ABSTRACT Since the mid-2000s low- and lower-middle-income countries have been focusing on developing and using evidence for immunization policy making, with an increasing emphasis on cost-effectiveness analysis, program costing, and financial flows—particularly for the introduction of newer, more expensive vaccines. While this is critical to informing decisions, countries still need to increase national immunization investment and explore innovative approaches to augment financing of immunization programs. The need for increased financing is especially strong in countries transitioning from support by Gavi, the Vaccine Alliance. With increased fiscal space to finance health and immunization programs as a result of improved economic performance, low- and lower-middle-income countries can reach the health status enjoyed by wealthier nations within a generation. However, new strategies and approaches related to domestic resources for immunization programs are needed to achieve this goal. Governments will need to increase their investments and modify existing external immunization financing arrangements if country ownership of immunization programs and the full promise of new vaccines are to be realized.

Vaccines are among the “best buys” in public health. They improve health outcomes at a relatively low cost, particularly among the world’s poorest people. Since the early 1980s, vaccines have been reaching the majority of children in low- and lower-middle-income countries. In 2014 over 115 million (86 percent) vaccine-eligible children were immunized, preventing between two and three million childhood deaths. Unlike previous technologies, newer vaccines are being introduced rapidly to the poorer countries.

This success in rapidly extending vaccine coverage reflects both global commitment and growing technical and managerial capacity in the low- and lower-middle-income countries. These countries have increased fiscal space—that is, flexibility to direct expenditures according to their own priorities—to finance health and immunization programs as their economies grow. Directing additional resources to health and immunization programs will allow them to reach the health status enjoyed by wealthier nations within a generation.

Gavi, the Vaccine Alliance, plays a large role in extending vaccine uptake (referred to as “coverage”) by funding the purchase of vaccines that otherwise would not be affordable in many countries. Gavi’s funding, made possible by a global
set of partners, enables countries to access new and standard vaccines at prices that would likely not be possible had vaccine programs relied only on funding from domestic budgetary resources. Without Gavi funding, European and American manufacturers of the newer vaccines would not have scaled up their production, and the vaccines would not have been introduced widely in low- and lower-middle-income countries.

While the economic payoffs of newer vaccines are irrefutable, there are financial constraints that must be overcome if the advances in vaccine coverage are to be sustained. Low- and lower-middle-income countries—particularly those countries transitioning from eligibility for Gavi grants to internal financing—need to allocate additional domestic resources to immunization and make that financing sustainable.

The transitioning countries will need to absorb the full costs of new vaccines and health systems improvements previously financed by Gavi, while sustaining the programmatic systems that have facilitated the introduction of vaccines. For many countries, this will mean that they urgently require improvements in core fundamental financing functions for vaccines and vaccination programs, improved coordination between ministries of health and finance, and appropriate deployment of innovative financing approaches that secure not only budgeted amounts but also timely cash disbursement for vaccines and vaccination programs. On the supply side, the vaccines must remain not only relatively affordable, in terms of traditional cost-effectiveness metrics, but also absolutely affordable on a unit cost basis to help sustain new vaccine introductions.

In July 2015, at the United Nations International Conference on Financing for Development in Addis Ababa, Ethiopia, a central premise was reaffirmed: that each country has primary responsibility for its own economic and social development. As countries move toward implementing the economic, social, and environmental Sustainable Development Goals that have been agreed to as goals for the next fifteen years, the global community seeks to translate promises into real change. Sustainable development is ultimately and inextricably tied to financial sustainability. The ongoing experiences of countries transitioning out of eligibility for Gavi grants and for other multilaterally funded programs with macroeconomically defined eligibility criteria provide insights into this larger process.

**After Gavi Support**

Most Gavi financial support to low- and lower-middle-income countries is allocated to new vaccine purchases (approximately 80 percent of financial support, according to Gavi’s 2014 annual report). However, financial support is increasingly also allocated to health system strengthening (roughly 10 percent in 2014). As resource requirements for vaccination programs increase, governments of low- and lower-middle-income countries are expected to meet an increasing share of vaccine costs, particularly in the twenty-two countries currently transitioning out of Gavi eligibility before 2020.

