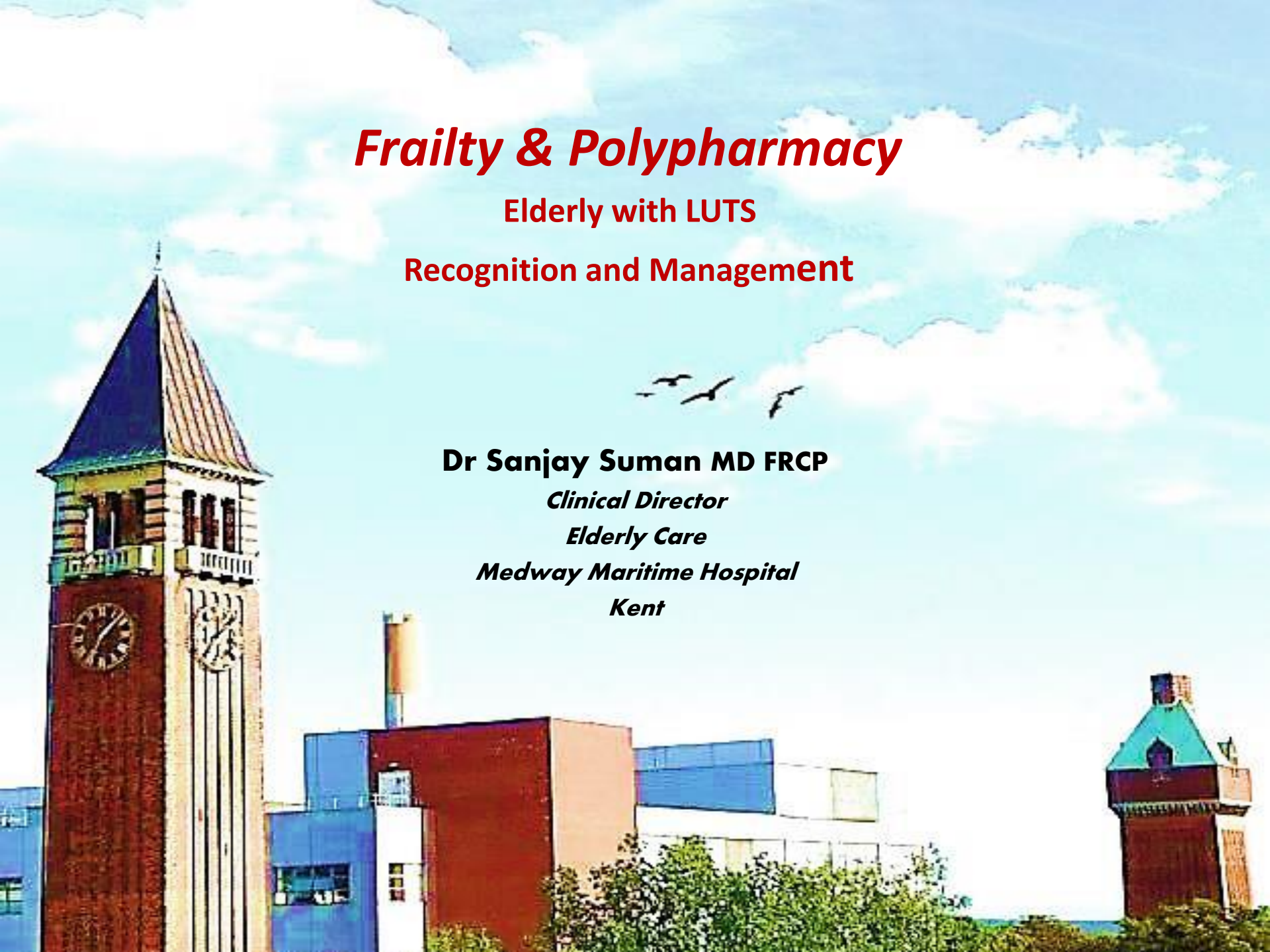

Frailty & Polypharmacy

Elderly with LUTS

Recognition and Management

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Clinical Director

Elderly Care

Medway Maritime Hospital

Kent

Declaration of interests

Honoraria and Advisory Board

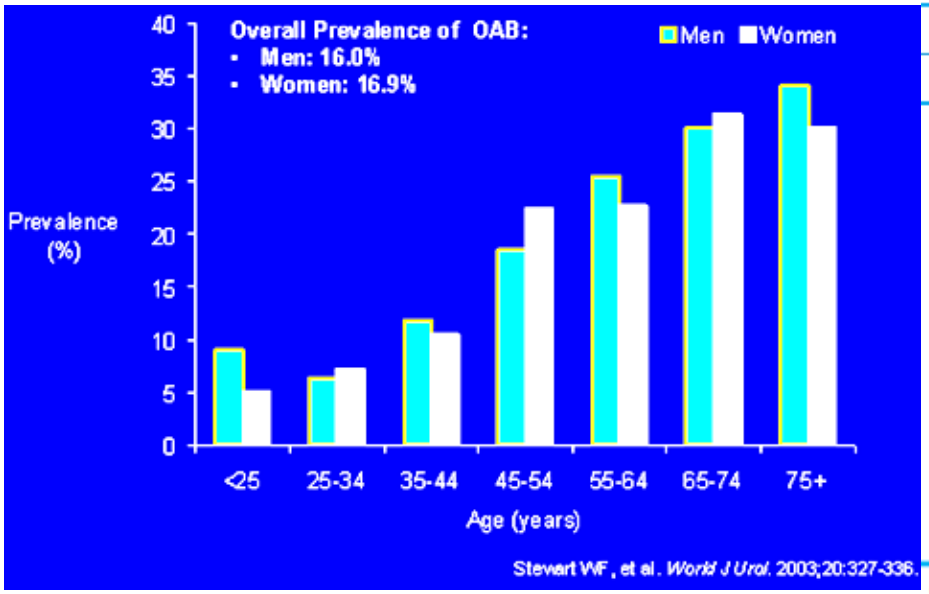
Bayer, Pfizer, MSD, Astellas, Lilly, Internis, Flynn, Boehringer-Ingleheim, Ferring , Kyowa Kirin, Astellas, Vifor, BMS

No direct Conflict of interest applies to this presentation

Why consider frailty in LUTS

Frailty and LUTS are both common in Elderly and often co-exist

LUTS: High prevalence in Elderly



LUTS: High prevalence of Comorbidities

Table 1. Comorbidities associated with bladder dysfunction

Comorbidity	Association with UI
Parkinson's disease	60% of patients have LUTS
Dementia	Odds of UI 2.3 (95% CI 1.6-3.3)
Falls and dementia	Odds of UI 4.9 (2.0-12.0)
Stroke	UI is a poor prognostic factor
Cardiovascular disease	Rates of UI increase with severity and duration of heart disease
Diabetes	80% higher risk of severe UI
Arthritis, back pain	50-90% higher risk of having UI
Obesity	Pelvic floor dysfunction 4 times more likely

Cite as: *Can Urol Assoc J* 2013;7(9-10):S183-5. http://dx.doi.org/10.5489/cuaj.1619
Published online October 9, 2013.

Why consider Polypharmacy in LUTS

- Older adults have multiple co-morbidities requiring multiple medications
- Many of these medications could actually be contributing to LUTS
- Anticholinergic Burden

Table 1 Number of patients with LUTS prescribed medicines that can cause LUTS

(a) Medicines that caused the storage symptoms

Medication class	Medicine	Prevalence n (%)	
Anti-dementia drugs	Donepezil	272	14.1
Intestinal Lavage Solution			
Decongestants and antiallergics			
Antineoplastic agents			

(b) Medicines that caused the voiding symptoms

Medication class	Medicine	Prevalence n(%)	
Anti-parkinson drugs	Trihexyphenidyl	32	13.7
	Biperiden	56	
	Amantadine	93	
	Levodopa/Benserazide	72	
	other	※	
Antidepressants	Mianserin	58	13.8
	Paroxetine e	119	
	Fluvoxamine	61	
	Milnacipran	29	
Anxiolytics	Diazepam	95	4.9
	other	※	
Antipsychotics	Chlorpromazine	30	13.3
	Risperidone	108	
	Levomepromazine	36	
	Sulpiride	68	
	other	※	

Hashimoto *et al. Journal of Pharmaceutical Health Care and Sciences* (2015) 1:7
DOI 10.1186/s40780-014-0004-1

