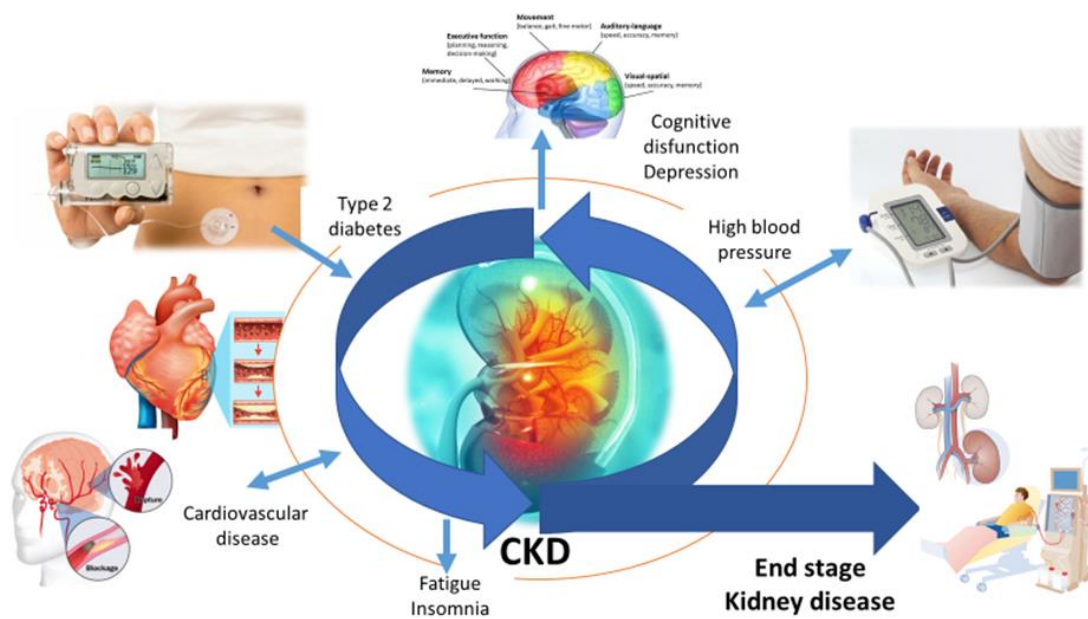


Chronic kidney disease (CKD) is becoming a manifest health issue to the European health care systems and society. COVID-19 adds to this trend, by complicating the course of CKD and causing acute kidney injury as an often long-lasting effect of Intensive Care Hospitalisation.

EKHA therefore draws public attention to the substantial impact that COVID-19 has on (kidney) patients, the lessons learnt from this crisis and offers suggestions for improved resilience.

About 75 million (one in ten) Europeans suffer from CKD. By 2040, CKD will have risen to the 5th cause of death globallyⁱ. Without adequate treatment, CKD culminates in advanced kidney failure with the need for a costly kidney replacement therapy (KRT), i.e. dialysis or transplantation. CKD significantly contributes to early death by worsening cardiovascular disease and diabetes mellitus and affects patient quality of life by causing a large number of life-long disturbing symptoms like pain, itching, sleep disturbances or fatigue.

The figure below shows the interaction of kidney insufficiency in relation to other diseases.



IMPACT OF COVID-19 – LESSONS LEARNED

Vulnerable group

The pandemic disclosed how kidney patients were among the most vulnerable groups and showed the shortcomings in how treatments are delivered to them. CKD patients are more susceptible to COVID-19 and have worse outcomes than other chronic diseases. COVID-19 adds constant stress for CKD patients, because of the need for isolation to prevent and the lower survival chance in case of infection.

Preliminary studies suggest that 20% or more patients on kidney replacement therapy diagnosed with COVID-19 may not surviveⁱⁱ.

Dialysis risk

Also, the COVID-19 crisis has a large impact on the quality of dialysis care. As closed communities, in-centre hemodialysis units are susceptible for COVID-19 outbreaks affecting both patients and personnel. In-centre hemodialysis patients were disproportionately affected because of the mandatory contact time (usually $\geq 3 \times 4$ hours per week). Furthermore, Peritoneal Dialysis (PD) catheter insertions (used for home dialyses) have been postponed as non-urgent, forcing patients to start on in-centre catheter based hemodialysis at much higher risk or to wait for a necessary therapy.

