1. International Advisory Group for the Revision of ICD-10 Mental and Behavioural Disorders. World Psychiatry 2011;10:86-92.
2. Krueger RF, Markon KE. Annu Rev Clin Psychol 2014;10:477-501.
3. Tyrer P, Crawford M, Mulder R et al. Personal Ment Health 2011;5:246-59.
4. Tyrer P, Reed GM, Crawford MJ. Lancet 2015;385:717-26.
5. Herpertz SC, Huprich SK, Bohus M et al. J Pers Disord 2017;31:577-89.
6. Hopwood SJ, Kotov R, Krueger RF et al. Personal Ment Health 2018;12:82-6.
7. Sharp C, Wright AGC, Fowler JC et al. J Abnorm Psychol 2015;124:387-98.
8. Williams TF, Scalco MD, Simms LJ. Psychol Med 2018;48:834-84.
9. Clarkin JF, Lenzenweger MF, Yeomans F et al. J Pers Disord 2007;21:474-99.

DOI:10.1002/wps.20533

Neurocognitive disorders in ICD-11: the debate and its outcome

In the ICD-11, the chapters "06. Mental, behavioural or neurodevelopmental disorders" and "08. Diseases of the nervous system" are going to include, respectively, the groupings of "Neurocognitive disorders" and "Disorders with neurocognitive impairment as a major feature". Concern over the "wrong" allocation of dementias in the diagnostic system had produced many critical reactions from mental health professionals, due to the anticipated adverse consequences for treatment and care. Here we summarize the background and outcome of these reactions.

In late 2016, the World Health Organization (WHO) moved the dementia categories – contrary to the "traditional" location of clinical manifestations in ICD-10 (F00-F03) – from chapter 06 to chapter 08 of the ICD-11 draft. This step, following a Neurology Topic Advisory Group proposal, generated written protest notes by about two dozens of national and international scientific associations, mainly from psychiatry, old age psychiatry, psychology and other mental health workforce. In early 2017, the WHO corrected the previous step in that the dementia categories were moved back to chapter 06.

What was the rationale of these moves? According to the ICD-11 Reference Guide, the guiding principles for "allocation of entities" are "to maintain the structural and functional integrity" of the classification and "to preserve consistency with previous versions". Classification should be changed only with a "strong rationale", and categories should be kept in their "legacy location" if they "could arguably be in two or more places".

Neurocognitive disorders such as Alzheimer dementia are being classified in ICD-10 according to the dagger-asterisk system, with the *clinical manifestation* in chapter F (F00*) and the *aetiology* in chapter G (G30†). In ICD-11, according to this "legacy location", Alzheimer dementia should continue to be classified both in chapter 06 ("disorders") for its manifestation and in chapter 08 ("diseases") for its aetiology, using the new post-coordination coding.

Despite increasing knowledge on aetiopathogenesis and biomarkers, dementias are generally still diagnosed clinically and classified according to their manifestation. The proposal to move them to chapter 08 may have been either misled by concept or misread by the WHO, although the ultimate aim of classifying disease entities is indeed to primarily build on aetiologies and dysfunctional body systems and not solely on clinical manifestations. Despite Griesinger's dictum "mental disease is brain disease"[1], and although involvement of brain dysfunction is increasingly recognized and important to consider, most "mental" disorders cannot be treated as "brain disorders" or diseases with *monocausal* brain pathology.

Arguments against the move of dementias to chapter 08 were referring to WHO managing issues (move contrary to the joint recommendation by Mental Health and Neurology Topic Advisory Groups), conceptual and methodological issues (lack of evidence for the move; the need for a biopsychosocial approach in integrated care), treatment and service issues (resulting limitation of access to care; importance of neuropsychological vs. biomedical measures in treatment and care), professional and interdisciplinary issues (cross-national variation in responsibility of specialties, but usually major role of psychiatrists in treatment and care; importance of keeping the balance among disciplines), economic issues (problems with reimbursement by insurance companies in several countries if dementia is withdrawn from chapter on mental and behavioural disorders), psychopathological issues (behavioural symptoms do not belong in the "neurology" section, while being a major burden for patients and carers and hence a significant focus for treatment), and classification analogies in ICD-11 (e.g., chapters on cardiovascular, infectious and endocrinological diseases).

As an outcome of the debate, the WHO has moved dementias back to mental disorders in chapter 06, analogously to ICD-10 and DSM-5. Chapter 08 covers in its neurocognitive section only "diseases", e.g. Alzheimer disease, which can be associated by post-coordination coding with "6E00 Dementia due to Alzheimer disease". Options for post-coordination coding have now also been implemented for "6D91 Mild neurocognitive disorder" (F06.7 in ICD-10), which can be associated with any of the diseases in chapter 08, or with diseases classified elsewhere, as a result of commentaries by the Japanese Society of Psychiatry and Neurology (JSPN), the German Association of Psychiatry and Psychotherapy, and the American Psychiatric Association.

Another proposal by JSPN was the introduction of specifiers for behavioural symptoms in the diagnosis of dementias, because of their high burden for patients and carers. This has been implemented by the WHO under "6E20 Behavioural or psychological disturbances in dementia".

