



Early diagnosis of chronic kidney disease

A discussion paper for building resilience and sustainability of healthcare systems

International Society of Nephrology

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About this discussion paper

This discussion paper has been funded by AstraZeneca and developed by the International Society of Nephrology (ISN), a global professional association dedicated to advancing kidney health worldwide since 1960 through education, grants, research and advocacy.

The ISN, through its members and in collaboration with national and regional societies, engages 30,000 health professionals from across the globe to reduce the burden of kidney diseases and provide optimal healthcare for patients.

About the International Society of Nephrology

Since 1960, the ISN has promoted and worked toward a future where all people have equitable access to sustainable kidney health. We do this for all our stakeholders by:

- Bridging the gaps of available care through advocacy and collaborations with our global partners
- Building capacity in healthcare professionals via granting programmes, education and research
- Connecting our community to develop a stronger understanding of the management of kidney disease

1 Introduction

What is chronic kidney disease?

Chronic kidney disease (CKD) is a condition where patient health is affected by abnormalities of kidney structure or function. People living with CKD progressively lose kidney function, but may not know they have the disease until advancing to the later stages. CKD is classified into five stages, with stage 1 indicating normal kidney function (patients may have other abnormalities such as loss of protein in urine or structural abnormality of kidneys), to the stage of kidney failure (stage 5).¹

Up to 82% of people with CKD stage 3 (moderately decreased kidney function) are undiagnosed and half remain undiagnosed even at stage 4–5 when symptoms typically begin to become apparent (Figure 1).² Mean annual healthcare costs nearly double as CKD progresses from stage 2 to stage 3, then increase up to four-fold with progression to stage 4–5. Kidney failure is associated with a cost of up to USD 100,600 per patient.³

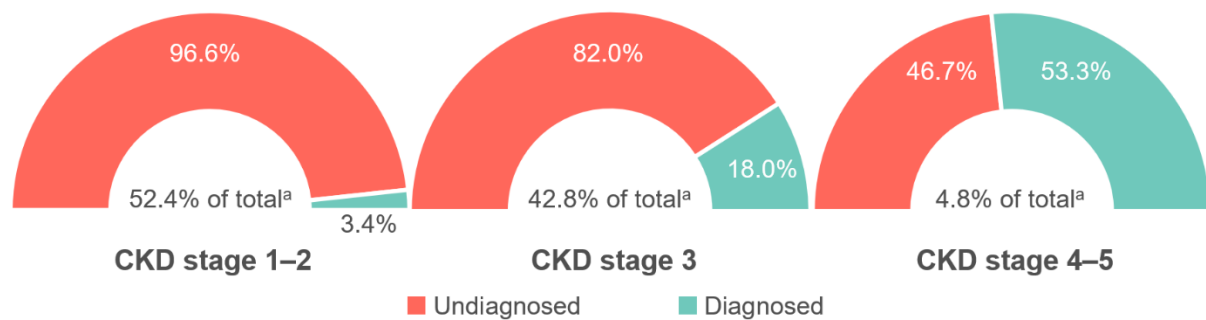


Figure 1. In a multicentre observational study, the CKD prevalence in adult patients with type 2 diabetes was assessed, and the proportion of detected and undiagnosed CKD in the primary care setting was characterised. Delayed onset of CKD symptoms was coupled with a high prevalence of undiagnosed CKD, particularly in early disease stages.² ^aPercentage of study population with CKD and type 2 diabetes at the indicated CKD stage.

The growing burden of chronic kidney disease (CKD). Chronic kidney disease has been neglected as a public health issue despite its significant burden. Worldwide, there are in excess of 850 million people living with kidney disease, of which 700 million have CKD.^{4 5} As a comparison, 463 million people globally live with diabetes, the prevalence of cancer worldwide is 85.8 million and 36.8 million people are currently living with AIDS/HIV.^{5 6}

CKD disproportionately affects disadvantaged populations and reduces the number of productive years of life. The disease can have major adverse consequences for the living conditions of affected individuals and their families, including severe financial difficulties. Many who progress to dialysis face a potential loss of employment.

