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# Impact of Dialysis Coverage on the Provision of Universal Health Insurance in the Republic of Congo

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## Abstract

**Introduction:** The launch of health insurance in the Republic of Congo took place against a backdrop of extremely high costs for dialysis, which was not one of the services financed within this framework. The aim of this study is to assess the impact of including dialysis in the health insurance package in Congo. **Methodology:** This is a descriptive cross-sectional study with an evaluative aim, analyzing the impact of dialysis on the financing capacity of health insurance and health facilities to provide this type of care. **Results:** The results show that including dialysis in the universal health insurance package will require an additional financial effort of 6.20% of the current total financing capacity of the care basket. Most dialysis sessions are provided by the private health sector (87.5%), whose health facilities are unevenly distributed across the country, and concentrated in the country's two major cities. This problem is the dual consequence of the very high cost of a dialysis session (average cost 140,234,375 FCFA or 229 US Dollars) and the number of patients under care, which will increase in the absence of effective and ongoing prevention efforts against chronic diseases in general and end-stage renal failure in particular. **Conclusion:** Dialysis is a high-impact public health intervention. The impact of its inclusion in the universal health insurance care package is difficult to bear financially. For dialysis to be covered by universal health insurance, additional funding and improved technical facilities are needed.

## Keywords

Universal Health Insurance, Care Basket, End-Stage Renal Disease, Dialysis,

Republic of Congo

## 1. Introduction

Universal health insurance (UHI) is a health financing mechanism that contributes significantly to improving a country's health indicators. Its importance is obvious for the healthcare systems of most African countries. These already fragile systems have been profoundly weakened by the recent COVID-19 pandemic.

To guarantee access to healthcare, several African countries are implementing health insurance policies with the support of international organizations. However, for these policies to be successful and effective, they need to be based on a realistic basket of services adapted to health needs, financing capacity, and risk management.

In the Republic of Congo, the plan to launch universal health insurance under a compulsory scheme calls for a basket of treatments targeting: maternal and child health, malaria, HIV/AIDS, tuberculosis, neglected tropical diseases, diabetes, hypertension, cesarean section, fibromectomy, hysterectomy, prostatectomy, appendectomy, hernia removal, and minor surgery (abscess incision, wound suture, superficial tumor removal: cyst, lipoma).

For each health problem or intervention, the basic basket of care has been defined on the basis of five criteria: cost-effectiveness analysis, financial protection of the population, burden of disease, public preferences, and societal values [1]. This universal health insurance scheme, based on a contributory financing model involving the insured, private employers, and the state, has set itself three essential missions: improving access to healthcare for all, developing the supply of quality care, and preserving the financial equilibrium of the universal health insurance scheme [2].

The Congo's health insurance strategy is based on the technical and operational feasibility of covering insured persons on the basis of the care basket described. However, this prudential strategy, which is based on an analysis of the experiences of countries such as Gabon, Côte d'Ivoire, Morocco, Senegal, and Rwanda with health insurance, is guided by a gradual analytical approach. It considers a sample of the various social categories in the Congo, before covering the entire population.

During the preparatory phase for the launch of health insurance in the Congo, the government instructed the project team to include chronic kidney disease (CKD) at the dialysis stage in the care basket. The care scenarios envisaged revealed difficulties in sustaining this recommendation over the long term, in the absence of government support for the Universal Health Insurance Fund.

Indeed, CKD represents a real public health problem in the Congo, as in most low-resource countries, due to the complications it causes [3], the high cost of treatment [4], and the shortage of nephrologists, which limits the range of care

available [5].

Despite the very low availability of data currently published in the Congo, hospital studies show a CKD frequency of 52.1% among patients admitted to the Nephrology Department of Brazzaville University Hospital, with a mortality rate in excess of 50% [6]. The rate of dialysis emergencies is 30% among patients admitted to the same department for renal failure [7].

This situation masks many realities in a context of low demand for hospital care, due to the high cost of CKD care, particularly dialysis [8].

