The rationale for deprescribing

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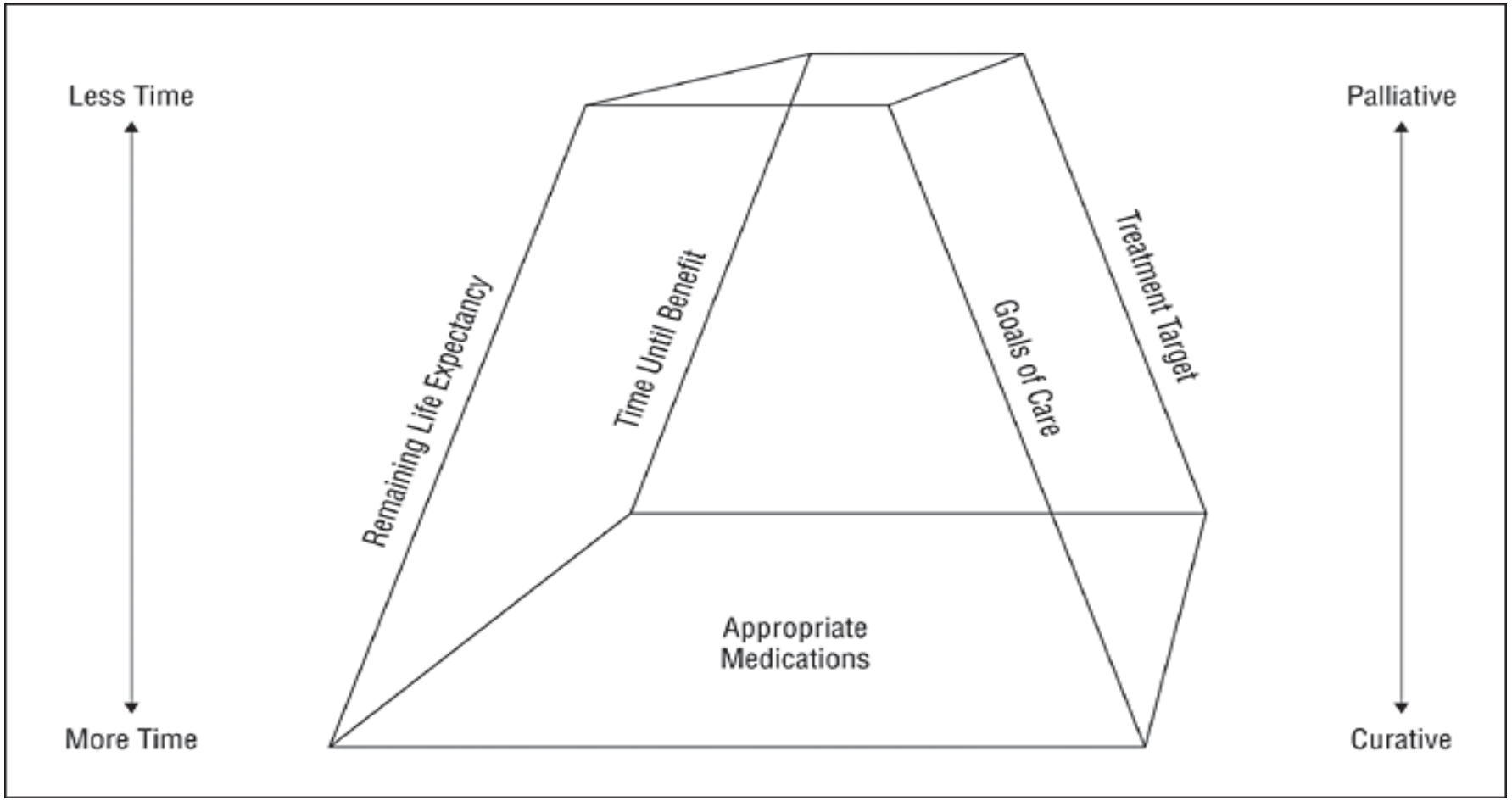
The Startling Statistics

- >220 million medication errors *per annum*
- 764 deaths last year estimated due to ADR
- Estimated as a contributory factor in 22 000 deaths
- *A report[1], which reflects on 36 studies that details medication error rates in primary care, care homes and secondary care, showed that the most errors with potential to cause harm happen in primary care (71%), which is where most medicines in the NHS are prescribed and dispensed. Errors were more likely to occur in older people and in patients with multiple conditions and using many medicines.*

