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Occupational Therapy's Distinctive Role in Functional Cognitive Disorders


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1



Disclosures
Lisa Marshall, OTR/L, CLWT is the founder and CEO of Specialty Rehabilitation Inc. Her division of Oncology Consulting and Education provides continuing education courses and consulting services.


Brenda Crowley, COTA/L, CLWT is employed by Specialty Rehabilitation Inc.



2

Objectives

- The participants will be capable of identifying 2 appropriate evidence-based functional outcome tools in a case study of a person with functional cognitive deficits.
- Using a case study, participants will identify 3 functional cognitive deficits, develop a plan of care, and two functional long and short-term goals.
- Upon completion, participants will identify at least three intervention strategies for functional cognitive impairments for immediate implementation into their practice.

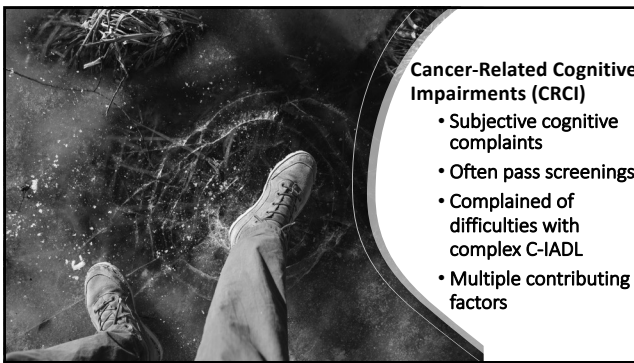


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3

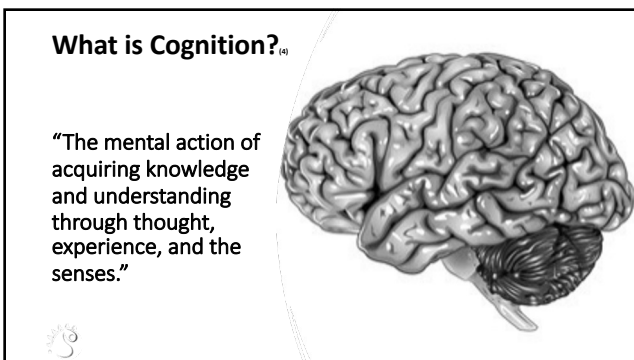


4



5

- Cancer-Related Cognitive Impairments (CRCI)**
- Subjective cognitive complaints
 - Often pass screenings
 - Complained of difficulties with complex C-IADL
 - Multiple contributing factors



What is Cognition?

“The mental action of acquiring knowledge and understanding through thought, experience, and the senses.”

6

What is Cognition? ⁽⁴⁾

Cognition includes several elements or processes that all work to describe how our knowledge is built up and our judgments are made.

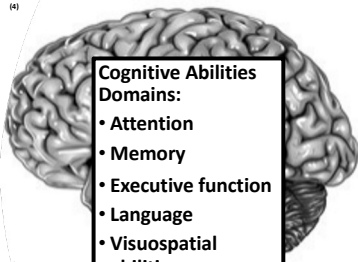


7

What is Cognition? ⁽⁴⁾

Among these many elements are the processes of:

- Perceiving
- Recognizing
- Conceptualizing
- Learning
- Reasoning
- Problem-solving
- Memory
- Language



8

What is Functional Cognition?

- Functional Cognition is how an individual utilizes and integrates thinking and processing skills to accomplish everyday activities in clinical, community, and living environments.
- We are not just looking at components of cognitive deficits but big picture "overall" function.



As occupational therapy practitioners we are unique - We Address Functional Cognition



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9

What is Cognitive Impairment? ⁽¹⁾

- Cognitive impairment describes the condition of an individual who has trouble with memory, attention, understanding conversation and mental processes used in everyday living.
- Cognitive impairment may come and go and be mild or severe



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10



Occupational Therapy Practitioners Unique Contributions

- Understanding the relationship between cognitive processes and ADL/IADL with the focus on performance
- Functional approach to treatment
- Therapeutic use of self
- Acknowledgment of mind-body-spirit
- Use of activity analysis with simulated functional performance task



AJOT-73s201-Cognitive Statement-2019

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11

Statistics Aging

People over 65


- 2010 = 40 million
- 2050 = 89 million



12

Role of OT

- People are living longer thus, an increase in the dementia population
- Age impacts cognition
- Prevention and treatment strategies to preserve cognition as we age