In view of the imminent launch of universal health insurance in the Congo, scheduled for early 2024, new choices have been made in favor of including dialysis treatment for CKD in the care basket.

Therefore, this research aims to study the impact of introducing dialysis care into the universal health insurance basket in the Congo. The aim is to enlighten stakeholders on the implications and sustainability of such a decision, in the context of limited resources.

## 2. Methodology

This is a descriptive cross-sectional study with an evaluative aim, analyzing the impact of dialysis on the financing capacity of health insurance and health facilities' performance in managing CKD at the dialysis stage in the Republic of Congo.

**Description of the Universal Health Insurance Financing Model**

Data for the financing of the health care basket comes from the universal health insurance scheme, which sets member contributions at the rates and amounts defined according to the social categories described in **Table 1**.

As part of this health insurance policy, access to care for members of different social categories is subject to the payment of a "ticket modérateur", the rate of which is set at 30% of the price of the health intervention; students and vulnerable people are exempt. The remaining 70% will be paid directly by CAMU to the health facilities.

The conclusions of the work on the cost of the healthcare basket presented three scenarios for safeguarding the financial equilibrium of RAMU. They are classified as low, medium, and high assumptions. These assumptions for contributions are respectively 70 billion, 78 billion, and 90 billion FCFA per year. Compared with the expected average social security contributions of 66,623,840,174 FCFA (see **Table 1**), the respective funding gaps for each scenario are −4.82% (*i.e.* −3,376,159,826 FCFA), −14.58% (*i.e.* −11,376,159,826 FCFA) and −25.97% (*i.e.* −23,376,159,826) [9].

The gaps are financed by additional resources: 1) the 0.5% levy on the portion of income exceeding the FCFA 500,000 thresholds, as a solidarity contribution towards health insurance by the upper social categories (tax introduced in 2021), 2) taxes on alcoholic beverages and tobacco [10] and finally 3) state subsidies set up to provide free access to high-impact public health interventions in the Republic of Congo concerning HIV/AIDS, malaria, tuberculosis, and caesarean sections.

**Table 1.** Contribution rates and amounts according to contributors' social categories.

| No. | Categories | Contribution rates | Expected amounts | % |
|---|---|---|---|---|
| 1 | Employers | 4.55% | 31,706,569,911 | 47.59% |
| 2 | Employees (public and private) | 2.27% | 15,853,284,955 | 23.80% |
| 3 | Self-employed | 3.79% | 14,642,603,369 | 21.98% |
| 4 | Retirees | 2.27% | 2,457,140,751 | 3.69% |
| 5 | Students | 11,764 FCFA/an | 235,280,000 | 0.35% |
| 6 | Vulnerable persons | 3529 FCFA/an | 1,728,961,188 | 2.60% |
| Total contributions for the basic health care basket | | | **66,623,840,174** | **100%** |

Source: MFPTSS, Universal Health Insurance Contribution, Rates Evaluative Study Report, 2019.

At present, there is no way of financing dialysis-stage CKD under Congo's universal health insurance scheme, even though this intervention is of high importance. The data used relates to the development capacity and availability of this care in health facilities, in line with CAMU objectives. The number of patients suffering from CKD at the dialysis stage and the associated costs were obtained by collecting hospital data.

## 3. Results

The interventions in the basic basket of care are provided in most public and private health facilities, according to their level in the Congo's health pyramid. They include maternal and child health care, malaria, HIV/AIDS, tuberculosis, neglected tropical diseases, diabetes, hypertension, cesarean section, fibromectomy, hysterectomy, prostatectomy, appendectomy, hernia repair, and minor surgery. As far as dialysis is concerned, hospital data show a total of 256 patients currently receiving dialysis treatment, mostly at their own expense (see Figure 1).

The three towns where all 256 CKD patients are concentrated currently have a total of eight health facilities (one public hospital and seven private clinics) offering dialysis treatment. With three dialysis sessions per week, or twelve per month, costs vary from one town to another and according to the type of facility.

