Surgical delays cannot be avoided in patients unfit for surgery at the time of admission because of poor health status, severe comorbidities, or previous medication. Some authors[15,16] reported that early surgery could increase mortality in those patients. We agree that surgery must be done as quickly as possible, and surgery within 6 h might provide benefits for those patients who are fit for surgery at admission. However, accelerated surgery might negatively affect patients' outcomes by preventing or limiting the opportunity for optimisation of patients' medical conditions before surgery. It seems more prudent to have further well designed studies before advising surgery within 6 h for all patients.

Deliberately delaying surgery is unethical, which precludes a randomised study on the effect of delaying surgery. In our opinion, the method proposed by the HIP ATTACK investigators is ethically appropriate. Further study is needed to examine the differences in outcomes between medically fit and unfit patients, and to establish whether accelerated surgery will produce better outcomes and yield cost-effective benefits.

We declare no competing interests.

*Alejandro Lizaur-Utrilla, Fernando A Lopez-Prats
lizaur1@telefonica.net

Department of Traumatology and Orthopaedics, Faculty of Medicine, Miguel Hernandez University, San Juan de Alicante, Alicante 03202, Spain

1 Leal J, Gray AM, Prieto-Alhambra D, et al. Impact of hip fracture on hospital care costs: a population-based study. *Osteoporos Int* 2016; **27:** 549–58.
2 Khan SK, Kalra S, Khanna A, Thiruvengada MM, Parker MJ. Timing of surgery for hip fractures: a systematic review of 52 published studies involving 291 413 patients. *Injury* 2009; **40:** 692–97.
3 Chlebeck JD, Birch CE, Blankstein M, Kristiansen T, Bartlett CS, Schottel PC. Nonoperative geriatric hip fracture treatment is associated with increased mortality: a matched cohort study. *J Orthop Trauma* 2019; **33:** 346–50.
4 Nyholm AM, Gromov K, Palm H, Brix M, Kallemose T, Troelsen A. Time to surgery is associated with thirty-day and ninety-day mortality after proximal femoral fracture: a retrospective observational study on prospectively collected data from the Danish fracture database collaborators. *J Bone Joint Surg Am* 2015; **97:** 1333–39.
5 Orosz GM, Magaziner J, Hannan EL, et al. Association of timing of surgery for hip fracture and patient outcomes. *JAMA* 2004; **291:** 1738–43.
6 Bretherton CP, Parker MJ. Early surgery for patients with a fracture of the hip decreases 30-day mortality. *Bone Joint J* 2015; **97-B:** 104–08.
7 American Academy of Orthopaedic Surgeons. Management of hip fractures in the elderly. Evidence-based clinical practice guideline. Sept 5, 2014. https://www.aaos.org/research/guidelines/hipfxguideline.pdf (accessed Jan 12, 2020).
8 National Institute for Health and Care Excellence. Clinical guideline [CG124]. Hip fracture: management. May, 2017. https://www.nice.org.uk/guidance/cg124 (accessed Jan 12, 2020).
9 Scottish Intercollegiate Guidelines Network. Management of hip fracture in older people: a national clinical guideline. June, 2009. https://www.sign.ac.uk/assets/sign111.pdf (accessed Jan 12, 2020).
10 Uzoigwe CE, Burnand HG, Cheesman CL, Aghedo DO, Faizi M, Middleton RG. Early and ultra-early surgery in hip fracture patients improves survival. *Injury* 2013; **44:** 726–29.
11 The HIP ATTACK Investigators. Accelerated surgery versus standard care in hip fracture (HIP ATTACK): an international, randomised, controlled trial. *Lancet* 2020; published online Feb 9. https://doi.org/10.1016/S0140-6736(20)30058-1.
12 Gandhi R, Perruccio AV. Reducing mortality and morbidity following hip fracture: is expedited surgery the way to go? *CMAJ* 2016; **188:** e277–78.
13 Vidán MT, Sánchez E, Gracia Y, Marañón E, Vaquero J, Serra JA. Causes and effects of surgical delay in patients with hip fracture: a cohort study. *Ann Intern Med* 2011; **155:** 226–33.
14 Simunovic N, Devereaux PJ, Sprague S, et al. Effect of early surgery after hip fracture on mortality and complications: systematic review and meta-analysis. *CMAJ* 2010; **182:** 1609–16.
15 Lizaur-Utrilla A, Martinez-Mendez D, Collados-Maestre I, Miralles-Muñoz FA, Marco-Gomez L, Lopez-Prats FA. Early surgery within 2 days for hip fracture is not reliable as healthcare quality indicator. *Injury* 2016; **47:** 1530–35.
16 Yonezawa T, Yamazaki K, Atsumi T, Obara S. Influence of the timing of surgery on mortality and activity of hip fracture in elderly patients. *J Orthop Sci* 2009; **14:** 566–73.

