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Tackling Indonesia's diabetes challenge: Eight approaches from around the world

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Indonesia's economic and demographic evolution is leading to a dramatic rise in noncommunicable diseases. How big is the problem? What approaches are other countries taking that could inform Indonesia's response?

Indonesia is in the midst of a fundamental economic and demographic transition. The country is projected to become one of the top ten economies in the world by 2030, up from the sixteenth largest today. An additional 90 million people are estimated to join the consuming class by 2030. In healthcare, too, Indonesia has made rapid strides, reducing maternal mortality by 56 percent in the last decade and under-five mortality by 86 percent over the past 50 years. An Indonesian's average life expectancy has increased from 49 years in 1960 to 69 in 2013.[1] In 2014, Indonesia introduced the world's largest single-payor health-insurance program, seeking to provide universal healthcare to its approximately 250 million citizens by 2019.

Looking ahead to the next 10 to 15 years, one of Indonesia's biggest challenges will be addressing noncommunicable diseases (NCDs). In 1990, NCDs represented 43 percent of the country's disease burden, compared with 49 percent for communicable diseases such as tuberculosis. Today, NCDs' share has grown to 69 percent,[2] and the numbers are rising. In 2014, three NCD categories—cardiovascular diseases, diabetes and its

complications, and respiratory diseases—accounted for nearly 50 percent of deaths in the country.[3] These three NCDs will cost Indonesia an estimated $2.8 trillion from 2012 to 2030 (three times Indonesia's GDP in 2014, and nearly 107 times Indonesia's total health spending in 2014), according to the World Economic Forum.

The adoption of a modern lifestyle by the Indonesian middle class and the country's aging population are the main factors behind the increase in NCDs. As elsewhere in the developing and developed world, a modern lifestyle corresponds to a higher calorie intake and sedentary behavior: fewer people walk to work or school, and more people are spending increasing hours in front of televisions or computer screens. By 2030, 135 million Indonesians are forecast to be part of the consuming middle class, compared with 45 million in 2010.[4] Additionally, projections suggest that about 27 percent of Indonesians will be more than 50 years old in 2035, compared with 14 percent in 2000.[5]

Indonesia is drafting a national agenda to address the growing burden of NCDs. In this report, we focus on diabetes to illustrate the issues the country faces in responding to the rise of NCDs. Our report draws on extensive secondary data, primary research, and McKinsey perspectives to highlight the country's diabetes challenge. We illustrate measures taken by other countries from which Indonesia might draw insights as it shapes its NCD agenda. We have grouped these measures into eight approaches:

1. developing a national diabetes strategy

2. establishing data systems and performance-management processes

3. upgrading primary-care networks

4. using innovative healthcare models to increase screening and diagnosis, particularly in remote areas

5. upgrading the skills of and providing incentives to healthcare-delivery professionals

6. empowering patients to improve adherence to therapy

7. increasing awareness of healthy living and encouraging lifestyle changes

8. developing policies to promote and enforce healthier lifestyles

This report is not intended to present an exhaustive list of potential diabetes

interventions, and it does not evaluate their medical or cost effectiveness. Rather, it is meant to illustrate the scale of Indonesia's diabetes challenge, highlight initiatives other countries are deploying that may be relevant to Indonesia and could inform Indonesia's approach, and outline how Indonesia might implement a national diabetes-management strategy.

The rest of the report is organized into three sections:

- the nature of Indonesia's diabetes challenge
- lessons from around the world in addressing the diabetes challenge
- ways Indonesia could implement a diabetes-management strategy

The nature of Indonesia's diabetes challenge

As of 2014, more than 9 million adult Indonesians (from 20 to 79 years old) suffered from diabetes, making the country's diabetes population the fifth largest in the world.[6] Projections suggest that more than 14 million Indonesians will have diabetes by 2035.[7] In 2014, diabetes was estimated to cause nearly 176,000 deaths in the country,[8] with the disease costing the Indonesian health system $1.6 billion a year[9]—more than 40 percent of government spending on NCDs overall.

