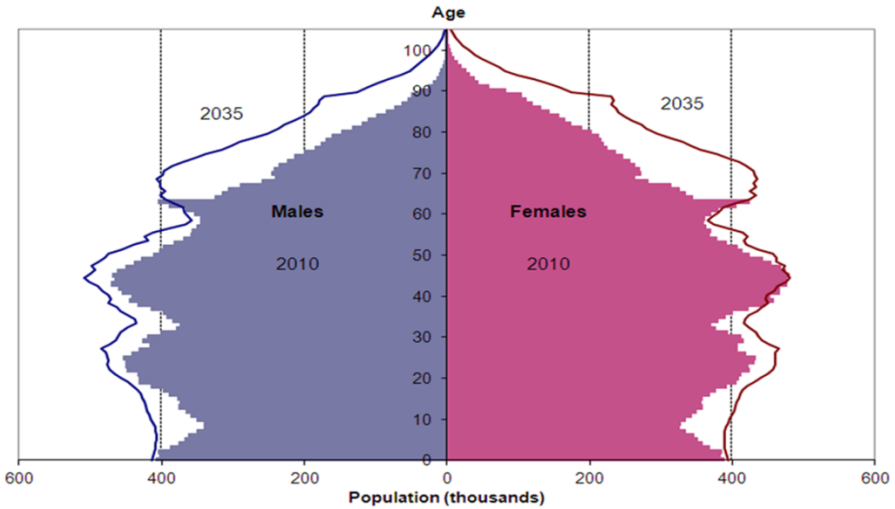
Chronic Kidney Disease

Managing CKD in conjunction with other LTC in Primary Care

Andrew Frankel

Estimated and projected age structure of the United Kingdom population, mid-2010 and mid-2035

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NHS 'can't cope' with multi-disease patients
The health system in the UK cannot cope with the rising number of under-65s with long-term medical conditions and needs "radical change", says a study in The Lancet.
A team of researchers analysing 1.75 million people in Scotland found that nearly a quarter had two or more chronic diseases.
Their care was often co-ordinated poorly and inefficient, the study said.
GPs often have to deal with patients who have multiple health problems

- 42% have a long-term condition
- 23% have multiple conditions
- Onset 10-15 years earlier if socioeconomic deprivation

INTEGRATING ACROSS SPECIALITIES AS WELL AS ACROSS ORGANISATIONS

- Understand key common messages that relate to all patients with long term conditions and embed them into relevant clinical guidelines and educational materials
- Work with colleagues in community programmes to utilise opportunities for collaborative educational and clinical programmes