Case Study
Mrs P, 85 years old lady

PMH

Hypertension, OA, T2DM, CKD

Complaints

Dizziness , Falls

Diarrhoea

Urinary incontinence

Weight loss

Episodic confusion

Medications

Ramipril 5 mg od

Amlodipine 5 mg od

Furosemide 20 mg od

Metformin 1 gm bd

Gliclazide 80 mg bd

Tramadol 50mg PRN

Solifenacin 5 mg od

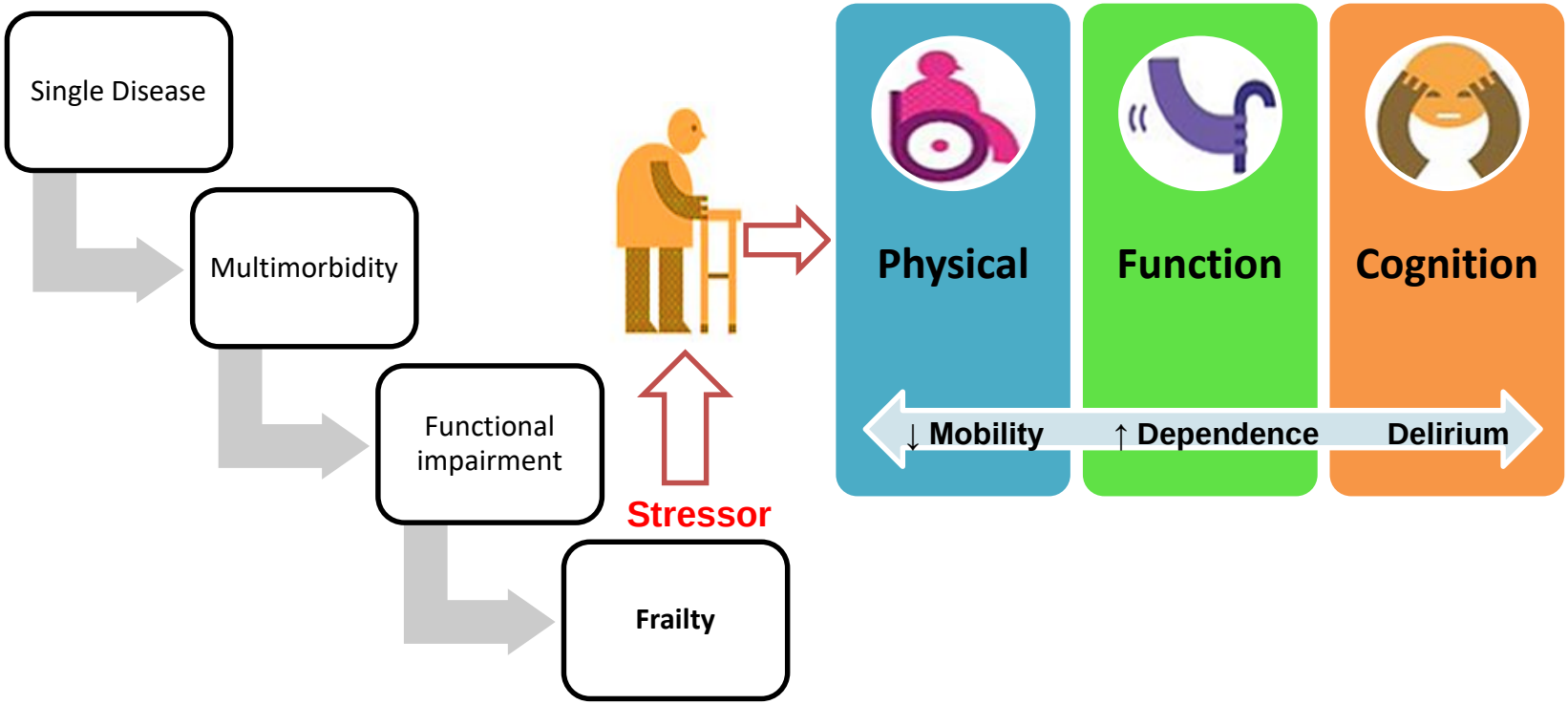
Social History

Lives alone

Carer 1 / day

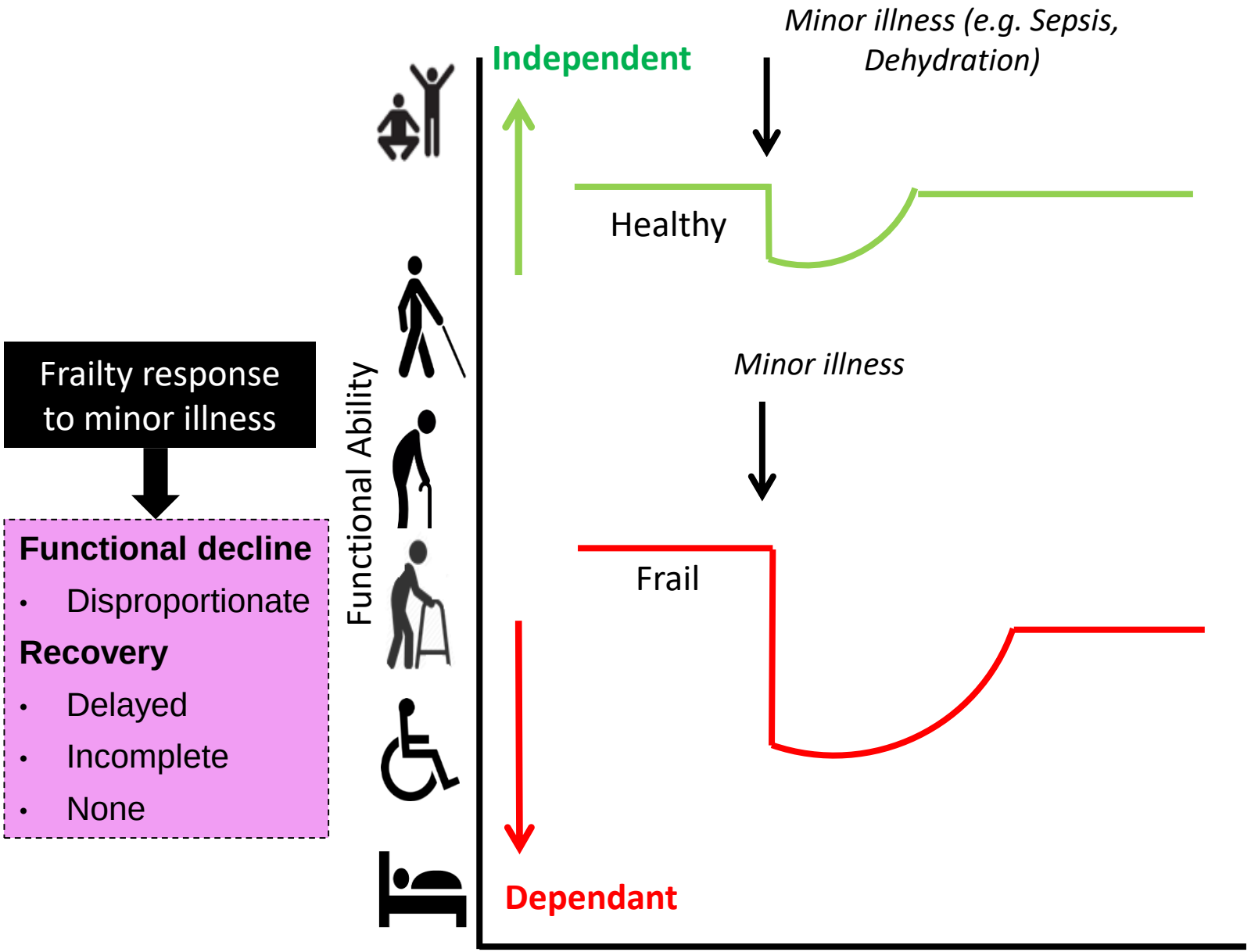
What is frailty?

- Accumulating health deficits[1]
- Increased susceptibility to adverse outcomes in response to minor stressors [2]



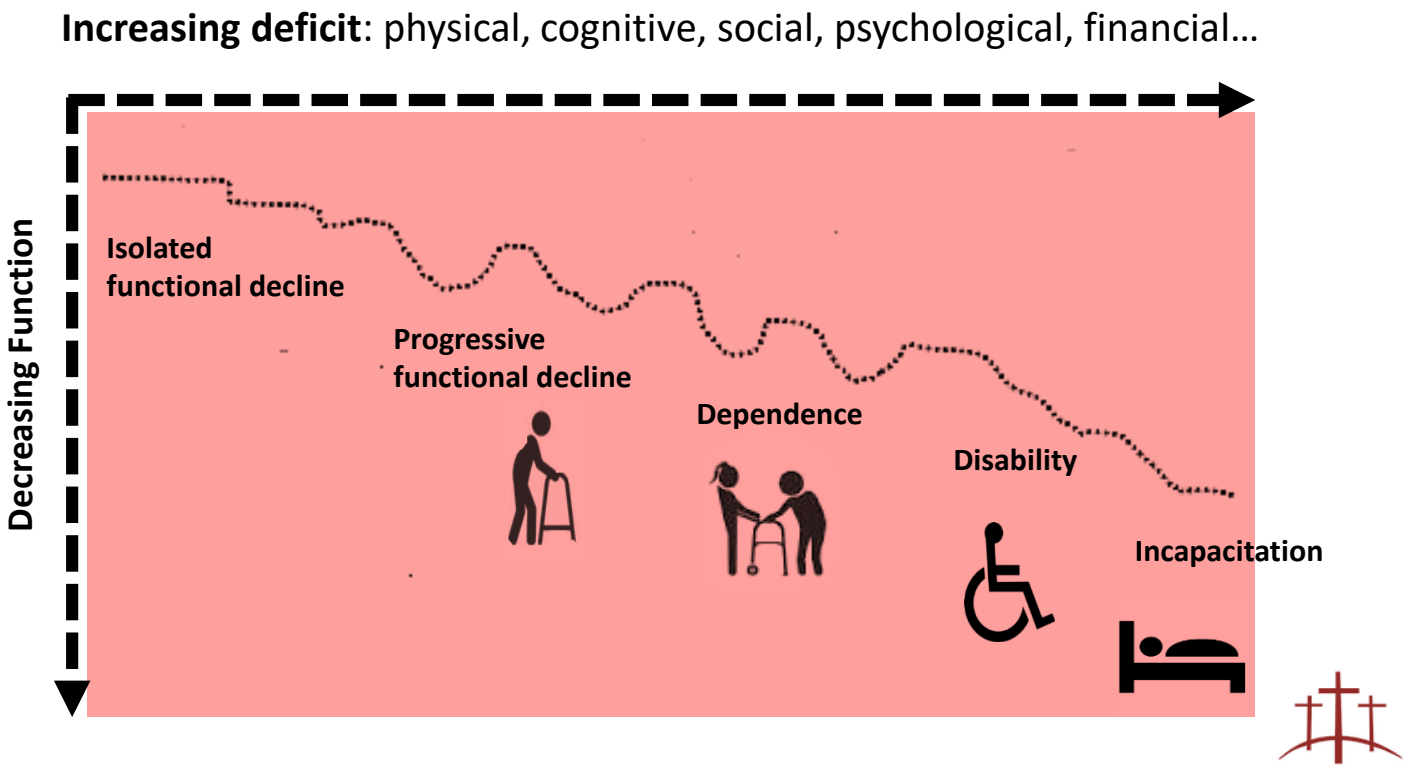
Minor stressors: infection, dehydration, injury etc.

1 Yarnall et al. **Age and Ageing** 2017;46: 882-888
2 Clegg et al . **Lancet** 2013;381:752-62



Clegg et al . **Lancet** 2013;381:752-62

Typical longer term trajectory for frailty

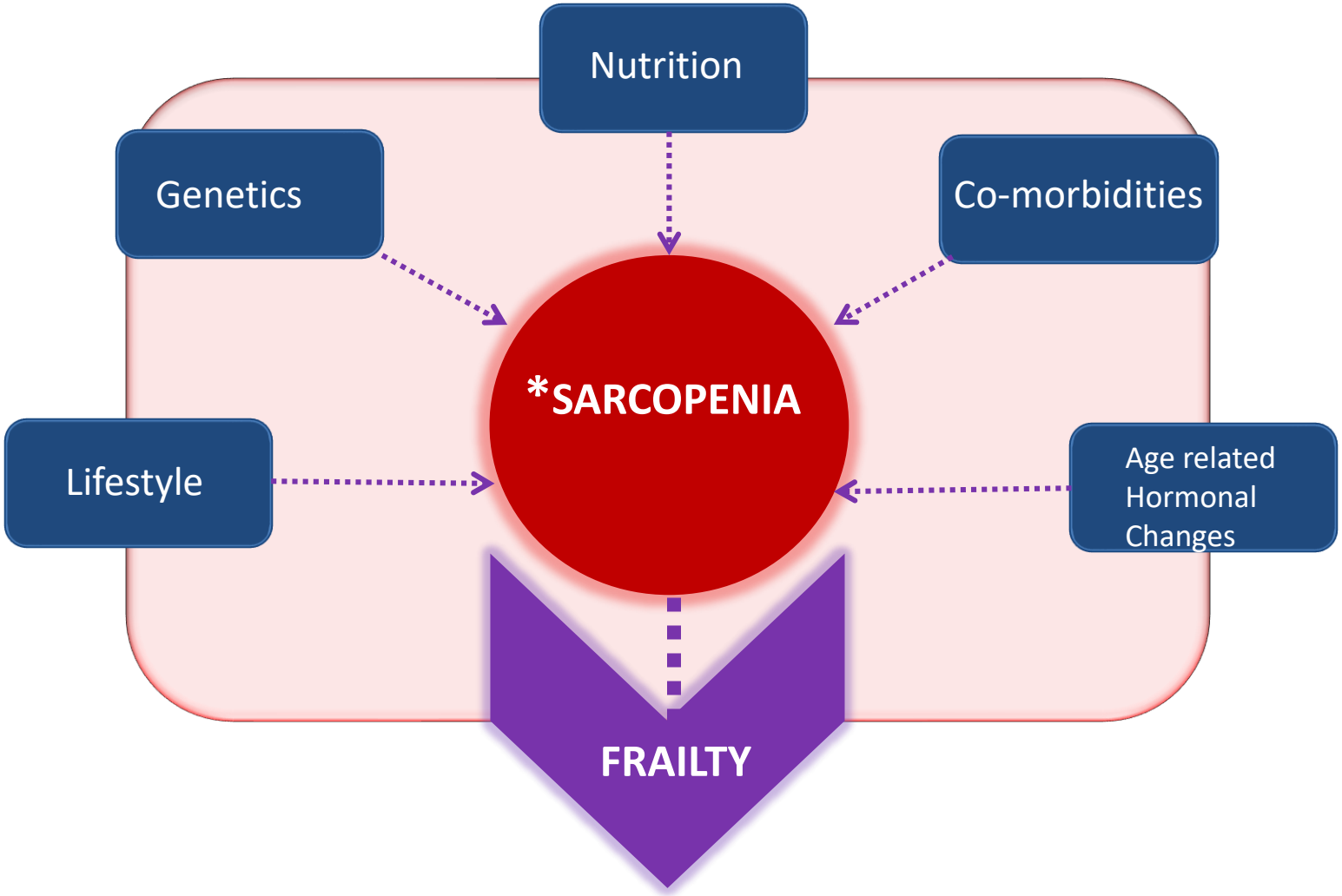


An early model for objectively identifying frailty

1. Weight Loss	>10 lb (4.5kg) unintentionally in previous year
2. Muscle Weakness	Grip strength in lowest 20% of the population
3. Exhaustion	Self-reported exhaustion
4. Slowness	Gait speed in slowest 20% of the population
5. Low Activity	kcal/week in lowest 20% of the population

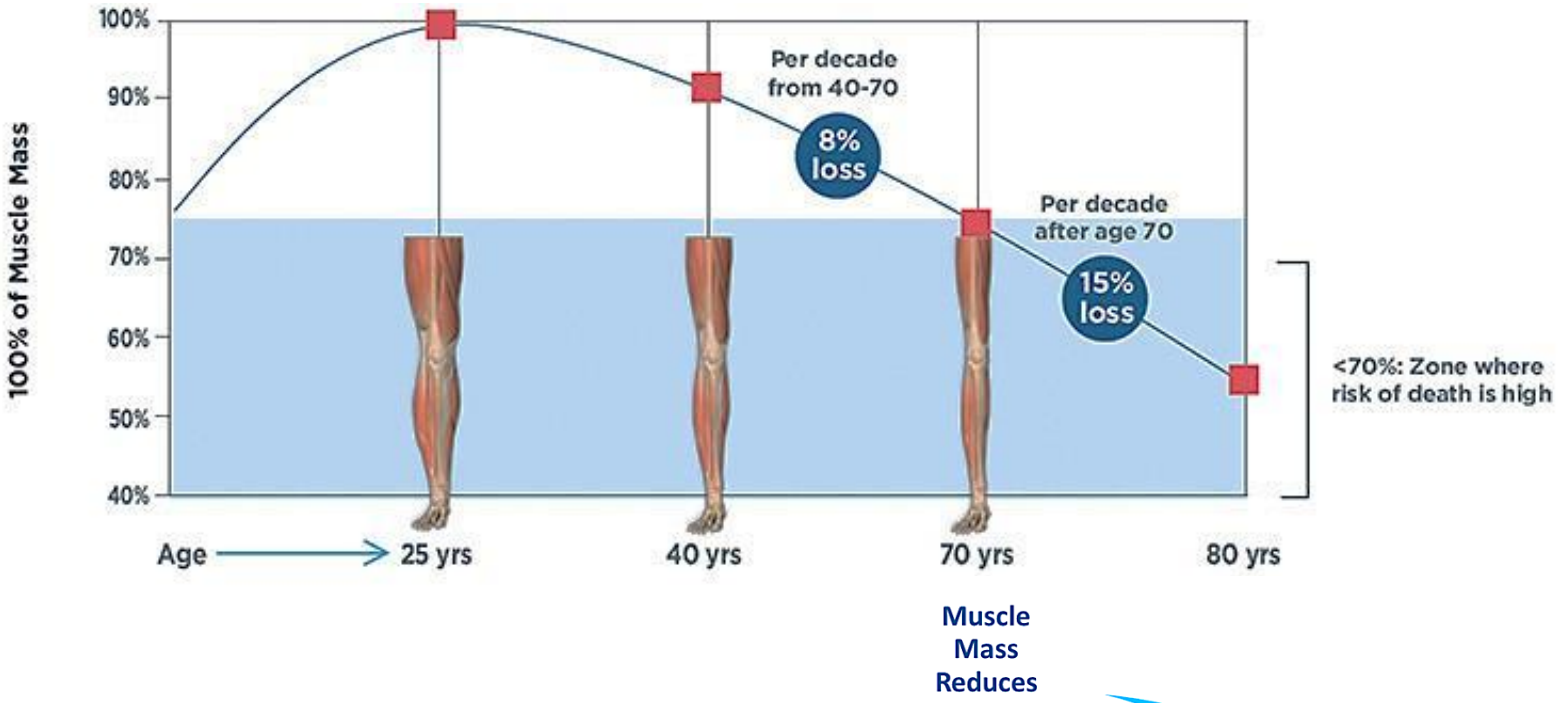
≥ 3/5 Frail
1- 2/5 Pre-frail

Fried et al. Frailty in older adults: evidence for a phenotype. J Gerontol A Biol Sci Med Sci 2001 Mar; 56: M146-56



