Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Opinion TRENDS in Parasitology Vol.23 No.2

Parasitology in Japan

The Okinawa Infectious Diseases Initiative

Osamu Kunii

Institute of Tropical Medicine, Nagasaki University, Sakamoto 1-12-4, Nagasaki 852-8523, Japan

At the Kyushu–Okinawa Group of Eight summit in 2000, Japan announced the Okinawa Infectious Diseases Initiative (IDI) and pledged to spend US$3 billion over a five year period to combat infectious and parasitic diseases in developing countries. The IDI has exceeded expectations, spending more than US$4 billion over four years. The IDI is a unique initiative with its own philosophical basis and specifically tailored interventions and measures that helped to initiate worldwide political and financial commitments in the fight against infectious diseases. Notably, it promoted partnerships among stakeholders and emphasized comprehensive and intersectoral approaches (i.e. coordination and collaboration between health and other sectors). It helped to create a new vision of what is possible in the global effort against communicable diseases and has been instrumental in shaping the changing environments of development assistance, poverty reduction and other trends to reduce the impact of infectious and parasitic diseases.

The battle against infectious diseases

Since the 1997 Group of Seven (G7) summit in Denver, USA, world leaders have made major commitments and agreed to collaborate to combat infectious and parasitic diseases [1]. At the Kyushu–Okinawa Group of Eight (G8) summit in July 2000, infectious diseases were on the main agenda for the first time, and major progress was made in securing stronger commitments from all G8 nations [2]. The commitments included an agreement to establish new partnerships to help maximize the impact of health and medical interventions, and recognition of the need to expedite the mobilization of additional resources. One of the outcomes of this new-found political appreciation of the urgent need to tackle infectious diseases was the establishment in January 2002 of the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM: http://www. theglobalfund.org/) [3].

Japan remained the top overseas aid donor throughout the 1990s and is still the second biggest after the USA [4]. Even before the Denver summit, the Japanese Government was committed to fighting infectious diseases. In 1993, together with the USA, Japan launched the Common Agenda for Cooperation in Global Perspective [5] to address global problems such as increasing environmental damage, overpopulation and damage from both natural and manmade disasters. This was followed, in 1994, by the Global Issues Initiatives on Population and AIDS [6]. Japan underscored its undertaking to boost parasite control efforts by launching the Global Parasite Control Initiative, also known as the Hashimoto Initiative (HI), at the 1998 G8 summit in Birmingham, UK [7]. The subsequent Okinawa Infectious Diseases Initiative (IDI) was designed using the successes and challenges experienced during HI activities, expanding targets and strategies towards broader infectious disease control and prevention, and deploying a broad spectrum of interventions. In this article, I review the IDI, focusing on its philosophy, components, activities and achievements.

Basic philosophy

The IDI incorporated the following basic philosophy, which greatly influenced the manner in which the programme was designed and implemented.

Infectious and parasitic diseases as a central issue in economic and social development

Infectious and parasitic diseases not only threaten the lives of individuals in developing countries but also are an impediment to the social and economic development of those nations [8–10], particularly affecting the poor [11]. The risk of infection in developing countries is increased by several factors, including high population growth rates, poverty, gender disparities, fragile medical systems, inadequate preventive care and treatment services, lack of safe water supply, and malnutrition [12–14]. These factors are compounded because poor health exacerbates poverty [15]. Fighting infectious and parasitic diseases should be a central part of all development programmes and a crucial element in efforts to reduce poverty [16].

Global partnership and community-based action

Infectious and parasitic diseases should be viewed as a global issue that requires collective approaches based on international, multisector partnerships [17]. Effective measures to tackle these diseases also require action at the community level based on the concept of primary health care [18]. As such, it is also important to incorporate measures against infectious and parasitic diseases in all community-level development programmes.

The experiences of Japan in public health activities and its future role

Following World War II, Japan developed a public health centre system, trained public health workers extensively,

Corresponding author: Kunii, O. (kunii@jp.org).
Available online 22 December 2006.

