviewed regularly and trial withdrawals attempted.

7. Do the caregivers need help?

The key to looking after someone with dementia is looking after their carer/ support person. Information, advice, support, and counselling are available from organisations such as the Alzheimer’s Society. Carers need to know the diagnosis, be recognised and heard, have support including breaks, and be informed. However, the possibility of subtle or overt Elder Abuse must be kept in mind.

8. Is the placement (home, rest home, hospital) suitable?
- The objective is to maintain maximal independence and quality of life (not necessarily the same thing) in the least restrictive environment for as long as possible. Support services may need to be activated, e.g. home help, meals-on-wheels, district nurse, laundry service, incontinence aids, day care, respite care, or sitters. Enduring Powers of Attorney may need to be arranged to protect the person’s interests and to enable a reliable person to assist them to manage their affairs.
9. General principles of communicating with people with dementia: (see table below)

Seven “S”s	Desirable messages	Inappropriate methods
Sign posting	Orientating, identifying	Abrupt, impersonal
Soothing	Reassuring, calm	Critical, arguing
Sociable	Respectful, polite	Patronising, ordering
Simple	One message	Complex sentences
Slowly	Clear & repeated	Hurrying, rushing
Showing	Demonstrate, Indicate	Unclear abstract concepts
Scheduling	Explain coming events	Unannounced happenings

10. Refer patient and family to their local Alzheimers organisation for support and education.



# Cognitive screening instruments

There are a variety of cognitive screening tools that have been and are employed to help assess cognitive function or dysfunction (acute or long-term). Previously one of the most commonly used tools was the Mini Mental State Examination (MMSE). This however is now the subject of copyright disagreements, and consequently is not being used. Tools in current clinical use are listed below:-

- Abbreviated mental test Score (AMT) in which the patient is asked 10 questions (1 mark for each correct answer):

1. Age
2. Time (to nearest hour)
3. Address for recall at end of test – this should be repeated by the patient to ensure it has been heard correctly; 42 West St
4. Year
5. Name of hospital
6. Recognition of two persons (doctor, nurse etc.)
7. Date of birth
8. Year of 2nd World War
9. Name of present monarch
10. Count backwards 20-1

A score below 7 would give cause for concern. Low scores do not help differentiate delirium from dementia.

**Other tests include:**

- The 4A Test(4AT): screening instrument for cognitive impairment and delirium
- Confusion assessment Method (CAM)
- General Practitioner Assessment of Cognition (GPGOG), accessible via its website – <http://www.gpcog.com.au/>
- IQCODE
- Montreal Cognitive Assessment (MoCA)
- Addenbrooks Cognitive Examination (ACE-III)
- Rowland Universal Dementia Assessment Scale (RUDAS) – useful in patients who do not speak English, and designed to be used with an interpreter. Does not require the ability to read, write or perform arithmetic, and therefore less influenced by education than other screening tools.

Note: Different DHBs and hospitals may have a preference or policy for the use of different questionnaires so you should be guided by your ward policy and by advice from your clinical team. Copies of the tests used locally will be found on your ward.

**A few cautions and limitations of the any cognitive test**

Cognitive tests are only screening instruments and should not be used alone for the diagnosis of dementia or delirium. Neither can they be reliably employed to differentiate dementia from delirium.

Frontal lobe dementia or cognitive problems can be missed with such screening.

Patients with language difficulties (e.g. aphasia, dysphasia) may falsely underscore and be considered to have dementia and contrary to it they may have normal cognition with a speech deficit.

Those with disabilities or visual impairment and who cannot write may be cognitively intact and need caution in the interpretation.

Those who may speak different languages will need to be assessed in their own languages. RUDAS translates well and no copyright.

Educational level is important in the screening as those with lower educational level should not be considered cognitively impaired and need to be tested appropriately.

# Daily Living Functional Assessment

Most wards are now using the FIM (Functional Independence Measure) to document daily living function. Ideally it should be performed on admission and again on discharge.

Please note FIM is to be completed by certified staff only. Please liaise with nursing staff on your ward regarding FIM scores for case histories.

\*NB some items in the FIM have two options (eg walk or wheelchair, visual or auditory). If both boxes are filled in, the lowest score is recorded.

- Self-Care Eating
- Grooming
- Bathing
- Dressing – upper body
- Dressing – lower body
- Toileting
- Sphincter control Bladder management
- Bowel management
- Transfers Bed/chair/wheelchair
- Toilet
- Bath/shower
- Locomotion \*Walk/wheelchair
- walk OR wheelchair
- Stairs
- Communication\* Comprehension: auditory OR visual  
\*Expression: vocal OR non-vocal
- Social/cognition Social interaction
- Problem solving
- Memory

**Total**

**The FIM scoring scale:**

**No helper**

- 7** = complete independence (no help, no devices, safely and timely)
- 6** = modified independence (assistive device, safety or timeliness issues)

**Helper**

Modified Dependence:

- 5** = supervision, setup or standby prompting
- 4** = minimal contact assistance or prompting (patient does 75% or more of effort)
- 3** = moderate contact assistance or prompting (patient does 50-74% of effort)

Complete Dependence:

- 2** = Maximal contact assistance or prompting (patient does 25-49% of effort)
- 1** = total assistance (patient does less than 25% of effort)





# Demography and Epidemiology of Ageing in New Zealand

## Terminology and definitions

The age of 65 years has long been regarded as the cut-off considered as “older age” for reporting health status, health service provision and utilisation. While a cut-off of 65 years may seem arbitrary, it does enable standardised international comparisons and descriptions of trends, and is used in this chapter unless otherwise stated. For some purposes other age thresholds are preferred.

Surveys of older people in NZ have found that in general they prefer the term “older people” rather than “elderly”, “old”, “pensioners” or “geriatrics”.

## Ageing population

### Older population

It is well known that in NZ and most other countries, the population is ageing, that is, the proportion of the population that is older is increasing, a trend that will continue for several more decades yet. Because of their greater use of health services (demonstrated later in this chapter), in future years, older people will dominate medical practice – in primary care, specialist practices and hospitals.

