Working with cognitive communication disorders after right hemisphere stroke: The speech pathologist's role in identification and management

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Dysphagia
Communication

Speech Pathology and Stroke

Left Hemisphere
- Right hand control
- Language skills
- Writing
- Scientific skills
- Mathematics
- Analytic thought
- Logic

Right Hemisphere
- Left hand control
- Emotion expression
- Spatial awareness
- Music
- Creativity
- Insight
- Holistic thought

Cognitive Communication Disorder (CCD): Right Hemisphere Stroke

Definition:
- communication impairment resulting from underlying cognitive deficits due to neurological impairment
- reflects an inability to create a “communication gestalt”
  - i.e. difficulty integrating linguistic, paralinguistic & extralinguistic components

The what?

Incidence and Nature of Cognitive Communication Disorder

Incidence of CCD

- Remains unclear in literature due to methodological variations
  - range from 50% to 80%\(^3,4\)
  - 96% of people with RH stroke have at least 1 cognitive or communication deficit\(^10\)
- Local data based on chart audit: 66% diagnosed with CCD

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Areas of Communication Impairment

**Lexical-Semantics**
- ↓ ability to understand or use abstract or figurative language
- ↓ ability to comprehend complex sentence structures

**Prosody**
- Aprosodia + ↓ comprehension of prosody
- Emotional & linguistic prosody

**Discourse**
- ↓ understanding or production of all forms of discourse
- Hypo- or hyper-affective discourse production

**Pragmatics**
- Impaired interpretation & use of language in social context
- Non-verbal cues, social rules / conventions

Clinical Profiles of CCD

Preliminary taxonomy of 3 clinical profiles proposed

**Profile 1:** significant impairments across all domains
- Global lexical semantic deficits, conversational discourse, & prosody

**Profile 2:** mixed presentation of impairments, ↓ severity of impairment
- Isolated lexical semantic deficit, conversational & narrative discourse, & linguistic prosody

**Profile 3:** restricted areas of impairment
- Conversational discourse & emotional prosody

Ferre et al. (2012). Folio Phoniatrica et Logopaedica, 64, 199-207.

The why?
How does CCD affect the individual and their family?

- Communication is...the “currency of relationships” (pg. 44)
- Enables interpersonal interactions and social participation
- Communication underpins so many aspects of our lives
  - Work, hobbies, independent living
  - Participation in healthcare & rehabilitation services

Limited research detailing the long term impact of CCD on individuals and family.


"...I was lucky with a mild stroke. The doctor said I was doing very well and I only stayed at the hospital for two days. I came back to my own house without needing help. But when I got home I started to realise that I wasn’t the same. I thought I could understand what I heard and read pretty well. But put me in a group of people and I struggle to follow the conversation which was a big surprise for me as everyone said that I was fine. I am much better now with reading but I got very tired initially, so I would just put the book down, I realised on my own that I wasn’t quite the same. And that made me feel vulnerable, but I didn’t want to tell people close to me, they were worried enough already.”

Independent living

I worked state-wide as a manager. I could walk in anywhere and call the shots. When I had the stroke I wouldn’t even have been able to buy a train ticket, I could walk right up to the station but I wouldn’t have known how to pay or even what ticket to ask for...
Work

Everything changed for him, he could not return to work even if he wanted. It was not just his physical difficulties, his way of thinking through problems is shocking and of course the way he views a situation is strange to say the least. This is so different to the way he was....

Interpersonal relationships

His emotions and communication definitely changed, it was like living with a toddler who didn’t understand human emotions and how to respond. I remember sitting on the couch crying one day and he just looked at me and changed the subject, as if he didn’t even realise that I was sad, and this is still hard. I still have to remind him not to cut people off in conversations - he never used to be rude.

Interpersonal relationships

His speech was always clear and he could understand what he heard and read and could write but his communication was completely different - does that make sense? He would just go quiet in a group of people. One-to-one is fine but 3 or 4 people together and he cannot participate. This is why he lost contact with some of his friends. They couldn’t do the same activities together anymore and then there was nothing left for him to talk about. He doesn’t seem able to come up with new topics. Like I will say to him, why don’t you just talk about this if you can’t talk about last weekend, but it is hard for him.
"What annoys me most these days is that I think they should have spent more time on other things in rehab. I know they wanted him to get stronger in his arm and better with his balance but it is as if they didn’t pick up on all the other stuff because they were so busy with physio. When he came home I would cringe … on the very first day leaving the hospital a lady got into a waiting taxi ahead of us and he said ‘god she is fat’ out loud and I could just hide somewhere for the embarrassment. So I had to warn all our friends about this but he is so reluctant to socialise now, not really reluctant I mean he would go along but he looks so bored, and conversations just pass him by.”