Improve QOL

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13

4 levels of Cognitive impairment ⁽¹⁾

NCI: No cognitive impairment	SCI: Subjective cognitive impairment	MCI: Mild cognitive impairment	Dementia-Alzheimer's stages
<ul style="list-style-type: none"> • Normal cognitive changes with aging 	<ul style="list-style-type: none"> • CRCI • FCD 	<ul style="list-style-type: none"> • Syndrome that may lead to dementia 	<ul style="list-style-type: none"> • Early (mild) • Middle (moderate) • Late (severe)

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14

Normal aging process	MCI/Pre clinical Alzheimer's	Alzheimer's early dementia stage
Reduced processing speed and auditory acuity	Mild changes in memory/thinking	Memory loss: recent hard to learn new information Repeat same question over and over
Reduced elective and divided attention	Memory lapses things usually easily remembered	Difficulty with problem solving
Reduced working memory and executive cognitive function	Trouble judging amount of time needed to complete a task	Changes in personality
DOES NOT AFFECT ADL/IADL	Trouble judging sequencing number of steps to complete a task	Difficulty organizing and expressing thoughts
	Ability to make sound decisions may be harder	Getting lost or misplacing items
	Daily life activities are not affected	ADL/IADL are affected

15

MCI- Mild Cognitive Impairments ⁽¹⁾

Objective cognitive impairment on neurocognitive testing in the absence of significant impairment in activities of daily living (ADL)

- This cognitive state is not always accompanied by a subjective awareness of cognitive impairment.

Age	65-69	75-79	80-84	Over 85
% of MCI	8%	15%	25%	37%



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16

Symptoms of MCI

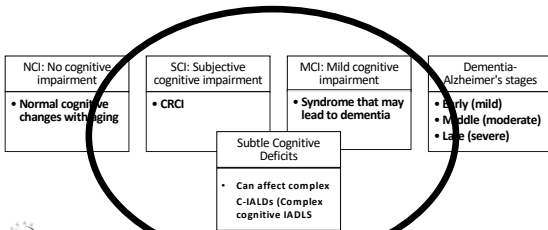
Impaired:

- Memory loss
- Language problems
- Attention deficits
- Reasoning and judgment
- Complex decision making



17

4 levels of Cognitive impairment ^(1,3)



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18

High Level Cognitive Impairments in the Literature		
Subtle Cognitive Deficits (SCD) (Toglia 2020)	Subjective Cognitive Impairments (SCI)	Functional Cognitive Dysfunction (FCD)
Subjective complaints	Subjective complaints	Subjective complaints (often the person is more worried than the family)
May not show up on neuropsychiatric testing but person has difficulties with complex IADL-work skills	May not show up on neuropsychiatric testing but person has difficulties with complex IADL-work skills	May not show up on neuropsychiatric testing but person has difficulties with complex IADL-work skills
Complains of distress and affects on QOL	Complains of distress and affects on QOL	Complains of distress and affects on QOL
May affect Complex C-IADL	May affect Complex C-IADL	Inconsistent deficits

19

Subtle Cognitive Deficits (SCD)

Difficulties with Complex C-IADL






20

Who is at Risk for Self-Identified SCI and (SCD) ?

- Age-associated cognitive impairment
- Mild-acquired brain injury-concussion
- Long-haul COVID
- Cancer-related cognitive impairments (CRCI)
- Multiple sclerosis, parkinson's, lupus, older adults with self-identified complaints, Mild acquired brain injury. (Toglia, Foster 2021)


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21

Age-Associated Cognitive Impairment ^(1,2)

- Approximately 40% of people aged 65 or older
- 16 million people living in the United States
- Only about 1% of them will progress to dementia each year.
- Occasional forgetfulness is part of normal again



22

Long-Haul COVID ⁽³⁾

According to the Board of Governors of the Federal Reserve System:

- Fatigue
 - SOB
 - "Brain fog" (self reported)
 - Cardiac issues
 - High levels of distress
- It may affect a person's ability to work

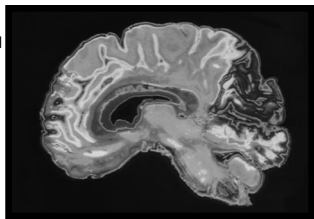
<https://www.federalreserve.gov/econres/notes/feds-notes/long-covid-cognitive-impairment-and-the-stalled-decline-in-disability-rates-20220805.html>

