Behavioural change

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Neuropsychiatric symptoms

Pose a major challenge for patients – and their carers

- Behavioural and psychological symptoms are most difficult symptoms for patients and caregivers to deal with. They can cause a great deal of distress.

"I can cope with the memory problems, but what I find very difficult is that my husband thinks I'm having an affair with the neighbour. He's always suspicious that there's someone else in the house at night. He gets agitated and hits me."

- Treating these symptoms can make a real difference to reduce stress for patients and their families and improve quality of life.
- Neurobiology for most symptoms poorly understood but there is progress on some fronts.

Neuropsychiatric symptoms (NPS)

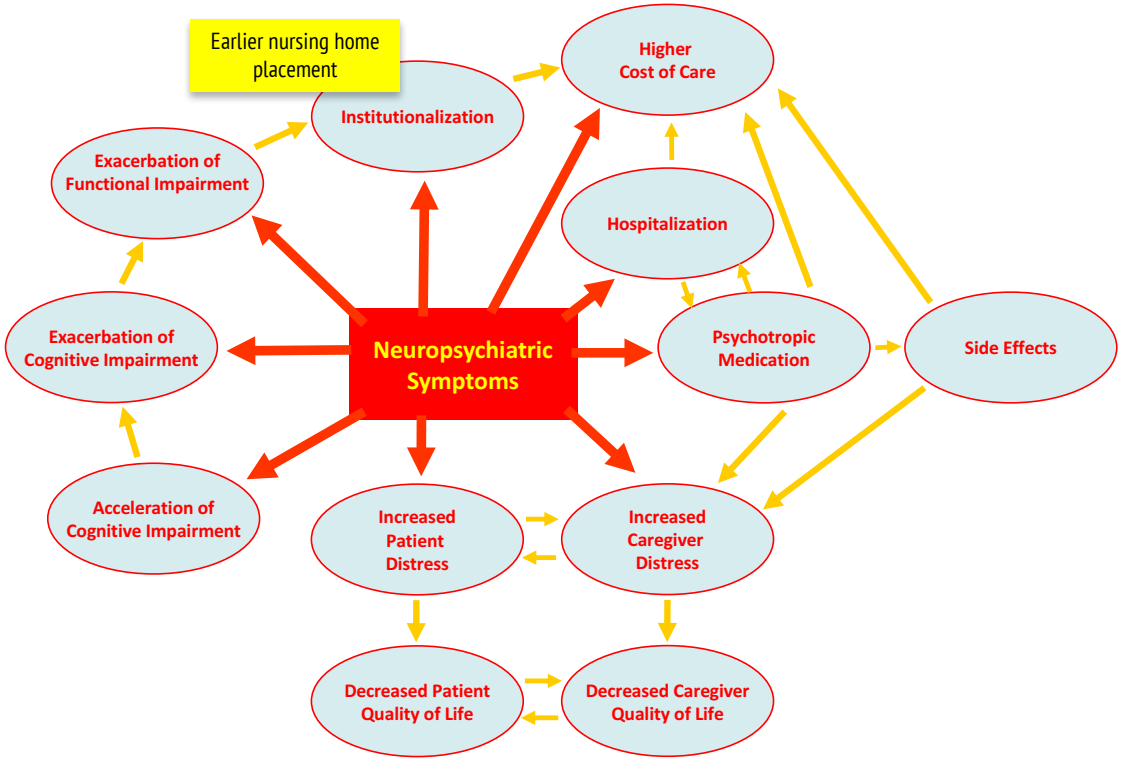
What are they?

- Aggression
- Agitation
- Anxiety
- Apathy
- Appetite / eating changes
- Delusions
- Depression or dysphoria
- Disinhibition
- Euphoria
- Hallucinations
- Irritability or lability
- Motor disturbance or stereotyped behaviours
  - *Pacing, wandering, picking, rummaging*
- Night-time behaviours and sleep disturbance

