The International Classification of Function, Disability and Health (ICF) and Its Application with AIDS

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The International Classification of Functioning, Disability and Health (ICF), currently developed by the World Health Organization, is a multidimensional classification system for human functioning and disability. The conceptual framework of the ICF offers a sound basis for demonstrating the different dimensions of disablement across national boundaries and cultures. Its systematic coding scheme along with the uniform terminology used may serve to promote communication between health care professionals, other sectors, and people with disabilities. To facilitate the understanding of the construct as well as the practical usefulness of the ICF, this article provides an explicit overview of the ICF and the examples of its application with persons living with HIV/AIDS. A number of the ICF codes are demonstrated for identifying the various areas of HIV/AIDS disablement.

The family of international classifications of the World Health Organization (WHO) provides a uniform language to convey a wide range of health-related information and promote communication between various health related disciplines and sciences. The International Classification of Disease, Tenth Revision (ICD-10) offers an etiological framework for classifying health conditions (i.e., disease, disorder, injury, or trauma or other health-related status). The International Classification of Impairments, Disabilities, and Handicaps (ICIDH), developed in 1980, served as a classification of the consequences of a disease (World Health Organization, 1980). Within the two decades of its use, the ICIDH has been translated into 13 languages and utilized for a number of purposes: (a) as a statistical tool for disability data collection, (b) as a research tool to measure health service outcomes and quality of life, (c) as a clinical tool for needs identification and treatment planning, and (d) and as a social policy tool to aid in social welfare planning and human rights advocacy (Bickenbach, Chatterji, Badley, Ustun, 1999; World Health Organization, 2002).

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Since 1992, the WHO has been developing a new version of the ICIDH, which led to the International Classification of Functioning, Disability and Health, known as the ICF (or formerly as ICIDH-2). One of the primary goals of the revision was to provide a classification system with a neutral conception of "components of health" instead of "consequences of a disease" that were often characterized through negative terminology in the ICIDH (World Health Organization, 2001). "Consequences of a disease" may simply focus on the impact of a disease or injury, while "components of health" encompass all aspects of health and some health-related components of well-being, such as education and employment. In addition, there frequently were concerns of the applicability of the ICIDH for specific age groups (e.g., children) and diagnostic groups (e.g., multiple sclerosis; Halbertsma, Heerkens, Hirs, de Kleijn-de Vrankrijker, Van Ravensberg, & Napel, 2000). The ICF aimed to extend its scope of the classification to cover a wide range of functioning and disability manifested by different groups of people. Additionally, to emphasize the dynamic and reciprocal nature of person-environment interactions within the health paradigm, contextual factors are currently included in the ICF as a separate, but interrelated part of the taxonomy. The ICF, thus, is used to identify health states associated with all health conditions at body, individual, and societal levels. When applied to the field of rehabilitation or other health care settings, the conceptual framework of the ICF provides a sound basis for understanding and studying the different dimensions of disablement as the consequences of health conditions and/or environmental interactions. In addition, its systematic coding scheme, along with the uniform terminology used, can serve to enhance communications between health care professionals and people with disabilities and to improve the comparability of data across countries, sectors, disciplines, services, and time.

To facilitate the understanding of "components of health" as a construct as well as the practical usefulness of the ICF, this article: (a) provides an explicit overview of the ICF system including its conceptual framework and the coding scheme, (b) applies the system to the analysis of health outcomes and disablement of persons living with HIV/AIDS, and (c) demonstrates a number of potential ICF codes for identifying the various areas of HIV/AIDS disabling condition frequently discussed in the literature.

The Conceptual Framework of the ICF

In general, the ICF organizes information into two parts: (a) Functioning and Disability, and (b) Contextual Factors (World Health Organization, 2001). "Functioning" and "Disability" serve as two umbrella terms encompassing the components of human functioning (i.e., Body Functions and Structures; Activities and Participation) and disabling conditions (i.e., Impairments; Activity Limitations or Participation Restrictions), respectively. In turn, Contextual Factors include components of Environmental Factors and Personal Factors. Each component of the ICF consists of different domains. Further within each domain are categories that constitute the units of the ICF coding system.

