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ICD-11 Mental, behavioural or neurodevelopmental disorders: innovations and managing implementation

Wolfgang Gaebel, Ariane Kerst

INTRODUCTION

The International Classification of Diseases (ICD) by the World Health Organization (WHO) is the leading classification system for mental, behavioural or neurodevelopmental disorders (MBND) and somatic disorders worldwide [1]. The eleventh revision of ICD – ICD-11 – was released by WHO in June 2018 and approved by the World Health Assembly (WHA) in May 2019.

The ICD-11 is an open source for the global community of clinicians in various settings, researchers, consumers, administrators, policy makers and governments. The ICD serves as a tool for clinical documentation and population statistics [2]. To meet the needs of various users, different versions for different purpose will be available:

- Mortality and Morbidity Statistics version (MMS) of ICD-11 containing a hierarchical structure, category names, code numbers, brief descriptions, inclusion and exclusion terms; MBND available as the ICD-11 implementation version (https://icd.who.int/browse11/l-m/en);
- Clinical Descriptions and Diagnostic Guidelines (CDDG) for MBND for use in clinical settings by global health professionals (in preparation);
- Primary care version for use by primary care physicians;
- Research version possibly to be developed later in collaboration with relevant parties to formulate a work plan.

The WHO initiated the major revision of the ICD-10 in 2005 and led the international, structured revision process, including various user-groups of the classification. In 2007, the WHO appointed a Topic Advisory Group (TAG) for the revision of the chapter on mental, behavioural neurodevelopmental disorders (MBND). Subsequently, working groups were created in order to develop evidence-based source materials for ICD-11 diagnostic criteria and guidelines, to review proposals and provide recommendations for the revision [2].

The revision was guided by the principles of global applicability, scientific validity and clinical utility [2,3]. Global applicability refers to the multitude of the 194 WHO member countries with their differing cultural background the ICD-11 has to fit. In addition, the classification needs to be scientifically valid as it represents the state-of-the art in mental health research and the experience in classification of mental and behavioural disorders in the past decades. Clinical utility refers to the usefulness of the classification system. It includes, for example, the value in communicating (e.g., among practitioners, patients, families, administrators), the implementation characteristics in clinical practice, including its goodness of fit (i.e., accuracy of description), its ease of use, and the time required to use it (i.e., feasibility) as well as the usefulness

Wolfgang Gaebel[1,2], **Ariane Kerst**[1,2]: [1]Department of Psychiatry, Medical Faculty, LVR-Klinikum Düsseldorf, Heinrich-Heine-University, Düsseldorf, Germany; [2]WHO Collaborating Centre for Quality Assurance and Empowerment in Mental Health, Düsseldorf, Germany

in selecting interventions and in making clinical management decisions [4].

Led by these guiding principles, the WHO tested the results of the revisions extensively in field studies in different countries of the WHO member states, thereby allowing enough time to adapt the ICD-11 based on the field trials' results [3]. These field trials included evaluative case-controlled vignette studies of diagnostic decision-making using the proposed clinical guidelines as well as ecological implementation studies with the aim to examine reliability and utility in relevant settings in which the ICD-11 will be used. In parallel to the field-testing, the revised versions were accessible via an online platform, the ICD-11 beta draft, in which users were able to interactively provide feedback to the changes made to the ICD. Intense discussions between different medical disciplines and professions about the appropriate classification of diseases and disorders arose during the revision process. For example, neurology and psychiatry disagreed about the placement of neurocognitive disorders in the ICD-11, which has been a topic of dissent for several years [5]. After international debate and the involvement of several scientific associations, a consensus was reached and finally endorsed by the WHO [5]. Taken together, on different issues WHO took into account more than 10,000 comments from laypersons, experts, professional and scientific associations as well as other interest groups [6].

The systematic revision of the ICD took more than 10 years with more than 300 international experts involved in its development [7]. These explications might give a slight insight into the complexity of this global, multidisciplinary and participatory revision process with the aim of meeting a multitude of requirements and needs. So far, several field studies have shown better clinicians' ratings of clinical utility and reliability of ICD-11 as well as quality improvement of the diagnostic process compared to ICD-10 [1, 8]. However, the process of revision will be followed by an extensive implementation phase in which the transition of ICD-10 to ICD-11 will take place in the WHO member countries. The ICD-11 should come into effect on January 2022, but it some countries it may take longer.

