Supportive care for end-stage kidney disease: an integral part of kidney services across a range of income settings around the world

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A key component of treatment for all people with advanced kidney disease is supportive care, which aims to improve quality of life and can be provided alongside therapies intended to prolong life, such as dialysis. This article addresses the key considerations of supportive care as part of integrated end-stage kidney disease care, with particular attention paid to programs in low- and

middle-income countries. Supportive care should be an integrated component of care for patients with advanced chronic kidney disease, patients receiving kidney replacement therapy (KRT), and patients receiving non-KRT conservative care. Five themes are identified: improving information on prognosis and support, developing context-specific evidence, establishing appropriate metrics for monitoring care, clearly communicating the role of supportive care, and integrating supportive care into existing health care infrastructures. This report explores some general aspects of these 5 domains, before exploring their consequences in 4 health care situations/settings: in people approaching end-stage kidney disease in high-income countries and in low- and middle-income countries, and in people discontinuing KRT in high-income countries and in low- and middle-income countries.

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From the perspective of end-stage kidney disease (ESKD), integrated care includes pre-emptive treatment for people with chronic kidney disease (CKD) and those at risk of acute kidney injury, alongside kidney replacement therapy (KRT) (i.e., dialysis or kidney transplantation) and non-KRT conservative care. A key component of treatment for all people with advanced kidney disease is supportive care, which aims to improve quality of life and can be provided alongside therapies intended to prolong life, such as dialysis.¹ This article addresses the key considerations of supportive care as part of integrated ESKD care. This article considers supportive care for people of all ages, both those with and approaching ESKD, with special attention to programs in low- and middle-income countries and emphasize that supportive care should be an integrated part of care for patients with advanced CKD, patients receiving KRT, and patients receiving non-KRT conservative care. The challenges of delivering supportive care as part of cost-effective, integrated kidney care will vary according to disease epidemiology, health care funding and infrastructure, and the cultural and political issues of a country. An action plan to support the optimal delivery of supportive care across a range of health care and income settings is outlined in Harris *et al.*² This article adds granularity to the recommendations by exploring application of the proposed action plan in 4 settings: people reaching ESKD and people receiving KRT in high-income countries (HIC), and in low- and middle-income countries (Table 1). This approach has been chosen to highlight the principal gaps, opportunities, and challenges in supportive care delivery worldwide.

Global inequity in access to kidney care

There is substantial global inequity in access to kidney care. In 2010, an estimated 2.62 million people were receiving KRT

worldwide,³ with approximately 93% of these people living in high- or upper-middle-income countries. This reflects KRT rates in HIC that are 70 times higher than in low- and lower-middle-income countries.⁴ In HIC, the incidence of KRT has increased progressively over the past half century, although conservative care as a treatment alternative for older multi-morbid people has gained acceptance.⁵ Meanwhile, it is in low- and lower-middle-income countries, where ESKD is increasing in prevalence, that most of the 7 million people die each year as a result of unavailable or severely limited KRT.^{3,6} As well as limited funding for KRT itself, these less-affluent nations have health care worker shortages, including both physician and nursing personnel, with nephrologist densities averaging 0.32 per million population, compared with more than 50 per million population in some HICs.^{6–8} Similarly, there is a critical lack of access to palliative care, especially for the poor.⁹

Integrated kidney care can incorporate a combination of treatments that aim to prevent future health complications, such as cardiovascular events and ESKD, management of kidney disease (e.g., KRT), and supportive care. Relative investment in and contribution of the three domains of kidney care are closely linked with the economic setting^{10,11} (Figure 1¹¹). Higher-income countries can provide greater access to all 3 domains, whereas the World Health Organization has rated dialysis service development as low priority in low- and lower-middle-income countries, where they recommend efforts that focus on ESKD prevention.^{12,13} There is a clear need to ensure that efforts to define roles and standards of supportive care are individualized to the health economic contexts in which they will be applied.