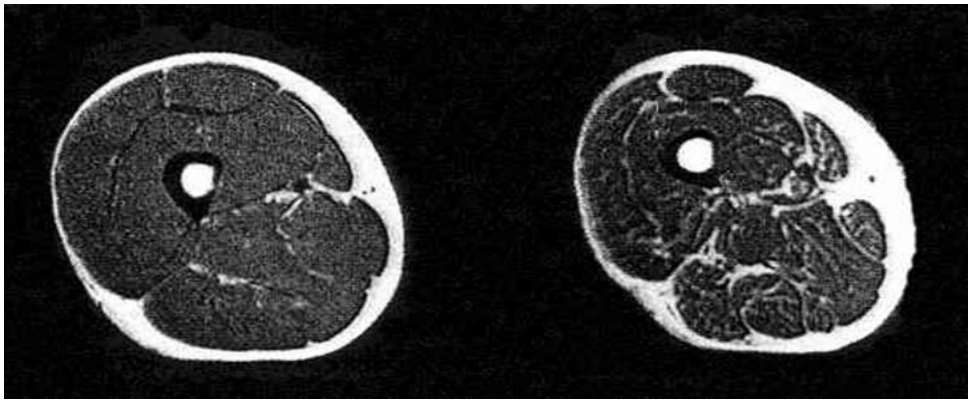
***SARCOPENIA (Loss of muscle mass, quality, strength) Considered as the main driver for frailty**

Sarcopenia (Loss of muscle mass) increases with age



Muscle Mass Reduces

Healthy Muscle **Sarcopenia**

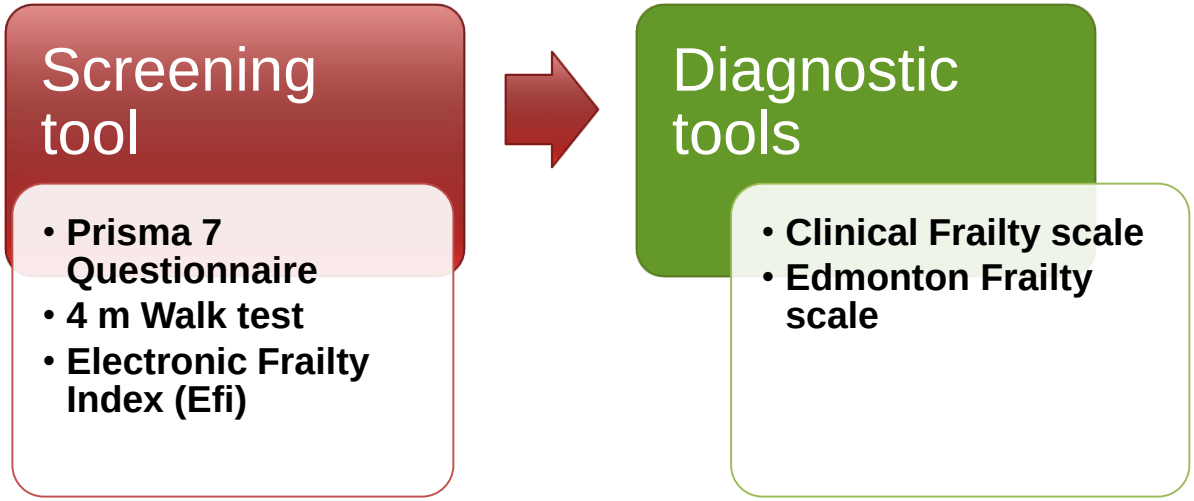


- ↓ Physical Activity
- ↓ Muscle Strength
- ↑ Risk of Falls
- ↓Autonomy

↑ DEPENDANCY

Tools for screening and diagnosing Frailty in practice

A number of practical tools are available



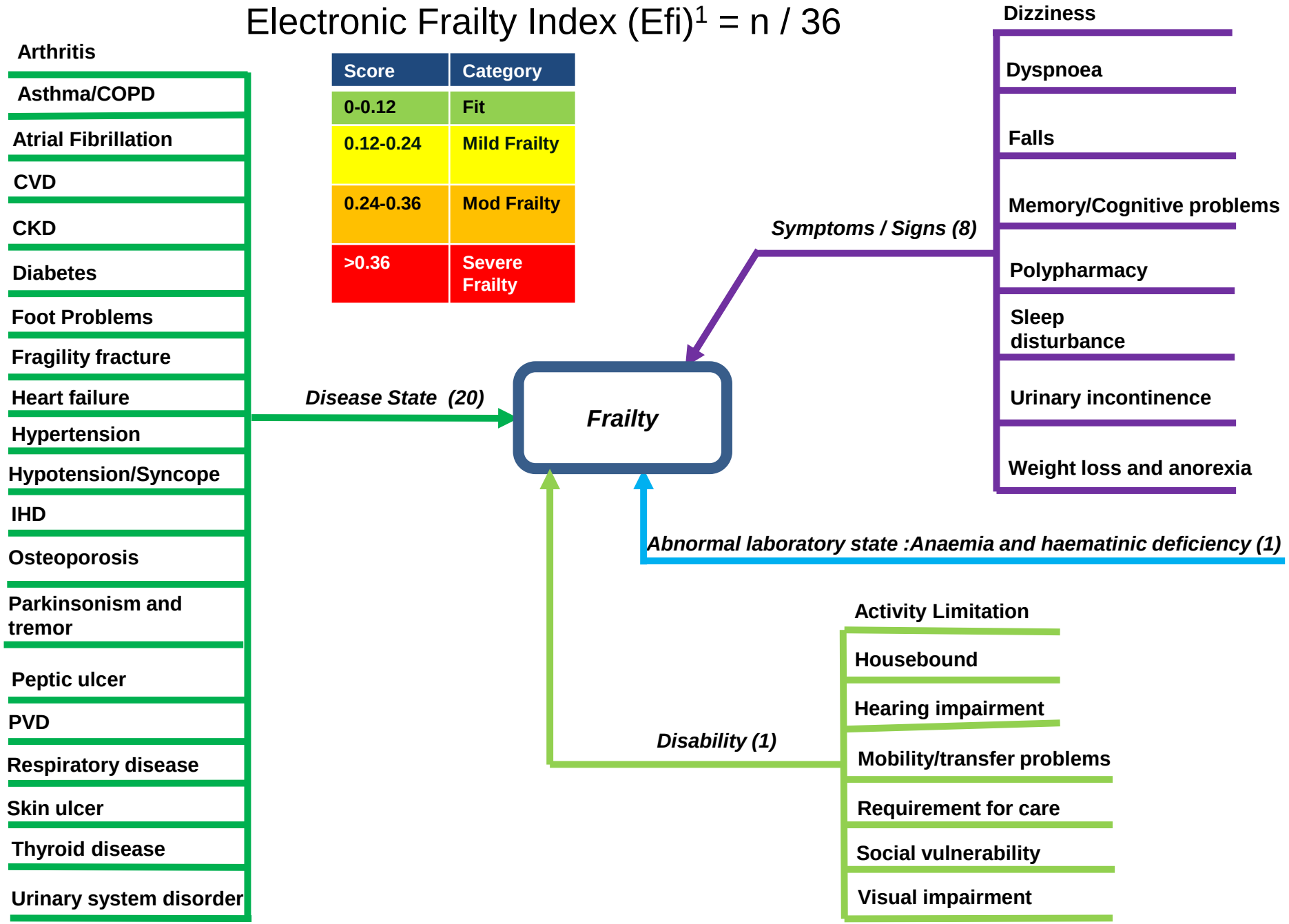
Electronic Frailty Index (Efi)[1]

- Routine primary care electronic health record (EHR) data
- **36 clinical deficits chosen**
- Actual numbers of deficit captured **(n)** and analysed electronically give an individual score (n/36)
- Endorsed by NHS England, NICE and British Geriatric Society

1 Andrew Clegg et al. Age Ageing 2016;ageing.afw039

Electronic Frailty Index (Efi)[1] = n / 36

Score	Category
0-0.12	Fit
0.12-0.24	Mild Frailty
0.24-0.36	Mod Frailty
>0.36	Severe Frailty



1 Andrew Clegg et al. Age Ageing 2016;ageing.afw039

Clinical Frailty Scale* (CFS)

1 **Very Fit** – People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.

2 **Well** – People who have **no active disease symptoms** but are less fit than category 1. Often, they exercise or are very **active occasionally**, e.g. seasonally.

3 **Managing Well** – People whose **medical problems are well controlled,** but are **not regularly active** beyond routine walking.

4 **Vulnerable** – While **not dependent** on others for daily help, often **symptoms limit activities.** A common complaint is being "slowed up", and/or being tired during the day.

5 **Mildly Frail** – These people often have **more evident slowing,** and need help in **high order IADLs** (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.

6 **Moderately Frail** – People need help with **all outside activities** and with **keeping house.** Inside, they often have problems with stairs and need **help with bathing** and might need minimal assistance (cuing, standby) with dressing.

7 **Severely Frail** – **Completely dependent for personal care,** from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~ 6 months).

8 **Very Severely Frail** – Completely dependent, approaching the end of life. Typically, they could not recover even from a minor illness.

9. **Terminally Ill** - Approaching the end of life. This category applies to people with **a life expectancy <6 months,** who are **not otherwise evidently frail.**

Scoring frailty in people with dementia

The degree of frailty corresponds to the degree of dementia. Common **symptoms in mild dementia** include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

In **moderate dementia**, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

In **severe dementia**, they cannot do personal care without help.

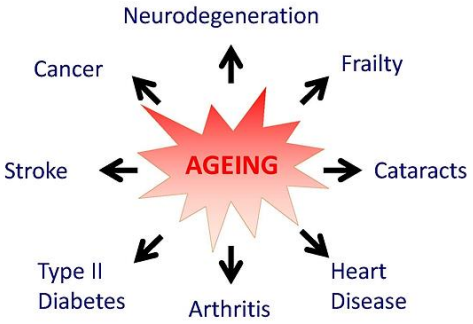
* 1. Canadian Study on Health & Aging, Revised 2008.
2. K. Rockwood et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005;173:489-495.

