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Global Policy Barriers and Enablers to Exercise and Physical Activity in Kidney Care

Paul N. Bennett, MHSM, PhD[*,†], Masahiro Kohzuki, MD, PhD[‡], Clara Bohm, MD, MPH, FRCPC[§], Baback Roshanravan, MD, MS, MSPH, FASN[¶], Stephan J. L. Bakker, MD, PhD[**], João L. Viana, PhD[††], Jennifer M. MacRae, MSc, MD[‡‡], Thomas J. Wilkinson, PhD[§§], Kenneth R. Wilund, PhD[¶¶], Amaryllis H. Van Craenenbroeck, MD, PhD[***], Giorgos K. Sakkas, PhD[†††], Stefan Mustata, MD[‡‡‡], Kevin Fowler, BS[§§§], Jamie McDonald, PhD[¶¶¶], Geovana Martin Aleamañy, PhD[****], Kirsten Anding, MD[††††], Keith G. Avin, PhD, DPT[‡‡‡‡], Gabriela Leal Escobar, SCN[§§§§], Iwona Gabrys, MKin[¶¶¶¶], Jill Goth, MSW[*****], Myriam Isnard, MD, MSc[†††††], Manisha Jhamb, MD, MPH[‡‡‡‡‡], Jun Chul Kim, MD, PhD[§§§§§], John Wing Li, MBBS, MM(Clin Epi), FHKAM[¶¶¶¶¶], Courtney J. Lightfoot, PhD[§§], Mara McAdams-DeMarco, PhD[******], Fabio Manfredini, MD, PhD[††††††], Anthony Meade, BSc, MND[‡‡‡‡‡‡], Stig Molsted, PhD[§§§§§§], Kristen Parker, MKin[¶¶¶¶¶¶], Eva Seguri-Orti, PhD[*******], Alice C. Smith, PhD[§§], Nancy Verdin, BScOT[†††††††], Jing Zheng, PhD[‡‡‡‡‡‡‡], Deb Zimmerman, MD, MSc[§§§§§§§], Stephanie Thompson, PhD, MD[¶¶¶¶¶¶¶] Global Renal Exercise Network (GREX)

[*]Medical and Clinical Affairs, Satellite Healthcare, San Jose, California

[†]Clinical and Health Sciences, University of South Australia, Adelaide, South Australia, Australia

[‡]Department of Internal Medicine and Rehabilitation Science, Tohoku University Graduate School of Medicine, Sendai City, Japan

[§]University of Manitoba, Winnipeg, Canada

[¶]University of California Davis, Davis, California

[**]Department of Internal Medicine, University Medical Center MC Groningen, University of Groningen, Groningen, the Netherlands

[††]Research Center in Sports Sciences, Health Sciences and Human Development, University Institute of Maia, Maia, Portugal

[‡‡]Cumming School of Medicine, University of Calgary, Calgary, Alberta, Canada

[§§]Department of Health Sciences, University of Leicester, Leicester, UK

[¶¶]Department of Kinesiology and Community Health, University of Illinois at Urbana-Champaign, Champaign, Illinois

[***]Department of Nephrology, University Hospitals Leuven, Leuven, Belgium

[†††]Cardiff Metropolitan University, Cardiff, UK and University of Thessaly, Volos, Greece

[‡‡‡]Faculty of Medicine, University of Calgary, Calgary, Canada

Address correspondence to Dr Paul N. Bennett, PhD, Associate Professor, University of South Australia Adelaide, South Australia, Australia and Satellite Healthcare, California, USA. paul.bennett@unisa.edu.au.