 1471-4922/$ – see front matter doi:10.1016/j.pt.2006.12.008

promoted measures for maternal and child health care and enhanced health care services in schools [19,20]. These steps contributed to the rapid reduction in infant mortality rates [21]. Japan also mounted major initiatives to eliminate infectious and parasitic diseases nationwide; for example, by linking public health activities with measures to control tuberculosis (TB), Japan substantially reduced the number of TB-related deaths [22]. Okinawa, which comprises the southernmost islands of Japan, has a history of successful eradication of malaria, filariasis and other parasitic diseases through active public health measures, including community participation and mobilization [23].

Drawing upon these experiences, Japan has provided experts, technical assistance and capacity development programmes to developing countries through the IDI by modification and application of the methods and technology that have proved so successful in Japan.

The IDI actions against infectious and parasitic diseases

Strengthening the health sector in developing countries

The most important philosophy of Japanese development assistance is to support the self-help efforts of developing countries. Japan supports the development and implementation of health sector plans and/or infectious-disease-specific intervention programmes designated by the countries themselves. Through infrastructure and institution building, in addition to provision of technical assistance, Japan supports and facilitates the development of health systems and sector reforms, thereby reinforcing health development planning and programmes, building capacity and helping to ensure sustainability of infectious disease control.

Human resources development

The IDI has given high priority to supporting human resources development, which is the most crucial component in making health systems function, and to creating quality services and high performance in infectious disease control. Japan has provided several training programmes and courses in response to local needs in both developing countries and in Japan aimed at individuals from all levels (e.g. from policy makers to field site personnel).

Partnership with civil organizations, donor countries and international organizations

To tackle a formidable global issue, Japan has consolidated partnerships with various stakeholders, including the United Nations (UN: http://www.un.org) and other multilateral organizations, donor agencies, nongovernmental organizations (NGOs) and civil organizations such as private nonprofit organizations and community groups. Japan has also promoted partnerships with developing nations that have already shown progress and in which high-quality human resources in infectious disease control already exist. These partnerships have been developed into a cooperative network in developing countries that facilitates sharing of knowledge, skills and expertise among the cooperating countries.

Promotion of research activities

For decades, Japan has promoted research activities in developing countries that are designed to create new, appropriate technology and quality clinical and laboratory work [24,25]. Therefore, the promotion of research activities became one of the key components of the IDI. However, because of Japanese official development assistance budget constraints (i.e. reduced aid to developing countries) and the increasing trend of targeting worldwide assistance towards poverty reduction [26], there has been a priority shift away from scientific research and towards an operational focus, with the goal of providing rapid and direct support to those most in need. Consequently, support for research has declined.

Promotion of public health at the community level

Japan has paid special attention to the improvement of basic sanitation, clean water, basic education and primary health care within communities, concentrating on interventions that lead to the reduction of infectious diseases. This infrastructure support, ostensibly assistance to boost primary and community health care, has emphasized the need for comprehensive, integrated approaches and has included the construction of health centres, the distribution of medical and laboratory equipment and supplies, the training of community personnel and the facilitation of community participation.

Major achievements of the IDI

The formation of the IDI stimulated an increase in worldwide political and financial commitment for the fight against infectious diseases [27]. According to the G8 performance assessments conducted by the G8 Information Centre at the University of Toronto, the 2000 Okinawa summit is ranked top among the 1996–2004 summit meeting of the major donor nations under the issue of health and infectious diseases. (http://www.g8.utoronto.ca/evaluations/2000okinawa/country.htm#issues)

Between 2000 and the start of 2004, Japan spent US$4.1 billion on the IDI. IDI spending is classified under two categories: direct assistance (US$1.2 billion) and indirect assistance (US$2.98 billion). Direct assistance involves projects and interventions that directly affect disease prevention. These include treatment and control (i.e. the provision of medicine), diagnostics and vaccines, technical assistance for disease control and training a workforce for disease control. Indirect assistance involves projects and interventions that indirectly influence infectious disease control. These include clean water and sanitation, provision of basic education and renovation of health facilities. With regard to the geographical allocation of the IDI inputs (Table 1), Japan has focused mainly on Asia. However, more attention is now being paid to Africa because it represents the biggest obstacle to the achievement of the Millennium Development Goals (MDGs: http://www.un.org/millenniumgoals/), which are a series of global development targets set by the 2000 UN Millennium Assembly.

