Viewpoint

The Right ICD Code, Right Now: A Call to Action for Pragmatic Language Disorders After Right Hemisphere Stroke

Jamila Minga,[a,b] iD **Shanika Phillips Fullwood,**[c,d,e] **Deborah Rose,**[b] **and Danai Kasambira Fannin**[a,f] iD

[a] Department of Head and Neck Surgery & Communication Sciences, Duke University School of Medicine, Durham, NC [b] Department of Neurology, Duke University School of Medicine, Durham, NC [c] Moses Cone Memorial Hospital, Greensboro, NC [d] Department of Communication Arts, Sciences, and Disorders, Brooklyn College, The City University of New York, NY [e] Cognitive Neuroscience Admitting Program, Duke University, Durham, NC [f] Department of Communication Sciences and Disorders, North Carolina Central University, Durham

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ABSTRACT

Purpose: Diagnosis of language impairments after stroke is important to optimizing stroke outcomes. After right hemisphere brain damage (RHD), apragmatism can impact the comprehension and production of pragmatic language. However, despite decades of empirical evidence, there is no International Classification of Diseases (ICD) code for RHD pragmatic language impairments. The absence of an ICD code has far reaching ramifications that impact patient outcomes, including reduced clinical and public awareness, limited curricular content, and underdiagnosis. This viewpoint justifies the need to appropriately classify the pragmatic language symptomology after RHD with an ICD code.
Conclusion: An ICD code can positively influence health care practitioner knowledge, education, and practice while informing public health considerations vital to epidemiological analyses.

Diagnoses of aphasia, cognitive-communication deficit (CCD), and social pragmatic communication disorder are common in speech-language pathology. Each can result in communicative changes and has an established diagnostic code that outlines symptomatology. Aphasia and CCD are associated with a neurologic event or disorder after a left hemisphere stroke, traumatic brain injury (TBI), and right hemisphere stroke, respectively. Almost half of strokes in the United States result in right hemisphere brain damage (RHD; Hedna et al., 2013) with 50%–78% of survivors experiencing deficits that affect communication (Benton & Bryan, 1996; Ferré et al., 2009). Language use after RHD is well typified as heterogenous across a spectrum of behaviors (i.e., paucity of expression vs. verbosity). The CCD diagnosis codes are neither specific nor representative of the highly pragmatic language impairments after RHD (see Minga et al., 2021,

for a review). These impairments are recognized by speech-language pathologists (SLPs) more so than other health care practitioners (Lehman Blake et al., 2003) positioning the profession to best address this issue. In this viewpoint, we briefly describe RHD language impairments and then delve into the area of nosology, a disease classification branch of medical science (Roselli, 2018). It is hoped that the scholarly opinions presented will promote dialogue that leads to actionable support for an International Classification of Diseases (ICD) code that more specifically and accurately represents the pragmatic language impairments after RHD.

Nosology of RHD Language Impairments

Descriptions of language impairments after RHD have focused on the cognitive integrative processes underlying discourse (Bartels-Tobin & Hinckley, 2005; Brownell & Martino, 1998; Myers & Brookshire, 1996; Tompkins, 1990; Tompkins et al., 1992; Weed et al., 2010). Empirical gains made between the mid-1970s and early 2000s concerning discourse in RHD language disorders were primarily related to comprehension impairments (Blake,

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Correspondence to Jamila Minga: jamila.minga@duke.edu. **Disclosure:** *Jamila Minga co-developed the RHDBank and is a founding member of the International Right Hemisphere Collaborative. The other authors have declared that no competing financial or nonfinancial interests existed at the time of publication.*

2009; Brownell & Martino, 1998; Rehak et al., 1992; Tompkins et al., 1994, 2000; Van Lancker & Kempler, 1987). The focus on language comprehension impairments is unsurprising, given the epistemology at the time, which was that the right hemisphere "did not speak" but, rather, aided in the integration of information and meaning important to communicative interactions. Specifically, studies revealed a deficit profile inclusive of challenges in the interpretation of meanings for abstract language, referential communication (Davis et al., 1997), discourse processing, organization, and planning (Beeman, 1993; Bloom et al., 1996; Brownell & Martino, 1998). Inconsistent documentation of communication impairments found in studies, however, undoubtedly contributed to the infrequent study of RHD language production impairments through the early 2000s (Blonder et al., 1993; Brady et al., 2006; Brownell & Stringfellow, 1999; Joanette et al., 1986; Kennedy, 2000; Kennedy et al., 1994; Lehman Blake, 2006).