Body Functions and Structures are classified according to the body systems (e.g., the nervous system, the cardiovascular, immunological, and respiratory systems). Body functions are the physiological, psychological, or cognitive functions of the body systems, while body structures are the anatomic parts of the body such as organs, limbs, and their components. These two classifications are designed to be parallel. For example, the "sensory functions" of the body has its structural correlates, the eye, ear, and related structures. Impairment is defined under the ICF as an anomaly, defect, loss, or other significant deviation in body function or structure (World Health Organization, 2001). It should be noted that impairment is not exactly identical with the underlying pathology at the cellular or molecular level (e.g., demyelination of central nervous axons), but is the manifestation of that pathology (e.g., problems in neuromusculoskeletal and movement-related functions). The classification of Body Functions and Structures is intended to be used along with its subsequent categories, Activities and Participation.

The component of Activity and Participation refers to an individual's performance of tasks or accomplishments, either physical or mental, which are associated with all aspects of human life (e.g., learning and applying knowledge, communication, mobility, self care). This component involves the integrated use of body functions in a purposeful manner within various contexts including physical, social, and attitudinal environments. Because exclusively separating "Activities" and "Participation" based on their domains was difficult, the current version of the ICF intends to join together these two constructs in a component. However, the ICF also provides guidelines for users intending to differentiate "Activities" and "Participation" in the classification (World Health Organization, 2001). Accordingly, Activity Limitation occurs when an individual either has difficulty performing the activity in an expected manner, or is unable to perform it at all. It is assessed on the basis of an individual's actual ability to perform tasks or activities without taking into account the external influences, such as environmental factors. In turn, Participation Restrictions are problems an individual may experience in involvement in life situations due to the external factors: existence of barriers, lack of facilitators, or both in the environment (Gray & Hendershot, 2000). For example, society may hinder a person with AIDS from fully participating in the workplace because the workplace creates barriers (e.g., inaccessible office building) or it fails to provide facilitators (e.g., powered wheelchair). "Participation" differs from "Activity" in that the contextual factors involved in participation are at the societal level while activity limitation is simply expressed at an individual performance level. Two classification qualifiers, "Capacity" and "Performance," developed for the current version of the ICF, can be used to indicate "a person's ability to execute a task or an action, irrespective of impacts from environments" and "what a person does in his or her current environments," respectively (World Health Organization, 2001). These qualifiers will be further discussed in the section "the Coding Scheme of the ICF."

Both functioning and disability are regarded as the results of a dynamic interaction between an individual's health conditions and contextual factors. Contextual factors include both personal and environmental factors. Personal Factors, according to the ICF, refer to the features of an individual, such as age, race, educational background, occupation, experiences, personality, and aptitudes. These factors may have impacts on the individual's health conditions as well as the outcome of interventions. However, given that personal factors are not the direct indicators of a health condition or functional state and that there might be large individual, social and cultural variances associated with these factors, they are presented in the ICF conceptual model, but not included in the classification or coding system (World Health Organization, 2001). Environmental Factors, such as architectural characteristics, the legal system, and societal attitudes, constitute the physical, social, and attitudinal contexts in which an individual lives and conducts his or her life. These factors, thus, can have significantly positive or negative influences on an individual's full participation in society. For example, a person who has an HIV infection may not exhibit any impairments or activity limitations but may still be denied access to employment due to the employer's negative perception or attitudes towards the AIDS disease. In conjunction with the other classifications (i.e., Body Functions and Structures, Activity and Participation), evaluation of Environmental Factors can help to identify the determinants of disablement at the body, person, and person-in-context levels. Moreover, the classification of environmental factors would also provide information useful for policy making in such areas as public education, equalization of opportunities, social reform, legislation, and universal architectural design (Simeonsson, Lollar, Hollowell, & Adams, 2000).