Population ageing is caused not by “baby boomers” (the large cohort born 1950 – early 1970s), but by the reducing rates of both births and deaths. These arise from the combined impact of people having fewer children (the use of the contraceptive pill & women delaying families until they are older) and people living longer (success in population health and health care). Unless radical unanticipated societal change occurs, the proportion aged 65+ will remain high even after the baby boomers have moved through.

Official estimates for the New Zealand population in 2013 are shown in Table 1. Numbers of older people are increasing faster than any other age group. Those aged 65+ reached 511,400 in 2006, and 626,000 in 2013, and are projected to reach over 1,010,300 by 2027. That corresponds to 12% of the total population in 2006, 14% in 2013, and 20% in 2027. Over the same period, numbers 85+ grew from 58,100 in 2006 to 74,700 in 2013, and are projected to reach 125,200 by 2027.

Table 1. Estimated NZ older population by age and gender, 2013

	N	% of all
By gender		
Men	288,600	13.3
Women	337,400	14.9
By age group		
65-69 years	205,800	4.6
70-74 years	154,000	3.5
75-79 years	109,300	2.5
80-84 years	82,100	1.8
85-89 years	49,800	1.1
90-110 years	24,900	0.6
Total 65+ years	626,000	14.1
Total 85+ years	74,700	1.7
Total, all ages	4,442,100	100.0

Data source: Statistics New Zealand 2012, NZ.Stat, as at 30 June 2013

As age increases, the ratio of women to men increases (Figure 1), driven by higher mortality among men in all age groups.

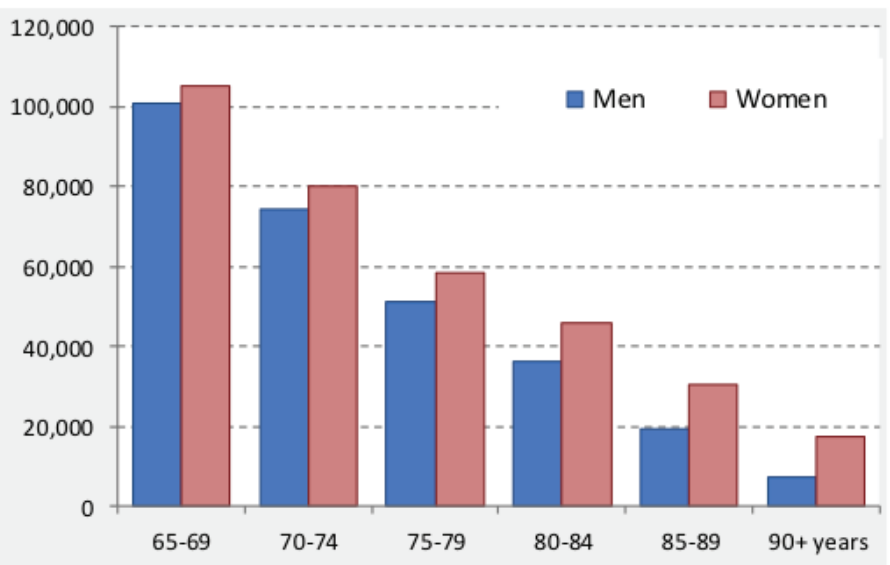
Almost 90% of older people in NZ are of European ethnicity, with about 6% Maori and 5% Asian (Table 2). This is changing, with fast growth in older Asian populations.

Table 2. Estimated NZ older population by ethnicity, 2013

	N 65+	% of those aged 65+
By ethnicity		
European, NZ or Other	552,600	88.3
Maori	36,500	5.8
Asian	32,000	5.1
Pacific peoples	16,300	2.6
Middle Eastern, Latin American, African	1,800	0.3

Data source: Statistics New Zealand 2012, NZ.Stat, as at 30 June 2013v

Figure 1. NZ’s older population, by sex



Data source: Statistics New Zealand 2012, NZ.Stat, as at 30 June 2013



Demographic projections

Figure 2 shows NZ’s population growth by age group, showing the rapidly increasing 65-84 age group until about 2030, followed by rapid growth in the 85+ group. In the 40 years from 2006, the number of people aged 85+ years is expected to rise over five-fold, from 58,100 to 296,700.

Life expectancy

In NZ, fewer live longer than 107 years. The oldest confirmed recorded age for any human is 122 years, so this is regarded as maximum life span. Life expectancy is a statistical estimate of the average length of life remaining at a given age. As in almost all countries, life expectancy in NZ has increased over many decades and is expected to continue over the coming decade at least.

Shorter life expectancy is seen among men and Maori people. At the age of 65 years, women have on average a life expectancy of 20.6 years, and men 18.0 years. At the age of 85 years, life expectancy for women is 6.6 years, and men almost 5.6 years. Figure 3shows how this has changed since the 1950s, and also the lower life expectancy of Maori.

Longer lives are lived with varied levels of dependency, and there is much debate about compression or expansion of morbidity. The NZ Health Surveys suggest that longer lives are on average being lived with greater periods of dependency, rather than with improved physical function and presumably better quality of life (Figure 4).

Social trends

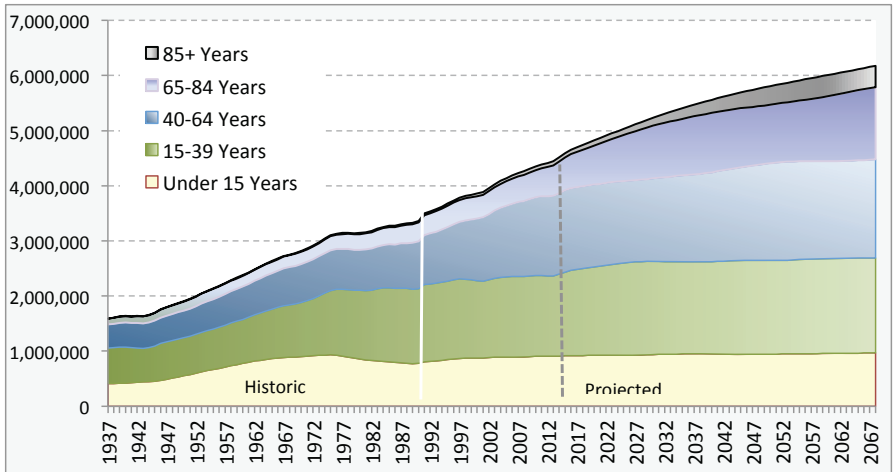
NZ’s older population is changing and becoming more diverse:

- by the mid-2020s, 30 per cent of people aged 65 or over are projected to choose to continue to be in paid work, compared to 20 per cent in 2010
- older consumers are projected to spend over \$60 billion in 2051, vs. around \$13.5 billion in 2011
- home ownership rates for people aged 65+ are declining and probably this will continue
- a greater proportion of older people will live alone
- by 2052 the number of older people with a disability is expected to grow by 60 per cent
- the older population will be more ethnically diverse with an increasing proportion of Māori, Pacific and Asian people

Deaths

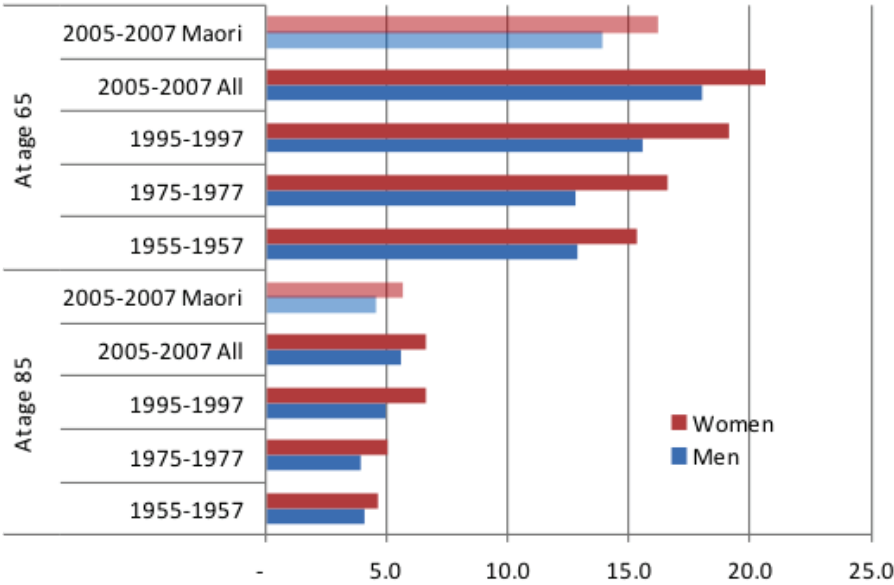
During the past decade, on average about 60,000 babies were born and 25,000 to 30,000 people died each year; 80% of deaths were of those aged over 65 years. Numbers of

Figure 2. Total NZ population, historic and projected, by age group



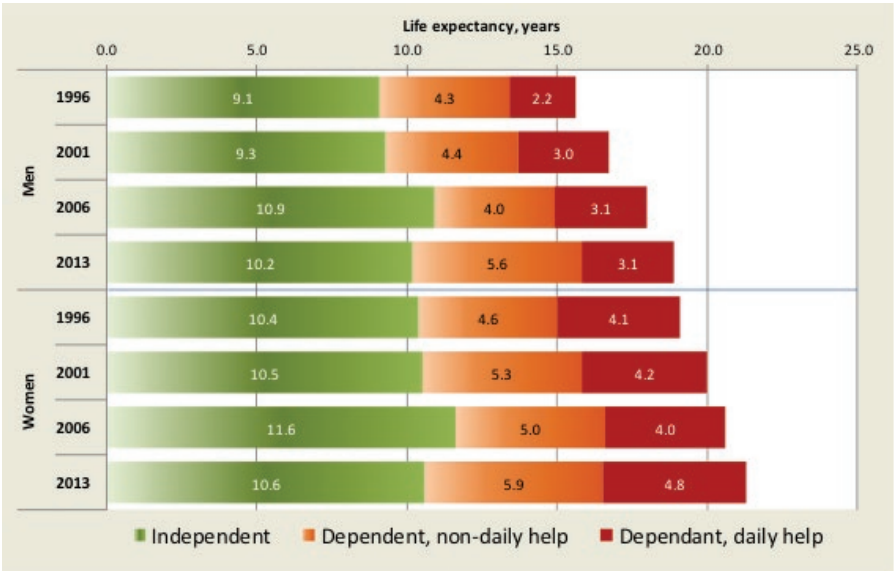
Data source: Statistics New Zealand 2015, custom request