In conclusion, we have witnessed successful outcomes from a worldwide interactive process with the WHO on classifying neurocognitive disorders taking into account clinical utility[2]. In keeping abreast of the ever developing state of the art, the ICD-11 will need ongoing adaptation, e.g., taking into account the progress in preclinical classification of Alzheimer dementia

and biomarker-based diagnosis[3].

Wolfgang Gaebel[1,2], Frank Jessen[3,4], Shigenobu Kanba[5,6]
[1]Department of Psychiatry and Psychotherapy, Medical Faculty, Heinrich-Heine University, Düsseldorf, Germany; [2]WHO Collaborating Centre on Quality Assurance and Empowerment in Mental Health, Düsseldorf, Germany; [3]Department of Psychiatry, Medical Faculty, University of Cologne, Cologne, Germany; [4]German Center for Neurodegenerative Diseases, Bonn, Germany; [5]Department of Neuropsychiatry, Kyushu University, Fukuoka, Japan; [6]Japanese Society of Psychiatry and Neurology, Tokyo, Japan

Unless specifically stated, the views expressed in this letter are those of the authors and do not represent the official policies or positions of the WHO.

1. Griesinger W. Die Pathologie und Therapie der psychischen Krankheiten für Ärzte und Studierende, Vol.1. Stuttgart: Krabbe, 1845.
2. Reed GM. Prof Psychol Res Pr 2010;41:457-64.
3. Dubois B, Hampel H, Feldman HH et al. Alzheimers Dement 2016;12:292-323.

DOI:10.1002/wps.20534

Digital interventions in severe mental health problems: lessons from the Actissist development and trial

Severe mental health problems are characterized by repeated relapse, yet timely access to treatment remains problematic[1]. Within current health care systems, the delivery of treatment by scheduled appointment can result in warning signs being missed or treated too late. Recognizing the need for innovative, timely and efficient solutions to improve the speed and quality of treatment delivery, digital strategies are being developed worldwide[2].

Grounded in the cognitive model of psychosis, and following an extensive period of co-design with patients and stakeholders, we developed Actissist[3], a theory-informed smartphone app targeting areas of distress in early psychosis. Actissist uses question and answer dialogues with a branched design to provide cognitive or behavioral-informed feedback to participants, based on the information they input into the app. The app also contains a menu of multi-media options (e.g., links to external sites, patient stories, relaxation sessions) designed to complement and support the feedback from the intervention domains.

In a proof-of-concept, single-blind, randomized controlled trial, 36 early psychosis patients were randomly allocated to receive either Actissist plus treatment as usual (N=24) or ClinTouch[4], a symptom monitoring app, plus treatment as usual (N=12) over 12 weeks, with blind assessor follow-up at 12 and 22 weeks[3]. Participants were recruited over 7 months from several early intervention for psychosis services in the North West of England.

Nearly two thirds (38/59; 64.4%) of referred people participated in the study. We found that Actissist was feasible (75% participants used it at least once a day over the 12-week intervention period; 97% participants remained in the trial until the end), acceptable (90% participants declared they would recommend Actissist to others in a similar position), and safe (no serious adverse events related to the study). The treatment effects at 12 weeks favoured the Actissist group, with a Cohen's D standardized effect size of −0.85 (95% CI: −1.44 to −0.25) for the total score on the Positive and Negative Syndrome Scale, and of −0.65 (95% CI: −1.28 to −0.02) for the total score on the Calgary Depression Scale for Schizophrenia.

The next stage of Actissist is being tested in a powered randomized controlled trial (RCT). However, there are at present several clear challenges to both the conduction of standard RCTs in this area and the implementation of digital health interventions in ordinary practice.

In standard RCTs, the intervention is fixed at the onset of the trial and is not permitted to evolve during the trial. For many drugs under investigation or complex interventions, this is reasonable. However, this is problematic for digital health interventions due to the pace of change in technology. Fixing the intervention at trial onset can render the technology outdated or even obsolete by the time the trial results are available. Adaptive interventions, which are designed to systematically and efficiently optimize behavioural interventions, might be one possible solution to this problem[5].

Furthermore, the success of digital health interventions is not merely determined by patient uptake; it will ultimately be determined by patients *and* staff, both of whom are key end-users. We have found that mental health professionals and patients often express concerns about data security, safety and risk information being robustly handled[6]. However, given reassurances from reputable and trusted organizations, patients recognize the value of digital health interventions in enhancing their connection with services, and perceive digital approaches as not only destigmatizing but also a relevant way of receiving health care. Perhaps most importantly, patients view these interventions as empowering, affording them meaningful choice and the opportunity to take active control of their health care.

Staff attitudes, however, are a potentially major barrier to digital health care implementation[6]. In our work, staff often expressed the opinion that resources would be better spent on professionals' training than on technology development. Integrating a steady stream of data into patients' records was sometimes perceived as overwhelming, adding to already stretched workloads and professional responsibilities. Without considering issues around implementation during the early stages of the development and delivery of digital health interventions, it is unlikely that these approaches will be disseminated beyond research studies and into the service setting.

Moreover, a clear set of strategies regarding closer involvement of patients in the development of digital innovations as well as engagement of stakeholders with digitally-enabled services is lacking. More research is needed worldwide to under-