§§§The Voice of the Patient, Elmhurst, Illinois

¶¶¶School of Sport, Health and Exercise Sciences, Bangor University, Bangor, UK

****Hospital General de México “Dr. Eduardo Liceaga”, Mexico City, Mexico

††††Nephrology, KfH Nierenzentrum Bischofswerda, Bischofswerda, Germany

‡‡‡‡Indiana University Department of Physical Therapy, Indianapolis, Indiana

§§§§Department of Nephrology Instituto Nacional de Cardiologia Ignacio Chávez, Mexico City, Mexico

¶¶¶¶University of Alberta Hospital, Edmonton, Alberta, Canada

*****Programs & Public Policy, The Kidney Foundation of Canada, Montreal, Quebec, Canada

†††††Médipôle, Avignon, France

‡‡‡‡‡University of Pittsburgh, Pittsburgh, Pennsylvania

§§§§§Division of Nephrology, Department of Internal Medicine, CHA Gumi Medical Center, CHA University, Gumi, Republic of Korea

¶¶¶¶¶Renal Medicine, Nepean Hospital, Katoomba, New South Wales, Australia

******Johns Hopkins University, Baltimore, Maryland

††††††Department of Biomedical Sciences and Surgical specialties, University of Ferrara, Ferrara, Italy

‡‡‡‡‡‡Royal Adelaide Hospital, Adelaide, Australia

§§§§§§Nordsjaellands Hospital, Hillerød, Denmark

¶¶¶¶¶¶Alberta Kidney Care – South, Calgary, Alberta, Canada

*******Department of Physiotherapy, Universidad Cardenal Herrera-CEU, Alfara del Patriarca, Valencia, Spain

†††††††University of Alberta, Red Deer, Canada

‡‡‡‡‡‡‡School of nursing, Guangdong Pharmaceutical University, Guangzhou, P.R. China

§§§§§§§Ottawa Hospital, Ottawa, Ontario, Canada

¶¶¶¶¶¶¶Department of Medicine, University of Alberta, Edmonton, Canada

Abstract

Objective: Impairment in physical function and physical performance leads to decreased independence and health-related quality of life in people living with chronic kidney disease and end-stage kidney disease. Physical activity and exercise in kidney care are not priorities in policy development. We aimed to identify global policy-related enablers, barriers, and strategies to increase exercise participation and physical activity behavior for people living with kidney disease.

Design and Methods: Guided by the Behavior Change Wheel theoretical framework, 50 global renal exercise experts developed policy barriers and enablers to exercise program implementation

and physical activity promotion in kidney care. The consensus process consisted of developing themes from renal experts from North America, South America, Continental Europe, United Kingdom, Asia, and Oceania. Strategies to address enablers and barriers were identified by the group, and consensus was achieved.

Results: We found that policies addressing funding, service provision, legislation, regulations, guidelines, the environment, communication, and marketing are required to support people with kidney disease to be physically active, participate in exercise, and improve health-related quality of life. We provide a global perspective and highlight Japanese, Canadian, and other regional examples where policies have been developed to increase renal physical activity and rehabilitation. We present recommendations targeting multiple stakeholders including nephrologists, nurses, allied health clinicians, organizations providing renal care and education, and renal program funders.

Conclusions: We strongly recommend the nephrology community and people living with kidney disease take action to change policy now, rather than idly waiting for indisputable clinical trial evidence that increasing physical activity, strength, fitness, and function improves the lives of people living with kidney disease.

Introduction

CHRONIC KIDNEY DISEASE (CKD) is associated with an increasing human, economic, and health resource burden, and the sustainability of worldwide kidney care growth is uncertain.[1] Increased focus on globally cost-effective, preventative lifestyle interventions, such as increased physical activity behavior, is required.[2] Physical dysfunction, with low muscle mass and low muscle strength, is an enormous threat to the quality of life and independence of people with CKD[3] and end-stage kidney disease (ESKD).[4] Impaired physical function and sedentary lifestyles are associated with comorbid disease progression and increased mortality risk.[5,6] Unfortunately, people with CKD and ESKD have been largely unsupported about engaging in physical activity and exercise interventions in part because of the limited focus on policy barriers and enablers.[7]

Health and social policy reform can result in improved health outcomes both at population and individual levels.[8] Policy barriers can relate to funding, service provision, legislative, regulatory, clinical practice guideline recommendations, environmental, social, communication, and marketing elements.[9] Although lack of physical activity is consistently perceived to be a local issue, a broader global policy review has been recommended to understand policy barriers worldwide.[10] We aimed to develop a consensus to identify global policy-related enablers, barriers, and strategies to increase exercise participation and physical activity behavior for people living with kidney disease.

