

SMR's in problematic polypharmacy: diabetes focus

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Declaration of interests

- Anna Hodgkinson, within employed role:**

- Part of pilot with Abbott around use of Freestyle Libre 2 (intermittently scanned CGM) in defined cohorts in T2DM
- Part of joint working project with Boehringer Ingelheim optimising outcomes in T2DM
- Provided education to NovoNordisk employees as part of education/training program

Background to our local population, South East London

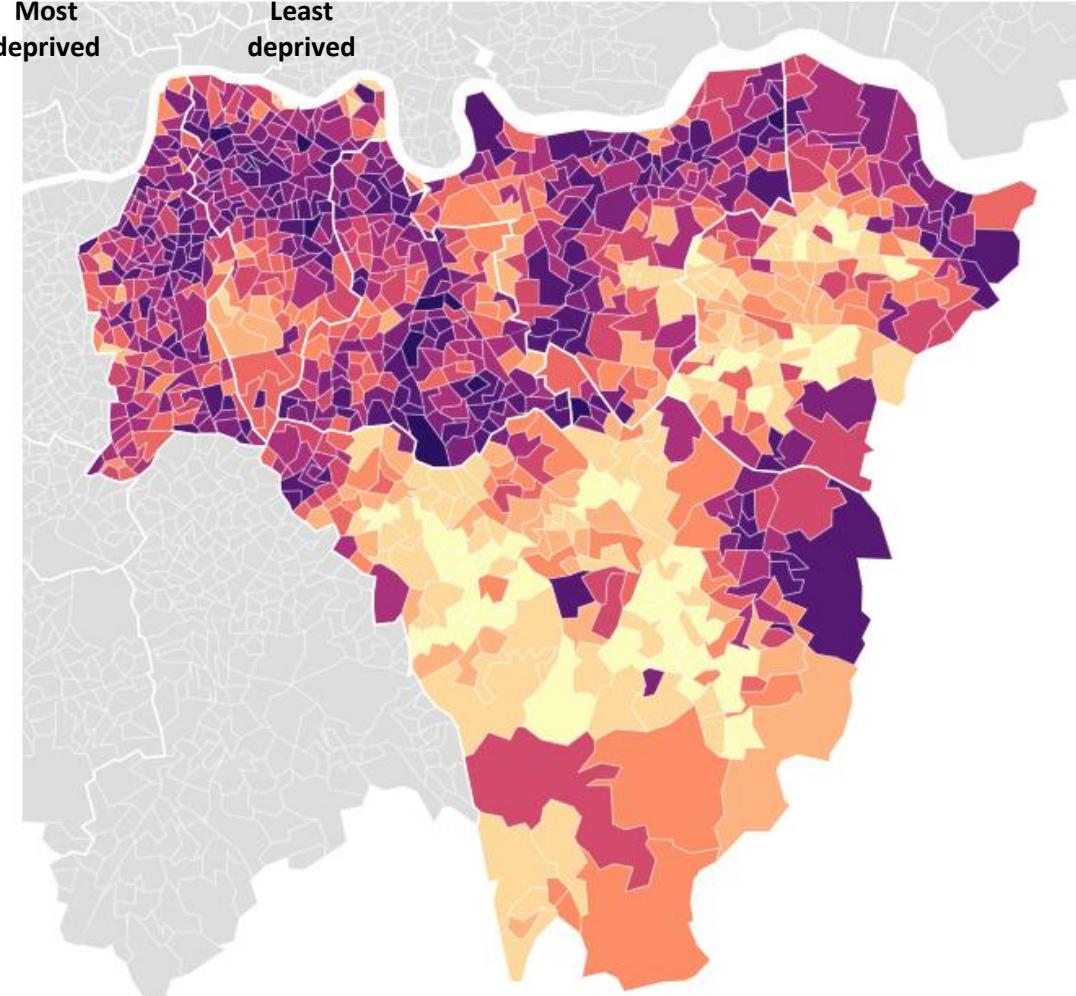
- Ethnically diverse population (>40% non-white)
- High burden of cardorenal metabolic diseases with onset at an earlier age
- QoF registers in SEL:
 - 125,000 people with diabetes
 - 63,000 people with CKD 3-5
 - 40,000 people with established CV disease