There is now a growing interest in scientific advances concerning the pragmatic language use assessment (Hewetson et al., 2017, 2018; Parola et al., 2016), labeling (Minga, Sheppard, et al., 2023), and characterization after RHD (Kasambira Fannin et al., 2023; Marini, 2012; Minga et al., 2021). These works were built on the foundational research of pioneers in the field (Myers, 1999, 2001; Tompkins, 1995, 2012). The RHDBank and RHDBank GrandRounds, developed in 2016, provide an open-source database for research and an educational platform to enhance awareness of language impairments after RHD (Minga et al., 2021). Dedicated inquiry has aided in the renewal of apragmatism as a diagnostic label for the pragmatic language impairments (Minga, Sheppard, et al., 2023) and facilitated systematic reviews that document these impairments to guide subsequent data-driven inquiry (Berube et al., 2022; Sheppard et al., 2022; Ukaegbe et al., 2022). Such laudable scientific advances have served to shift anecdotal recognition to greater symptomatology specificity in the literature. RHD language impairments, hereafter referred to as apragmatism, have yet to rise to the height of recognition as other acquired neurogenic communication disorders, posing a significant public health concern.

Apragmatism is defined as a language disorder in conveying and/or comprehending meaning or intent through verbal and nonverbal modes of context-dependent communication across three domains of deficits (see Table 1), wherein the context is inclusive of communicative partners, environment, and culture (Minga, Sheppard, et al., 2023). Recognition of apragmatism by SLPs and other health care practitioners alike is important, so that each can become familiar with the deficit profile to plan effective outpatient treatment and consistently report patient outcomes. This is particularly important given that apragmatism after RHD may not be recognized as life changing when compared to aphasia contributing to infrequent referrals for communication-based treatment.

Support for an ICD Code

Health information is essential to promoting shared knowledge of disease processes and disorders within the health care system, but the current nosology fails to comprehensively address the classification of apragmatism after RHD. Information concerning the impact of apragmatic language disorders on daily living, familial units, employment status, and rehabilitative supports has not been systematically documented to reveal the functional significance. One way to improve on the health information pertinent to acquiring data to guide approaches for the rehabilitation of apragmatism while giving credence to the significant functional impact of RHD is with a diagnostic code. Within the U.S. health care infrastructure, reimbursement for rehabilitative services is linked to the use of ICD codes. ICD codes were published by the World Health Organization (WHO) in 1978 for International Classification of Diseases, Ninth Revision and in 1992 for the International Classification of Diseases, 10th Revision (ICD-10), but the ICD-10 was not implemented until October of 2015 (Rahmathulla et al., 2014; Topaz et al., 2013). The codes are commonly used internationally to classify diseases and related symptoms in health care settings and serve as an objective way to describe prevalence, incidence, and symptoms of medical conditions with greater specificity to support rehabilitative clinical encounters, insurance reimbursement, and health policy research.

Language impairments after RHD significantly impact the lives of survivors and their loved ones (Hewetson

Table 1. Apragmatism domain descriptions (Information from Minga, Sheppard, et al., 2023).

Domains		
Linguistic	Paralinguistic	Extralinguistic
Deficits in producing or understanding language that is appropriate for the communicative context, e.g., meaning interpretation, question asking, volume of linguistic output	Deficits in the manipulation of grammatic, pragmatic, affective/emotional prosody for prosodic manipulation of to convey meaning	Deficits in nonverbal aspects of language use and comprehension; body language, eye gaze, facial expression, and gestures

et al., 2018). For survivors, significant negative outcomes include the dissolution of professional, personal, and social relationships, which contribute to multiple social determinants of health, such as economic stability, health care access and quality, and social and community context (U.S. Department of Health and Human Services, 2020). The psychosocial impact of these outcomes was clearly described by multiple stroke survivors in the *RHD Hidden Diagnosis* documentary that was produced by the first author of this article. One survivor expressed, "If you say something to me in a kind tone of voice or you say something to me in a mean tone of voice ... on the inside I didn't have a way of knowing how you meant those words and I think it caused a lot of problems with people particularly who were close to me. I think between the communication issues, and maybe some personality changes, unfortunately my marriage didn't make it and I understand that's really common especially after right-sided strokes" (Minga, Jallah, & Pierce, 2023).

