

CHEMO BREIN

Feit
Of
'Fake Nieuws' ?

Prof H  l  ne Schoemans, UZ Leuven

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Disclosures

- HS reports having received personal fees from Incyte, Janssen, Novartis, Sanofi and from the Belgian Hematological Society (BHS), as well as research grants from Novartis and the BHS, all paid to her institution.
- She has also received non-financial support from Gilead, Pfizer, the EBMT (European Society for Blood and Marrow transplantation) and the CIBMTR (Center for International Bone Marrow Transplantation Research).
- HS is a [BMT transplant physician](#) from [UZ Leuven, Belgium](#), working in HCT since 2003.

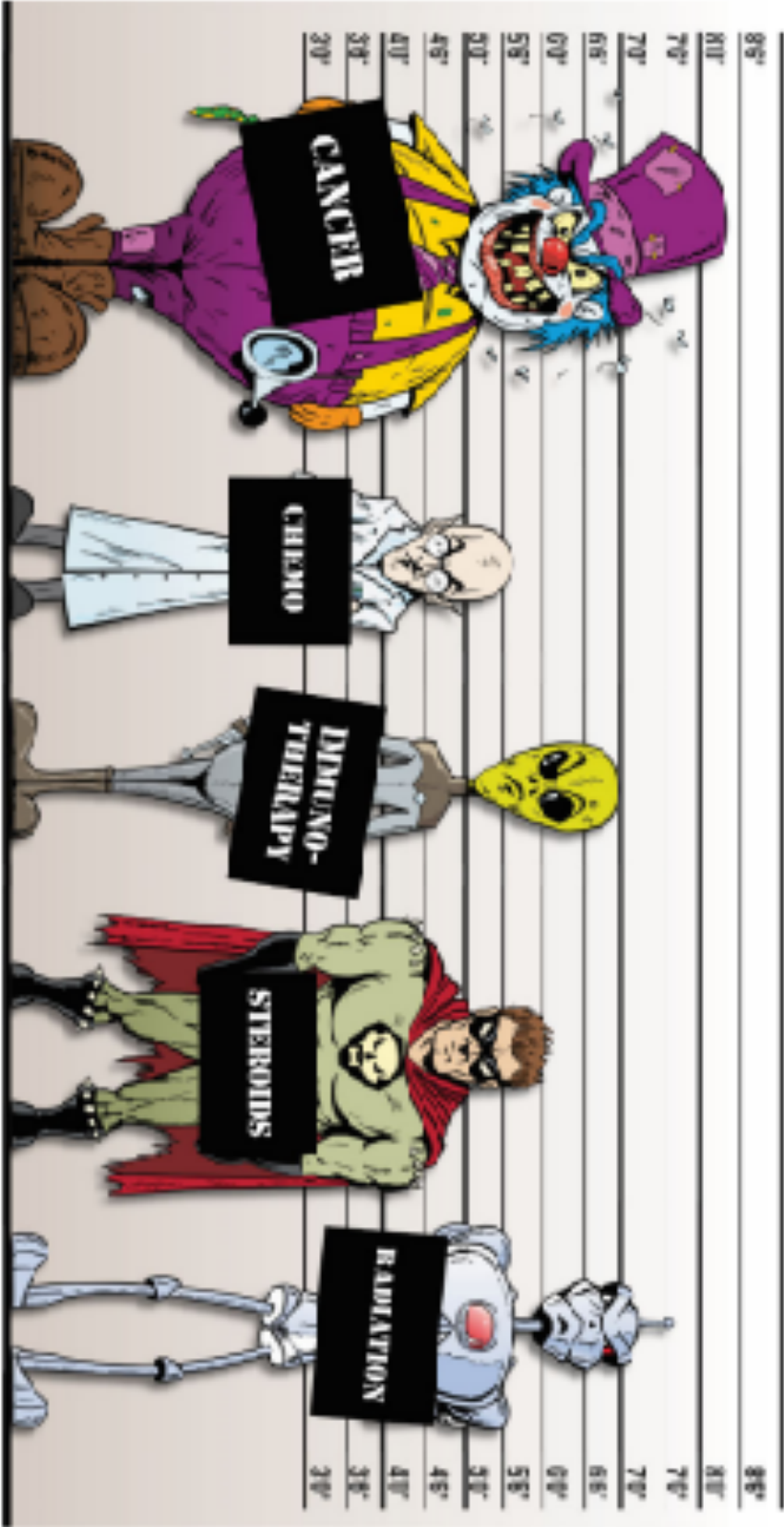
Welke van de volgende zaken is mogelijk
een neuro-cognitieve probleem?