If Indonesia takes no effective interventions, researchers forecast the following consequences arising between 2014 and 2020:

- total of 1.2 million new diabetes cases[10]
- a $66 billion GDP loss attributable to diabetes[11]
- a 5 to 10 percent cumulative increase in diabetes complications, such as hypertension, retinopathy, neuropathy, and diabetic kidney disorders[12]

Lifestyle and dietary habits

About 24 percent of Indonesians older than 18 are physically inactive, compared with

15 percent in Thailand, 13 percent in India, and 16 percent in the Philippines.[13] The percentage of overweight people (meaning a body-mass index greater than 25) in Indonesia is also rising, from 21.2 percent in 2010 to 24.5 percent in 2014.[14] This increase corresponds to an additional 10.9 million overweight Indonesians. More than three-quarters of Indonesian males 15 years old and above smoke, compared with 20 percent in India.[15] Average salt intake per person per day is 15 grams, three times higher than the World Health Organization's recommended daily consumption.[16]

Diabetes awareness, screening, and diagnosis

Physicians and other healthcare professionals tell us that patients are often unaware of diabetes symptoms, resulting in improper or late diagnosis. Indonesia also lacks comprehensive diabetes-education programs.[17] Only 47 percent of diabetes patients are diagnosed in Indonesia, compared with 75 percent in Mexico and 72 percent in the United States.[18] Diagnosis also tends to happen late in the disease pathway, when many patients have already developed two or more complications. For example, neuropathic symptoms are often the initial cause of medical consultation in Indonesia leading to diabetes diagnosis.

Management of diabetes

Recommended diabetes-treatment targets (HbA1C level of 7 percent or below) are achieved by only 30 to 35 percent of diabetes patients in Indonesia, compared with 50 to 55 percent in the United States.[19] Contributing to this situation are patients' poor adherence to medication and recommended lifestyle changes, inconsistent follow-ups with doctors, and inconsistent treatment for complications and comorbidities.[20]

In addition, physicians do not appear to adhere uniformly to standard treatment guidelines. For example, even though 70 to 90 percent of doctors are aware of guidelines for blood-glucose targets and lifestyle modifications, only 20 to 35 percent implement them with patients. Several factors contribute to this situation: physicians' inability to obtain access to the full guidelines, inadequate and improper training, high healthcare costs for patients, high percentage of patients still without health insurance, and low levels of disease awareness among patients.[21]

As a result, diabetes-treatment outcomes are poor, and comorbidities and complications are high, significantly increasing the overall cost to the country. A study

from India estimates diabetes complications increase hospitalization costs by up to four times.[22]

Healthcare resources and infrastructure

Indonesia has 2 doctors per 10,000 people, compared with 7 in India and 19 in China.[23] Countries with fewer than 25 physicians, nurses, and midwives per 10,000 people generally fail to achieve adequate coverage rates for selected primary-healthcare interventions as prioritized by the World Health Organization's Millennium Development Goals.[24] In addition, the distribution of physicians is geographically uneven: for example, DKI Jakarta has more than 15 general practitioners per 10,000 people, while West Sulawesi has less than 1 per 10,000 people.[25]

Also, Indonesia's government-owned primary-care network (the Puskesmas) lacks the resources to screen, diagnose, and treat diabetes patients. For example, about a quarter of Puskesmas do not have laboratory facilities,[26] only 54 percent of Puskesmas can perform blood-glucose tests, only 47 percent are equipped to perform urine tests, and most are not equipped to test HbA1C.[27]

Integrated national diabetes agenda

Indonesia has multiple diabetes-management programs on the drawing board and in the early stages of implementation (see sidebar "Indonesia's diabetes/NCD-management initiatives"). However, the lack of an overall performance-management framework for tracking and monitoring progress of these initiatives makes it difficult for the government to assess the impact of ongoing programs and interventions.[28]

Lessons from around the world in addressing the diabetes challenge

To manage the country's worsening diabetes situation, Indonesia will need to address the issues highlighted in the previous section. The government is already undertaking several initiatives in this regard. As it continues to draft a comprehensive response to the diabetes situation, Indonesia can learn from other countries that have faced similar challenges. This section describes eight approaches from around the world

that Indonesia could use to inform its response to its diabetes challenge (exhibit).

