

# Self-monitoring solution in mobile app can help uncontrolled asthma

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Children with asthma use inhalers to relieve some of their symptoms, which include coughing, wheezing, chest tightness and shortness of breath. Credit: Tradimus / Wikimedia commons / [CC BY-SA 3.0](https://creativecommons.org/licenses/by-sa/3.0/)

A study by researchers at Karolinska Institutet shows that a treatment-adjustment algorithm based on lung function and symptoms in a mobile phone is useful for managing uncontrolled asthma. For fuss-free measuring of lung function, the phone connects to a wireless spirometer, and the app can register respiratory symptoms and provide visual

feedback on treatment. The study is published in the highly respected *European Respiratory Journal*.

Asthma is a widespread disease that affects around 10 percent of Sweden's population. Approximately half the affected people have so-called [uncontrolled asthma](#), and frequently experience breathing difficulties or [asthma](#) attacks. Inadequate management and/or incorrect use of medicines are common causes of this.

"Previous research has shown that asthma sufferers' health and quality of life improves with patient education that focuses on [self-care](#), self-testing and clear management plans. Additionally, health and medical care costs fall if patient involvement and knowledge can be leveraged," says Björn Nordlund, pediatric nurse and research group leader at the Department of Women's and Children's Health, Karolinska Institutet, Sweden.

Consequently, along with his colleagues, Björn developed a digital, automated self-care system for asthma. Called AsthmaTuner, it enables the measurement of [lung function](#) via a wireless spirometer connected to a mobile telephone app. Symptoms are evaluated using questions linked to an individual treatment plan. The system was approved for use in medical care in 2018. It is now marketed by MediTuner AB, a company partly owned by Björn Nordlund.

"The system analyses lung function and symptoms in accordance with asthma-care guidelines," he explains. "It then gives feedback in the form of automated, doctor-prescribed, treatment recommendation. Users also receive a picture of the inhaler that is to be used and instructions on whether the medication is to be maintained, increased or decreased."

The study was carried out in primary care and at the Astrid Lindgren Children's Hospital in Stockholm, Sweden. Its purpose was to evaluate

the digital tool's impact on symptoms and whether users more readily remembered to take their medicines.

The study comprised 77 uncontrolled asthma sufferers aged six and up. Around half of these were children and adolescents. Study participants were randomly chosen to use AsthmaTuner for at least eight weeks as a support for self-management, and also to receive traditional asthma care with a printed, individual treatment plan for at least eight weeks.

"In part, the results were hard to interpret. However, we could see that asthma symptoms improved more with the digital tool than they did with traditional care. Adult patients who used the tool at least once a week also more often remembered to take their medicines. Thus, we conclude that this tool can contribute to alleviating uncontrolled asthma sufferers' symptoms," says Björn Nordlund.

As asthma requires long-term, regular management, the researchers regarded the shortness of the study as a weakness. Hence the plans to continue the work. "We do not know if the effects last longer than eight weeks. Thus, we are starting a larger study this autumn. It will run for a longer period and be conducted in Norrtälje's Tiohundra medical care district and pediatric [medical care](#) in Stockholm (the Astrid Lindgren Children's Hospital)."

**More information:** Ljungberg H, et al. Clinical effect on uncontrolled asthma using a novel digital automated self-management solution: a physician-blinded randomised controlled crossover trial. *European Respiratory Journal* (2019). [DOI: 10.1183/13993003.00983-2019](https://doi.org/10.1183/13993003.00983-2019)

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