INNOVATIONS IN ICD-11 MBND

The ICD-11 has 28 chapters, six chapters more than the ICD-10 has, which is partly the result of changes in old chapters as well as creation of new ones. Compared to ICD-10, ICD-11 allows for a greater number of groupings due to the new flexible alphanumeric coding structure. ICD-11 is still a hierarchical categorical classification system, although there have been steps towards dimensional approaches in line with current evidence [5, 3]. Together with the American Psychiatric Association (APA) the WHO also intended to harmonize the overall structure with the DSM-5 [3].

The CDDG, main source for general clinical, educational and service use, focus on essential features that clinicians are expected to detect in every case of the respective disorder [3]. The inclusion of cut-offs or precise requirements related to symptom counts and duration have been avoided, except there were convincing reasons to include them (e.g., empirical evidence across countries and cultures) [3]. The ICD-11 now offers consistent and systematically characterized information, for example related to boundaries with normality or with other disorders. Furthermore, culture-related guidance for disorders is included to enhance global utility. In addition, the classification now adopts a lifespan approach, so that childhood forms of disorders are allocated to the respective grouping [2, 3].

Besides these just mentioned alterations of the overall structure of the ICD-11, changes have been made to the respective disorder chapters. In the following paragraphs, we will give a brief overview of selected novelties in the MBND-chapter without claiming comprehensiveness of all changes [compare also 2].

Two conditions were removed from the MBND chapter: sleep-wake disorders and conditions related to sexual health are now grouped in two separate newly integrated chapters [2, 3]. A number of disorders have been added to the ICD-11 (Table 1).

Table 1. Added ICD-11 disorders

Catatonia	Binge Eating Disorder
Bipolar Type II Disorder	Avoidant/Restrictive Food Intake Disorder
Body Dysmorphic Disorder	Body Integrity Dysphoria
Olfactory Reference Disorder	Gaming Disorder
Hoarding Disorder	Compulsive Sexual Behaviour Disorder
Excoriation Disorder	Intermittent Explosive Disorder
Complex Post-Traumatic Stress Disorder	Premenstrual Dysphoric Disorder
Prolonged Grief Disorder	

The ICD-11 chapter on **Neurodevelopmental disorders** covers ICD-10 mental retardation (a term that is renamed to 'disorders of intellectual development'), disorders of psychological development and attention deficit hyperactivity disorder (ADHD). ICD-11 ADHD replaced the ICD-10 hyperkinetic disorders [2]. The ICD-11 autism spectrum disorders comprise both childhood autism and Asperger's syndrome and are included in the grouping of neurodevelopmental disorders. Chronic tic disorders are found in the ICD-11 chapter 08 on diseases of the nervous system with a cross reference to the neurodevelopmental disorders chapter.

The ICD-11 chapter on **Schizophrenia or other primary psychotic disorders** replaces the ICD-10 chapter on schizophrenia, schizotypal and delusional disorders [10]. It includes schizophrenia, schizoaffective disorder, schizotypal disorder, acute and transient psychotic disorder and delusional disorder. ICD-11 has omitted all schizophrenia subtypes and de-emphasizes first-rank symptoms due to a lack of longitudinal stability and prognostic validity [2, 3]. ICD-11 introduces cognitive symptoms as symptoms of schizophrenia and adds dimensional course – and symptom specifiers (for all primary psychotic disorders). Symptom – and course specifiers have been introduced to acknowledge that there are different types of illness course with different symptom profiles intra – and interindividually. This is underscoring the need to differentiate between first and recurrent episodes emphasizing early diagnosis and treatment as well as the fact that there are variable clinical presentations and fuzzy borders to 'normality' and other mental disorders [2].

The ICD-11 chapter on **Mood disorders** contains depressive disorders and bipolar disorders. The symptom count for depression changed compared to ICD-10 with now five out of ten symptoms as a minimum condition [3]. A novelty in this chapter is the differentiation between bipolar disorder type I (with at least one manic episode) and type II (with at least one hypomanic episode and one depressive episode) [2]. The mood disorder episodes classify according to qualifiers on course over time, severity and remission status. Qualifiers also allow adding symptoms of anxiety to the classification.

ICD-11 merges **Anxiety and fear-related disorders** in a new chapter [2]. The grouping includes generalized anxiety disorder, panic disorder, agoraphobia, specific phobia, social anxiety disorder, separation anxiety disorder and selective mutism. In contrast to ICD-10, phobic anxiety disorders and other anxiety disorders are not distinguished. In line with the lifespan approach, separation anxiety disorder and selective mutism were integrated in this chapter.

