to be clinically significant, and about 25% because PCI was likely to cause complications, would have a low likelihood of success, or failed. It is plausible that the effect of ranolazine might vary according to the reasons for incomplete revascularisation. Residual ischaemia caused by these untreated lesions is likely to be less in patients in whom medical treatment is thought to be sufficient. It remains unclear whether ranolazine would have a larger effect on patients with little angina in whom anti-angina treatment might be satisfactory or in patients with failed revascularisation who are at increased risk of recurrent angina. Routine use of fractional-flow reserve to assess the severity of lesions pre-PCI would, furthermore, provide crucial information on the functional degree of incomplete revascularisation, and whether medical treatment is indeed thought to be the appropriate strategy for non-stented lesions.¹¹

The results of RIVER-PCI⁷ might be a barrier to more widespread use of ranolazine, as the study indicates that it should not be the first-line treatment for incompletely revascularised patients. However, a reduction in adverse events in this cohort of patients could theoretically narrow the gap between PCI and CABG and open the door to treating even more complex cases with PCI. Therefore, it can be expected that more forthcoming studies will test adjunctive medical treatments for patients with incomplete revascularisation.

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🕢 Antibiotics: achieving the balance between access and excess

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Hardly a week goes by without antimicrobial resistance being in the news. Increasing recognition that the problem has become a serious public health threat has prompted Presidents and Prime Ministers, together with global health leaders, to prioritise antibiotic resistance in their speeches and communiqués.¹ The consequence has been a welcome surge of declarations, announcements, and campaigns. There is, for example, now a Global Action Plan on Antimicrobial Resistance.² Antimicrobial resistance is at last fashionable. The subject has come of age. The issue of resistance, and the threat of resurgence of previously controlled infectious diseases, has the political visibility that it so desperately needed. However, this Lancet Series, Antimicrobials: access and sustainable effectiveness,³⁻⁷ seeks to add an important and missing dimension to the prevailing debate about antibiotic resistance.

This Lancet Series follows 2 years on from the Lancet Infectious Diseases Commission, Antibiotic resistancethe need for global solutions,⁸ and coincides with the first World Antibiotic Awareness Week on Nov 16-22, 2015, the theme of which is Antibiotics: handle with care. The overarching message is now a familiar one: antibiotics are a precious resource that we should be concerned to preserve. However, this Lancet Series³⁻⁷ is not simply another report on antimicrobial resistance. Our intention is to redefine and reposition antimicrobial resistance into a broader and more appropriate context, especially given the new era of sustainable development. The focus on resistance alone is too narrow. It misunderstands the challenge of antibiotics, and fails to take a global perspective on the needs of those for whom antibiotics are indeed such a precious

resource. Our Series defines two dimensions: sustainable access, as well as sustainable effectiveness.

The threat to human and animal health from antimicrobial resistance is well established. But overlooked is the fact that more people die from the lack of access or delayed access to antimicrobials than from resistant bacterial pathogens. The first paper in our Series, by Ramanan Laxminarayan and colleagues,³ shows that for human health lack of access to essential and effective life-saving antibiotics is as important an issue as antibiotic resistance. In an analysis of communityacquired pneumonia in children younger than 5 years, Laxminarayan and colleagues estimate that universal provision of antibiotics could avert 445000 deaths out of an estimated total of 590 000 deaths from pneumonia across 101 countries-a 75% reduction in deaths from pneumonia. Conversely, not using antibiotics to treat pneumonia in the same age group, but instead scaling up vaccines against pneumococcus and Haemophilus influenzae type b (Hib), thereby conserving antibiotics and reducing selection pressure, could prevent up to 11.4 million days on antibiotics per year—a 47% reduction in days on antibiotics in 75 countries.

But access to antimicrobials cannot happen on its own. Access to diagnostics, health services, prevention measures, reliable guidance and education, qualityassured medicines, and sustainable financing all need to take place together, at the same time as curbing inappropriate antimicrobial use.

Currently, it is unclear how much of the recent highlevel rhetoric on antimicrobial resistance will translate into actionable measures in programmes and practice. The Global Action Plan on Antimicrobial Resistance² provides a good blueprint but, disappointingly, there are insufficient technical and financial mechanisms (including incentives and accountability instruments) for the plan to gain real traction in countries.

