

# Risk factors of longer hospital stays in paediatric bone and joint infections in France

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## Introduction

- Paediatric Bone and joint infections (PBJI), even in rare (22/100,000 in France in 2008) can cause growth disturbance and joint sequelae.
- PBJI management can be monitored through national hospital discharge databases (NHDD).
- Recent published studies suggest that a short hospital intravenous treatment (2-5 days) is effective, allowing a fast discharge, especially because PBJI are mainly discharged home (93% in France in 2008).

Grammatico-Guillon L et al. Acta Paediatr. 2013.

Castellazzi L et al. Int J Mol Sci. 2016.  
Pääkkönen M et al. Int J Antimicrob Agents. 2011.

**Objective : to identify the factors associated with hospital stays longer than 5 days (>5d) in PBJI, using 2013 French NHDD**

## Methods

- Case selection: validated algorithm including specific diagnostic and procedure codes of hospital discharge resume.

Grammatico-Guillon L et al. J. Hosp. Infect. 2012.

- Patients included:
  - Age < 15 years
  - Haematogenous PBJI
  - First hospitalisation in the year
- Exclusion criterion:
  - ambulatory stays

## Results

- National incidence: 22/10<sup>5</sup>** (fig 1):
  - Stable between 2008 and 2013
  - Higher among boys (26/10<sup>5</sup>) and children ≤ 1 year (59/10<sup>5</sup>)

- 28% of patients with coded microorganisms** (fig 2):
  - Staphylococci 50%

- 49% of stays >5d:**
  - Mean length: 7,5d
  - Decreasing: 8,5d in 2008

### → Risk factors of longer stays

(table):

- Infant < 1y
- Spondylodiscitis
- Sickle cell disease
- Bacteria: Staphylococci, Streptococci
- Hospitalisation in a General Hospital

- Crude regional disparity +++** (fig 3)
  - Distribution of cases according to the hospital size and type

## Tables and Figures

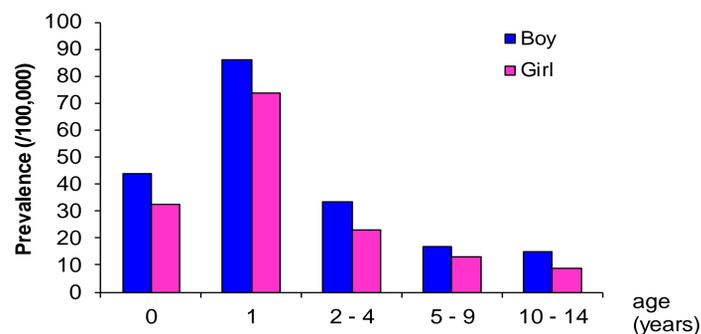


Figure 1 Prevalence of PBJI by age, France 2013

Table Characteristics of PBJI stays and risk factors of stays >5 days, France 2013

CHILDREN France 2013	n	>5d (%)	Bivar. p-value	Multivariate OR	IC95%
<b>Patients</b>	<b>2,717</b>	<b>49</b>			
<b>Type of PBJI</b>			<b>0.02</b>		
Septic arthritis	1,368	50		1	
Osteomyelitis	1,256	47		0.94	0.80 - 1.11
Spondylodiscitis	93	62		2.21	1.42 - 3.45
<b>Age group</b>			<b>&lt;0.01</b>		
<1 year	303	54		1	
1 year	632	42		0.73	0.55 - 0.97
2 - 4 years	689	43		0.70	0.53 - 0.93
5 - 9 years	604	54		0.88	0.66 - 1.18
10 - 14 years	489	57		0.89	0.65 - 1.21
<b>Sex</b>			<b>0.5</b>		
Boy	1,594	50			
Girl	1,123	48			
<b>Surgical stay</b>	1,577	48	<b>0.4</b>		
<b>Type of hospital</b>			<b>&lt;0.01</b>		
Teaching hospital	1,745	45		1	
General hospital	894	57		1.59	1.34 - 1.89
<b>Comorbidities</b>	98	77			
Sickle cell disease	38	84	<b>&lt;0.01</b>	7.00	2.89 - 16.94
Cancer	15	53	<b>0.7</b>		
<b>Microorganisms</b>	750	67			
Staphylococci	376	77	<b>&lt;0.01</b>	4.30	3.29 - 5.62
Streptococci	124	79	<b>&lt;0.01</b>	4.61	2.94 - 7.22

