

ReCIVA breath sampling in paediatric asthma: a feasibility study

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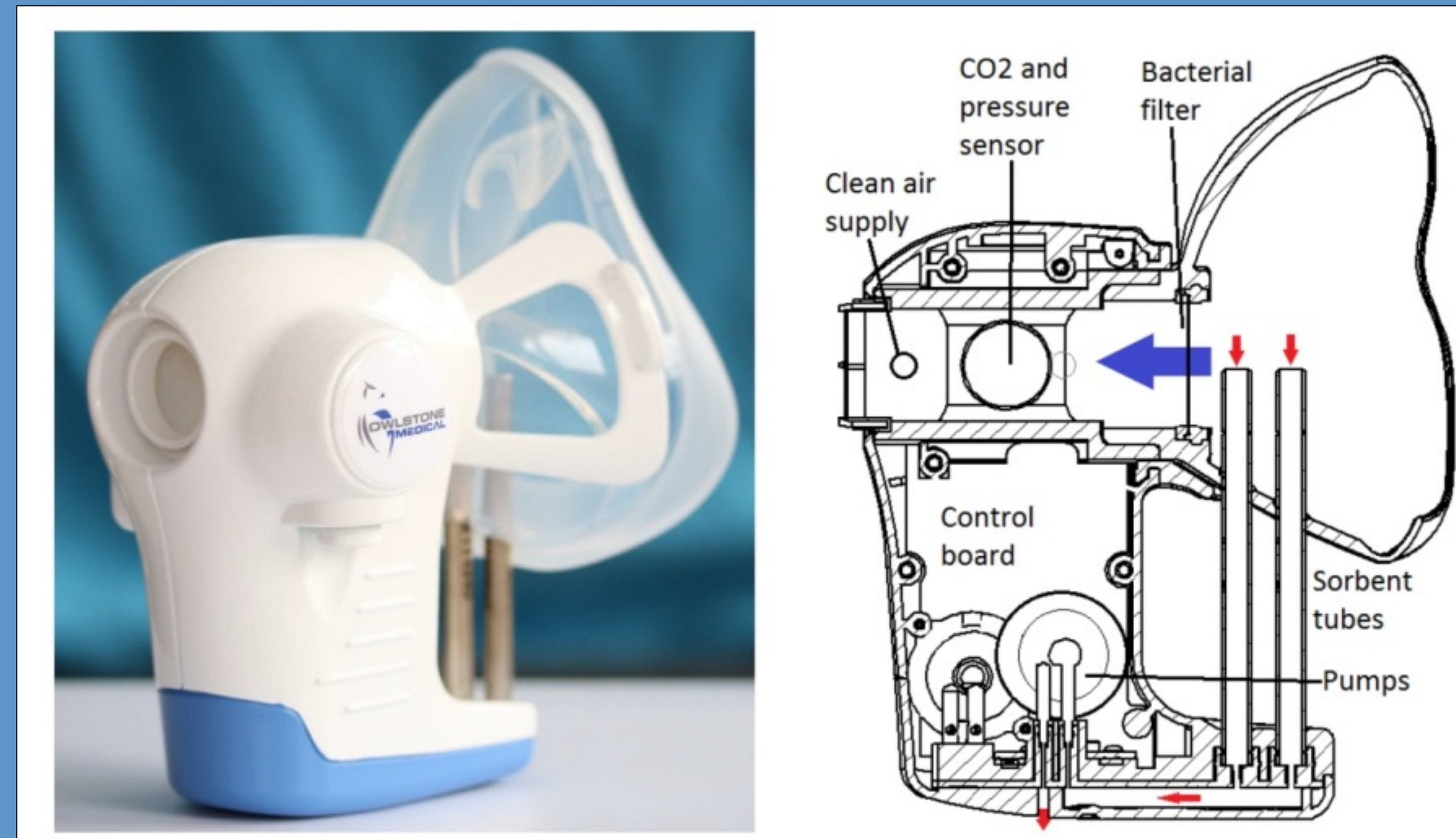


BACKGROUND

- Investigating airway inflammation and pathology in children can be difficult from both a technical and ethical standpoint
- In the EMBER clinical trial a ReCIVA (Owlstone Medical) breath sampling device was used for collection of breath samples at the bedside
- These samples can then be analysed in advanced metabolomics studies to ascertain exhaled volatile organic compound (eVOC) profiles
- We aimed to assess the feasibility of collecting breath samples from children at the bedside for metabolomics analysis in the acute setting

METHODS (continued)

Figure 2 : Photograph of device and schematic diagram of apparatus used (Owlstone Medical)



DISCUSSION – KEY POINTS

- Non-invasive breath analysis in children of varying ages with both acute and chronic asthma is feasible
- Acceptability was universal
- All but one sample collected were analysable

DISCUSSION – ONGOING WORK

- Optimisation of metabolomics data workflow to create a breath matrix
- This will allow extraction of identifiable biomarkers and eVOC profiles
- Ultimately leading to the possibility of these biomarkers being investigated in terms of phenotyping children with asthma

METHODS

Figure 1: Summary of methodology

We recruited children aged 5 to 16 years attending Leicester Children's Hospital with acute wheeze or stable asthma. Control subjects were also recruited. Parents provided written informed consent

Demographic and clinical data were collected. When clinically stable, children underwent breath sample collection

- Children breathed room air tidally into the ReCIVA mask device for up to 900 seconds.
- Two tubes of breath were collected from each child and they were transferred for analysis by means of gas-chromatography mass spectrometry
- Environmental air samples were simultaneously collected necessary for background subtraction

RESULTS

Table 1: characteristics of children recruited

Number of samples obtained		71
Median (range) age (years)		10 (5-16)
Male (%)		43.6
Type of recruit	Asthma	58
	Control	13
% tolerating procedure		100
% giving an analysable sample		98.5

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