RWD37

Healthcare Resource Use and Associated Costs of Dengue Fever Requiring Hospitalization: A French National Real-World Study

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INTRODUCTION

- Dengue is an infectious disease caused by dengue virus transmitted by female mosquitoes, causing ≈20,000 deaths each year, worldwide[1-2].
- Severe dengue symptoms include important high fever, plasma leakage, bleeding, respiratory distress and shock syndrome.
- Dengue management is exclusively symptomatic. Recently, vaccines allowed the emergence of dengue active prophylaxis.
- Real-world data on dengue economic burden in France are limited.

STUDY OBJECTIVE

To assess the **epidemiology and economic burden of dengue fever** in France using data from French hospital database (PMSI)

METHODS

- Study design: descriptive, longitudinal, retrospective, real-world study using the French national hospital database (PMSI) diagnoses and healthcare resources[3]. PMSI is an exhaustive database containing all hospital-related claims in France irrespective to healthcare insurance system and setting (public/private).
- Study population: Patients hospitalized between 2015 and 2020 with a diagnosis of dengue fever as main or related diagnosis, based on ICD-10 codes A90 and A91 from 2015 to 2017, and A97. For patients with dengue fever recorded as associated diagnosis, a medical review on compatible symptoms was done. Patients from French Polynesia and New Caledonia (French overseas regions) were not included as hospital data from these regions are not available in PMSI.
- Statistical analyses: The statistical unit is hospital stay. Main outcomes were the number of hospitalizations, patient characteristics, hospitalization rates and length of stays. Hospitalization rates were calculated based on the size of French population per age including mainland and/or overseas territories, estimated by the French national census institute (INSEE) on the 1st January 2020. Costs included inpatient stays based on DRG, additional fees (intensive care and other special units) and expensive medications and medical devices and were corrected by inflation rate for each year.

RESULTS

- Overall, 5,978 patients with dengue were identified (2015-2020), accounting for 6,215 hospitalizations. An important increase in the number of cases was observed over 2019-2020 with more than 2,000 new patients, reaching 3,571 *(Figure 2*), compared to before 2019.
- More than 20% of hospitalizations were among children aged <18 years, while adults aged 18 to 60 years and older adults accounted for around 50% and 28%, respectively. Overall, the number of hospitalizations was slightly higher among women, with 52.1%. Comorbidities of interest were identified in 13.5% of hospitalizations, but they are potentially underestimated as they are not systematically coded in PMSI. (*Table 1*).
- In recent years, the majority of patients were from overseas regions.
- Most admissions (81%) were via emergency room. This rate reached >90% among children, potentially highlighting more disease severe forms. Hospital mortality was 1.4%. In 2020, possibly due to COVID-19, imported cases decreased in French mainland (*Table 1*).
- The overall hospitalization rate was 9.3/100,000 persons with important differences observed between mainland and overseas regions. Most hospitalized cases were patients aged ≥60 years. Among patients aged <18 years, teenagers seemed slightly more at risk to be hospitalized for dengue. Median (Q1–Q3) length of stay was 4.0 (2.0–6.0) days, with no difference on age classes or regions (*Figures 3 and 4*).
- Overall median (Q1–Q3) hospital cost was €2,411 (€1,068–€4,346) for mainland and overseas regions. Slightly higher in costs were observed within older patients (*Figure 5*).

Table 1: Main patients characteristics

Age – years, median (Q1–Q3)	**43.0 (22.0–63.0)**
[0 – 5] years (%)	5.2%
[6 – 11] years (%)	7.5%
[12 – 17] years (%)	8.4%
[18 – 35] years (%)	20.2%
[36 – 60] years (%)	30.2%
>60 years (%)	28.5%
Sex-ratio (% women)	**0.92 (52.1%)**
Admission via emergency room (%)	**81.0%**
<18 years (%)	90.5%
Intensive care unit use (%)	**4.1%**
Overseas hospitalization (%)	**80.3%**
2015 (%)	19.0%
2017 (%)	14.9%
2019 (%)	78.8%
2020 (%)	92.7%
Comorbidities of interest (diabetes, chronic kidney disease) **(%)**	**17.6%**
Blood transfusions (%)	**2.6%**
In-hospital death (%)	**1.4%**