DALHOUSIE UNIVERSITY
Inspiring Minds

Polypharmacy

Historical Definition: Prescription of ≥ 4 / 5 drugs

Age Group	4 – 9 drugs	≥ 10 drugs
60-69 Yrs	28.9%	7.4%
≥ 80 Yrs	51.8%	18.6%



Prevalence of Polypharmacy in a Scottish Primary care Population
Payne et al. Eur J Cl Pharmacol 2004;991-1001

Polypharmacy
Current Take on understanding the issue

Appropriate

- Established co-morbidities
- Shared Goals
- Effective & tolerated

Inappropriate

- Risk outweighs benefit
- Drug class duplication
- Co-prescribing drugs with potential interactions

Omission of medications that are
-effective
-well tolerated
-for established indications
highly inappropriate

Spinewine A et al. Lancet 2007;370(9582): 173-84
Hanlon JT et al. JAGS. 2001;49: 200-9.
Fisk D et al. Arch Intern Med. 2003;163: 2716-2724.
Steinman et al. JAGS. 2006;54:1516-23

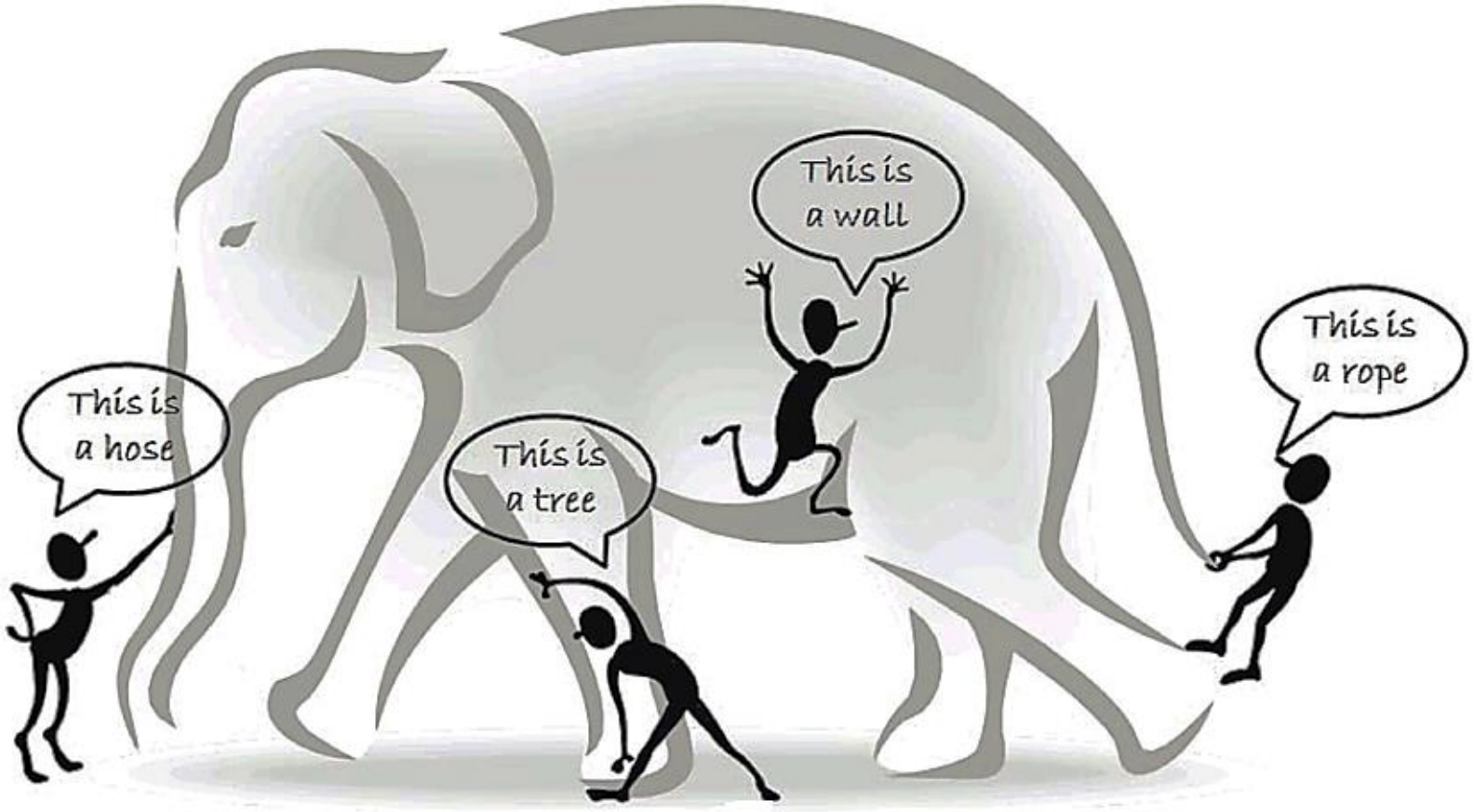
45% of all medications prescribed for ≥ 65 years[1]

1. Wynne et al Maturitas 2010;246-50

- **Guidelines based prescribing**
- **Aggressive primary / secondary**
- **prevention**
- **Focus on "targets"**
- **Expectations**

Multiple Prescribers / Silo prescribing

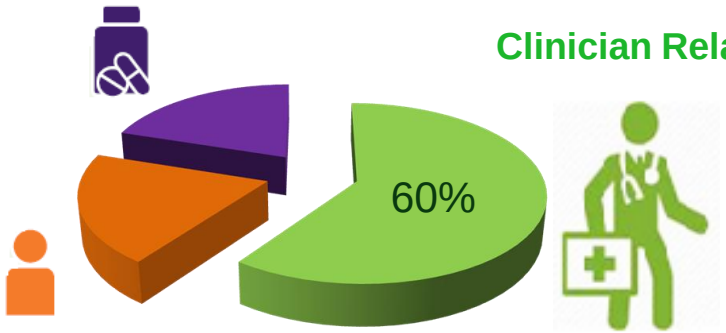
Single Health Condition: narrow focus



Adverse Drug Events (ADE's)

Adverse Drug Reactions (ADR's)
Noxious
Unintended
Undesired effects

Medication Errors
Prescribing
Dispensing
Administering



Clinician Related[1]

Inappropriate prescribing:
Failure to: adjust Dose, monitor, analyse risk
V benefit

1. NPS MEDICINEWISE Sep 2013
Based on data: Roughead EE et al 2004; 13:83-7

ADE's: Impact

Account for 6.5 % of hospital admissions [1]

50% of Hospital Admissions due to Adverse Drug Effects are preventable

Case fatality for those admitted to hospital: 4.7%[2]

Cost to NHS £466 million / annum[3]

[1]Medicines optimisation: www.rpharms.com/promoting-pharms-pdfs

[2]Wu et al JR Soc Med. 2010;103(6):239-50

[3]Pirmohamed et al BMJ 2004; 329: 15-19

Scottish Government Polypharmacy Model of Care Group. *Polypharmacy Guidance, Realistic Prescribing 3rd Edition, 2018*. Scottish Governmen

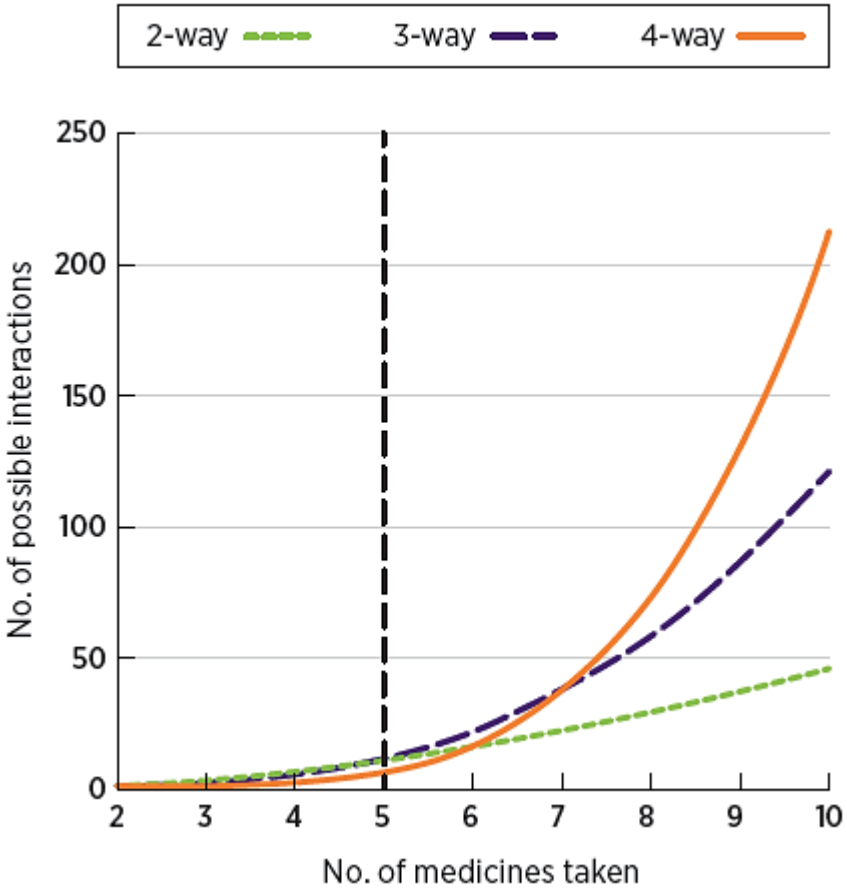
ADE's: Polypharmacy contributes strongly

Drug-Drug interactions

Errors in dispensing

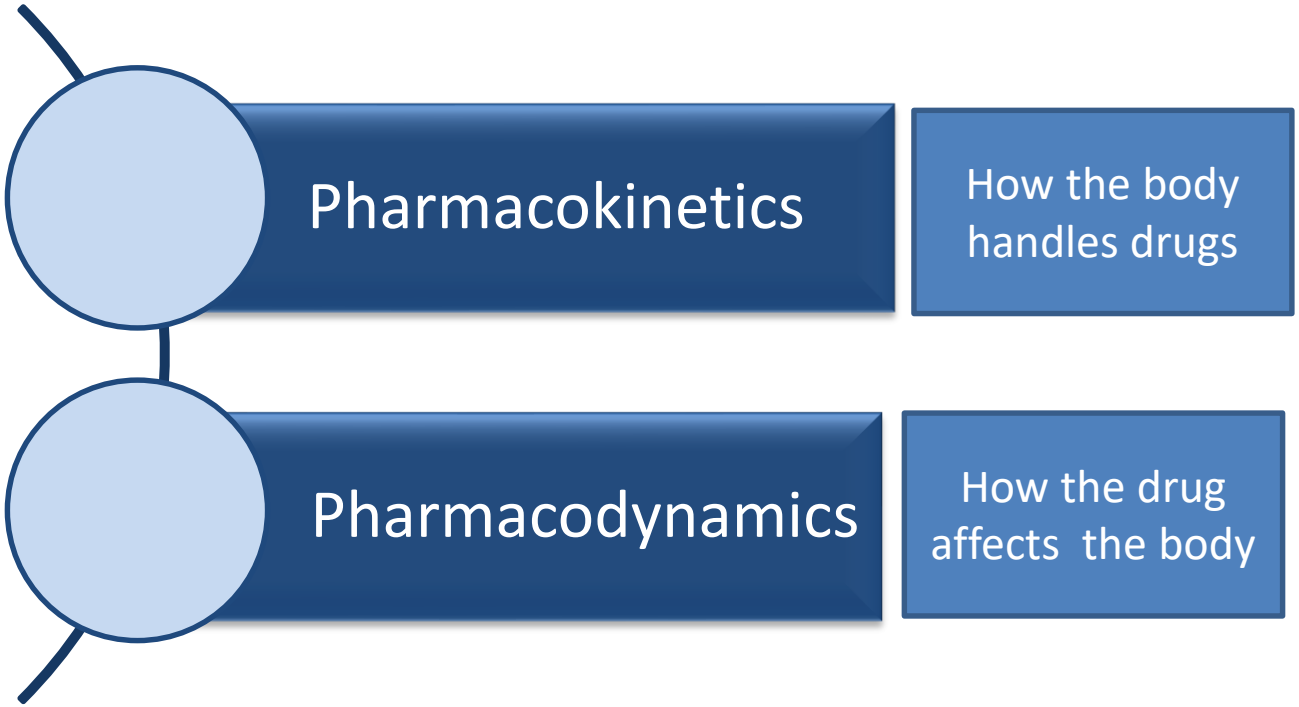
Non- adherence

Risk of overdose



Fermer RE, Arenson JK. BMJ 2006; 333:143-5

Age related changes ↑ risk of ADR's



Effect of ageing on Pharmacokinetics

	Physiological Change	Effect	Drugs most affected
Absorption	↑pH & ↓ motility	↓ absorption	Iron, Calcium, B12
Distribution	↑ body fat	↑ Elimination half life	Benzodiazepines Morphine
	↓ Body water	↑ Serum level	Digoxin, Lithium, Theophylline
Metabolism	↓ hepatic mass, blood flow	↓ first pass metabolism ↑ Serum level	Propranolol, GTN, Lisinopril, Oxycodone, Atorvastatin
Renal excretion	↓ GFR	↑ Serum level	Digoxin, Lithium, Gentamicin, ACEi

How the body handles drugs

Ageing enhances susceptibility to ADR's

Impairment	Drug class	Adverse outcome
↓ Cholinergic activity	Drugs acting on *CNS	**Delirium** **Cognitive impairment** **Falls**
↓ Baroreceptor reflex	Vasodilators	**Postural hypotension** Falls

How the drug affects the body

*CNS: Central Nervous System

Case Study

Mrs P, 85 years

PMH

Hypertension, OA, T2DM, CKD

Complaints

Dizziness, Falls

Diarrhoea

Urinary incontinence

Weight loss

Episodic confusion

Social History

Lives alone

Carers 1 / day

Medications

Ramipril 5 mg od

Amlodipine 5 mg od

Furosemide 40 mg od

Metformin 1 gm bd

Gliclazide 80 mg bd

Tramadol 50 mg PRN

Solifenacin 5 mg od

Examination

Weight 48 Kg, BMI 17, AMTS 5/10

BP Lying 110 / 70, standing 80 /60

HR 60 regular, Gait: unsteady

Recent Blood tests

HbA1C 43, eGFR40

Case Study
Mrs P, 85 years

Medication changes?