With an average cost of 140,234,375 FCFA per dialysis session and 1,346,250 FCFA per month, the Caisse d'Assurance Maladie Universelle will have to make an additional budgetary effort of 4,135,680,000 FCFA, to include dialysis in its care basket, assuming that the number of patients remains stable at 256 per year (Table 2).

Health system data show that, out of a total of 31 district referral hospitals and 10 general hospitals in the Republic of Congo, only one public health facility in the northern part of the country currently offers dialysis treatment for CKD.

None of the public health facilities in the country's two major cities, Brazza-

ville and Pointe-Noire, have dialysis services. This service is provided exclusively by private clinics, as shown in Table 3.

It should be noted that these two cities are home to almost two-thirds of the Congolese population, and more than ninety percent of dialysis patients.

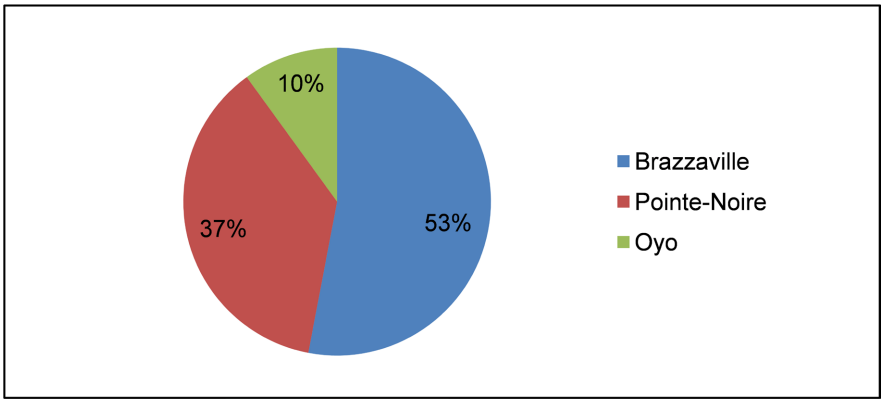


Figure 1. Distribution of dialysis patients by locality in the Republic of Congo, 2023.

Table 2. Cost of dialysis by city in the Republic of Congo, 2023.

| Cities | No. of clinics providing dialysis | Average cost of dialysis per session | Monthly cost of dialysis |
|---|---|---|---|
| Brazzaville | 5 | 88,000 (60,000 - 150,000) | 1,056,000 (720,000 - 1,800,000) |
| Pointe-Noire | 2 | 150,000 | 1,800,000 |
| Oyo | 1 | 157,000 | 1,890,000* |

*= This cost, which seems higher, includes the cost of the session, accommodation, and food, as the 25 patients who receive treatment in Oyo usually live in the south of the country. NB: Amounts are in Central African CFA francs (1 US Dollar = 61,227 CFA francs on August 16, 2023).

Table 3. Health facilities offering dialysis care in the Republic of Congo, 2023.

| Cities | Health centers | Status |
|---|---|---|
| Brazzaville | Specialist Centers | Private |
| | Ouenze Dialysis Centre | Private |
| | NET CARE Clinic | Private |
| | VERALNO Clinic | Private |
| | SECUREX Clinic | Private |
| Pointe-Noire | DENGO Clinic | Private |
| | NET CARE Clinic | Private |
| Oyo | Edith Lucie Bongo Ondiba General Hospital | Public |

Source: Congo Universal Health Insurance Fund project, July-August 2023.

## 4. Discussion

The aim of this study was to assess the impact of including dialysis in the universal health insurance package in the Republic of Congo, which is due to be launched shortly.

The decision to include CKD treatment at the dialysis stage is a response to the need to reduce the unbearable burden of healthcare costs, which until now has weighed heavily on people suffering from this chronic disease. In Africa, in contrast to developed countries, the disease is increasingly affecting young, active people [11].

CKD therefore represents a real threat to the health of populations and the healthcare system, due to its complications and high cost. This situation is compounded by enormous challenges in terms of health human resources (there are, for example, fewer than 10 nephrology specialists in the whole of the Republic of Congo) [12].

