Original Article

The Prevalence of High Antiretroviral Coverage and Viral Suppression in Japan: an Excellent Profile for a Downstream Human Immunodeficiency Virus Care Spectrum

Naoko Miyazaki†, Wataru Sugiura‡**, Hiroyuki Gatanaga¹, Dai Watanabe⁴, Yasuyuki Yamamoto⁵, Yoshiyuki Yokomaku¹, Kazuhiro Yoshihura⁶, and Shuzo Matsushita* on behalf of the Japanese HIV-MDR Study Group

¹The Institute of Medical Science, The University of Tokyo, Tokyo 108–8639; ²National Hospital Organization, Nagoya Medical Center, Nagoya 460–0001; ³National Center for Global Health and Medicine, Tokyo 162–8655; ⁴National hospital Organization, Osaka Medical Center, Osaka 540–0006; ⁵Tokyo Medical University, Tokyo 160–0022; ⁶National Institute of Infectious Diseases, Tokyo 160–8640; and ⁷Kumamoto University School of Medicine, Kumamoto 860–0811, Japan

SUMMARY: We investigated the effectiveness of the Japanese health care system for human immunodeficiency virus/acquired immunodeficiency virus (HIV/AIDS), in terms of prevention, diagnosis, access to antiretroviral treatment, and treatment outcomes. Clinical information on HIV/AIDS cases was collected via questionnaires sent to 377 registered HIV/AIDS clinics in Japan. Data on 9,040 and 14,569 cases were collected in 2009 and 2014, respectively. The percentages of cases undergoing treatment were 69.6% and 87.8% in 2009 and 2014, respectively, demonstrating an improvement in treatment coverage over the 5 years between the 2 surveys. The proportion of cases with undetectable HIV RNA in the 2014 survey was 87.7%. Thus, our survey revealed that the 2 of the United Nations AIDS Fast-Track targets, 90% treated and 90% virally suppressed, are close to being achieved. However, Japan appears to have fallen short of the upstream target of 90% diagnosed. Japan needs to radically reform its strategies for encouraging people to undergo HIV testing and to develop a system for estimating the number of people living with HIV.

INTRODUCTION

In Japan, newly diagnosed human immunodeficiency virus-1-(HIV-1)-infected cases are reported under a mandatory system managed by the Ministry of Health, Labour and Welfare since 1984, when the first HIV-1 case was officially reported. Since then, the annual number of newly diagnosed cases has increased yearly, until this number plateaued at approximately 1,500 cases per year in 2007 (Fig. 1) (1). Although the increase in the number of new cases has leveled off, it has not decreased further, and the total number of HIV-seropositive cases has been accumulating continuously and linearly, exceeding 23,000 in 2013 (2). Combination antiretroviral treatment (ART) was introduced in Japan as a standard of care in 1997, similar to other high-income countries. This year is marked as the beginning of the era of ART, and since then, acquisition of drug resistance has been a major risk factor for treatment failure. However, the number of drug-resistant cases had decreased dramatically and HIV infections are now better controlled. This is due to the development of new antiretroviral drugs with improved pharmacokinetic profiles, high genetic barriers to resistance acquisition, and alleviation of the pill burden for patients due to single tablet regimens. These improvements in ART and recent successes in prevention studies with antiretroviral drugs (3) may be instrumental in developing strategies that can impede the rate of HIV epidemic and even eradicate this life-threatening infection. To address this, Gardner and colleagues highlighted the importance of providing HIV-infected individuals with the full spectrum of HIV care (4). Furthermore, the World Health Organization and United Nations acquired immunodeficiency virus (UNAIDS) set 3 ambitious, but achievable, targets for 2020: 90% diagnosed, 90% treated, and 90% virally suppressed (5). Here, we report on the current status of the HIV epidemic and the use of ART in Japan, as well as potential ways to achieve an “AIDS-free generation” in our country.

