Healthcare Resource Utilization of Medically Attended Dengue in Children and Adults in Puerto Rico From 2019 to 2025: A Descriptive Study

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Background

Dengue viruses (DENV-1–4), spread by *Aedes spp.* mosquitoes, cause illness ranging from mild fever to life-threatening hemorrhagic fever and shock.[1] About 400 million infections occur annually worldwide (≈100 million symptomatic; ~40,000 deaths), and nearly half the global population is at risk.[1] In the Americas, dengue has risen sharply[2]; Puerto Rico is endemic with year-round transmission[3] and a consistently high burden in adolescents (10-19 years), children, and adults.[4,5] Despite well-described clinical and epidemiologic features, healthcare resource use during dengue illness – visits, hospitalizations, diagnostics, medications, information sources, and support – is poorly characterized, limiting cost estimates and resource planning. Using the Sentinel Enhanced Dengue Surveillance System (SEDSS) in the Ponce Health District, we describe dengue healthcare utilization by age and care setting (outpatient and hospitalized) to inform resource estimates and public health planning in Puerto Rico.

Objectives

- To describe the demographic characteristics of medically attended dengue patients for laboratory confirmed in Puerto Rico from 2019 to 2025
- To evaluate patients' care plans once diagnosed and estimate health-related costs

Methods

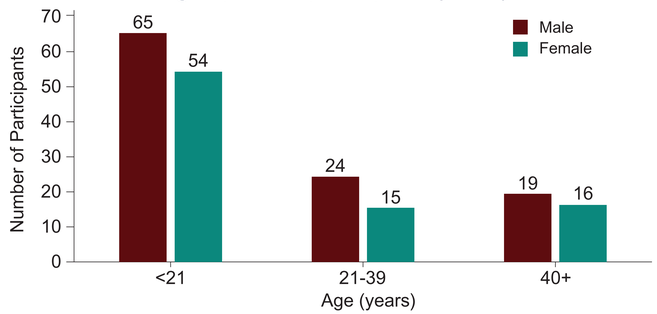
This preliminary analysis is based on a retrospective observational study using structured secondary data from SEDSS and electronic medical record chart review from Centro Médico Episcopal San Lucas and the Integrated Medicine & Emergency Center in Ponce, Puerto Rico (population coverage ≈500,000). Eligible participants included PCR-confirmed dengue cases with documented clinical management. Standardized abstraction forms were used to collect demographic characteristics, level of care (emergency, outpatient, inpatient), laboratory test results, clinical evaluations, treatments, procedures, and associated costs.

Results

We reviewed 193 dengue cases; 56% were male (n=108) and 44% female (n=85), with a mean age of 23.4 years (SD=16.4). Most patients (62%, n=119) were younger than 21 years, followed by those aged 21-39 years (20%, n=39) and ≥40 years (18%, n=35). Cases were reported across 19 municipalities. DENV-3 was the predominant serotype (64%), with DENV-2 and DENV-1 representing 16% and 20% of cases, respectively.

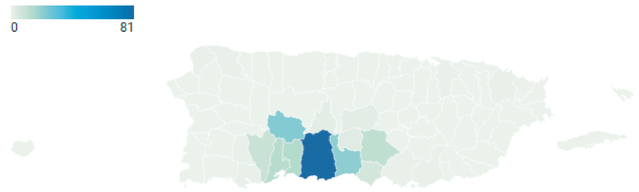
Most patients (74%) were discharged home, 24% required hospitalization, and 2% were transferred to other facilities for higher levels of care.

Figure 1. Age and sex distribution of dengue-positive participants (n=193)



This bar chart displays the frequency of PCR-confirmed dengue cases by age group and sex.

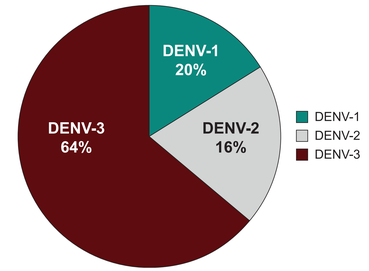
Figure 2. Geographic distribution of PCR-confirmed dengue cases by municipality in Puerto Rico



The map visualizes the spatial distribution of cases reported from each location. The table displays the frequency and percentage of cases by municipality. The majority of the cases is concentrated at Ponce (n=81, 42%), followed by Adjuntas (n=23, 12%), and Juana Diaz (n=21, 11%).

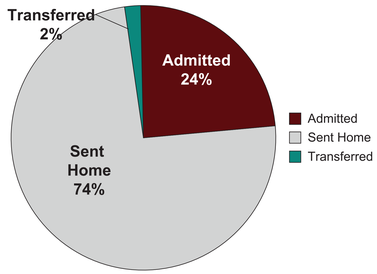
Municipality	Frequency	Percentage
Adjuntas	23	12%
Aguadilla	1	1%
Coamo	11	6%
Guánica	1	1%
Guayama	1	1%
Guayanilla	13	7%
Isabela	1	1%
Jayuya	2	1%
Juana Diaz	21	11%
Orocovis	2	1%
Peñuelas	14	7%
Ponce	81	42%
Rio Grande	1	1%
Sabana Grande	1	1%
Salinas	1	1%
San Juan	1	1%
Santa Isabel	6	3%
Villalba	3	2%
Yauco	9	5%
TOTAL	**193**	**100%**

Figure 3. Distribution of dengue virus (DENV) serotypes among PCR-confirmed dengue cases



The pie chart illustrates the proportion of dengue cases by DENV serotype. DENV-3 accounted for the majority of cases (64%, n=123), followed by DENV-1 (20%, n=38) and DENV-2 (16%, n=32). No cases of DENV-4 were detected.

Figure 4. Disposition of medically attended dengue patients at initial encounter (n=193)



Clinical disposition of patients with PCR-confirmed dengue virus infection at the conclusion of their initial medical visit.

Conclusions

Dengue cases occurred across a wide age range, with the highest burden among individuals <21 years, underscoring continued transmission among children and adolescents. Adult infections highlight that risk extends beyond pediatric groups. Absence of DENV-4 suggests ongoing serotype-specific circulation patterns during the study period. Most patients received outpatient care, reflecting predominantly mild to moderate disease. Nevertheless, the 24% hospitalization rate indicates that a significant proportion required closer monitoring for warning signs or complications. Notably, the study reported zero mortality among patients.

References

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Acknowledgments

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Disclosures

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