

# Hospital Costs of Balloon Pulmonary Angioplasty (BPA) Procedure and Management for Chronic Thromboembolic Hypertension Patients:

An Observational Study Based on the French National Hospital Discharge Database (PMSI)

PCV25

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## Introduction

Balloon Pulmonary Angioplasty (BPA) is an option in the management of patients with inoperable or recurrent chronic thromboembolic pulmonary hypertension (CTEPH) despite previous surgical procedures. BPA has been carried out since 2014 by 2 centers in France, Paris-Sud (Marie Lannelongue, Bicêtre Hospital) and the Grenoble University Hospital. The procedure requires dilatation sessions performed during several hospital stays.

## Objectives

To assess the hospital cost of BPA sessions and management in patients with CTEPH in France.

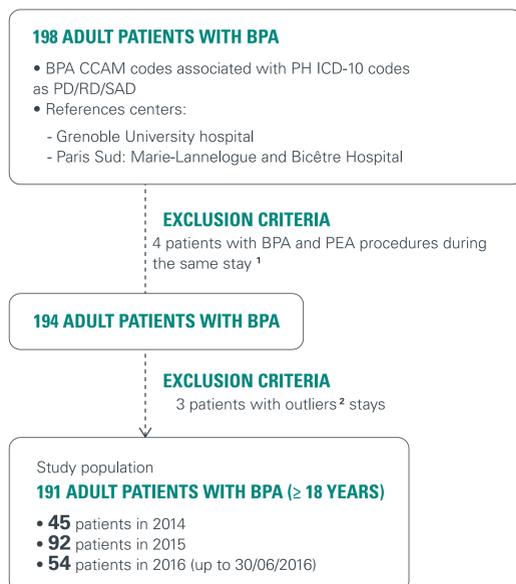
## Methods

An observational retrospective cohort study was conducted using the French national hospital discharge database (PMSI-MCO). All adult patients hospitalized for a BPA (with at least one hospitalization for Pulmonary Hypertension (PH), ICD-10 codes I270 and I272, as PD or RD or SAD and with an associated BPA procedure, CCAM codes DFAF001, DFAF002, DFAF003, DFAF004) between January 1st, 2014 and June 30th, 2016 in the 2 centers performing BPA in France (Paris Sud and Grenoble University hospitals) were included.

As BPA is a new therapeutic approach introduced in 2014, all patients are incident for BPA procedure. Patients were followed from the first hospital stay for BPA until 6 months or death, whichever occurred first. Follow-up stays were classified as BPA procedure(s), BPA complications and CTEPH management based on a pre-defined algorithm and a medical review using type of diagnosis (ICD-10), delay from last BPA procedure stay and length of stay. Costing were determined from National Health Insurance perspective. Hospital costs (including medical transports) were estimated using published official French tariffs from 2014 to 2016 and expressed in 2017 Euros. Patients with costly surgery stays (not related to CTEPH) were excluded from the study population (n=3).

## Flow chart of the study population

01/01/2014 - 30/06/2016 (PMSI-MCO)



## Conclusion

The study allows assessing in real-life the hospital cost of BPA sessions and management in CTEPH patients, especially relevant at a time when the position of BPA in the therapeutic algorithm is regularly re-assessed. Results were sensitive to age classes, density of city of residence and some comorbidities.