Methods

In November 2019, the Global Renal Exercise Network (GREX) held an inaugural meeting in Alberta, Canada, that was attended by an international mix of 50 leading clinicians, researchers, and people living with kidney disease.[10] The overarching objective of this meeting was to increase the inclusion of physical activity and exercise in kidney care

on a global scale. The group defined physical activity as bodily movements produced by skeletal muscles that result in energy expenditure[11] and exercise as planned, structured, and repetitive bodily physical activity designed to improve physical function and quality of life.[12]

Guided by the Behavior Change Wheel framework,[9] the attendees explored policy barriers and enablers to exercise program implementation and physical activity promotion in kidney care and developed a consensus document over the succeeding 8 months.

The consensus process consisted of developing themes from 50 global regional exercise experts attending the GREX workshop (North America, South America, Continental Europe, United Kingdom, Asia, and Oceania). These themes were submitted to the coordinating GREX group who developed these themes into a 11000-word summary document. This document was then disseminated to the larger consensus group members who refined the consensus document into concise 3000 word "Policy Barriers and Enablers to Exercise and Physical Activity in Kidney Care" that was approved and endorsed by the GREX Network (Figure 1).

Result of Consensus Process

The results of the consensus process identified the enablers and barriers to exercise and physical activity. This was aligned with the Behavior Change Wheel approach of funding, service provision, legislative, regulatory, clinical practice guideline recommendations, environmental, social, communication, and marketing as elements required for broad policy change.[9] In addition, the consensus group developed potential strategies that nephrology programs could embrace to increase exercise and physical activity for people in their care.

Enablers, Barriers, and Strategies

Funding—The funding of renal services is frequently linked to quality metrics that drive models of clinical care.[13] Although patients with kidney disease have identified components of lifestyle management as priorities in renal care,[14,15] quality metrics in place commonly fail to incentivize preventive lifestyle activities, such as physical activity.[16] In the United States (US), the Center for Medicare and Medicaid Services administers the Quality Incentive Program that links financial reimbursements for dialysis facilities to a core set of quality measures.[17] Unfortunately, these quality measures are largely based on biochemical parameters, are not associated with patient-reported outcome measures,[18] and do not incentivize action upon measures of quality of life and dialysis experience.[19] As a result, these metrics lead to misaligned priorities between the dialysis providers and people requiring dialysis. In countries with one-payer, government-funded universal health-care systems, there is limited funding for lifestyle activity programs. Japan is the outstanding exception, offering exercise training for people with CKD stage 3B–5, funded by the national health insurance system.[20,21]

Two strategies that can address funding limitations are to (1) mandate funding-linked physical activity metrics and (2) increase physical disability and sarcopenia diagnostic coding (Table 1). Given the high prevalence of physical disability among people with CKD

and ESKD,[22] increased awareness and use of such diagnostic codes can provide accurate estimates of the prevalence of these conditions to help mobilize reimbursable rehabilitation services. This requires greater coding vigilance similar to what is currently performed in cardiac rehabilitation.[23] Implementing the aforementioned strategies could drive health services toward increasing physical function and activity levels in people with CKD and ESKD.

