Ametris | Hyfe

A New Digital Health Solution for Continuous, Long-Term Cough Monitoring

Accurate Cough Measures in Clinical Research are Important

Cough is a significant symptom in many disease areas that negatively impacts patients' quality of life and often correlates with disease progression and prognosis[1,2]. Cough frequency can be highly variable hour-to-hour and/or across days[3] and brief snapshots, such as 24-hour monitoring, may miss trends or reflect a misleading trajectory over time. Patient-reported cough severity and objective measures of cough frequency have shown only modest correlation[3], and self-reported cough is susceptible to a high placebo effect[4].

Until now, obtaining accurate measures of cough was a challenge, limiting the development of new treatments and our ability to improve care and patient outcomes. With our new solution -

- Accurately measure cough in acute and chronic conditions and assess responses to treatment
- Objectively evaluate symptom severity (complement subjective PROs)
- Detect exacerbations early and track progression over time

Multisensor Data Collection for Novel Insights

Our new combined solution allows researchers to leverage Hyfe's validated cough detection algorithms alongside Ametris' industry leading digital measures for physical activity, sleep, and vital signs for a comprehensive view of cough.

Private and Secure Cough Detection

AI models enable the identification of candidate cough events and feature extraction onboard Ametris' ActiGraph LEAP device. This means audio recordings are not stored or transferred, protecting the privacy of study participants.

Longitudinal, Continuous Monitoring

Cough is variable over time and can vary substantially between patients. Continuous cough monitoring over days, weeks, or months captures precise and information rich data about cough patterns that otherwise may have gone undetected with traditional assessments.

Low Burden, Easy to Use, Scalable Solution

The ActiGraph LEAP's fit-for-purpose, patient-centered design is worn on the wrist, supporting passive data collection and automated remote data uploads. Our scalable cloud platform and end-to-end support enable seamless deployment and near real-time data access.

HOW IT WORKS

AI-Powered, Digital Cough Monitoring Solution

Capture continuous, objective data with the FDA-cleared, multisensor ActiGraph LEAP, leveraging Hyfe's validated AI algorithms for monitoring cough[5]. Participants receive the wrist-worn ActiGraph LEAP, which uses on-device AI models for peak detection and feature extraction. Feature data is then processed through a classifier to categorize each one as a cough or non-cough. Each cough is time-stamped, and data is aggregated into digital measures of cough count or cough patterns such as bouts. The original audio data is then discarded to fully preserve patient privacy.

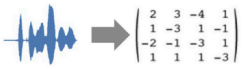
AI-Powered Cough Detection

Peak Detection & Feature Extaction

Participant wears ActiGraph LEAP® on the wrist

Microphone sensor scans for "explosive" sounds (e.g. bark, slam, cough)

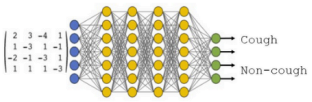
Only explosive sounds are fed into the AI model



The AI model simplifies each explosive sound into a mathematical matrix representing the key 'features'

Cough Classification

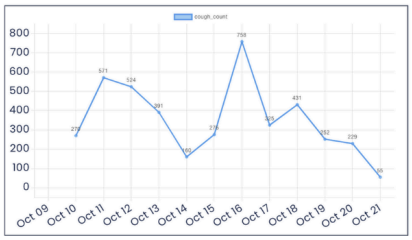
Key 'features' are reviewed by a 2nd AI model



'Features' are categorized as a **cough** or **non-cough**

Aggregate Cough Measure

Each cough is time-stamped to generate longitudinal, continuous cough frequency data



For example, daily cough rates over 2 weeks

Contact us to learn more about how we can support your study with continuous cough monitoring!

References

1. Khor et al. Am J Respir Crit Care Med. 2024 Oct 15;210(8):1035-1044.
2. Choate et al. Chronic Obstr Pulm Dis. 2020 Jan;7(1):49-59.
3. Lee et al. Lung. 2023 Dec;201(6):555-564.
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5. Chaccour et al., Sci Rep. 2025 Jan 6;15(1):880.