In the direct assistance section, 32% of spending was allocated to HIV/AIDS-related projects, whereas <5% was allocated to the control of malaria and other parasitic diseases. This reflects the political commitment worldwide and especially the efforts that have been prevailing in recent years to combat HIV/AIDS [28,29]. Japan had a

Table 1. IDI expenditures and other outputs by region[a]

Region	Grant aids and loans (US$ millions)	Number of technical cooperation projects	Number of technical cooperation experts and volunteers	Number of health personnel trained in Japan
Africa	442	55	604	1788
Asia	602	107	659	8361
Europe	93	0	79	118
Latin America	228	33	669	1364
Middle East	187	17	102	360
Oceania	37	0	255	137

[a]Figures correct as of December 2002.

key role in establishing the GFATM, contributing an additional US$346 million by November 2005, which was not included in the budget frame of the IDI (http://www.infojapan.org/announce/press/2005/11/1108.html).

Japan has put great emphasis on the promotion of public health and the improvement of underlying social and economic conditions that enable infectious diseases to flourish and spread. These include illiteracy, lack of potable water and sanitation, and inadequate access to basic health services. Major importance has been assigned to water supply projects, which facilitate and promote infectious and parasitic disease control and improve the socioeconomic status of communities through reduction of the time and labour required for drawing water [30]. Japanese leadership in this respect has placed Japan as the top global donor in the sector, having contributed to more than one-third of water supply and sanitation projects in the developing world to provide >40 million people with access to safe drinking water and basic sanitation in the past five years [31] (http://www.mofa.go.jp/mofaj/gaiko/oda/index.html).

The IDI also provided extensive support to basic education, not only through the building of schools and the training of teachers but also through equipping schools with basic sanitation and a clean water supply, and developing school-based programmes (e.g. deworming, hygiene education and HIV/AIDS awareness and education). For discussion of Japanese initiatives in school health, see Ref. [7].

The creation of new and multifaceted partnerships has been integrated throughout all IDI activities. First, Japan has provided small grants to local, international and Japanese NGOs in >100 countries. Second, Japan has cemented and extended its partnerships with other donors, in particular with the USA. Japan signed the Japan–USAID Partnership for Global Health document in June 2002 and sent joint project-formulation missions to Nigeria, Nepal, Honduras and ~30 other countries to initiate collaborative efforts to combat infectious diseases. Third, Japan has strengthened partnerships with the World Health Organization (WHO: http://www.who.int), United Nations Children's Fund (UNICEF: http://www.unicef.org) and other UN agencies in various programmes such as the Roll Back

Box 1. Projects under IDI

Examples

- Japan has provided diagnostic kits, equipment, voluntary counselling, testing centres, training of laboratory technicians and clinicians, and other types of support to control HIV/AIDS in many HIV-epidemic countries.
- For vaccine-preventable diseases, the IDI has supplied vaccines with a cold chain and provided technical assistance for surveillance and laboratory and clinic management.
- In support of the Global Malaria Programme and RBM, Japan has donated anti-malarial drugs, diagnostic equipment and long-lasting insecticide-treated bed nets, and offered technical assistance and training for laboratory and clinical management, especially in sub-Saharan Africa and the Greater Mekong Subregion
- To combat lymphatic filariasis in the Pacific region, Japan has contributed to PacELF by offering the know-how learned from Japanese experience in eliminating this disease in the 1970s. The IDI has also provided diethylcarbamazine and immunochromatographic test cards and deployed the Japan Overseas Cooperation Volunteers for this programme [44].
- Japan has also been one of the largest donors in controlling Chagas disease in Central America through the provision of equipment and supplies, in addition to technical assistance for programme management and individual interventions, including surveillance, materials for information, education and communication, and insecticide spraying [45].
- In partnership with the WHO and the Carter Center (http://www.cartercenter.org), Japan has contributed to the Guinea Worm Eradication Program by establishing community-based surveillance systems and offering health education in infected villages. The IDI also provided indirect assistance to improve water supply systems using new water-filtering equipment.
- In response to the tremendous impact of severe acute respiratory syndrome (SARS) and avian flu on neighbouring Asian nations and the urgent need for the containment and control of these disorders, Japan provided quick and intensive assistance to China, Vietnam and other affected nations. Japan provided preventive, diagnostic and curative supplies, in addition to equipment and expertise [46].