DIABETES

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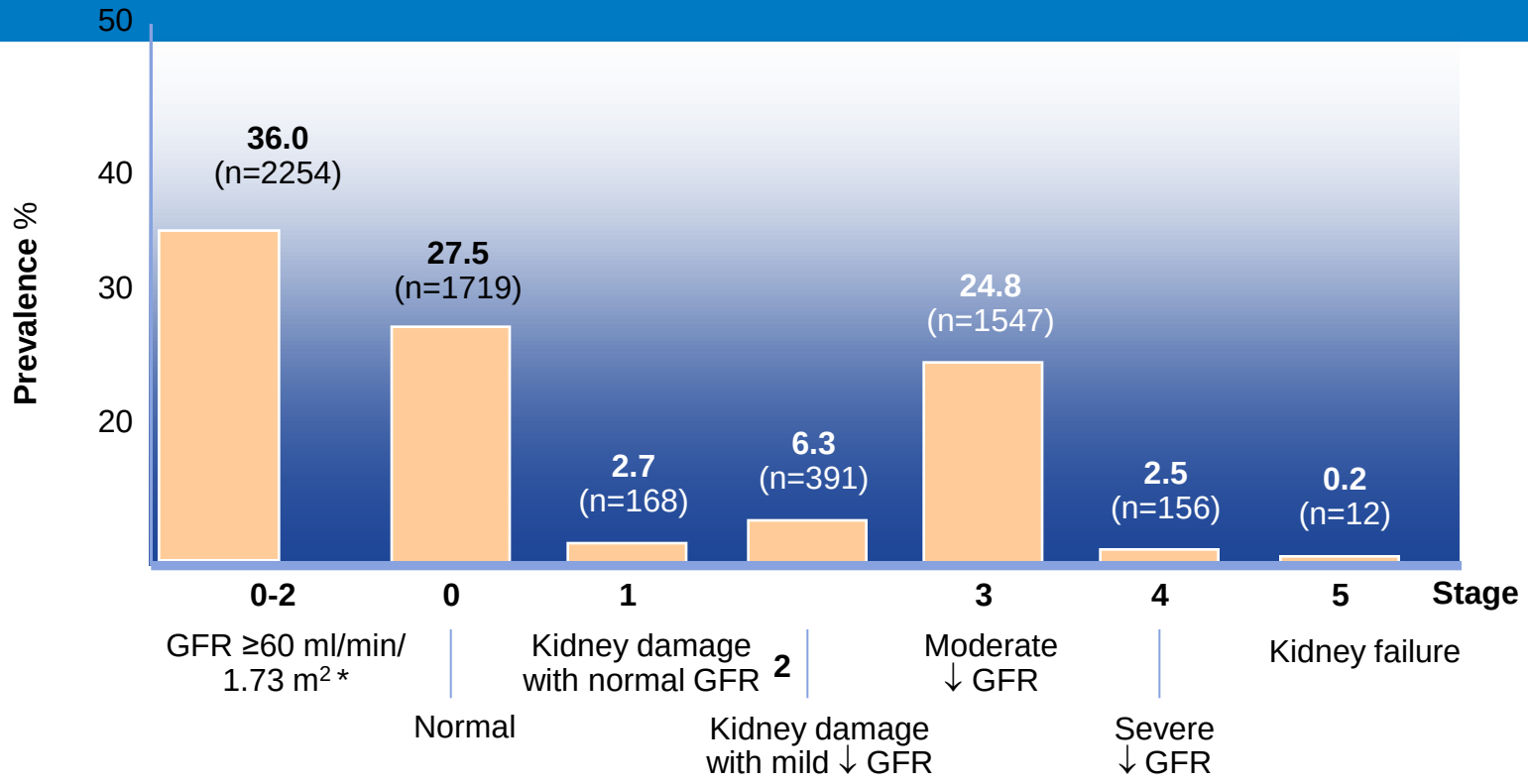
Prevalence of Chronic Kidney Disease in patients with Type 2 Diabetes (UK)

Prevalence of CKD according to K/DOQI classification



Age (yr) Mean (SD)	**64.7** (13.4)	**54.1** (12.6)	**48.0** (12.7)	**59.7** (11.9)	**72.1** (10.8)	**71.9** (12.9)	**63.2** (13.9)
GFR ml/min/ 1.73 m^2	**≥60**	**≥90**	**≥90**	**60-89**	**30-59**	**15-29**	**<15**

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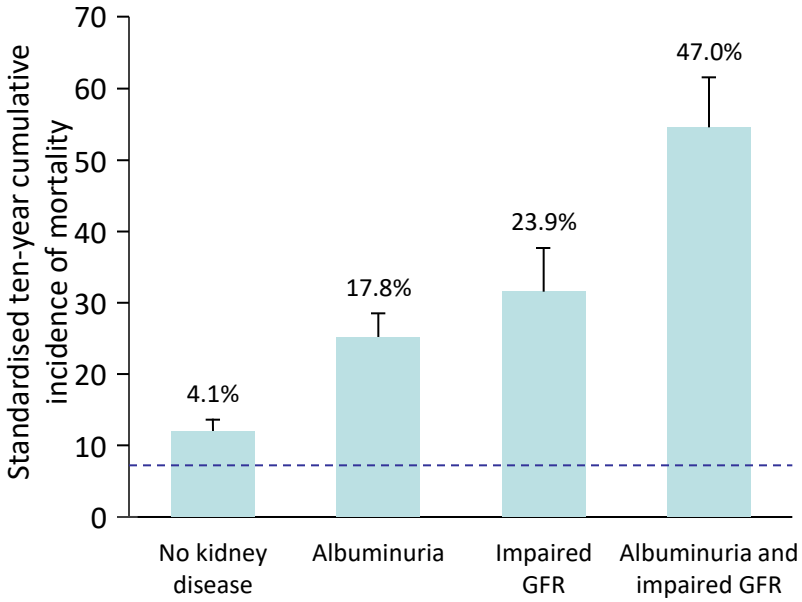
Wiggins KJ. et al. Nephrol Dial Transplant. 2006;21:88-92