DOMAIN	N/A[1]	ABSENT	FREQUENCY	SEVERITY	FREQUENCY X SEVERITY	CAREGIVER DISTRESS
		0	1 2 3 4	1 2 3		0 1 2 3 4 5
A. Delusions	☐	☐	☐☐☐☐	☐☐☐	☐☐	☐☐☐☐☐☐
B. Hallucinations	☐	☐	☐☐☐☐	☐☐☐	☐☐	☐☐☐☐☐☐
C. Agitation/Aggression	☐	☐	☐☐☐☐	☐☐☐	☐☐	☐☐☐☐☐☐
D. Depression/Dysphoria	☐	☐	☐☐☐☐	☐☐☐	☐☐	☐☐☐☐☐☐
E. Anxiety	☐	☐	☐☐☐☐	☐☐☐	☐☐	☐☐☐☐☐☐
F. Elation/Euphoria	☐	☐	☐☐☐☐	☐☐☐	☐☐	☐☐☐☐☐☐
G. Apathy/Indifference	☐	☐	☐☐☐☐	☐☐☐	☐☐	☐☐☐☐☐☐
H. Disinhibition	☐	☐	☐☐☐☐	☐☐☐	☐☐	☐☐☐☐☐☐
I. Irritability/Lability	☐	☐	☐☐☐☐	☐☐☐	☐☐	☐☐☐☐☐☐
J. Aberrant Motor Behavior	☐	☐	☐☐☐☐	☐☐☐	☐☐	☐☐☐☐☐☐
TOTAL SCORE:					☐☐☐	☐☐
K. Sleep and Nighttime Behavior Disorders	☐	☐	☐☐☐☐	☐☐☐	☐☐	☐☐☐☐☐☐
L. Appetite/Eating Changes	☐	☐	☐☐☐☐	☐☐☐	☐☐	☐☐☐☐☐☐

Consequences of neuropsychiatric symptoms

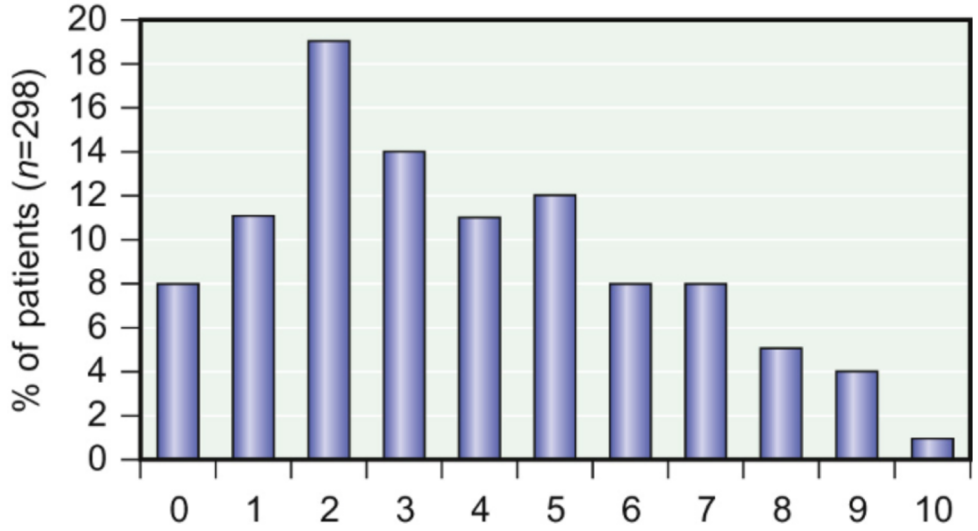
Major impact on patients, families, medical staff and economy



Wint & Cummings (2016) in Husain & Schott
Oxford Textbook of Cognitive Neurology & Dementia

Frequency of one or more NPS

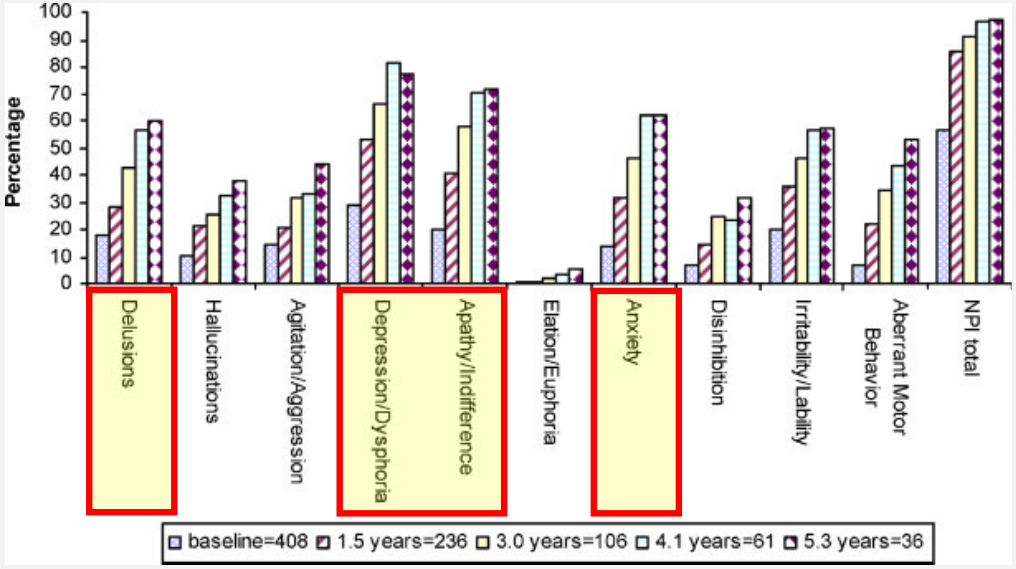
Most patients suffer more than one or more neuropsychiatric symptom



