

Epidemiology and Hospital Management of Patients With PROS in France

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OBJECTIVE

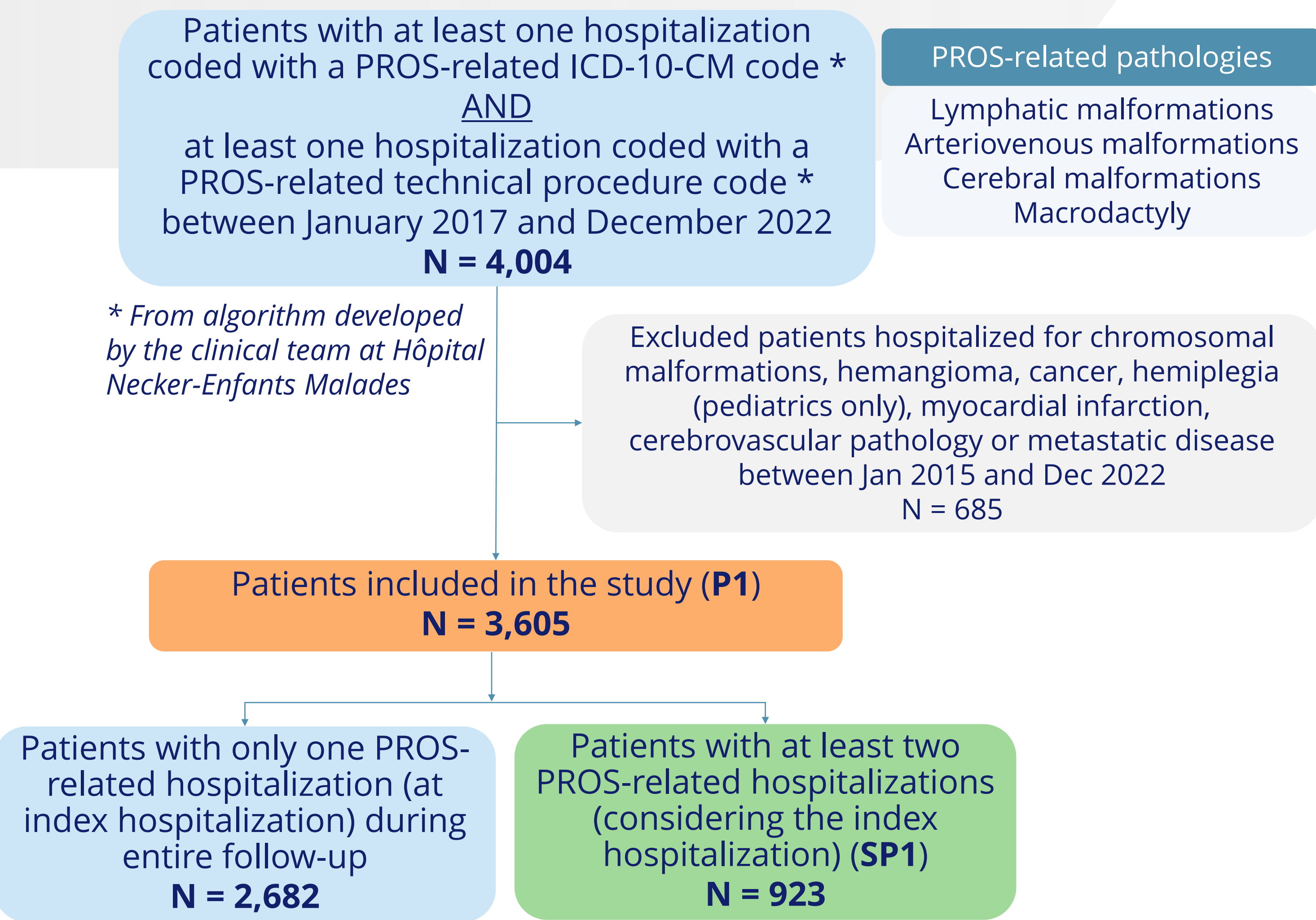
- > PIK3CA-related overgrowth spectrum (PROS) is a rare condition with diverse clinical manifestations caused by activating PIK3CA mutations, with a prevalence estimated to 14 patients per 1 million persons according to OrphaNET and NIH Genetics.
- > However, confirming the epidemiology and burden of PROS remains challenging due to the lack of specific medico-administrative coding. Although today no treatment is approved in Europe for PROS, alpelisib has demonstrated significant improvement in treating patients with severe forms of PROS (EPIK-P1 study)¹.
- > This study assesses the epidemiology and hospital-related resource utilization of patients with multiple PROS-related hospitalizations to support alpelisib assessment by French Health Technology Assessment (HTA) authority.