Service Provision—Globally, the provision of healthy lifestyle interventions is limited by health service fragmentation. Preventative exercise and rehabilitation programs rely on the coordination and alignment of primary, secondary, and tertiary care.[24] Most exercise training programs for people with chronic diseases are managed by community organizations that are commonly not aligned with tertiary renal care.[21] The result is that people with CKD and ESKD, who are physically deteriorating, fall into a gap without access to funded exercise programs that individuals living with other chronic diseases have access to[25] (i.e., cardiac rehabilitation[23,26] and pulmonary rehabilitation).[27–29] The inclusion of physical activity assessment, prescription, and management as part of routine clinical care in CKD and ESKD clinical pathways and policies would address this gap. Unfortunately, the capacity of nephrology clinicians to provide exercise expertise is currently limited.[30]

Most people living with kidney disease believe that an increase in physical activity is beneficial and agree that they would exercise if advised to do so by their physician.[31,32] Although nephrologists in some countries (Canada, Australia, and New Zealand) believe that exercise counseling is within their scope of practice,[25] few nephrologists consistently discuss exercise as a relevant component of a treatment or prevention strategy during clinical interactions.[30,33] Nephrology nurses do not always believe it is their responsibility to conduct exercise programs,[34] and they are restricted by high workloads,[35] limitations in scope of practice,[36] and lack of education relating to physical activity.[37]

Limited evidence and experience, absence of guidelines, and safety concerns also impact the nephrology clinician's confidence and capacity to motivate people to increase physical activity. Although people with CKD and ESKD have extremely low functional status compared with the general population, and are at a greater risk for cardiovascular events, evidence to support restricting exercise does not exist.[38] A systematic review of 45 CKD and ESKD exercise studies reported no increase in the risk of cardiac events, serious adverse events, hospitalization, or mortality as a consequence of exercise, but rather significant positive effects on physical fitness, walking capacity, blood pressure, heart rate, and health-related quality of life.[39] Taking into account contraindications such as cardiac instability and active illnesses, encouraging people to move more is likely to almost always be safe. As clinicians become more comfortable with encouraging physical activity in individuals with various comorbidities and levels of disabilities, the number of people that are approached to participate in exercise programs will increase.[40]

Strategies to address service provision policy barriers include

1. *Developing better evidence for exercise programming and physical activity programming* in individuals with varying levels of function and comorbidities.

Promoting exercise research in CKD to achieve decreased disease burden and decreased costs is relevant to policy-makers.[41,42] Recent developments to address the lack of evidence have highlighted the need for large studies that focus on the effect of exercise programs on the risk of cardiovascular disease, symptom burden, morbidity, and mortality.[25,43–45] Given most renal interventional studies are underpowered and subject to selection bias,[45] international, well-funded, pragmatic multicenter clinical trials are required.

2. *Specific education to address concerns or perceived risks of exercise participation* in undergraduate and postgraduate renal professional training programs is likely to contribute to increasing emphasis on exercise, physical activity, and patient referral to appropriately qualified exercise professionals.[37,46]

3. *A policy of integrating clinical tools to facilitate addressing exercise and physical activity in clinical encounters* such as the provision of exercise guides,[47–49] simple tailored exercise prescriptions, and brief clinical safety reviews (such as checking vitals, ruling out acute cardiovascular symptoms). These clinical algorithms in the form of checklists can assist renal clinicians without exercise professional knowledge and skills.

4. *Actionable national health system policy initiatives* to increase the opportunistic delivery of consistent and concise healthy lifestyle information will enable all individuals to engage in conversations about health across all organizations and populations.[50]

5. *Increasing the number of exercise professionals associated with renal programs*. The most successful strategy to date has been the policy to include exercise professionals (exercise physiologists, kinesiologists, physical therapists, rehabilitation specialists, occupational therapists, athletic trainers, personal trainers, student clinical placements) in renal programs to ensure the delivery of safe, individualized, and effective services and to support the sustainability of exercise participation and physical activity behavior change across a range of in-center, community, and home-based settings.[51–56]

Regulations and Legislation—The regulations and policies governing renal clinicians' scope of practice may constrain clinically sustainable renal exercise programs. However, nephrologists, renal dietitians, renal social workers, and renal nurses can provide exercise and lifestyle advice while still acting in accordance with their scope of practice.[57] In the UK, clinicians can prescribe exercise as if prescribing a medication "off-license" if they are covered to do so by their hospital's trust and approved to make such prescriptions as part of their professional registration.[58] In the regions where exercise professionals provide renal exercise programs, coverage can be assured through their professional registration organizations.