The Coding Scheme of the ICF

The ICF provides a series of over 1,800 codes serving as the uniform terminology and standard to describe and measure an individual's health, disabling conditions, or both within each component of the framework. These ICF codes are systematically arranged along the components at body, individual, and society levels. An alphanumeric system is used in the ICF coding scheme

with the letters b, s, d and e denoting the components of Body Functions, Body Structures, Activities and Participation, and Environmental Factors, respectively. Each component contains various "domains" (also known as "chapters") that serve as the first level codes following the alphabets. For example, the component of Body Function includes eight domains, such as "b1" (Mental Function), "b2" (Sensory Functions and Pain), "b3" (Voice and Speech Functions) and so on. Table 1 shows all the domains (first level codes) of each ICF component.

Each ICF domain (the first level code) is followed by numerous categories that convey more detailed classifications. These categories include the second level code (with 2 digits) and the third and fourth level codes (1 digit each). There are two "versions" of the classification. In general, the first two levels of coding (i.e., the first level code + the second level code) constitute the "short (concise) version" of the classification, such as "b168" (Mental function of language). The first three levels or the entire

Table 1

The ICF Components and Domains (World Health Organization, 2001)

ICF Components	ICF Domains/Chapters (First Level Codes)
Body Function (b)	**b1** Mental Function **b2** Sensory Functions and Pain **b3** Voice and Speech Functions **b4** Functions of the Cardiovascular, Haematological, Immunological and Respiratory Systems **b5** Functions of the Digestive, Metabolic and Endocrine Systems **b6** Genitourinary and Reproductive Functions **b7** Neuromusculoskeletal and Movement-Related Functions **b8** Functions of the Skin and Related Structures
Body Structures (s)	**s1** Structure of the Nervous System **s2** The Eye, Ear and Related Structures **s3** Structures Involved in Voice and Speech **s4** Structure of Cardiovascular, Immunological and Respiratory Systems **s5** Structures Related to the Digestive, Metabolism and Endocrine Systems **s6** Structure Related to the Genitourinary and Reproductive System **s7** Structures Related to Movement **s8** Skin and Related Structures
Activities and Participation (d)	**d1** Learning and Applying Knowledge **d2** General Tasks and Demands **d3** Communication **d4** Mobility **d5** Self-Care **d6** Domestic Life **d7** Interpersonal Interactions and Relationships **d8** Major Life Areas **d9** Community, Social and Civic
Environmental Factors (e)	**e1** Products and Technology **e2** Natural Environment and Human-Made Changes to Environment **e3** Support and Relationships **e4** Attitudes **e5** Services, Systems and Policies

four levels of coding constitute the "full (detailed) version" of the classification, such as "b1680" (Mental function of reception of language), or "b16801" (Mental function of reception of written language). It is suggested that the full version of the classification be used by professionals in special areas of health care such as rehabilitation, geriatrics, or mental health to describe and measure in detail an individual's function/disability, while the short version be used for cohort studies, surveys, and service evaluation that aim to assess or compare general health outcomes within a certain population (World Health Organization, 2001).

The classification uses "qualifiers" placed after a decimal point following the category codes to indicate the level of health (or severity of the problem) in each domain. The generic qualifier can be compatibly used for the all components of the ICF. It is represented through a 0-4 point scale (xxx.0 = No problem, xxx.1 = Mild problem, xxx.2 = Moderate problem, xxx.3 = Severe problem, xxx.4 = Complete problem; where "xxx" symbolizes the first two levels of coding). There also are specific qualifiers that were developed for certain components to identify specific natures or problems seen in the components (see Table 2 for the summary of all qualifiers).

Both Body Functions and Body Structures have the generic qualifier as their first qualifier indicating the extent or magnitude of an impairment. For example, "b1750.2" indicates "Moderate problem" in "Mental function of reception of language." In addition, the classification of Body Structures includes the second and third qualifiers to denote the nature (e.g., total absence, discontinuity, deviating position) and location (e.g., right, left, proximal, distal) of a structural impairment, respectively. For example, s750.321 indicates a severe problem (impairment) associated with the partial absence of the right lower extremity.