Furthermore, the prospect of financial burden discourages many patients from treatment, thereby leading to preventable morbidity and death.⁷

Huge burden on the healthcare system and individuals. Although only 1% of people with CKD will progress to dialysis, it remains the most expensive chronic disease.¹ Many developed countries spend 2–4% of their annual healthcare budget on the treatment of kidney failure, even though those receiving such treatment represent ~0.15% of the global population.⁸ About 188 million people experience catastrophic health expenditure annually as a result of kidney diseases across low- and middle-income countries (LMICs), the greatest of any disease group.⁹

Treatments necessitated by kidney failure, such as dialysis, can be highly invasive, with a detrimental effect on patient quality of life and productivity.³ For patients undergoing dialysis, mortality rate increases and quality of life decreases, at a high cost to society. Dialysis patients are often hospitalised for extended periods of time, incurring costs for healthcare systems. Selected measures of health-related quality of life for dialysis patients is 27–49% worse than for the general population, and is a predictor of hospitalisation and mortality in these patients.¹⁰ In older patients, initiation of dialysis may result in increased frailty, loss of independence and decreased cognitive function.¹¹

During the current COVID-19 pandemic, patients on dialysis were identified as having the highest risk of acquiring the infection and experiencing poor outcomes once infected. Population-based analysis has shown that the age-matched relative risk of death from COVID-19 for an in-centre haemodialysis patient compared to the general population ranges from 432 for a person aged 20–39 years, to around 10 for a person over 80 years old.¹²

Leading causes of death. In 1990, CKD was the 17th leading cause of death globally, but this ranking had risen to 12th in 2017.¹² CKD currently is the third fastest-growing cause of death worldwide,¹³ and is expected to become the fifth leading cause of years of life lost around the world by 2040.⁴

In 2013, in the wake of the first United Nations (UN) Global Summit on Non-Communicable Diseases (NCDs), governments around the world committed to reducing premature mortality due to NCDs by one third by 2030.¹⁴ This goal was later integrated into the UN Agenda for Sustainable Development, with Sustainable Development Goal 3.4 focussed on reducing mortality from NCDs and achieving universal health insurance for all.¹⁴

Reducing the burden of CKD is an essential pillar of achieving these goals. There is a range of complex risk factors for developing CKD, including diabetes, hypertension, heart disease, obesity and a family history of kidney disease. Although CKD is not among the five NCDs (cardiovascular disease, chronic respiratory disease,

cancer, diabetes and mental health), it has an indirect impact on global morbidity and mortality by increasing the risks associated with five major causes of death: cardiovascular diseases, diabetes, hypertension, HIV/AIDS and malaria.¹⁵

The Global Burden of Disease (GBD) 2017 study estimated that 1.4 million of CKD deaths and 25.3 million disability-adjusted life-years from cardiovascular diseases were directly attributable to reduced glomerular filtration rates (GFRs).¹⁶ The GFR indicates the current stage of kidney disease – if the GFR value is low, the kidneys are not working well as they should.

The GBD 2019 study estimated that CKD has been a key driver of increasing global disease burden over the past three decades.⁵ The global all-age mortality from CKD increased by 41.5%,¹⁶ while the percentage of disability-adjusted life years lost due to CKD across all age groups nearly doubled (93.2% increase), and rose by 130.2% among 50–74-year-olds and 196% among those over 75 years old.⁵ Across this timeframe, the decline in global age-standardised mortality rates observed for cardiovascular disease, chronic lung disease and cancer has not been observed for CKD,¹⁶ in part because of disparities in access to diagnosis and care. Effective action on CKD is therefore essential for improvement of overall health as well as health equity worldwide.