Potential policy strategies to mitigate liability concerns could include stratifying those with the highest risk of complications by assessing baseline physical function status. Policies can include guidelines for reassessment by an exercise professional, such as after a hospitalization episode, hemodynamic instability, or a new or chronic condition.[59] Higher

risk groups could be triaged for referral to exercise professionals in physical rehabilitation services before engaging in structured exercise and physical activity programs[60].

Considered from another perspective, the ethical requirements of nonmaleficence and beneficence implore the clinician to do all that is within their scope of practice to benefit and mitigate harm to people in their care. Therefore, addressing the needs of people with kidney disease who require support to prevent physical deterioration and disability is an ethical responsibility.[37]

The lack of a career pathway for renal exercise professionals is a further regulatory barrier to the development of expert renal exercise practice. Accreditation is unavailable in most countries except for Japan where the Japanese Society of Renal Rehabilitation, established in 2011, initiated a certification program for the Registered Instructor of Renal Rehabilitation (RIRR).[61] The RIRR has embraced interdisciplinary members (nephrologists, registered nurses, physical therapists, occupational therapists, clinical laboratory technicians, medical engineers, dietitians, and exercise trainers) as certified renal rehabilitation instructors who have qualified by passing the RIRR examination. Once qualified, clinicians' services are then covered by the Japanese National Health Insurance System.

Guidelines—Guidelines addressing renal physical activity implementation strategies are restricted by limited robust evidence. Furthermore, the limited number of rigorous randomized controlled trials addressing physical function have been performed under optimal conditions and often fail to be translated into real-world clinical settings. Therefore, pragmatic clinical trials exploring physical activity in kidney disease should study samples representative of the general CKD population and assess outcomes such as quality-adjusted life years, disability-adjusted life years, and patient-reported outcome measures. Qualitative methodologies that address the importance of exercise and physical activity participation and important factors to consider in the implementation of such programs from the perspective of people living with kidney disease can enhance the findings of quantitative studies.[55]

Policy-makers require large robust studies to move from non–evidence-based suggestions to definitive recommendations, and although the challenges in designing and conducting randomized controlled trials are not unique to exercise interventions, the absence of influential studies supporting exercise in the nephrology literature is particularly striking. To accelerate knowledge generation and education, the formation of a global clinical research consortium focused on renal exercise and physical activity can contribute to the production and application of these evidence goals.

The recent UK Renal Association Clinical Practice Guidelines on Haemodialysis provides the most recent and practical guidelines using the best evidence available promoting intradialytic exercise.[62] The US Kidney Disease Outcomes Quality Initiative clinical practice guidelines recommend exercise and questionnaire-based assessments; however, there are limited actionable recommendations for those with poor physical function.[63,64] Guidelines could include recommendations that physical activity initiatives be mandatory within renal programs.

The Kidney Disease Improving Global Outcomes Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease[65] recommends that individuals with CKD engage in physical activity for at least 30 minutes per day, 5 times per week. Importantly, a blanket guideline such as this fails to reflect the complexities that exist for people with kidney disease who are burdened with fatigue and weakness.[66] Anything beyond maintenance of activities of daily living may be overwhelming for many.

Although guideline development does not always result in practice change, guidelines can be useful for policy-makers to guide the best policies for clinical care. Thus, exercise and physical activity guidelines such as the upcoming European Renal Best Practice benefits and harms of exercise training in people with CKD (https://www.era-edta.org/en/exercise-as-erbp-guideline-topic/) and the International Society of Peritoneal Dialysis/GREX Peritoneal Dialysis Clinical Recommendations Project (http://grexercise.kch.illinois.edu/) will be beneficial for policy-makers.