Transition from Gavi eligibility begins when a country’s gross national income per capita passes a set eligibility threshold (US $1,580 in 2015). Countries then enter a five-year transition period during which they are expected to progressively increase domestic contributions to their immunization programs, assuming full responsibility for all vaccination program costs by the end of the period. Countries will need to absorb the full costs of immunization if complete country ownership—an overarching goal of the Decade of Vaccines (2010–20)—is to be realized.

However, many immunization programs remain heavily dependent on external partners for both financial and technical support. In the period 2008–10, low- and lower-middle-income countries financed 36–67 percent of immunization program costs. But immunization costs have quickly outpaced investments. New vaccines are more expensive than traditional ones and are the single largest cost driver, accounting for at least 50 percent of total immunization expenditures once new vaccines are introduced. With continued population growth, additional resources are also required to purchase and deliver more traditional vaccines, and increased attention from countries is needed to ensure the continued sustainability of vaccination programs.

Concomitantly, low- and lower-middle-income countries are growing economically, and theoretically they should have greater fiscal space to use more domestic resources to support health programs. It is not possible to generalize about all low- and lower-middle-income countries, given that economic growth rates will fluctuate over time. Nonetheless, assuming continued macroeconomic growth, the outlook for sustained immunization financing by countries after transitioning from Gavi support is promising.

For countries to harness their macroeconomic growth to increase domestic revenues and subsequently allocate larger shares to human capital investments, including immunization, will require significant planning, a commitment to increasing domestic financing, and the development of appropriate innovative approaches to
immunization financing. Additionally, to increase domestic financing requires a recasting of immunization as an investment in children with long-term returns in the form of a healthier and more productive population, so that spending on immunization can be prioritized on the same level as infrastructure and economic investment.

Sustainable Financing Approaches
As countries seek new and more efficient financing arrangements, governments must increasingly know how well their present immunization budgets are performing. This new emphasis on improved budget and financial management capacity can bring dividends. Resource tracking requires examining annual budgets and identifying where bottlenecks are occurring. The aim is to remedy common problems such as cash hoarding (in which budgeted amounts are never fully disbursed by the treasury), misallocation (in which funds meant for immunization are used for other purposes), and low absorptive capacity (in which funds are left over at the end of a funding year). Sharing budget performance information more widely, particularly with nongovernmental stakeholders, creates new incentives for managers to maximize budget performance.

Other improvements are needed, including more predictable domestic revenue generation from current sources and the development of new revenue sources. Innovative immunization financing approaches are starting to emerge as countries move toward greater ownership. Some countries are creating national or public-private immunization funds in which (for example) governments pledge to match private domestic contributions. One example, Nepal, is described in a companion article in this issue of *Health Affairs*.14

Another mechanism is to create a protection-based transfer of assets (a process known as ring-fencing) for federal and sometimes subnational government financing for immunization to ensure that adequate funding is set aside in federal and subnational annual budgets. Such ring-fenced funds often require specific revenue sources to be earmarked or budget shares to be set by law. Ring-fenced funds sometimes include money for other communicable disease programs along with immunization. At the country level, legislation to develop new sources for immunization and to create a ring fence to protect those funds for immunization can be done in different ways. Other countries are identifying new revenue sources such as excise taxes on mobile phone calls to pay for immunization.

All of these new arrangements seek to ensure continuous and adequate immunization financing. However, it is important, if these interventions are deployed, that they be appropriate, additive, and supportive of good budgeting and disbursement processes, and that they not displace resources or undermine sound financial practices and management.

At the global level, global health partners are also innovating as well as building on platforms that have had proven success. For example, the United Nations Children’s Fund (UNICEF) Vaccine Independence Initiative was launched nearly twenty-five years ago, to support countries that were transitioning from donor funding to self-funding of vaccine programs. As part of a broader program that is focused on budgeting and planning, that initiative reduces vaccine supply constraints for countries by offering participating countries the ability to pay for vaccines after delivery according to agreed-upon credit terms, through a capital fund that provides the financial security for these transactions.