South East London - Index of Multiple Deprivation

1
Most
deprived

10
Least
deprived



[Indices of Deprivation - London Datastore](#)

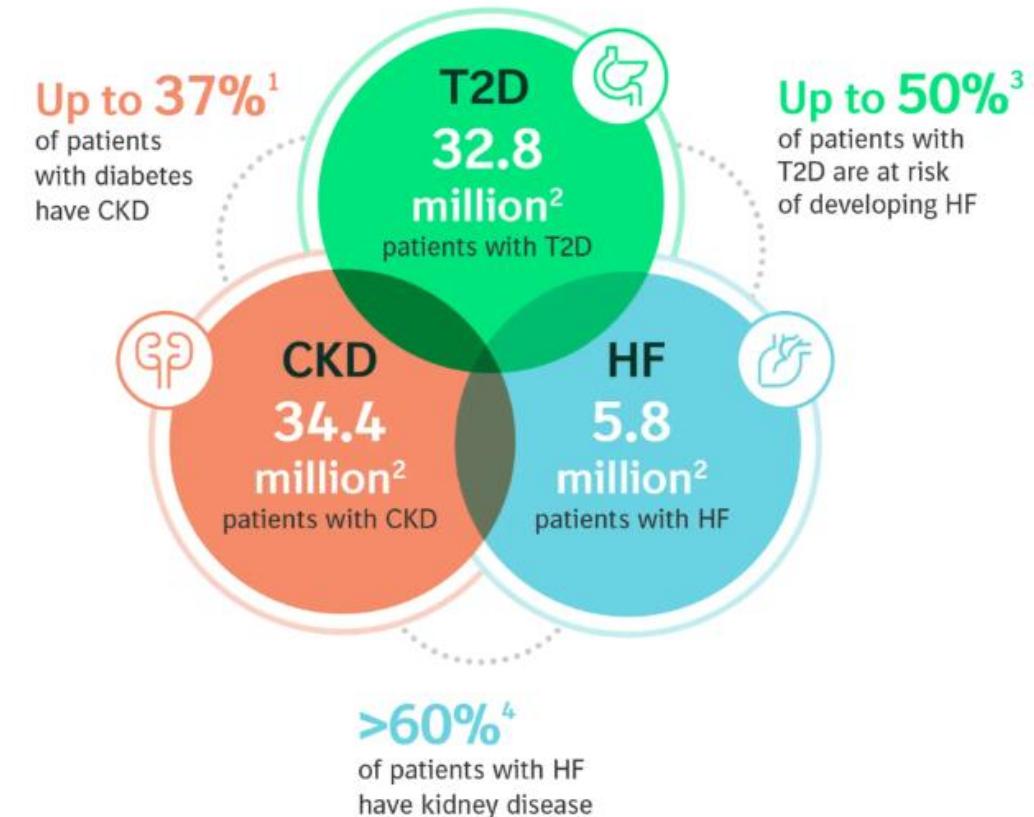
Cardiovascular disease is the greatest long term risk in diabetes

Approximately 1/3 of people with diabetes have kidney disease

People with CKD are 20 times more likely to die of cardiovascular disease than end-stage renal disease

Every week diabetes leads to >190 amputations, 770 strokes, 590 heart attacks and more than 2300 cases of heart failure

Optimal control of all risk factors can reduce CV events and mortality in diabetes by 50%



HbA1c



BP



Cholesterol



CKD CVD (HF)



