Scientists create drug to replace antibiotics

Hannah Devlin, Science Editor

Scientists have developed the first effective antibiotic to address the threat of drug-resistant superbugs. In a small patient trial, the drug was shown to be effective at eradicating the drug-resistant MRSA. Scientists say it is likely that the infection could develop resistance against the new treatment, which is already available as a cream for skin infections. Researchers hope to develop a pill or an injectable version of the drug within five years.

Conventional antibiotics are steadily losing their effectiveness at treating infections, prompting David Cameron to warn this year that the rise of drug-resistant superbugs could take medicine "back to the dark ages."

Dame Sally Davies, the chief medical officer, has predicted an "apocalyptic" scenario in which basic procedures, from hip replacements to chemotherapy, become futile unless new drugs are rapidly brought on to the market.

About 5,000 deaths in England each year are caused by antibiotic-resistant strains of disease. The last new class of antibiotics was produced in the late 1980s and many experts believe that new approaches are necessary to provide a more lasting solution to the problem of drug resistance.

The latest treatment attacks infections in an entirely different way from conventional drugs and, unlike them, exclusively targets the Staphylococcus bacteria responsible for MRSA, and spares other microbes unaffected.

Mark Offerhaus, chief executive of the biotechnology company Microceuticals, which is behind the advance, said that it marked "a new era in the fight against superbugs". "Millions of people stand to benefit," he said. "It's very exciting and gratifying."

The treatment is inspired by naturally occurring antibiotics that attack bacteria using enzymes called endolysins. It uses a specially designed endolysin that the scientists engineered to latch onto the surface of bacteria cells and tear them apart.

Bjorn Harpers, a clinical microbiologist, who tested the drug at the Public Health Laboratory in Kemnemerland, the Netherlands, said: "Endolysins exist in nature, but we've made a modified version that combines the bit that is best at binding to the bacteria with another bit that is best at killing it. It's a new molecule designed from fragments that already exist in nature."

Conventional antibiotics need to reach the inside of the cell to work, and part of the reason they are becoming less effective is that certain strains of bacteria, such as MRSA, have evolved impermeable membranes. By contrast, endolysins target basic building blocks on the outside of bacterial cells that are unlikely to change as infections gradually mutate over time.

Scientists believe that the results could mark the first of a wave of endolysin-based therapies for infections that conventional drugs are now no longer able to treat. About 80 per cent of gonorrhoea infections are resistant to front-line drugs, and multi-drug-resistant salmonellas, tuberculosis and E. coli are regarded as significant threats. Naturally occurring endolysins can continue on page 4, col 1.

Obama defiant despite poll humiliation

David Taylor US Editor

President Obama suffered a humiliating defeat in the midterm elections, losing control of both houses of Congress to Republicans for the first time. Mr Obama came out fighting last night. He threatened to veto legislation he did not like and vowed to impose sweeping immigration reform before the end of the year.

Faced with the prospect of political impotence in his final two years in office, Mr Obama came out fighting last night. He threatened to veto legislation he did not like and vowed to impose sweeping immigration reform before the end of the year. His issued the threat less than an hour after Mitch McConnell, the new Republican leader of the Senate, had warned that such a step would be "like waving a red rag in front of a bull". The two men will meet over lunch at the White House tomorrow along with a larger group of congressional leaders, where they will try to find common ground to break Washington's gridlock.

Tuesday's result marked a complete transfer of power on Capitol Hill since Mr Obama first won the White House in 2008. When he lost the House of Representatives in 2010, Mr Obama called the defeat a "shellacking". This time, he merely conceded that the Republicans had a good night and congratulated them on their victory.

Speaking in the East Room of the White House, he said that he had heard the judgment of voters but noted that two thirds of Americans did not cast a vote in Tuesday's election. "My number one goal is to deliver as much as I can for the American people in these last two years," he said. "The American people overwhelmingly believe that this town doesn't work well... they hold me accountable to make it work."

The president set out priorities including an end to deal to make funds available for the battle against ebola, and to have Congress pass new military authority for the war against Isis. Mr Obama has asked military chiefs to brief leaders on the campaign against Isis.

"It's too early to say if we are winning," Leading article, page 20 Repubsicans jubilant, page 22.

IN THE NEWS

Labour reshuffle
Ed Miliband has overhauled his election team to arrest a slump in the party's rating. Fears are growing in the shadow cabinet that MPs plan to oust their leader. Page 2

Cybercrime warning
Cybercriminals are stealing twice as much money from bank accounts than is being reported. Banks are accused of "systematically understating" the problem. Page 5

Gaddafi clan's return
The cousin of Moammar Gaddafi, the Libyan dictator overthrown and killed three years ago, said that former regime figures were planning a return to government. Page 24

Britain's visa windfall
Wealthy Chinese and Russians have invested £700 million in Britain through a visa programme that encourages the super-rich to buy their way into the country. Page 31

Nine-man City lose
Manchester City's hopes of progress in the Champions League suffered a huge blow as two players were sent off in their 2-1 defeat at home to CSKA Moscow. Pages 60-64

I'm in these new smart drugs
Midlife checks for worried well leave no time to treat the sick, warn GPs

Chris Smyth Health Correspondent

Millions more patients are expected to demand statins after “midlife MoTs” given to people aged over 40 recommended wider use of the cholesterol-lowering drugs.