The ICD-11 **Obsessive-compulsive and related disorders** include obsessive-compulsive disorder (OCD), hypochondriasis (illness anxiety disorder), body dysmorphic disorder, olfactory reference disorder and hoarding disorder, with the last three being new in ICD-11. Based on evidence, the symptoms of repetitive unwanted thoughts and related repetitive behaviours as the primary clinical presentation were grouped together [3]. ICD-11 omits subtypes of OCD and the diagnosis along with depressive disorders is now possible [2, 3]

The ICD-11 **Disorders specifically associated with stress** replace the ICD-10 reactions to severe stress and adjustment disorders. This grouping includes post-traumatic stress disorder (PTSD), adjustment disorder, reactive attachment disorder, disinhibited social engagement disorder and the newly introduced complex post-traumatic stress disorder and prolonged grief disorder. The concept of PTSD is narrower in comparison to ICD-10 [2]. Complex

PTSD is characterized by all symptoms of PTSD with three additional requirements: severe and persistent 'problems in affect regulation; beliefs about oneself as diminished, defeated or worthless, accompanied by feelings of shame, guilt or failure related to the traumatic event; and difficulties in sustaining relationships and in feeling close to others'. ICD-11 no longer classifies an acute stress reaction as a mental disorder [3].

Compared to ICD-10, the ICD-11 grouping of **Dissociative disorders** has been reorganized and simplified [3]. The term 'conversion' was dropped in the grouping [3]. The chapter includes dissociative neurological symptom disorder (equivalent to ICD-10 dissociative disorders of movement and sensation), dissociative amnesia, trance disorder, possession trance disorder, dissociative identity disorder (renamed from ICD-10 multiple personality disorder), partial dissociative identity disorder, depersonalization-derealisation disorder and secondary dissociative syndrome.

The chapter on **Feeding and eating disorders** includes anorexia nervosa, bulimia nervosa, binge eating disorder, avoidant-restrictive food intake disorder, pica and rumination-regurgitation disorder. Anorexia nervosa and bulimia nervosa are conceptually updated and ICD-10 atypical categories are omitted [2]. New classifications in this grouping are binge eating disorder and avoidant-restrictive food intake disorder (ARFID).

In ICD-11, **Elimination disorders** comprise enuresis and encopresis. The term non-organic is removed from the chapter [3].

The ICD-11 **Disorders of bodily distress and bodily experience** include bodily distress disorder (comprises ICD-10 somatoform disorders and neurasthenia) and body integrity dysphoria, which is a new classification. Bodily distress disorder classifies according to essential features rather than the absence of medical explanations, as it was the case in the ICD-10 somatoform disorders [3]. ICD-10 hypochondriasis moved to the chapter on obsessive-compulsive and related disorders [2].

The organization of **Disorders due to substance use and addictive behaviours** is similar to ICD-10 but revised in favour of clinical utility [3]. ICD-11 classification offers an expanded group of substance classes [2]. Furthermore, clinicians can classify single episodes of substance use in ICD-11. Disorders due to addictive behaviours include gambling disorder (previously ICD-10 pathological gambling) and the new classification of gaming disorder.

The chapter on **Impulse control disorders** includes pyromania, kleptomania, compulsive sexual behaviour disorder (previously ICD-10 excessive sexual drive) and intermittent explosive disorder as a new classification.

ICD-11 **Disruptive behaviour and dissocial disorders** (previously ICD-10 conduct disorders) include oppositional defiant disorder and conduct-dissocial disorder. In line with the lifespan approach of ICD-11, these disorders may apply to all age groups. Clinicians can use qualifiers to specify the disorders appropriately, e.g. with childhood or adolescent onset.

The ten **Personality disorders** of ICD-10 have been omitted [2]. The ICD-11 criteria have been revised in order to first determine if a personality disorder is present and then to specify its severity (mild, moderate, severe) based on given criteria (e.g., the degree and pervasiveness of disturbances in functioning of aspects of the self or of interpersonal dysfunction). Further classification is based on maladaptive personality traits with the possibility to add the qualifier 'borderline pattern'.