The global burden of chronic kidney disease


Leeds Teaching Hospitals NHS Trust/Science Photo Library

Published **Online** February 13, 2020 https://doi.org/10.1016/S0140-6736(19)32977-0

See **Articles** page 709

Chronic kidney disease (CKD) is a non-communicable disease usually caused by diabetes and hypertension.[1] Cardiovascular disease is the major cause of the early morbidity and mortality sustained by patients with CKD. The severity of CKD can be quantified by a low serum creatinine-based estimated glomerular filtration rate (eGFR), which indicates excretory kidney function, and raised urinary albumin measured by the urinary albumin-to-creatinine ratio (ACR), which is a marker of kidney damage.[2] The Kidney Disease: Improving Global Outcomes classification system for staging CKD is based on eGFR and ACR and is widely used in clinical practice.

In *The Lancet*, the Global Burden of Disease (GBD) Chronic Kidney Disease Collaboration report a comprehensive analysis of the global prevalence and burden of CKD.[3] The researchers used established GBD methodology in their analysis of data for 1990–2017 from 195 countries. Complex statistical modelling was applied to minimise uncertainty in primary data, and predictive covariates and geographical proximity estimates were used to maximise accuracy for countries with limited primary data.

In 2017, the global prevalence of CKD was 9·1% (95% uncertainty interval [UI] 8·5 to 9·8), which is roughly 700 million cases. Since 1990, the prevalence of CKD has increased by 29·3% (26·4 to 32·6), but age-standardised prevalence has remained unchanged during this period (1·2%, –1·1 to 3·5). A substantial increase was noted in age-standardised incidence of end-stage kidney

disease (ESKD) treated by renal replacement therapy, with dialysis and kidney transplantation increasing by 43·1% (95% UI 40·5 to 45·8) and 34·4% (29·7 to 38·9), respectively. The global increase in mortality from CKD since 1990 was 41·5% (95% UI 35·2 to 46·5), such that mortality from CKD, and cardiovascular disease deaths attributable to impaired kidney function (a term used to describe a low eGFR or elevated ACR without treatment by renal replacement therapy) caused 4·6% (4·3 to 5·0) of global deaths in 2017, making CKD the 12th leading cause of death globally in 2017, an increase from 17th in 1990. Age-standardised mortality remained unchanged, with a 2·8% change (95% UI –1·5 to 6·3) from 1990 to 2017.

Large between-region and between-country variations were noted in deaths from CKD; for example, in central Latin America, central Asia, and high-income North America, CKD mortality increased by around 60%. In central and Andean Latin America, CKD was, respectively, the second and fifth ranked cause of death in 2017. Overall, these GBD data are a stark confirmation that the global burden of CKD is increasingly carried by countries in low and middle Socio-demographic Index (SDI) quintiles.