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23

Cancer-Related Cognitive Impairment (CRCI)

- 30% of cancer patients have CRCI prior to starting chemotherapy
- 75% of patients report some form of cognitive impairment during treatment
- 35% of patients have continues issues following completion of tx, can be for years



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24

Cancer Statistics (20, 2)

- 2019 an estimated 16.9 million survivors,
- Projected growth to 26 million by 2040
- 39.6% lifetime risk



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25

Cancer Statistics (9, 28)

- Increased aging population
- 64% of cancer survivors are 65 years or older
 - Older cancer population has increased:
 - Rates of multi-morbidities
 - Premorbid disablement
 - Cancer-related treatment toxicities

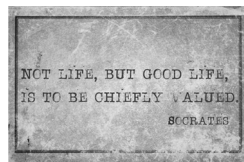


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26

Cancer Statistics (22, 13)

- Cancer is a chronic condition
- Increased life expectancy
- Life expectancy doesn't always equate to quality of life (QOL).
- Acute and long-term side effects
 - Side effects
 - physical and
 - psychological and
 - affect a person's functional well being-impacting their QOL



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27

CRCI Symptoms (40)
7, 98, 30, 62

Deficits in:

- Attention
- Concentration
- Working memory
- Executive function
- Speed of processing
- New learning
- Word finding abilities

28

Why Do Some Survivors Have Symptoms Before They Start Treatment?

- Cancer
- Stress from Diagnosis
- Inflammatory cytokines

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29

CRCI and Long Haul COVID can be medically validated

30

WHY
 May test normal on neuropsychiatric testing.

Self-reported difficulties with complex IADL (C-IADL)

31

- CRCI is best understood within the context of ADL's and IADL's
- Not solely by imaging and neuropsychiatric testing.

32

Contributing factors in literature affecting cognition

- Stress
- Emotional Status
- Anxiety/depression
- Mental and physical fatigue
- Sleep dysfunction
- Chronic pain
- Medication side effects
- Nutrition

33

Stress: A Contributing Factor in CRCI

- Cancer creates sustained stress and inflammatory response



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34

Pain and Medications

Pain

- Associated with
 - Impaired executive function, attention abilities, processing speed and memory.

Medications:

- Sedating
- Steroids affect ability to sleep

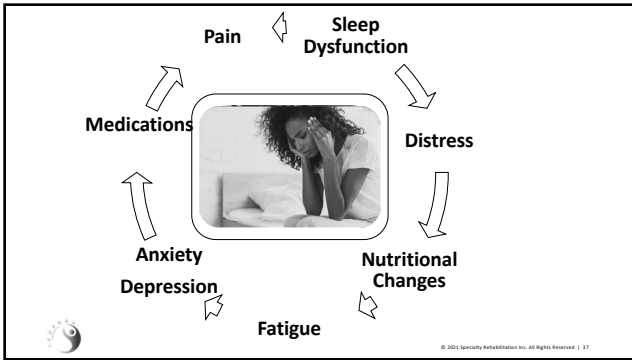


35

Depression and Anxiety



36



37



38

- Management of CRCI can be applied to SCI**
- Validation
 - Stress management/coping strategies
 - Pain management
 - Fatigue management
 - Exercise
 - Energy conservation
 - Sleep hygiene
 - Compensatory strategies and or restoration
- Restorative vs Supportive/Adaptive or Combo**

39

Combining General Cognitive Optimization With Functional Cognitive Training

- Lifestyle choices and education
- Sleep hygiene
- Exercise
- Fatigue management-energy conservation
- Stress management-coping skills
- Mind-body strategies



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40

Risk Factors MCI^m

- Increasing age
- Links to APOE e4 gene
- Other medical conditions
 - Diabetes
 - Smoking
 - HTN
 - Obesity
 - Depression
 - Lack of physical exercise
 - Low education level
 - Infrequent participation in mentally or socially stimulating activities



41

Possible Contributing Factors: ^m


- Depression, stress, anxiety
- Thyroid, kidney, or liver problems
- Sleep apnea and other sleep disorders
- Diseases that affect blood flow in the brain (tumors, blood clots, stroke, TBI, normal pressure hydrocephalus)
- Low B12 or other nutrient levels
- Eye or hearing problems
- An infection
- Side effects of certain prescriptions (anticholinergic drugs used to tx bladder conditions, Parkinson's disease, illegal drugs)
- Hx of alcoholism
- Isolation