Cummings (2003) *The Neuropsychiatry of Alzheimer's disease and Related Dementias*

Prevalence of neuropsychiatric symptoms

Cache County (Utah) study | *N*= 408 cases with dementia



Steinberg *et al* (2008) *Int J Geriatr Psychiatry*

Prevalence of neuropsychiatric symptoms

European Alzheimer Disease Consortium | *N*=2354 cases with Alzheimer's

Table 2. Mean NPI scores (severity × frequency: range = 0–12) and percentage of patients with symptoms

NPI items	Mean and SD	Patients with symptom (score >3)	
		%	n
Delusions	1.5 ± 2.8	19.4	457
Hallucinations	0.7 ± 2.1	9.1	213
Agitation	2.3 ± 3.1	31.1	732
Depression	2.8 ± 3.4	36.7	863
Anxiety	2.7 ± 3.3	37.0	871
Euphoria	0.4 ± 1.4	4.9	115
Apathy	4.2 ± 3.8	55.2	1,299
Disinhibition	0.8 ± 2.2	9.5	224
Irritability	2.4 ± 3.1	32.1	756
Aberrant motor behaviour	2.0 ± 3.4	27.5	647
Night-time behaviour disturbances	1.5 ± 2.9	19.5	427
Appetite and eating abnormalities	1.7 ± 3.2	21.8	477

- Scores > 3 in a symptom considered to be clinically relevant

Aalten *et al* (2007) *Dement Geriatr Cogn Disord*

Prevalence of neuropsychiatric symptoms

European Alzheimer Disease Consortium | *N*=2354 cases with Alzheimer's

Factor loading

	Factor 1: hyperactivity	Factor 2: psychosis	Factor 3: affective	Factor 4: apathy
Delusions	0.294	*0.707*	0.063	–0.018
Hallucinations	0.134	*0.808*	0.054	–0.011
Agitation	*0.700*	0.112	0.274	0.036
Depression	0.069	0.052	*0.728*	0.206
Anxiety	0.154	0.141	*0.706*	0.023
Euphoria	*(0.359)*	0.049	–0.355	0.207
Apathy	0.121	–0.141	0.184	*0.629*
Disinhibition	*0.682*	0.139	–0.119	0.030
Irritability	*0.707*	0.093	0.278	0.026
Aberrant motor behaviour	*0.432*	0.222	–0.118	(0.412)
Night-time behaviour disturbances	–0.054	*0.510*	0.157	(0.431)
Appetite and eating abnormalities	0.000	0.105	–0.011	*0.705*
Eigenvalues	2.772	1.264	1.117	1.063
Variance, %	23.10	10.54	9.31	8.86

- Factor analysis demonstrated four factors that accounted for 52% of variance in data

Aalten *et al* (2007) *Dement Geriatr Cogn Disord*

Caregiver burden

Systematic review | Total *N*=2835 cases with dementia

Symptoms that impact most on caregivers

- Irritability
- Agitation/aggression
- Sleep disturbance
- Anxiety
- Apathy
- Delusions

Terum *et al* (2017) *Int J Geriatr Psychiatry*

Neuropsychiatric Inventory (NPI)

Developed by Jeff Cummings | Downloadable from npitest.net

DOMAIN	N/A[1]	ABSENT	FREQUENCY	SEVERITY	FREQUENCY X SEVERITY	CAREGIVER DISTRESS
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C. Agitation/Aggression	☐	☐	☐☐☐☐	☐☐☐	☐☐	☐☐☐☐☐☐
D. Depression/Dysphoria	☐	☐	☐☐☐☐	☐☐☐	☐☐	☐☐☐☐☐☐
E. Anxiety	☐	☐	☐☐☐☐	☐☐☐	☐☐	☐☐☐☐☐☐
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L. Appetite/Eating Changes	☐	☐	☐☐☐☐	☐☐☐	☐☐	☐☐☐☐☐☐

NPI questions for disinhibition

Then get them to rate frequency and severity, and level of distress to them

H. DISINHIBITION **(NA)**

Does the patient seem to act impulsively without thinking? Does he/she do or say things that are not usually done or said in public? Does he/she do things that are embarrassing to you or others?