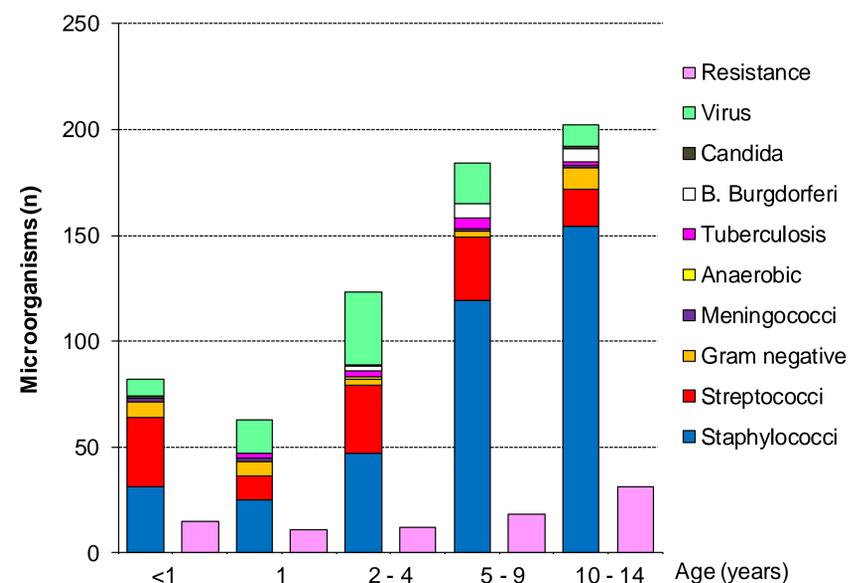


Figure 2 Number of microorganisms coded in PBJI by age, France 2013

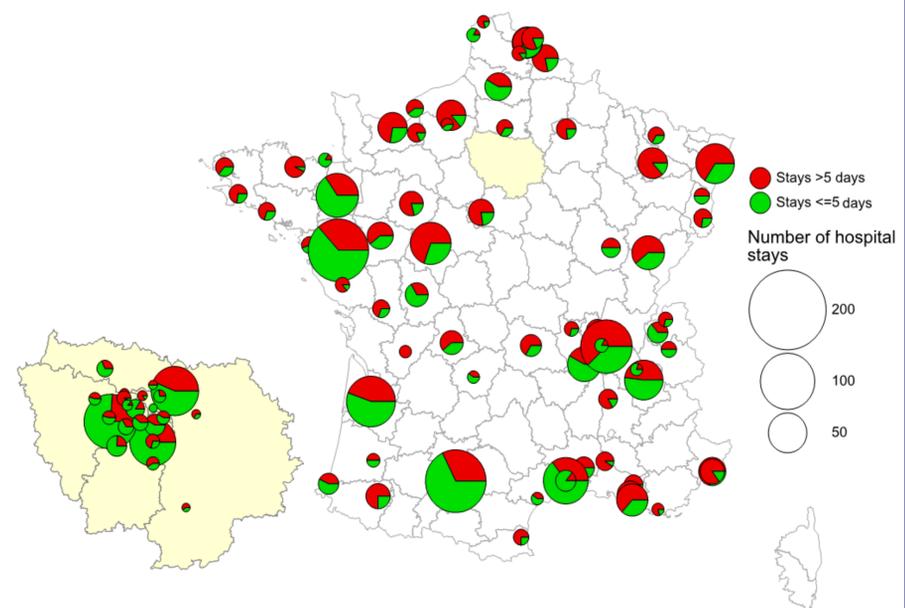


Figure 3 Crude number of PBJI stays and percentage of stays >5d, by hospital, France 2013

## Discussion

- Epidemiological trends:
  - Similar to the previous French study → stability
  - Consistent with literature → confirms the relevance of NHDD to monitor PBJI
  - But limited contribution for microbiology epidemiology (no code for *K. kingae*, probably too many coded viruses)
- Nearly half of the stays >5 days, but decreasing mean length of stay → positive impact of the recent recommendations?
- After adjusting for severity, stays in General Hospitals remain longer than in Teaching Hospitals:
  - Lack of information about recent guidelines?
  - Fewer PBJI cases managed leading to fewer well-established procedures? Including delay in performing diagnostic tests (scan/microbiology)?

Greater knowledge and widespread use of short treatment regimens are needed, along with developing telemedicine