The component of Activity and Participation is coded using two qualifiers: Performance (the first qualifier) and Capacity (the second qualifier). The "performance" qualifier assesses what a person actually does in his or her current environment. It takes into account the provided supports (e.g., assistive devices, personal assistance) as well as the impact of contextual factors (e.g., architectural barriers, societal attitudes) on the person's ability. In contrast, the "capacity" qualifier measures the person's true ability to carry out a task or an action in the "standardized" environment in which the related supports and diverse impact from environments are removed. Examples of such an environment are those experimental or clinical settings for capacity assessment or a neutral milieu assumed to have a uniform impact for all people, regardless of potential individual or cultural differences (World Health Organization, 2001). The capacity qualifier, thus, reflects the environmentally adjusted ability of a person. A 0-4 point scale (the same as the generic qualifier) is used to identify the person's both levels of performance and capacity. For example, d550.12 may indicate that the individual has mild difficulty eating with the use of assistive devices available in his or her current environment, while he or she would have moderate difficulty eating without the use of assistive devices. Moreover, the disparity between these two qualifiers may also indicate the contribution of environmental facilitators (e.g., wheelchair ramps) to or the influence of environmental barriers (e.g., an employers' negative attitude towards persons with HIV/AIDS) on the person's full participation in society. Both environmental facilitators and barriers are further specified in the component of Environmental Factors.

The classification of Environmental Factors is used to identify the nature and extent of environmental influences on an indi-

Table 2
The ICF Qualifiers (World Health Organization, 2001)

Components	First qualifier	Second qualifier	Third qualifier
Body Functions (b)	*Generic qualifier* used to indicate the extent or magnitude of an impairment	None	None
Body Structures (s)	*Generic qualifier* used to indicate the extent or magnitude of an impairment	*2nd qualifier* used to indicate the nature of the change in the respective body structure	*3rd qualifier* used to indicate the location of the structural impairment
Activities and Participation (d)	*Performance (Generic qualifier)* used to indicate the level of performance in the person's current environment	*Capacity (Generic qualifier)* used to indicate the level of ability in the standardized environment	*None*
Environmental Factors (e)	*Generic qualifier,* with negative and positive scales, to denote extent of barriers and facilitators respectively	None	None

vidual's overall health or functional continuum. It covers assessments of all possible areas of physical, social, and attitudinal worlds, such as building design and construction, social security services and policies, and societal attitudes. The same 0-4 point scale (generic qualifier) is used to describe both environmental facilitators and barriers, but, to specify the facilitator, the decimal point is replaced with a plus sign (+). For example, e460.2 denotes that "Societal attitudes" cause a "Moderate barrier" to the individual, while e570+3 indicates that "Social security services, systems and policies" serve as a "Substantial facilitator" to the individual (World Health Organization, 2001). All the qualifiers in each component of the ICF are important in the coding scheme because a code without an identified qualifier would have no meaning when used for an individual. The WHO also has called for the development of other potential qualifiers such as a qualifier measuring subjective satisfaction of personal performance or capacity that may add other kinds of useful information to the classification system (World Health Organization, 2001).

The Application of the ICF on Persons Living with HIV/AIDS

As a newly developed system, the ICF needs to be applied to various health conditions/diseases in order to document its practical usefulness. Over the years, improved medical care and pharmaceutical treatment of HIV infection have both delayed the onset of AIDS and lengthened the survival time post-diagnosis. As a result, the perception of HIV/AIDS as an acute condition has been replaced by a "chronic disease" model (Harris, 1990). Health information focusing on a wide spectrum of HIV/AIDS disablement becomes a critical component in the studies of the epidemic, rehabilitation of the disabling conditions, and the process of related policy making.