The authorized ceiling for this capital fund has just been raised from $10 million to $100 million, subject to successful capitalization via fund-raising.15 This will allow more countries to use the fund, which will be especially important to some of the twenty-two countries transitioning from Gavi support during the period 2016–20. Ultimately, countries should also graduate from the Vaccine Independence Initiative with strengthened budgeting and disbursement practices, as has been the case for countries using the fund in the past.

These and other approaches and mechanisms can help improve country ownership through increased transparency concerning the management of vaccine resources, increased government financing, and reasonable vaccine prices. Governments, civil society, and external partners are all playing roles in the transition to
New domestic revenue streams are critical to sustaining national immunization programs.

country ownership. The increased accountability and transparency and improved financial performance of these new approaches to immunization are broadly applicable across the health sector.

Not all low- and lower-middle-income countries will achieve the fiscal space needed to fully finance their immunization programs by 2020. Country ownership increases as the composition of funding shifts from international to domestic. This transition must be managed carefully so that immunizations continue to be delivered continuously and equitably.

Besides financing, sustainability of vaccines programs includes a technical dimension. One in every five of the children living in low- and lower-middle-income countries (twenty-three million children each year) still do not receive a full course of vaccines recommended by the World Health Organization (WHO), and coverage is lower for newer vaccines such as pneumococcal and rotavirus vaccines. Technical performance, instead of funding per se, may still be the limiting factor for immunization programs in many low- and lower-middle-income countries.

Current trends in domestic immunization spending show only modest progress toward country ownership. In 2012, data reported by countries through the WHO/UNICEF Joint Reporting Form for immunization showed that governments spent less on routine immunization than they did in 2011. By 2014, spending on routine immunization was again on the rise, increasing from $36 per surviving infant in 2013 to $44 in 2014. (Among the seventy-three countries eligible for Gavi support, the increase was more modest—from $8 to $9 per infant.)

Capturing and correctly reporting immunization expenditures is exceedingly difficult, and this is reflected in the Joint Reporting Form data. Only three-fourths of the low- and lower-middle-income countries eligible for Gavi support reported any expenditures in 2014. Few if any reported the shared health system expenditures that, after the vaccines themselves, make up the bulk of routine immunization program spending.

Ministries of health in most low- and lower-middle-income countries are only now building the financial management capacity to capture health system expenditures. Managers may find it easier to access support from external partners than to undertake the institutional work needed to increase national funding. Governments may underinvest in immunization, knowing that external partners will continue to cover financing gaps.

Although a recent analysis by Natalia Alfonso and coauthors shows that the national propensity to spend on vaccines as income increases lags behind the propensity to spend on general health, there is cause for optimism. The disparity between ability to spend and actual spending means that financial resources are there. If and when countries take ownership of their immunization programs, they can better direct funds to their programs in an appropriate manner. Countries often know what they want and can be frustrated by what is offered to them—for example, in the case of presentations of vaccines, the number of doses per vial, cold storage requirements, recommended doses per child, and so on—with political pressures and donor politics trumping technical needs.

Conclusion

Although much progress has been made, current levels of funding and program efforts on vaccines are not sufficient to fully meet the long-term challenges to low- and lower-middle-income country ownership and to ensure that newer vaccines reach all children.

Countries face an ever-changing array of competing demands for scarce health resources, including pressures to address the rise in chronic and noncommunicable diseases and policy mandates such as making basic health care universal. National economies face the threat of exogenous macroeconomic shocks driven by declining commodity prices as well as other pressures.

At the global level, donors recently replenished Gavi’s resources, providing on the order of US $7.5 billion for Gavi’s next strategic period (2016–20). The donors that contribute to Gavi expect that it will use their resources to help countries introduce more new vaccines and extend equitable and sustainable immunization coverage to the remaining “fifth child”—or the children in remote areas far from health clinics who are the most challenging to reach.

For the countries transitioning from Gavi support, the expectation is that health gains made through new vaccine introductions will be sus-
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