Supportive care for people approaching ESKD, on KRT, and withdrawing from KRT

Adults and children with advanced CKD and ESKD experience a high symptom burden and have complex health and social care needs.^{14–16} The definition of supportive care in the setting of kidney disease has been aligned with the World Health Organization’s description of palliative care.¹ Thus defined, supportive care is “. . . an approach that improves the

Table 1 | Illustrative settings in which supportive care is delivered worldwide

Clinical situation	High-income country	Low- or middle-income country
People reaching ESKD	Setting A: supportive care for individuals reaching ESKD where KRT is universally available (includes those who choose or are advised not to start KRT)	Setting B: supportive care for individuals reaching ESKD where KRT availability is restricted or self-funded (includes those who choose, are advised, or are obliged not to start KRT)
People receiving KRT	Setting C: supportive care for individuals on KRT (includes those who choose or are medically advised to withdraw from KRT)	Setting D: supportive care for individuals on KRT (includes those who choose, are medically advised, or are obliged to withdraw from KRT)

ESKD, end-stage kidney disease; KRT, kidney replacement therapy (dialysis and kidney transplantation).

Figure 1 | Components of care received by individuals with kidney disease, conceptualized as preventive (light-blue), management of underlying kidney pathology (mid-yellow), and supportive (dark-green). Contributions of care components are shown in 4 hypothetical settings: 2 high-income, 1 middle-income, and 1 low-income, and are interpretable as countries, regions, or treatment centers. In setting 1, greater total and proportional investment has been made in managing kidney disease (e.g., dialysis services) than in settings 2, 3, or 4. In setting 2, greater emphasis on preventive and supportive care is delivered. In setting 3, preventive treatment and management of kidney disease are funded, but supportive care has not yet been funded. In setting 4, preventive treatment represents a greater proportion of service delivered than in settings 1, 2, and 3, although it receives less investment in absolute terms. Management of kidney disease (e.g., dialysis) is unavailable in setting 4. Data are from White SL, Chadban SJ, Jan S, et al. How can we achieve global equity in provision of renal replacement therapy? *Bull World Health Organ.* 2008;86:229–237.¹¹

quality of life of [people with kidney disease] and their families facing the problems associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual.”¹⁷ Figure 2 shows supportive care integrated into the care of all individuals with kidney disease, including patients with and without ESKD, patients receiving KRT and conservative care, and patients at the end of life. Key components of supportive care include proactive symptom assessment and management, estimation and communication of prognosis, shared decision-making, advance-care planning, as well as end-of-life and bereavement care.¹ Each of the 3 elements of integrated kidney care is required to varying

degrees by patients at different points in their disease course, with a tendency for supportive care to increase toward the end of life (Figure 3).

Although the main components of supportive care have been outlined, and the need to integrate them into routine care has been recognized, no consensus exists as to what constitutes *optimal* supportive care for patients with CKD and ESKD.¹ Clear definitions of the key components and role of supportive care could facilitate the development of pragmatic minimum standards, matched to local health care systems, culture, and economic settings.² Such standards would facilitate the delivery and measurement of supportive care provision, including analysis of cost effectiveness in different settings, to inform resource distribution and program delivery. Delineation of supportive care would facilitate assessment of its interactions with preventive treatment and as a key component in the management of kidney disease.

Figure 2 | Supportive care as part of integrated kidney care. Arrow between conservative care and kidney replacement therapy (KRT) indicates individuals switching their treatment approach. Those with end-stage kidney disease who stop KRT receive supportive care at the end of life, not conservative care, which is provided to individuals reaching the end stage as either a chosen or choice-restricted therapy. AKI, acute kidney injury; CKD, chronic kidney disease; HD, hemodialysis; PD, peritoneal dialysis; Tx, transplantation.