- Stop Amlodipine
- Stop Gliclazide
- Reduce Metformin dose
- Stop Furosemide
- Stop Solifenacin
- All of the above

Medications

Ramipril 5 mg od
Amlodipine 5 mg od
Furosemide 40 mg od
Metformin 1 gm bd
Gliclazide 80 mg bd
Tramadol 50 mg PRN
Solifenacin 5 mg od

Examination

Weight 48 Kg, BMI 17, AMTS 5/10
BP Lying 110 / 70, standing 80 /60
HR 60 regular, Gait: unsteady

Recent Blood tests

HbA1C 43, eGFR40

Individualised Management plan for Mrs P

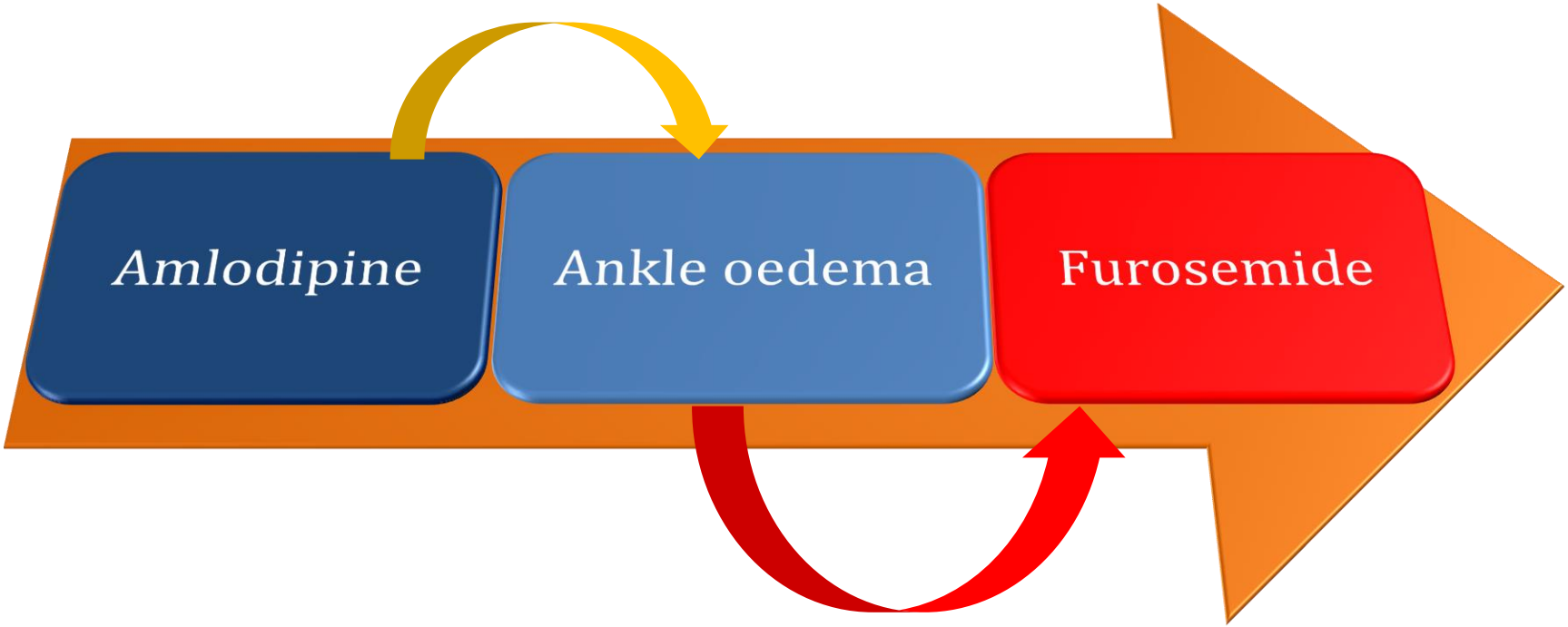
Multidisciplinary

Comprehensive Geriatric Assessment (CGA)

Poor Muscle strength + Gait instability	Physiotherapy Falls Prevention Exercises
Environmental Hazards for falls	Occupational Therapist (Home hazard assessment)
Weight Loss	Dietician
Advance Care Plan	Would like to be admitted to hospital if necessary
DNAR	Agrees (Advance Nurse Practitioner)
Social isolation	Day centre 1/ week (Age UK)
Increasing care needs	↑ Care package x3/d (Social Services)

Prescribing Cascade

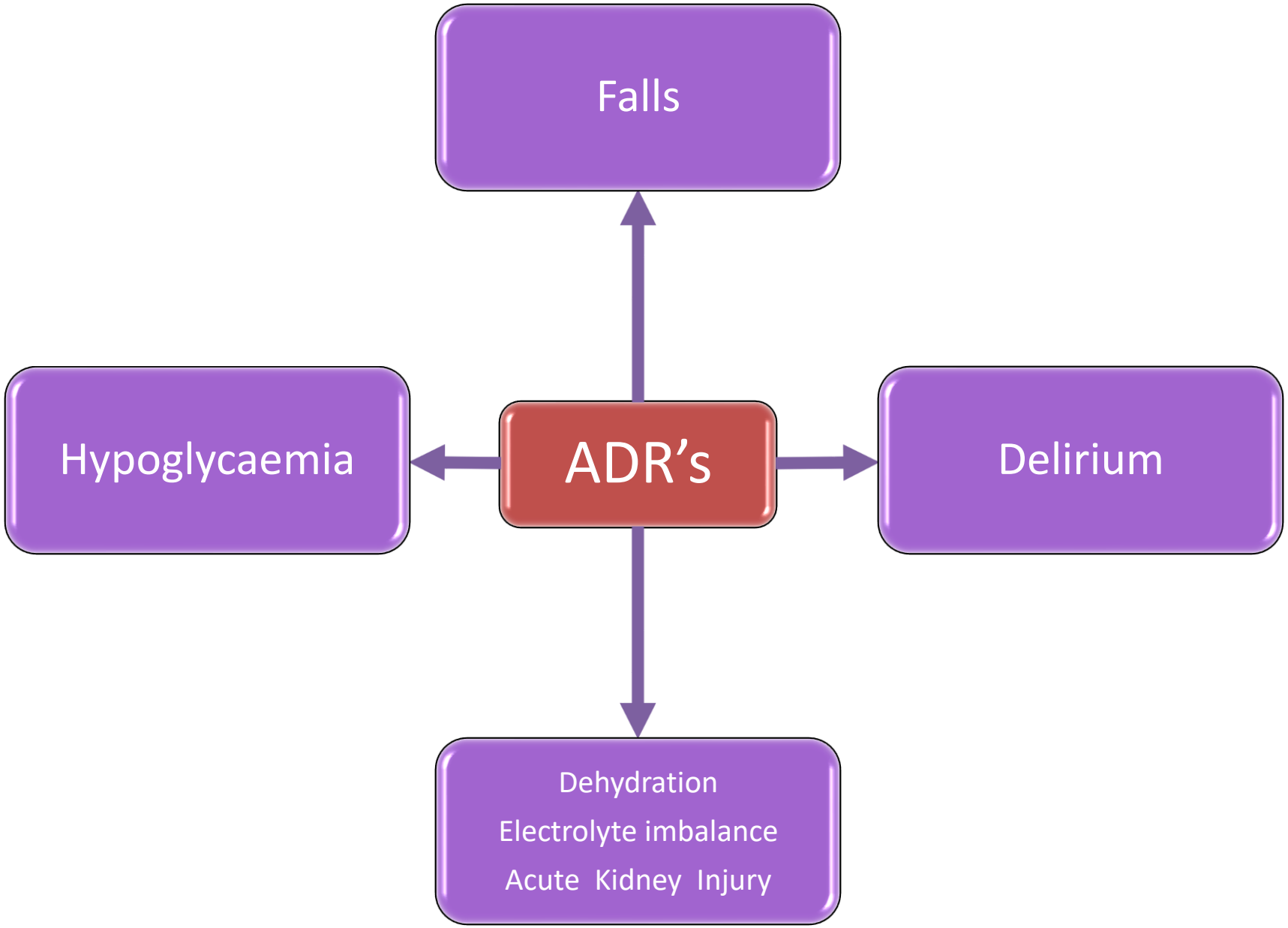
Adverse effect of a medication



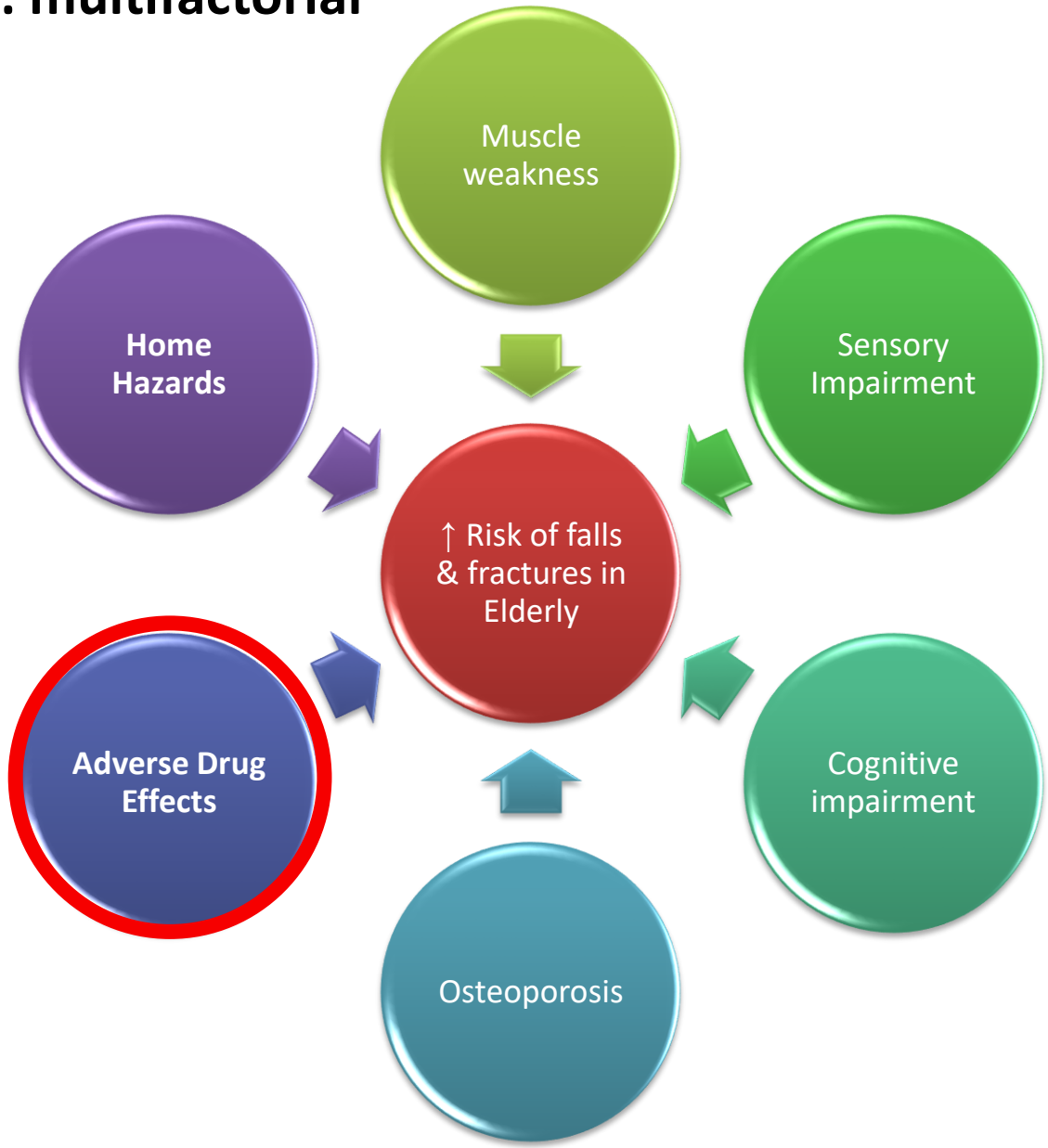
Treated with prescription of another drug