METHODOLOGY

- > **Data source:** Retrospective analyses of the French national claims hospital database (PMSI) were conducted from January 2015 to December 2022.
- > **Study design:** Patients were identified using a combination of inclusion (e.g., malformations commonly associated with PROS) and exclusion (e.g., hemangioma diagnosis) criteria based on ICD-10-CM and technical procedure codes at time of hospitalization.
- > **Index date:** First occurrence of an ICD-10-CM code or a technical procedure code associated with PROS during the inclusion period (2017-2022).
- > **Outcomes:** Hospitalizations and external technical procedures and visits (ACE) rates were estimated per person-year (PPY) in the total population (P1) and the sub-population (SP1) of patients with multiple PROS-related hospitalizations.

RESULTS

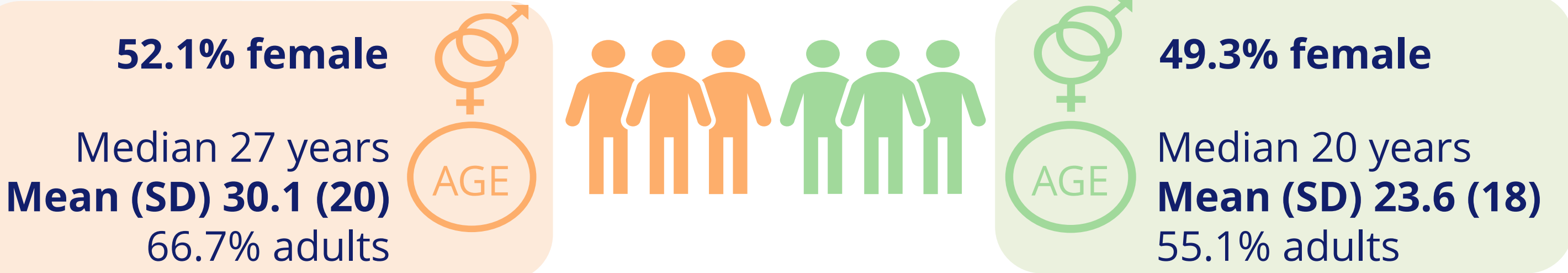
PATIENT IDENTIFICATION