Given the limited epidemiological data, the common lack of awareness and the frequently poor access to laboratory services, such figures likely underestimate the true burden posed by CKD.¹⁵

More recently, air and water pollution, and factors related to climate change such as heat extremes and water shortages, have also been associated with an increased incidence of CKD, especially in LMICs.^{15 17 18} The prevalence and associated burden of CKD continue to rise worldwide, with the fastest growth occurring in LMICs.¹⁹

Reducing the burden of CKD and kidney failure is an equity imperative for policymakers and healthcare systems. It is difficult to paint a global picture of expenditure on CKD, given the variability of factors included in analyses and the range across countries in different economic regions, and even between urban and rural settings within individual countries.²⁰ However, a consistent pattern across economic regions is that annual costs of CKD treatment are lowest in the pre-dialysis stages and increase substantially following initiation of kidney replacement therapy (KRT). Healthcare costs for patients undergoing haemodialysis are up to 45 times higher than for the general population, and five times higher than the costs associated with pre-dialysis stages of CKD.²⁰

In LMICs, CKD disproportionately affects younger, economically productive people, meaning that premature mortality resulting from a lack of access to KRT may also reduce the labour force and drive household poverty.²¹ In addition, a disproportionate

amount of the burden of CKD falls on people with lower socioeconomic status, as they have a higher prevalence of CKD. These people have limited access to treatment, which leads to poorer outcomes.²² CKD is the leading cause of catastrophic health expenditure worldwide (out-of-pocket expenditure on health above 40% of household income that further diminishes the household).²¹ This makes identifying and treating CKD at the earliest stages an equity imperative.²² UN Member States and the World Health Organization need to prioritise the elimination of health inequities, removing barriers to healthcare access and developing policies that include treatment and care for all people affected by kidney disease.²³

If risk factors are identified early, CKD can be prevented and, if CKD is detected early, worsening of kidney function can be slowed or averted by inexpensive interventions.¹⁵ This discussion paper looks at the early detection of CKD as an important example of how to build resilience and sustainability in our future healthcare systems.

2 Opportunities to improve health systems sustainability and resilience

CKD needs to be recognised as a public health priority. CKD provides an excellent opportunity to demonstrate how healthcare costs can be reduced and patient outcomes improved by preventing, detecting and initiating treatment in the early stages of the disease. Around 10% of the adult population worldwide is affected by CKD,⁴ with far-reaching patient health and economic implications. Despite this, low policymaker awareness means that CKD is still not included in most priority lists of NCDs. There are few countries with explicit policies or public programmes in place aimed at CKD prevention and control.¹⁹ Globally, just over half of governments recognise CKD (51%) and kidney failure (58%) as health priorities, and fewer than half (43%) have national strategies for improving CKD care, none of which are in low-income countries.¹¹

Implementation of evidence-based strategies to reduce disease progression is fundamental. There is a significant economic rationale for early CKD detection, risk stratification and treatment, combined with timely management using evidence-based strategies.²² However, use of evidence-based strategies to reduce kidney disease progression is suboptimal worldwide. Even where guidelines and interventions have been established, implementation may be thwarted at several levels, including inadequate health system response to kidney care delivery, poor understanding of CKD and its risk factors among primary care physicians, low patient awareness, and a lack of locally appropriate or adapted guidelines.²⁴⁻²⁶

Better data availability to support strategies for improving CKD care. In LMICs, data on the burden of CKD are lacking as a result of an absence of healthcare resources and inadequate data collection methods.²⁷ In developed countries, variability in the evidence for the indirect costs of CKD and direct costs at the payer,

provider and patient levels are barriers to comprehensive assessment of its economic burden.²⁸ Early CKD detection programmes are cost-effective, but consistent and reliable data on the true fiscal impact of the disease must be made available to policymakers and stakeholders, allowing them to fully comprehend the socioeconomic benefits of these programmes and identify definitive targets for improvements to practice and policy.²⁸

Investment in primary care to reduce total healthcare costs. Investment in primary care to reduce the number of patients ultimately requiring KRT reduces long term healthcare expenditure, thus delivering high value for money.²²