The differential changes in prevalence of and mortality from CKD are likely to be multifactorial. Some countries showed increases compared with neighbouring countries with similar demographics, indicating increased recognition and recording of CKD and mortality from this disease. Survival is also extended (with population ageing) in countries in lower SDI quintiles, with an epidemiological shift in mortality from communicable diseases to non-communicable diseases, with major increases in the prevalence of diabetes and hypertension.[4,5] In some regions, changes might also be seen in disease epidemiology; for example, in some Latin American countries, CKD of unknown cause (eg, mesoamerican nephropathy) is prevalent.[6]

Disability-associated life-years (DALYs) caused by CKD, or cardiovascular disease and gout attributable to impaired kidney function, varied more than 15-fold between countries. Generally, regions and countries within the lower SDI quintiles sustained the highest rates of DALYs. Years living with disability (YLDs) accounted for only 20·3% (95% UI 15·9–24·6) of the total CKD DALYs, probably because most patients had mild-to-moderate CKD (ie, stages 1–3), a level of disease at which specific functional impairment is uncommon.

These GBD data demand careful reading by policy makers and clinicians. CKD-attributable morbidity and mortality follow the paradigm for chronic disease, whereby access to identification and management is dependent on income and geography. Patients living in countries in low and middle SDI quintiles who do not die during progression of CKD will typically die within months when they reach ESKD, because renal replacement therapy is not available or dialysis is inadequate. Kidney transplantation, the best health-preserving and economic treatment for ESKD, only accounts for a fifth of renal replacement therapy, and programmes are underdeveloped in most countries.

The global age-standardised mortality rate for CKD is not declining, unlike those for other important non-communicable diseases.[7] Interventions to slow kidney disease progression require early testing of people at risk by measurement of eGFR and ACR. Even in high-income countries, ACR testing is generally not done,[8] despite being a major independent risk factor for CKD progression and cardiovascular disease events.[9] Inexpensive interventions for diabetes, hypertension, and CKD can have a substantial effect on clinical and societal outcomes.[10] Supporting countries to develop sustainable and affordable health-care infrastructure for CKD and other non-communicable diseases, from public health legislation to population-based identification and management programmes, is a global priority.[11,12]

PC declares honoraria for educational seminars from NAPP Pharmaceuticals, outside of the area of work commented on here. L-AF declares no competing interests.

*Paul Cockwell, Lori-Ann Fisher
paul.cockwell@uhb.nhs.uk

Department of Renal Medicine, Queen Elizabeth Hospital, Birmingham B15 2WG, UK (PC); College of Medical and Dental Sciences, University of Birmingham, Birmingham, UK (PC); and University Hospital of the West Indies and University of West Indies, Kingston, Jamaica (L-AF)

1 Webster AC, Nagler EV, Morton RL, Masson P. Chronic kidney disease. *Lancet* 2017; **389:** 1238–52.
2 van der Velde M, Matsushita K, Coresh J, et al. Lower estimated glomerular filtration rate and higher albuminuria are associated with all-cause and cardiovascular mortality: a collaborative meta-analysis of high-risk population cohorts. *Kidney Int* 2011; **79:** 1341–52.
3 GBD Chronic Kidney Disease Collaboration. Global, regional, and national burden of chronic kidney disease, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet* 2020; published online Feb 13. https://doi.org/10.1016/S0140-6736(20)30045-3.
4 NCD Risk Factor Collaboration (NCD-RisC). Worldwide trends in diabetes since 1980: a pooled analysis of 751 population-based studies with 4·4 million participants. *Lancet* 2016; **387:** 1513–30.

5 NCD Risk Factor Collaboration (NCD-RisC). Worldwide trends in blood pressure from 1975 to 2015: a pooled analysis of 1479 population-based measurement studies with 19·1 million participants. *Lancet* 2017; **389:** 37–55.

6 Gonzalez-Quiroz M, Pearce N, Caplin B, Nitsch D. What do epidemiological studies tell us about chronic kidney disease of undetermined cause in Meso-America? A systematic review and meta-analysis. *Clin Kidney J* 2018; **11:** 496–506.