1. Elliott R, Camacho E, Campbell F, Jankovic D, Martyn St ,James M, Kaltenthaler E, Wong R, Sculpher M, Faria R, (2018). Prevalence and Economic Burden of Medication Errors in The NHS in England. Rapid evidence synthesis and economic analysis of the prevalence and burden of medication error in the UK. Policy Research Unit in Economic Evaluation of Health and Care Interventions. Universities of Sheffield and York.

A Model for Appropriate Prescribing for Patients Late in Life



Assessing Prescribing Appropriateness

- Is there an indication for the drug?
- Is the medication effective for the condition?
- Is the dosage correct?
- Are the directions correct?
- Are the directions practical?
- Are there clinically significant drug-drug interactions?
- Are there clinically significant drug-disease interactions?
- Is there unnecessary duplication with other drugs?
- Is the duration of therapy acceptable?
- Is this drug the least expensive alternative compared to others of equal utility?

Types of Suboptimal Drug Use

1. Overutilization (polypharmacy)

2. Underutilization

3. Inappropriate utilization

Hanlon JT, et al. J Am Geriatr Soc 2001;49:200-9;

Spinewine A, et al. Lancet 2007;370:173-184

Underutilization of Medication

- Undiagnosed and untreated condition
- Diagnosed condition but omitted treatment
- Underuse of preventative treatment

Examples of Medication Under-Use

DOAC for stroke prevention

Hypoglycemics for diabetes and antihypertensives for BP

Bisphosphonate & vitamin D treatment for osteoporosis

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****caution*****

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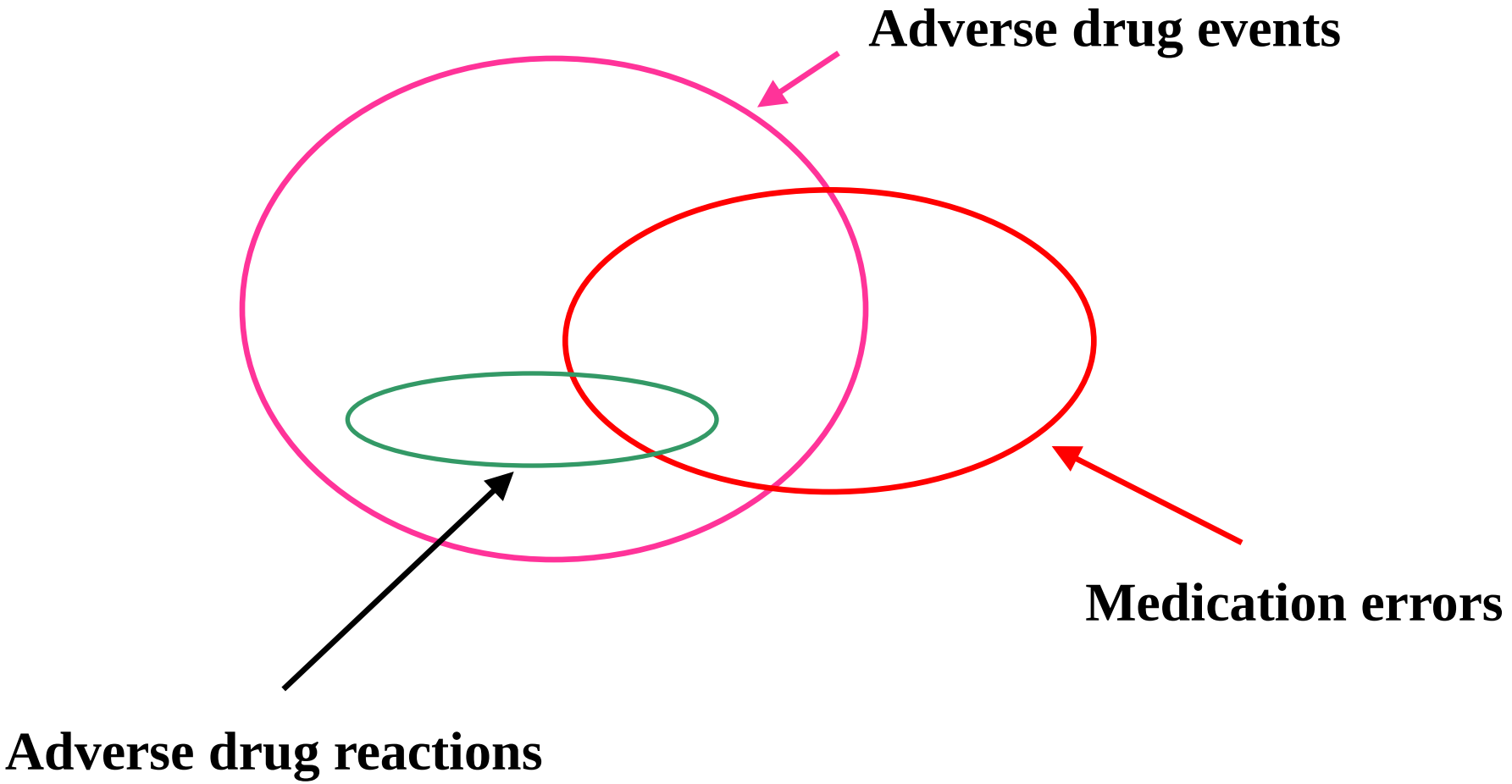
Risks from drug treatment