Exhibit

Eight approaches from other countries could help Indonesia address its diabetes challenge.

Diabetes strategy and systems	1. Developing a national diabetes strategy 2. Establishing data systems and performance-management processes
Primary-care infrastructure	3. Upgrading primary-care networks
Screening and monitoring	4. Using innovative healthcare models to increase screening and diagnosis, particularly in remote areas
Management of treatment outcomes	5. Upgrading the skills of and providing incentives to healthcare-delivery professionals 6. Empowering patients to improve adherence to therapy
Healthy living and lifestyle changes	7. Increasing awareness of healthy living and encouraging lifestyle changes 8. Developing policies to promote and enforce healthier lifestyles

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Diabetes strategy and systems

The starting point for an integrated and comprehensive NCD-management program is always a national-level strategy with clearly outlined objectives, targets, and timelines. Several countries have understood the importance of such top-down planning and have drawn up their disease-management strategies at the country level.

Approach 1: Developing a national diabetes strategy. Countries such as Australia, Mexico, Switzerland, and the United Kingdom are adopting and implementing a systematic national approach to diabetes. For example, Switzerland recently introduced a national diabetes strategy through a structured eight-step process.[29] Called the QualiCCare project, the effort focused on ensuring appropriate coverage of the relevant diabetes population, enforcing discipline and follow-through in implementation, and establishing ways to measure program impact. Specific steps included the following:

- outlining the diabetes disease pathway and identifying treatment elements
- selecting treatment elements based on scientific evidence
- defining focus areas for improvement in the country
- identifying benchmarks
- modeling and quantifying the potential impact of healthcare outcomes
- modeling and quantifying the financial impact on healthcare spending
- designing specific interventions to capture the full potential impact
- establishing an implementation agency and road map

In implementing this effort, a Swiss national-diabetes-strategy working group identified a list of treatment elements and metrics across the diabetes pathway. The group recorded a baseline for each metric, using the latest available data, and determined a range of potential improvements by assessing peer-country benchmarks, internationally accepted guidelines, and expert advice. Final targets were selected based on what was deemed feasible.

To improve the chances of success, implementation followed a multistakeholder consortium approach that included the Department of Health, patient organizations, physician associations, payors, and outside experts.

As the Swiss example illustrates, a well-articulated national policy would include clear, specific, and measurable goals and objectives; well-defined roles and responsibilities for various stakeholders; and a performance-management system to track progress. A comprehensive national diabetes agenda would also review current approaches to NCD services and care, seek to maximize the efficient use of limited healthcare resources, and surface ideas to better coordinate health resources across all levels of government. Indonesia could follow a similar model.

Approach 2: Establishing data systems and performance-management processes. Several countries have launched innovative data approaches to help manage their national diabetes programs. In particular, some have developed open-data portals with stakeholders, such as hospital groups, pharmaceutical companies, medical-device companies, and data-analytics organizations. Such portals can aggregate data from multiple sources, enabling multiple stakeholders to generate insights as well as fill data gaps.[30]

Singapore, for example, created an open-data platform (data.gov.sg) in 2011. The government subsequently launched its National Electronic Health Record program.[31] This aggregates the personal-health and care-consumption data of each citizen to form a complete, structured patient database. The open-data repository uses digital databases started and managed by the Singapore Department of Statistics in the early 1970s. In 2001, the National Disease Registries Office was created to collect epidemiological data on illnesses such as cancer, renal diseases, and stroke. Implementation of standard IT systems in all healthcare facilities followed.

The development of the open-data approach in 2011 started with the launch of a platform containing 8,600 data sets from 60 different public entities. The Ministry of Health, the Department of Statistics, and the Singapore Medical Council were the public aggregators of health data. The Ministry of Health website later became the main portal to access health data.

Similarly, Malawi offers an example of how a country with limited resources can tackle the data-systems challenge using innovative technologies and methods. Malawi launched a pilot project in 2009 at three growth-monitoring clinics in the central part of the country to gather nutritional data on children under five years old. This included a provision for automated data entry into a central database through mobile text messages as well as a two-way information exchange. For example, after submitting a child's readings via text message, health-surveillance assistants receive

an automatic confirmation through the same channel. The assistants get two hours of government-funded training in rapid SMS reporting. This approach was later expanded to diseases such as HIV and to education and other sectors.