Figure 3. Life expectancy at age 65 years and 85 years, by sex and ethnicity



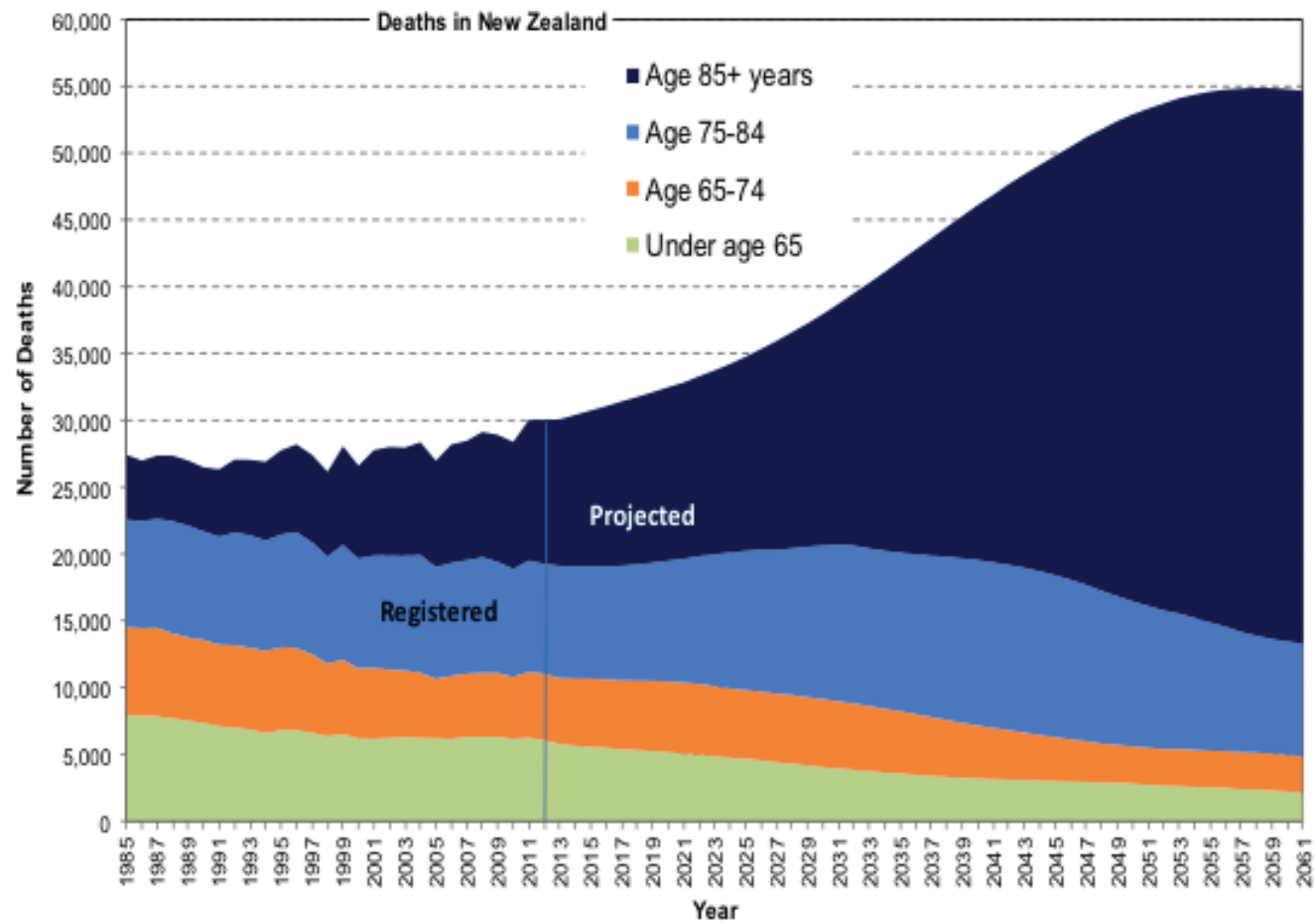
Data source: Statistics New Zealand 2006

Figure 4. Healthy life expectancy at age 65 years



Data source: Ministry of Health 2015, custom request

Figure 5. Deaths of people aged 65+ in New Zealand, historic and projected



Data source: Statistics New Zealand 2012

deaths each year are now increasing after being relatively stable for the past 25 years. They are projected to increase from 2012 until at least 2055 when 95% of all deaths will be of those aged 65+ (Figure 5).

Place of death

Place of residence in later life is not routinely published, however place of death data for 2004-2007 show that in those dying aged over 65 years, 38% of deaths occur in residential aged care, 34% in public (acute) hospital care, and 5% in hospices. These proportions vary with age, so that of deaths in people aged over 85 years, more than half (55%) occur in residential aged care and 29% in public (acute) hospital care. With population ageing, demand for residential aged care will likely increase markedly, but perhaps not as much as age-specific rates might expect. It has been shown that use of residential aged care is associated more with time to death than with age.

Cause of death

The Ministry of Health assembles information each year from death certificates. They liaise with Ministry of Social Development who manage superannuation and benefit payments, the Ministry of Transport, the Water Safety Council, driver’s licence and passport offices to update records. The ICD coding system is used

internationally to code hospital diagnoses and also causes of death. Data extracts of death certifications are summarised and published annually.

Across deaths in all age groups in 2012, 34% were from circulatory diseases, 30% from cancer (neoplasms), 9% from respiratory conditions and 6% from external causes including accidents.

Of those who died aged over 65 years in 2012, ischaemic heart disease was by far the greatest cause of death recorded for both men and women, accounting for 19% of deaths. Other forms of circulatory disease accounted for 5%, and stroke for 10%. All cancers together accounted for 27% (including 9% neoplasms of digestive organs, and 5% neoplasms of respiratory organs). Respiratory diseases accounted for 5%. The top 11 causes of death for those aged over 65 years in NZ are shown in Figure 6. These are related to age and ethnicity, as shown in Figure 7.

Hospital utilisation

Admissions and discharges

During 2009, 29% of all admissions to public hospital were of people aged over 65 years. Six percent were aged over 85 years, and this age group had the highest rate of publicly

funded hospitalisations in 2009/10 of any age group. Numbers of hospital discharges, with age-specific rates per 100 people, are shown in Figure 8. After the age of 60, each 5-year age group has similar numbers of admissions although rates rise markedly with age; men have higher rates of admission than women.

Not only are rates of discharges higher (per thousand) among people aged over 65 years, but lengths of stay are longer. Consequently there is greater resource use by, and more contact of hospital-based doctors with, older people than with younger people.

A further 5,500 discharges from private hospitals were publicly funded but are not included in the figure. Older people are more likely to have adverse events while in hospital, and these are more likely to be avoidable than those which occur in patients of younger age.

[continues]

[continued]

Emergency Department Presentations

Emergency department admissions data show that 22% of all presentations were for those aged 65+ years in 2009/2010 (Figure 9). Again, at older ages men have higher rates of emergency presentation than do women.