DEFINITION

"ADR is a response to a drug that is noxious and unintended and occurs at doses normally used in man for the prophylaxis, diagnosis or therapy of disease, or for modification of physiological function"

WHO. International drug monitoring: The role of the hospital. WHO Tech Rep. 1969; 425: 5-24

Classification

Type A

- Predictable from pharmacology
- Dose related
- Influenced by kinetic and dynamic changes
- Account for 75% of ADR
- Preventable

Type B

- Unrelated to pharmacology
- Poor relationship with dose
- Uncommon and difficult to detect during development
- Patient idiosyncrasy major factor
- Unavoidable

DEFINITION OF ADR

"An appreciably harmful or unpleasant reaction, resulting from an intervention related to the use of a medicinal product, which predicts hazard from future administration and warrants prevention or specific treatment, or alteration of the dosage regimen, or withdrawal of the product "

Edwards & Aronson. Adverse drug reactions: definitions, diagnosis, and management. Lancet 2000; 356: 1255-59

Principles for Optimizing Drug Use in the Elderly

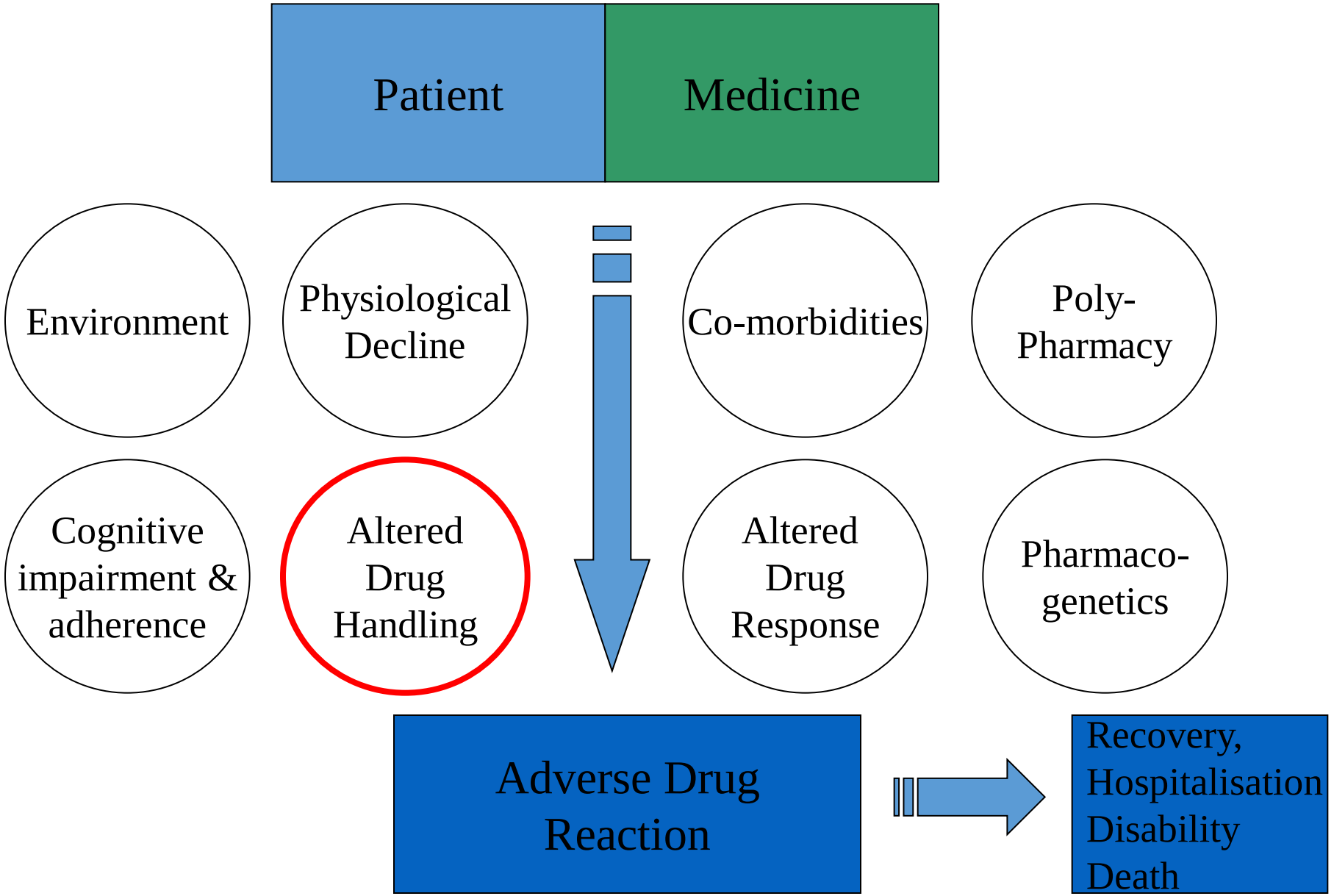
- Consider whether drug therapy is necessary
- Promote the use of a small number of drugs to treat common problems
- Adjust doses and or/dosage intervals for medications
- Establish reasonable therapeutic endpoints and monitor for desired outcome
- Monitor for adverse drug reactions
- Regularly review the need for chronic medications

Table: The Prescribing Cascade

Initial treatment	Adverse effect	Subsequent treatment	Subsequent adverse effect
NSAIDs	Rise in blood pressure	Antihypertensive treatment	Orthostatic hypotension
Thiazide diuretics	Hyperuricaemia	Allopurinol	Hypersensitivity reaction (Skin rashes)
Metoclopramide treatment	Parkinsonian symptoms	Treatment with levodopa	Visual and auditory hallucination

(Source: Adapted from Rochon and Gurwitz, 1997)

Why are the elderly at risk of ADRs?


Patient
Medicine
Environment
Physiological Decline
Co-morbidities
Poly-Pharmacy
Cognitive impairment & adherence
Altered Drug Handling
Altered Drug Response
Pharmaco-genetics
Adverse Drug Reaction
Recovery,
Hospitalisation
Disability
Death