Metformin

RAS inhibitor

Statin

RAS inhibitor

SGLT2 inhibitor

Calcium channel blocker

SGLT2 inhibitor

Gliptin/SU/
Pioglitazone

CV risk reduction

MRA

GLP-1 analogues

SGLT2 inhibitor

GLP-1
analogues

?GLP-1 analogues

Polypharmacy in diabetes/CVRM

Polypharmacy



≥5
medications

Polypharmacy



Appropriate
polypharmacy

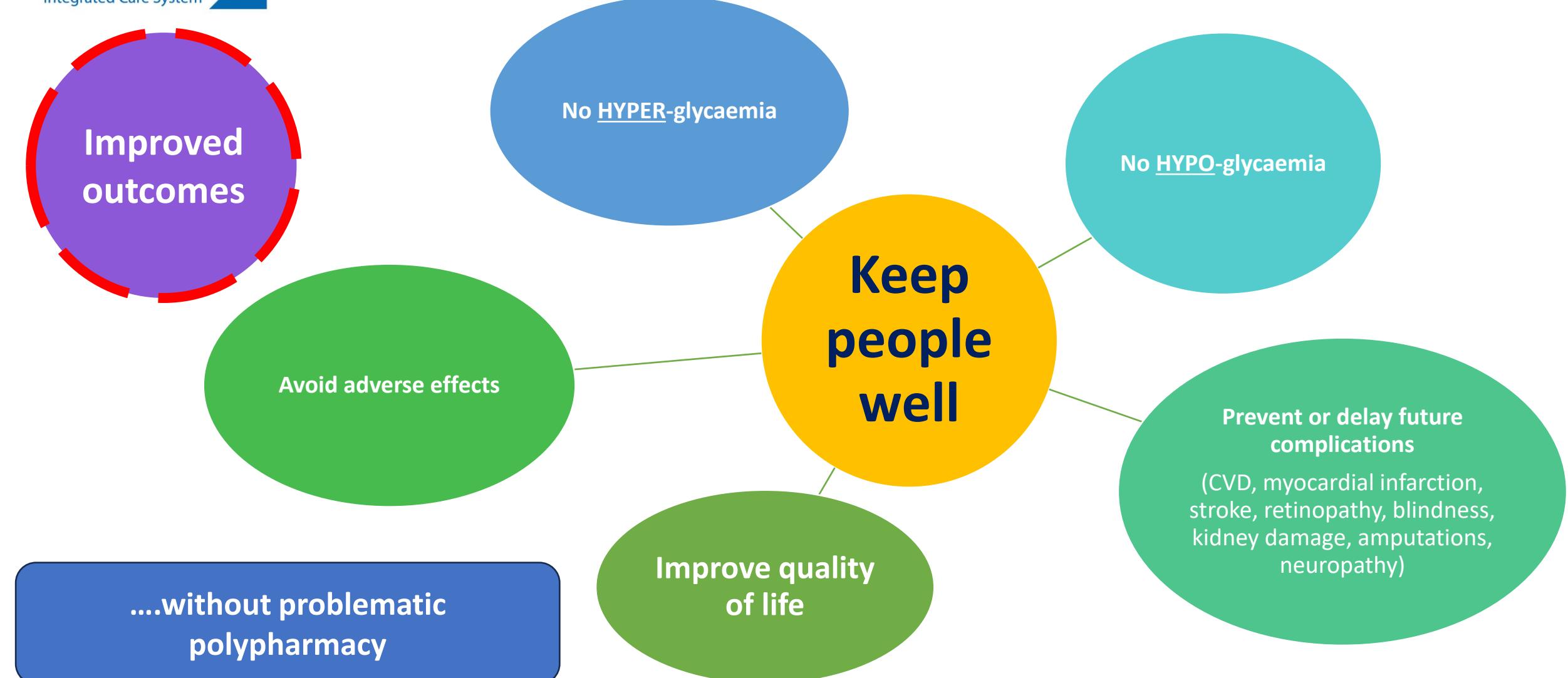
Problematic
polypharmacy



Hyper-
polypharmacy



≥10
medications



80F, South Asian

- **Past medical history:**
 - CKD stage G3aA1
 - T2DM
 - Hypertension
 - Depression
 - NKDA

Social history

- Lives alone
- Non-smoker, nil alcohol
- Exercise limited
- Wears glasses
- Does not drive

Case study 1 – Thomassina

Drug history:

- Metformin 1g BD
- Sitagliptin 100mg OD
- Gliclazide 80mg with breakfast, 160mg with evening meal)
- Repaglinide 500 micrograms with breakfast
- Atorvastatin 20mg OD
- Ramipril 10mg OD
- Amlodipine 10mg OD
- Sertraline 100mg OD
- Co-codamol 30/500mg, 2 QDS PRN
- Gabapentin 300mg BD
- Laxido sachets OD PRN

OTC:

- No herbal/alternative/internet medication

Results

- eGFR: 56ml/min
- K+: 4.2 mmol/L
- uACR: 2.9 mg/mmol
- HbA1c: 63 mmol/mol
- Total cholesterol: 3.9 mmol/L
- LDL-C: 1.8 mmol/L

Observations

- BP 135/79 mmHg
- BMI 26.6 kg/m²
- KFRE: 2year <0.1%, 5 years 0.1%

Additional SMR information

- **Blood glucose levels**
 - pre-breakfast 6-8mmol/L
 - pre-evening meal 5 -10mmol/L
 - reports readings 3.4-3.8mmol/L ~midday once or twice a week
- **Renal function & profile stable**
- **9 care processes undertaken:**
 - Smoking
 - HbA1c
 - Creatinine and uACR
 - BMI
 - Blood pressure and cholesterol
 - Eye screening and foot checks
- **Ordering medication regularly**
 - Adherence screening identified no concerns apart from gabapentin
- **No recent hospital admissions**

- **Recent change in vision**
- **Dietary intake:**
 - **Breakfast:** porridge with blueberries or scrambled eggs and tomatoes
 - **Lunch:** cheese sandwich, one piece of fruit, water
 - **Evening meal:** rice, fish, vegetables, yoghurt or ice cream
 - **Snacks:** crisps, nuts
 - **Drinks:** tea with milk, water

Thomassina:

- Thinks her diabetes levels are too high but doesn't know what to do
 - She checks her glucose levels twice daily but she doesn't know what to do with the numbers
- Wonders if one of her tablets is causing dizziness before lunch. She knows she has to check her glucose levels when it is low and have a sugary drink if <4mmol/L
- Would like to know what her medications are for – are they all needed, there seems to be a lot
- Stopped taking gabapentin a few weeks ago as she didn't think it was working

Medical approach

A: A1c

HbA1c 63mmol/mol
Below target (~64)

Current meds:

- Metformin 1g BD
- Sitagliptin 100mg OD
- Gliclazide 80mg MANE, 160mg NOCTE
- Repaglinide 500 micrograms MANE

B: BP

BP 135/79mmHg
~At target

Current meds:
-Ramipril 10mg OD
-Amlodipine 10mg OD

C: Chol

TC 3.9
LDL 1.8

Current meds:
-Atorvastatin 20mg
OD

D(KD)

eGFR 56ml/min
Urine ACR 2.9
CKD G3aA1

Current meds:
-Ramipril 10mg OD
- Atorvastatin 20mg
OD

Holistic review & shared decision making



Current plan

- Stop repaglinide
- ...
- ...
- ...

Future plan

- ...
- ...
- ...
- ...