Any new symptom maybe adverse drug effect: STOP, THINK

Common ADR's in frail individuals



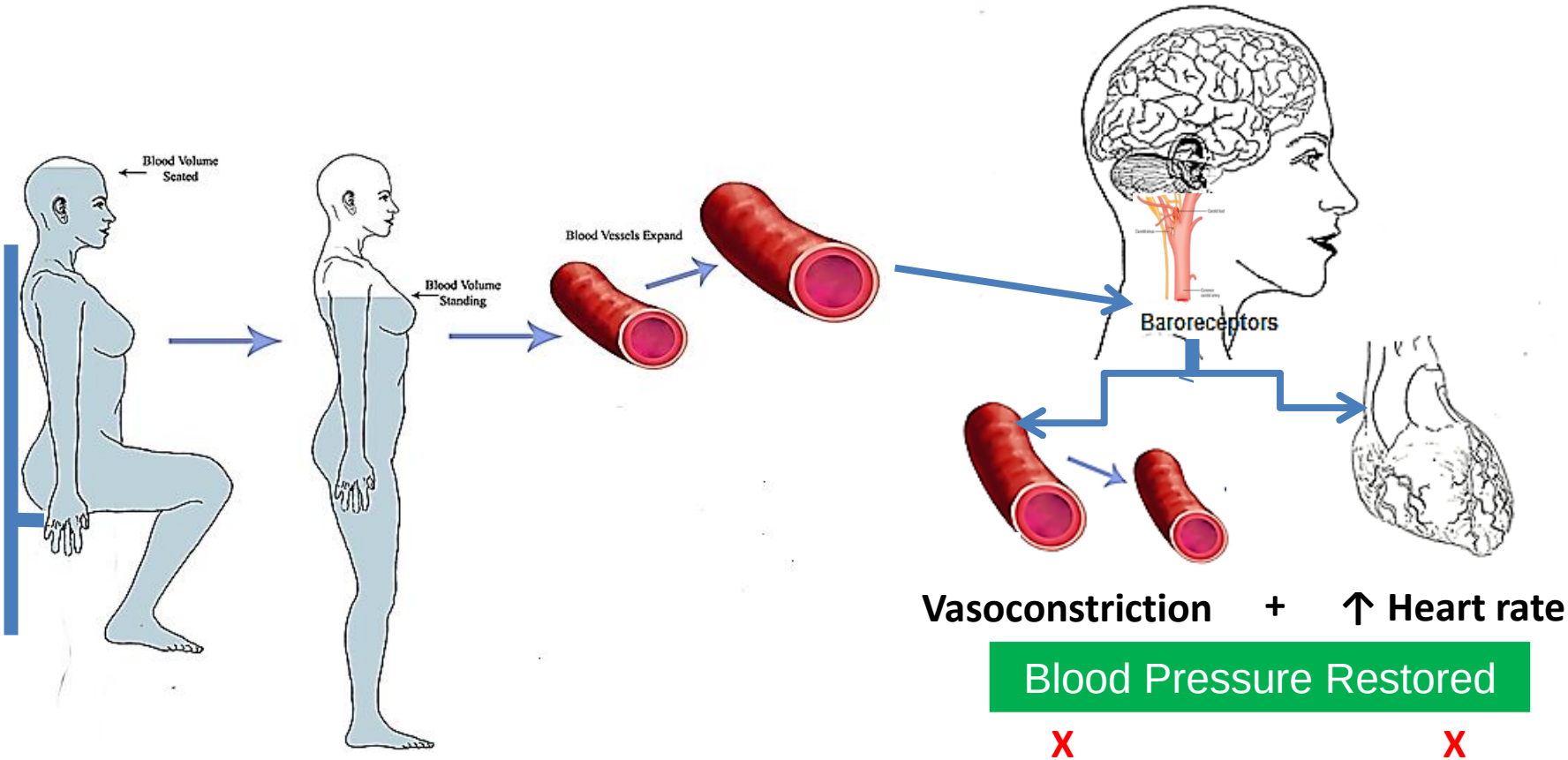
Falls aetiology: multifactorial



High risk medications: Falls

Sedation/Drowsiness	Impaired Postural Stability	Postural Hypotension
• Antidepressants • Antipsychotics • Hypnotics • Antihistamines • Opiates	• Hypnotics (Z drugs) • Benzodiazepines • Anti-epileptics	• Diuretics • Alpha-blockers • Beta blockers • Ace-inhibitors • Nitrates • Parkinson's disease medications

Baroreceptor reflex maintains BP



Age related Impaired baroreceptor reflex enhances the ADR's of cardiovascular drugs

Orthostatic Hypotension (OH)

OH Definition

- A drop of ≥20 mmHg in systolic or ≥10 mmHg in diastolic after 3 minutes of standing

Important Causes

- **Medications**
- Autonomic failure
- Fluid depletion

Management of OH

Stop the offending medication

- Alpha blockers (Doxazosin, Tamsulosin)
- Diuretics
- ACE-inhibitors
- Nitrates

General Measures

- Fluid intake (1.5-2.0L) Increase salt intake (2-10g) if not contraindicated
- Adopt strategic “getting up” strategy
- Lie propped up at night with a head up tilt 15-20 degrees (pillow height 20-30 cm)
- Full length Gr 2-3 compression hosiery, Lower Limbs

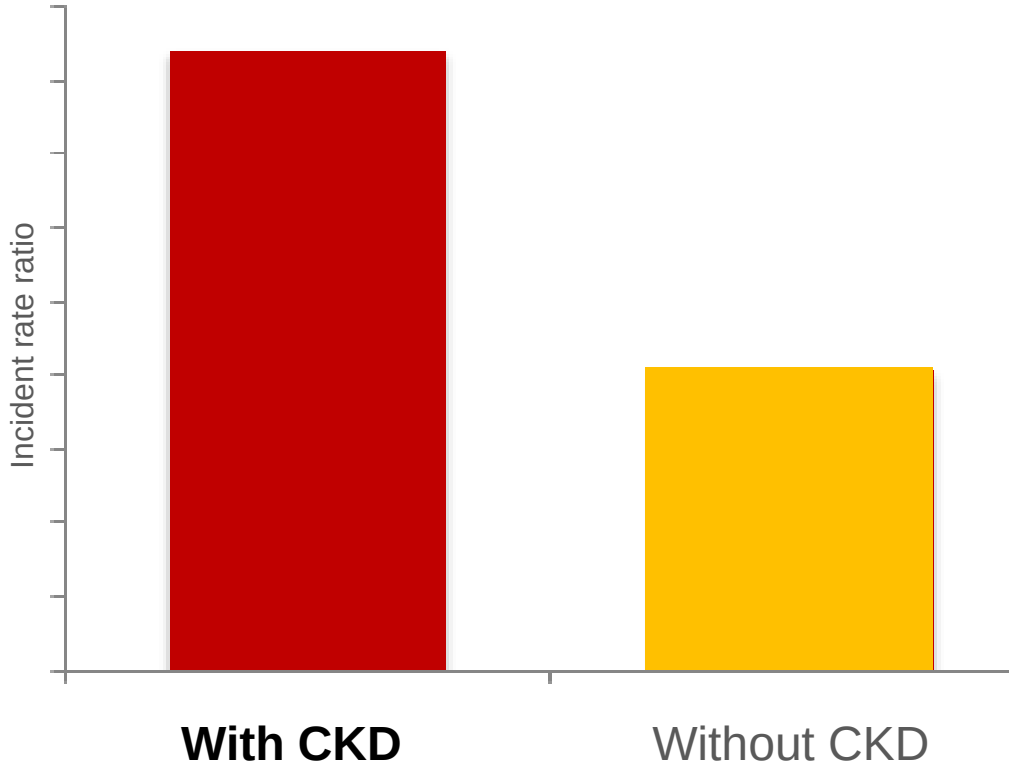
Pharmacological (usually initiated by specialists)

- Fludrocortisone 100-200 microgram / d
- Midodrine 2.5-10 mg tds

ESC 2009, Eur Heart J 2009; 30: 2631-71

Hypoglycaemia risk in elderly Diabetics

- ↑ with Renal impairment [1,2]
- In elderly people (>70 years) hypoglycaemia occurs more frequently in subjects with CKD stages 3–5[1]



1. Haneda M, Morikawa A. Nephrol Dial Transplant. 2009; 24:338–341.
2. Adapted from Moen M et al. Clin J Am Soc Nephrol. 2009; 4:1121–1127.

HbA1C Targets according to functional & cognitive status

Functional/Cognitive Status	HbA1C (%)	HbA1C (mmol/mol)
Functionally independent	7.0-7.5	53-59
Functionally dependent	7.0-8.0	53-64
Frail	Up-to 8.5	70
Dementia	Up-to 8.5	70

NEW

NICE puts forward new QOF indicators to help GPs 'personalise' diabetes care (NM158)

17 October 2018

HbA1C targets for **moderate to severe frailty at 75mmol/mol** new indicators to inform negotiations for 2019/20 QOF