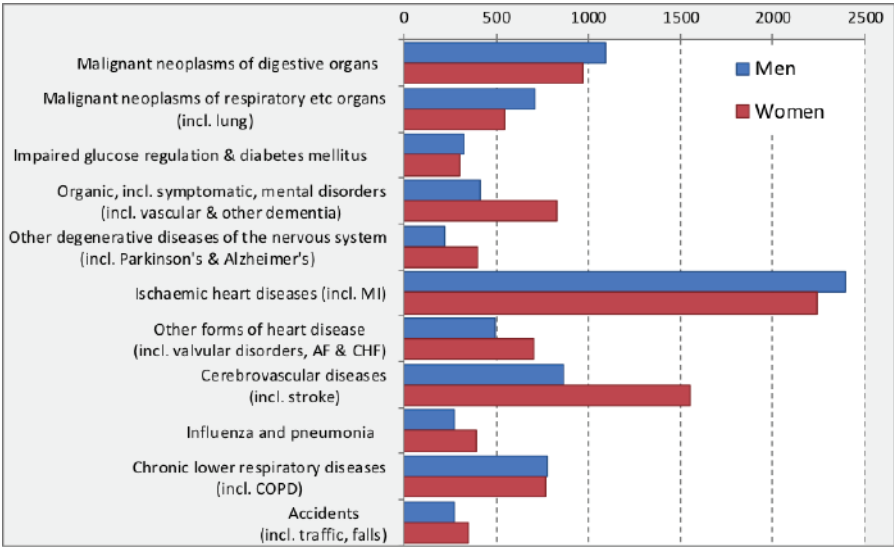
Primary care service utilisation

The National Primary Medical Care survey (NatMedCa) in 2001/02 reported a representative sample of GP consultations in private practice (not including Accident & emergency clinics) expressed as a ratio relative to the population average. A ratio of 2.0 therefore indicates the consultation rate is twice the average in the whole population. A plot of these results is shown in Figure 10, showing again increasing likelihood with age, and higher use of primary care among adult women vs. men.

Residential aged care utilisation

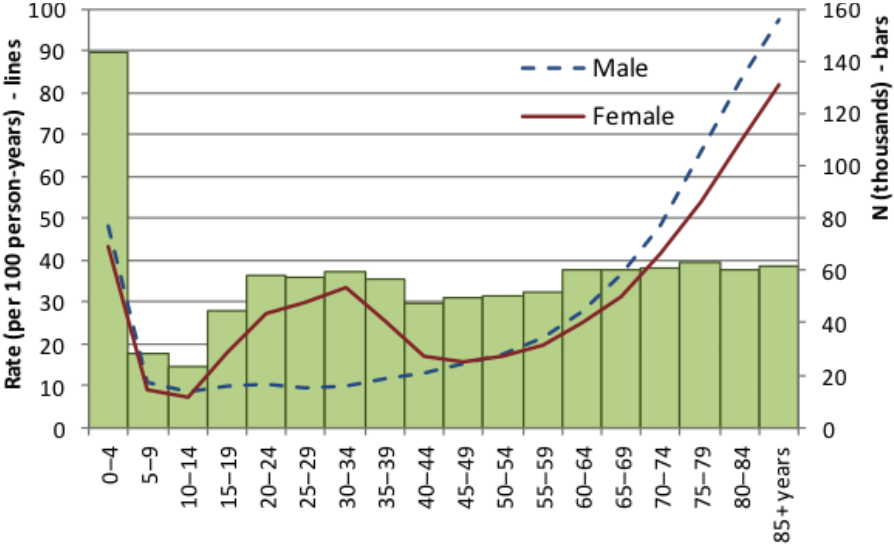
Residential aged care (RAC) facilities fill an important role in New Zealand, providing care for older people whose health and functional needs mean they can no longer live at home, even with support. Facilities come under the Health and Disability Services (Safety) Act, 2001, and are certified and audited by DHBs. Facilities are categorised by the care provided – rest home care for those who need 24-hour care but not 24-hour nursing care, and private hospital care for those who need nursing care round the clock. (These are private geriatric hospitals, distinct from private surgical hospitals). Dementia care is a form of secure rest home care for those whose behaviour offends

Figure 6. Leading 11 causes of death in those aged over 65 years in NZ, 2012



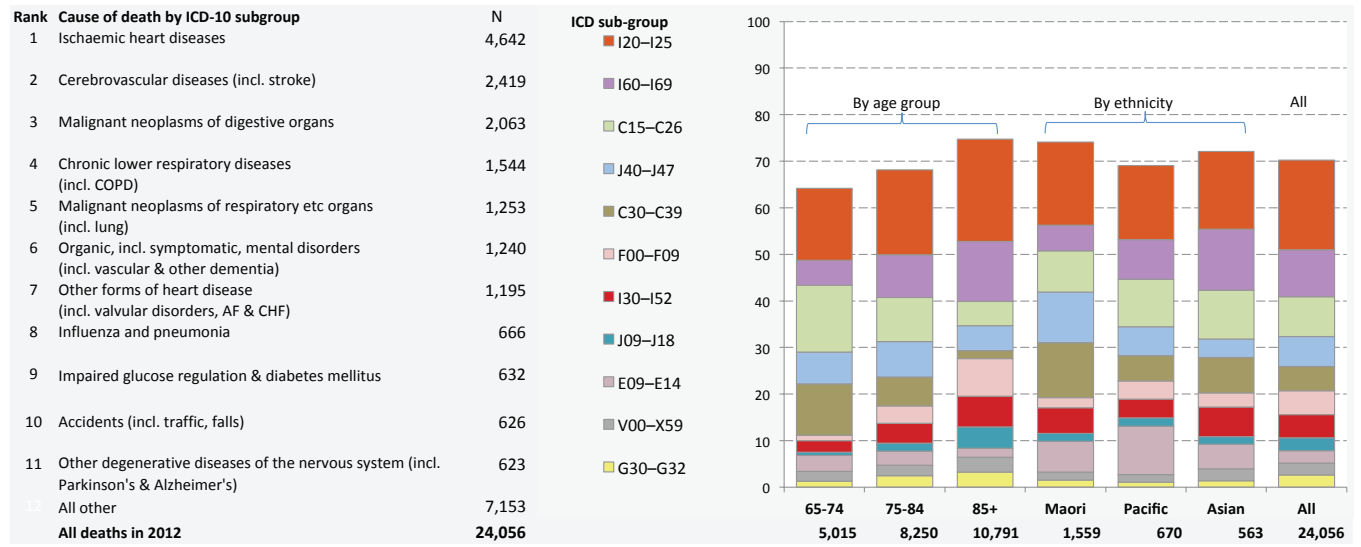
Diagnosis defined by ICD Chapter of primary cause of death. Abbreviations: MI=myocardial infarction, AF=atrial fibrillation, CHF=congestive heart failure, COPD=chronic obstructive pulmonary disease. Data source: Ministry of Health 2015