Address Thomassina's concerns and questions

Diet and lifestyle

T2DM & Frailty UK Guidelines

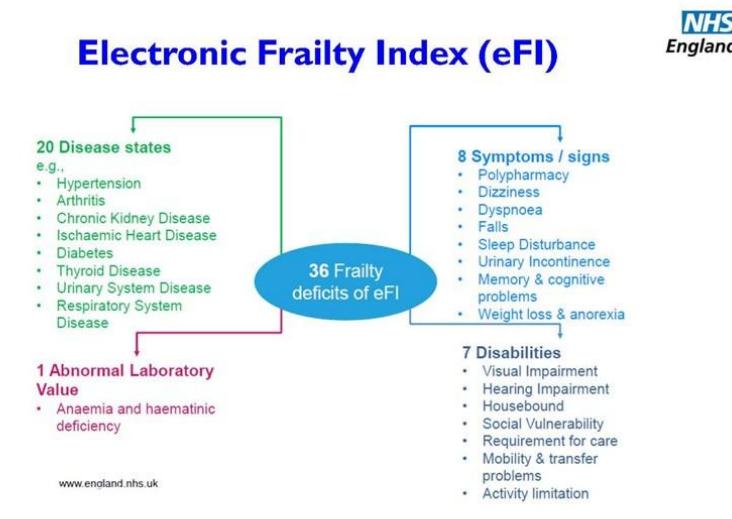
Level of frailty	Status	Treatment goals	Recommended interventions	Recommended targets
Healthy/pre-frail/mild frailty	Functional and independent	Reverse frailty or limit its progression	Tight glycaemic control Resistance exercise and nutritional interventions.	HbA1c 58 mmol/mol but ≥ 53 mmol/mol FPG 5.0–8.0 mmol/L
	Life expectancy of >10 years	Maintain functional status, independence and QoL	Statin therapy unless contraindicated/ not tolerated	BP <140/90 mmHg
		Prevent or delay macro/microvascular complications		
			contraindicated/ not tolerated	
Moderate frailty	> 2 comorbidities	Prevent decline in QoL	Glycaemic control.	HbA1c <64 mmol/mol but ≥ 58 mmol/mol
	Reduced life expectancy	Limit the progression of microvascular complications	Assess and reduce cognitive decline	FPG 6.0– 10.0 mmol/L
		Avoid metabolic emergencies such as hypoglycaemia	Statin therapy unless contraindicated/ not tolerated	BP <140/90 mmHg
Severe frailty	Significant comorbidity, functional deficits, and limited independence	Improve QoL by reducing symptoms or hospitalisations	Less aggressive glycaemic targets but avoid hypoglycaemia and be aware that hyperglycaemia can increase risk of infection and cause urinary incontinence, life thirst and dehydration	HbA1c <69 mmol/mol FPG 7.0–12.0 mmol/L BP <150/90 mmHg
		Maintain functional status, preventing further lower limb dysfunction, preventing significant disability		
			Consider whether statin therapy is beneficial	

- Prognosis and appropriate treatment goals for older adults with diabetes vary greatly according to frailty.
- Older adults are more prone to hypoglycemia and all its consequences, in hospitalization, card all-cause mortality.

CLINICAL FRAILTY SCALE

	1	VERY FIT	People who are robust, active, energetic and motivated. They tend to exercise regularly and are among the fittest for their age.
	2	FIT	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, even if occasionally symptomatic, but often not regularly active beyond routine walking.
	4	LIVING WITH VERY MILD FRAILTY	Previously "vulnerable"; this category marks early transition from complete independence. 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	LIVING WITH MILD FRAILTY	People who often have more evident slowing, and need help with high order instrumental activities of daily living (finances, transportation, heavy housework). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation, medications and begins to restrict light housework.
	6	LIVING WITH MODERATE FRAILTY	People who 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	LIVING WITH SEVERE FRAILTY	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	LIVING WITH VERY SEVERE FRAILTY	Completely dependent for personal care and approaching 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 living with severe frailty. Many terminally ill people can still exercise until very close to death.

Electronic Frailty Index (eFI)