Pharmacokinetic changes in the elderly

Drug distribution

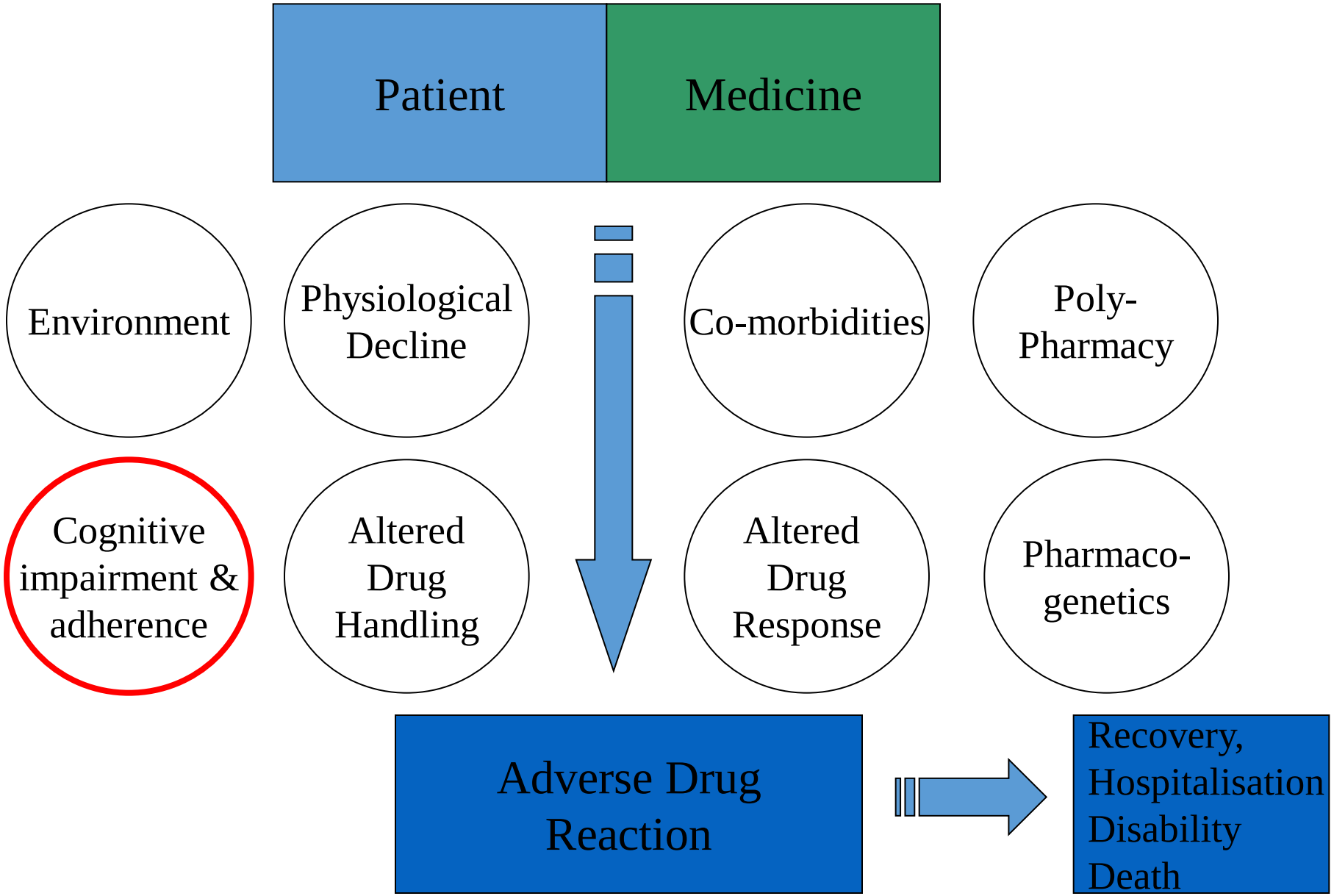
- changes in body fat/lean ratio & protein binding
- increase free drug concentrations (warfarin; phenytoin)

Metabolism

- changes to liver mass and blood flow