7 GBD 2017 Causes of Death Collaborators. Global, regional, and national age-sex-specific mortality for 282 causes of death in 195 countries and territories, 1980–2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet* 2018; **392:** 1736–88.

8 Kim LG, Cleary F, Wheeler DC, et al. How do primary care doctors in England and Wales code and manage people with chronic kidney disease? Results from the National Chronic Kidney Disease Audit. *Nephrol Dial Transplant* 2018; **33:** 1373–79.

9 Hallan SI, Matsushita K, Sang Y, et al. Age and association of kidney measures with mortality and end-stage renal disease. *JAMA* 2012; **308:** 2349–60.

10 Chen TK, Knicely DH, Grams ME. Chronic kidney disease diagnosis and management: a review. *JAMA* 2019; **322:** 1294–304.

11 Di Cesare M, Khang Y-H, Asaria P, et al. Inequalities in non-communicable diseases and effective responses. *Lancet* 2013; **381:** 585–97.

12 Levin A, Tonelli M, Bonventre J, et al. Global kidney health 2017 and beyond: a roadmap for closing gaps in care, research, and policy. *Lancet* 2017; **390:** 1888–917.

Do not violate the International Health Regulations during the COVID-19 outbreak

Published **Online** February 13, 2020 https://doi.org/10.1016/S0140-6736(20)30373-1

The International Health Regulations (2005) (IHR)[1] govern how 196 countries and WHO collectively address the global spread of disease and avoid unnecessary interference with international traffic and trade. Article 43 of this legally binding instrument restricts the measures countries can implement when addressing public health risks to those measures that are supported by science, commensurate with the risks involved, and anchored in human rights.[1] The intention of the IHR is that countries should not take needless measures that harm people or that disincentivise countries from reporting new risks to international public health authorities.[2]

In imposing travel restrictions against China during the current outbreak of 2019 novel coronavirus disease (COVID-19), many countries are violating the IHR. We—16 global health law scholars—came to this conclusion after applying the interpretive framework of the Vienna Convention on the Law of Treaties[3] and reaching a jurisprudential consensus on the legal meaning of IHR Article 43 (panel).

We explain our conclusion here. First, under Article 43.2, countries cannot implement additional health measures exclusively as a precaution but must rather ground their decision making in "scientific principles", "scientific evidence", and "advice from WHO".[1] Many of the travel restrictions being implemented during the COVID-19 outbreak are not supported by science or WHO. Travel restrictions for these kinds of viruses have been challenged by public health researchers,[4–6] and WHO has advised against travel restrictions, arguing they cause more harm than good.[7,8]

Second, under Article 43.1 any additional health measures implemented by countries "shall not be more restrictive of international traffic and not more invasive or intrusive to persons than reasonably available alternatives".[1] In this case, even if travel restrictions did work, there are so many other more effective measures that countries can take to protect their citizens. WHO has issued COVID-19 technical guidance on several such measures, including risk communication, surveillance, patient management, and screening at ports of entry and exit.[9]

Third, and most importantly, Article 3.1 strictly requires all additional health measures to be implemented "with full respect for the dignity, human rights and fundamental freedoms of persons",[1] which in turn must reflect the international law principles of necessity, legitimacy, and proportionality that govern limitations to and derogations from rights and freedoms.[10] Under no circumstances should public health or foreign policy decisions be based on the racism and xenophobia that are now being directed at Chinese people and those of Asian descent.[11]

Many of the travel restrictions implemented by dozens of countries during the COVID-19 outbreak are therefore violations of the IHR.[12] Yet, perhaps even more troubling, is that at least two-thirds of these countries have not reported their additional health measures to WHO,[12] which is a further violation of IHR Articles 43.3 and 43.5. Flagrant disregard for the legal requirement to promptly report any additional health measures frustrates WHO's ability to coordinate the world's