Conservative care for people approaching ESKD not planning to start KRT

Supportive care is the foremost domain of integrated kidney care for individuals receiving conservative care. However, consideration must be given to 3 distinct groups who receive conservative care because provision of supportive care differs for each (Table 2).¹ Those who elect not to start KRT or who are medically advised not to start KRT based on their individual circumstances are categorized as receiving comprehensive conservative care. Among the oldest individuals and those with major comorbidities, a number of observational studies have shown no clear net survival or quality of life benefit from preparing for dialysis compared with having comprehensive conservative care.^{18–21} Individuals who start conservative care because of KRT unavailability receive choice-restricted conservative care. Those who reach ESKD

Figure 3 | Hypothetical patient journey showing variation in components of kidney care with disease/time progression. In this example, a patient already is receiving cardiovascular risk management when their chronic kidney disease (CKD) is diagnosed. CKD care then is added. At a later date, supportive care is added for symptom control. Sometime later they start kidney replacement therapy (KRT). Later again, a deterioration triggers deprescribing of preventive care and subsequently a choice to withdraw from dialysis. Supportive care is continuous through CKD, end-stage kidney disease (ESKD)/KRT, end-of-life, and bereavement phases. Light-blue boxes, preventive care; yellow boxes, kidney care; green boxes, supportive care.

without recognition or a diagnosis are categorized as having unrecognized ESKD. Evidence of the effectiveness of conservative care and the experiences of patients in these contexts is needed. In nations that can provide KRT to all individuals who might benefit, comprehensive conservative care is likely to predominate. Individuals in countries that cannot provide universal KRT may elect to receive conservative care, but most are likely to receive choice-restricted conservative care or die with unrecognized ESKD. Access to supportive care also is likely to be highly restricted for these individuals.

Key components of comprehensive conservative care have been defined (Table 3).¹ As with KRT, comprehensive conservative care includes all treatment domains, such as preventive care (minimize risk of adverse events), management of kidney disease (interventions to delay progression), and supportive care. Nonetheless, treatment elements predominantly relate to supportive care, signifying palliative care as an essential component of comprehensive conservative care. Choice-restricted conservative care and unrecognized ESKD are compatible with provision of both preventive and supportive care, although neither is presumed.

Opportunities and challenges in the delivery of supportive care

Five themes were identified and included in the action plan by Harris *et al.*,² as follows: improving information on prognosis and support, developing context-specific evidence,

establishing appropriate metrics for monitoring care, clearly communicating the role of supportive care, and integrating supportive care into existing health care infrastructures. Generalizable aspects are outlined later, before exploring their consequences in 4 contexts: people approaching ESKD in high- and low- and middle-income countries and people discontinuing KRT in high-, low-, and middle-income countries (Table 1).

Generalizable aspects of the 5 themes

Improving information on prognosis and support for people with ESKD. In all settings, patient preference and perspective must be included in the provision of supportive care. Although in many cultures this will be best achieved through shared decision-making with health care professionals trained in effective communication, it must be recognized that there are different approaches to family involvement in decision-making and these do not always follow East–West cultural stereotypes.²² Regardless, improved evidence is needed regarding how best to support people preparing for life and potential or probable death with ESKD. The probability of ESKD, likelihood of transplantation, and projected survival with each treatment are likely to inform initiation decisions. Dealing with uncertainty is challenging and needs support. Further information also is needed on quality of life and death, and patient-reported experiences. The consequences of providing intensive supportive care for people with kidney disease are largely unknown. These may involve physical and mental health, end-of-life care, and survival, as has been shown in other disease settings.²³

Making available context-specific guidance on supportive care. Guidance on prognosis and supportive care will have the greatest influence if it is readily available, understandable, and context-specific, or in a form that allows it to be interpreted in a context-specific manner (including for children, and so forth, as well as across economic settings). Materials must be accessible to relevant parties and relate to realistic, rather than idealized, care.