- decrease first pass metabolism - increase bioavailability (opiates, nitrates)

Elimination

- Decrease clearance of renally excreted drugs (digoxin, lithium, antibiotics)
- active metabolites – morphine-6-glucuronide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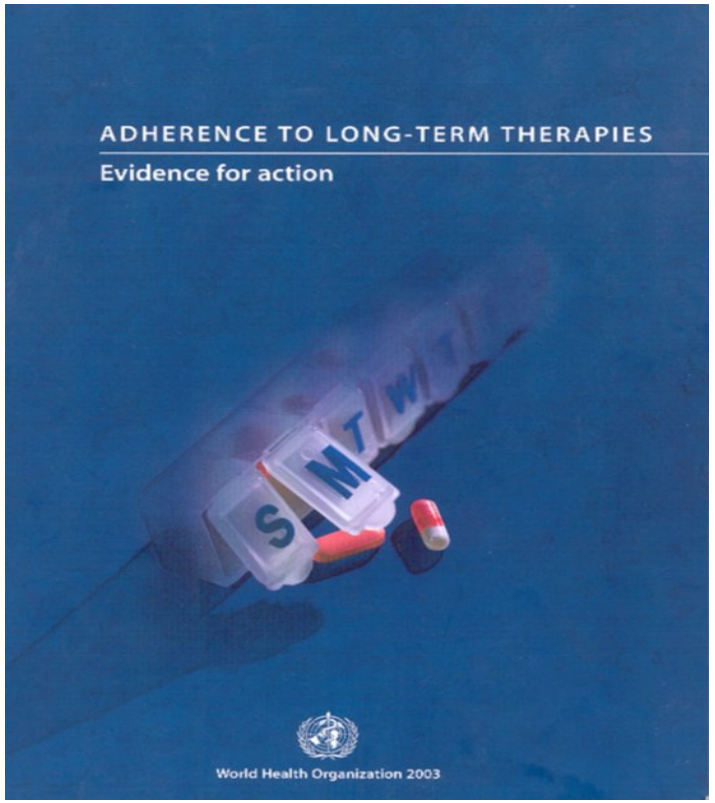
Non-adherence to medicines