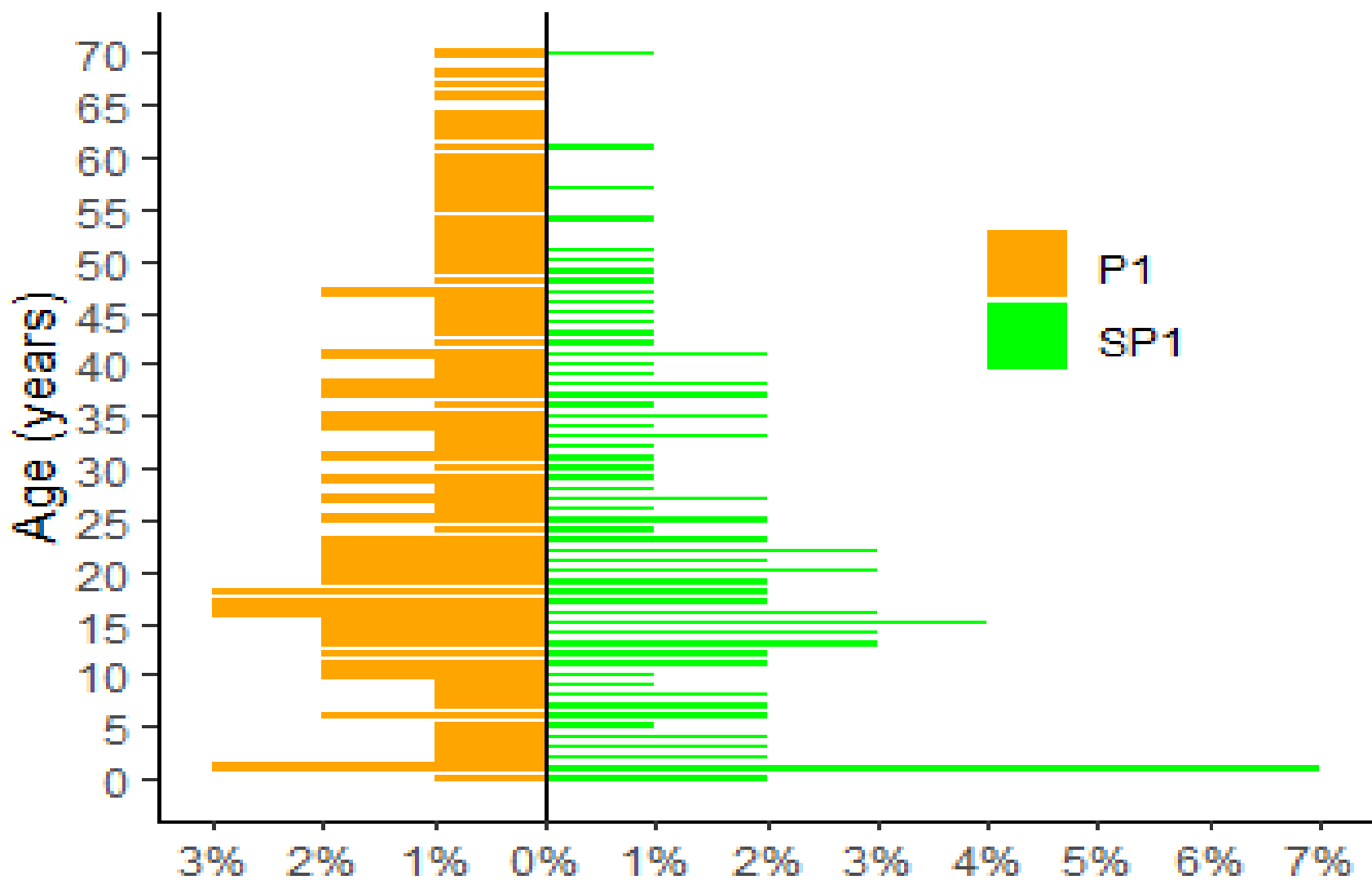
« AT HOSPITAL »-BASED PREVALENCE

	P1 (N = 3,605)	SP1 (N = 923)
Yearly prevalence rate per 1 million inhabitants [95% CI]	8.83 [8.15 - 9.57]	5.89 [5.34 - 6.49]

SOCIO-DEMOGRAPHIC CHARACTERISTICS



AGE DISTRIBUTION



Patient age was calculated at index date. Pediatric patients, particularly one-year-old patients and those aged 13 to 17 years, were proportionally more present in both populations than the other age groups, and there was also a larger proportion of one-year-old patients in SP1 compared to P1.

FOLLOW-UP

In the **P1** group, **47.8% had at least one additional** all-cause hospitalization in France after index date, with a median (Q1 - Q3) follow-up of **0 months (0.0 – 16.7)** (52.2% had only the initial hospitalization). By contrast, 100% of SP1 patients had at least one additional hospitalization, with a median (Q1 – Q3) follow-up of **15 months (5.5 – 32.7)**.