The non-inclusion of dialysis in the initial care basket of the universal health insurance scheme could therefore constitute a brake that could compromise the achievement of public health objectives aimed at access to care for all. Some studies reveal that between January 1, 2016, and December 31, 2018, only 73 patients (19.8%) out of 295 were able to access dialysis in the Republic of Congo. In the same period, epidemiological data placed the mortality rate due to CKD at 49.9% [8].

The importance of universal health insurance coverage for dialysis is a necessity, not a luxury, as it represents a real challenge for present and future public health policies. According to the WHO, one in ten adults worldwide suffers from kidney disease, i.e. almost 600 million people, and the prevalence of CKD is expected to increase by 17% over the next ten years [6].

In light of these epidemiological forecasts, it would seem essential to introduce appropriate preventive measures that take account of the African context, targeting diabetes, hypertension, and HIV in particular. In the same vein, it is necessary to promote 1) the non-abusive use of medication (especially anti-inflammatory drugs) without medical advice, 2) healthy eating (eating less salt, less fat, eating more vegetables, drinking enough water), and 3) healthy living (avoid smoking and practice sport).

The prevention of CKD therefore deserves to be reinforced in the operation of universal health insurance, as this disease carries a high risk of comorbidity. Some research shows that patients suffering from CKD are at risk of cardiovascular accidents (stroke, myocardial infarction, etc.) [13]. There are several stages of treatment: primary prevention, which focuses on people at risk of developing CKD; secondary prevention, which consists of halting or slowing the progression of CKD, and also involves treating any comorbidities; and renal function replacement, either by transplantation (preemptive, with a living donor) or by dialysis (at home [peritoneal dialysis] or in hospital [hemodialysis]).

These preventive measures would reduce the risk of complications from kidney

disease, and hence the demand for dialysis care, in the face of a very limited and financially inaccessible supply, in a context where the average wage cannot support the cost of a weekly dialysis treatment (between 240,000 and 450,000 FCFA), with more than a third of the population living below the poverty line [9].

As the launch of universal health insurance approaches, the virtual absence of public-sector hospital capacity to provide dialysis care calls for a very strong commitment from political decision-makers, in order to rapidly make strategic investments in public health, targeting kidney disease.

Current dialysis care provision, which is virtually private, is limited to seven health facilities, all concentrated in Congo's two major cities. This in no way meets the requirements of geographical and financial accessibility of care, to guarantee universal health coverage.

The ongoing preparation of health facilities for the roll-out of universal health insurance should also include the upgrading of technical facilities adapted to the management of dialysis sessions in the operational action lines. However, the delay in the inclusion of dialysis in the care basket could enable the Caisse d'Assurance Maladie Universelle du Congo to better plan this intervention through improved organization, structuring, and anticipation of the provision of this care.

From a budgetary point of view, the impact of including dialysis in Congo's universal health insurance is very significant. It is in the order of 4,135,680,000 FCFA out of a total budget of 66,623,840,174 FCFA, or 6.20% of the plan's current capacity to guarantee its financial equilibrium (total contributions for the RAMU basic basket of care). The Republic of Congo therefore needs to make a greater budgetary effort. This requires both additional financing and orthodox management of the Universal Health Insurance Fund.

It should be pointed out, however, that these projections only concern the 256 patients currently identified as being on dialysis. The inclusion of dialysis in CAMU's range of services will undoubtedly lead to an explosion in demand, which will of course put a strain on the financial equilibrium of the universal insurance scheme.

The dreaded impact is the dual consequence of the very high cost of a dialysis session (average cost 140,234,375 FCFA or 229 US Dollars) and the potentially growing number of patients to be cared for. The prevalence of CKD at the dialysis stage will increase with the multiplicity of risk factors, in the absence of a genuine policy focused on effective and ongoing prevention efforts against chronic diseases in general and chronic renal failure in particular.