As CKD progresses to kidney failure, the only available life-prolonging treatment is KRT, including dialysis and kidney transplantation.⁸ These expensive, technically demanding interventions pose a considerable challenge to universal healthcare coverage (UHC) and require disproportionately high expenditure for the benefit of a relatively small proportion of the population. Globally, insufficient access to dialysis treatment and kidney transplantation means that only half of people requiring KRT can be treated.^{19 29} LMICs in particular may be ill-equipped to deal with the devastating consequences of kidney failure, and so effective preventative measures to avoid CKD or to slow progression are of immense importance.^{21 30} When CKD is diagnosed early, patients can be advised on effective interventions to delay CKD progression and reduce cardiovascular risk, such as drug therapy, tobacco control, regular exercise and a healthy plant-based diet, which are relatively inexpensive in comparison to the costs of KRT.^{15 22 30}

Across socioeconomic strata worldwide, investment in the strengthening of basic infrastructure for primary care services will improve early detection and timely management of CKD, reducing healthcare costs in the long term.³¹

Effective preventive measures and early detection programmes are critical. While early CKD can be asymptomatic, accurate and inexpensive diagnostic tests are available, such as blood and urine tests, and effective treatments can be initiated in early stages of the disease. On implementation of early detection programmes, it is important that the results are reliable, which can be achieved through dual assessment of estimated GFR and protein excretion into urine (albuminuria).²² Cost management is also crucial, particularly in LMICs, as the costs of CKD diagnostic tests may be prohibitive in these countries.²² However, as screening for hypertension, type 2 diabetes and HIV infection are often already included in clinical practice guidelines in resource-poor settings in LMICs, there is potential to couple these programmes with simple CKD screening tests.²⁷

Early detection programmes have the potential to shift clinician and patient recognition of CKD to much earlier stages.²² In high-income countries, early detection in groups at higher risk for CKD is likely to be cost-effective, and education about CKD risk

factors enables clinicians to identify high-risk candidates who will benefit from early CKD detection.²² To maximise the impact of these tests and treatments, public health campaigns should be aimed at individuals at risk for developing CKD, such as patients with diabetes, hypertension or cardiovascular disease. Depending on the region, it may also be important to consider other high-risk individuals and populations based on comorbidities, environmental exposures or genetic risk factors.²²

CKD management needs to be part of overall NCD control strategies rather a separate programme to ensure greatest efficiencies and health benefits. This is especially the case for initiatives to combat other NCDs with close links to CKD.³⁰ Given the synergies between the management of CKD and that of hypertension, diabetes and cardiovascular disease, integrated programmes for NCD control at the primary care level would augment or strengthen early CKD identification and intervention.²² Systematic approaches to detecting CKD in high-risk individuals could lead to early disease detection and permit intervention with cheap therapies to manage risk factors and slow the progression of CKD.²¹ For example, the HEARTS package developed by the World Health Organization provides a set of effective and practical interventions for strengthening the management of cardiovascular disease risk factors in the primary healthcare setting, using an integrated approach to the management of NCDs that promises to reduce deaths from kidney disease and other associated diseases.³²

CKD should be incorporated into global NCD strategies, supporting advocacy groups and mitigating barriers to prevention and treatment of CKD.¹¹ Advocacy may help promote government prioritisation and further public awareness of how to prevent and manage CKD.¹¹ Public health policies to prevent or reduce risk factors for CKD would also reduce the burden of kidney disease and need to consider other important aspects, particularly in LMIC, such as maternal and child health, malnutrition, basic sanitation, tobacco consumption, unsafe work environments and infectious diseases.¹¹

Engaging stakeholders and adopting a patient centric approach will maximise the effect of early detection. Implementation efforts that engage policymakers, local clinicians, the community at large and broader stakeholders in an iterative process are more likely to be effective, particularly when bearing in mind the importance of patient engagement in efforts to screen for and treat CKD.²²

3 Building resilience and sustainability in CKD: What needs to change?

The COVID-19 pandemic has highlighted the need for healthcare system resilience. Dialysis, CKD, organ transplantation and diabetes are the four comorbidities associated with the highest mortality risk from COVID-19, while CKD is the most prevalent risk factor for severe COVID-19. This heightened risk is evident

from CKD stage 1 and increases through the subsequent stages of this disease, with the highest risk in patients on KRT.³³ In addition, preliminary data have shown that about 20–30% of patients hospitalised with COVID-19 develop kidney failure, which has led to a surge in the requirement for dialysis. At the same time, regular dialysis services have been interrupted as hospitals redirect resources to providing care for patients with COVID-19.³⁴

