

Antimicrobial resistance – a ‘rising tide’ of national (and international) risk

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[doi:10.1016/j.jhin.2015.10.005](https://doi.org/10.1016/j.jhin.2015.10.005)

When we think of threats to our way of life, we tend to think of ISIL (‘Islamic State of Iraq and the Levant’) and Al-Qaeda, of lone gunmen on Tunisian beaches or Norwegian islands, or of bombers on the London Underground, not *Escherichia coli*, *Klebsiella pneumoniae* or *Acinetobacter baumannii*. Yet it is the increasing antibiotic-resistance of micro-organisms such as these that will kill an estimated 10 million people annually worldwide by 2050 – more than currently die from cancer and road traffic accidents combined – and which will cost the global economy US\$100 trillion. ¹ The number lost to terrorism – in 2013 approximately 18,000, which is estimated to have doubled due to the ISIL threat in 2014 – pales into insignificance compared with the threat of antimicrobial resistance. ²

It should not, therefore, be a surprise that research into the challenge from antimicrobial resistance has been on the agenda of the Royal United Services Institute for Defence and Security Studies – better known as a defence and security think tank – since 2012; nor that, when the latest version of the UK's National Risk Register (NRR) was published in March 2015, antimicrobial resistance received a special mention. ³ Although, after long consultations within Government, it was not added to the NRR matrix in its own right (as volcanic eruptions and wildfires tend to be when they occur), it was included within the same framework as terrorist attacks and devastating earthquakes.

There are several reasons for this inclusion. As infections become harder to treat, the more attractive they may become as a weapon of bioterror. Furthermore, *A. baumannii* and other multidrug-resistant bacteria are already causing challenges to UK military operations. ⁴ And at a more fundamental level, one of the three criteria defining civil emergency in the NRR is ‘an event or situation which threatens serious damage to human welfare’. The National Security Strategy talks of ‘ensuring a secure and resilient UK – protecting our people, economy, infrastructure, territory and way of life from all major risks that can affect us directly’. ⁵ Antimicrobial resistance undoubtedly fits these criteria as it threatens to undermine the healthy lives we have taken for granted since Alexander Fleming's discovery of penicillin in 1928. Thanks in large part to antibiotics, we have been freed from fear that we (or our children) will die during childbirth, from childhood infections in infancy, or from minor cuts and scrapes becoming infected throughout life; and so we can survive long enough to need the cancer treatments and hip replacements AMR also threatens. The rapid increase in life expectancy seen in the mid-20th century could be reversed if we do not act swiftly and

collectively across disciplines and sectors (health and security) as well as across geographic and organizational borders.

An estimated 700,000 individuals die worldwide each year from antimicrobial resistance, 50,000 of those in the UK and USA.¹ The ‘reasonable worst case scenario’ premise on which the National Risk Assessment (which leads to the NRR) is conducted predicts that a widespread outbreak of a drug-resistant pathogen could result in up to 200,000 people being affected by a bacterial blood infection that could not be treated effectively with existing drugs, with a potential death toll of around 80,000.

Global consumption of antibiotics in human medicine rose by 40% in the first decade of the 21st century despite the challenge being well understood by that time, with the BRIC nations (Brazil, Russia, India, China) responsible for three-quarters of this growth.⁶ As health systems and health provisions increase in less developed nations, particularly across Africa, we need to understand how we can prevent their consumption from growing at similar rates.

The World Health Organization is taking the lead to agree a global action plan to tackle antimicrobial resistance among 194 countries. Such initiatives need the full co-operation of all parties, but this does not and should not prevent us from simultaneously acting at the grassroots level, as well as at the international strategic level, if we are to avoid a ‘tragedy of the commons’ in which every potential actor waits for the others to take first action. Good antimicrobial stewardship begins with general practitioners taking the time to explain why antibiotics will make no difference to a patient’s runny nose, and with the patient being willing to listen. It begins with junior doctors having the confidence to think twice in situations where more experienced colleagues may make a different prescribing decision. Without a concerted attack from the ground troops, as well as strategic planning, the war will never be won.

As the UK’s Review on Antimicrobial Resistance points out, it would be unforgivable if the great progress made in combating infectious disease were threatened by lack of common sense – not least because Fleming himself saw the dangers coming and made full reference to them in his Nobel Prize acceptance speech of 1945. We cannot claim that we did not foresee the danger, or that it was an ‘unknown unknown’.

Is antimicrobial resistance a national security risk? Yes, if it has the ability to kill UK citizens in their thousands, to fundamentally change the way we expect to live our lives, to reduce our personal longevity, and to undermine the health provision we currently expect. No terrorist organization would be allowed to get away with so much.

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