Environment and Social Elements—Local neighborhoods and climates matter when developing policy to increase physical activity in CKD and ESKD. People with ESKD have ranked their home as their preferred exercise location, followed by their neighborhood and gym.[31] Possession of home exercise equipment and perceived access to physical activity opportunities in the community have been positively associated with the maintenance of postcardiac rehabilitation exercise.[67] These findings are likely transferrable to the kidney disease population. Grants for the acquisition of home exercise equipment for motivated financially disadvantaged people with kidney disease could be made available through local kidney foundations or charitable groups that often have favorable taxation arrangements. People with kidney disease can also be directed via social media to walking groups and gyms in their area that can provide a physically active environment for people with multiple comorbid illnesses.

When exercise at home cannot be undertaken, exercise in, or close to, a health clinic may be preferred. Unfortunately, inflexible or unavailable transport can be a barrier to physical activity.[68] To overcome this barrier, gymnasiums or fitness areas could be incorporated into newly designed renal clinics and dialysis units to facilitate the implementation of routine exercise and physical activity, ensuring strict precautions to maintain high standards of infection control. This would address transportation barriers and potential fatigue associated with attending multiple appointments and traveling to places of exercise.[69,70] Alternatively, funded group exercise programs, where people can be placed into groups according to their location of residence (using postal codes) with sponsored community transportation, can facilitate group exercise, foster mutual encouragement, and create an exercise community for people with kidney disease.

Limited guidelines or policies have been developed to address exercise safety at home or in supervised, clinical environments. Policies are recommended to ensure functional limitations, fear of falling, recent hospitalizations, cardiovascular stability, or the presence of comorbid conditions are recognized and addressed in recommended programming, while still encouraging physical activity.[59] Both home- and clinic-based exercise programs require financially feasible equipment that is easily maneuverable with appropriately designed

handles and requires minimal storage space.[55] Elastic fitness bands are ideal as they are inexpensive and easy to store, and people can keep their bands separate from others to minimize cross-infection if participating in group exercise programs.[71] Designing future clinics to enhance space for exercise equipment storage and support staff, such as patient care assistants or service workers, is also an important strategy to help support such exercise initiatives.[7] Policies that support and outline staff roles, storage, cleaning, infection control, and moving of exercise equipment such as standard operating procedures can support exercise engagement in renal programs.[72]

Communication and Marketing—Effective communication and marketing are required to influence health and social policy at various levels of administration and government. This has been a great challenge for the nephrology community. Historically, encouraging and mandating physical assessment and exercise prescription in clinical practice has been largely unsuccessful. National and international nephrology associations can collaborate with rehabilitation and exercise professional organizations to increase the awareness of the impact of physical dysfunction and inactivity in individuals with kidney disease and help develop professional career paths to address the deficit of expertise in this area.[61] The JSRR has led the way in this realm, managing to successfully combine nephrology with exercise professionals.[61] This has led to the concept of renal rehabilitation which has become accepted among multiple stakeholders in Japan including nephrologists, exercise professionals, nutrition specialists, nurses, and people living with kidney disease.[73]

On the global stage, GREX is working with professional nephrology societies (International Society of Nutrition and Metabolism) and renal exercise groups (European Association of Rehabilitation in CKD and the JSRR) to improve the evidence base for physical activity and exercise, highlight the known benefits, and provide support for the implementation of physical activity programs.[74] GREX is actively pursuing certification processes, international collaborative research, and implementation projects to continue to promote exercise and physical activity in CKD across the globe. Through each of these activities, GREX is hoping to raise awareness among nephrologists, people living with kidney disease, and major decision-makers about the benefits of exercise in CKD and to promote strategies for increased implementation of physical activity programs.