Establishing approaches to evaluation of care access and quality. Collecting data on aspects of supportive care for CKD, KRT, and conservative care would provide an integrated picture of total kidney care. Defining optimal and minimum

Table 2 | Definitions of conservative care

Comprehensive conservative care	Conservative care that is chosen or medically advised
Choice-restricted conservative care	Conservative care for patient in whom resource constraints prevent or limit access to kidney replacement therapy; therefore, a choice for conservative care cannot be recognized
Unrecognized G5 CKD	CKD is present but has not been recognized or diagnosed; therefore, a choice for conservative care cannot be recognized

CKD, chronic kidney disease; G5, glomerular filtration rate category 5 CKD. Reproduced with permission from Davison SN, Levin A, Moss AH, et al. Executive summary of the KDIGO Controversies Conference on Supportive Care in Chronic Kidney Disease: developing a roadmap to improving quality care. *Kidney Int.* 2015;88:447–459.¹

Table 3 | Components of comprehensive conservative care

Comprehensive conservative care is planned, holistic, patient-centered care for patients with G5 CKD that includes the following
<ul style="list-style-type: none"> • Interventions to delay progression of kidney disease and minimize risk of adverse events or complications • Shared decision-making • Active symptom management • Detailed communication including advance-care planning • Psychological support • Social and family support • Cultural and spiritual domains of care
Comprehensive conservative care does not include dialysis

CKD, chronic kidney disease; G5, glomerular filtration rate category 5 CKD.

Data are from Davison SN, Levin A, Moss AH, et al. Executive summary of the KDIGO Controversies Conference on Supportive Care in Chronic Kidney Disease: developing a roadmap to improving quality care. *Kidney Int.* 2015;88:447–459.¹

standards of supportive care is a necessary first step to assessing whether and to what standard it is being delivered. Inclusion of metrics such as patient-reported outcomes and experiences, dialysis withdrawal, and quality of end-of-life care would facilitate evaluation of the experience of living and dying with kidney disease.

Clearly communicating the role of supportive care. Supportive and conservative care must not be perceived as cost-saving alternatives to provision of other aspects of kidney care, such as KRT. Defining the role of each domain of integrated kidney care emphasizes the eligibility for supportive care of all individuals, including those receiving KRT. Nomenclature may need to be flexible for communication in different cultures and dialects. Rigor is needed, however, to prevent confusion between conservative care, provided only to those not receiving KRT, and supportive care, which is beneficial to all people with advanced kidney disease.

Integrating supportive care with existing health care supply chains. Effective and efficient supportive care requires integration with existing infrastructures. Increasing levels of multimorbidity means that most people with advanced kidney disease will be living with comorbidity.²⁴ Furthermore, the supportive care needs of people with kidney disease are likely to overlap with those with other life-limiting conditions. Exchange of learning between specialists in kidney disease and experts in multimorbidity and palliative care may be valuable. By defining preventive, kidney, and supportive aspects of kidney management, health care for people with kidney disease may be rationalized.

Setting A: people reaching ESKD in HIC

This section examines the role of supportive care for individuals starting an ESKD treatment modality in which direct costs are paid by the state or an insurer. Supportive care for these individuals has 2 manifestations. The first is as support during treatment decision-making. The second is the supportive care components of each available treatment package—the nature of which might, in turn, influence which is chosen. Broadly speaking, 2 groups of people require attention:

- younger, fitter people who are likely to live substantially longer with KRT than conservative care, deciding on a

long-term treatment strategy combining dialysis modalities and/or transplantation. Although conservative care is exceptional, these people would benefit from supportive care, perhaps most importantly in the form of symptom management and psychological support, during decision-making and alongside KRT; and

- typically older, multimorbid people for whom the survival benefits of KRT are less and might be traded off against the burden of dialysis. Treatment decisions are between dialysis modalities and comprehensive conservative care because transplantation is not medically an option. Supportive care available during decision-making, as part of comprehensive conservative care or alongside KRT, will benefit these people.