[1]World Health Organization Report 2003.

[2]Horne *et al*. Concordance, adherence and compliance in medicine taking. NIHR SDO 2006.

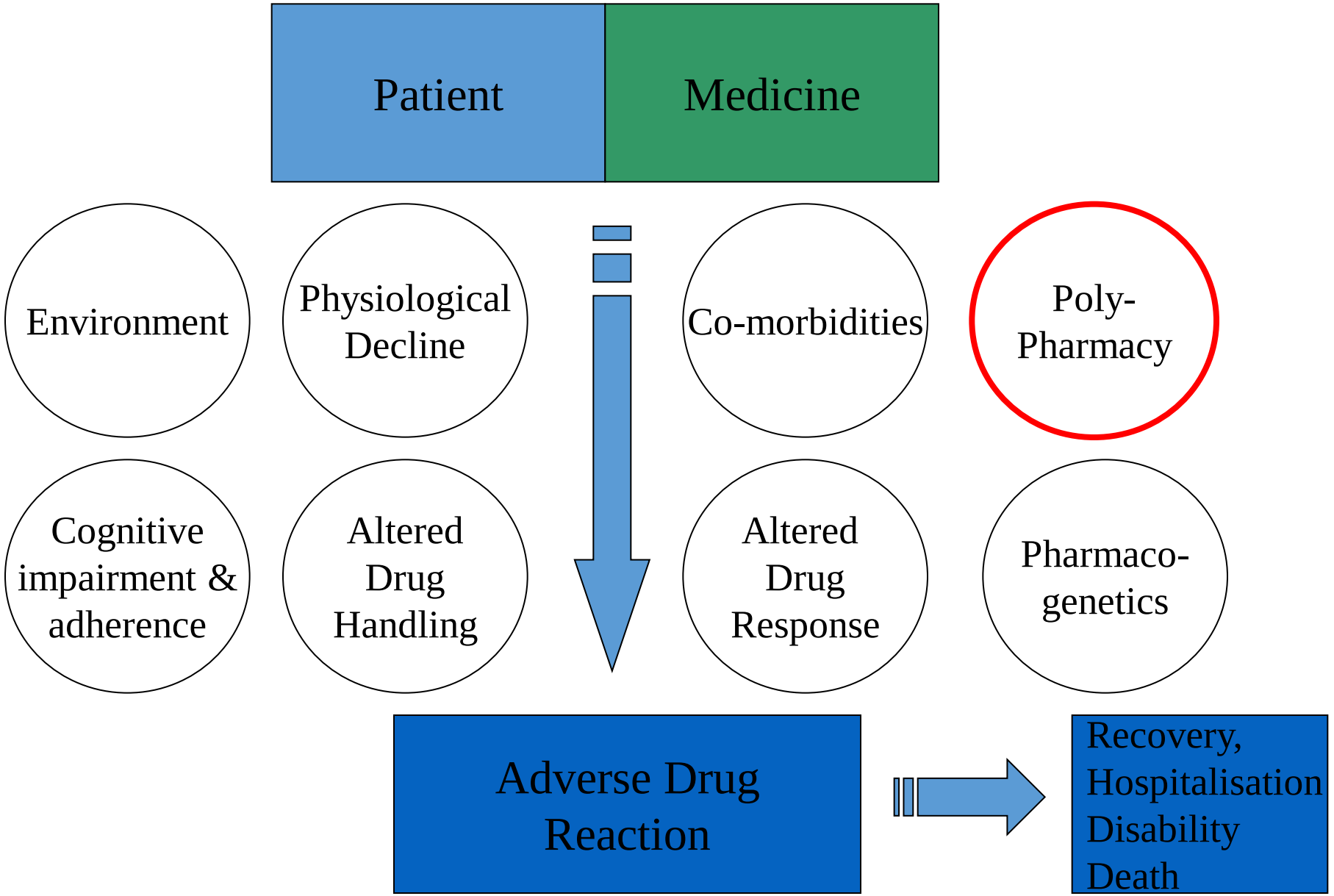
[3]NICE. Medicines concordance & adherence:involving adults and carers in decisions about prescribed medicines 2008/9

