EPH131

Identifying CKD as a Key Driver of CVD Deaths

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Introduction

- Chronic Kidney Disease (CKD) affects over 7 million people in England[1] and is a major but often under-recognised driver of cardiovascular disease (CVD) mortality.
- CKD contributes to approximately 11% of all CVD deaths (~19,000 annually),[2,3] placing it on par with diabetes as a cause of premature cardiovascular mortality. Despite this burden, 42% of patients with stage 3-5 CKD remain undiagnosed,[1,4] and only 17% of eligible patients receive SGLT2 inhibitors, despite clear NICE recommendations.[5,6]

Objectives

- Quantify the burden of CKD and CKD-related CVD on the National Health Service (NHS) and wider economy of the United Kingdom.
- Assess testing and treatment gaps, particularly in high-risk patients and those living in deprived areas and model the clinical and economic impact of earlier diagnosis and treatment with SGLT2i.
- Propose a scalable strategy for earlier intervention to reduce CKD-related mortality and health inequalities.[7,8]

Method

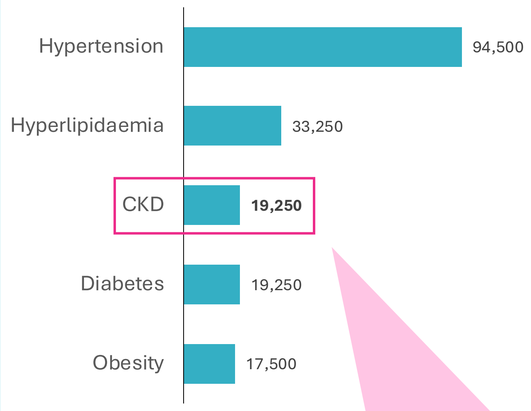
- Conducted a retrospective real-world data (RWD) analysis using national NHS datasets: Hospital Episode Statistics (HES)[9], CVDPrevent, and the Health Survey for England.[1,10]
- Integrated economic modelling was based on NICE guidance[6] and real-world datasets (e.g., Greater Manchester).[4]
- A scenario was modelled for early CKD identification and SGLT2i adoption, with outcomes measured across hospital admissions, dialysis uptake, CVD events, and cost of care.
- Analyses were stratified by disease stage, age, and deprivation quintile to quantify inequalities.[4,11]

Results

- Diagnosis gap: 42% of stage 3-5 CKD patients are undiagnosed.[1,4]
- Mortality link: CKD responsible for ~19,000 CVD deaths per year (11%).[2,3]
- Treatment gap: Only 17% of eligible CKD patients receive SGLT2i treatment.[5,6]
- Inequalities: Individuals in the most deprived quintile are twice as likely to develop CKD and die younger from CVD.[4,10,11]
- Economic burden: CKD costs the NHS £8.2B and the UK economy £5.2B annually.[9,12]
- Earlier identification and treatment of eligible patients with SGLT2 inhibitors could:
  - Reduce progression to dialysis, prevent cardiovascular events, and save an estimated £45.7M per year, offsetting the £23M treatment cost.
  - Save >6,000 lives per year through reduction in CKD-related CVD deaths.[7,8]
  - Prevent >25,000 cardiovascular events annually, including heart failure, stroke, and myocardial infarction.[8,9]
  - Free 300,000+ hospital bed days per year, equivalent to ~1,100 NHS beds.[9]
  - Deliver £1.1B in NHS savings annually, driven by £674M from reduced hospitalisations, £260M from avoided dialysis and transplant, and £174M from fewer CVD complications.[9,12]

Disease-based risk factors for CVD deaths

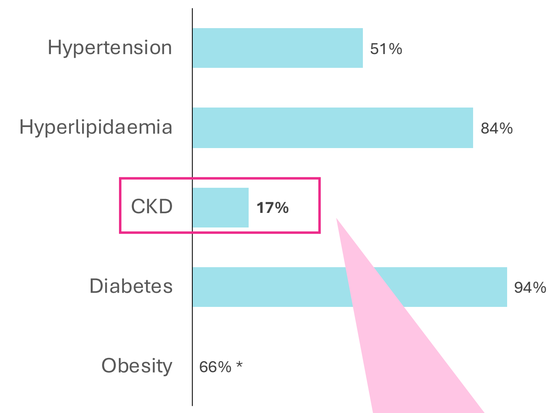
Estimated annual CVD deaths attributable to each condition



CKD is estimated to contribute to **11% of CVD deaths**, over 19,000 CVD deaths each year, as many deaths as diabetes, and more than obesity

