'Large increase' in number of adults living with cystic fibrosis

The number of people living with cystic fibrosis into adulthood in the UK is expected to increase dramatically by 2025, prompting calls for the development of adult cystic fibrosis services to meet the demand.

People living with cystic fibrosis have previously had low life expectancy, but improvements in treatments and care in the last three decades have led to an increase in survival with almost all children now living to around 40 years of age.

Researchers have provided forecasts for the number of adults living with the disease in 34 different European countries by the year 2025 (Burgel et al, 2015).

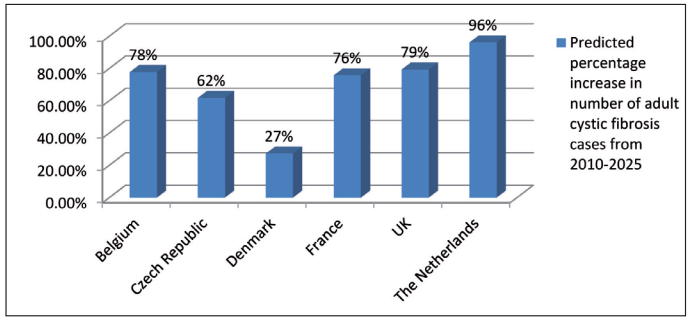
Professor Stuart Elborn, an author of the study from Queen's University Belfast, said: 'The estimations we have made show very positive news for cystic fibrosis patients as the average survival age is increasing. We are now concerned that there are insufficient specialist centres to provide optimal care to adults with the disease. It is crucial that we take note of these early predictions and adapt the NHS to this change.'

The researchers divided the countries into four groups based on the availability of data, and where no data existed, on the economic state of the country. Using these measurements, predictions were made to estimate the levels of adults with cystic fibrosis by the year 2025.

The results showed that in the 16 countries where reliable data exists, the number of adults with cystic fibrosis is expected to increase by approximately 75%. Within the six countries with the most reliable data (*Figure 1*), the Netherlands and the UK are expected to see the largest rises with 96.1% and 79.3% increases respectively.

Many cystic fibrosis centres are focused on paediatric care so if trends continue as predicted, adults living with the disease may not be able to access the specialist care they need.

Figure 1. Predicted percentage increase in number of adult cystic fibrosis cases from 2010–2025.



Burgel P-R, Bellis G, Olesen H, Viviani L, Zolin A, Blasi F, Elborn JS on behalf of the ERS/ECFS Task Force on The Provision of Care for Adults with Cystic Fibrosis in Europe (2015) Future trends in cystic fibrosis demography in 34 European countries. *Eur Respir J* (doi: 10.1183/09031936.00196314)

Familial clustering of breast and prostate cancer

Having first-degree relatives with a family history of prostate cancer may increase a woman's risk of developing breast cancer (Beebe-Dimmer et al, 2015). The results of this observational study indicate that clinicians should take a complete family history of all cancers – even in family members of the opposite sex – to assess a patient's risk of developing cancer.

Researchers studied 78 171 women who enrolled in the Women's Health Initiative observational study between 1993 and 1998 and were free of breast cancer at the start.

During follow-up, which ended in 2009, a total of 3506 breast cancer cases were diagnosed. A family history of prostate cancer in first-degree relatives (fathers, brothers, and sons) was linked with a 14% increase in breast cancer risk for women, after adjusting for various patient factors.

'The increase in breast cancer risk associated with having a positive family history of prostate cancer is modest; however, women with a family history of both breast and prostate cancer among first-degree relatives have an almost 2-fold increase in risk of breast cancer,' said Dr Jennifer L Beebe-Dimmer, of the Barbara Ann Karmanos Cancer Institute and Wayne State University School of Medicine in Detroit.

Beebe-Dimmer JL, Yee C, Cote ML et al (2015) Familial clustering of breast and prostate cancer and risk of postmenopausal breast cancer in the Women's Health Initiative Study. *Cancer* (doi: 10.1002/cncr.29075)

Statins reduce hospital admission for heart failure

A collaborative meta-analysis of 17 statin trials including over 100 000 patients found that statin treatment led to a significant 10% reduction in hospital admission for heart failure over an average of 4 years treatment (Preiss et al, 2015).

The analysis found a 10% reduction in first heart failure hospital admission (relative risk 0.90, 95% confidence interval 0.84–0.97), and an 8% reduction in the composite end point, which was driven by the effect of statin treatment on heart failure hospital admission (relative risk 0.92, 95% confidence interval 0.85–0.99). However, there were insufficient data to show that statin treatment could reduce heart failure death (relative risk 0.97, 95% confidence interval 0.80–1.17).