The inclusion of dialysis in the health insurance basket of care is an eminently social and salutary measure that, under current conditions, constitutes a risk of financial imbalance in the Republic of Congo's universal health insurance scheme, given its high cost. A comparison with other countries shows that the average cost of a dialysis session paid by the patient in the Congo is well above the African average, which ranges from 18,368 to 61,227 FCFA (30 to 100 US dollars) [14].

The cost in Congo is higher than in Benin, where dialysis is heavily subsidized by the state; the price paid by the patient amounts to 5000 or 2500 CFA francs per dialysis session [15]. On the other hand, in some health facilities in Benin, prices range from 59,040 FCFA to 100,000 FCFA [16].

In Mali, thanks to the Medical Assistance Scheme, dialysis patients holding a certificate of indigence pay 2500 FCFA per dialysis session, instead of the full rate of 125,000 FCFA. In this country, despite the efforts made by decision-makers, the price of dialysis sessions varies from 10,000 FCFA in the public sector to 60,000 or 100,000 FCFA in the private sector [17].

The impact of including dialysis in the health care basket will undoubtedly affect the financial equilibrium of the insurance scheme, as well as the population's access to care and capacity to develop the supply of quality care at the health facility level. It is therefore urgent to put in place a plan to safeguard the Congo's universal health insurance scheme. This plan involves implementing short-, medium- and long-term lines of action.

Thus, in the short term, this work proposes:

- The granting of a substantial state subsidy, dedicated to the comprehensive management of chronic renal failure, including dialysis;
- The state (two possible contribution scenarios: 80% - 70%), the universal health insurance fund (three possible contribution scenarios: 20% - 15% - 10%), and patients (four possible contribution scenarios: 20% - 15% - 10% - 0%) should contribute to the cost of dialysis;
- The State to facilitate the purchase of dialysis kits through the total tax exemption of consumables;
- The creation of a National Dialysis Agency, jointly managed by the Ministry of Public Health, the Ministry of Social Security and the Ministry of Finance. This agency will work directly with the Caisse d'Assurance Maladie Universelle as the management body for the subsidies granted.

In the medium and long term, it is important to:

- Increase the number of dialysis centers nationwide, anchored in the country's district and general hospitals;
- Promote the acquisition of dialysis machines (purchase, appeal for donations from technical and financial partners);
- Use innovative financing to protect the financial equilibrium of the universal health insurance scheme.

The effectiveness of this governmental support will determine Congo's ability to set up a large number of dialysis units, making this treatment available in several health facilities, at a reasonable cost that will enable patients from all social categories to be cared for.

## 5. Conclusion

Dialysis is a high-impact public health intervention. Its inclusion in the universal health insurance package, based on social and employer contributions, is difficult

to support financially. Complementary funding and the reinforcement of technical facilities are needed to guarantee the feasibility of dialysis being covered by universal health insurance. The ongoing search for financial equilibrium in the universal health insurance scheme should be an objective to be pursued to ensure access to healthcare for all, as well as the sustainable development of quality healthcare.

## Authors' Contributions

All authors participated in all stages of the development of this manuscript. All have read and approved the final manuscript, which is submitted for publication.

## Conflicts of Interest

The authors declare no conflicts of interest and receive no external financial support.

## References

[1] Ministère de la Santé et de la Population (2017) Rapport sur la définition et le coût du panier de soins de l'assurance maladie universelle en République du Congo. https://sante.gouv.cg/

[2] (2015) Loi n° 12-2015 du 31 août 2015 Portant creation de la caisse d'assurance maladie universelle en République du Congo. *Journal Officiel de la République du Congo*, No. 36, 687-688.