Based on the ICF framework, the following sections provide a systematic outlook of HIV/AIDS related disablement. It is noteworthy that, instead of actually gathering information from individual clients, the exemplification of the ICF and HIV/AIDS in this article is based on the existing studies and literature reporting various health outcomes and disabilities of persons living with HIV/AIDS (PLWHAs). That is, a number of the ICF codes that can be used to reveal those frequently discussed areas of HIV/AIDS disablement will be identified. However, unlike the actual use of the coding system with individual clients, the assigning of the qualifiers (e.g., a 0-4 point scale) to the ICF codes will not be demonstrated in the text.

Impairments of PLWHAs

Mental Functions (Chapter 1 of Body Function: b1). Mental function in the ICF is broadly defined as the functions of the brain and central nervous system (CNS), including both global mental functions (e.g., orientation functions, intellectual functions) and specific mental functions (e.g., memory functions, psychomotor functions, emotional function; World Health Organization, 2001). It has been well documented that PLWHAs are at high risk for adverse mental health outcomes. For example, Snyder and his colleagues (1992) evaluated 42 PLWHAs newly admitted to an inpatient setting using DSM-III-R criteria. Twenty six (61.9%) of the individuals were found to have current Axis I clinical syndromes including organic mental disorders (e.g., delirium, dementia, mood disorder, anxiety disorder), adjustment disorders, and depressive syndrome. Another study assessing psychomotor slowness of 72 PLWHAs through a self-rating slowness scale (SRSS) found that 64 (89%) of the individuals reported at least one symptom of psychomotor slowing on the SRSS, such as slowness in planning and organizing, speaking, reading, and writing (Lopez, Wess, Sanchez, Dew, & Becker, 1998).

AIDS dementia complex (ADC) is one of the most common CNS complications among individuals with a diagnosis of AIDS (Price, 1995). The earlier clinical manifestations of ADC usually consist of difficulties with concentration and attention. Individuals may lose track of thought, conversation, or both and have complaints of slowness in thinking and poor memory. With respect to behavioral deficits, individuals become socially withdrawn and appear apathetic (Price, 1995). Therefore, in an actual clinical setting, the following ICF codes combined with the use of the qualifier discussed previously (i.e., 0-4 point generic qualifier) may offer a sound framework for documenting the extent to which the client shows impairment in the areas of mental function:

- b120 Intellectual functions
- b140 Attention function
- b145 Memory function
- b150 Psychomotor functions
- b155 Emotional function
- b165 Thought functions
- b175 Specific mental functions of language (World Health Organization, 2001).

For example, a "b145.2" indicates the client has moderate impairment in memory function.

Neuromusculoskeletal and Movement Related Functions (b7). Neuropathology is common among PLWHAs. Both the central and peripheral nervous systems can be involved as a result of HIV invasion or secondary complications (e.g., infection, lymphoma). It is apparent that many of the individuals with neurological conditions will present physical impairments and functional loss. Previously discussed ADC, for example, can also result in motor deficits, such as ataxia, lower extremity weakness and loss of coordination (Price, 1995). Moreover, vacuolar myelopathy is commonly found in PLWHAs. Characterized by lateral and dorsal vacuolar degeneration of the thoracic spinal cord, this myelopathy can lead to spastic paraparesis with lower extremities weakness, gait ataxia, and sensory abnormalities in the legs (Tagliati, Di Rocco, Danisi, & Simpson, 2000; Tan, Guiloff, & Scaravilli, 1995). Inflammatory, demyelinating peripheral neuropathy is found in more than 50% of PLWHAs with the pathologic diagnosis of vacuolar myelopathy. The clinical manifestations of peripheral neuropathy include progressive weakness, loss of reflexes, and sensory impairments (Tagliati et al., 2000). A series of the ICF codes combined with the generic qualifier can be used to identify each individual client's physical complaints:

- b730 Muscle power functions
- b735 Muscle tone functions
- b740 Muscle endurance functions
- b750 Motor reflex functions
- b760 Control of voluntary movements functions
- b770 Gait pattern function

- b780 Sensations related to muscles and movement functions (World Health Organization, 2001).

