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### **Home Hemodialysis in French Guiana: Transforming logistical challenges into Healthcare Opportunities**

**(Hémodialyse à domicile en Guyane française : Transformer les défis logistiques en opportunités de santé)**

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#### **Summary**

In French Guiana, an Amazonian territory marked by vast spaces and the isolation of many municipalities, the management of chronic kidney disease faces significant challenges. The prevalence of this condition is high, often affecting a younger population living with multiple health conditions and frequently residing far from healthcare facilities. Currently, the provision of renal replacement therapy is almost exclusively concentrated along the coast, exacerbating inequalities in access to care. In this context, home hemodialysis emerges not only as an innovative alternative but also as a necessity to ensure equity and improve individuals' quality of life. This paper explores this modality's needs, specific constraints, and implementation prospects in French Guiana.

**Keywords:** French Guiana, Chronic Kidney Disease, Home Hemodialysis

#### **Résumé**

En Guyane, territoire amazonien marqué par de vastes espaces et l'isolement de nombreuses communes, la prise en charge de l'insuffisance rénale chronique (IRC) se heurte à des difficultés importantes. La prévalence de cette pathologie est élevée, touchant souvent une population jeune vivant avec de multiples pathologies et résidant fréquemment loin des structures de soins. Actuellement, la fourniture d'une thérapie de remplacement rénal est presque exclusivement concentrée le long de la côte, ce qui exacerbe les inégalités d'accès aux soins. Dans ce contexte, l'hémodialyse à domicile apparaît non seulement comme une alternative innovante mais aussi comme une nécessité pour garantir l'équité et améliorer la qualité de vie des individus. Cet article explore les besoins, les contraintes spécifiques et les perspectives de mise en œuvre de cette modalité en Guyane française.

**Mots-clés :** Guyane française, maladie rénale chronique, hémodialyse à domicile

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## Introduction

French Guiana is the largest but least densely populated of the French territories, with nearly 300,000 inhabitants spread over more than 83,000 square kilometers. Its territorial organization is based on a model of small, often isolated municipalities accessible only by river or air. This geographical configuration presents a major obstacle to accessing healthcare, particularly for the management of chronic kidney disease (CKD) [1].

CKD is a complex condition that requires rigorous and regular monitoring, often through hemodialysis. While mainland France has gradually moved toward more flexible and individualized care models, particularly with the promotion of home dialysis [2], French Guiana remains largely dependent on hospital structures located in three main coastal cities: Cayenne, Kourou, and Saint-Laurent du Maroni [1] (Figure 1). This organization creates significant disparities for individuals living in isolated areas. Indeed, access to nearby dialysis care is rare, resulting in long, costly, and exhausting travel, often at the expense of patients' quality of life.

In many inland municipalities, dialysis care is nearly inaccessible, leading to serious inequalities in healthcare access.



↑ Figure 1. Location of dialysis centers in French Guiana

## A Frequent, Early, and Unevenly Managed Disease

Chronic kidney disease is a major public health issue in French Guiana. Data from the REIN Registry shows that the prevalence of CKD in French Guiana is higher than the national average, with an incidence of 16.6 cases per 100,000 inhabitants compared to 12.5 in mainland France. The population suffering from this disease is also younger, with a median age of 50 years compared to 68 years in mainland France. The early onset of the disease is exacerbated by unfavorable socioeconomic factors, such as poverty, increased exposure to cardiovascular diseases, malnutrition, and limited access to preventive care and early screening [3].

The affected population is often burdened by multiple comorbidities, and diagnosis typically occurs at a late stage.

Individuals in French Guiana often present for care at the terminal stage of CKD, making dialysis even more urgent. The lack of medical facilities in the hinterland, combined with a low density of specialized doctors, delays not only diagnosis but also the initiation of treatment, further aggravating the complications related to the disease.

Moreover, the population's lack of awareness of chronic kidney disease, coupled with difficulties in accessing specialized care in remote areas, exacerbates territorial inequalities. Individuals living in areas such as Maripasoula, Grand-Santi, or Camopi, which are far from care centers, face extremely difficult transport conditions. This can lead to treatment interruptions, loss of autonomy, and deterioration in the quality of life [4]. These obstacles severely compromise the continuity of care, particularly for younger patients who could otherwise benefit from early-stage management.