* without albuminuria data

Kidney disease powerfully predicts increased mortality in people with diabetes



Absolute differences in mortality risk were estimated using linear regression and were adjusted for age, sex, and race. Standardised 10-year all-cause cumulative incidences were estimated for the mean levels of the covariates in the study population. The dashed line indicates mortality in people without diabetes or kidney disease (the reference group). The numbers above bars indicate excess mortality above the reference group. Error bars indicate 95% CIs.

- CI=confidence interval; GFR=glomerular filtration rate
- Afkarian M et al (2013) *J Am Soc Nephrol* **24**: 302–8

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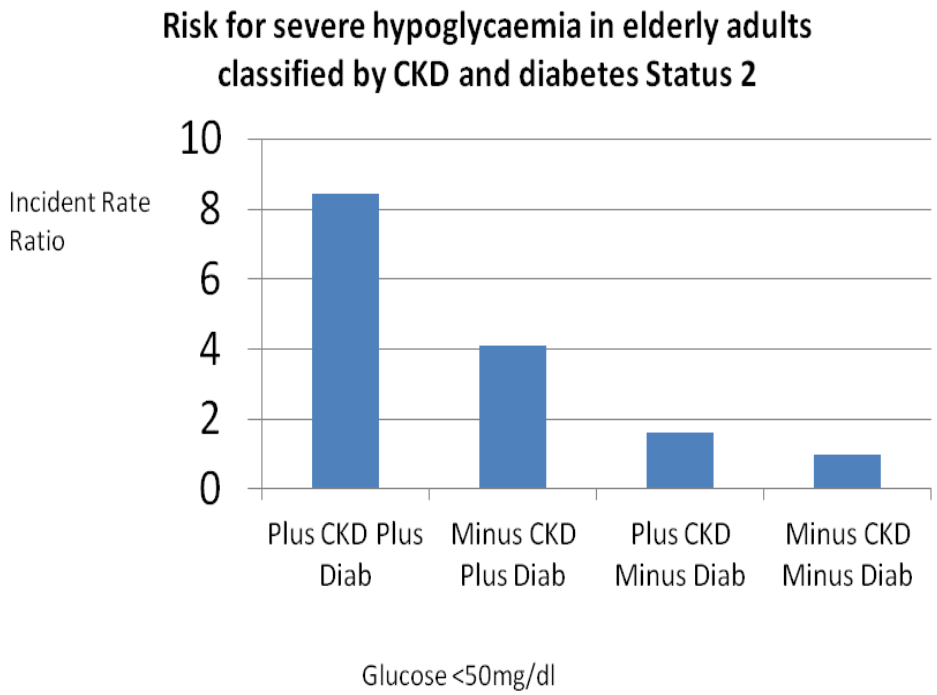
Renal Impairment and hypoglycaemia risk



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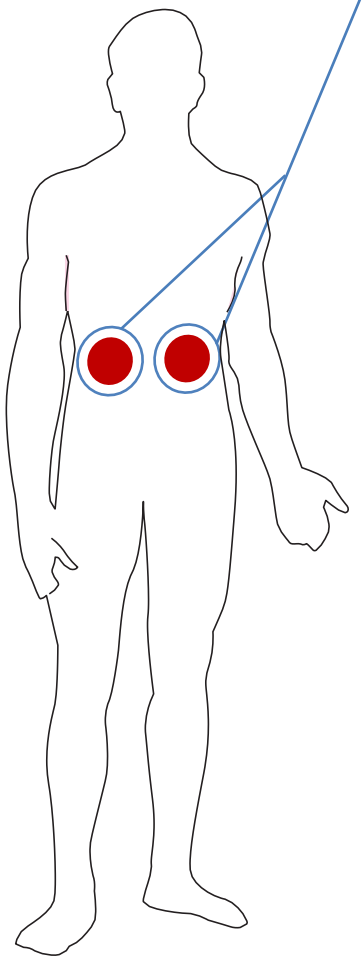
Managing Diabetic Kidney Disease in the Community