Achievements

- As the largest donor in the Western Pacific Region of the WHO, the IDI has supported the polio eradication programme. This region obtained polio-free status in October 2000 [47].
- Japan has made the second biggest contribution, after the USA, towards the eradication of guinea worm and continues to support this programme [48]. The number of people infected with guinea worm worldwide declined by 99%, from ~3.5 million cases in 1986 to 16 026 in 2004.
- Good results have also been achieved in Chagas disease control in Central America. The vector *Rhodnius prolixus* has been eliminated from 294 villages in nine health areas, and the house infestation rate of another vector, *Triatoma dimidata*, has decreased by ~70% following the first large-scale vector control project in Guatemala. This project was supported by Japan and involved two cycles of residual spraying in >200 000 houses in 2004 (http://www.paho.org/English/AD/DPC/CD/dch-jica-pjt.doc).

Malaria Partnership (RBM: http://www.rbm.who.int) and the Pacific Programme to Eliminate Lymphatic Filariasis (PacELF: http://www.pacelf.org).

In addition, Japan established special funds in various organizations to be used for infectious disease control, such as the Trust Fund for Human Security with the UN Secretariat, the Japan Funds in Trust Project for Capacity Building of Human Resources and the Japan Trust Fund for HIV/AIDS Education with UNESCO (http://www.unesco.org), the Japan Policy and Human Resources Development Fund and the Japan Social Development Fund with the World Bank (http://www.worldbank.org) and the Japan Fund for Poverty Reduction with the Asian Development Bank (http://www.adb.org).

The IDI direct assistance programme has provided several projects and interventions, varying from provision of supplies and equipment to technical assistance and training. These were planned and implemented with the recipient governments and development partners according to the needs of the countries. Some examples of the IDI projects are listed in Box 1. It is difficult to measure the impact of the IDI in terms of mortality or morbidity reduction with regard to each infectious disease because the inputs of the IDI vary according to the needs of each country. In addition, the contribution by IDI is just a part of all the efforts and interventions made by the recipient countries, donors and other development partners. However, there are some examples of the IDI having made a major contribution and having shown considerable impact (Box 1).

Concluding remarks

Since the UN adopted the MDGs, global development efforts have been increasingly focused and result orientated [16]. Substantial funding has gone to the control of HIV/AIDS and several other infectious diseases through the GFATM, the US President's Emergency Plan for AIDS Relief (PEPFAR: http://www.pepfar.org) and other initiatives. However, relatively little funding is provided to control several parasitic diseases that are now increasingly being labelled as the neglected diseases [32,33]. Although some of the recently formed foundations and agencies such as the Carter Center focus on the eradication or elimination of individual parasitic diseases [34], most of the donors and aid agencies focus their attention on HIV/AIDS and other high-profile killer diseases [35]. Under these circumstances, Japan needs to pay special attention to the neglected diseases.

Apart from the MDGs, there are other approaches that focus on poverty reduction and that promote coordinated efforts and actions involving the recipient country, donor agencies and other stakeholders; these include Poverty Reduction Strategy Papers and Sector Wide Approaches [36,37]. These are characterized by a set of operating principles, including broadening policy dialogue, developing a private sector policy (e.g. health and education, and a common realistic expenditure programme), common monitoring arrangements and additional coordinated procedures for funding and procurement [38,39]. This trend has been gradually preventing a single donor from providing specific projects in developing countries [40]. Rather, it is recommended to enable donors to support overall health planning and financing in the recipient countries [41].

However, many developing countries still have several specific needs that range from the central government to individual communities and from financial assistance to technical matters. Donor agencies should carefully observe the real needs of recipient countries and be aware of the short- and long-term effects of external assistance. Infectious and parasitic diseases are more prevalent among the poor; therefore, unless special attention and assistance are given for the prevention, treatment and care of the poor, health inequities will broaden and expand, even in a country undergoing rapid development.