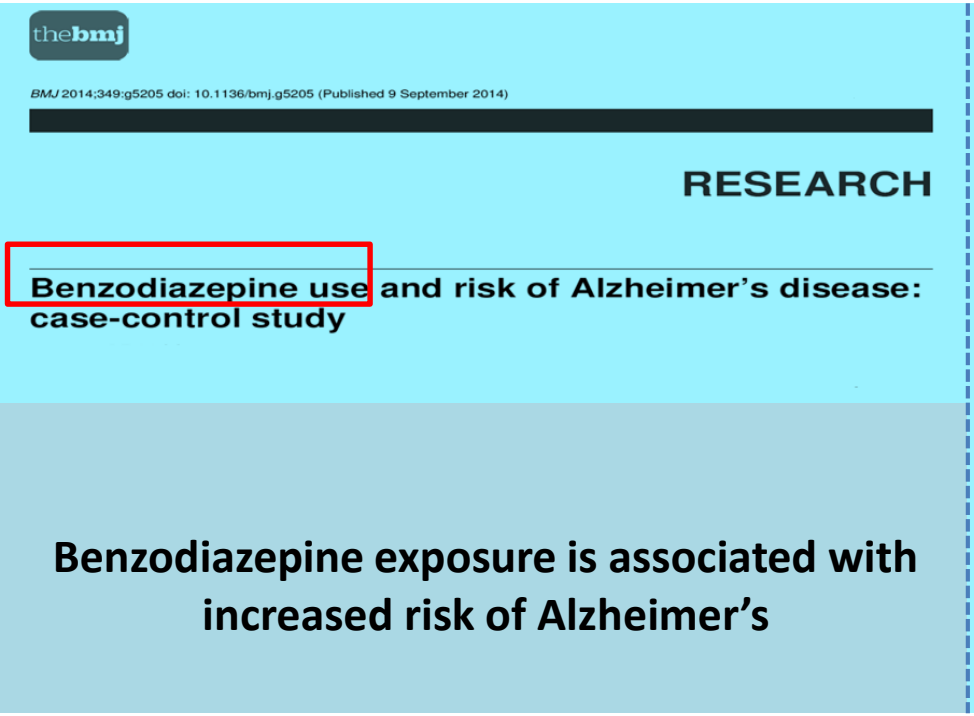
International Diabetes Federation

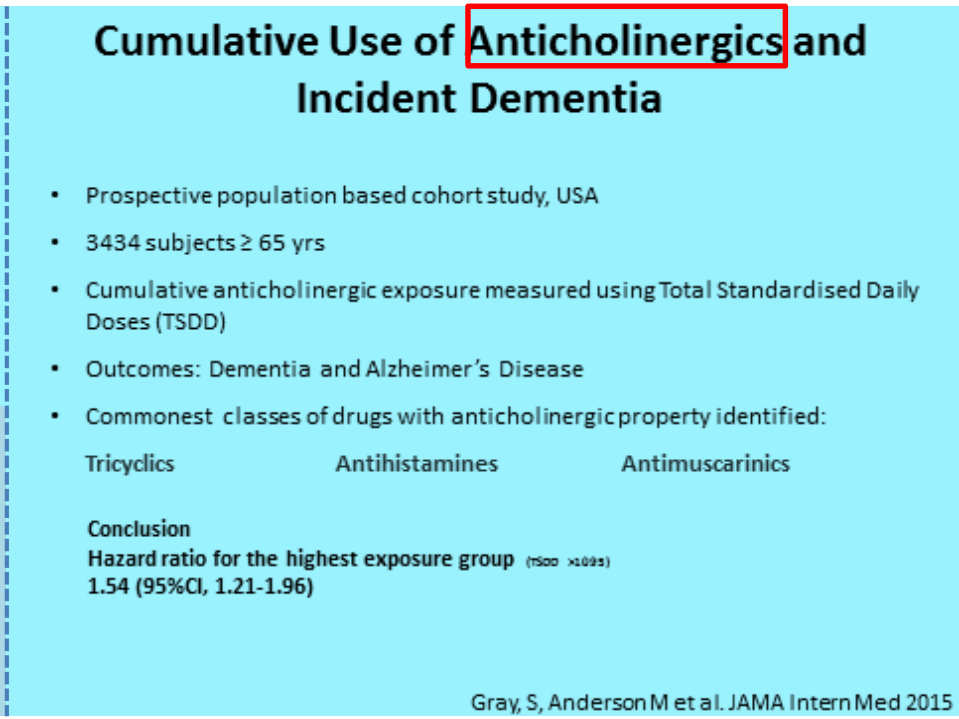
Diabetes UK

Good clinical practice guidelines for care home residents with diabetes

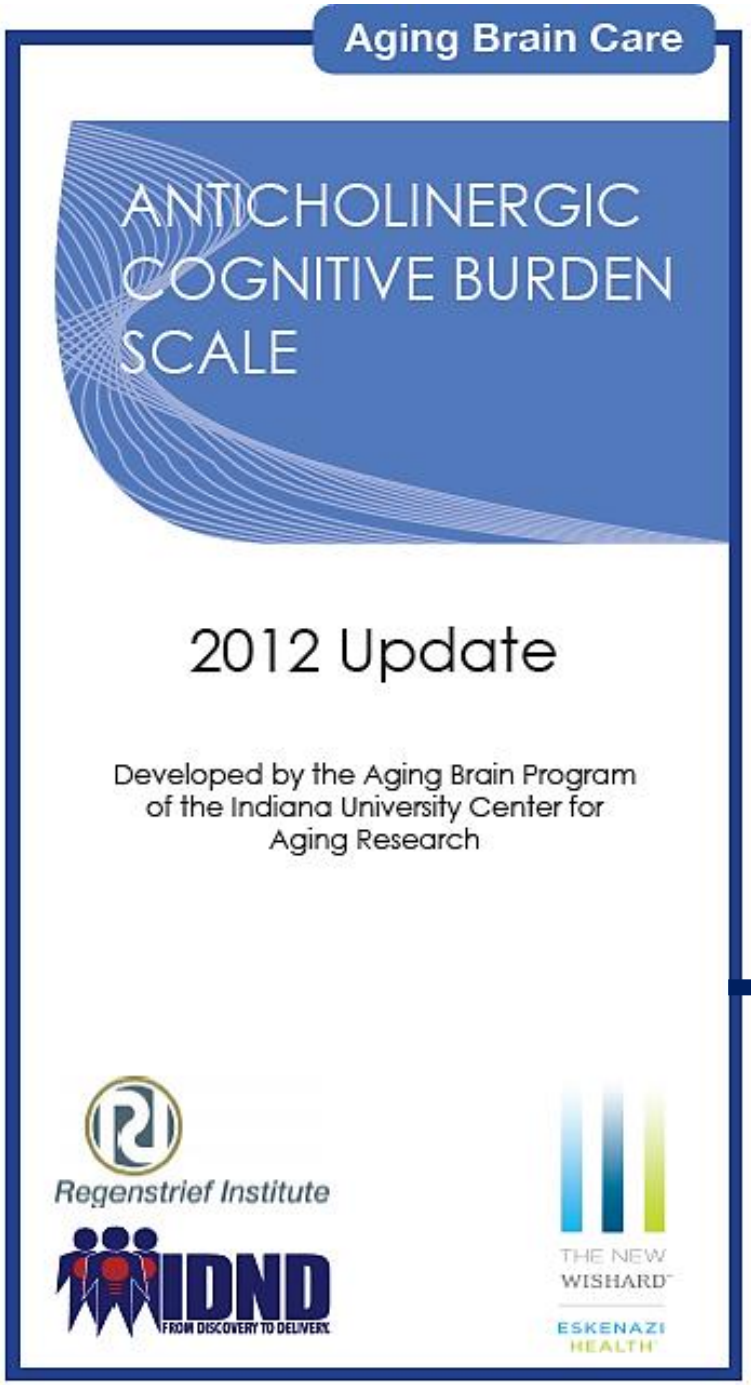
A revision document prepared by a Task and Finish Group of Diabetes UK

ADR's: Cognition





Greater the length of exposure, stronger the risk



- **Lists commonly used drugs with anticholinergic properties**

- **Grades each drug with a score**
  - 1= Possible anticholinergic
  - 2= Definite anticholinergic
  - 3= Definite anticholinergic

Each 1 point score ↑ risk of

- **Cognitive impairment** by 46%
  (over 6 years)

- **Death** by 26%

ANTICHOLINERGIC COGNITIVE BURDEN SCALE

Estimating the anticholinergic burden

Drugs with ACB Score of 1

Generic Name	Brand Name
Alimemazine	Theralen™
Alverine	Spasmonal™
Alprazolam	Xanax™
Aripiprazole	Abilify™
Asenapine	Saphris™
Atenolol	Tenormin™
Bupropion	Wellbutrin™, Zyban™
Captopril	Capoten™
Cetirizine	Zyrtec™
Chlorthalidone	Diuril™, Hygroton™
Cimetidine	Tagamet™
Clidinium	Librax™
Clorazepate	Tranxene™
Codeine	Contin™
Colchicine	Colcrys™
Desloratadine	Clarinex™
Diazepam	Valium™
Digoxin	Lanoxin™
Dipyridamole	Persantine™
Disopyramide	Norpace™
Fentanyl	Duragesic™, Actiq™
Furosemide	Lasix™
Fluvoxamine	Luvox™
Haloperidol	Haldol™
Hydralazine	Apresoline™
Hydrocortisone	Cortef™, Cortaid™
Iloperidone	Fanapt™
Isosorbide	Isordil™, Ismo™
Levocetirizine	Xyzal™
Loperamide	Immodium™, others
Loratadine	Claritin™
Metoprolol	Lopressor™, Toprol™
Morphine	MS Contin™, Avinza™
Nifedipine	Procardia™, Adalat™
Paliperidone	Invega™
Prednisone	Deltasone™, Sterapred™
Quinidine	Quinaglute™
Ranitidine	Zantac™
Risperidone	Risperdal™
Theophylline	Theodur™, Uniphyl™
Trazodone	Desyrel™
Triamterene	Dyrenium™
Venlafaxine	Effexor™
Warfarin	Coumadin™

Drugs with ACB Score of 2

Generic Name	Brand Name
Amantadine	Symmetrel™
Belladonna	Multiple
Carbamazepine	Tegretol™
Cyclobenzaprine	Flexeril™
Cyproheptadine	Periactin™
Loxapine	Loxitane™
Meperidine	Demerol™
Methotrimeprazine	Levoprome™
Molindone	Moban™
Nefopam	Nefogesic™
Oxcarbazepine	Trileptal™
Pimozide	Orap™

Categorical Scoring:

- Possible anticholinergics include those listed with a score of 1; Definite anticholinergics include those listed with a score of 2 or 3

Numerical Scoring:

- Add the score contributed to each selected medication in each scoring category
- Add the number of possible or definite Anticholinergic medications

Notes:

- Each definite anticholinergic may increase the risk of cognitive impairment by 46% over 6 years. [3]
- For each on point increase in the ACB total score, a decline in MMSE score of 0.33 points over 2 years has been suggested. [4]
- Additionally, each one point increase in the ACB total score has been correlated with a 26% increase in the risk of death. [4]

Aging Brain Care

www.agingbraincare.org

Drugs with ACB Score of 3

Generic Name	Brand Name
Amitriptyline	Elavil™
Amoxapine	Asendin™
Atropine	Sal-Tropine™
Benztropine	Cogentin™
Brompheniramine	Dimetapp™
Carbinoxamine	Histex™, Carbihist™
Chlorpheniramine	Chlor-Trimeton™
Chlorpromazine	Thorazine™
Clemastine	Tavist™
Clomipramine	Anafranil™
Clozapine	Clozaril™
Darifenacin	Enablex™
Desipramine	Norpramin™
Dicyclomine	Bentyl™
Dimenhydrinate	Dramamine™, others
Diphenhydramine	Benadryl™, others
Doxepin	Sinequan™
Doxylamine	Unisom™, others
Fesoterodine	Toviaz™
Flavoxate	Urispas™
Hydroxyzine	Atarax™, Vistaril™
Hyoscyamine	Anaspaz™, Levsin™
Imipramine	Tofranil™
Meclizine	Antivert™
Methocarbamol	Robaxin™
Nortriptyline	Pamelor™
Olanzapine	Zyprexa™
Orphenadrine	Norflex™
Oxybutynin	Ditropan™
Paroxetine	Paxil™
Perphenazine	Trilafon™
Promethazine	Phenergan™
Propantheline	Pro-Banthine™
Propiverine	Detrunorm™
Quetiapine	Seroquel™
Scopolamine	Transderm Scop™
Solifenacin	Vesicare™
Thioridazine	Mellaril™
Tolterodine	Detrol™
Trifluoperazine	Stelazine™
Trihexyphenidyl	Artane™
Trimipramine	Surmontil™
Trospium	Sanctura™

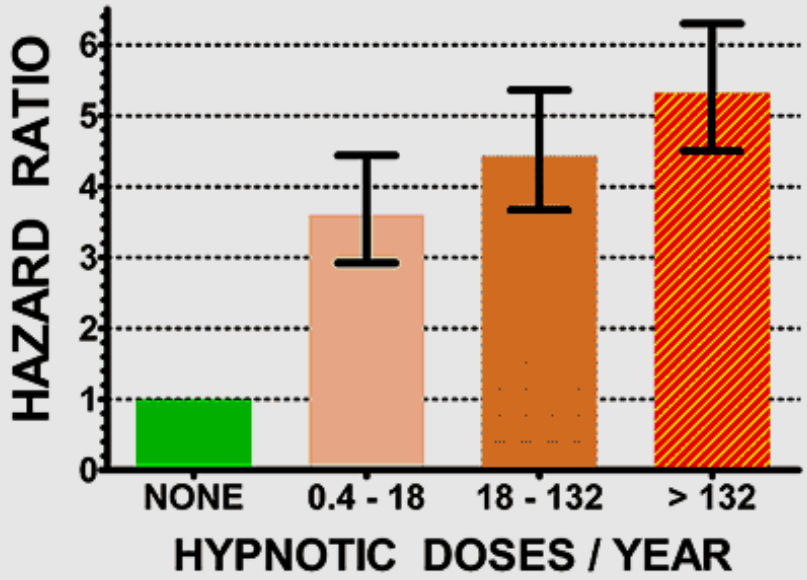
Benzodiazepines and hypnotics safety

Memory impairment

Falls

Fractures

Automobile accidents

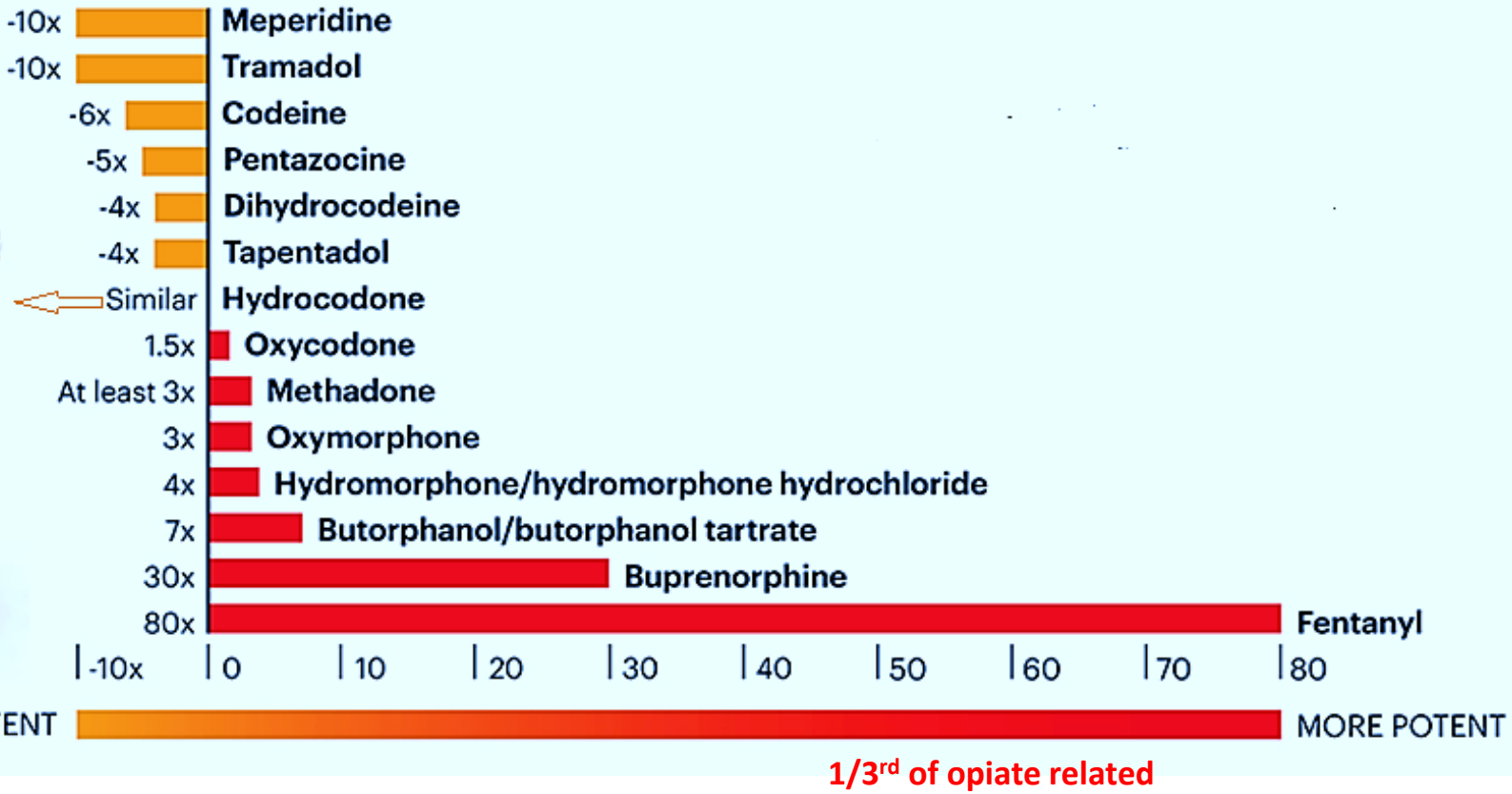


Kripke DF, Langer RD, Kline LE.
BMJ Open. 2012;2:e000850 .