- Diabetes and CKD are 2 relatively common long term conditions that frequently coexist
- The mainstay of treatment remains related to cardiovascular health, blood pressure management and appropriate glycaemic control
- Hypoglycaemia is associated with poor outcomes in patients with diabetes and kidney abnormalities
- The presence of CKD in a patient with Type 2 Diabetes will have an impact on the management of that patient
    - Glycaemic targets – individualised 58 to 68
    - Glycaemic management – tailoring drug treatment to reduce complications
- The management of patients with Type 2 Diabetes and stable CKD can be effectively managed in the community

TYPE 2 DIABETES – PREVENTING RENAL COMPLICATIONS

Endorsed by CWHHE Diabetes Strategy Group



DIABETIC NEPHROPATHY

Diabetic Nephropathy is characterised by the excretion of abnormal amounts of albumin in the urine, arterial hypertension or progressive decline in kidney function

ALBUMINURIA

Albuminuria is the earliest sign of kidney involvement in Type 2 Diabetes and is best assessed by laboratory measurement of the albumin creatinine ratio (ACR).

Secondary care services sometimes use protein creatinine ratio (PCR) and broadly ACR is usually 70% of measured PCR.

Albuminuria is an independent CV risk factor. It is also associated with a higher risk of progression to end-stage kidney disease.

All patients with albuminuria should be on maximal ACEi or ARB therapy and have BP controlled to target (See page 3)

SEEK RENAL ADVICE IF

Unexplained sudden increases in albuminuria
Unexplained eGFR decline in absence of albuminuria

MANAGEMENT OF INDIVIDUAL WITH DIABETIC NEPHROPATHY

Patient education is an integral part of overall management

Lifestyle changes, weight loss and smoking cessation should be advised

Target HbA1c:

- 48 - 53 mmol/mol (6.5% - 7%) in CKD G3a
- 53 – 68 mmol/mol in CKD G3b/G4 (individualisation of patient target)

Maintain blood pressure below 140/90 (130/80 if ACR > 70)

- **Maximal** doses of ACE inhibitors or Angiotensin II receptor blockers (ARBs) are recommended first line drugs (unless contraindicated)
- Calcium channel blocker (non-dihydropyridine class) drugs and low dose thiazide diuretics are useful second line agents
- Loop diuretics are useful in the presence of volume overload (e.g. leg oedema not caused by the side effects of calcium channel blockers)
- Additional antihypertensive therapy may be required.

Monitor
Treat dyslipidaemia (serum cholesterol, LDL cholesterol and serum triglycerides to targets)

Aspirin therapy if eGFR <60 and ACR>70

Ensure patient understands sick day guidance for relevant drugs eg ACE/ARBs/ Metformin

All patients with Diabetes should be on a register and minimum data should include annual measures for microvascular disease. Please see Cardiovascular Risk for additional requirements.

PROTEINURIA MEASUREMENTS AND BLOOD PRESSURE TARGETS

ACR	PCR	BP target
≤ 70	≤ 100	140/90
> 70	> 100	130/80

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HEART FAILURE

Chronic Kidney Disease and Heart Failure

Heart failure impacts renal function – CKD and heart failure often co-exist

Signs and symptoms overlap:

- Breathlessness,
- Peripheral and
- Pulmonary Oedema

ACEis / ARBs and mineralocorticoid receptor antagonists (MRAs) offer prognostic benefit

ACEis / ARBs

- Aim for maximum tolerated dose
- Withold if *symptomatic* hypotension

Seek specialist help if:

- If Cr >200µmol/L, eGFR < 25 ml/min or
- K+ >5.5mmol/L

MRAs (eg.spironolactone)

Use can be limited due to hyperkalaemia

A rise in potassium of up to ≤ 5.5 mmol/L is acceptable

If >5.5mmol/L:

- Hold potassium supplements or MRA (e.g. spironolactone)
- Ensure low potassium diet
- Sodium Bicarbonate (500mg BD PO) if serum bicarbonate <22mmol/L
- This can be used in conjunction with an increase in loop diuretics

After these measures:

- Retrial MRA and check U+Es 1-2 weeks later

Permissible rises in Creatinine with ACEi/ Ag2RB

In patients without heart failure, a rise of up to 30% above baseline in the first 6-8 weeks after starting treatment is considered acceptable, as long as renal function then reaches a plateau.