Activity Limitations/ Participation Restrictions of PLWHAs

Mobility (d4), Self Care (d5) and Domestic Life (d6). Impairments in physical (or possibly cognitive) functions due to neurological deconditioning can constitute the greatest limitation to individuals' mobility and ability to perform activities of daily living (ADL). A study by O'Dell and colleagues (1996), using data collected from the AIDS Time-Oriented Health Outcome Study, demonstrated the types, severity, and correlates of functional limitations in ADL, instrumental activities of daily living (IADL), and mobility among 546 PLWHAs. Functional limitations were evaluated through a self-administered assessment consisting of 20 items measuring individuals' perceived difficulty in eight functional activity categories: dressing/grooming, eating, hygiene, reaching (e.g., picking up clothes, lifting 2 kg from above head), gripping (e.g., opening jars, turning faucets), general activities (e.g., doing errands/shopping and household chores), walking, and rising (e.g., standing from straight chair, getting in/out of bed). The degree of the perceived difficulty varied widely across activity categories, and tended to be more severe among the areas of IADL and mobility. For the IADL area, 17% of the individuals reported mild or moderate difficulty in gripping, 29% in reaching, and 52% in performing general domestic activities. For mobility, 38% individuals had difficulty in walking and 28% in rising. A somewhat smaller proportion of the individuals reported difficulty among ADL items (11% in eating and 21% in both hygiene and dressing/grooming) (O'Dell, Hubert, Lubeck, & O'Driscoll, 1996).

A more recent study of the HIV Cost and Services Utilization Survey (HCSUS) on a national sample of 2,836 PLWHAs documented physical and role functioning limitations of the population (Crystal, Fleishman, Hays, Shapiro, & Bozzette, 2000). Physical functioning was determined by the clients' self-report to a 9-item scale including measures of ADL (feeding, bathing and dressing, preparing meals and doing laundry), IADL (shopping), mobility (moving around inside the house, climbing stairs, walking 1 block, walking > 1 mile), and vigorous activities. Consistently, a considerable proportion of the PLWHAs experienced difficulty in performing energy-demanding tasks such as vigorous activities (64%), climbing stairs (43%), and walking more than one block (26%). A relatively smaller proportion reported limitations in basic ADL such as bathing/dressing (14%) and feeding (8%). In general, the perceived difficulty in these functional activities was found to be correlated with the individuals' symptom intensity, global health status, and pain and fatigue (Crystal et al., 2000; O'Dell et al., 1996). Potential ICF codes for identifying each individual client's problems in the areas of mobility, self-care, and domestic activities include:

- d410 Walking
- d455 Moving around
- d460 Moving around in different locations
- d510 Washing oneself
- d520 Caring for body parts
- d530 Toileting
- d540 Dressing
- d550 Eating
- d560 Drinking
- d630 Preparing meals
- d640 Doing housework (World Health organization, 2001).

In addition, the use of both Performance (1st qualifier) and Capacity (2nd qualifier) with these codes would serve to specify the client's capability of carrying out the activities under different given situations. For example, a "d455.13" may indicate the client has mild difficulty in moving around using a powered wheelchair, but would have severe difficulty in moving around without any devices or assistance.

Major Life Areas (d8). This domain documents individuals' participation in the tasks and activities required in major life situations including education, work and employment, and economic transactions (World Health Organization, 2001). The analyses of the data from the AIDS Cost and Services Utilization Survey (ACSUS) of 1991-1992 showed that over 40% of 1,811 surveyed PLWHAs reported themselves to be chronically prevented from participating in major activities, such as working at a job, attending school or doing housework (Sebesta & LaPlante, 1996). Fifty-two percent of them were not employed at the time of the survey. Further analyses indicated that among those who reported having at least one functional limitation such as difficulty in walking or self care (n = 934), only 14% were able to work on a full-time basis. A number of studies have supported that impairments of physical and cognitive functions with the progression of the disease have significant impacts on individuals' working ability and eventually may lead to loss of employment among persons with a diagnosis of AIDS (Ezzy, de Visser, & Bartos, 1999; van Gorp, Baerwald, Ferrando, McElhiney, Rabkin, 1999; Vitry-Henry, Penalba, Beguinot, & Deschamps, 1999). The examples of the ICF codes for identifying the employent status of PLWHAs include:

- d840 Apprenticeship (work preparation)
- d845 Acquiring, keeping and terminating a job
- d850 Remunerative employment
- d855 Non-remunerative employment
- d859 Work and employment, other specified and unspecified (World Health Organization, 2001).

In fact, besides the physical and cognitive limitations, external factors may also influence the employment status of PLWHAs. For example, a study of individuals with a diagnosis of AIDS, who expressed a desire to return to work, indicated a range of additional challenges facing this population (Brooks & Klosinski, 1999). These challenges included the possibility of a loss or change in current medical benefits, the need for reasonable accommodations in the workplace, concerns regarding disclosure of their health status, and the possibility of job related discrimination. Further analysis of the environmental factors associated with PLWHAs would provide another keen insight into those domains that can facilitate or hinder the individuals' full participation in society.

Impact of Environmental Factors on PLWHAs

Attitudes (e4). Aside from the biomedical phenomenon of AIDS, it is also important to examine the socially constructed image of the disease and attitudes toward it. Many negative atti-

tudes and beliefs were derived, in part, from ignorance and fear regarding the spread of the disease and the patterns of infection. These attitudes and beliefs may also be linked to the issues surrounding homophobia and hostility towards drug abusers, even though there has been clear evidence that the infection affects heterosexual men, women, and children as well. According to Conrad (1986), AIDS was viewed as "an illness with a triple stigma: it is connected to stigmatized groups (homosexuals and drug users); it is sexually transmitted; and, like cancer, it is a terminal, wasting disease" (p. 53).

Although knowledge about HIV/AIDS is currently widespread, negative attitudes and beliefs may still be associated with the disease. A study based on telephone interviews with a national sample (n = 1,712) suggested the persistence of AIDS misconception, stigma, and negative attitudes in the United States (Herek & Capitanio, 1998). Despite changes in the HIV/AIDS risk groups during the past decade, the public still generally related HIV/AIDS with homosexual and bisexual men. Antipathy was found strongest toward PLWHAs who were gay or bisexual men and drug abusers. Most of the interviewees (>75%) in the study supported mandatory HIV testing for immigrants, pregnant women, and people from high-risk groups, and a relatively small proportion of them (<20%) agreed to quarantine and public identification of PLWHAs. In addition, more than 40% of the interviewees overestimate the possibility of HIV transmission through casual contacts, such as sharing food utensils, coughing or sneezing (Herek & Capitanio, 1998). As might be expected, these negative societal perceptions and attitudes associated with HIV/AIDS would constitute "environmental barriers" to the dimensions of functions, activities, and participation of PLWHAs.

The ICF provides several codes with the qualifier (i.e., a generic qualifier with an indicator of barrier or facilitator) for illustrating the extent to which an individual with HIV/AIDS may experience negative attitudes or stigmas within his or her environment:

- e445 Individual attitudes of strangers
- e450 Individual attitudes of health professionals
- e455 Individual attitudes of health-related professionals
- e460 Societal attitudes
- e465 Societal norms, practices and ideologies (World Health Organization, 2001).

For example, an "e450.1" can be used to indicate that a health professional's negative attitudes toward PLWHAs constitute a mild barrier to the client's receiving quality health care.

