was established somewhat arbitrarily by Salminen et al because little clinical information was available to provide a better estimate for it.

Future studies should be carefully designed with a strong justification for the minimal clinically important difference. Antibiotics with broad enough coverage to treat appendicitis may cause the development of resistant organisms or *Clostridium difficile* infections. Given the balance between potential complications of antibiotic treatment or appendectomy for appendicitis, is 10% of patients with appendicitis not experiencing successful treatment with antibiotics clinically important? 30%? 50%? Investigators will need to determine and fully justify how much worse than appendectomy antibiotic treatment of appendicitis must be before the notion of replacing appendectomy with antibiotic treatment is rejected.

Because appendectomy is performed to prevent major pelvic infection, the strongest design would be one showing that antibiotics could prevent pelvic abscesses as effectively as surgery. However, because pelvic abscess is infrequent, a trial using this outcome would need to enroll a very large number of patients.

The time has come to consider abandoning routine appendectomy for patients with uncomplicated appendicitis. The operation served patients well for more than 100 years. With development of more precise diagnostic capabilities like CT and effective broad-spectrum antibiotics, appendectomy may be unnecessary for uncomplicated appendicitis, which now occurs in the majority of acute appendicitis cases.

**Development Assistance for Health**

**Potential Contribution to the Post-2015 Agenda**

Andy Haines, MD, MB, BS

**Despite economic growth** in low-income countries, the internal resources available to some governments will be inadequate to support the delivery of health care to their populations for years to come. Approximately 150 million people worldwide experienced catastrophic expenditure annually to cover out-of-pocket payments for health. Despite substantial progress, 6.6 million children who were younger than 5 years were stunted (having an inadequate height for age). Almost 300,000 women died in 2013 of causes related to pregnancy and childbirth. Against this background, the study by Dieleman and colleagues in this issue of *JAMA* makes a substantial contribution to the current understanding of the flow of development assistance for health (DAH) and how these resources can contribute to the achievement of international health goals.

The authors made helpful distinctions between the primary sources of funding, the channels through which funding flows and the implementing institutions, as well as distinguishing between “commitments,” which may not be implemented, and actual disbursements that reflect the real transfer of resources. Their report clearly demonstrated how, following a substantial increase in yearly funding between 2000-2010 from approximately $7 billion to $35 billion, DAH has essentially plateaued since 2010 as a result of constraints in government spending in many donor countries. The authors also documented changes in funding between health priorities (such as increased support of newborn and child health in recent years) and showed the importance of US government funding (especially for human immunodeficiency virus [HIV]/AIDS). Private sources and the UK government constitute the second and third most important sources of DAH as a whole. The importance of funding from the Bill and Melinda Gates Foundation is highlighted by the estimate that, since 1999, when it began providing DAH, the Gates Foundation has provided 5.6% of the total DAH.

The study is particularly timely because the United Nations’ (UN’s) millennium development goals (MDGs), which have shaped the international development agenda over the past 15 years, are due to be achieved this year. Progress by countries and across different goals has been highly variable. The post-2015 development agenda is currently the subject of intergovernmental negotiations and the UN’s sustainable development goals (SDGs) to be adopted at the forthcoming

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UN Summit (September 25-27, 2015) will differ in a number of important respects from the MDGs. The SDGs aim to be relevant to countries at all levels of development and encompass a wider range of sectors.4 The Open Working Group on the SDGs of the UN General Assembly proposed that there will be 17 SDGs and no less than 169 targets to be achieved by 2030; potential indicators to assess progress toward those targets are currently under discussion.4 The proposed targets are defined as aspirational global targets, with each government setting their own national target according to their circumstances.

Goal 3 of the SDGs—to “ensure healthy lives and promote well-being for all at all ages”—proposes ambitious targets for health including ending preventable deaths for newborns and children younger than 5 years; reducing the global maternal mortality ratio to less than 70 per 100 000 live births; ensuring universal access to sexual and reproductive health care services including for family planning; ending the epidemics of AIDS, tuberculosis, malaria, and neglected tropical diseases; and, in a departure from the MDGs, reducing by one-third premature mortality from noncommunicable diseases.4 Notably, a target within the third goal confined as aspirational global targets, with each government setting their own national target according to their circumstances.

Goal 3 of the SDGs—“improve health and reduce premature mortality resulting from communicable, noncommunicable, and injuries deaths”—proposes targets for health including ending preventable deaths for newborns and children younger than 5 years; reducing the global maternal mortality ratio to less than 70 per 100 000 live births; ensuring universal access to sexual and reproductive health care services including for family planning; ending the epidemics of AIDS, tuberculosis, malaria, and neglected tropical diseases; and, in a departure from the MDGs, reducing by one-third premature mortality from noncommunicable diseases.4 Notably, a target within the third goal commits governments around the world to achieving universal health coverage (UHC), including “financial risk protection, access to quality essential health care services, and access to safe, effective, quality, and affordable essential medicines and vaccines for all.”4 The current lack of funding for health system support and noncommunicable diseases, less than 10% of the total DAH, as noted by Dieleman and colleagues, suggests that achieving success with respect to noncommunicable diseases will be quite difficult.

Mandatory prepayment from pooled funds will be necessary to ensure UHC with financial risk protection. One estimate suggests that annual government health expenditure should be approximately $86 per capita to provide access to priority services compared with $15 (42% of total health expenditure) currently in low-income countries.5 Even if the 33 low-income countries met an expenditure target of 5% of their gross domestic product on health from domestic sources, they would not currently be able to meet the $86 per capita spending target.6 Continuing flows of DAH from high-income countries will therefore be essential to support progress toward the SDG for health, including the aspiration to provide UHC. Meanwhile, there is increased scrutiny of foreign aid budgets amidst concerns that aid money may not be spent effectively and efficiently to achieve the desired ends6 and downward financial pressures on government budgets in many donor countries.

How can funding be sustained and increased in the face of austerity as well as ensuring efficient use of funding that is available? The UN aid spending target of 0.7% of gross domestic product on international aid5 has only been met by a few countries. In 2013, only 5 countries—Sweden, Norway, Luxembourg, Denmark, and the United Arab Emirates—had met or exceeded the 0.7% aid spending target and were joined in 2015 by the United Kingdom.7 Although renewed progress on reaching this target is necessary, innovative financing mechanisms should be exploited, such as the air-

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staff (for example due to salary differentials). Donors need to avoid distorting existing health systems by preferential funding for vertical (disease-specific) programs.14

Increasingly DAH should be seen within the context of the SDGs, including the emerging noncommunicable disease epidemic, which is leading to a double burden of disease in many countries and underscores the need for development of resilient health systems that are able to cope with changing disease burdens (particularly by delivering affordable interventions through primary health care),15 together with robust public health policies in areas such as tobacco control. Many determinants of disease and noncommunicable disease risk factors that are responsible for large burdens of disease are outside the control of health care services in sectors such as transport, food and agriculture, energy, housing, and urban planning, which are also reflected in the SDGs. Policies in these sectors should be assessed for co-benefits to health in addition to their primary aim (eg, by reductions in air pollution from reduced coal combustion or increased physical activity from policies to encourage walking and cycling in urban areas).16 In this way, aid across a range of sectors can be harnessed to improve health and complement DAH focused on health care delivery.

Finally, work such as that described in the study by Dieleman et al should be supported and expanded. Additional data are needed to provide better evidence for decision making and strengthen the case for funding to address the health problems of poor populations living in low-income countries that cannot fund the provision of essential health care for their own populations in the near future.

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