



# Characteristics of asthma-related nocturnal cough – a potential new digital biomarker

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## Introduction

- The nature of nocturnal cough is largely unknown
- It might be a valid marker for asthma control but very few studies characterized it as a basis for better defining its role and its use as clinical marker
- This study investigated prevalence and characteristics of nocturnal cough in asthmatics over the course of 4 weeks

## Methods

- In 2 centers, 94 adult patients with physician-diagnosed asthma were recruited
- Patient-reported outcomes and nocturnal sensor data were collected by a smartphone with a chat-based study app

## Results (1)

- Patients coughed in 53% of 2212 nights (range 0-345 coughs/night, figure 1a)
- Nocturnal cough rates showed considerable inter-individual variance (figure 1b)
- The highest counts were measured in the first 30 minutes in bed (4.5-fold higher than rest of night, figure 1c)

## Results (2)

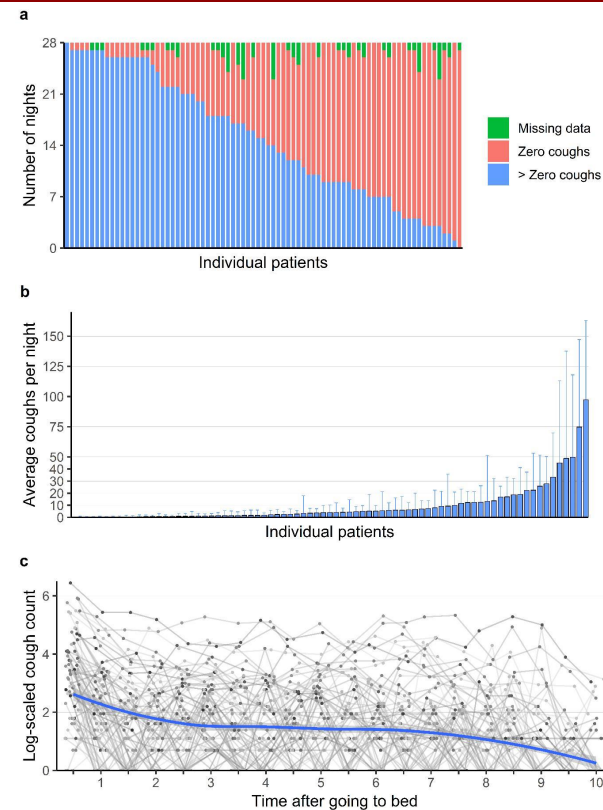


Figure 1

## Results (3)

- 86% of coughs were part of a cough cluster. Clusters consisted of a median of 2 coughs (IQR 2-4, figure 2)

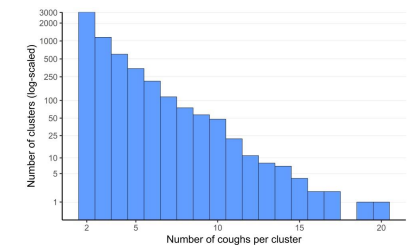


Figure 2

- Nocturnal cough was persistent within patient

## Conclusion

- To the best of the authors' knowledge, this study is the first to describe prevalence and characteristics of nocturnal cough in asthma over a period of one month, demonstrating that it was a prevalent symptom with large variance between patients and high persistence within patients
- Cough events in asthmatics were 4.5 times more frequent within the first 30 minutes of bedtime indicating a potential role of positional change

## Acknowledgments

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