Building a fact-based performance-management system typically has several requirements:

- The government must define its data needs and outline a process to source, track, and report the information periodically.
- Data must be updated continuously and disseminated regularly to relevant stakeholders through decision-making dashboards and related tools.
- A program-management office must be established to play an effective central role in coordinating and monitoring progress of the overall system.

Indonesia could consider moving to an open-data approach, creating a public portal that would house existing data from multiple sources such as the Ministry of Health, BPJS (Healthcare and Social Security Agency), the national health survey, pharmaceutical companies, and nongovernmental organizations. The government and other stakeholders, such as hospital groups, pharmaceutical companies, medical-device companies, and data-analytics organizations, could use the portal to generate insights and fill data gaps. Additionally, they could consider other innovative ways to gather data, such as mobile messaging (see the example for Malawi) and creating incentives for hospital and pharmaceutical companies to do more clinical research. Doing so would help build patient registries specific to Indonesia.

Primary-care infrastructure and quality of care

Primary care is an important first layer of the treatment funnel in any healthcare system. A primary-care system that does not offer systematic identification and follow-up of patients with NCDs such as diabetes will place a disproportionate load on the rest of the healthcare infrastructure. In Mexico, for example, where the prevalence of diabetes is about 12 percent of the population,[32] nearly 40 percent of all internal-medicine hospitalizations are accounted for by NCD cases. In Indonesia, too, the

increasing burden of NCDs will require a rapid upgrade and scale-up of primary-healthcare infrastructure and delivery throughout the country.

Approach 3: Upgrading primary-care networks. Issues such as the number of doctors, diagnostic labs, and consistent availability of appropriate medication are central to ensuring that primary-care networks are fit for purpose. Several governments have adopted a multipronged approach to upgrading primary-care networks, with methods such as these:

- emphasizing the introduction of, implementation of, and adherence to standard protocols
- changing prescriptions policies—for example, by offering longer-term prescriptions following a diagnosis
- becoming a one-stop shop to access multidisciplinary teams (physicians, nutritionists, and social workers) to improve care management and quality of life of a diabetes patient
- undertaking operational-transformation programs to improve patient flow and reduce costs
- upgrading facilities and equipment such as diagnostic centers and screening and monitoring equipment

India, for example, recently started building NCD clinics as a part of its basic healthcare-delivery network (see sidebar "How India is scaling up healthcare delivery").

Indonesia could draw several lessons from these examples in thinking through and implementing changes to its Puskesmas primary-care network. Local private and international hospital groups can help identify and accelerate the adoption of standard clinical guidelines and operational processes to reduce costs. In parallel, governments can adopt alternative financing and investment models—for example, outsourcing diagnostics operations to private vendors or encouraging wealthy individuals and NGOs to adopt a clinic.

Screening and monitoring

Poor health awareness, low diagnosis (only 47 percent of people with diabetes are diagnosed in Indonesia, compared with 72 percent in the United States), and lack of basic health services in rural areas are major issues in Indonesia.[33] Early diagnosis and improved diagnosis rates could cut the cost of diabetes treatment to the healthcare system and ultimately help contain losses in productivity and GDP to the economy.

Approach 4: Using innovative healthcare models to increase screening and diagnosis, particularly in remote areas. Innovative delivery models such as telemedicine and mobile health are now available, and have proved faster and less expensive in improving awareness and diagnosis than traditional in-person methods, particularly in remote areas (for example, the Chunampet diabetes-screening bus initiative from India or the diabetes-awareness bus initiative by Novo Nordisk in many countries).

