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Stroke care pathways according to rural-urban residency

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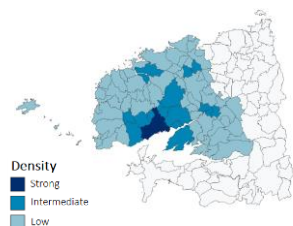
Context and Objectives

Stroke is a pathology that traces the performance of the health system, requiring coordination of all of its components (from prevention to rehabilitation). In the French context, a 2019 study showed a higher incidence, but **lower lethality in rural areas** covered by the Brest Stroke Registry [1]. This result is in opposition what was observed in a second study covering the national territory [2].

The **objectives** were **1** - to characterize the care pathways of patients with ischemic stroke and **2** - to study the association with rural-urban residency context of the patient.

Methods

Rural urban indicator



Data

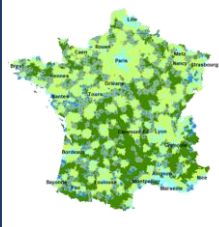
Brest stroke registry - ischemic stroke between 2010 and 2013 (clinical data)

Pairing

French National Health Insurance Data System (SNDS) (healthcare consumption)

Rural urban indicator

Data



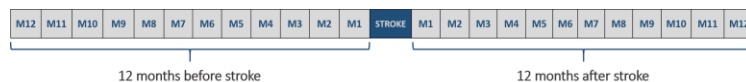
Typology

- Large urban areas, excluding rural areas
- Rural territories in large areas
- Medium, small areas, multipolarized municipalities, non-rural
- Rural territories of medium and small areas
- Isolated rural

Typology of pathways

Multichannel Sequence Analysis (MCSA) [3]

Hierarchical Ascending Classification (CAH)



Results

BREST AREA

2 499 ischemic stroke
52.9% 79.5 y
47.1% 70.8 y

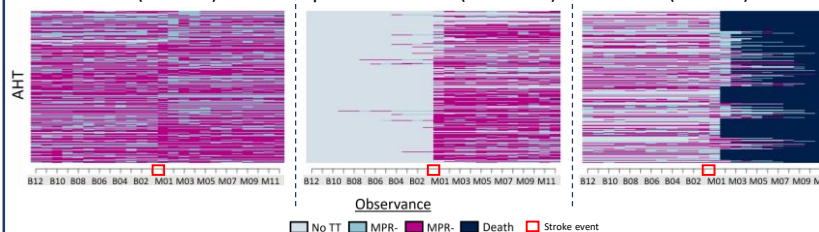
Three typologies of pathways

(Illustrated below according to the antihypertensive consumption indicator)

Prevention of vascular risk (n = 843)

Low consumption of pre-stroke care (n = 1 117)

Post-stroke death (n = 539)

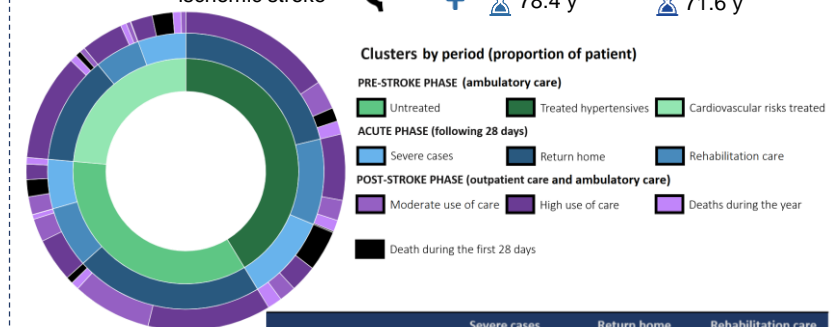


No association between the clustering and rural-urban residency. However:

- In low density area (« rural ») use of care is comparatively higher and case fatality lower compared to strong and intermediate densities,
- In intermediate density area (« peri-urban ») use of care is significantly lower than strong and low densities.

FRANCE

85 250 ischemic stroke
48.8% 78.4 y
51.2% 71.6 y



	Severe cases OR [95% CI]	Return home OR [95% CI]	Rehabilitation care OR [95% CI]
Stroke unit: Yes vs No	0.90 [0.86 – 0.94]*	0.94 [0.91 – 0.97]*	1.20 [1.15 – 1.24]*
Intensive care: Yes vs No	6.09 [5.49 – 6.76]*	0.22 [0.19 – 0.25]*	0.77 [0.67 – 0.88]*
Short-Term Hospitalization Units: Yes vs No	0.89 [0.84 – 0.94]*	1.10 [1.05 – 1.15]*	

*adjusted on gender, age, rural-urban residency, charlson score, social protection scheme, clustering of the pre-stroke phase

- Use of care, whether before or after stroke occurrence, did not differ according to rural-urban residency, apart from a higher access to Stroke Unit in large urban areas.

Conclusions

- We did not identify a clear relationship between the typology of stroke care pathways and rural-urban residency, suggesting equity of care,
- The clustering of the acute phase is differentiated by the stroke management services,
- The three period (pre-stroke phase, acute phase and poste-stroke phase) are independent of each other.

[1] Grimaud O, Lachkhem Y, Gao F, et al. Stroke Incidence and Case Fatality According to Rural or Urban Residence: Results From the French Brest Stroke Registry. Stroke. 2019;50(10):2661-2667. doi:10.1161/STROKEAHA.118.024695 ;

[2] Gabet A, Grimaud O, de Peretti C, Béjot Y, Olié V. Determinants of Case Fatality After Hospitalization for Stroke in France 2010 to 2015. Stroke. 2019;50(2):305-312. doi:10.1161/STROKEAHA.118.023495 ;

[3] Gabadinho A, Ritschard G, Müller NS, Studer M. Analyzing and Visualizing State Sequences in R with TraMineR. J Stat Softw. 7 avr 2011;40:1-37