Lack of access to dialysis has long been a reality in LMICs, but its impact has now been intensely highlighted even in high-income countries, owing to critical shortages of dialysis equipment and staff during the COVID-19 pandemic.²¹

Earlier diagnosis of CKD through early detection programmes, combined with timely management using evidence-based strategies, would reduce the number of patients at risk of developing a complication of COVID-19, as well as reducing the number of patients with CKD progressing to dialysis, decreasing demand on services in times of unprecedented pressure on healthcare systems.

Healthcare system governance

Structured implementation and monitoring of early detection programmes across healthcare systems are crucial for success. Efforts to implement effective early CKD detection, treatment and management require multi-stakeholder implementation strategies to overcome barriers to high-quality CKD care, with aligned financial and non-financial incentives.²² As part of this process, governments need to have early detection and management of CKD policies, and ensure programmes are in place to integrate CKD with the prevention and treatment of other NCDs.

A key rationale for early CKD detection is the availability of many effective interventions to delay CKD progression and reduce cardiovascular risk. People with hypertension, diabetes or cardiovascular disease should be part of early detection programmes for CKD.²² Other population-specific risk factors may be used to identify groups that might benefit from targeted detection programmes.

Ongoing evaluation of systematic early CKD detection efforts across healthcare systems will build stronger evidence regarding their effectiveness to reduce morbidity and mortality from CKD for the global population.²²

In the USA, kidney disease affects 37 million people.³⁵ The national health insurance program (Medicare) alone spends more than USD 100 billion annually on kidney care, and one in five Medicare dollars are spent on dialysis, the most expensive element of KRT.³⁶ In order to tackle the economic burden of CKD, the Advancing American Kidney Health initiative was announced by the US government in 2019, with the goal of transforming the prevention and treatment of kidney disease. As part of this initiative, there has been investment in improved identification of populations at risk

for CKD, increased engagement with kidney health researchers, and dissemination of information to raise public awareness regarding kidney health and the need for kidney disease detection.³⁵

Healthcare system financing

Investing in prevention and early detection of CKD is a cost-effective strategy.

Prevention and early detection of CKD through government funding and increased universal healthcare coverage (UHC) for medication in earlier stages of CKD will prevent disease progression and the need for costly KRT, along with its associated burden on patient wellbeing.^{11 20 29} This highlights the need for policymaker attention to be focussed on implementing strategies that target care to individuals at increased risk of CKD (patients with diabetes, cardiovascular disease, hypertension, obesity and/or family history of kidney disease).²²

Early CKD detection and management programmes have been implemented in both high- and low-resource settings, and demonstrate the potential for such programmes to bring about population-wide benefits and reduce costs.³⁷

An early detection programme set up in Dharan, Nepal, screened 20,811 adults for CKD risk factors and carried out spot urine, fasting blood glucose and renal function tests. High blood pressure, high fasting glucose and impaired renal function were detected in 4471 individuals, and low-cost medication prescribed as appropriate. After three years of follow-up, 63% of individuals with elevated levels of protein in their urine and 48% with impaired renal function at baseline had regained stable kidney function.²⁷

In Taiwan, a CKD care programme was initiated in major hospitals, then extended to 90 institutes in 2009, and finally rolled out to primary care clinics in 2011. The programme promoted early CKD detection in high-risk populations, patient education and multidisciplinary care. As a result, the incidence of kidney failure in people younger than 75 years was stabilised, mortality was reduced and patients experienced better quality of care, lower medical costs, improved quality of life and delayed progression of CKD.³⁷

A CKD screening and prevention programme was launched in Uruguay in 2004 with the aim to reduce cardiovascular and kidney risk factors, increase accessibility to kidney healthcare in the primary setting, promote early CKD detection in the population at risk, enhance patient care at all stages of CKD, and prevent cardiovascular morbidity and mortality in the target population. These initiatives continue to be incorporated into mandatory healthcare programmes, with the aim of making them universal throughout the country. The programme has resulted in improved quality of care and a reduction in CKD progression.³⁷