[3] Bello, A.K., Alrukhaimi, M., Ashuntantang, G.E., Basnet, S., Rotter, R.C., Douthat, W.G., *et al.* (2017) Complications of Chronic Kidney Disease: Current State, Knowledge Gaps, and Strategy for Action. *Kidney International Supplements*, **7**, 122-129. https://doi.org/10.1016/j.kisu.2017.07.007

[4] Adejumo, O., Akinbodewa, A., Ogunleye, A., Enikuomehin, A. and Lawal, O. (2020) Cost Implication of Inpatient Care of Chronic Kidney Disease Patients in a Tertiary Hospital in Southwest Nigeria. *Saudi Journal of Kidney Diseases and Transplantation*, **31**, 209-214. https://doi.org/10.4103/1319-2442.279942

[5] Eyeni Sinomono, D.T., Gassongo Koumou, G.C. and Loumingou, R. (2017) Profil épidémiologique de l'insuffisance rénale chronique au CHU de Brazzaville en 2016. *Néphrologie & Thérapeutique*, **13**, 396. https://doi.org/10.1016/j.nephro.2017.08.302

[6] Eyeni Sinomono, D.T., Loumingou, R., Gassongo Koumou, G.C., Mahoungou, G.H. and Mobengo, J.L. (2020) Insuffisance Rénale Chronique au CHU de Brazzaville: Épidémiologie, Diagnostic et Évolution. *Health Sciences and Disease*, **22**, 11-14.

[7] Mahoungou, G., Eyeni Sinomono, D.T., Foungou Tsiloulou, E., Loumingou, J.R. and Otiobanda, G.F. (2021) Les urgences dialytiques: Aspects épidémiologiques, cliniques, étiologiques et évolutifs. *Néphrologie & Thérapeutique*, **17**, 368. https://doi.org/10.1016/j.nephro.2021.07.046

[8] Mahoungou, G.H., Niama, A.C., Batchi-Bouyou, A.L., Eyeni Sinomono, D.T., Ngabe, E.N., *et al.* (2022) Knowledge and Perceptions of Kidney Disease among Workers of Marien Ngouabi University, Republic of the Congo. *International Journal of Nephrology and Kidney Failure*, **8**, 1-3.https://doi.org/10.16966/2380-5498.223

[9] Ministère de la Fonction Publique, du Travail et de la Sécurité Sociale/Agence Française pour le Développement (2019) Rapport sur l'équilibre du financement de

l'assurance maladie universelle en République du Congo.

[10] (2021) Loi n° 51-2021 du 31 décembre 2021 portant loi de finances rectificativepour l'année 2022. *Journal Officiel de la République du Congo*, No. 51-2021. https://www.finances.gouv.cg/

[11] Ramilitiana, B., Ranivoharisoa, E.M., Dodo, M., Razafimandimby, E. and Randriamarotia, W.F. (2016) Une étude rétrospective sur l'incidence de l'insuffisance rénale chronique dans le service de Médecine Interne et Néphrologie du Centre Hospitalier Universitaire d'Antananarivo. *Pan African Medical Journal*, **23**, Article 141. https://doi.org/10.11604/pamj.2016.23.141.8874

[12] Ministère de la Santé et de la Population (2019) Plan national de développement sanitaire 2018-2022. https://sante.gouv.cg/plan-national-de-developpement-sanitaire-2018-2022-pnds-2018-2022/

[13] Moustapha, C.M., Tall, L.A., Maria, F., Khodia, F., Moustapha, F., Fary Kel, H., Abdou, N. and Boucar, D. (2016) Evaluation des complications cardiaques chez les hémodialysés chroniques de Dakar. *Pan African Medical Journal*, **23**, Article 43. https://doi.org/10.11604/pamj.2016.23.43.7227

[14] Asserraji, M., Dohmi, G. and Abdelbaki, N. (2016) Coût de l'hémodialyse au Maroc. *Néphrologie & Thérapeutique*, **12**, 271. https://doi.org/10.1016/j.nephro.2016.07.342

[15] http://www.santetropicale.com/

[16] Centre de Dialyse au Bénin. https://www.cadesmedical.fr/benin/centre-de-dialyse-au-benin_690.html

[17] Djagadou, K.A., Tchamdja, T., Némi, K.D., Djalogue, L., Balaka, A. and Djibril, M.A. (2019) Cout direct de la prise en charge des patients en insuffisance renale chronique au centre hospitalier universitaire sylvanus olympio. *Advance Research Journal of Multidisciplinary Discoveries*, **33**, 18-20.