Because of the need to reach adequate ACEi dosing to see a prognostic benefit in heart failure, a

- **Cr increase of up to 50% above baseline, or 266µmol/L,**
- **or eGFR <25 mL/min/1.73 m2,**

whichever is the smaller is acceptable in patients with concomitant CKD and heart failure.

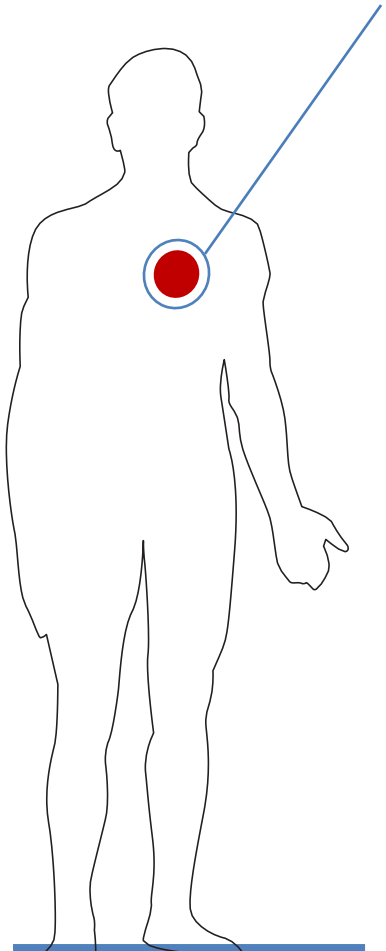
Practical Management

- **Check renal function prior to initiation of therapy**
- **Stop concomitant nephrotoxic drugs e.g. NSAIDS**
- **Recheck 1-2 weeks after initiation and 1-2 weeks after final dose titration**
- **Recheck renal function four monthly thereafter**

This is a larger increase than that which is considered acceptable for patients without heart failure.

CHRONIC KIDNEY DISEASE AND HEART FAILURE

Developed in conjunction with Dr. C. Plymen, Cardiology Consultant, Imperial



Patients with heart failure often have multiple comorbidities: their care is not straight forward. Such patients are best managed in the context of a multidisciplinary team.

BACKGROUND POINTS

Signs and symptoms of heart failure are often non-specific and can overlap with symptoms of CKD (e.g.dyspnoea, peripheral and pulmonary oedema). Heart failure is not a benign disease: there is a 10% inpatient mortality associated with diagnosis, and 50% are dead at 5 years [1].

The benefits of ACEi and mineralocorticoid receptor antagonists in relation to heart failure prognosis are just as important in patients with concomitant CKD. (Angiotensin II receptor blockers (ARBs) in patients intolerant of ACEi).

The risks/benefits of temporarily holding or continuing these therapeutic agents during inter-current illness are different in patients with both heart failure and CKD compared to patients with CKD alone.

PERMISSIBLE RISES IN CREATININE WITH ACEi / ARB

Because of the need to reach adequate ACEi dosing to see a prognostic benefit in heart failure,
'a Cr increase of up to 50% above baseline, or 266µmol/L, or eGFR <25 mL/min/1.73 m2, whichever is the smaller'
is acceptable in patients with concomitant CKD and heart failure [3]. ***This is a larger increase than that which is considered acceptable for patients without heart failure.***

MANAGEMENT OF INDIVIDUALS WITH CKD AND HEART FAILURE

Patient education is an integral part of overall management

Lifestyle changes; exercise, weight loss and smoking cessation should be advised

ACEi/ARB Therapy:

- Check renal function prior to initiation of therapy
- Stop concomitant nephrotoxic drugs e.g. NSAIDS
- Recheck 1-2 weeks after initiation and 1-2 weeks after final dose titration
- Recheck renal function four monthly thereafter

- **Maximal** doses of ACE inhibitors or ARBs (unless contraindicated)
- ACEi/ARBs should not be held if BP low unless significant symptomatic hypotension.
- If Cr >200µmol/L, eGFR < 25 ml/min or K+ >5.5mmol/L, seek specialist help.
- Additional antihypertensive therapy may be required.