- Three key reports:

- Estimated that between 30 -50% medicines prescribed for long term illnesses are not taken as directed

- If prescription was appropriate then this represents a loss for patients, healthcare providers and pharma industries

- Effective interventions are elusive (Haynes, *et al.* 1996, 2003 - series of Cochrane reviews of efficacy of adherence interventions)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Risks Associated with Polypharmacy

- Functional status decline
- ADRs
- Inappropriate drug use
- Increased medication administration errors
- Increased risk of geriatric syndromes

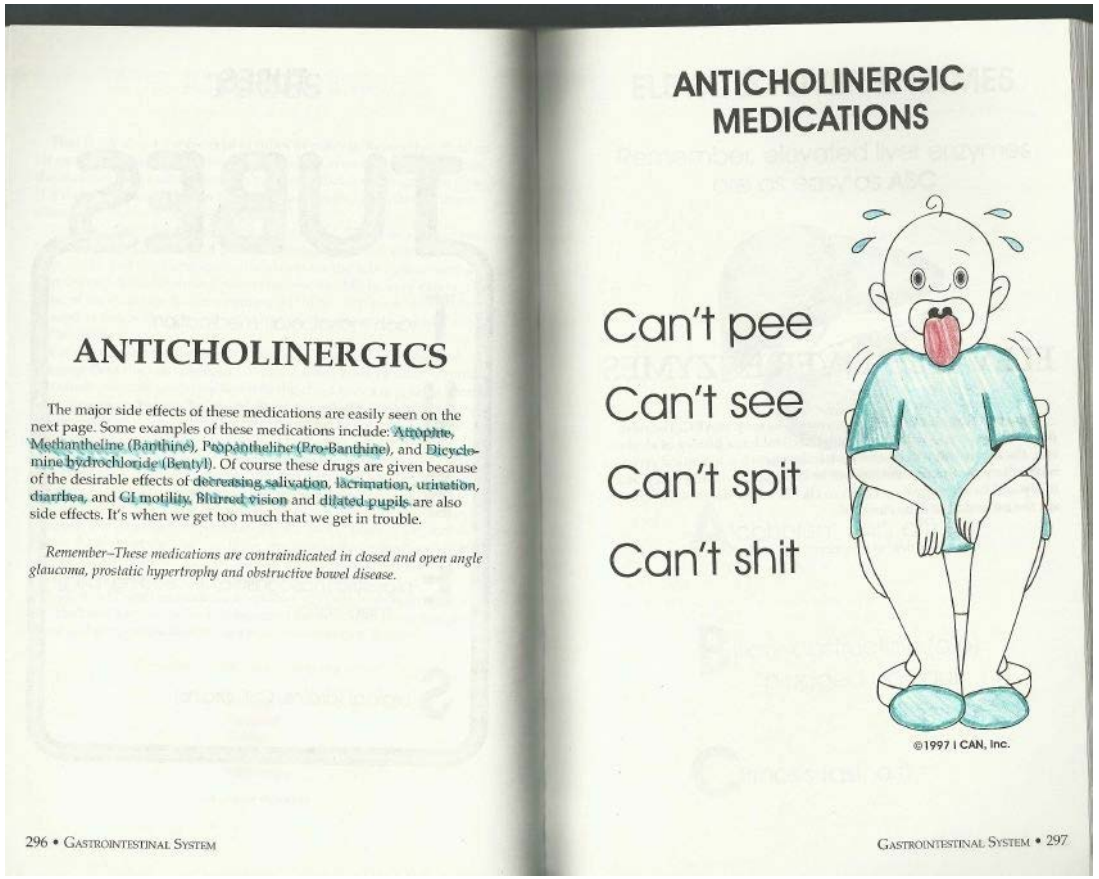
Chronic Medication Review Steps

- Assess whether ADRs are the cause of any symptoms
- Match problem list with drug list
- If on drug but no match with problem list consider whether drug is necessary
- If has a chronic condition and not on a medication consider whether there is an evidence based drug to tx the condition
- Assess the monitoring for efficacy/safety/appropriateness of the remaining medications

Prescribing to Reduce ADRs

- Age, hepatic and renal disease may impair clearance of drugs so smaller doses may be needed.
- Prescribe as few drugs as possible and give clear instructions to patients and carers
- If serious ADRs are liable to occur warn the patient
- Where possible use familiar drugs.
- With new drugs be particularly alert for ADRs and unexpected event.

Risks of anticholinergic medication



ANTICHOLINERGICS

The major side effects of these medications are easily seen on the next page. Some examples of these medications include: Atropine, Methantheline (Banthine), Propantheline (Pro-Banthine), and Bicyclomine hydrochloride (Bentyl). Of course these drugs are given because of the desirable effects of decreasing salivation, lacrimation, urination, diarrhea, and GI motility. Blurred vision and dilated pupils are also side effects. It's when we get too much that we get in trouble.

Remember–These medications are contraindicated in closed and open angle glaucoma, prostatic hypertrophy and obstructive bowel disease.