In addition to established professional nephrology organizations, highly effective organizations run by, and representing, people with kidney disease have a pivotal role to play. Government, policy-makers, and health-care providers require a voice and input from the true kidney experts, those who are living with kidney disease. Not-for-profit health charities and nongovernment organizations supporting kidney health can be found in most countries, and many have been successful in partnering with local health service activities. These organizations can offer expertise and support to pilot projects and initiatives to encourage activity and patient-centered research within the renal population. The involvement of people living with kidney disease in evaluating exercise and physical activity initiatives provides a strong basis for the adoption of policies and practices. This strategy can provide the “patient perspective” to challenge or refute perceived barriers that appear insurmountable to those working in the health-care system.

Globally, we are an increasingly diverse world in terms of race, color, ethnicity, nationality, religion, socioeconomic status, education, marital status, language, age, gender, gender expression, gender identity, sexual orientation, mental or physical ability, genetic information, and learning styles. Integrating the voice of the person living with kidney disease from all individuals into policy requires the voice of those from all diverse backgrounds. In particular, the development and dissemination of educational resources using traditional and social media methods for those from all backgrounds is vital for a culture of exercise and physical activity to be maintained. Globally, minorities are particularly at risk of CKD, physical inactivity, and lifestyle diseases, yet insufficient resources are allocated to generate educational materials that meet these groups' specific requirements.

The barriers to increasing physical activity behavior in people living with kidney disease are numerous. Overcoming these barriers requires all stakeholders associated with kidney care to consider what each can do to enhance policy development and implementation in this area. We have summarized policy initiatives that can enable diverse stakeholders to better encourage physical activity and exercise participation, independence, and improved quality of life in people with kidney disease in Table 2.

Conclusion

The effective delivery of exercise interventions and physical activity promotion via clinical services will require pragmatic policies to ensure the development of sustainable systems that support education, leadership, expertise, facilities, and equipment. People living with kidney disease, who are burdened with low physical function and high prevalence of troublesome symptoms, require global and local policy reform to address funding, service provision, legislation, regulations, guidelines, environmental aspects, and communication and marketing to maintain physical activity and a high quality of life. Given that other chronic disease communities have pre-existing, long-adopted exercise and physical activity policies, we strongly recommend that the nephrology community act now to promote "moving more" to improve the lives of people living with kidney disease.

Practical Application

Even though physical dysfunction decreases the quality of life and independence of people with kidney disease, physical activity and exercise is not a policy priority. Clinicians, administrators, renal care provider organizations, program funders, and education providers are well positioned to incorporate and promote local and regional policies to improve the physical function of individuals with kidney disease.

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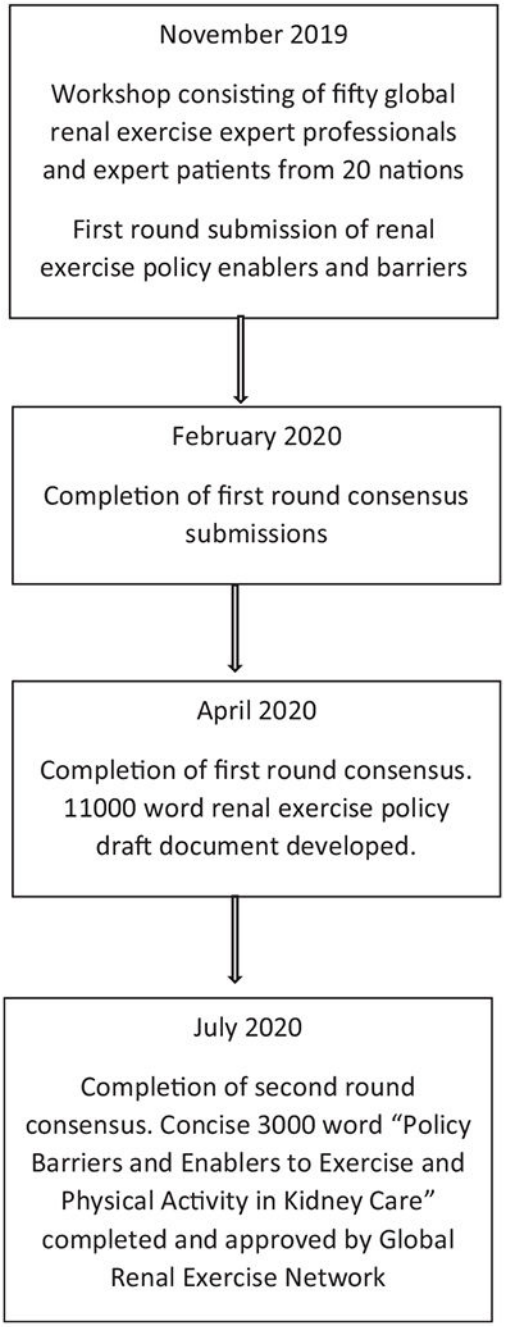