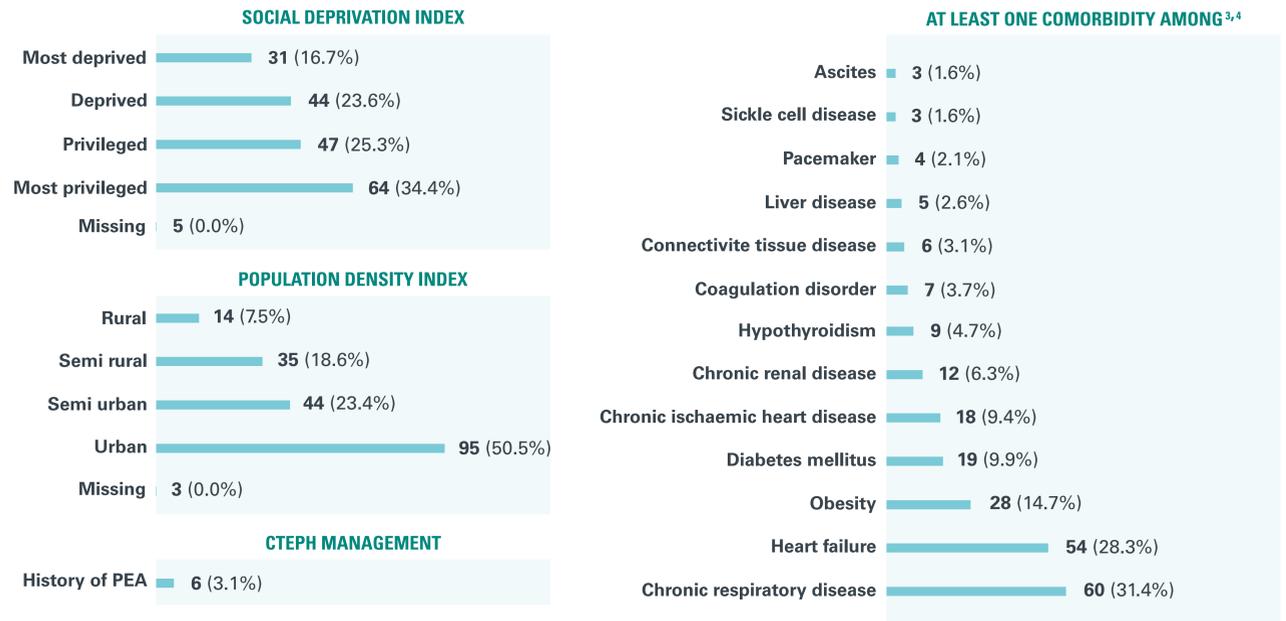
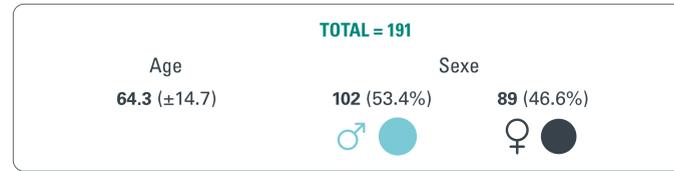
<sup>1</sup> Patients presenting during the same hospital stay, a PEA and a BPA (in this context, the BPA is considered as rescue procedure - and is directly linked to the PEA instead of the CTEPH management)  
<sup>2</sup> Patients with costly surgery stays (not related to CTEPH)  
<sup>3</sup> Information available since 2006  
<sup>4</sup> ICD-10 codes used to track comorbidities have been validated by experts

PEA : Pulmonary Endarterectomy  
 PD : Principal Diagnosis  
 RD : Related Diagnosis  
 SAD : Significantly Associated Diagnosis

## Results

### Demographic and medical characteristics of patients at baseline

The mean age at inclusion was 64.3 years and 53.4% were male. A history of PEA procedure was found for 3.1% of patients. Mean duration between the first hospitalization for PH (since 2006) and BPA inclusion stay was 2.1 years (SD = 2.5) and median duration was 1.1 years.



### Characteristics of hospital stays

(6 month-follow-up)

Over a 6 month-follow-up, 76% of patients had at least one additional stay with BPA sessions and 42% had at least one additional stay for CTEPH management. Only 2 patients had one additional stay for BPA management. The total hospital cost for CTEPH adult patients experiencing BPA was € 4,343,886 (including € 464,510 for costs of transports). This cost included mainly (93.3%) the cost of stays with BPA sessions.