Figure 8. Publicly funded hospital discharges in New Zealand 2009/10



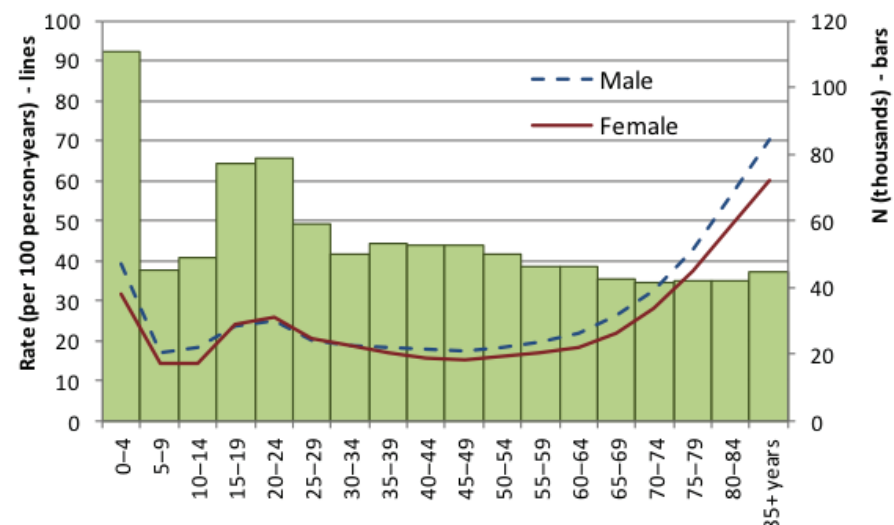
Source: data from Ministry of Health 2010

Figure 7. Leading 11 causes of death in those aged over 65 years in NZ, 2012, by age group & ethnicity



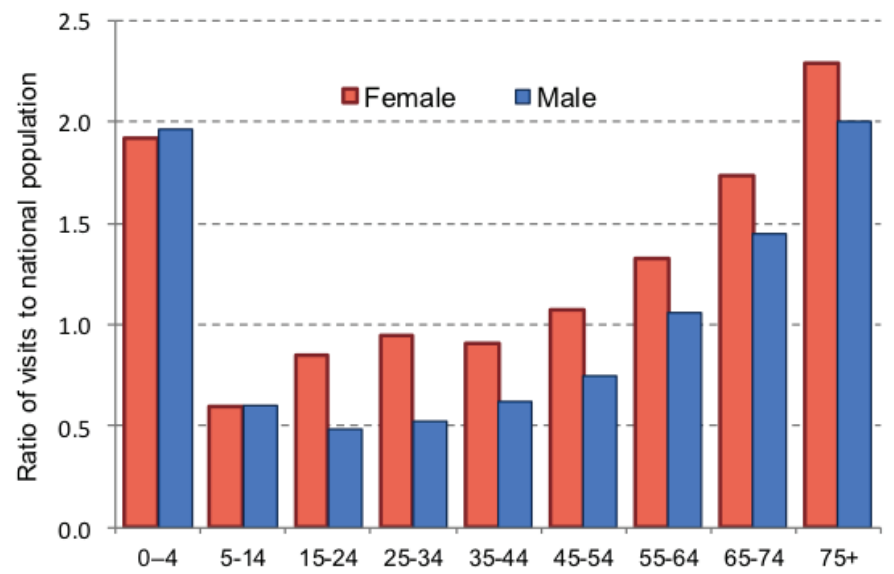
Diagnosis defined by ICD Chapter of primary cause of death. Abbreviations: MI=myocardial infarction, AF=atrial fibrillation, CHF=congestive heart failure, COPD=chronic obstructive pulmonary disease. Data source: Ministry of Health 2015

Figure 9. Public hospital emergency department presentations, 2009/10



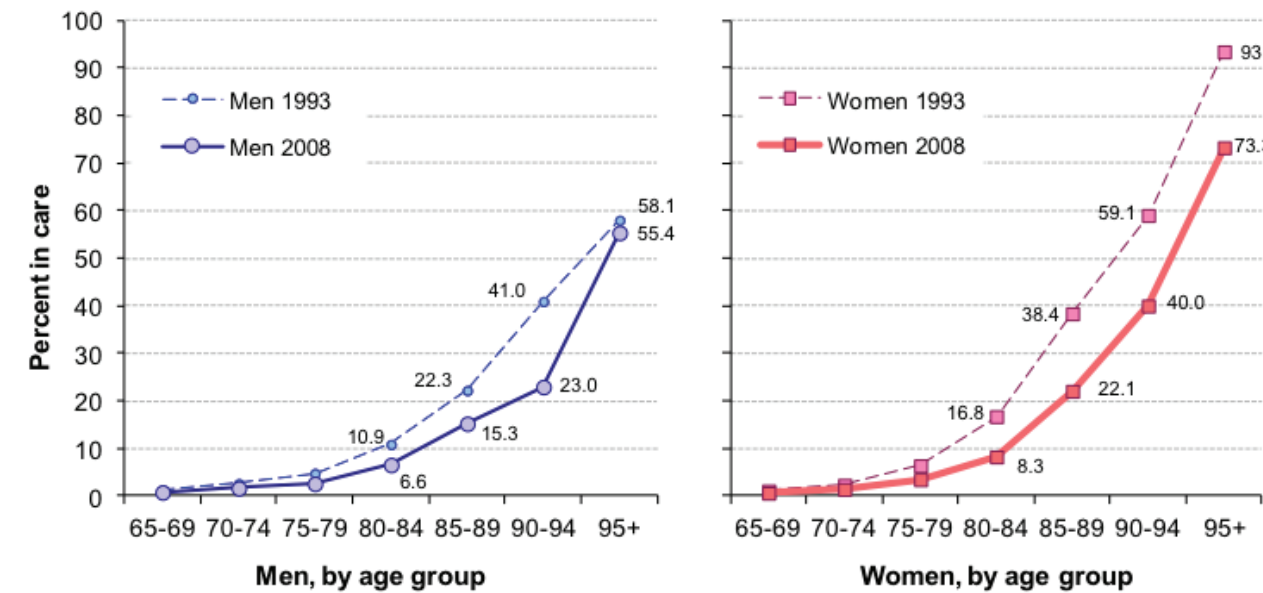
Source: data from Ministry of Health 2010

Figure 10. Rate ratio of primary care consultations in NZ, 2001/02



Source: data from NatMedCa survey, Raymont 2004

Figure 11. Rate of use of residential aged care in Auckland, 1993 and 2008



Source: Auckland Long Term Care Studies 1993 & 2008

or to prevent wandering. Psychogeriatric care is a specialist form of private hospital care. RAC facilities may also provide short-term respite care, rehabilitation, and/or palliative care.