Service delivery (a): Patient registries and electronic health records

Tracking trends and outcomes with patient registries and electronic health records inform improvements in CKD care. Patient registry data describes the epidemiology and burden of disease, and captures regional or national variations in treatment and outcomes, allowing clinicians and policymakers to evaluate the safety, quality and value of patient care.³⁸ Most countries have registries for dialysis and kidney transplantation, but registries for acute kidney injury are available in only 13 countries, and in 19 out of 160 countries for non-dialysis CKD.²⁹ Recent work sponsored by the Australian Commission of Safety and Quality in Health Care highlighted that each \$1 of expenditure on the Australia and New Zealand Dialysis and Transplant Registry yielded \$7 of benefits.³⁹ These economic benefits, along with the clinical impact on patient outcomes make the case for investment in systematic CKD measurement and reporting compelling. The lack of renal registries, particularly in emerging economies, leaves gaps in the available information on the healthcare facilities accessible to people with CKD and how this affects patient outcomes.³⁸ Effective collaboration between stakeholders will enable the development of renal registries where they are absent, or allow enhanced data collection and dissemination for currently existing registries.³⁸

Electronic medical record systems can play a key role. The government healthcare system within Abu Dhabi has been successful in detecting and managing CKD by implementing several measures, which include: the automated calculation of estimated GFR embedded within the electronic medical record, online physician support for decisions in referral and treatment management, and kidney nurses working both within primary care and multidisciplinary CKD clinics. The programme has clearly demonstrated the ability to modify physician prescribing behaviour and exemplifies value-based healthcare with improved patient outcomes at a reduced cost to the healthcare system.³⁷

Service delivery (b): Quality indicators

The development and expansion of quality indicators will improve patient care. Monitoring of quality indicators helps to identify when the quality of care received by patients is less than ideal, and can help initiate and guide the development of appropriate quality improvement programmes.¹¹ Furthermore, global quality indicators can provide benchmarks to individual countries to help guide practice for the delivery of optimal care.¹¹ However, despite these benefits, quality indicators are not routinely measured across all stages of CKD; only those for kidney transplant recipients are commonly measured and reported.¹¹ The implementation and systematic monitoring of quality indicators within a country and worldwide need to be promoted through access to guidelines, incentives and registries, allowing governments and healthcare systems to ensure that all patients receive high-quality and equitable care.¹¹

Workforce

There is a global shortage of healthcare professionals specialising in the care of patients with CKD. Nephrologists are primarily responsible for the care of patients with kidney failure globally, with care jointly provided by primary care physicians in only 22% of countries. In high-income countries, the prevalence of nephrologists is 26.5 per million population (pmp), but this falls to 0.4 pmp in low-income countries.²⁹ Over 90% of low-income countries have shortages of providers essential to kidney failure care – nephrologists, interventional radiologists, surgeons and transplant coordinators.^{11 29} These workforce shortages can be addressed by developing effective multidisciplinary teams, task shifting (e.g. allowing primary care practitioners to play a greater role in treatment) and harnessing the potential of telemedicine.¹¹

Early CKD detection programmes and improving primary care practitioner involvement in the early stages of CKD will reduce the burden on nephrologists and specialist clinicians providing care for patients with kidney failure.

In Thailand, in 2015, the Ministry of Public Health announced the prevention of CKD as a national health priority. Due to limited resources, all referral, provincial and district hospitals were requested to set up a multidisciplinary care team around CKD. Community nurses and village health volunteers were trained with information on CKD provided in accordance with the International Society of Nephrology and international guidelines. A protocol checklist on the essential parts of CKD management and key performance indicators of diabetes and hypertension were agreed upon, with the key indicators reported to the Ministry of Health. The findings to date illustrate favourable outcomes in a sustainable and cost-effective national CKD prevention programme.³⁷