- A. Medicatie vergeten
- B. Woordvindingsstoornissen
- C. Slechter koken
- D. Niet lachen met een goede mop
- E. Je ellende op je transplantatie steken

Chemo brein?



Multiple Suspects



Neurocognitive function

activities of the brain involved in generating the complex behaviors observed in day to day life



Neurocognitive Function = 8 domains



1- Attention & Concentration

Alertness sufficient to the completion of tasks.

Ability to **focus** and sustain attention throughout tasks (distractibility).



2 - Perceptual processing

The ability to **recognize** objects and **locate** them in space.

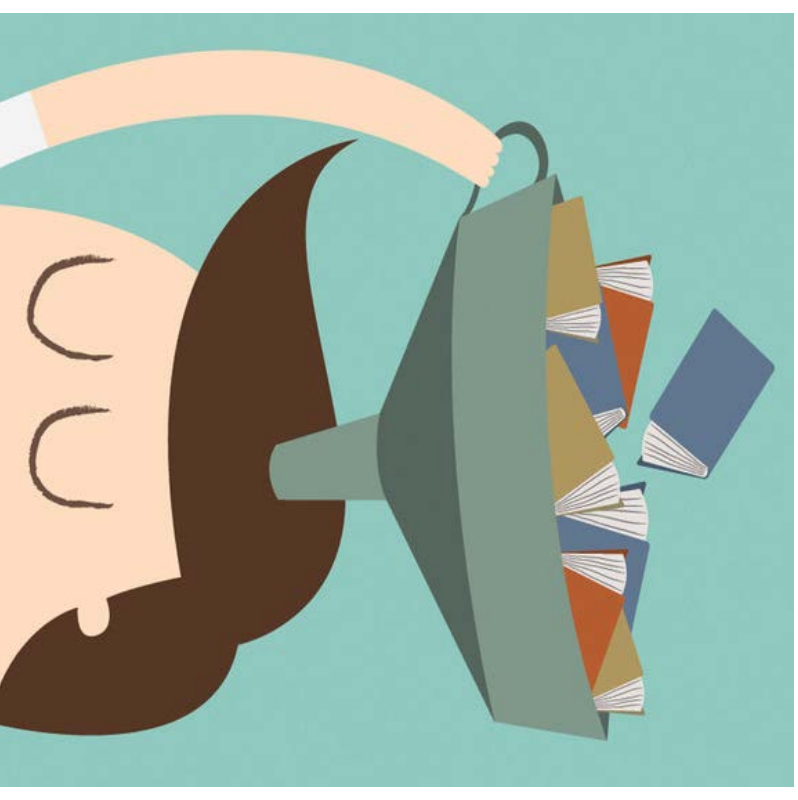
The sequence of psychological processes used to **organize** & **interpret** the outside world.



3 - Learning & Working Memory

Learning is the capacity to **store and recall new information.**

Working memory is used to describe the capacity to **hold, process, and manipulate information.**



4 - Abstract Thinking & Executive Function

Ability to reason beyond
given information to arrive
at an **interpretation** or
understanding, or a **course**
of action consistent with
goals.



5 - Language

Ability to use written or spoken communication to
understand or convey information



6 - Information Processing Speed

Ability to rapidly process simple and complex information.

Information processing speed is a measure of the efficiency of cognitive function, and is necessary for motor function.



7 - Motor Function

Ability to perform tasks rapidly, precisely and in a smooth, coordinated way



8 - Emotions

Ability to suppress actions that interfere with goal-driven behavior.

Recognizing emotions, understanding social situations and behavioral self-control.



Who cares?

Bone Marrow Transplantation
<https://doi.org/10.1038/s41409-017-0055-7>



REVIEW ARTICLE



Neurocognitive dysfunction in hematopoietic cell transplant recipients: expert review from the late effects and Quality of Life Working Committee of the CIBMTR and complications and Quality of Life Working Party of the EBMT