42

Prevention ⁽⁴⁾

- Avoid alcohol
- Limit exposure to air pollution
- Don't smoke
- Manage health conditions: diabetes, HTN, obesity, depression
- Practice good sleep hygiene and manage sleep disturbances
- Engage socially with others
- Exercise regularly at moderate to vigorous intensity
- Wear a hearing aid if you have hearing loss
- Stimulate your mind with puzzles, games and memory training



43

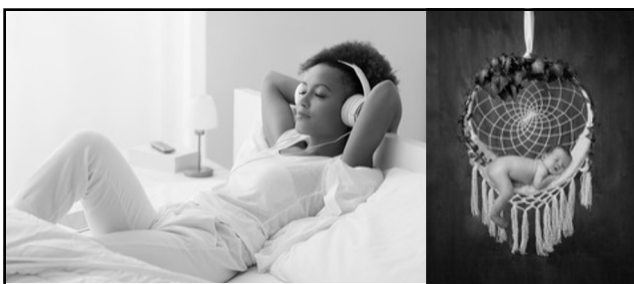


Interventions that simultaneously target physical activity, nutrition and mind/body.

Educate Lifestyle Changes



44




Sleep Hygiene

45




Exercise

46




- Stress- Management
- Mind-Body
- Coping Strategies

47



**Occupational Therapy Practitioners
Perfect for Teaching/Educating
Stress Management Methods**

- Breathing exercises
- Meditation
- Mindfulness
- Guided imagery



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48

Diagnosing SCI Cognitive Impairments



SELF:
REPORT/QUESTIONNAIRE

↓

NEUROPSYCHOLOGIST:
TESTING

↓

TESTING:
DOES NOT REFLECT THE
PATIENT EXPERIENCE



49

Don't Let Patients With SCI Fall Through The Cracks



- Subtle symptoms
- Evidenced with challenges such as increased stress, multitasking, and challenging environment

50

Functional Cognitive Rehabilitation (1)



- Optimize general cognition
- Multicontext (MC) approach based on Dynamic Interaction Model (DIM) (Toglia)

51

Evaluation & Plan of Care Development

- Chart Review
- Interview of client and (others)
- Cognitive screening
- Environmental assessment
- Specific cognitive measures
- Performance-based assessments
- Occupation based outcomes
- Outcomes

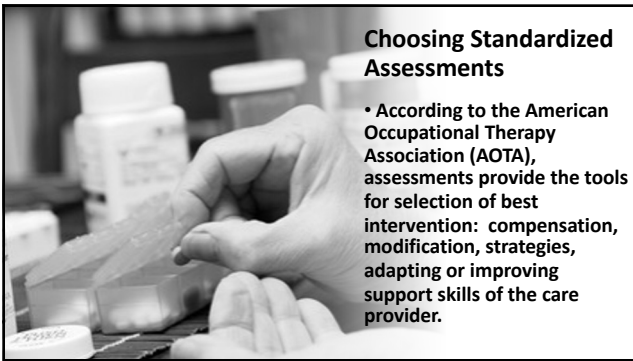


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52

Choosing Standardized Assessments

- According to the American Occupational Therapy Association (AOTA), assessments provide the tools for selection of best intervention: compensation, modification, strategies, adapting or improving support skills of the care provider.



53

Choosing Standardized Assessments

- Will the assessment provide insight into areas of task performance breakdown?
- Can the individual accurately estimate their own abilities for self-assessment?
- Performance based tests allows therapists to perform activity analysis for performance breakdown, self awareness, and self correction



54

When Choosing ⁱⁿ

Things to consider

- The individual's ability to use multiple cognitive processes during task performance
- The environmental demands
- Task complexity
- The dynamic nature of naturalistic environments
- Whether the individual can adapt as 1 or more of these elements change during the enactment of a dynamic activity.