Monitor K+ :

- A rise in potassium of up to ≤ 5.5 mmol/L is acceptable.
- Stop potassium supplements or potassium sparing drugs (e.g. amiloride) if high potassium an issue.
- Consider low dose Sodium Bicarbonate (max 500mg BD PO) if patient is acidotic actual venous bicarbonate <22.
- Consider increasing loop diuretic if patient experiencing symptoms of overload.

Treat dyslipidaemia (serum cholesterol, LDL cholesterol and serum triglycerides to targets)

Aspirin therapy if indicated (2° prevention)

Ensure prescribing is consistent with CKD

Sick day guidance: Consider holding ACEi and seek early medical attention.

References

1. National Heart Failure Audit 2014-15. NICOR. https://www.ucl.ac.uk/nicor/audits/heartfailure/documents/annualreports/annual_report_2014_15_v2
2. Bakris GL, Weir MR. Angiotensin-converting enzyme inhibitor-associated elevations in serum creatinine. Arch Intern Med (2000);160:685–93.
3. 2016 ESC Guidelines for the treatment and management of acute and chronic heart failure. European Heart Journal (2016); 37:2129–2200

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FRAILTY

Chronic Kidney Disease (CKD) in Frailty

Definitions:

- Frailty is a clinical syndrome characterized by reduced physiological reserve and a higher risk of poor outcomes

- Age is a risk factor for frailty but not all older people are frail

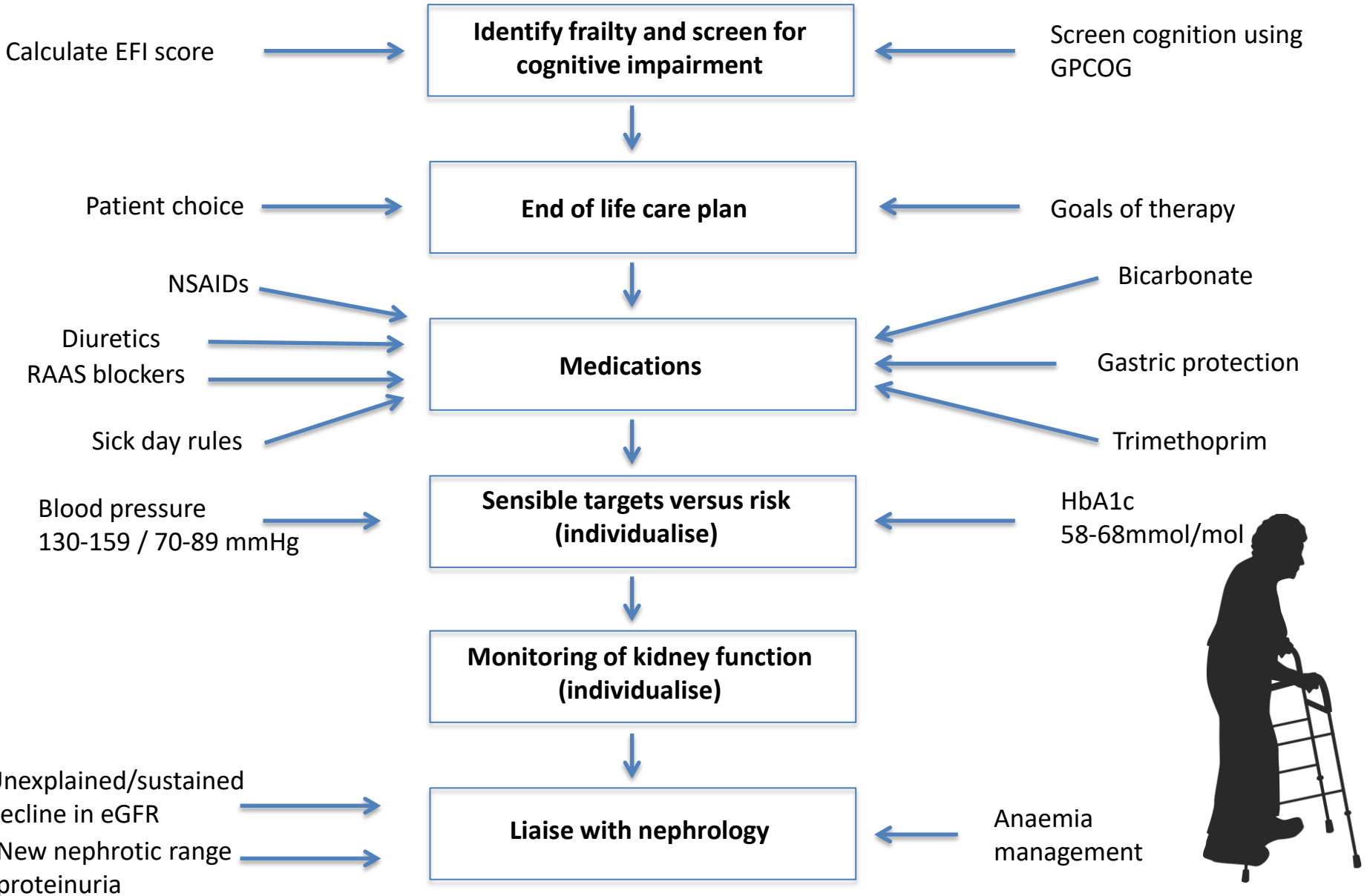
- The management of CKD in the context of frailty requires holistic approach

