

NEWS RELEASE

Tackling respiratory disease with home-based services and solutions could improve the lives of six million people in the UK.

The SENSOR project: a collaboration between Portsmouth Hospitals NHS Trust, University of Portsmouth and Aseptika Ltd.

August 19, 2014, Cambridgeshire and Portsmouth: Respiratory diseases such as Chronic Obstructive Pulmonary Disease (COPD), Bronchiectasis and severe Asthma affect one in five of us, making it the third biggest cause of death in the UK.

The NHS provides 1 million hospital bed days for sufferers, spending an estimated £4.7 billion a year treating patients - and the costs are rising¹.

Portsmouth Hospitals NHS Trust ([PHT](#)), the University of Portsmouth ([UoP](#)) and the UK-based [Aseptika Ltd](#) (a small company in Cambridgeshire) have come together to develop, trial and evaluate new ways to help people with respiratory disease learn about means to maintain their health.

A tailored suite of simple medical devices, internet connected iPads and training in how to use them will be provided to 30 volunteer patients from the Portsmouth area. In the study, volunteers will measure their own parameters of health such as: lung function, levels of physical activity, oxygen levels in the blood and even their weight using devices, which then automatically send the information to a secure dedicated website, via the iPads issued to them.

Volunteers will also provide samples of sputum, which will be analyzed later at PHT using a new test developed by Aseptika that measures the level of activity of certain bacteria.

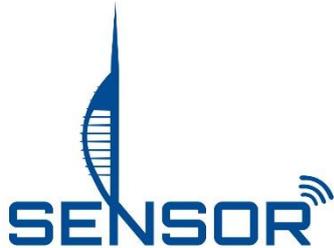
The three collaborators have come together to test the idea that this information when combined, can be used to predict flare-ups of infection (called exacerbations) 10-15 days before hospitalisation is eventually required.

Future services might include a self-care plan in which patients are educated to monitor and interpret their own signs of impending exacerbation because the technology is being developed to be simple enough for everyone to use correctly - with a little education, training and support from their clinical care team.

The emphasis of the solution being developed and trialed is patient empowerment, self-management and giving greater control to the patient and their family members who care for them.

With the digitalised information recorded and being made accessible to the diverse range of professionals involved in supporting these patients, the Aseptika system can also be used to provide remote support, monitoring, advice and health coaching during weekends and evenings, providing a continuum of care at home, which cannot be delivered through face-to-face contact because rising demand is fast outpacing the resources that are available.

Self-management checks to predict exacerbations of *Pseudomonas aeruginosa* in patients with long-term respiratory conditions or **SENSOR**, is funded through Aseptika, via a pre-procurement contract with NHS England's Small Business Research Initiative Healthcare ([SBRI Healthcare](#)) managed by [Health Enterprise East](#) on behalf of the Eastern Academic Health and Sciences Network ([EAHSN](#)).



Aseptika is working closely with the clinical research team at PHT and the NHS South Central Research Design Service as well as academic staff from the School of Health Sciences and Social Work (SHSSW), at UoP. Aseptika is funding positions for a research nurse and a laboratory technician based at PHT, the research by UoP and is providing its Activ8rlives products to volunteer patients – with an iPad. The three teams are also collaborating to develop a dedicated App to meet the specific needs of the people of Portsmouth who take part in the SENSOR study programme.

Commenting on the goals of the collaboration, Professor Anoop Chauhan, Research Director and Chief Investigator at PHT said:

“Everyone in healthcare knows the challenges that lie ahead – an ageing population, lifestyle-related ill health, increasing demand for services and constrained budgets. We have pioneered the use of self-care plans in Portsmouth and these are very popular with patients because following them reduces the number of visits they have to make to the hospital. We have also researched the impact of providing 24/7 care at home in the surrounding area and this has been proven to help patients stay healthy, reducing the number of emergency admissions, but it is very expensive to provide through face-to-face contact with the patient.

