



# Innovació Europea en l'atenció a la rinitis basada en apps – Estudi MASK

Xavier Basagaña

# MASK

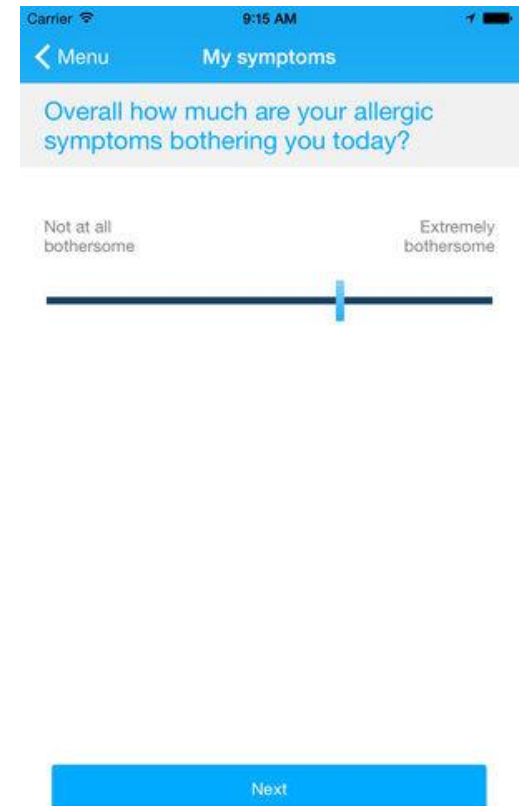
- MASK-rhinitis (Mobile Airways Sentinel Network for allergic rhinitis) is a patient centered information and communications technology (ICT) system.
- A mobile phone app (Allergy Diary) central to MASK has been launched in 23 countries and has been validated



Visual Analog Scale (VAS)<sup>†</sup>

Not at all severe ————— Extremely severe

**Finger Approach**

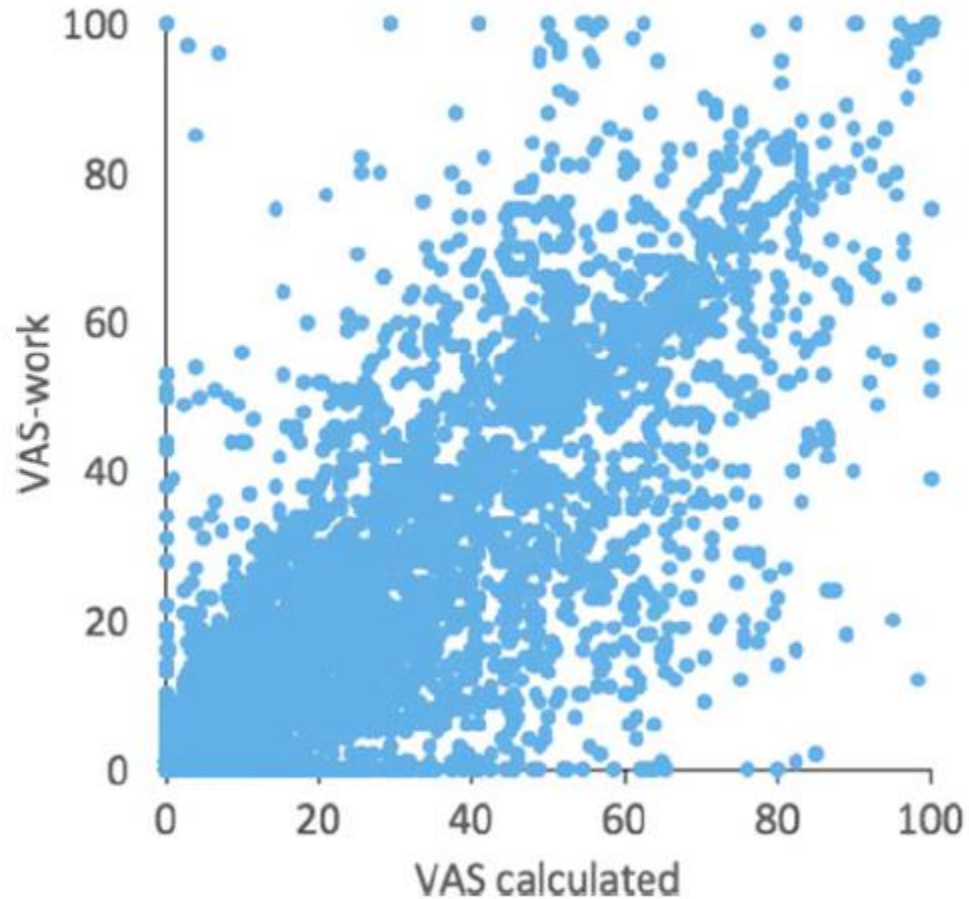


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**TABLE 1** Study outcome measures