Acute kidney injury (AKI)

A majority of hospitalized COVID-19 patients, entered without kidney failure, developed acute kidney injury (AKI) and a subsequent need for acute dialysis in those patients led to shortages in supplies. Preliminary data from the US Centres of Disease Control suggests that almost 35% of patients with AKI did not survive. As many patients with AKI subsequently evolve into CKD. A similar evolution is likely in COVID-19 patients surviving AKI.

Transplantation rate

COVID-19 has profoundly impacted organ (including kidney) donation and transplantation activities across Europe. The need to shift the focus of intensive care units – where most donors are recruited – to COVID-19 treatment together with difficulties ensuring safety for transplanted patients, have compounded transplantation rate. As one in five waitlisted patient dies per year before receiving the organ they are waiting for, this causes great uncertainty for the patient community. In addition, COVID-19 could have a long-lasting impact on donation rates if patients who recovered from COVID-19 would impose a risk of transmitting the disease, thus potentially disqualifying them as donors?

SOLUTIONS FOR RESILIENCE

There is a need for a change in the thinking pattern, which should lead to more sustainable and more cost-saving measures. The following steps are essential for a more efficient approach to the foreseeable COVID-19 flare-up or the outbreak of an even more serious infection or other type of crisis.

1. Better flow of information and guidelines
2. **Augment efforts on good lifestyle CKD prevention & control**
3. Improve secondary prevention
4. **Conceptually changing the dialysis principle**
5. Set up an EU-level data collection system on Chronic Disease including CKD and risks factors
6. **Promote best practices that encourage different modes of KRT**
7. Support digital transformation of kidney care
8. **Continue the running efforts on organ availability and transplantation quality**

1. Better flow of information and guidelines

In depth information about kidney disease and its risk factors is needed with adjusted outreach to the general population, all stages of kidney failure, all levels of literacy, and medical professionals. The right attention for CKD in public documents is a condition for success.

2. Augment efforts on good lifestyle CKD prevention & control

Only 3% of health budget across the EU is currently earmarked for disease preventionⁱⁱⁱ. Increased EU investments and regulatory measures to eliminate key lifestyle-related risk factors such as smoking, excessive use of alcohol, high consumption of salt, fat and sugar and inadequate daily physical activity should be implemented to tackle the prevalence of CKD and chronic disease at large and improve COVID-19 survival quality.

As the economic consequences of COVID-19 put health systems under pressure, it will also be crucial to strengthen health promotion and disease prevention measures as a way of reducing healthcare costs and prevent healthcare systems 'overburden' in the future. We encourage an evaluation of the quality of public information campaigns for food and life style advice.

3. Improve secondary prevention

Healthcare organizations across Europe are setting up screening programs for the early detection of CKD for people at risk. As soon as CKD has been diagnosed, pharmaceutical interventions are limited to antihypertensives that slow down the deterioration of kidney function, or to drugs that treat the complications that arise from CKD (a.o. anaemia and bone disease). There is a need for drugs that directly target the kidney itself and help restore or preserve the kidney function. To this end, this unmet need is largely neglected by the pharmaceutical industry, even though adequate treatment of CKD would also reduce the risk for cardiovascular disease, cancer, secondary effects as cramps and itching. The disease and cost reduction potential is high.

4. Conceptually changing the dialysis principle

Patients are urgently asking for new inventions that help them gaining more control of their lives and alleviate or even cure kidney disease and its complications. Innovation should go beyond new drugs and include the design and development of medical devices that replace kidney functions, such as portable, biological or implantable artificial kidneys or devices that aid in disease monitoring.

For 75 years chronic hemodialysis is saving the lives of kidney patients. In contrast to many other medical devices, the technology has barely evolved. Quality of life and survival remain dismal. Treatment options lacked innovation for decades, while the potential is growing, for example regenerative medicine and nano-membrane technologies. And with a huge consumption of energy, plastic and water, especially hemodialysis is also in need of ecologic reconceptualization.