David Buchbinder¹ · Debra Lynch Kelly² · Rafael F. Duarte³ · Jeffery J. Auletta⁴ · Neel Bhatt⁵ · Michael Byrne⁶ · Zachariah Defilipp⁷ · Melissa Gabriel⁸ · Anuj Mahindra⁹ · Maxim Norkin¹ · Helene Schoemans¹⁰ · Ami J. Shah¹¹ · Ibrahim Ahmed^{12,13} · Yoshiko Atsuta^{14,15} · Grzegorz W. Basak¹⁶ · Sara Beattie¹⁷ · Sita Bhella¹⁸ · Christopher Bredeson¹⁹ · Nancy Bunin²⁰ · Jignesh Dalal^{13,21} · Andrew Daly²² · James Gajewski²³ · Robert Peter Gale²⁴ · John Galvin²⁵ · Mehdi Hamadani⁵ · Robert J. Hayashi²⁶ · Kehinde Adekola²⁵ · Jason Law²⁷ · Catherine J. Lee²⁸ · Jane Liesveld²⁹ · Adriana K. Malone³⁰ · Arnon Nagler^{31,32} · Seema Naik³³ · Taiga Nishihori³⁴ · Susan K. Parsons²⁷ · Angela Scherwath³⁵ · Hannah-Lise Schofield³⁶ · Robert Soiffer³⁷ · Jeff Szer³⁸ · Ida Twist⁸ · Anne B. Warwick³⁹ · Baldeep M. Wirk⁴⁰ · Jean Yi⁴⁰ · Minoo Battiwalla⁴² · Mary D.E. Flowers⁴¹ · Bipin Savani⁶ · Bronwen E. Shaw⁵

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How do you detect neurocognitive dysfunction?



- MMSE® (Mini Mental State Examination) – 10 min
- COWAT® test (Controlled Oral Word Association Test) – 15 min
- Wisconsin Card Sorting Test® – 25 min
- WAIS IV® (Wechsler Adult Intelligence Scale) – 60 min

Try the WAIS IV !

“Which 3 of these pieces go together to make this puzzle?”



1



2



3



4



5



6

Problems with detecting neurocognitive dysfunction?

Many domains

Lengthy

No absolute standard test / cut off / baseline

Limited by language skills

Often NOT correlated with patient perception

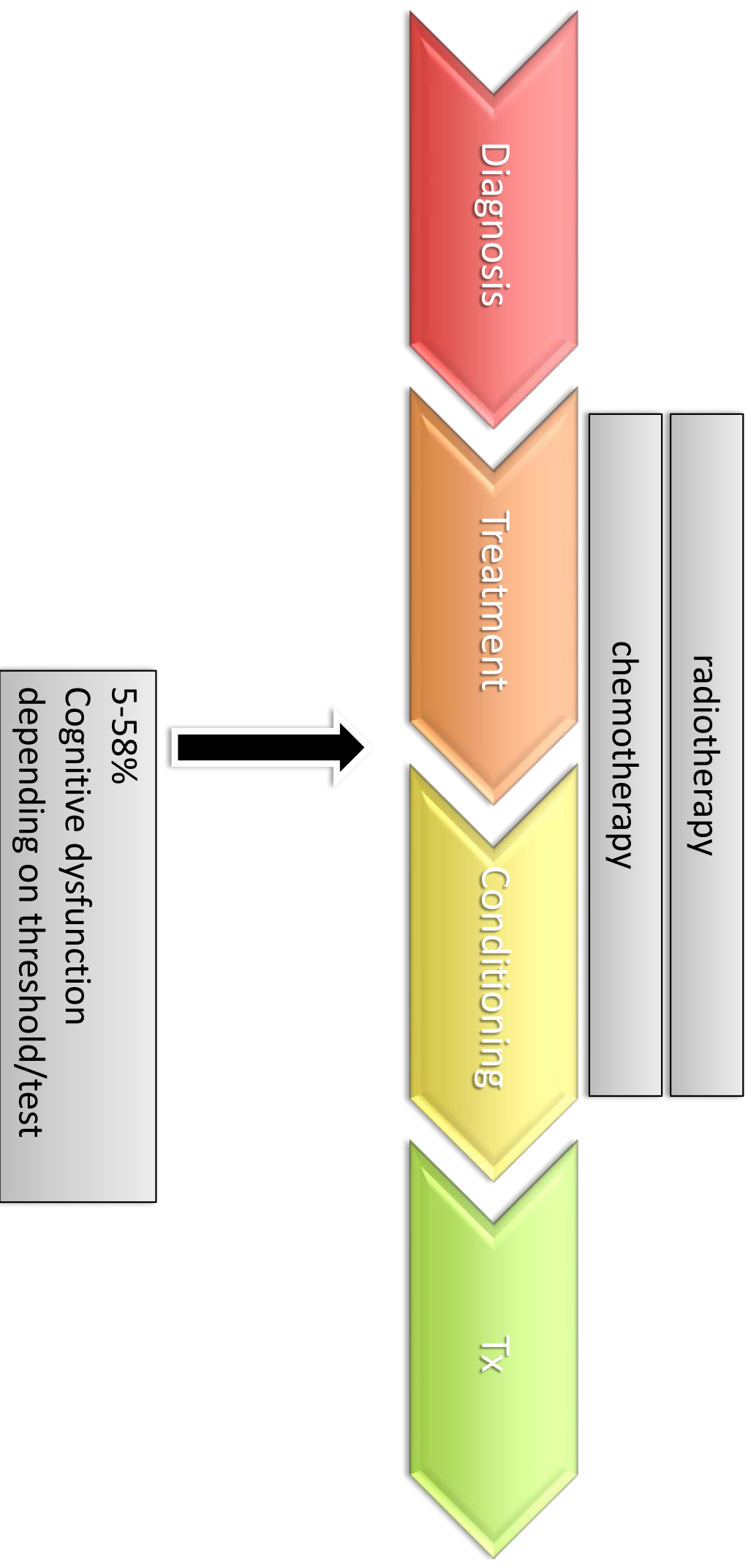
A red starburst graphic with a white outline, containing the text "NOT CANCER SPECIFIC".