CaDeN
Canadian Deprescribing Network

ReCaD
Réseau canadien pour la déprescription

Opiates are widely prescribed in frail elderly



Highly addictive

1/3rd of opiate related deaths in US linked to prescribed opiates

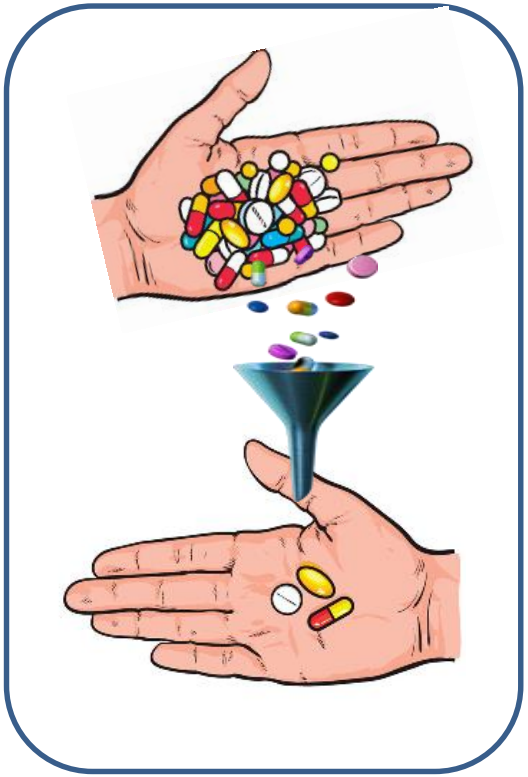
Common side effects in elderly include falls, constipation, delirium

“I feel a lot better since I ran out of those pills you gave me”

What is Deprescribing?

Process

Required for the safe and effective cessation of inappropriate medication

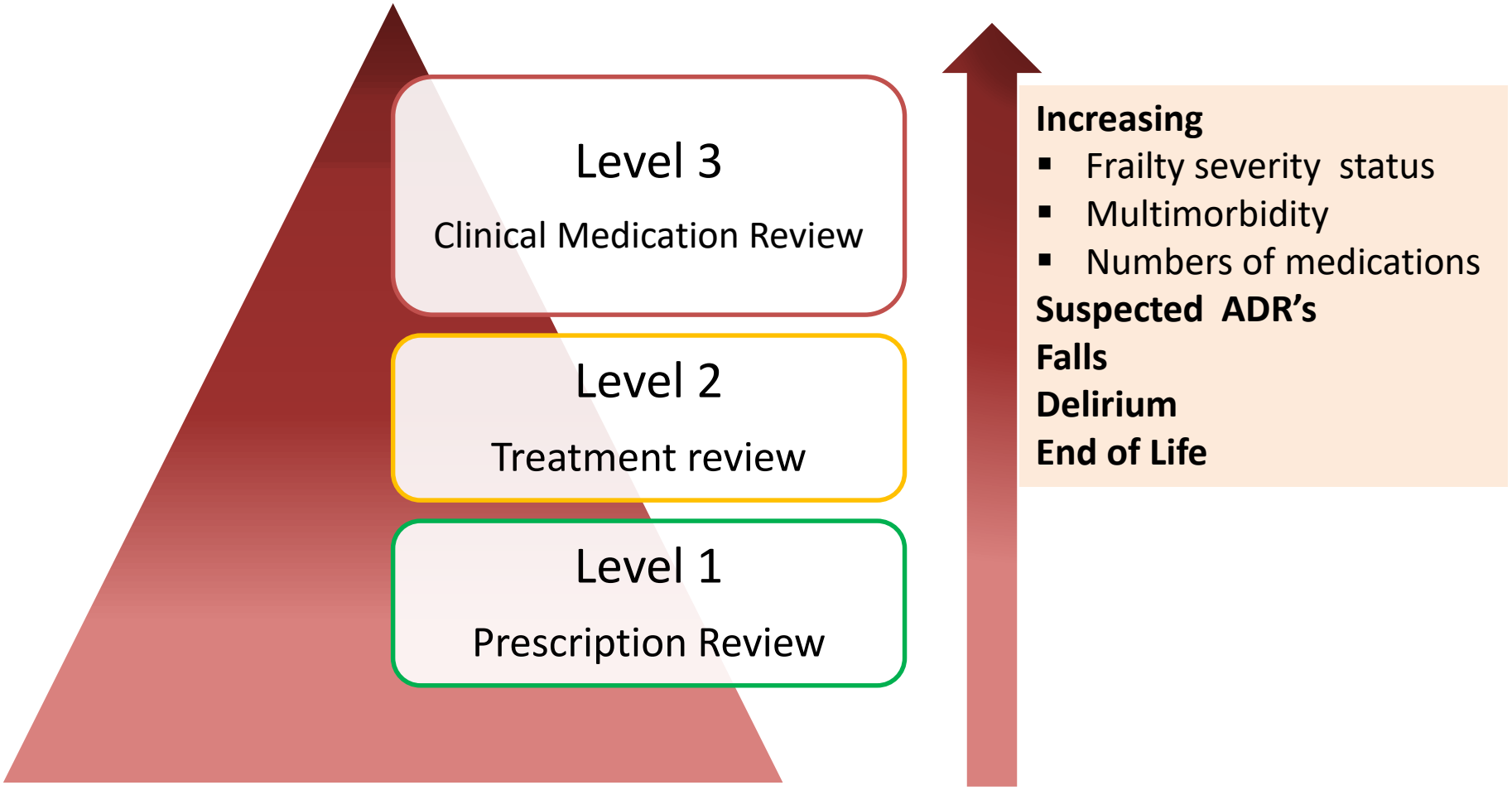


Taking into account

Patient's physical functioning
co-morbidities
preferences
lifestyle

DTB 52:2014

Types and Levels of Medication Review



Medication Review Process leading to Deprescribing

How often should medication review take place?

- ✓ **Opportunistically**
- ✓ **6 monthly** if on ≥ 4 drugs
- ✓ **Annually** for all >75 years old

General Practice Contract Requirement 2017/18

MARCH 2017

Practice Based Clinical Pharmacists

ROYAL PHARMACEUTICAL SOCIETY England

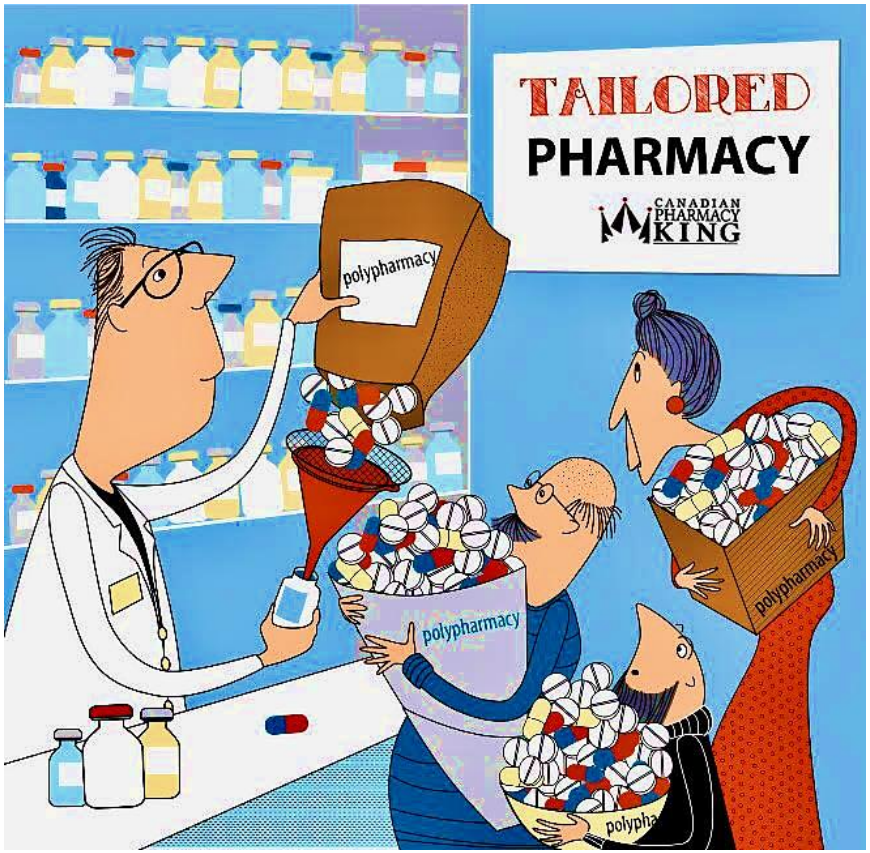
Shaping pharmacy for the future

Pharmacists and GP surgeries

The Royal Pharmaceutical Society (RPS) believes that primary care patients should have the benefit of a pharmacist's clinical expertise similar to that currently experienced by patients in hospital

Important Role in managing

- long term health conditions
- Inappropriate Polypharmacy
- Medicine Reconciliation



Tools for Polypharmacy reduction

Beer's Criteria

- List 53 potentially inappropriate drugs
- Endorsed by American Geriatrics Society

STOPP / START Criteria

- Validated and relevant for UK population
- Endorsed by British Geriatrics Society

Guidelines.co.uk/NiceMedOpt

Prescribing for elderly: Considerations

- Any new symptom maybe adverse drug effect: STOP, THINK
- Non pharmacological measures remain underutilised
- Life expectancy, functional and cognitive status play a role in shared decision making
- Quality of life matters most to people
- Start low, go slow but use enough

Prescribing for elderly: Considerations

- **Focus on common medications**

  NSAID

  Proton Pump Inhibitors

  Opiates

  Hypnotics

  Benzodiazepines

  Antipsychotics (for behavioural and psychological symptoms in Dementia)

  Anticholinergics

  Diuretics for leg oedema

  Antihypertensives

  Oral Hypoglycaemic agents

- **Are any medications <u>not</u> being prescribed that need to be?**

  Examples:

  Osteoporosis

  Anticoagulation in Atrial fibrillation

Prescribing for elderly: Considerations

Medicine Sick Day Rules

When you are unwell with any of the following:

- Vomiting or diarrhoea (unless only minor)
- Fevers, sweats and shaking

Then STOP taking the medicines listed overleaf

Restart when you are well (after 24-48 hours of eating and drinking normally)

If you are in any doubt, contact your pharmacist, GP or nurse

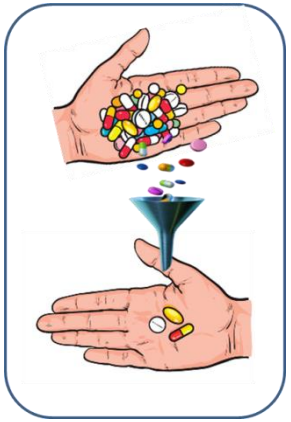
Medicines to stop on sick days

☐ ACE inhibitors:	medicine names ending in “pril” *eg, lisinopril, perindopril, ramipril*
☐ ARBs:	medicine names ending in “sartan” *eg, losartan, candesartan, valsartan*
☐ NSAIDs:	anti-inflammatory pain killers *eg, ibuprofen, diclofenac, naproxen*
☐ Diuretics:	sometimes called “water pills” *eg, furosemide, spironolactone, indapamide, bendroflumethiazide*
☐ Metformin:	a medicine for diabetes

Initially produced by NHS Highland

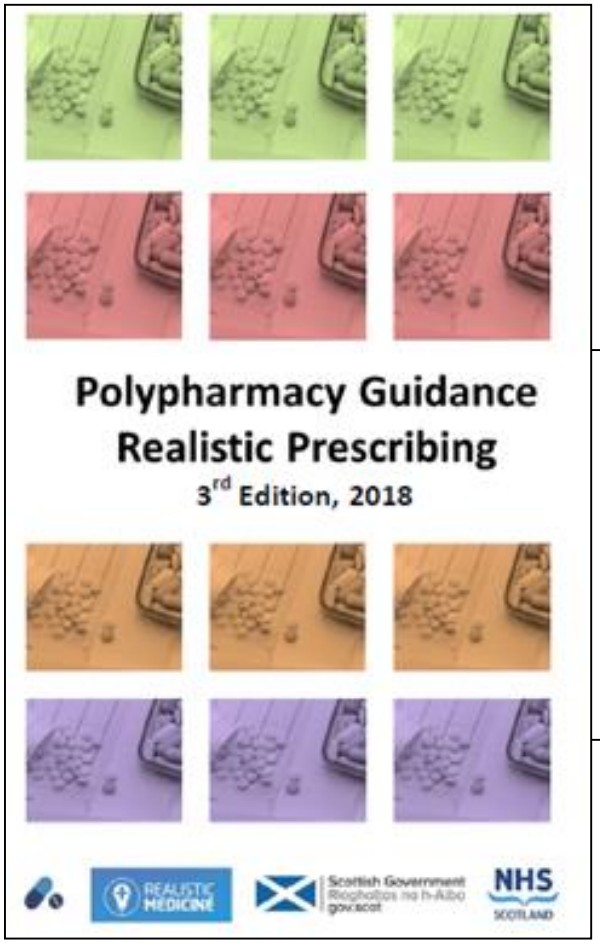
Conclusions

- Frailty recognition is important and tools are available
- Inappropriate prescribing runs risk of adverse effects
- Establish local systems & gain confidence in conducting medication reviews leading to appropriate prescribing



Thank you for listening

Resources for further reading



Questions / Comments