5. Set up an EU-level data collection system on Chronic Disease including CKD and risk factors

COVID-19 has shown that interoperable and comparable data on diseases are essential to build effective and evidence-based policies. The [ERA-EDTA registry](#), which collects data on patients receiving KRT via the national and regional registries in Europe and the [ERACODA database](#)^{iv}, which collects individual data of patients that receive KRT and have COVID-19, are good examples of data sharing and pooling mechanisms across countries that could evolve as valuable EU initiatives if extended to CKD not on KRT. Such an EU-wide system, involving all Member States, built on the same model as the European Network of Cancer Registries (ENCR), would improve the quality, comparability and availability of CKD data. The ECDC has done excellent work in the acute follow-up of the pandemic, but since chronic disease patients were heavily affected, an extension of competences is imperative.

6. Promote best practices that encourage different modes of KRT

There are two dialysis treatment options for kidney failure: Hemodialysis (HD) – performed in hospitals or at home – or Peritoneal dialysis (PD) – performed at home. In general, home dialysis is known to be a cost-effective way to reduce visits to the hospital and to improve the quality of life of patients.

During the pandemic, data showed that home therapies also contributed to reduce patient's exposure to COVID-19 - the proportion of COVID-19 patients was higher among HD patients than in PD patients^v – and helped to guarantee the continuity of care for CKD patients. Unfortunately, the choice between different modes of KRT for kidney patients is not available in all Member States, largely because of financial and resource constraints^{vi}. The EU should support Member States in sharing and implementing best practices which encourage increasing availability of home care treatments. This would not only improve the quality of life of patients on the long-term but also allow effective shielding at home in times of pandemic.

7. Support digital transformation of kidney care

On the same model as home therapies, digital tools and services help to reduce hospital visits while increasing patient engagement and empowerment. The lack of access to care during the first wave of the pandemic and the necessity for kidney patients to shield at home has cast a spotlight on the need to further strengthen the digitalization of kidney care. Facilitating the availability of effective and affordable telemedicine services should be part of preparedness plans for future outbreaks and considered a priority.

8. Continue the running efforts on organ availability and transplantation quality

Kidney transplantation is the most cost-effective KRT option allowing optimal survival and quality of life and the EU has with the first action plan on donation and transplantation generated a spectacular boost in European transplant activity. It is, however, important to maintain this momentum and to continue efforts to harmonize activities as disparities among countries persist, suggesting ample room for further improvement, e.g. by rolling out a second action plan. With regards to the pandemic, transplant patients need less visits to the hospital, which further could be reduced by telemedicine, so that transplantation also allowed more protection than the most frequent option, in-centre hemodialysis^{vii}.

ECONOMICS OF CKD

A more sustainable health system should provide medicines and therapies that slow down the progression of CKD and prevent it where possible. The best treatment for a kidney patient with end stage kidney disease at this moment is transplantation, but in many countries the waiting list and time is long. So out of necessity kidney patients have to dialyze to survive. Hemodialysis – the most frequent Kidney Replacement Therapy (KRT) option – is among the most expensive treatments and large inequality in availability still exists across Europe. Hospital-based hemodialysis – the most common form of dialysis – alone costs up to €90,000 per year per patient^{viii}. The total 'direct' cost of dialysis across Europe is unknown, but an estimate puts it at over €23 billion per year^{ix}.

IT'S IMPERATIVE TO BOTH PATIENTS AS THE SUSTAINABILITY OF THE SYSTEM THAT LESS EXPENSIVE AND MORE EFFECTIVE TREATMENTS COME INTO PLACE.

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ⁱⁱ ERACODA: The ERA-EDTA COVID-19 Database for KRT patients (5th report, 6 May 2020)

ⁱⁱⁱ https://ec.europa.eu/health/sites/health/files/state/docs/2019_companion_en.pdf

^{iv} ERACODA: The ERA-EDTA COVID-19 Database for KRT patients (5th report, 6 May 2020)

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