Japan has upheld the concept of 'human security', which is a human-centred approach that protects and improves the welfare of people most in need and empowers them to cope with adversity [42]. Professionals who work on infectious or parasitic disease control in or for developing countries also need to broaden their views to encompass the more comprehensive and integrated approach that is needed if poverty reduction and sustainable development of communities, nations and the world are to be successfully achieved. True to its long-term commitment, Japan announced a new Health and Development Initiative (HDI) in 2005. This will build on the foundations and successes of the IDI and will commit a further US$5 billion over a five-year period [43]. The HDI will provide substantial resources to help the global community achieve the MDGs and to help many developing countries improve the overall wellbeing of their populations and, thereby, encourage them to work towards attaining a higher quality of life.

References

1 Shalala, D.E. (1998) Collaboration in the fight against infectious diseases. *Emerg. Infect. Dis.* 4, 354–357
2 Lamar, J. (2000) G8 countries accused of ignoring debt relief. *BMJ* 321, 320
3 Tan, D.H. *et al.* (2003) Global plagues and the Global Fund: challenges in the fight against HIV, TB and malaria. *BMC Int. Health Hum. Rights* 3, 2
4 Kawai, M. and Takagi, S. (2004) Japan's official development assistance: recent issues and future directions. *J. Int. Dev.* 16, 255–280
5 Westley, S.B. (1996) The United States and Japan pursue a common agenda. *Asia Pac. Pop. Policy* 39, 1–4
6 Brown, T. *et al.* (1997) Japan/United States collaboration in international HIV prevention and care. *J. Acquir. Immune Defic. Syndr. Hum. Retrovirol.* 14 (Suppl. 2), S68–S80
7 Kojima, S. and Takeuchi, T. (2006) Global parasite control initiative of Japan (Hashimoto Initiative). *Parasitol. Int.* 55 (Suppl.), S293–S296
8 Folch, E. *et al.* (2003) Infectious diseases, non-zero-sum thinking, and the developing world. *Am. J. Med. Sci.* 326, 66–72
9 Larson, E. (1997) Social and economic impact of infectious diseases – United States. *Clin. Perform. Qual. Health Care* 5, 31–37
10 Olshansky, S.J. *et al.* (1997) Infectious diseases – new and ancient threats to world health. *Popul. Bull.* 52, 1–52
11 Accorsi, S. *et al.* (2005) The disease profile of poverty: morbidity and mortality in northern Uganda in the context of war, population displacement and HIV/AIDS. *Trans. R. Soc. Trop. Med. Hyg.* 99, 226–233
12 Morse, S.S. (2004) Factors and determinants of disease emergence. *Rev. Sci. Tech.* 23, 443–451
13 Brown, C. (2004) Emerging zoonoses and pathogens of public health significance – an overview. *Rev. Sci. Tech.* 23, 435–442
14 Macias, A.E. and Ponce-de-Leon, S. (2005) Infection control: old problems and new challenges. *Arch. Med. Res.* 36, 637–645