		Question	VAS score measured or calculated
1	MASK	VAS-global measured <sup>a</sup>	Overall, how much are your allergic symptoms bothering you today?
2		VAS-nasal	How much are your nose symptoms bothering you today?
3		VAS-ocular	How much are your eye symptoms bothering you today?
4		VAS-asthma	How much are your asthma symptoms bothering you today?
5		VAS-global calculated	VAS-nasal + VAS-ocular/2
6		VAS-work <sup>b</sup>	How much are your allergic symptoms affecting your work today?
7	WPAI:AS	Q4-WPAI:AS <sup>c</sup>	During the past 7 d, how much did allergies affect your productivity while working?

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- Data on treatment use is also collected.
- The treatments reported included 504 drugs.

**TABLE 2** Adherence to treatment in users reporting  $\geq 5$  d of visual analog scales (VAS) in 2016

Treatment reporting (d)	N	Pattern <sup>a</sup>			Number of treatments during the reporting			
		Adherent (%)	Discontinuous (%)	Non-adherent (%)	1 (%)	2 (%)	3 (%)	$\geq 4$ (%)
5-7	98	40 (40.8)	12 (10.2)	46 (47)	41 (41.8)	33 (33.7)	21 (21.4)	3 (3.1)
8-14	85	28 (32.9)	17 (20)	40 (47.1)	27 (31.7)	20 (23.5)	19 (22.3)	19 (22.3)
15-30 <sup>b</sup>	181	71 (39.2)	18 (10)	92 (50.1)	52 (28.7)	55 (30.4)	37 (19.9)	37 (19.9)

<sup>a</sup>Adherent: reporting  $\geq 80\%$  consecutive days and  $\geq 80\%$  days with treatment. Non-adherent: reporting  $< 80\%$  days with treatment. Discontinuous: reporting  $< 80\%$  consecutive days and  $\geq 80\%$  days with treatment.

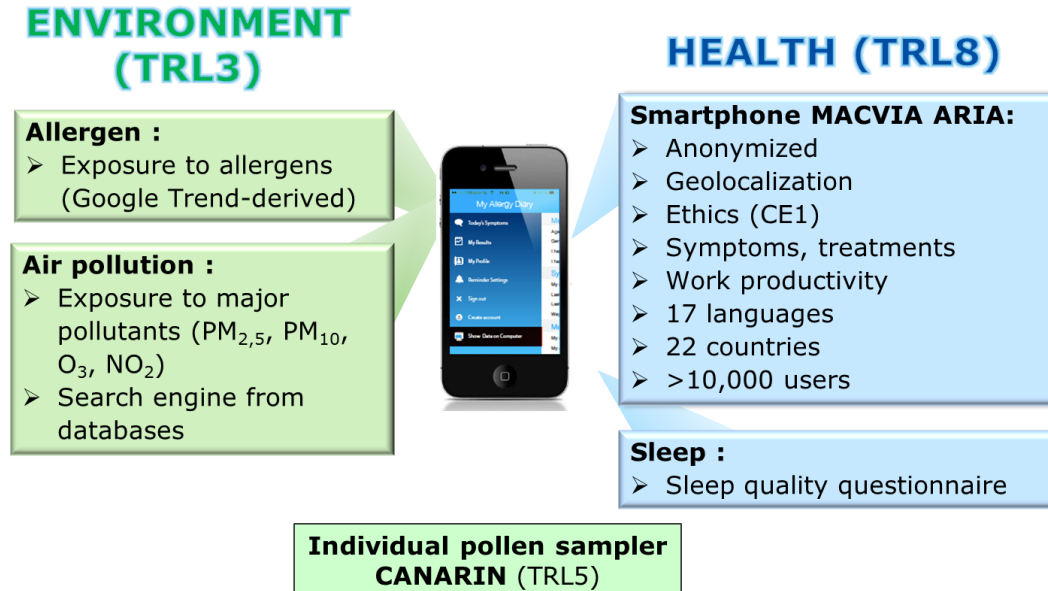
<sup>b</sup>Assessment of day 1 up to day 30 in users who reported  $\geq 15$  d of VAS.