Chronic Kidney Disease (CKD) in Frailty

CKD in the context of frailty increases the risk of

- Acute kidney injury (AKI)
- Progression to end-stage kidney disease
- Cardiovascular disease
- Dementia
- Fractures
- Harm from poly-pharmacy

Chronic Kidney Disease (CKD) in Frailty



Frailty and Chronic Kidney Disease (CKD)

Endorsed by Medicine for The Elderly department, Imperial College NHS Healthcare Trust

Management of CKD in the context of frailty requires a holistic approach

Kidney Ageing

Kidney function (GFR) declines with age:
- ~0.8 mL/min/year after 35 years old
- up to 2mL/min/year after 70 years old

- eGFR >30mL/min in the absence of acute illness, proteinuria or uncontrolled HTN is unlikely to progress to end-stage kidney disease

Focus of Care in Frail Patients

- Should be patient and outcome centred
- View CKD in the context of an individual's comorbidities and personal priorities
- Renal replacement therapy (RRT) may not improve quality of life – focus on symptom control may be more appropriate
- Advance care planning should be a priority

MANAGEMENT OF FRAIL PATIENTS WITH CKD

Identify frailty and screen for cognitive impairment
- Consider calculating EFI score (https://doi.org/10.1093/ageing/afw039)
- Consider screening cognition using GPCOG (http://gpcog.com.au/)

Medications
- Frail patients are more susceptible to harm from medications
- Refer to "Drugs and CKD" page

Blood pressure (BP) or HbA1c targets - individualise to patient:
- Be wary of falls risk – check postural BPs
- Higher BP targets are appropriate eg. systolic BP 130-159 mmHg / diastolic BP 70-89 mmHg
- Be wary of hypoglycaemia risk with insulin and oral hypoglycaemic agents
- Higher HbA1c targets are appropriate eg. 58-68 mmol/mol

Diet – avoid protein restriction / aggressive salt restriction

Monitoring of renal function
- If renal replacement therapy (RRT) is considered - refer to page 3
- If RRT is unlikely to improve quality of life, tailor frequency to clinical need

In event of sudden eGFR decline exclude common causes:
- UTIs
- obstructive uropathy
- Medications (eg. anti-hypertensives, NSAIDs)

Consider nephrology advice if:
- Unexplained and sustained decline in renal function / new nephrotic range proteinuria
- Refractory and symptomatic anaemia (<100g/L) in advanced CKD (stages 3b – 5)

may require intravenous iron +/- erythropoietin supplementation

Further advice

Specialty advice is available to North West London primary care services:
- ICHC-tr.ckdadvice@nhs.net (nephrology consultant advice)
- ICHC-tr.adviceelderlymedicine-imperial@nhs.net (consultant geriatrician advice)

Primary Care E-advice Service

Support GPs, practice nurses and practice staff to offer the right treatment and referral decisions for their patients with CKD

ICHC-tr.ckdadvice@nhs.net