### **Home Hemodialysis: A Suitable and Necessary Response**

Home hemodialysis represents a promising alternative in this particular geographic and social context. International studies have shown that this modality significantly improves individuals' quality of life, notably by reducing the stress associated with frequent travel, maintaining family and social ties, and providing greater autonomy [5]. This approach helps preserve patients' independence while enabling treatment in familiar and less stressful environments.

Patients treated with home hemodialysis also have lower mortality rates, partly due to better management of their own treatment and closer medical follow-up through telemedicine [6]. If implemented properly, home hemodialysis could address the logistical challenges inherent in French Guiana, particularly the distance between individuals and care centers, and offer a flexible, safe solution tailored to local specifics. It is also a key step in promoting healthcare equity across isolated and underserved territories.

However, for it to become a common practice, a well-defined framework is necessary to ensure treatment safety and regular patient follow-up. Pilot projects conducted in mainland France and other overseas territories have shown encouraging results, particularly in the islands of Réunion and Guadeloupe, where telemedicine and mobile teams have helped overcome geographical barriers [6]. Such initiatives can serve as models for adaptation to the Amazonian context of French Guiana.

### **The Challenges of an Ambitious Project in the Amazonian Environment**

The challenges of implementing home hemodialysis in French Guiana are numerous. The provision of services to isolated municipalities poses a major logistical problem, as many localities are accessible only by river or air. Travel to deliver equipment, maintain the devices, and provide medical support incurs significant costs. In addition to transportation issues, the cost of organizing and sustaining care logistics is amplified by the geographical isolation of many communities.

Additionally, the cultural and linguistic diversity, with a population made up of various ethnic groups and numerous Creole speakers, presents an additional barrier to health education and the training of patients and healthcare providers. Training must be adapted to the local context,

incorporating multilingual materials and community-based support to ensure successful patient education.

French Guiana also faces issues with basic infrastructure. Many isolated areas lack stable access to potable water and electricity, both of which are crucial for the safety of dialysis treatments. The construction of supporting infrastructures, such as water treatment units and reliable electricity generators, will be necessary to ensure that treatments can be carried out under optimal safety conditions.

Implementation may also require the use of portable dialysis units with integrated water purification systems or reliance on pre-packaged dialysate.

### **Towards a Realistic and Progressive Development**

Despite these challenges, the development of home hemodialysis in French Guiana is not an unachievable goal. Pilot projects could be launched in the most accessible areas, supported by telemedicine and mobile teams. This progressive model would make it possible to test the system's effectiveness and adapt protocols to local specifics.

Gradual deployment will help identify the most suitable protocols and build local expertise over time. The support of the Regional Health Agency and Health Insurance will be essential to ensure the continuous training of healthcare professionals and optimal coordination.

International collaboration may also prove beneficial. The International Home Dialysis Consortium (IHDC), co-founded by the International Society for Peritoneal Dialysis (ISPD) and the International Society of Nephrology (ISN), provides technical and organizational support to regions facing similar structural challenges [7].

The integration of home hemodialysis into the Guianese healthcare system could also strengthen local expertise in nephrology, benefiting the entire territory. The engagement of local stakeholders, particularly local authorities and patient associations, will be crucial in promoting this solution and raising the population's awareness of the benefits of home dialysis.

### **Conclusion**

Chronic kidney disease represents a major public health challenge in French Guiana. In this context, home hemodialysis emerges as a relevant and necessary response. Although logistical and socioeconomic obstacles remain, the gradual adoption of this modality, leveraging local resources and innovation, could reduce inequalities in access to care and significantly improve individuals' quality of life. Through adapted organization and continuous support, home hemodialysis could become a cornerstone of patient care in French Guiana, providing a sustainable response to the unique health challenges of this exceptional territory.

### **Ethical Considerations**

N/A

## Patient Consent

N/A

## Funding

None

## Conflicts of interest

*The author declares no conflicts of interest with this article.*

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