Lead author, Dr David Preiss, from the Institute of Cardiovascular and Medical Sciences, University of Glasgow, said: 'The results of this meta-analysis clearly show a modest, but significant benefit, reducing hospital admission for heart failure by 10% which is clinically important.'

Preiss D, Campbell RT, Murray HM et al (2015) The effect of statin therapy on heart failure events: a collaborative meta-analysis of unpublished data from major randomized trials. *Eur Heart J* (doi: 10.1093/eurheartj/ehv072)

Movement differences assessed in athletes post-knee ligament reconstruction surgery

Athletes returning from knee ligament reconstruction surgery may be at greater risk of degenerate disease and repeated injury than previously suspected, according to new research (Clarke et al, 2015).

The research compared the hip and knee mechanics of athletes who had undergone anterior cruciate ligament reconstruction surgery with a healthy control group.

Both movement and forces of athletes were measured during a sports-specific task, designed to replicate demanding team sport game situations. The researchers found that those who had undergone surgery were more flexed at the hips, but had more rotation in their affected knee joint, potentially increasing the risk of degenerative disease such as osteoarthritis as well as increasing the risk of sustaining a further injury.

Eighteen reconstructed athletes participated in the study alongside a matched control group. Three-dimensional hip, knee and ankle angles were calculated during a maximal jump from a box before participants were asked to touch a suspended target at their maximal jump height. The athletes then had to respond to an unanticipated change of direction with all movements captured by sensors on the body and three-dimensional camera technology.

Dr Sarah Clarke, Senior Lecturer, Sport and Exercise Biomechanics, Leeds Beckett University, Leeds

Dr Sarah Clarke, Senior Lecturer, Sport and Exercise Biomechanics at Leeds Beckett University, explained: 'Based on this study I would advise people who have undergone anterior cruciate ligament surgery to recognize that they will always move differently. [However] the results of this study have shown us that it is possible to rehabilitate successfully and adapt to requirements of the previously injured limb.'

Clarke SB, Kenny IC, Harrison AJ (2015) Dynamic knee joint mechanics after anterior cruciate ligament reconstruction. *Med Sci Sports Exerc* **47**(1): 120–7 (doi: 10.1249/MSS.0000000000000389)

Model predicts risk of unexpected uterine sarcoma following surgery for benign leiomyoma

A new model predicts the risk of unexpected uterine sarcoma in women undergoing minimally invasive procedures for the removal of presumed benign leiomyoma (Brohl et al, 2015). There is significant controversy regarding the use of morcellation to remove bulky tumours laparoscopically.

To help quantify this risk, a team of researchers led by Dr Andrew S Brohl, at the Icahn School of Medicine at Mount Sinai in New York, NY, retrospectively evaluated the incidence of unexpected uterine sarcoma among women undergoing minimally invasive leiomyoma removal at Mount Sinai facilities since 2005. The research team also conducted a meta-analysis by pooling their findings with those of similar studies conducted between 1980 and 2014.

An analysis of age-stratified risk revealed that the risk of unsuspected uterine sarcoma varied significantly by age, with a more-than 5-fold difference between the highest- and lowest-risk groups. Women aged 75–79 years had the highest risk of unsuspected uterine sarcoma, at 10.1 cases per 1000 surgical procedures, or 1 in 98. By comparison, women aged <30 years had the lowest risk, at <1 case per 500.

Dr Brohl said: 'Importantly, our risk model is the first to take into account how much a patient's age affects her risk and shows that some age groups are at a much higher risk for unexpected uterine sarcoma than previous estimates imply.'

Brohl AS, Li L, Andikyan V et al (2015) Age-stratified risk of unexpected uterine sarcoma following surgery for presumed benign leiomyoma. *Oncologist* pii: theoncologist.2014-0361 (Epub ahead of print)

No increased risk of suicide with varenicline

A systematic review and meta-analysis looking at the neuropsychiatric effects of varenicline (Champix) use has concluded that there is no increased risk of suicidal behaviour, depression or death compared with placebo groups (doi: 10.1136/bmj.h1109).

Secukinumab (Cosentyx) first IL-17A inhibitor for moderate to severe plaque psoriasis

Secukinumab (Cosentyx) has demonstrated efficacy in reducing moderate to severe plaque psoriasis with more than 7 out of 10 patients achieving a 75% improvement of their psoriasis at 12 weeks and beyond. Secukinumab is the only licensed therapy that blocks IL-17A, found in significantly increased concentrations in psoriasis-affected skin.