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55

AOTA- List of Functional Cognitive Assessments

- EFPT: executive performance test
- WCPA: weekly calendar planning activity
- PASS: performance assessment of self-care skills
- AMPS: The assessment of motor and processing skills
- MET: multiple errands test-
- The Actual Reality Assessment



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Objective Assessments to Consider

- Montreal Cognitive Assessment (MoCA)
- Multiple Errands Test (MET)
- Executive Functional Performance (EFPT)
- Saint Louis University Mental Status Test (SLUMS)



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57

Occupational Performance Tests Self-Assessments

- Functional Independence Measure (FIM)
- Canadian Occupational Performance Measure (COPM)
- Patient-Reported Outcomes Measurement Information System (PROMIS)-Cognitive Function
- Patient Specific Functional Scale (PSFS)



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58

Dr. Joan Toglia, PhD, OTR/L, FAOTA

Developed the MultiContext Approach (MC)

- Framework for promoting strategy use and self-monitoring across activities
- Focuses on enhancing self-awareness of cognitive performance



59

Multicontext Approach



Introduced in 1991



Incorporates numerous functional assessment tools



Based on principles of dynamic assessment



Used to identify and analyze cognitive performance errors within functional activities



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60

Talking the Same Language

- Working Memory (WM)
 - Holding information for a short period of time during task/activity
 - For <1 minute
 - Capacity of 7 +/- 2 bits or "chunks" of information
 - Temporary storage for immediate use.



61

Talking the Same Language

- Initiation
 - Difficulty starting task
 - Generating or formulating goals into action
 - Determine source of problem



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62

Talking the Same Language

- Inhibition (ability to)
 - Inhibit impulses
 - Plan & Troubleshoot
 - Adapt to unexpected circumstances and changes
- Disinhibition
 - Impulsive behavior
 - Unable to suppress irrelevant stimuli
 - Easily distracted



63




Talking the Same Language

- Flexibility
 - Reactive flexibility
 - Spontaneous
- Poor Flexibility
 - May lead to perseveration

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64



Metacognition

Talking the Same Language

- Involves knowledge
- Thinking & reflection
- Self-recognition and correction of task errors

65

Putting It All Together		
Term	Description	Executive Function
Working Memory	Short-term storage and manipulation of information	Keeping track of information and multitasking
Response Inhibition	Ability to suppress actions	Planning, initiation, monitoring
Sustained Attention	Maintaining performance over time	Completion of tasks,
Selective Attention	Ability to focus on relevant information	Inhibiting internal/external distractions
Alternating Attention	Mental shifting of ideas, thoughts and/or actions. Self-initiated decisions.	Generate multiple alternative solutions, switch fluidly between tasks
Divided Attention	Attending to more than one	Multi or Dual Tasking

66

Ideal Model of Problem Solving Dysfunctional Behavior

Developed in 1993 by Bransford and Stein

- Identify
- Define
- Explore
- Act
- Look

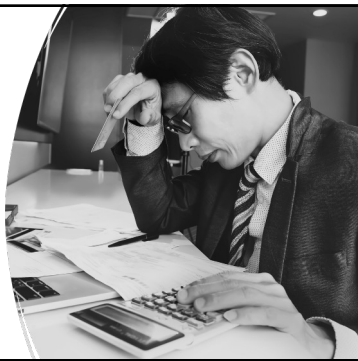


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67

Identify the Problem

- Assessing
- Exploring
- Attention
- Awareness of environment
- Understanding cause and effect



68

WHAT DOES IT MEAN?

Defining the Problem

Analyzing conditions of the problem and constructing a meaningful internal representation of the problem



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69



Explore Possible Strategies



- Formulating a plan, trying alternate strategies, and testing hypothesis

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70

Act

- Executing the strategy of plan
- Difficulty following the plan of action
- Becomes sidetracked
- Loses track of time

71

Look at the Effects



Comparing final solution with original conditions of the problem.

72

Treatment Strategies

Managing Stress & Fatigue

Don't Forget!

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73

Physical Exercise ⁽⁷⁾

- Evidence shows physical exercise (PE) impacts cognitive functions through specific cerebral circuitry involving prefrontal and limbic structures.
- PE unlike physical activity is planned, structured and repetitive
- PE can be aerobic or anaerobic

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Meet Jack-Case Study

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Diaphragmatic Breathing

- Evidence shows diaphragmatic breathing
- Balances nervous system
 - Lowers the heart rate
 - Helps you relax, shuts out "all the internal noise".



76

Use of Internal/External Cues

- Post its
- Self Talk
- Lists
- Calendars



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77

Task Analysis


- Working Memory
- Inhibition
- Flexibility
- Dual Tasking or Multitasking
- Disinhibition



78

Meet Ann-Case Study

- Working Memory
- Initiation
- Inhibition
- Disinhibition




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79

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80

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81

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82



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83