Knowledge concerning apragmatism, while termed differently in the past (see Minga, Sheppard, et al., 2023, for a full review), has spanned a few decades with a recent surge in published works examining language impairments during discourse (Barnes, 2020; Berube et al., 2022; Kasambira Fannin et al., 2023; Minga et al., 2020, 2022; Schneider et al., 2021; Stockbridge et al., 2021). This, coupled with the fact that nearly 80% of right hemisphere stroke survivors can experience challenges with communication (Ferré et al., 2009) but may not receive acute treatment important to brain recovery (Di Legge et al., 2005), substantiates our proposal for a population-specific language disorder ICD code. There is no justifiable reason that a code should not be established in concert with the growing objective evidence and knowledge about the RHD language deficit profile. Especially, given that increased specificity for most neurogenic communication disorders with the adoption of the ICD-10 codes (Topaz et al., 2013). Now, the International Classification of Diseases, 11th Revision (ICD-11) classification system is being adopted (Harrison et al., 2021) with a purported enhanced ability to report, analyze, and interpret health information data. The new coding system, however, is neither inclusive of a designated cognitive-communication code nor a code specific to the acquired language disorders after RHD.

Given the preponderance of language deficits after right hemisphere stroke, the functional impact on the lives of survivors and loved ones, and the existence of a code for aphasia, a code for apragmatism is an empirical and clinical necessity. In the following sections, we outline two core reasons to support proposal for an apragmatism ICD code:

1. Language impairments acquired after RHD are not represented in existing ICD codes. Problem lists in electronic health records (EHRs) are vital to patient management, rapidly informing health care practitioners about patients' ongoing conditions. The lists, populated with diagnoses derived from ICD terminology and codes, are found at the core of EHRs; often the first clinical data visible when a provider accesses the record (Horsky et al., 2018). Historically, SLPs have used the ICD code for CCD (R41.841) or cognitive deficits following cerebral infarction (I69.31) to support outpatient clinical encounters for RHD. Although addressing CCDs is useful, pragmatic language is not regularly assessed in the acute phase of recovery (Ramsey & Blake, 2020), leaving the acquired pragmatic language impairments after RHD uncoded and unrecognized within the EHR. Moreover, when the CCD code is used, patients with RHD may not receive outpatient therapy since their cognitive impairment may be mild or within functional limits for many formal diagnostic assessments. The tendency to use this cognitively focused code also hampers efforts to distinguish RHD language impairments as specific and distinct from cognitive communication disorders that are associated with TBI (Hartley, 1994). Furthermore, the ICD-11 omits the CCD code.

Consideration of the pragmatic basis of RHD language disorders is essential for diagnostic specificity. The sole ICD code for pragmatics is social pragmatic communication disorder (coded as F80.82 in ICD-10 and 6A01.22 in ICD-11), a developmental pragmatic language disorder (see Table 2). Since these codes are subsumed under developmental disorders, it is inappropriate for the classification of apragmatism. Thus, there are no known diagnostic codes that ascribe pragmatic language disorders to acquired neurologic events, neither have studies been done to confirm whether an apragmatism code will result in better medical outcomes. However, other disciplines have shown the power of accurate and specific codes (Purdy et al., 2009; van Walraven & Austin, 2012). Indeed, there are instances where the use of nonspecific ICD codes served as a barrier to accurate provision of medication, while specific coding was a protective factor in that patients with the specifically coded disorder received medication and experienced fewer instances of discharge against doctor's orders (Marks et al., 2020). We are, therefore, building on previous science (Goday et al., 2019) to posit that specific coding for RHD communication might improve clinical decision making and ensuing health care outcomes.