Optimizing communication and maximizing patient participation in decision-making is a top priority for adults on or nearing dialysis, their caregivers, and health care professionals.²⁵ Shared decision-making is expected in many HICs.²⁶ Decision support tools have been developed and more are in development.²⁷ Prognostic calculators exist, including some that have been validated in external data sets.²⁸ However, shared decision-making may not always occur in decisions regarding ESKD, in which KRT may be given precedence over comprehensive conservative care during decision-making.²⁷ Meanwhile, nonsystematic efforts to communicate treatment options and aims in advanced kidney disease have been reported.²⁹

Although there are many successful examples of integrated preventive, kidney, and supportive care systems in HICs,¹⁹ barriers and disincentives have the potential to drive under-delivery of supportive care. In some settings this might reflect disproportionate investment in kidney domains of health care (Figure 1), which may convey a risk of overtreatment. Even in settings in which comprehensive conservative care is well established, the availability and nature of services can be variable and ill defined.³⁰

Many HICs have registries that are well placed to appraise delivered care along with dialysis and transplant epidemiology and outcomes. Patient-reported outcome measures have been incorporated into a small number of kidney registry data sets. However, the capture of data for individuals without ESKD is rare, particularly for children. Very little is known about the experiences of people who make an informed decision for comprehensive conservative care.

Recommendations.

- The core components and standards of supportive care, such as symptom control and opportunities for advance-care planning, should be defined in a way that permits measurement.
- Chosen standards must be culturally suitable and sensitive. For example, although shared decision-making is favored in many Western cultures, it may not be a universally appropriate metric as new, non-Western countries develop into HICs and become able to provide KRT more broadly.
- Information on prognosis and supportive care should be freely available to all relevant parties. When appropriate, a

single repository should be maintained to ensure clarity of communication and prevent duplication of work.

- Registries provide a logical means through which to collect required information. Databases should be expanded to include:
 - all individuals with kidney disease, including:
 - children,
 - individuals with acute kidney injury and CKD, and
 - those choosing comprehensive conservative care; and
 - quality of life and quality of death.
- Robust decision support tools should be developed to facilitate shared decision-making between KRT and comprehensive conservative care. These should facilitate discussion of prognosis and transplant likelihood.
- Decision support should be developed for less well-represented populations, including children, and should cover individual and caregiver costs such as travel, loss of employment, and so forth.
- Nephrology services should interface with primary care, community, and palliative services to ensure that people with kidney disease have access to existing supportive care networks and that their special requirements are met.
- Observational and interventional research is required to understand the system and individual effects and costs of introducing standardized supportive care. Interventions such as decision aids must be tested rigorously in real-world settings.

Setting B: people reaching ESKD in low- and middle-income countries

This section examines the role of supportive care for individuals residing in countries where the majority of direct treatment costs are not paid by the state. These are individuals who lack private insurance or personal wealth such that they do not have the opportunity to choose KRT or comprehensive conservative care. They may reside in countries where some citizens have access to health care (e.g., state employees) but there is not yet universal health care coverage. For the majority of these individuals, kidney care is unavailable or unaffordable. As a result, they die with undiagnosed ESKD or receive choice-limited conservative care, usually with no access to palliative care.

Individuals and their families in this setting have different supportive care needs from those in more affluent areas. Given low levels of influence over their treatment, supportive care is likely to play a lesser role in decision support. Nevertheless, a proportion of individuals self-fund a period of KRT. Dialysis may cost 7 to 48 times the average income and can be associated with catastrophic health care costs and precipitation of familial poverty.^{31,32} For those contemplating self-funding, supporting rational decisions with information regarding the survival and quality-of-life benefits of KRT alongside financial costs may reduce the need for early KRT withdrawal and health care-related poverty.

Individuals who cannot access or afford KRT experience high levels of avoidable health-related suffering.³³ These

individuals need supportive care. Deficiencies of and priorities for palliative care in low-income countries are well described.^{9,33} The essential components of supportive care for people dying with/from non-KRT-treated ESKD need defining, but are likely to overlap with familiar palliative care priorities. Where general palliative care services are in place, these may provide models, access to care, and opportunities for establishing costs and effectiveness for those with kidney disease. Supportive care for those receiving choice-restricted conservative care may provide a legitimate alternative for families considering self-funding KRT. Although the need for supportive care is clear, it is vitally important that access to palliation does not contribute to underprovision of kidney and preventive domains of care, except where rigorously developed health economic evidence supports this approach.