☐ Yes (if yes, please proceed to subquestions)
☐ No (if no, please proceed to next screening question) ☐ N/A

1. Does the patient act impulsively without appearing to consider the consequences?	☐ Yes	☐ No
2. Does the patient talk to total strangers as if he/she knew them?	☐ Yes	☐ No
3. Does the patient say things to people that are insensitive or hurt their feelings?	☐ Yes	☐ No
4. Does the patient say crude things or make sexual remarks that he/she would not usually have said?	☐ Yes	☐ No
5. Does the patient talk openly about very personal or private matters not usually discussed in public?	☐ Yes	☐ No
6. Does the patient take liberties or touch or hug others in way that is out of character for him/her?	☐ Yes	☐ No
7. Does the patient show any other signs of loss of control of his/her impulses?	☐ Yes	☐ No

If the screening question is confirmed, determine the frequency and severity of the disinhibition.

Cambridge Behavioural Inventory

Rapid screening – without interview – completed by an informant

Cambridge Behavioural Inventory Revised (CBI-R)

For the Carer

Your Name:_____ Today's date:___/___/___
Patient's name: _____Relationship to the patient_____

We would like to ask you a number of questions about various changes in the patient's behaviour that you may have noticed. It is important that we obtain your view as it will help us in our assessment.
Please read the description of each problem carefully. Then circle the number under the heading "Frequency" that best describes the occurrence of the behavioural change.
Some of the everyday skill questions may not apply, if for instance the person you care for has never done the shopping. Please enter N/A (not applicable).

All questions apply to the patient's behaviour OVER THE PAST MONTH.

0 Never	1 a few times per month	2 a few times per week	3 daily	4 constantly

	FREQUENCY				
Memory and Orientation					
Has poor day-to-day memory (e.g. about conversations, trips etc.)	0	1	2	3	4
Asks the same questions over and over again	0	1	2	3	4
Loses or misplaces things	0	1	2	3	4
Forgets the names of familiar people	0	1	2	3	4
Forgets the names of objects and things	0	1	2	3	4
Shows poor concentration when reading or watching television	0	1	2	3	4
Forgets what day it is	0	1	2	3	4
Becomes confused or muddled in unusual surroundings	0	1	2	3	4
Everyday Skills					
Has difficulties using electrical appliances (e.g. TV, radio, cooker, washing machine)	0	1	2	3	4
Has difficulties writing (letters, Christmas cards, lists etc.)	0	1	2	3	4
Has difficulties using the telephone	0	1	2	3	4
Has difficulties making a hot drink (e.g. tea/coffee)	0	1	2	3	4
Has problems handling money or paying bills	0	1	2	3	4
Self Care					
Has difficulties grooming self (e.g. shaving or putting on make-up)	0	1	2	3	4
Has difficulties dressing self	0	1	2	3	4
Has problems feeding self without assistance	0	1	2	3	4
Has problems bathing or showering self	0	1	2	3	4
Abnormal Behaviour					
Finds humour or laughs at things others do not find funny	0	1	2	3	4
Has temper outbursts	0	1	2	3	4
Is uncooperative when asked to do something	0	1	2	3	4
Shows socially embarrassing behaviour	0	1	2	3	4
Makes tactless or suggestive remarks	0	1	2	3	4
Acts impulsively without thinking	0	1	2	3	4

Cambridge Behavioural Inventory Revised (CBI-R)