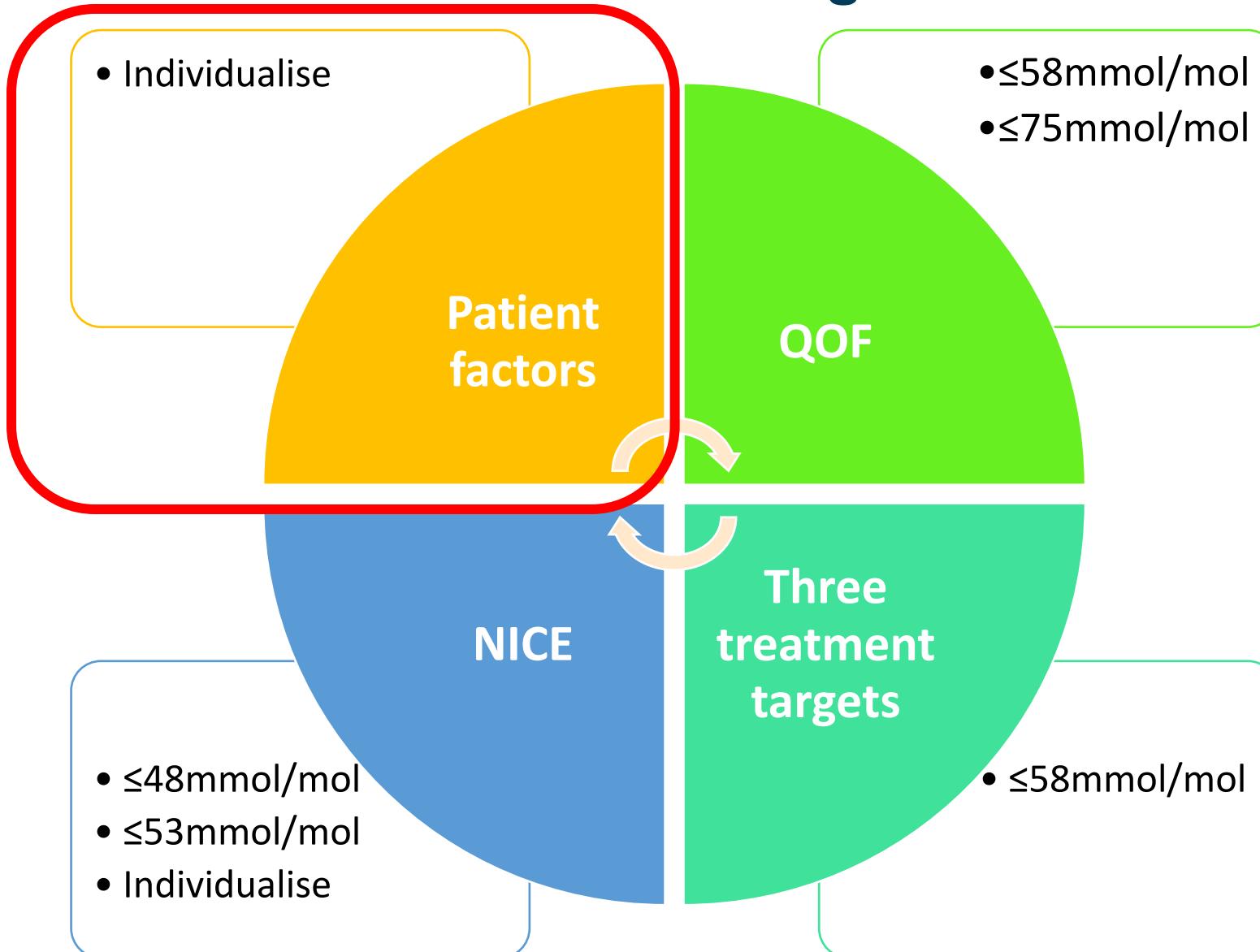
www.england.nhs.uk

Clegg et al: Age Ageing 2016; 45:353-360

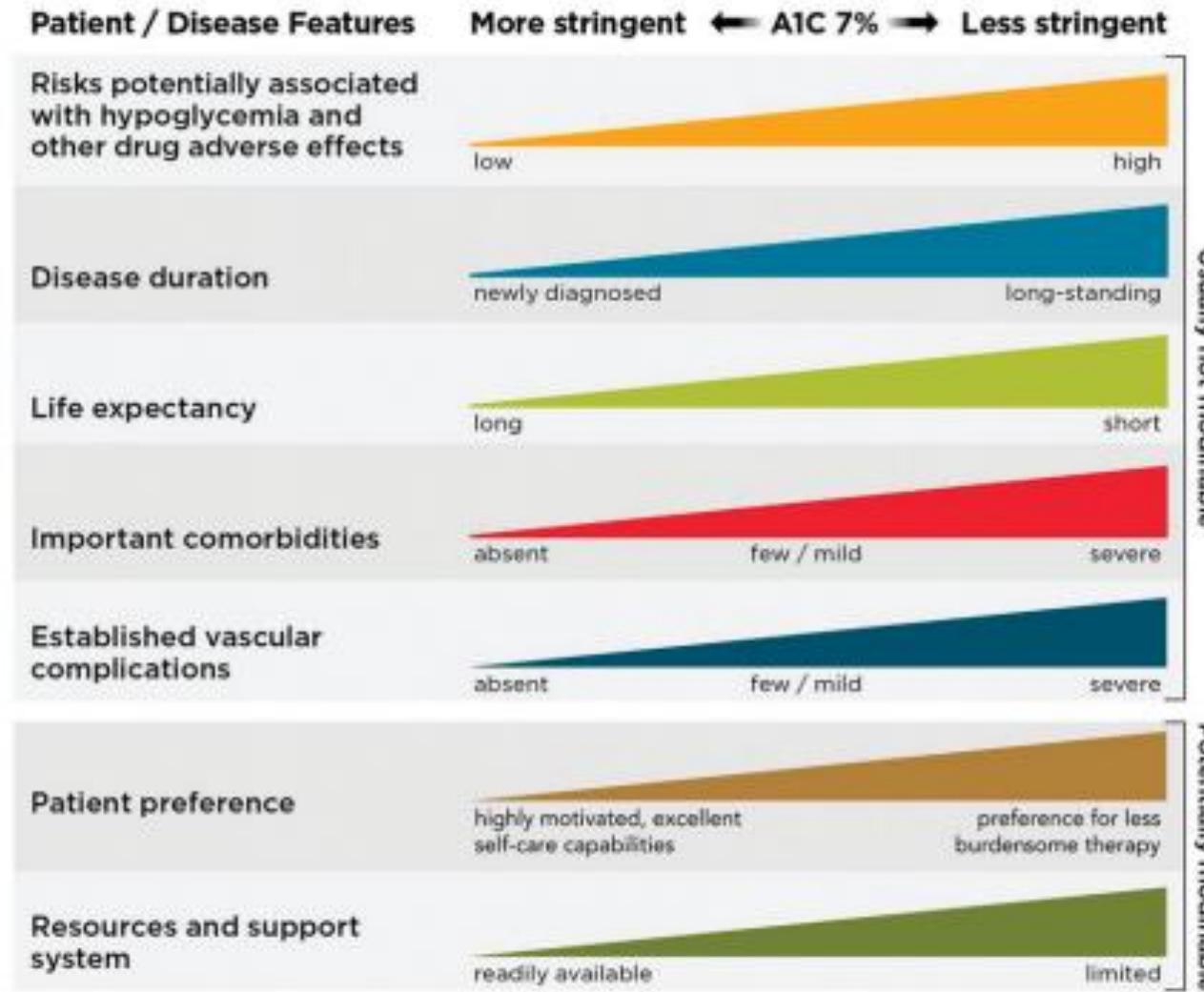
Essential to avoid hypoglycaemia

- **Older adults more prone to hypoglycaemia**
 - Renal dysfunction
 - Polypharmacy
 - High risk hypo meds
 - Weight loss
 - Changes to dietary intake
 - Cognitive impairment
- **Presentation may change**
 - Dizziness, confusion and visual disturbances > adrenergic symptoms
 - Can be mistaken for dementia or neurological problems
- **Impact can be significant**
 - Falls/fractures
 - Cognitive decline
 - CV events
 - Hospitalisations
 - All cause mortality - ACCORD
 - Counter regulation impaired – hypo unawareness
- **Impact wider than health**
 - Decrease in confidence
 - Social isolation
 - Self care capacity
 - Driving consequences
 - Cognitive status
 - Emotional wellbeing

T2DM HbA1c targets



Approach to Individualization of Glycemic Targets



Glycaemic targets: standards of Medical Care in Diabetes 2022. *Diabetes Care* 2022;45(Supplement_1):S83–S96

Summary

- **Polypharmacy is common in diabetes**
 - mLTC
 - Earlier diagnosis = people living with mLTC for longer
 - Number of evidence based prognostic medications
- **Right medication for the right patient**
 - Recognise that patient factors change: think medical, physiological and social aspects
 - Regular review essential
 - Holistic approach
 - Risk vs benefit
 - Avoid problematic polypharmacy
 - Think about wider impact of medications
- **Important to individualise HbA1c, glucose and blood pressure targets**
 - Person centred approach