METHODS

To assess HIV-treatment outcomes throughout Japan, we surveyed 377 and 389 registered HIV/AIDS treatment clinics in 2009 and 2014, respectively. The survey questionnaires included questions on the (i) number of HIV-1 infected cases, (ii) number of cases receiving ART, (iii) number of cases maintaining viral load < 20 copies/mL for more than 3 months, and (iv)
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number of cases with viral load > 500 copies/mL. The 2009 survey did not include the question (iii) because it had a stronger focus on drug resistance. This study was conducted in accordance with the principles outlined in the Declaration of Helsinki. The study was approved by the ethical committee at NMC (#2014-777).

RESULTS

Clinical information was collected for 9,040 HIV-infected cases from 211 clinics (56% of all clinics) in 2009 and on 14,569 cases from 216 clinics (56% of all clinics) in 2014. The proportions of cases receiving treatment in 2009 and 2014 were 69.6% and 87.8%, respectively (Fig. 2), demonstrating a significant improvement in ART coverage ($p < 0.0083$) between 2009 and 2014. In the 2014 survey, most cases receiving ART (87.7%) had undetectable HIV RNA levels. Alternatively, 97 (1.5%) and 142 (1.1%) cases had uncontrolled viral loads in 2009 and 2014, respectively; this included drug-resistance cases.

DISCUSSION

Through 2 surveys carried out 5 years apart (2009 and 2014), we observed a significant improvement in the proportion of HIV-infected cases receiving treatment in Japan. Given sufficient supplies of antiretroviral drugs and financial support in Japan, this improvement could be due to a change in the therapeutic approach. This change introduced an earlier initial treatment, in accordance with updates to the Department of Health and Human Services (DHHS) guidelines (6). This earlier initial treatment may have resulted in suppressed HIV transmission, thereby reducing the number of newly diagnosed cases.

Our surveys revealed that 2 UNAIDS targets, 90% treated and 90% virally suppressed, had almost been achieved at the time of the 2014 survey. However, the first goal, 90% diagnosed, is difficult to measure because the number of HIV-1-infected cases in Japan has not been estimated. However, we estimated the proportion of cases linked to care, which is the second step of the treatment spectrum, by evaluating the total number of diagnosed cases (16,903 in 2009 and 24,535 in 2014) that had been reported to the Ministry of Health, Labour and Welfare (Fig. 1). These proportions were determined as 53.5% and 59.4% in 2009 and 2014, respectively. While these estimates were not sufficiently high, they should be considered as minimum because of the following limitations of the data. First, only 56% of clinics, in both 2009 and 2014, took part in our survey. The remaining clinics did not disclose the number of HIV patients undergoing treatment at their facilities; therefore, the proportions of cases undergoing treatment may be underestimated. However, the number of missed cases may not be large because despite a 56% coverage, the responding facilities included the major HIV/AIDS clinics in Japan providing treatment to a major fraction of HIV patients in the country. The second limitation, which is related to the first limitation, is that the current governmental reporting system does not require any follow-up information, such as death or deportation from the country. Thus, the number of diagnosed patients living with HIV/AIDS may be overestimated. These 2 factors suggest that the proportion of cases linked to care in 2009 and 2014 could be greater than 53.5% and 59.4%, respectively.

Through the concept of a HIV treatment spectrum, the targets and requirements necessary to improve Japan’s incomplete engagement in HIV care is evident. The estimated number of HIV-positive cases, the most upstream information in the care spectrum, is missing.
and undefined. The actual number of people living with HIV/AIDS in Japan must be clarified by improving the current HIV reporting system. In addition, improving the identification of diagnosed HIV cases requires the consideration and preparation of multiple approaches for the provision of HIV screening, including self-tests and opt-out tests at clinics and hospitals, to at-risk populations.

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**Conflict of interest** Wataru Sugiura is an employee of GlaxoSmithKline since April 2015. The data in this manuscript was prepared before March 2015, when the presenter was the employee of National Hospital Organization Nagoya Medical Center and National Institute of Infectious Diseases.

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