Paraphilic disorders (previously ICD-10 disorders of sexual preference) include exhibitionistic disorder, voyeuristic disorder, pedophilic disorder, coercive sexual sadism disorder, frotteuristic disorder, other paraphilic disorder involving non-consenting individuals and paraphilic disorder involving solitary behaviour or consenting individuals. These disorders have in common that they contain sexual arousal patterns with focus on non-consenting others [2]. ICD-10 sadomasochism, fetishism, and fetishistic transvestitism were removed.

Factitious disorders, conceptually comparable to the ICD-10 intentional production or feigning of symptoms or disabilities, are a newly introduced and extended grouping in ICD-11 compared to ICD-10. The grouping includes factitious disorder imposed on self and factitious disorder imposed on another.

Neurocognitive disorders in ICD-11 comprise delirium, mild neurocognitive disorder, amnestic disorder and dementia, which were previous-

ly found in ICD-10 organic, including symptomatic, mental disorders. The MBND-chapter contains the syndromal characteristics of dementia associated with different etiologies, whereas underlying etiologies are placed in chapter 08 on diseases of the nervous system [3].

The ICD-11 is freely accessible and details on all disorders are available online through the ICD-11 browser: https://icd.who.int/browse11/l-m/en.

Managing implementation

Following the WHA's approval, the transition from ICD-10 to ICD-11 is starting in most of the 194 WHO member states [3]. The ICD-11 is freely accessible on the internet (https://icd.who.int/browse11/l-m/en) and versions of the classifications will be available at low cost with large discounts to low income countries. Extensive training of professionals to use the new classification system will accompany the implementation process. Field trials have shown that the training of professionals in diagnosing and coding of MBND may be one of the key factors for successful transition to the new ICD-11 [2]. Thus, integrated setting – and workforce-adapted dissemination and implementation with guided education and training will be conducted. Trainings and seminars on ICD-11 were already provided at a number of international scientific congresses (e.g., the annual congresses of the European Psychiatric Association (EPA) and the World Psychiatric Association (WPA)). Next steps will include the development and provision of different education and training methodologies with adapted teaching materials from face-to-face training courses to electronic learning tools as well as their application in undergraduate, postgraduate, and continuous medical education.

The WHO already offers several online tools to help the individual in getting acquainted with the ICD-11. The ICD-11 Reference Guide, for example, is freely available on the internet (https://icd.who.int/icd11refguide/en/index.html). In addition, the ICD-11 online platform offers a coding tool and video tutorials on how to use those online resources. In the scope of implementation, the ICD-11 will be translated with priority on English, French, Spanish, Russian, Chinese and Arabic [11]. In this context, the focus lies on the representation of equivalent concepts rather than a word-by-word translation. An adequate translation process will be managed with the help of computerized tools including human experts [11]. Another important tool for the countries' overall implementation process is the ICD-11 Implementation or Transition Guide [12]. This document is part of the WHO ICD-11 implementation package (comprising in addition the Classification System, the Coding Tool, Browser and all supporting documents including the Reference Guide and a set of tools). Besides some background related to the development of the ICD-11 it outlines essential issues that countries need to consider in the lead up to and during the transition from an existing ICD environment to the eventual implementation of ICD-11 [13]. Because of the vast differences and varying complexities in the different country settings, this guide can provide only an overview of transition and implementation. The guide has been compiled in collaboration between all WHO Regional Offices, Headquarters, the Network (https://www.who.int/classifications/network/collaborating), and many Member States.

CONCLUSION

Although ICD-11 has not introduced a paradigm shift in disease classification, it has taken steps towards a dimensional approach added to categorical classification in MBND contributing to improved patient-centred diagnostics, prognostics and choice of treatment and care. A major focus of the ICD-11 is improved utility, feasibility and reliability thereby adapting to both clinical and statistical needs of a variety of user groups. An extensive implementation phase will follow the complex, multidisciplinary revision and field trials' piloting process. An integrated setting – and workforce-adapted dissemination and implementation with guided education and training will be needed to provide a successful transition from ICD-10 to ICD-11. Internet-based training tools as well as face-to face courses for diagnostic and coding procedures are already available and will be further developed, providing web-based education and training programs for ICD-11 MBND. The translation pro-

cess of ICD-11 MBND MMS and CDDG targeting equivalent representation of clinical concepts in different languages is on its way although at a different state of completion.

The international implementation process nationally requires a well-structured strategical and methodological approach according to WHO and related guidelines including different stakeholders who are representing the various starting points, needs and perspectives of the WHO member states.

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