In RAC, personal cares are provided by care assistants. Clinical care is provided by facility nurses supported by GPs. Services that may be expected to be available within a hospital, such as intravenous infusions, x-rays and 24-hour medical cover are seldom available in RAC facilities.

At any one time, about 5% of people aged 65+ live in long-term care facilities, however this increases markedly with age (Figure 11). In NZ, at least 47% of all people aged over 65 years are estimated to use residential aged care at some time during their lifetimes, 66% of those aged over 85 years.

Dependency levels of RAC residents have increased markedly over the same period, partly because the proportion of the population living in residential aged care has fallen over recent decades, particularly in rest-home (lower) level of care. It is believed that use of residential aged care has reduced due to higher levels of provision of home-based care services, compulsory assessment before entry to residential aged care and the growth in housing more suited to older people, such as in retirement villages. The private hospital (higher level of care) has reduced less, but bed provision for this higher level of care and for dementia care is a growth area.

National statistics are somewhat variable because of their reliance on administrative (subsidy payments) data that miss those who pay privately for their care. Figure 11 therefore uses data from the Auckland Long Term Care Studies to show rates in care in the Auckland region.

Retirement villages are not part of residential aged care, but are purpose-built housing for older people living independently. Usually they have shared central social and activity spaces,



maintenance and security services. Only some villages have an RAC facility on the site or offer any nurse or clinical care. Some may arrange and provide home-based support services in what are termed *serviced apartments*, similar perhaps to low-level care in a rest home facility. Across the country, slightly more people live in retirement villages than in residential aged care.

### Entitlements, supports and subsidies

NZ has a universal superannuation scheme under which all older residents are entitled to receive weekly payments. While there has been discussion about raising the age of eligibility to avoid taxpayer burden, 65 years is the lower age limit for the meantime.

A range of health supports and services is available to older people where a need can be demonstrated. District nurses, podiatry and rehabilitation services for example can be provided at home. Other home-based support services include household help, including floor cleaning and help with laundry – but usually no more than an hour a day. Personal cares, including for bathing and dressing, are usually limited to no more than 21 hours a week. Beyond that, a person requiring care in the long-term will typically move to an RAC facility. If the person requires long-term residential care indefinitely, the level of care needed determines whether care will be in a rest home or hospital.

If a person believes they require support, the first step is to apply for a needs assessment from a DHB or local DHB-funded Needs Assessment and Service Coordination Agency (NASC). Often this is arranged via the GP or practice nurse.

Alternatively a person may be needs assessed while a patient in a public hospital. The needs assessment will determine whether or not the person has a condition that can be reversed, whether or not the person can be safely supported in the community. Needs assessors increasingly use the interRAI tool mandated for use throughout NZ, for both home-based support and RAC care.

NZ residents assessed as needing RAC care are entitled to subsidies for RAC care depending on their care needs and assets. Details are available on the Work and Income, DHB and Ministry of Health websites. Accident Compensation may also be claimed by older people for injuries arising from accidents. Very few insurance schemes cover long-term care in NZ.

### Implications for clinical practice and policy

As the population ages, geriatric medicine as a specialty area of clinical practice will grow further, but ageing will impact almost all other areas of medical practice. Many policy and practice issues will need to be addressed, including most particularly the diagnosis and management of multiple comorbidities. Efforts to reduce demand for care through more effective preventive medicine and through ongoing clinical and self-management of long-term chronic diseases will become increasingly important.

### References, information sources and further reading

The source of official population data for New Zealand is Statistics New Zealand, a government department that assembles and makes available information about the population. Much of their information is available on their website, [www.statistics.govt.nz](http://www.statistics.govt.nz), but some of the reports and projections presented here were obtained on request.

Information about hospitalisations and deaths is managed by the Ministry of Health, and routinely placed on their internet at [www.moh.govt.nz](http://www.moh.govt.nz) together with numerous publications. For example, information about health-related quality of life, disabilities, healthy life-expectancy and health service use are available in the publication *Older People’s Health Chart Book 2006*. Wellington: Ministry of Health; 2006.

Place of death information is presented in the paper by Broad JB, Gott M, Kim H, Boyd M, Chen H, & Connolly MJ. *Where do people die? An international comparison of the percentage of deaths occurring in hospital and residential aged care settings in 45 populations, using published and available statistics*. Int J Public Health. 2012; doi: 10.1007/s00038-012-0394-5.

Information about residential aged care is available from various Auckland LTC study papers including:

Boyd M, Broad JB, Kerse N, Foster S, von Randow M, Lay-Yee R, et al. *Twenty-year trends in dependency in residential aged care in Auckland, New Zealand: a descriptive study*. JAMDA. 2011;12(7):535-40. doi: 10.1016/j.jamda.2011.01.014

Broad JB, Boyd M, Kerse N, Whitehead N, Chelimo C, Lay-Yee R, et al. *Residential aged care in Auckland, New Zealand 1988-2008: do real trends over time match predictions?* Age Ageing. 2011;40(4):487-94. doi: 10.1093/ageing/afr056.