Figure 1.
Global renal exercise network policy consensus process.

Table 1.

Exercise and Physical Activity Policy Barrier Domains and Strategies in Kidney Care

Domain	Policy Strategies in Kidney Care
Funding	• Mandate funding-linked exercise and physical activity metrics • Increase and improve physical disability diagnostic coding • Fund renal exercise professionals
Service provision	• Integrate appropriate clinical algorithms for nonexercise renal professionals that include clinical algorithms, tailored exercise prescriptions, and brief clinical safety reviews • Develop and introduce nationwide policies that mandate the opportunistic delivery of consistent and concise healthy lifestyle information • Integrate cost-effective renal exercise professional models of care • Include exercise and physical activity education in undergraduate and graduate renal professional training programs
Regulations and legislation	• Support policy that endures liability cover for health professionals supporting increased physical activity • Decrease risk by introducing stratified activity risk assessment • Develop an education and accreditation process for renal exercise professionals
Guidelines and research	• Improved evidence through international, well-designed pragmatic clinical trials • Advance the idea of a global clinical renal exercise and physical activity research consortium into reality
Environmental and social	• Design fitness areas into outpatient and dialysis centers • Design and store exercise equipment to maximize staff and patient safety • Develop and coordinate policy-supported, funded group physical activity and exercise programs
Communication and marketing	• Encourage national and global nephrology associations to collaborate with rehabilitation and exercise professional organizations • Recommend that organizations supporting people with kidney disease lobby government, policy-makers, and health-care providers to include their voice in policy initiatives • Engage with minority diverse communities to ensure information and education available to all

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Table 2.

Renal Exercise and Physical Activity Policy Recommendations for Nephrology Stakeholders

Stakeholder	Recommendations
Nephrologists and renal clinicians	• Include physical function and physical activity as part of the medical history • Discuss exercise and physical activity as interventions for risk factor modification • Support exercise and physical activity studies by encouraging participation • Determine medical clearance when indicated only before initiating vigorous exercise
Renal care provider organizations	• Include physical activity assessment and strategies in clinical pathways • Develop local, regional, and national renal physical activity key performance indicators • Advocate for exercise professionals with the capacity to individualize exercise and physical activity assessment and counseling • Disseminate free online toolkits already available for exercise programs • Seek opportunities and partnerships with universities specializing in exercise professional training for clinical placements • Design gymnasiums, equipment, and activity centers in future clinic design
Funders	• Include exercise professionals in future funding models • Include physical activity credits to offset medication or insurance costs • Promote fitness membership in insurance packages • Include physical activity metrics in funding models • Provide incentives for clinics that promote physical activity
Education providers	• Develop short course, online, and postgraduate education options in renal rehabilitation • Develop nephrology exercise certification programs • Increase and incentivize exercise and physical activity education in nephrology medicine and nursing programs • Increase the amount of renal education in exercise professional courses • Seek opportunities with renal providers for student placement in renal programs