In resource-limited settings, choice-limited conservative care can be provided disproportionately to older people, children, and those from lower socioeconomic and minority ethnic groups.³⁴ Capturing data that permit evaluation of inequity could inform policy regarding access to care and equality of services nationally and internationally. This will require metrics that capture delivery of choice-limited conservative care and supportive care. Given the lower penetrance of registries and high levels of undiagnosed ESKD in low- and middle-income countries, routinely collected data are likely to be inadequate.

Recommendations.

- Supportive care should be available to all individuals, including those who self-funding KRT and those who receive choice-limited conservative care. Minimum standards of care should be defined.
- Information on prognosis should be accompanied by full details of cost for families contemplating self-funding.
- Alignment with existing networks for the delivery of palliative care is likely to be necessary.
- Studies are needed to identify the effectiveness, costs, and opportunity costs of providing supportive care in low- and middle-income countries.
- Provision of supportive care must not be regarded as an alternative to developing KRT services or investment in preventive care.

Setting C: people receiving KRT in HICs

This section examines the role of supportive care for people on KRT or withdrawing from state-/insurer-funded KRT. These individuals are likely to have complex health histories including preventive, kidney, and supportive care, the latter commencing in late stages of CKD and continuing on KRT.

Those who stop KRT do not start conservative care, as such (Figure 1), but transition to supportive care becoming the predominant domain. Individuals contemplating KRT cessation are likely to have complex social, psychospiritual, symptom, and informational needs (Figure 4). These requirements for supportive care must be met alongside decision support before and during withdrawal, and, if chosen, end-of-life care after discontinuation.

Figure 4 | Hypothetical patient journey showing variation in components of kidney care with disease/time progression. In this example, a major health event necessitates changes to all components of kidney care, culminating in a discrete shift to a purely supportive approach with the withdrawal of dialysis. Light-blue boxes, preventive care; yellow boxes, kidney care; green boxes, supportive care. CKD, chronic kidney disease.

Withdrawal from KRT is reported for up to 30% of people who receive dialysis in HICs.³⁵ Marked variation in withdrawal rates between countries may reflect differences in culture, practice, and definitions of dialysis withdrawal.³⁶ A unified definition would enable the generation of higher-quality evidence to inform discussions regarding cessation of KRT.³⁷ Increasing levels of comorbidity, including cognitive impairment, are likely to explain at least some of the increase in withdrawal from dialysis.³⁶ To ensure that individuals' wishes regarding dialysis continuation and withdrawal are respected, these must be discussed and recorded (e.g., as part of advance-care planning).

After KRT withdrawal, individuals enter an end-of-life phase and most die within days to weeks.³⁸ HICs are likely to have established systems for delivery of supportive care, such as palliative care clinicians, hospice care, and access to essential medications. It is important that individuals withdrawing from KRT can access such services. This does not always happen, however, even in HICs in this relatively controlled setting, and death after withdrawal from dialysis does not guarantee exemplary symptom control.^{39,40} Given the morbidity and vulnerability of this group, there is an urgent need for metrics and surveillance systems that can quality assure the palliative care received by people at this crucial stage in their treatment. Improved evidence is required regarding medicinal and non-medicinal treatment of symptoms after withdrawal of KRT.¹

Recommendations.

- Supportive care for all individuals on KRT should include discussion of withdrawal and the opportunity for them to share their values and preferences regarding it. This should include development of advance-care plans and directives.
- Access to end-of-life supportive care should be universal for individuals who withdraw from KRT.

- Metrics are required to assess the quality of end-of-life supportive care for individuals who withdraw from KRT. A unified definition of dialysis withdrawal should be operationalized. Data relating to quality of death are needed, but care must be taken not to burden patients and their families during this period.
- Improved evidence is required to facilitate generation of guidelines for the management of symptoms experienced by individuals withdrawing from dialysis.