In rural parts of Rajasthan, India, for instance, educational institutions, nongovernmental organizations, and pharmaceutical companies together began a program in 2008 called Arogya Ghar to provide treatment in areas with a limited supply of doctors and inadequate infrastructure. The initiative features walk-in health clinics equipped with computerized self-service kiosks offering a wide range of medical protocols approved by the US National Institutes of Health and the World Health Organization. These clinics offer information on disease outbreaks and other emergencies, adverse drug reactions, and medical advances. Arogya Ghar maintains electronic health records of patients and provides access to treatment plans through computers. Locally trained high-school graduates operate the kiosks, which are owned by social entrepreneurs.[34]

Another example is India's Chunampet Rural Diabetes Prevention Program, where buses equipped with medical devices and screening technologies visit remote locations. They offer free screening and diagnosis, videoconferencing with specialists, referrals, and follow-ups.[35]

In Mexico, MedicallHome tries to address the issue of scarcity of healthcare practitioners. For a flat monthly subscription fee, patients are able to call MedicallHome 24 hours a day, seven days a week, for health advice and consultation. Patients receive remote medical support; two-thirds of cases are resolved over the telephone, and those who don't need to see a doctor save $30 on average. In cases

where patients are referred to clinics, they receive discounts ranging from 5 to 50 percent and are examined according to evidence-based protocols by 1 of 6,000 physicians or 3,000 healthcare providers across 233 cities.

Indonesia already has the infrastructure and several initiatives in place to promote consistent screening and diagnosis of NCDs (for example, Posbindu and a mobile van program). It could assess the effectiveness of current programs and potentially complement them with a few pilots, such as a national screening drive through the Puskesmas network during the month of Ramadan, broadening the role of the mobile van program to include structured referrals and counseling to ensure adherence to treatment, and setting up kiosks in rural areas that have computers from which medical information can be obtained.

Management of treatment outcomes

Treatment outcomes are mainly a function of the quality and capacity of medical practitioners, adherence to clinical protocol and guidelines, and patient compliance with therapy and lifestyle changes. Upgrading the skills of healthcare professionals and empowering patients therefore assume great importance.

Approach 5: Upgrading the skills of and providing incentives to healthcare-delivery professionals. Various countries have embarked on improving disease-treatment outcomes by offering training programs to physicians and by adopting outcome-based and improvement-based payment methods (see sidebar "India's training partnership").[36] Additionally, physicians' capacity to examine patients could be augmented by training and empowering nurses and other paramedical professionals to offer patient advice on basic issues such as healthy lifestyles and diet.

In Indonesia in 2012, the pharmaceutical company Sanofi undertook a five-year "Train the Trainer" program in partnership with the Ministry of Health, the Indonesian Society for Endocrinology (Perkeni), and the American Diabetes Association. The program aims to provide training to 500 specialists and 5,000 general practitioners working at primary-healthcare centers on diagnosis, treatment, and disease management.[37]

Similarly, Novo Nordisk, Sanofi, and nongovernmental organizations such as the World Diabetes Foundation have been carrying out several other successful training programs covering more than 10,000 physicians across Indonesia.[38] Indonesia has

the opportunity to build on its training investments and initiatives to date to further empower its healthcare professionals. For example, incentives could be created for the primary-care doctor to accept responsibility for outcomes of a specific patient in an integrated way, across primary, secondary, and tertiary care. The country could also encourage physicians to connect and share effective clinical practices through continuing-medical-education programs and conferences. Finally, the government could encourage healthcare-technology companies to build technology-enabled decision-support tools to help physicians better diagnose and treat diseases. Such tools could be built in collaboration with the Perkeni (Indonesian Society for Endocrinology) and the Persadia (Indonesian Diabetes Association).

Approach 6: Empowering patients to improve adherence to therapy. Evidence shows that self-management education and programs to support lifestyle changes yield significant improvements in treatment adherence and positive clinical outcomes.[39] Around the world, pharmaceutical companies, health entrepreneurs, and big data and technology companies are collaborating to help create adherence programs and tools for patients. These include online or offline communities where patients and physicians connect and share experiences and best practices, provide support and guidance, and offer information on what foods to eat and to avoid.

For example, in the United States, an online disease-support group allows mothers of children diagnosed with hemophilia to connect, share experiences, spread awareness, and build community. The forum also provides resources for mothers to learn more about the disease and access other support resources.