Patient access to optimal CKD care can be improved through telemedicine and digital solutions. Telemedicine can facilitate equitable access to kidney care, increasing the ability to continue patient monitoring and reducing care provision costs, particularly in remote regions. To address workforce shortages or limited access to specialist care in remote regions, medical or laboratory data can be transmitted to experts for remote review as part of early detection or prevention programmes.⁴⁰ Furthermore, primary care physicians in rural areas can access education on CKD care through video conferencing and case-based learning tools.⁴¹ Using telemedicine to share the workload of CKD care across multiple providers will not only promote the use of multidisciplinary teams, but further allow for better care delivery to more patients.¹¹ As this novel field expands, governments should assess how to implement telemedicine most effectively, in a manner that supports and complements traditional education and healthcare modalities.

In addition, the use of mobile technologies and digital interventions has the potential to facilitate task sharing, personalised patient and healthcare worker education, patient monitoring and support, research and healthcare system strengthening. In the UK, the

National Institute for Health and Care Excellence recommends that people with diabetes as well as those with hypertension undergo an annual albumin-to-creatinine ratio (ACR) urine test. In order to raise testing adherence among their patients with type 1 diabetes, the Sussex Community NHS Foundation Trust have partnered with a technology company to provide an ACR home test that uses smartphone technology. The innovative aspects of this technology are that it allows non-clinical users to take semi-quantitative ACR measurements with a smartphone, and patients can do this in their own home and digitally share results with a clinician through existing electronic medical records. This technology could be used instead of, or alongside, existing tests to detect microalbuminuria in people with diabetes or high blood pressure who are at risk of kidney disease.⁴²

4 Conclusion

Kidney disease has a major effect on global health, both as a direct cause of global morbidity and mortality and as an important risk factor for cardiovascular disease. CKD is largely preventable and treatable, and deserves greater attention in global health policy decision-making.¹⁶

Kidney failure has a devastating effect on the lives of patients and an enormous economic cost, particularly in regions where access to kidney replacement treatment is limited. Systemic failures, such as the low early detection and treatment rates of CKD, have been undermining efforts to contain the spiralling socioeconomic costs of the disease, hampering the resilience and sustainability of healthcare systems.

Access to care for CKD is a global priority and a communal responsibility.²¹ This discussion paper sets out measures governments and healthcare systems need to consider as an opportunity to diagnose CKD at earlier stages, slowing progression of the disease, reducing cardiovascular death and the use of expensive and resource-intensive KRT, as well as transforming outcomes for millions of people worldwide.^{11 22}

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Recommended measures for reducing the global burden of kidney disease:

- Increase healthcare financing for prevention, early detection for individuals at risk and management of CKD¹¹
- Ensure programmes are in place to integrate CKD care with the prevention and treatment of other NCDs
- Expand healthcare information systems to prevent and manage CKD¹¹
- Incorporate the collection and reporting of quality indicators in CKD care¹¹
- Address workforce shortages through multidisciplinary teams, public education programmes and digital solutions¹¹

Achievement of UHC is the minimum requirement to ensure sustainable and affordable access to early detection and quality treatment of CKD and/or its risk factors, which should translate to a reduction in the burden of kidney failure in the future.⁴³

During the COVID-19 pandemic, preliminary data have shown that about 20–30% of patients hospitalised with COVID-19 developed kidney failure, which led to a surge in the requirement for dialysis. This resulted in high-income countries experiencing shortages of medical supplies and equipment that would typically be a reality for LMICs. At the same time, regular dialysis services were interrupted as hospitals redirect resources to providing care for patients with COVID-19.³⁴ For nephrologists across the globe, kidney disease has always served as an example of inequity, particularly in regions with limited resources. Now is the time to acknowledge and overcome global inequities that impede kidney health, and build sustainable and resilient healthcare systems.²¹

Further reading

The Global Kidney Health Atlas is the outcome of an International Society of Nephrology initiative, providing a baseline understanding of where countries and regions stand with respect to care of patients with CKD across healthcare settings. This resource allows the monitoring of progress through the implementation of various strategies aimed at achieving equitable and quality care for the many patients with kidney disease across the globe.^{11 31}

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