Treatment uptake per major CVD risk factor

% of patients treated for conditions linked to CVD risk

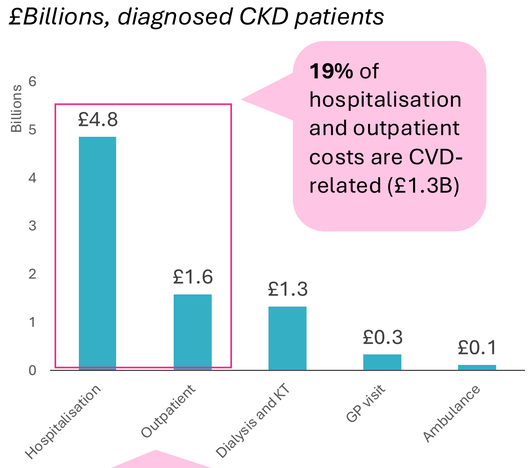


17% of CKD patients receive SGLT2i therapies proven to reduce the risk

*Only 220,000 patients to have access to tirzepatide from 3.4M eligible in England[15]

Annual CKD healthcare costs 24/25

£Billions, diagnosed CKD patients

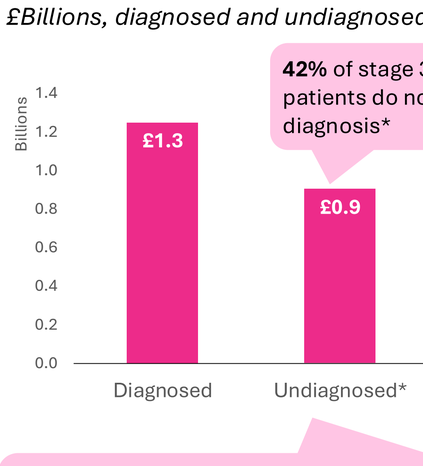


19% of hospitalisation and outpatient costs are CVD-related (£1.3B)

Hospital admissions drive most CKD healthcare costs — with nearly £1.3B linked to CVD complications

Annual CVD costs in CKD patients, diagnosed and undiagnosed* 24/25

*£Billions, diagnosed and undiagnosed**

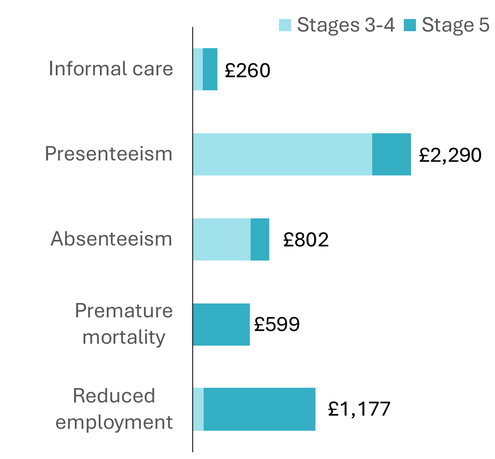


42% of stage 3-5 CKD patients do not have diagnosis*

Undiagnosed* CKD patients account for additional £0.9B of CVD-related costs — highlighting the price of late detection

Economic costs of CKD

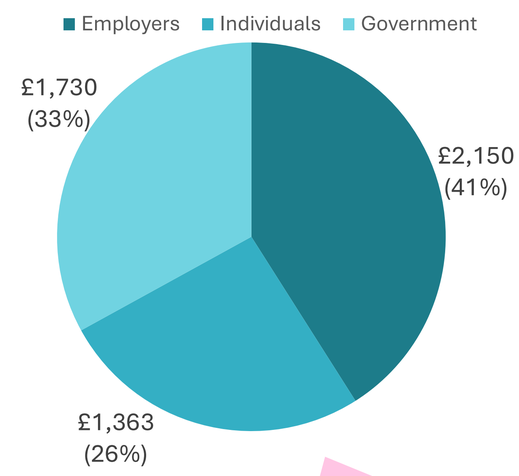
£Millions, by cost component



CKD in total costs £5.2B to the wider economy, with presenteeism and reduced employment accounting for >50%

Economic costs of CKD

£Millions, by payer



Patients and employers shoulder 74% of CKD's total economic cost, far more than the government

Conclusion

CKD is a preventable, high-cost driver of cardiovascular deaths and inequalities. Real-world data shows that earlier detection and targeted therapy can substantially reduce mortality, hospitalisations, and NHS expenditure.[7,8]

Embedding CKD testing into primary-care CVD prevention pathways, with expanded use of SGLT2i therapies, aligns directly with the NHS Long Term Plan and UK Government ambitions to halve premature CVD mortality by 2030.[8]

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Experts in health

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