Adverse events information is described in a paper by Davis P, Lay-Yee R, Briant R, Ali W, Scott A, Schug S. *Adverse events in New Zealand public hospitals II: preventability and clinical context*. NZMJ 2003; 2003:116 URL: <http://www.nzma.org.nz/journal/116-1183/624>

The legislation governing residential aged care facilities is found at the New Zealand Legislation website. Health and Disability Services (Safety) Act. 2001 Available from: [www.legislation.govt.nz/act/public/2001/0093/latest/DLM119975.html](http://www.legislation.govt.nz/act/public/2001/0093/latest/DLM119975.html)

The context and challenges of ageing in NZ, together with the social and other supports available, are described in: Ministry of Social Development. *Older New Zealanders – Healthy, independent, connected and respected*. Wellington: Ministry of Social Development, 2013.

Several NatMedCa publications are available on the Ministry of Health website, the results here are in Raymont A, Lay-Yee R, Davis P, Scott A. *Family Doctors: Methodology and description of the activity of private GPs. The National Primary Medical Care Survey (NatMedCa): 2001/02*. Wellington: Ministry of Health, 2004.

# Hauora Kaumātua – Health of Older Māori

This section addresses the health of older Māori (kaumātua). General Māori Health teaching and learning is provided separately, and this section does not seek to repeat that. All aspects of the Hauora Māori Domain curriculum are relevant to working with older Māori patients, however the following areas will be particularly useful to revise:

- The historical and contemporary determinants of Māori health in Aotearoa New Zealand
- Te Tiriti o Waitangi and implications of the treaty for Māori Health
- Cultural competence, in particular the ability to acknowledge and address one’s biases
- Use of the Hui Process when engaging in clinical interactions with Māori patients and whānau
- The meaning of commonly used words in te reo Māori (refer to the glossary on the Hauora Māori Domain CourseBuilder site).
- Tikanga and kawa (cultural norms, values and protocols) regarding death and dying.

Professor Sir Mason Durie has noted that “Māori live in diverse cultural worlds. There is no one reality nor is there any longer a single definition which will encompass the range of Māori lifestyles”<sup>1</sup>. What this means is that kaumātua will be diverse socially, economically, culturally, and in every other way. For example, there will be different levels of identification with tikanga Māori (Māori customs); some older Māori will not speak te reo Māori or associate with ‘traditional’ Māori cultural norms and practices. The key message here is that one should never make assumptions about patients.

Kaumātua are often referred to as Kuia (older woman) or Kōro (older man). In Māori society kaumātua tend to hold an esteemed position as holders of knowledge and wisdom. Kaumātua may have significant commitments within their whānau, hapū, iwi and communities, including cultural obligations and supporting whānau in a range of endeavours. Kaumātua may live with or close to whānau and it is not uncommon for them to be involved in caring for mokopuna (grandchildren). In return there is often an expectation on younger generations to support and care for kaumātua. Whanaungatanga (kin relations) are an important support network for kaumātua.

Compared with other ethnic groups, Māori are more likely to reside in rural areas, although the majority of kaumātua live in urban environments. Living rurally can result in problems with access to DHB provided rehabilitation and home based support services. Kaumātua may also be living distant to their rohe (tribal area), so may not have as many traditional supports available from local iwi (tribe) or marae (meeting place).

Government policies of particular relevance to kaumātua are:

- New Zealand Positive Ageing Strategy
- New Zealand Health of Older People Strategy
- He Korowai Oranga – New Zealand’s Māori Health Strategy
- Whānau Ora

Financial issues are important to consider for kaumātua as socioeconomic inequities contribute significantly to the differences observed in health outcomes of kaumātua compared to NZ European older people.<sup>2</sup>

As is the case for other Māori people, some kaumātua may consult a Tohunga (Healer) or Rongoā (Māori medicine and healing) practitioner alongside ‘mainstream’ medical care. Medical practitioners should try to seek information about any other treatment a patient is receiving and work with rather than against traditional healers. However if you feel their management is harmful then it is important that you share those concerns with your patient. A relevant reference is the Medical Council of NZ’s statement on complementary or alternative medicine.<sup>3</sup>

Treatment modalities used in traditional healing include;

- Rongoā rākau, which refers to the traditional medicinal formulations derived from plants, and associated healing practices.
- Mirimiri, which is massage – Māori physiotherapy.
- Karakia (incantation or prayer). Māori conceptions of health and wellbeing often acknowledge the integral nature of wairua (the spiritual dimension).

Cognitive assessment instruments in common use such as the -MoCA and ACE-III have not been validated in the Māori population. The need for culturally specific tools has been previously recognised, and has led to the development of the Kimberly Cognitive Assessment Tool[4] in Australia. The Rowland Universal Dementia Assessment Scale (RUDAS)[5] cognitive assessment tool also has less cultural bias in use.

A contemporary aging issue for older Māori has been the age at which NZ Superannuation is provided. The comment has been made in the political arena that Māori are ‘missing out’ on superannuation compared with some other ethnic groups because of shorter life expectancy after age 65. The question has been raised as to whether this should be addressed through differential eligibility for NZ Superannuation.

#### References

1. Durie et al, 1996 from *Ngā Āhuatanga Noho o te Hunga Pakeke Māori 2002*
2. Ministry of Health and University of Otago. *Decades of Disparity III: Ethnic and Socioeconomic Inequalities in Mortality, New Zealand 1981-1999*. Wellington: Ministry of Health;2006.
3. *Statement on complementary and alternative medicine*. Medical Council of New Zealand. Accessed Nov 2011. [http://www.mcnz.org.nz/portals/0/guidance/comp\\_alternative.pdf](http://www.mcnz.org.nz/portals/0/guidance/comp_alternative.pdf)
4. <http://www.wacha.org.au/kica.html>
5. Storey JE, Rowland JT, Basic D et al. The Rowland Universal Dementia Assessment Scale (RUDAS): a multicultural cognitive assessment scale. Int Psychogeriatr. 2004 Mar;16(1):13-31. Erratum in: Int Psychogeriatr. 2004 Jun;16(2):218.

<sup>1</sup> Note that ‘kaumātua’ can be translated as ‘elder’. Some people are recognised as kaumātua purely based on their age, but some younger Māori people have knowledge and leadership abilities that mean they are also considered kaumātua despite their youth.

# Notes

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