2. An ICD code can positively influence clinical education, practice, and public health. ICD codes inform health care from both a fiscal and functional perspective and play a significant role in the curriculum content for health care practitioners, both in clinical and academic settings. Insurance claim reimbursement, functional outcome measures, resource modeling, and allocation rely on the specificity and granularity of patient conditions using ICD health

Table 2. International Classification of Diseases, 10th Revision (ICD-10) and International Classification of Diseases, 11th Revision (ICD-11) diagnostic labels, codes, and descriptions associated with pragmatic language deficits.

| ICD code label | Code and description | |
	ICD-10	ICD-11
Cognitive-communication deficit	R41.84/I69.31/I69.315: Cognitive deficit in communication skills; cognitive linguistic dysfunction; language related cognitive disorder, cognitive, social, and emotional deficits after cerebral infarction	There is no code for cognitive-communication deficit
Social communication disorder	F80.82: Other developmental disorders of speech and language; semantic pragmatic impairment, social (pragmatic) communication disorder	6A01.22: Developmental language disorder with impairment of mainly pragmatic language; characterized by persistent and marked difficulties with the understanding and use of language in social contexts, e.g., making inferences, understanding verbal humor, and resolving ambiguous meaning

information (Outland et al., 2015). Approaches to clinical practice are a direct result of disorder exposure that has an impact on the public health outcomes of RHD. Below, we briefly summarize ways in which an apragmatism ICD code can influence education, clinical practice, and public health.

Education. Awareness and familiarity with impairments, or practice-based evidence, tends to fuel scientific inquiry and the generation of evidence-based practice, the foundation of educational curricula, and clinical rehabilitative focus. As it stands, students studying in neuroscience, medicine, and speech-language pathology programs have reduced exposure to educational content specific to language impairments after RHD. Increased awareness because of the use of a specific code might therefore trigger educators to include more RHD information in their curricula. In speech-language pathology, annual conferences or conventions can serve as an indicator of curricular focus. This is largely because the researchers in specific areas are actively disseminating findings for translation at the clinical level. In 2023, there were only four RHD-focused continuing education opportunities out of more than 2,500 sessions at the American Speech-Language-Hearing Association convention; this year, there were three of more than 140 sessions at the National Black Association of Speech-Language and Hearing convention and one of more than 20 sessions at the International Cognitive-Communication Disorders Conference. This demonstrates the need for enhanced continuing educational opportunities that may also contribute to an increase in the relative recognition and awareness of RHD impairments. The authors have experience with medical school curriculums and are privy to commentary from neuroscience undergraduate students, graduate students in communication sciences and disorders, and medical residents who relay a common message of no lecture or a single lecture exposure to RHD impairments overall in comparison to aphasia (Phillips Fullwood et al., 2024). We believe that, if an ICD code is established, the clinical connation of pragmatic language disorders will be systematically extended from developmental to acquired lending to opportunities for broader exposure to the RHD impairment profile and symptoms.

Clinical practice. According to the Integrated Health Model Initiative TM, a collaborative effort across health care and technology stakeholders designed to improve patient health outcomes, thoughtful and specific ICD codes empower clinicians " … with the clinically valid health care data needed to make informed clinical decisions" and " … support clinical decisions with useful and valid data to achieve broad improvements in health and greater health equity" (Robezenieks, 2019). In a survey of 143 SLPs in the United States, 80% did not assess pragmatic language after RHD, or only used observation (Ramsey & Blake, 2020), which would be especially unreliable in cases of intercultural communicative differences or limited educational or experiential exposure to milder cases of apragmatism. Given the dearth of pragmatic assessment, it stands to reason that regular provision of apragmatism treatment is tenuous. For instance, not all recover affective prosody (a paralinguistic component of apragmatism) recognition abilities, yet evidence-based treatment is lacking (Durfee et al., 2021). Establishing an ICD code that classifies the observable pragmatic language impairments after RHD can reduce subjective evaluation approaches and positively inform clinical practice guidelines like those developed for aphasia, dysarthria, and dysphagia (Burton et al., 2023; Frattali et al., 2003; Rohde et al., 2013; Shrubsole et al., 2017; Yang et al., 2023). An apragmatism code can validate researchers' efforts to develop pragmatic assessment tools and treatment methods for RHD and foster dialogue needed to increase representation in extramurally funded studies.