So who should we see?
And how?

How do we determine who to see?

- Do we follow the NSF Clinical Stroke guidelines?[14]
  - Sections 2.4.1 and 2.3.4

How do we determine who to see?

Should all patients with stroke (RH) be screened for communication deficits using a screening tool?
- potential sensitivity of prosodic tasks as screening tool alone
- use of screening tool incorporating all domains of communication
- self-report and significant other checklists/questionnaires
- informal observation

When do we see this group?

- Acute Care
- Inpatient rehabilitation
- Outpatient/community rehabilitation
- Recovery

Comprehensive Assessment of CCD

What options are available to speech pathologists?
- Standardised comprehensive assessment batteries
- Standardised assessment tasks/tools
- Self-report or significant other report questionnaires
- Informal observation tasks

Enlist your neuropsychologist or occupational therapist for cognitive assessments as necessary.
### Standardised comprehensive assessment batteries

- **MIRBI** (Mini Inventory of Right Brain Injury)\(^4\)
- **RIIPA** (Ross Information Processing Assessment)\(^4\)
- **RICE-3** (RIC Evaluation of Communication Problems in Right Hemisphere Dysfunction 3)\(^7\)
- **RHLB** (Right Hemisphere Language Battery)\(^4\)
- **MCLA** (Measure of Cognitive Linguistic Abilities)\(^4\)

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### Standardised assessment tasks / tools

- **Lexical semantic tasks**
  - COWAT, Sentence Comprehension tasks (PALPA or CAT), Inferential language (SCATBI)
- **Discourse Comprehension Test**\(^5\)
- **Florida Affect Battery**\(^1\)
- **The Awareness of Social Inferencing Test**\(^2\)
- **Functional Assessment of Verbal Reasoning and Executive Strategies**\(^2\)

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*Citations:

1. Pimental & Knight (2nd Ed). *MIRBI*. Pro-Ed, USA.
2. Ross-Swain, *RIPA*. Pro-Ed, USA.
3. Halper, Cherney & Burns. *RICE-3*. Rehabilitation Institute of Chicago, USA.

Checklists and Questionnaires

- Latrobe Communication Questionnaire\textsuperscript{24}  
  - self-report and significant other forms
- Social Communication Skills Questionnaire\textsuperscript{25}
- Cognitive-Communication Checklist for Acquired Brain Injury (CCCABI)\textsuperscript{26}  
  - referral tool / checklist

\textsuperscript{24} Douglas, Bracy & Snow (2002). La Trobe Communication Questionnaire. Melbourne, Vic: La Trobe University.

Informal observational tasks

Identification \checkmark

Now for management...
Now for management...

Rehabilitation should consider:

- Pre-morbid communication status
- Be individualized to the person’s needs, goals, and skills
- Include training of communication partners
- Occur in context to support generalization

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### Treatment Frameworks

**Traditional**

Process-specific approach

- i.e. impairment or activity focused
- Assumes discrete components of cognition that enable acquisition & use of information

**Context-sensitive**

Premised by:

- Cognitive +/- communicative functions are inter-connected
- A link exists between cognitive functioning and our goals, emotions, knowledge, & context

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### Current evidence for treatment of CCD in RH stroke

- Small number of studies provide evidence for communication specific treatment approaches
  - Treatments for aprosodia
  - Cognitive-linguistic or motor-imitative approaches
  - Lexical-semantic treatments based on theoretical underpinnings
    - Focus: coarse coding or suppression deficit hypotheses

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Treatments for CCD in RH stroke

- Communication partner training
- Education about impact of RH stroke on communication
- Draw knowledge from evidence base for similar disorders
  - e.g. treatment for CCD after TBI

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Summary

In summary

- CCD after right hemisphere stroke is highly prevalent
- CCD has the potential to impact many aspects of an individual’s life that could lead to social isolation and emotional well-being
  - relationships, independent living, work, hobbies
- Impact of CCD may be less noticeable in some environments
- Identification and management of CCD after RH stroke should be part of the speech pathologist’s role

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