NOT CANCER
SPECIFIC

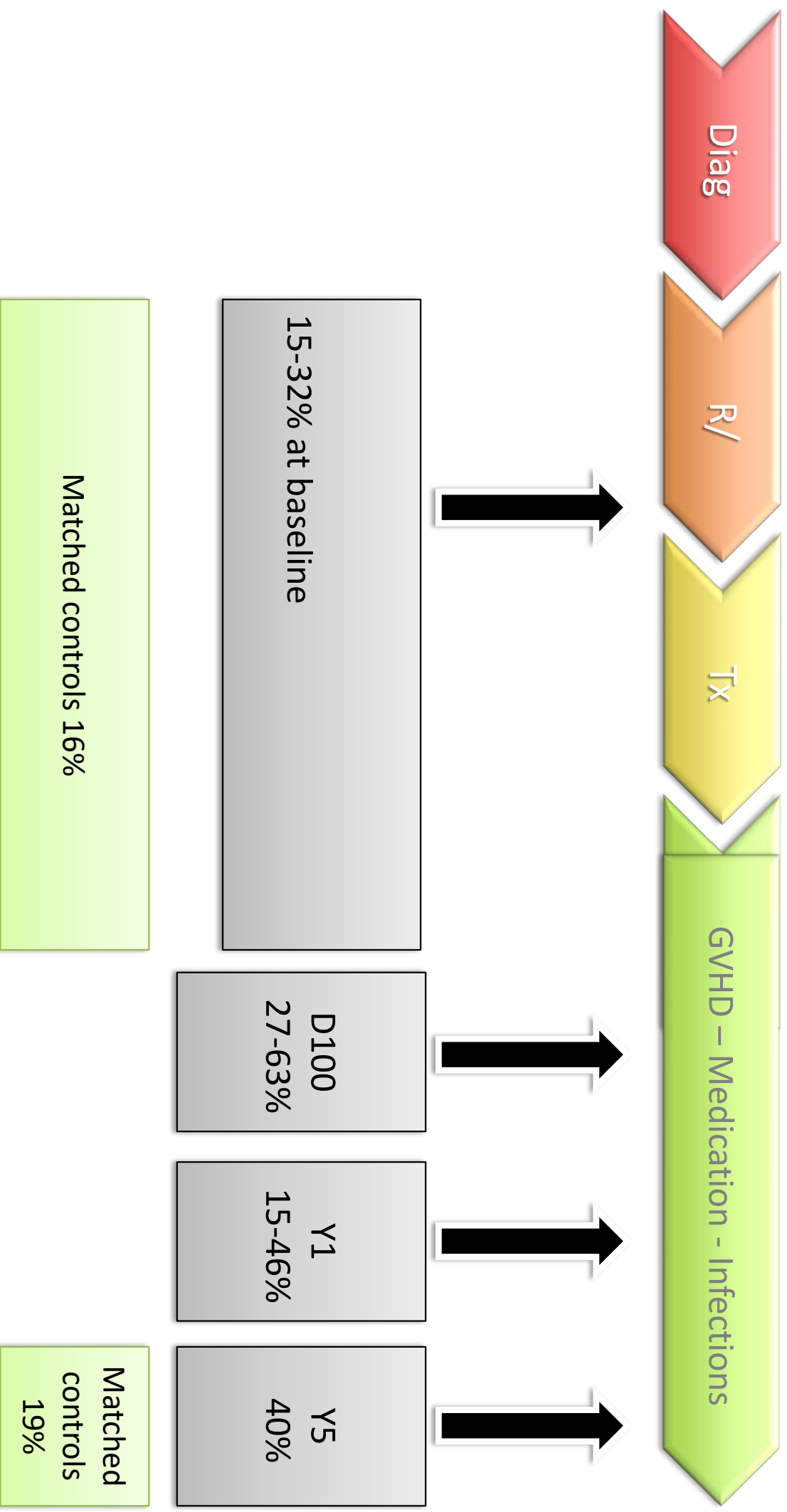
Other detection methods?