Services (e5) and Systems and Policies (e6). Both public services/programs and legislation/regulations have significant influences on individuals' physical, psychological, and social well-being. For PLWHAs, public resources for health care and other services are especially important because of the impoverishment of many individuals as the result of loss of employment and high medical expenditure (Ezzy et al., 1999). During the two decades of the HIV/AIDS epidemic, numerous federal, state, and local efforts have been made to develop various health care programs and related policies for PLWHAs. In 1990, the National Commission on AIDS made a commitment to provide PLWHAs a comprehensive health care service system with adequate funding and reimbursement rates (Goldman & Stryker, 1991). Public programs, such as Medicaid, support a large proportion of HIV/AIDS related medical care (Bartlett, 2000). The Ryan White Comprehensive AIDS Resources Emergency (CARE) Act was initiated in 1991 to furnish funds to state and local agencies with the goal of supplementing existing service and funding systems (Smith & Buchanan, 2000).

In 1990, the American with Disabilities Act (ADA) was passed to prohibit discrimination again people with disabilities (Public Law, 101-336). The legislation ensures individuals with disabilities access to employment, public accommodation, transportation, and communication services. Under the ADA, persons with HIV infection or AIDS, regardless of the presence of HIV-related symptoms, are considered to have a disability and are, thus, protected. Based on the conceptualization of the ICF, these health services and policies may constitute "environmental facilitators" that serve to promote the physical, mental, and social well-being of PLWHAs.

The following ICF codes and the associated qualifier (i.e., facilitator or barrier) can be used to specify the availability and accessibility of related service and policy systems within the milieu where an individual with HIV/AIDS lives:

- e545 Civil protection services, systems and policies
- e570 Social security services, systems and policies
- e575 General social support services, systems and policies
- e580 Health services, systems and policies (World Health Organization, 2001).

For example, an "e545+3" may indicate that the enactment of the ADA serves as a substantial facilitator for the individual's participation in the workplace.

Conclusion

Distinct from its previous version (i.e., ICIDH), the ICF is a classification of both human functioning and disability. It can be universally used to gather data and information that can be compared across national boundaries. Any individual can have a range of codes that characterize his or her health states at the levels of body function, activity and participation, and other health-related aspects (e.g., environmental factors). When used in the relevant fields (e.g., chronic health care, rehabilitation, epidemic, disability research, policy making), the ICF framework and its coding scheme provide a systematic view of the processes involved in the consequences of a health condition (e.g., disease, disorder, injury or trauma), and a classification of the individual's disablement within the context of his or her personal life situations and environments. Consistent with its previous version, the ICF would continue to serve as: (a) a clinical tool providing different perspectives about how services can be targeted to optimize the individual's ability to live a full life in the community and (b) a standard language used cross-culturally to improve the comparability of health relevant data and to enhance communications between health care professionals and policy makers.

Through use of the ICF, those frequently discussed HIV/AIDS-related issues including clinical manifestations (e.g., physical and cognitive impairments), mobility and ADL limita-

tions, employment issues, related social policies and services, and societal attitudes toward PLWHAs were systematically analyzed in this article. It was assumed that the conceptual framework along with the coding scheme of the ICF, as demonstrated, might serve as a useful tool for identifying the nature and magnitude of health and social issues for those with HIV/AIDS. Over the decades, the global campaign against HIV/AIDS has focused not only on decreasing the spread of the disease, but also on promoting and improving health and quality of life of the 34 million people worldwide living with the disease (AIDS International, 2000). It is hoped that the use of the ICF would lead to more effective communication of information about health outcomes of PLWHAs across a wide range of cultural and health-care settings. Consequently, the strategies for identifying health care needs, tailoring intervention programs, and establishing related policies for PLWHAs will be further developed in the world.

As opposed to gathering data from actual cases, the illustration of HIV/AIDS related disablement in this article was based on the information derived from current literature and studies published in the United States. Given the diversity of the feature and degree of disablement among individuals with HIV/AIDS in different parts of the world, future joint efforts of research incorporating a greater number of field trials, case studies, or both will be helpful in further scrutinizing the practical usefulness of the ICF in the field. Moreover, there is also a need for accumulated studies or users' feedback that would help to determine comprehensiveness and appropriateness of the ICF codes and qualifiers in assessing and identifying the magnitude of diverse disablements encountered by different kinds of disease or health problem.

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