Bousquet J et al. **Treatment of allergic rhinitis using mobile technology with real-world data: The MASK observational pilot study.** *Allergy*. 2018 Jan 15. doi: 10.1111/all.13406. [Epub ahead of print]

# POLLAR

- POLLAR (Impact of air POLLution on sleep, Asthma and Rhinitis) is a Horizon 2020 project of the European Institute of Innovation and Technology (EIT Health).
- It will use the Allergy Diary app for monitoring allergic rhinitis, and will combine it with data on levels of pollen allergens and air pollution.



# POLLAR – ISGlobal part

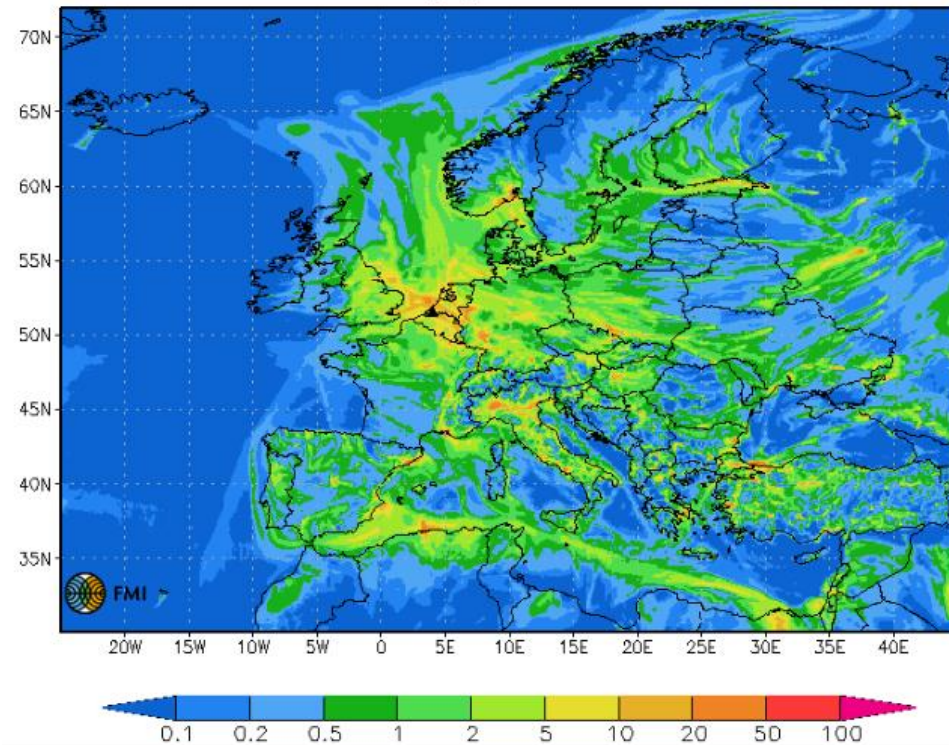
- Aim: to study the interaction between air pollution and pollen exposures on allergic rhinitis symptoms, among 20,000 users of the Allergy Diary app from 5 European countries (France, Portugal, Spain, Italy and Germany).
- Health data available:
  - The Allergy Diary app (Android and iOS). So far, 17,000 users have used the app and over 95,000 days of data are available.
  - Daily reports of the impact of the disease using a visual analogue scale (VAS) for overall allergic symptoms, nose symptoms, eye symptoms, asthma symptoms and impact on work productivity.
  - Daily use of medication.
  - Baseline data on symptoms and therapy.



# POLLAR – ISGlobal part

- Exposure data (from maps obtained via models):
  - Daily concentrations of pollen (Ambrosia, birch, cypress, ash, grass, poplar)
  - Daily concentrations of air pollution (PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>2</sub>, O<sub>3</sub> and Black Carbon)
- Linked via geocodes (anonimized).

Forecast for NO<sub>2</sub> gas. Last analysis time: 20180507 00  
Concentration, ugN/m<sup>3</sup>, 01:0010MAY2018





# POLLAR – ISGlobal part

- Statistical analyses: link between exposures and symptoms.
- Potential to create warnings based on pollen and air pollution levels.
- Methodological work: framework for health studies based on participatory app data.
  - Potential biases:
    - Participants are different from general population.
    - People use the app more when they have symptoms.
  - Study direction of bias and ways to correct for bias.



# Thanks