- No validated BIOMARKERS
- No validated imaging techniques
 - Gray matter loss
 - Increase in ventricular volume
 - Often NOT correlated with neuro-psy tests
 - ! Exclude subsequent malignancies !

Is 'chemo brain' due to Tx?



Is 'chemo brain' due to Tx?



Non-modifiable factors

- Older age
- Genetic factors
- Disease severity
- Treatment intensity / duration

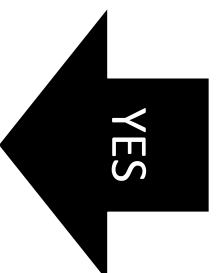


<https://www.catawiki.com/en/11567359-kamagurka-roeien-met-de-riemen-die-je-hebt>

National Comprehensive Cancer Network (NCCN) guidelines

3 Questions:

- ✓ Do you have difficulties multi-tasking or paying attention?
- ✓ Do you have difficulties remembering things?
- ✓ Does your thinking seem slow?



Focal deficit
Onset – Temporality
Clarify nature & Impact of impairment
Assess contributing factors
(medication / depression / pain / fatigue / sleep / alcohol)

What can you do?

Breathe, Accept, Adapt...



Modifiable factors

- Stress
- Sleep disruption
- Fatigue
- Low Mental Activity
- Low Physical Activity



BMT infonet Survivorship Symposium 2021

Coping with Attention, Learning and Memory Problems after Transplant, Shelli Kesler, University of Texas

accessed Nov 2023

<https://joleeftmetms.wordpress.com/2019/09/30/roeien-met-de-riemen-die-je-hebt/>

Exercise your body

- Promotes neurogenesis
- Improves cardiovascular function
- Improves cancer-related fatigue
- Improves functional capacity



How to exercise your body

- 150 mins moderate intensity aerobic exercise per week
 - Brisk walking
 - Riding a bike
 - Gardening
- 120 mins vigorous intensity
 - Jogging
 - HIIT (high intensity interval training)

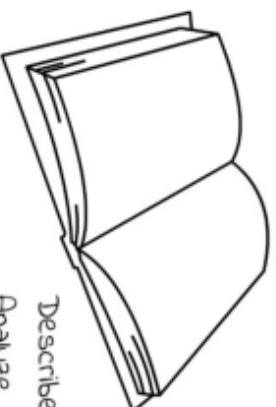
Alternatives

- Gentle yoga
- Stretching



Exercise your brain

- Cognitive training
- Active journaling
- Learn something new (language, music..)
- Regular mental exercise
- Coaching for cognitive rehabilitation



Describe events, thoughts, feelings
Analyze, interpret, integrate
Concise, organized
grammar, spelling



Avoid toxics

- Reduce psychotropic medication if possible
 - ! Pain
 - ! Depression
 - ! Fatigue
- Avoid illicit drugs and alcohol use



<https://www.social europe.eu/which-comes-first-big-toxics-profits-or-health>

~~no limits!~~

KNOW

your limits.

www.lesspitymoreparty.com

Adapt

- Get enough rest
- Plan according to your energy
 - Do your most important things when your energy is the highest
 - Avoid multi-tasking
- Use external devices to compensate
 - Notebooks
 - Smartphone
 - GPS
 - Tiles
- Adapt your work/study place
 - Sound reduction
 - Plan extra time to get things done
 - Partner with a colleague



BMT infonet Survivorship Symposium 2021

Coping with Attention, Learning and Memory Problems after Transplant, Shelli Kesler, University of Texas

accessed Nov 2023

<https://blogs.nottingham.ac.uk/studentlife/2019/03/21/knowning-your-limits/>

Conclusion

- Neurocognitive dysfunction is **frequent** after allogeneic transplantation (about 40%)
- It is a **mild** disease
- Detection methods can help to identify the **main concern** and **reassure** that there is no dementia or structural problem.
- **Regular physical & mental activity** are the best treatment
- **Accept, Adapt and...**





Thank you for your
cognitive effort during
this lecture!