In the past there have not been the simple technologies and tools to enable the patient and their families to help themselves when they need it. Ideally, we want these same tools to also communicate this information to us at the same time. This means that we can share our skills and knowledge with the family carers and patient, but with the benefit of the technology, we can give support sooner. What we all want is to provide the right care before a problem, which could be managed safely at home, becomes a real emergency” – the right care at the right time in the right place.

Ben Green, Consultant Respiratory Physician at the Queen Alexandra Hospital described the challenges he and his team face in caring for patients with severe respiratory disease:

“A number of patients with severe airways disease are chronically infected with a bacterium called *Pseudomonas aeruginosa* (PA) and in these patients, despite attempts to treat these infections, complete eradication is difficult. Flare ups of the infection are common, leading to a deterioration in symptoms which can lead to prolonged hospital admission. Hospital admission for this type of disease reduces quality of life and can be associated with increased mortality.

This work is important because it is helping to develop a tool for the early detection of flare ups which will mean patients can be treated earlier at home, improving quality of life and reducing the costs to the NHS of hospital admission.”

Emergency admissions for COPD are the second highest of any disease area in the UK, with one in three people with the disease being readmitted within 28 days².

Early intervention and better self-management at home could together, reduce the number and severity of admissions and increase life quality by slowing the rate at which the disease progresses.

Aseptika was attracted to work with Professor Chauhan and his clinical team because of their strong track record of research at PHT and its leadership in establishing self-care plans for patients with respiratory conditions to improve care in a sustainable healthcare model.

Dr. Kevin Auton, Founder and inventor of the test being developed at Aseptika, commented:

“Whatever the cause, respiratory disease predisposes us to repeated lung infections, which damage the lungs irreparably, leading to more infections in a downward spiral.

While these diseases are complex, there are predictable patterns. The changes that can be seen in the lead-up to the next exacerbation can be measured with very simple devices that everyone can be taught how to use. If we learn from the information we gather about ourselves, we can adopt new behaviours and see how best to implement the self-care plans and the advice about medication, exercise, lifestyle and diet that our doctors give us.

With education, support and a bit of encouragement, we can slow the rate at which these diseases progress. All it takes is to make a few quick health measurements at home each day using our simple devices.

We have seen in previous clinical trials that the pattern of these complex changes can be easily identified. Eventually, we want to transfer this skill to the patient. In doing so, we want to help them reduce the number of their infections, decrease emergency hospital admissions and improve their quality of life and that of their carers. These are the unpaid army of health care providers - often family members - who may also have jobs and perhaps children to also take care of.

We were very impressed with the initiatives for “hospital at home” that have been trialled by the clinical researchers in Portsmouth. We hope that our technology will enable their vision to be realised.”

Dr Jeannette Bartholomew, Head of the University of Portsmouth’s [School of Health Sciences and Social Work](#), said:

“We are very pleased to be working with Aseptika and PHT, to help build a sound evidence base for the SENSOR project. Being part of the team and involved from the outset means that the University has the opportunity to be influential during the research and innovation phase. Patients, both in Portsmouth and the wider health community, will have more complex health problems in the future and therefore will increasingly need services and products like these.”

1. All Parties Parliamentary Respiratory Report, June 2014.
2. Consultation on a strategy for services for chronic obstructive pulmonary disease (CPD) in England. Sourced at <http://www.dh.gov.uk>.

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This collaborative work was commissioned and funded by NHS England. The views expressed in the publication are those of the author(s) and not necessarily that of the funding partners.