Following the World Health Assembly Resolution on antimicrobial resistance in 2015, a process has begun to write (and pass) a resolution on antimicrobial resistance for the UN General Assembly in 2016. This resolution should not only repeat the recommendations of the Global Action Plan on Antimicrobial Resistance. It should have the added value of concrete proposals for extending access to antimicrobials as a key life-saving commodity for, most especially, the millions of children most at risk of treatable conditions, such as pneumonia



and diarrhoea.⁹ Furthermore, as our Series highlights, antimicrobial resistance must also be taken out of the realm of being a purely biomedical matter. Instead, resistance is an issue of One Health, integrating human with animal health, and encompassing a wide array of environmental determinants and concerns.

This Series aims to prove that the value of the antimicrobial coin is reflected in its two sides—effectiveness and access. The Series makes an urgent case for global collective action to achieve both goals. The questions are: will a current global health fashion be translated successfully into present and future tangible actions; and will the enthusiasm for that fashion be balanced with an equal zeal to see those without access to antibiotics being appropriately served? We hope our Series can trigger a debate to answer both of these pressing concerns.

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Civil-military cooperation in Ebola and beyond



The 2014 Ebola outbreak in west Africa blurred the lines between a public health emergency and humanitarian crisis. In so doing, it highlighted serious problems with coordinating disaster responses. Civilian agencies were overwhelmed; several non-government organisations closed down their operations and exited the affected countries; and, although the health sector in Liberia stepped up, Sierra Leone and Guinea remained in disarray. Since then WHO declared Sierra Leone to be Ebola free on Nov 7, 2015,¹ and declared the end of human-to-human transmission of Ebola virus in Guinea on Dec 29, 2015.² At the time of writing, WHO expects transmission linked to the most recent Ebola cases in Liberia will be declared to have ended on Jan 14, 2016, if no further cases are reported.³ Foreign and domestic military assistance proved pivotal to establishing an orderly response to contain the outbreak. However, despite the military's helpful role, some of its practices and results have also been criticised. Accordingly, a critical analysis is needed when we consider the Ebola response as a precedent for future civil-military cooperation in health.

Several high-level panels, including a *Lancet* report,⁴ are examining the domestic and international response to the 2014 Ebola outbreak.⁵ Central to the lessons learned will be the role that militaries had during this crisis. More than 5000 military personnel were deployed from the USA, UK, China, Canada, France, and Germany. These forces were seen by many as a game changer in the Ebola response.

We studied the effect of civil-military cooperation during the Ebola outbreak by conducting more than 70 semi-structured interviews between February and September, 2015.6 Our respondents included local health workers, non-governmental organisation representatives, officials from international organisations, government ministers, ambassadors, and officers from both foreign and domestic militaries. We asked about what worked and what failed in Liberia and Sierra Leone. Based on this research, we outline just four key findings here that should be considered when thinking about the role of the military during global health crises.

The first finding is that several challenges arose from how the Ebola crisis was initially framed as a health emergency instead of a humanitarian crisis.⁷ This situation created confusion in a number of responder agencies, resulting in ad-hoc and untried arrangements being created—such as the United Nations Mission for Ebola Emergency Response—rather than well-established humanitarian coordination systems and processes. The initial description of this outbreak as a health crisis was understandable, but, as wider social and economic consequences arose, there was a need to reconsider the event for what it had become—a humanitarian disaster and respond accordingly.

The second finding is that the deployment of foreign militaries was key to convincing several nongovernmental organisations to maintain or establish operations in the affected countries. Although Médecins Sans Frontières and the Red Cross were able to reprioritise their activities to care for patients with Ebola, many organisations found themselves unprepared for a crisis of this nature. Several closed operations and exited the affected countries. These organisations only returned or established operations once western governments announced that they were deploying military forces to help contain the outbreak.⁶

Third, it is important to note that most respondents found militaries open, engaging, and keen to learn. The services they provided in constructing Ebola treatment units and training health workers were well received, as was the medical care provided by a small number of military health professionals. The general consensus was that civil-military relations worked well in response to Ebola. Nevertheless, concerns were raised about the slow speed with which the militaries constructed Ebola treatment units, the risk aversion displayed by some forces (eg, refusing to transport infected patients), the absence of mission flexibility, and the masculine spaces of decision making that sometimes limited productive engagement.⁶

Fourth, no common framework was established for how different militaries operated during the Ebola crisis. The US military remained at arm's length, supporting