Greater regulation of hip replacement devices is needed

A new study calls for more UK compulsory regulation of devices used in hip replacements to reduce the need for further traumatic and expensive surgery (doi: 10.1136/bmj.h756) and bring rates of revision surgery below 5%.

Ongoing stimulus affects perception of level of pain

Under physiological conditions, momentary pain serves vital protective functions. Ongoing pain in chronic pain states, on the other hand, is a pathological condition that causes widespread suffering and whose treatment remains unsatisfactory. A team of researchers from Germany, the Slovak Republic and Scotland investigated how the duration of pain affects activities in the brain (Schulz et al, 2015).

For their measurements they used electroencephalograms. The test subject wore a cap with 64 electrodes that can measure nerve cell activity in the brain throughout the experiment, making it possible to chronologically pinpoint which signals nerve cells use to respond to a pain stimulus.

Over a period of 10 minutes, 41 study participants were given painful heat stimuli to the hand which varied in intensity throughout the duration of the experiment. The participants were asked to continuously assess the level of their pain on a scale of one to a hundred with the other hand using a slider.

The results revealed that the subjective perception of tonic pain is selectively encoded by gamma oscillations in the medial prefrontal cortex.

They also showed that the encoding of subjective pain intensity experienced by the participants differs fundamentally from that of objective stimulus intensity and from that of brief pain stimuli. These observations point to a role for gamma oscillations in the medial prefrontal cortex in ongoing, tonic pain and thereby extend current concepts of the brain mechanisms of pain to the clinically relevant state of ongoing pain.

Dr Markus Ploner, Heisenberg Professor of Human Pain Research, Department of Neurology, Technische Universität München, Munich, Germany

Commenting on the findings, one of the researchers, Dr Markus Ploner, from the Department of Neurology, Technische Universität München, Munich, said: 'We were absolutely amazed by the results. After just a few minutes, the subjective perception of pain changed – for example, the subjects felt changes in pain when the objective stimulus remained unchanged. The sensation of pain became detached from the objective stimulus after just a few minutes.'

Dr Ploner explained: 'If pain persists over a prolonged period of time, the associated brain activity shows that it changes from a pure perception process to a more emotional process. This realization is extremely interesting for the diagnosis and treatment of chronic pain where pain persists for months and years.'

Schulz E, May ES, Postorino M et al (2015) Prefrontal gamma oscillations encode tonic pain in humans. *Cereb Cortex* (doi: 10.1093/cercor/bhv043)

Melatonin improves sleep in noisy environments

Using melatonin could provide more and better quality sleep compared to using an eye mask and earplugs according to new research findings (Huang et al, 2015). This study was carried out on healthy subjects but could have future implications for intensive care unit patients.

Researchers from Capital Medical University in Beijing recruited 40 healthy participants to study the effects that simulated intensive care unit conditions had on sleep patterns. For the first four nights all participants underwent a baseline/adjustment period. During this time they slept in a sleep laboratory where on alternating nights a recording from a typical night shift at an intensive care unit was played and light levels were the same as in the hospital.

After this participants were randomly divided into four equal groups but continued to sleep in the simulated intensive care unit. The first group did not receive any sleep aid. The second were provided with eye masks and earplugs. The third group took 1 mg of fast-release oral melatonin when going to bed. The final group was given a placebo. The participants in the third and fourth groups did not know if they were receiving melatonin or placebo.

During the study period all participants' melatonin levels were tested hourly by taking blood samples. The quality of sleep was assessed using specialist equipment that measured brain activity, eye movement and muscle tension. Anxiety levels and sleep quality were also evaluated by getting participants to self-evaluate the following morning.

It was found that all sleep patterns were disturbed by exposure to the simulated intensive care unit environment. This resulted in feelings of anxiety and reduced quality of sleep. Those participants that used either eye masks and earplugs or oral melatonin had improved sleep. Those who took melatonin were found to have decreased awakenings during the night even compared to the group who had used an eye mask and earplugs.

The quality of the sleep was also found to be much improved for those taking melatonin, with reported lower anxiety levels and increased REM sleep – thought to be linked to improved cognitive restoration.

The authors note that future studies will need to be carried out on a larger group of diverse participants. Consideration would also need to be given for the administration of oral melatonin to critically ill patients who may also be taking other medications.

Huang H-W, Zheng B-L, Jiang L, Lin Z-T, Zhang G-B, Shen L, Xi X-M (2015) Effect of oral melatonin and wearing earplugs and eye masks on nocturnal sleep in healthy subjects in a simulated intensive care unit environment: which might be a more promising strategy for ICU sleep deprivation? *Crit Care* (doi: 10.1186/s13054-015-0842-8)

Emergency admissions, hospital stays and in-hospital mortality higher in patients with Parkinson's disease

The risk of dying in hospital following an emergency admission is increased by almost 2.5 times for people with Parkinson's disease, with the risk for older sufferers (over 85 years of age) increasing to 1 in 10 (Low et al, 2015).