Technology-enabled tools such as mobile apps can provide disease-management tips to patients; messages could remind patients to take their medicines and track their blood-glucose readings. Patient-support groups could also help patients cope with their diabetes condition and its challenges through sharing experiences. Several companies are beginning to offer such applications to patients directly. For example, Janssen Pharmaceuticals's Care4Today app texts users to remind them to take medication. It can provide graphs on how users are doing on medication adherence. Patients can show adherence reports to physicians to receive feedback and further treatment advice.

In Indonesia in 2013, MSD Pharmaceuticals launched a mobile app named Ramadan, Diabetes, and Me to help people manage their diabetes condition. The app provides advice to diabetes patients who want to fast during Ramadan and reminds them to

control blood-glucose levels during fasting (to avoid hypoglycemia). It also offers a blood-glucose-tracking feature. In addition, MSD printed patient-information booklets and distributed them to pharmacies to provide facts on fasting during Ramadan, and it facilitated communication between healthcare professionals and patients.

Healthy living and lifestyle changes

Evidence suggests that lifestyle modifications and investments in healthier living are an important dimension of improved healthcare outcomes in the long term, particularly for NCDs. Unhealthy conditions or behaviors such as impaired glucose tolerance, high body-mass-index measures, and smoking have been shown to increase the risk of developing diabetes, and most individuals—perhaps up to 70 percent—with these prediabetic states eventually develop diabetes.

In its 2014 research, *Overcoming obesity: An initial economic analysis*, the McKinsey Global Institute (MGI) assembled a list of interventions to reduce obesity prevalence that are being implemented across the world by central and local governments, employers, schools, healthcare systems, food retailers, manufacturers, and food-service providers. It developed an initial assessment of their cost-effectiveness and the potential scale of their impact if they were applied at a national level. Among other interventions, this research cited evidence from a US trial that showed lifestyle changes (a 7 percent weight loss accompanied by moderate physical activity) decreased the number of new diabetes cases by 58 percent among the high-risk population.

Similarly, research suggests school and workplace canteen programs offering meals low in calories but high in volume have reduced overall energy density of consumed food by more than 25 percent in one year.[40]

Thus, creating awareness of and encouraging lifestyle changes, along with establishing the necessary policy framework to promote healthy living, become important interventions in the effort to improve management of diabetes.

Approach 7: Increasing awareness of healthy living and encouraging lifestyle changes. National-level public-health campaigns to promote healthier lifestyles are an important baseline measure in any effort to create a cultural shift. Evidence shows that successful behavioral change relies on tailoring public-health campaigns to

specific audiences and deploying information that is most likely to resonate. This might include compelling stories focused on health- and longevity-related benefits, as well as financial and family impact (see sidebar "Successful healthy-lifestyle campaigns").

Similar to awareness campaigns, some countries have introduced health education in schools and enforce minimum hours of exercise, such as the Trim and Fit program (or the Holistic Health Framework) in Singapore. Programs such as these also encourage public investment in infrastructure that reinforces healthy lifestyles, such as the construction of walkways and parks. Other initiatives include providing people with access to knowledge and information on healthy lifestyles through websites, apps, and public kiosks.

Indonesia could draw insights from these campaigns and consider tailored national-level and regional initiatives to influence lifestyle changes.

Approach 8: Developing policies to promote and enforce healthier lifestyles. Experience from other countries suggests that government policies and regulations can play an important role in promoting and enforcing healthy lifestyles:

- Evidence suggests that subsidizing the cost of fruit and vegetables, for instance, leads to an increase in their consumption and weight-reduction outcomes in specific segments of the population.[41]
- While there is a plurality of views in academic studies, some research also suggests that increasing advertising for high-fat, high-sugar, high-salt products correlates with a rise in body-mass index.[42] Several governments are considering regulations on advertising unhealthy foods. In the United Kingdom, for instance, the government banned advertising of high-fat, high-salt, and high-sugar products during children's-television airtime.[43]

Many governments are adopting policies to encourage consumption of healthful foods and discourage consumption of high-fat, high-sugar, high-salt products. Measures include regulating advertising of these products and disseminating messages about such products to the public.