Controversial guidance from the National Institute for Health and Care Excellence (Nice) is likely to be incorporated into the programme of NHS health checks given to everybody aged between 40 and 74, Public Health England signalled.

GPs leaders say that the plans would heap further pressure on overstretched family doctors who would be forced to devote more time to the “worried well” at the expense of sick patients.

Andrew Green, of the British Medical Association’s GP committee, told Pulse: “Official policy on cardiovascular disease prevention is about as consistent and evidence-free as the writing on a sticker.”

In assessing the overall impact of this change, they must add on the pressure that resulting activity will have on general practice, and the knock-on effect there will be on the care we can offer to sick patients. GPs are likely to conclude that Public Health England views general practice as having an inexhaustible supply of time and expertise to be drawn on at will.

It is disappointing that there has been no discussion about this change between Public Health England and the representatives of the profession who will have to implement it.

By taking this 10 per cent non-evidence-based threshold and adding it to the non-evidence-based NHS health checks scheme, they are making the entire scheme even worse and an even greater waste of resources.

Jamie Waterall, of the NHS health check programme, said it “provides the health and care system in England with an opportunity to focus on the key behavioural and psychological risk factors which are responsible for the majority of preventable deaths and all ill health.”

Public Health England export scientific and clinical advice. Helen Field has recently reviewed the Nice lipid modification guidelines and recommended that these should be included in the NHS health checks best practice guidelines.

“Up to £8,000 lives could be saved every three years by offering statins to anyone with a 10 per cent risk of developing cardiovascular disease.”

Dementia payment ‘unethical’

Chris Smyth Health Correspondent

Doctors have urged the NHS to scrap its “cash for diagnoses” scheme that offers GP CCGs for every case of dementia they spot.

They say the “unethical” plan sets a dangerous precedent that could undermine patients’ trust in doctors. Health chiefs countered that doctors were unlikely to be nagged by a few hundred pounds a year towards surgery running costs.

David Cameron has promised to let tens of thousands of people know they have dementia; fewer than half the 800,000 people who are thought to have the condition know that they suffer from it. To meet the target, NHS England’s Clinical Research Network will identify “at-risk” patients, such as people over 60 who smoke, drink or eat too much, and give them memory tests. Practices will be paid for each patient they record as having the condition.

In an open letter to NHS England, published in The BMJ, the doctors, along with Katherine Murphy, chief executive of the Patients Association, argue that there must be “absolute clarity that doctors have no other motivation than the patient’s best interests when they make a diagnosis. A direct financial incentive like this undermines this confidence, and it is a breach of trust inherent in the doctor-patient relationship.”

Martin McShane, the national director for people with long-term conditions of NHS England, said: “Dementia is an absolutely devastating condition, and there are too many people undiagnosed who are being denied the care they need. It would be wrong to oversell the level of financial incentive. These are paid to GP practices — not individuals — and are unlikely to amount to more than a few hundred pounds a year.”

New drug set to tackle hospital bug

Continued from page 1

Many of these diseases, and the challenge is to create stable versions that can be packaged as drugs.

Mark Woolhouse, of the University of Edinburgh, said that scientists had been exploring the idea of endosymbiotic-based therapies for decades. “Nothing is a silver bullet,” he said.

The findings, presented yesterday at the conference Antibiotic Alternatives for the New Millennium, in London, showed that in laboratory tests, Staphylococcus aureus was effectively killing Staphylococcus aureus. However, the drug was shown to eliminate MRSA in five out of six patients with skin infections. Similar results were found in two further small observational studies on patients with skin infections linked toazaar, dermatitis and rosacea. Brendan Wren, an expert in infections at the London School of Hygiene and Tropical Medicine, said: “We are all aware that the post-antibiotic apocalypse is upon us, where we won’t be able to use antibiotics because of resistance, and one could argue that this is more acute than concerns such as climate change. We’re so desperate for new alternatives and this one looks like it’s at the leading edge.”

The treatment is licensed as a treatment for skin conditions and scientists predict that it could now be rapidly introduced to hospitals to reduce the risk of MSA infections spreading between patients.

Anthony Howells of the University of North Carolina, said: “A three-minute pin-prick blood test for bacterial infections can reduce excessive antibiotic use. The tests have been developed by the University of North Carolina, and doctors use them to test patients for skin infections linked to azaar, dermatitis and rosacea.”

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