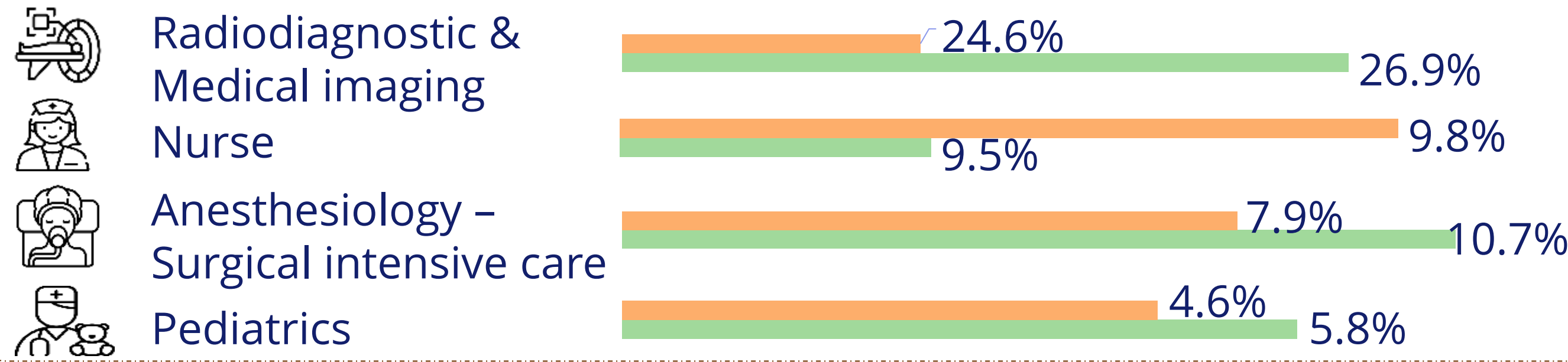
HEALTHCARE RESOURCE CONSUMPTION (HCRU)

59% of the PROS-related hospitalizations were **outpatient hospitalizations** for P1 and SP1, respectively.

HCRU per person-year (PPY) during the follow-up period (index included) [95%CI]	P1 (N = 3,605)	SP1 (N = 923)
All-cause hospitalization	2.52 [2.47- 2.58]	2.28 [2.21- 2.36]
All-cause ACE	6.03 [5.95 - 6.12]	5.44 [5.32 - 5.56]
PROS-related hospitalization	1.61 [1.57- 1.66]	1.59 [1.53- 1.66]
ACE executed by specific specialties*	1.59 [1.55 - 1.64]	1.70 [1.63 - 1.76]
Emergency room visits not followed by hospitalization	0.53 [0.51 - 0.56]	0.45 [0.41 - 0.48]

*Medical specialties associated with PROS

Main Specialties of Healthcare Professionals Executing ACEs of Interest



The **higher rate of all-cause and PROS-related hospitalizations** PPY in P1 compared to SP1 likely reflects the **longer mean (SD) follow-up for SP1 patients** (20.5 (17.7) vs. 10.7 (16.7) months).

Additionally, PROS-related hospitalizations PPY were generally lower in **adult** patients in both P1 and SP1 groups (1.45 [95% CI: 1.40–1.50] and 1.53 [1.45–1.62], respectively) compared to **pediatric age groups** (0-1, 2-5, and 6-17 years).

CONCLUSION

- > This study presents a novel method to identify patients with PROS hospitalized for disease management in a French claims database and provides insights on the epidemiology and gives an overview of the hospital management of these patients.
 - o Due to the absence of specific diagnosis codes for PROS (such as ICD-10-CM), patients in this study were identified using inclusion and exclusion criteria from an algorithm developed by the clinical team at Hôpital Necker-Enfants Malades (AP-HP).
- > We identified **3,605 patients (P1) hospitalized for PROS** management in France from 2017 to 2022, with 26% (923 patients – **SP1**) having at least one subsequent PROS-related hospitalization after their initial admission.
- > Although the hospital management costs of PROS were analyzed in this study, the results are not presented. The estimated costs would only provide a partial view of the economic burden to the French Health Insurance system, focusing solely on Medical, Surgical and Obstetrics (MSO) hospitalization costs.
 - o Experts indicate that patients with PROS often need additional services beyond hospitalization, such as home care, post-surgical follow-up, rehabilitation, and support from office-based practitioners—including physiotherapy, speech therapy, and home nursing care for patients on anticoagulant therapy requiring daily heparin injections—which were not/could not be considered in this analysis.
- > Thanks to this innovative method, we now have insights on the epidemiology and hospital management of patients hospitalized for PROS in France.

REFERENCES

1. Canaud, Guillaume, et al. "Alpelisib for treatment of patients with PIK3CA-related overgrowth spectrum (PROS)." Genetics in Medicine 25.12 (2023): 100969.

ACKNOWLEDGMENTS

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CG : Public health physician; SB, PN: Alira Health SAS France; BD, BL, MAS : Novartis Pharma SAS; PM : IT&M Consulting SAS; CTS : Public health physician