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Royalty Free

Caption: *Innovative hospitals are collaborating with small companies and Universities to implement learning gained from clinical research carried out in-house, such as the Portsmouth Hospitals NHS Trust. Successful trials in home care plans in Portsmouth have shown significant reduction in hospital admissions and the next step is to extend this by supporting patients by providing them with simple self-monitoring tools for home use. These are web-connected so that information can be learned from and shared with family carers, and when the patient chooses to, the same information can be shared with members of their healthcare team when help is needed.*

Notes to Editors:



Aseptika Limited (Activ8rlives)

Aseptika Limited is a healthcare company developing and marketing an integrated suite of self-monitoring devices and services under the Activ8rlives brand. We are developing integrated systems which can be used by laypeople and their healthcare service providers to better [self-manage](#) long-term health conditions through self-monitoring.

The Company's goal is to provide everyone with tools (and the understanding of how to apply them) so that most of us can keep healthy and well for most of the time. Self-management through self-monitoring is the motivation driving what we do.

Activ8rlives is unusual in that we are device agnostic, incorporating sensors and monitors ranging from consumer accessories to *in vitro* diagnostics (IVDs) with a focus on respiratory disease. All data is held together and can be cross analysed in the Cloud to provide forecasts and learning for the user and clinician.

The Company gained a patent in 2013 protecting the invention of a [test for biomarkers](#) of *Pseudomonas aeruginosa* in the sputum of patients, which can be used to detect the on-set of an exacerbation and profile the efficacy of antibiotic treatment for each patient.

Aseptika won first place in a recent competition earlier in 2014 to reward the most "Promising eHealth EU SME" [eHealth solution 2014](#) developed by an early-stage European SME. The 2014 Competition was organized by TICBioMed and had the endorsement of the Health and Wellbeing Unit of DG CONNECT of the European Commission. The judges commended Aseptika for the integrated approach it was taking in the support of patients with [long-term respiratory disease](#), providing the platform to self-manage their illness through self-monitoring. Central to the Company's "hospital-at-home" concept, is a test in which the patient measures the level of virulence of the bacteria living in their lungs which from time to time, flare into a full and repeated chest infections.

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www.activ8rlives.com



Portsmouth Hospitals NHS Trust

Portsmouth Hospitals NHS Trust is one of the largest acute hospital trusts in the country treating over half a million patients each year.

The Trust is the second largest employer in Portsmouth. We are also a major provider of training and education to a wide range of health professionals. Further, we are actively engaged in the national

agenda regarding research and development and have a reputation for being an innovative organisation.

We provide comprehensive secondary care and specialist services to a local population of 675,000 people across South East Hampshire. We also offer some tertiary services to a wider catchment in excess of two million people.

www.porthosp.nhs.uk



University of Portsmouth

The University of Portsmouth is a top-ranking university in a student-friendly waterfront city. It is ranked in the top 400 universities in the world, in the most recent *Times Higher Education* World University Rankings 2013 and has risen eight places from 63 to number 55 in The Sunday Times Good University Guide, which places Portsmouth in the table's top five modern English universities.

The results of the 2013 National Student Survey mark the seventh year running Portsmouth students have rated their university above the UK national average which this year stands at 85 per cent. This places us in the top 30 of mainstream universities in England for student satisfaction.

Research at the University of Portsmouth is varied and wide ranging, from pure science – such as the evolution of galaxies and the study of stem cells – to the most technologically applied subjects – such as computer games design. Our researchers collaborate with colleagues worldwide, and with the public, to develop new insights and make a difference to people's lives.

www.port.ac.uk Twitter: @portsmouthuni



Small Business Research Initiative for Healthcare (SBRI Healthcare)

The Small Business Research Initiative for Healthcare (SBRI Healthcare) is an NHS England initiative, championed by the newly formed Academic Health Science Networks (AHSNs), who aim to promote UK economic growth whilst addressing unmet health needs and enhancing the take up of known best practice.

Part of *Innovation Health and Wealth* the SBRI Healthcare programme sets industry the challenge in a series of health related competitions which result in fully funded development contracts between the awarded company and the NHS. Unlike many R&D projects which offer grant or match funding, SBRI contracts are 100 per cent funded and the company retains the IP.

www.sbrihealthcare.co.uk

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