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ANTICHOLINERGIC MEDICATIONS

Can't pee

Can't see

Can't spit

Can't shit

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- ***Significant*** increase in:
- Dementia
- Death
- Falls (all types)
- Postural hypotension
- Dry mouth
- Hallucinations/Delirium
- Worsened glaucoma
- Constipation
- Urinary retention

Anticholinergic burden scale

Medications Possessing Anticholinergic Side Effects		
Mild	**Moderate**	**Significant**
Alprazolam	Amantadine	Amitriptyline
Atenolol	Cyclobenzaprine	Brompheniramine
Captopril	Carbamazepine	Chlorpheniramine
Diazepam	Meperidine	Clozapine
Digoxin	Oxcarbazepine	Diphenhydramine
Furosemide	Pimozide	Hydroxyzine
Haloperidol		Meclizine
Hydralazine		Olanzapine
Isosorbide		Oxybutynin
Loperamide		Paroxetine
Metoprolol		Quetiapine
Morphine		tolterodine
Ranitidine		
Risperidone		
Trazodone		

Case 1 - Alf

- 74 year old man
- Dementia with Lewy Bodies
- Cerebrovascular disease
  - Previous TIAs
- NH resident
- Dependent
- BP 110/60
- Incontinent
- Behaviourally challenging

- Aspirin 75mg
- Dipyrimadole MR 200mg
- Atorvastatin 40mg nocte
- Losartan 100mg od
- Oxybutynin MR 10mg
- Paracetamol 1g qds prn
- Diazepam 5mg tds

CASE 2 - Enid

- 85 year old diabetic
- Attends with shivering, agitation and confusion
- Recent Colles' fracture (3/52 ago)
- Previous Hx
  - Hypertension
  - Hypercholesterolaemia
  - Osteoporosis
  - Depression
  - Lower back pain

- Paracetamol 1g qds
- Metformin 1g tds
- Sitagliptin
- Ramipril 10mg od
- Tramacet SR 100mg
- Simvastatin 40mg
- Ezetimibe 10mg od
- Clopidogrel 75mg od
- Alendronate 70mg
- Sertraline 50mg od
- Calceos T bd
- Omeprazole 20mg od

In summary

- What positive benefit is expected?
- What could the side effect profile look like?
- Remember trial data will not reflect the comorbid frail
- What are you trying to prevent and why?
- What does the patient want?
- Have they had adequate counselling and informed consent?
- Is there a built in review period?
- Can you be assured of concordance?

Final point…

- STOP anticholinergics
- DO NOT prescribe anticholinergics
- EVER!!!