For health care practitioners such as nurses, advanced practice providers, or physicians, the ICD code can serve to improve their awareness of the nature of the patient's

communication impairments, and the code may be applied to other populations who experience acquired pragmatic disorders. This heightened awareness across professions might augment efforts to improve provider–patient communication by increasing understanding of how apragmatism can affect clinical encounters (Kasambira Fannin et al., 2023). Moreover, having an apragmatism ICD code on the problem list may prompt strategic and systemic inclusion of communication treatment referrals as part of the stroke care protocols. This, in turn, may encourage health care team members to develop increased interprofessional communications with the SLPs to improve patient–provider communicative interactions, as poorer receipt of services and medical outcomes are due, in part, to communication breakdowns (Morgan et al., 2017; Stransky et al., 2018). Additionally, the inclusion of apragmatism in the EHR ICD coding system might prompt clinicians to inquire about outpatient therapy if it was missed at discharge or troubleshoot if difficulties arise when contacting the survivor about therapy.

Public health. The negative impact of reduced social connectivity after stroke has been acknowledged in our field, aligning with the WHO's global commission to support initiatives to address loneliness as a public health threat through evidence-based solutions (WHO, 2023). Language use is at the heart of social connections with the etiology, signs, symptoms, and disease definitions affecting language outlined in ICD codes (WHO, 2019). Established ICD codes, then, offer a structured opportunity to collect data about disorders that are increasingly important for the public health benefit of enhanced social connections.

In our experience, skilled speech-language therapy referrals to outpatient services for RHD survivors are influenced by the diagnostic report. Among other factors, the absence of an ICD code specific to apragmatism hampers the ability to acknowledge or promote efforts to diagnose and treat the socially impactful impairments after RHD and neighboring impairments. For example, communication impairments can result in poor health outcomes and increased unemployment (Stransky et al., 2018), which negatively impacts mental health. Thus, individuals with apragmatism are at risk for poststroke depression (Cai et al., 2019). The ability to evaluate the prevalence and incidence of apragmatism to analyze potential correlations between comorbidities such as depression would be greatly facilitated with an ICD code. Without a dedicated ICD code, the epidemiological indicators of post-RHD impairments and their impact, important to disorder trends and medical reimbursement decision-making policy, assessment of correlations that could inform public health initiatives and policy development for periodic population-specific screenings to positively shift health care practice and stroke care models will remain unaddressed. An ICD code can also prompt the engineering of novel assessments and treatments that could lead to population-specific Current Procedural Terminology codes for RHD. This could promote improvements in health outcomes for those with communication deficits after stroke (Stransky et al., 2018).

Representation for the RHD language impairments and their functional impact within health care information systems is long overdue. At a minimum, this inclusion can positively inform health policy and practice. Organizational support for the development of an apragmatism ICD code would be beneficial for mitigating the public health need. Representatives of the American Speech-Language-Hearing Association, the National Institutes of Health, WHO, the International Right Hemisphere Collaborative, and the Academy of Neurologic Communication Disorders and Sciences are composed of advocates, policy influencers, and researchers dedicated to making scientific advances concerning RHD language impairments. Collectively, these thought leaders who have justified the existence of apragmatism as a primary characteristic of RHD can support the petition needed to establish an apragmatism ICD code that gives practitioners the ability to classify the RHD communication profile with more accuracy and specificity.

Conclusions

Right hemisphere stroke can result in RHD and apragmatism, yet, to our knowledge, there is no plan to systematically acknowledge the differences between left and right hemisphere language impairments with a representative diagnostic code. The absence of a code specific to apragmatism serves to continue the underrepresentation and underrecognition of apragmatism at the health care system level and prevents documentation for rehabilitation purposes. The clinical consequences of this include minimization of the impact of apragmatism on functional outcomes and reduced empirical advances for the development of population-specific diagnostic and treatment protocols. It is hoped that our viewpoint serves to jumpstart discussions to outline actionable steps to mitigate the diagnostic gap concerning apragmatic language disorders after RHD. Establishing an exclusive apragmatism code might effectively transcend the current ICD limitations in pragmatic language disorders to represent those that are acquired and promote better acknowledgment of the RHD language disorders beyond cognition.

Data Availability Statement

This viewpoint does not have associated data to share with the reading audience.

Acknowledgments

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