Similarly, several countries have introduced or are considering introducing higher taxes on high-sugar, high-salt, or high-fat products. In March 2016, Britain's government announced plans to impose a tax on excessive sugar levels in sugar-sweetened beverages.[44] In 2014, Mexico introduced higher taxes on high-sugar and high-calorie foods.[45]

Policies are also being developed that mandate transparency about a food product's composition, nutritional value, and impact on health. MGI's research suggests that while studies on labeling have had mixed results, there is a consensus that labeling has a small direct effect on some groups of people and also has indirect signaling effects. MGI also cites research from the United States that suggests labeling in fast-food restaurants, coffee shops, and other eating environments away from home has encouraged producers and retailers to make their products more healthful or reduce portion size.[46]

Ways Indonesia could implement a diabetes-management strategy

In the previous section, we discussed initiatives that other countries are adopting to address the diabetes challenge. There are many lessons and models that Indonesia could draw upon and adapt to the country. It will be important, however, to ensure that any ideas Indonesia decides to take forward are implemented in a practical and sustainable manner.

Implementation of a national diabetes strategy and resulting initiatives will not be easy, given the size of the country and the relative scarcity of resources. No single type of intervention—or any single sector of society—will be able to rein in the rising prevalence of diabetes. More cooperation within and between public and private sectors is likely to be necessary. We also believe that the relevant sectors of society should be prepared to engage in trial and error to better understand which approaches are likely to be most effective. Following are a few implementation ideas the government might consider.

Pilot the new diabetes strategy on a small scale

Our experience suggests that piloting national disease-management strategies at the

state, zonal, or regional levels is likely to be the most effective approach. It ensures that implementation can begin with a small resource base, permit adjustment and fine-tuning of strategies, and generate tangible demonstration of proof of concept and impact before scaling up.

Australia recently implemented a diabetes-care-management pilot. Managers of the effort successfully enlisted 154 general-practitioner practices comprising roughly 6,800 patients across three states to participate in an 18-month trial to test diabetes-management initiatives. The managers created a control group and two test groups in a randomized pilot. With these three groups, they tested interventions such as care coordination and monitoring, flexible funding, an integrated information platform, continuous quality-improvement processes, and payments for quality improvement. The approach allowed officials to measure and monitor the impact of these interventions and to show proof of concept of what a comprehensive diabetes-management strategy could do.

Indonesia could emulate such a pilot approach in the rollout of its diabetes-management program. Identifying enthusiastic and supportive provincial, regency, or city governments and implementing, monitoring, and measuring the new approach would help prepare the country for wider national rollout of its new diabetes strategy and care programs.

Consider a multistakeholder consortium approach to implementation

In a resource-constrained country like Indonesia, involving a consortium of public and private players is likely to be important. Governments, hospitals, payors, pharmaceutical companies, medical-device companies, data-analytics organizations, academic and research institutions, media, consumer associations, medical associations, and many others could be involved. Australia's diabetes-management program included close to 20 organizations. Switzerland's QualiCCare project, as mentioned earlier, also followed a multistakeholder consortium approach that included the Department of Health, patient organizations, physician associations, payors, and outside experts.

Indonesia could consider pursuing such a multistakeholder approach as it begins to implement its diabetes-management program. Such an approach can help reduce the

resource burden on the government and expand the reach of the program.

Consider establishing a central implementation authority to encourage and monitor progress

A well-executed central agency could coordinate and accelerate implementation of national-level initiatives, manage resource allocation, ensure financial discipline, and improve accountability, as well as track, monitor, and communicate progress among various stakeholders. Such an authority also could become the most credible data-gathering and analysis group on diabetes and other NCDs. Given a central role, the agency could access, verify, and maintain accurate data on diseases at the national and provincial levels and help Indonesia reduce ambiguity about the country's disease burden and future projections.

Indonesia is in the middle of a demographic, economic, and epidemiological transition. Noncommunicable diseases are becoming more prevalent as the population becomes wealthier and older. Chronic, long-term conditions such as diabetes are causing an increasing number of deaths, rising healthcare costs, and GDP losses. Taking appropriate and timely steps to address the country's diabetes challenge could have a big impact on Indonesia's health system and economy for years to come.

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