Setting D: people receiving KRT in low- and middle-income countries

This section examines the role of supportive care for individuals on KRT or withdrawing from KRT in low- and middle-income countries. Similar to HICs, these individuals are likely to have complex health histories including preventive, kidney, and supportive care requirements. Deficiencies in palliative care services are likely to impact the availability of support for social, psychospiritual, symptom, and informational needs of individuals receiving KRT in this setting.³³

Although some patients will elect to withdraw from KRT for clinical reasons (comparable with those discussed in setting C) and many because of financial hardship, an infrequent but important group is those who are compelled to stop for reasons beyond their control. Choice-restricted KRT withdrawal after treatment provider/transplant immune suppression supplier collapse or natural disaster is catastrophic for individuals with ESKD and requires surveillance and reporting at an international level, given the resultant avoidable death and suffering (Figure 5).

The treatment priority for individuals mandated to stop owing to provider collapse or natural disaster is re-establishment of KRT as quickly as possible. When

Figure 5 | Hypothetical patient stories. (a) Patient A starts dialysis for HIV-associated nephropathy and dies while in receipt of kidney replacement therapy. (b) Patient B follows the same initial trajectory, but when the dialysis provider abruptly goes out of business or withdraws from the market, the patient has no option but to transition to choice-restricted conservative care. Patient B dies prematurely and experiences an abrupt onset of palliative care needs at the point of dialysis discontinuation. Light-blue boxes, preventive care; yellow boxes, kidney care; green boxes, supportive care. CKD, chronic kidney disease; ESKD, end-stage kidney disease.

impossible, supportive care for those dying from ESKD is required. Individuals in this setting are likely to be substantially younger and less comorbid than those withdrawing from KRT in HICs. Evidence relating to survival and symptom control cannot be extrapolated between these settings.

Recommendations.

- Supportive care should be available to all individuals on KRT.
- For individuals who withdraw from KRT, intensive supportive and kidney care should be instituted with efforts made to prolong life, where possible.
- When individuals are mandated to withdraw from KRT due to collapse of a provider or natural disaster, the priority should be the re-establishment of KRT.
- Events in which individuals are compelled to withdraw from KRT should be recorded and reported, as should deaths due to dialysis withdrawal.

Although the challenges must not be underestimated, it is possible to provide good supportive care in all 4 of these settings. To illustrate this, 4 of the co-authors have provided a case study from their recent practice (EB, CZ, MB, and MM) ([Supplementary Case Studies](#)).

Conclusion

Supportive care must be an integral part of the care of people with advanced CKD – those approaching ESKD, those on

KRT, and those withdrawing from KRT. To achieve this in all countries of the world, regardless of economic situation, we have identified 5 themes for work covering patient information provision, evidence-based guidance, processes and metrics for measurement, clear communication, and alignment with other chronic disease supply chains and infrastructure. Each of these will need tailoring to be context-sensitive. There is a lot of work to be done, but also a lot we can learn from examples of good practice already in place in high- and low- and middle-income countries.

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SUPPLEMENTARY MATERIAL

Supplementary File (Word)

Case Studies.

Setting A: Comprehensive conservative care in a high-income country. Mark Brown, Department of Renal Medicine, St. George Hospital, Sydney, New South Wales, Australia.

Setting B: Comprehensive conservative care in a low- or middle-income country. Carlos Zuniga, School of Medicine, Catholic University of Santísima Concepción, Concepcion, Chile.

Setting C: Withdrawing dialysis in a high-income country. Edwina Brown, Imperial College Healthcare NHS Trust, London, UK.

Setting D: Withdrawing KRT in a low- or middle-income country. Mignon I. McCulloch, Paediatric Intensive and Critical Unit, Red Cross War Memorial Children's Hospital, University of Cape Town, Cape Town, South Africa.

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