The study used the English Hospital Episodes Statistics Database. The researchers examined admissions by patients with Parkinson's disease and compared them to those for all other causes over a 4-year period.

The primary aim of the report was to highlight the need for Parkinson's patients to receive the right treatment at the right time. The secondary aim was to 'red flag' the increasingly high economic burden to the NHS caused by expensive and potentially preventable emergency admissions.

The report found that Parkinson's sufferers are more likely to be admitted as an emergency admission than for elective reasons (72% *vs* 28% respectively). Emergency admissions for people with Parkinson's cost the NHS nearly £200 million a year – £3338 per patient, compared to £1417 for a planned non-emergency hospital stay.

The lead author, Professor Carl Clarke, of the University of Birmingham and Sandwell and West Birmingham Hospitals NHS Trust, said: 'A greater understanding is required about the whole process of hospitalisation in Parkinson's patients including why they are admitted, what happens during admission, and what happens on discharge. Only then can we develop improved processes to prevent and better manage hospitalisation.'

Professor Carl Clarke, Professor of Clinical Neurology and Honorary Consultant Neurologist, Department of Neurology, City Hospital, Sandwell and West Birmingham Hospitals NHS Trust, Birmingham

Professor Clarke continued: 'Urgent attention should be given to developing cost-effective interventions to reduce the burden of hospitalisation for patients, carers and health-care systems.'

Low V, Ben-Shlomo Y, Coward E, Fletcher S, Walker R, Clarke CE (2015) Measuring the burden and mortality of hospitalisation in Parkinson's disease: A cross-sectional analysis of the English Hospital Episodes Statistics database 2009–2013. *Parkinsonism Relat Disord* (doi: 10.1016/j.parkreldis.2015.01.017)

Treating thyroid nodules with high-intensity focused ultrasound

A study was undertaken to assess the short-term efficacy and safety of ultrasound-guided high-intensity focused ultrasound ablation for treatment of benign solid thyroid nodules (Kovatcheva et al, 2015).

The patients demonstrated significant mean thyroid nodule volume reduction of 48.7% 6 months after the procedure ($P<0.01$). The maximum volume shrinkage was 93% from baseline.

There was a significant decrease (from 2.6 to 1.9, $P=0.022$) in the cosmetic score and significant increase in the satisfaction score (8.8 out of 10), confirming the treatment's effect and the patient's approval.

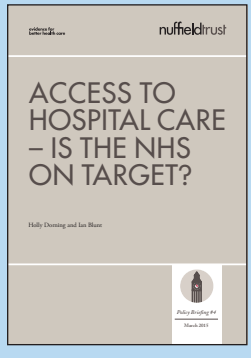
The procedure was well tolerated, with only minor transient side effects (lasting from 1 week to 1 month) observed in two patients.

Ultrasound-guided high-intensity focused ultrasound ablation is an effective and safe non-invasive treatment for benign solid thyroid nodules. The major limitation for this application is the technical accessibility of the nodule. However, larger clinical trials with longer follow-up should be undertaken to evaluate the long-term effectiveness and safety and to define the spectrum of thyroid abnormalities most suitable for this treatment.

Kovatcheva RD, Vlahov JD, Stoinov JI, Zaletel K (2015) Benign solid thyroid nodules: US-guided high-intensity focused ultrasound ablation-initial clinical outcomes. *Radiology* (doi: 10.1148/radiol.15141492)

No quick fixes for growing hospital waiting times

Fundamental problems affecting the NHS will make it harder for all hospitals in England to meet key hospital waiting times targets in future, reveals new analysis from the Nuffield Trust (Dorning and Blunt, 2015).



Whereas past dips in national performance have been attributed to a handful of 'poorly performing' hospital trusts, the study shows that marked deterioration in some measures over the past year has affected both the best and worst performing hospitals.

This casts doubt on the idea that problems overall are caused by a series of local or managerial failings, and suggests instead that they are likely to be more systemic.

Co-author Holly Dorning, Research Analyst at the Nuffield Trust, said: '...our analysis shows that deteriorating access to services is starting to affect patients attending even the best-performing hospitals.'

Dorning H, Blunt I (2015) Access to Hospital Care: Is the NHS on target? http://www.nuffieldtrust.org.uk/publications/access-hospital-care-nhs-target (accessed 23 March 2015)