Figure 1: Dengue patient disposition

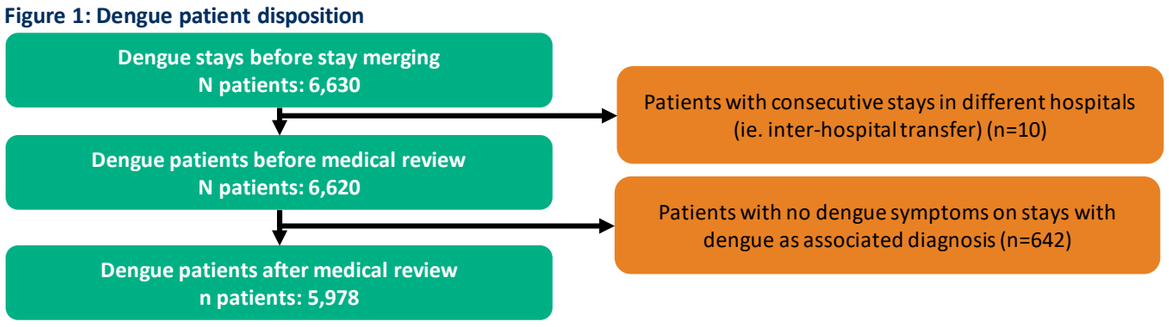


Figure 2: Annual number of patients and hospital stays for dengue fever

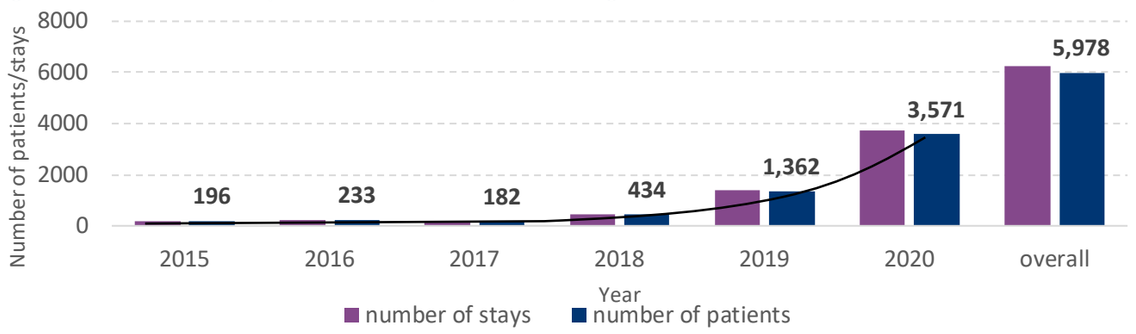


Figure 3: Hospitalization rates by age classes and region

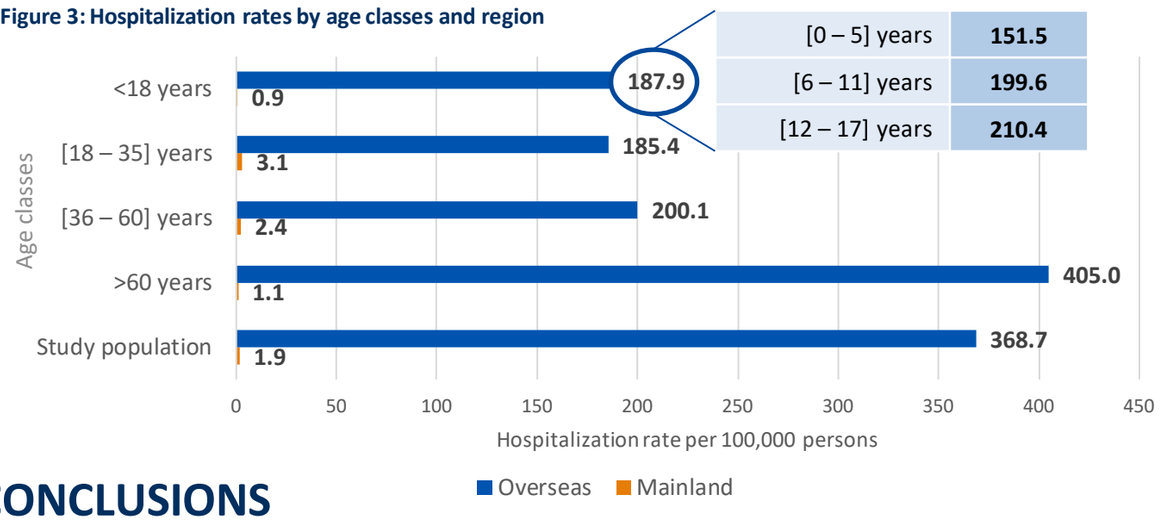


Figure 4: Hospital length of stay (days) by age classes and region

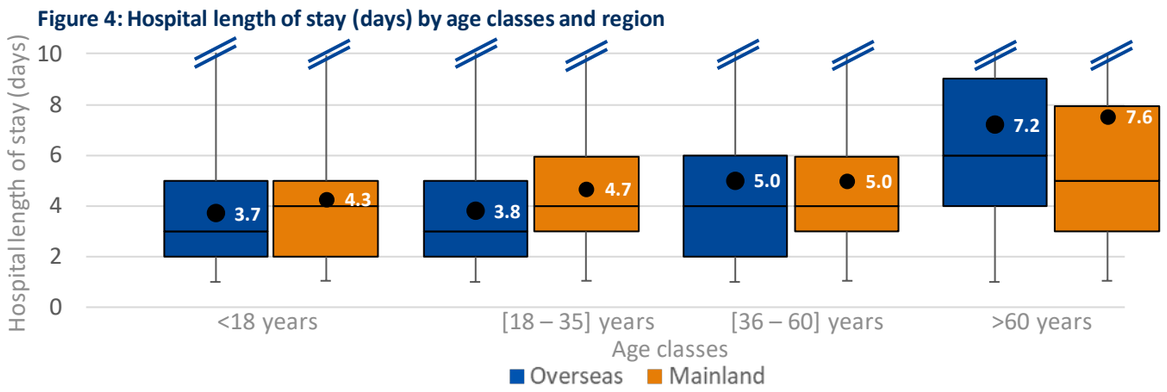
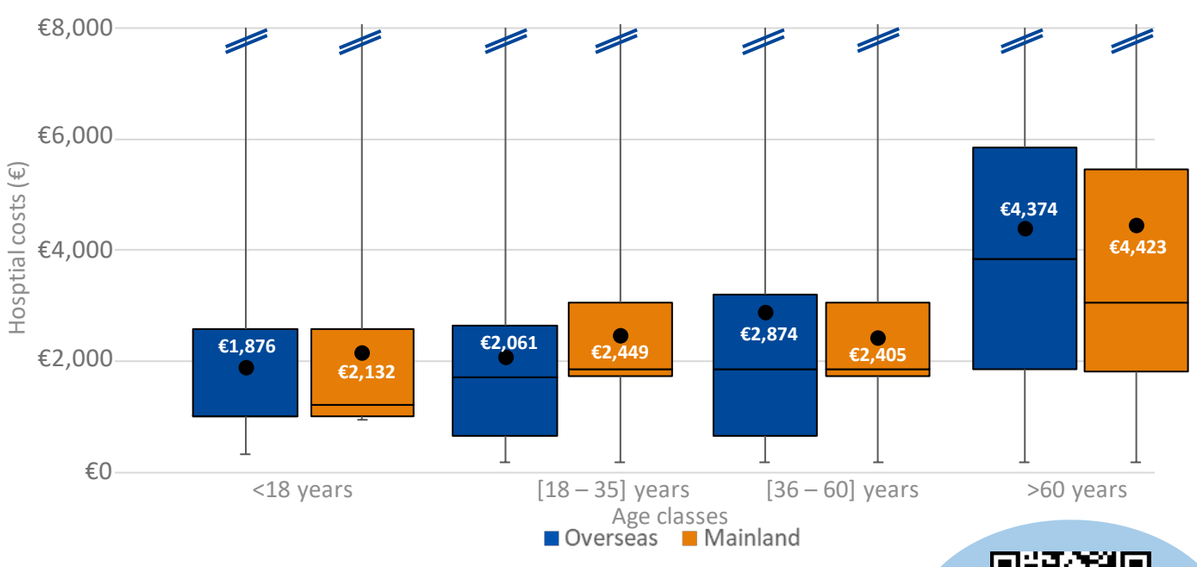


Figure 5: Hospital costs by age classes and region



CONCLUSIONS

- This study provides recent real-world evidence on healthcare resource use and related costs of hospitalized dengue cases in France, since a latest study published in 2016[4].
- This study focused only on hospitalized dengue cases, hence is not representative of all dengue cases in France.
- In recent years, the economic burden increased over years and was higher in French overseas territories, compared to Mainland.
- New alternatives for dengue prevention, such as new vaccines, could reduce the economic burden of dengue fever disease.

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