15 Ruger, J.P. and Kim, H.J. (2006) Global health inequalities: an international comparison. *J. Epidemiol. Community Health* 60, 928–936
16 Dodd, R. and Cassels, A. (2006) Health, development and the Millennium Development Goals. *Ann. Trop. Med. Parasitol.* 100, 379–387
17 Brower, V. (2003) Health is a global issue. *EMBO Rep.* 4, 649–651
18 Fleming, D.M. *et al.* (2002) Impact of infections on primary care – greater than expected. *Commun. Dis. Public Health* 5, 7–12
19 Miyaji, N.T. and Lock, M. (1994) Monitoring motherhood: sociocultural and historical aspects of maternal and child health in Japan. *Daedalus* 123, 87–112
20 Kunii, C. (1989) Population strategy. *Integration* 22, 22–23
21 Laskar, M.S. and Harada, N. (2005) Trends and regional variations in infant mortality rates in Japan, 1973–1998. *Public Health* 119, 659–663
22 Mori, T. (1998) Epidemiological review of tuberculosis. *Nippon Rinsho* 56, 3221–3225
23 Ogawa, S. (2003) Okinawan health sector human resources experiences since the mid-1940s and their applications to international health; final report. Ministry of Education, University and Society Collaboration Research Project (http://lib.itg.be/acq0395.htm)
24 Kobayakawa, T. (1993) Ghana/JICA/WHO training course in polio diagnostic procedures and vaccine potency testing. *Acta Paediatr. Jpn.* 35, 567–570
25 Yamashita, F. *et al.* (1993) International cooperation with Islamabad Children's Hospital. *Pakistan: the JICA project. Acta Paediatr. Jpn.* 35, 543–548
26 Besley, T. and Burgess, R. (2003) Halving global poverty. *J. Econ. Perspect.* 17, 3–22
27 Japan Anti-Tuberculosis Association (2004) Okinawa Infectious Disease Initiative (IDI) – Summary of Mid-term Evaluation Report, Commissioned by Ministry of Foreign Affairs of Japan (http://www.oecd.org/dataoecd/62/29/36497053.pdf)
28 Parker, R. (2002) The global HIV/AIDS pandemic, structural inequalities, and the politics of international health. *Am. J. Public Health* 92, 343–346
29 Poore, P. (2004) The Global Fund to fight AIDS, Tuberculosis and Malaria (GFATM). *Health Policy Plan.* 19, 52–53
30 Sobsey, M.D. and Bartram, S. (2003) Water quality and health in the new millennium: the role of the World Health Organization guidelines for drinking-water quality. *Forum Nutr.* 56, 396–405
31 Unno, H. and Yamamura, S. (1986) International cooperation for the improvement of environmental sanitation by Japan. *Water Sci. Technol.* 18, 71–77
32 Engels, D. and Savioli, L. (2006) Reconsidering the underestimated burden caused by neglected tropical diseases. *Trends Parasitol.* 22, 363–366
33 Shiffman, J. (2006) Donor funding priorities for communicable disease control in the developing world. *Health Policy Plan.* 21, 411–420
34 Molyneux, D.H. (2004) 'Neglected' diseases but unrecognised successes – challenges and opportunities for infectious disease control. *Lancet* 364, 380–383
35 MacKellar, L. (2005) Priorities in global assistance for health, AIDS, and population. *Popul. Dev. Rev.* 31, 293
36 Foster, M. (2000) New approaches to development cooperation: what can we learn from experience with implementing sector wide approaches? Working paper 140, Centre for Aid and Public Expenditure, Overseas Development Institute (http://www.odi.org.uk/publications/working_papers/wp140.pdf)
37 Verheul, E. and Rowson, M. (2001) Poverty reduction strategy papers. *BMJ* 323, 120–121
38 Laterveer, L. *et al.* (2003) Pro-poor health policies in poverty reduction strategies. *Health Policy Plan.* 18, 138–145
39 Hutton, G. and Tanner, M. (2004) The sector-wide approach: a blessing for public health? *Bull. World Health Organ.* 82, 893
40 Peters, D. and Chao, S. (1998) The sector-wide approach in health: what is it? Where is it leading? *Int. J. Health Plann. Manage.* 13, 177–190
41 Cassels, A. and Janovsky, K. (1998) Better health in developing countries: are sector-wide approaches the way of the future? *Lancet* 352, 1777–1779
42 King, G. and Murray, C.J.L. (2002) Rethinking human security. *Polit. Sci. Q.* 116, 585–610
43 Government of Japan. (2006) Health and Development Initiative (HDI) – Japan's contribution in achieving the health-related MDGs. (http://www.mofa.go.jp/policy/economy/summit/2006/disease-2.pdf)
44 Ichimori, K. and Crump, A. (2005) Pacific collaboration to eliminate lymphatic filariasis. *Trends Parasitol.* 21, 441–444
45 Yamagata, Y. and Nakagawa, J. (2006) Control of Chagas disease. *Adv. Parasitol.* 61, 129–165
46 Ohara, H. (2004) Experience and review of SARS control in Vietnam and China. *Trop. Med. Health* 32, 235–240
47 Anon (2000) Certification of poliomyelitis eradication. WHO Western Pacific Region, October 2000. *Wkly. Epidemiol. Rec.* 75, 399–400
48 Ruiz-Tiben, E. and Hopkins, D.R. (2006) Dracunculiasis (Guinea worm disease) eradication. *Adv. Parasitol.* 61, 275–309