0 Never	1 a few times per month	2 a few times per week	3 daily	4 constantly

Mood					
Cries	0	1	2	3	4
Appears sad or depressed	0	1	2	3	4
Is very restless or agitated	0	1	2	3	4
Is very irritable	0	1	2	3	4
Beliefs					
Sees things that are not really there (visual hallucinations)	0	1	2	3	4
Hears voices that are not really there (auditory hallucinations)	0	1	2	3	4
Has odd or bizarre ideas that cannot be true	0	1	2	3	4
Eating Habits					
Prefers sweet foods more than before	0	1	2	3	4
Wants to eat the same foods repeatedly	0	1	2	3	4
Her/his appetite is greater, s/he eats more than before	0	1	2	3	4
Table manners are declining e.g. stuffing food into mouth	0	1	2	3	4
Sleep					
Sleep is disturbed at night	0	1	2	3	4
Sleeps more by day than before (cat naps etc.)	0	1	2	3	4
Stereotypic and Motor Behaviours					
Is rigid and fixed in her/his ideas and opinions	0	1	2	3	4
Develops routines from which s/he can not easily be discouraged e.g. wanting to eat or go for walks at fixed times	0	1	2	3	4
Clock watches or appears pre-occupied with time	0	1	2	3	4
Repeatedly uses the same expression or catch phrase	0	1	2	3	4
Motivation					
Shows less enthusiasm for his or her usual interests	0	1	2	3	4
Shows little interest in doing new things	0	1	2	3	4
Fails to maintain motivation to keep in contact with friends or family	0	1	2	3	4
Appears indifferent to the worries and concerns of family members	0	1	2	3	4
Shows reduced affection	0	1	2	3	4

Any other comments:

Cambridge Behavioural Inventory

Rapid screening – without interview – completed by an informant

Examples

Abnormal Behaviour					
Finds humour or laughs at things others do not find funny	0	1	2	3	4
Has temper outbursts	0	1	2	3	4
Is uncooperative when asked to do something	0	1	2	3	4
Shows socially embarrassing behaviour	0	1	2	3	4
Makes tactless or suggestive remarks	0	1	2	3	4
Acts impulsively without thinking	0	1	2	3	4

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Shows reduced affection	0	1	2	3	4

Taking the history properly

Requires information from patient and informant | Screening questions of NPI can act as prompts

Delusions	Does the patient have false beliefs, such as thinking that others are stealing from him/her or planning to harm him/her in some way?
Hallucinations	Does the patient have hallucinations such as false visions or voices? Does he or she seem to hear or see things that are not present?
Agitation/Aggression	Is the patient resistive to help from others at times, or hard to handle?
Depression/Dysphoria	Does the patient seem sad or say that he /she is depressed?
Anxiety	Does the patient become upset when separated from you? Doeshe/she have any other signs of nervousness such as shortness of breath, sighing, being unable to relax, or feeling excessively tense?

Taking the history properly

Requires information from patient and informant | Screening questions of NPI can act as prompts

Elation/Euphoria	Does the patient appear to feel too good or act excessively happy?
Apathy/Indifference	Does the patient seem less interested in his/her usual activities or in the activities and plans of others?
Disinhibition	Does the patient seem to act impulsively, for example, talking to strangers as if he/she knows them, or saying things that may hurt people's feelings?
Irritability/Lability	Is the patient impatient and cranky? Does he/she have difficulty coping with delays or waiting for planned activities?
Motor Disturbance	Does the patient engage in repetitive activities such as pacing around the house, handling buttons, wrapping string, or doing other things repeatedly?

Behavioural change is the defining feature of bvFTD

Diagnostic criteria for behavioural variant frontotemporal dementia

Possible bvFTD

Three of the features (A–F) must be present; symptoms should occur repeatedly, not just as a single instance:

A Early (3 years) behavioural disinhibition
B Early (3 years) apathy or inertia
C Early (3 years) loss of sympathy or empathy
D Early (3 years) perseverative, stereotyped, or compulsive/ritualistic behaviour
E Hyperorality and dietary changes
F Neuropsychological profile: executive function deficits with relative sparing of memory and visuospatial functions

Probable bvFTD

All the following criteria must be present to meet diagnosis:

A Meets criteria for possible bvFTD
B Significant functional decline
C Imaging results consistent with bvFTD (frontal and/or anterior temporal atrophy on CT or MRI or frontal hypoperfusion or hypometabolism on SPECT or PET)

Definite bvFTD

Criteria A and either B or C must be present to meet diagnosis:

A Meets criteria for possible or probable bvFTD
B Histopathological evidence of FTLD on biopsy at post mortem
C Presence of a known pathogenic mutation

Exclusion criteria for bvFTD

Criteria A and B must both be answered negatively; criterion C can be positive for possible bvFTD but must be negative for probable bvFTD:

A Pattern of deficits is better accounted for by other non-degenerative nervous system or medical disorders
B Behavioural disturbance is better accounted for by a psychiatric diagnosis
C Biomarkers strongly indicative of Alzheimer's disease or other neurodegenerative process

Behavioral variant frontotemporal dementia

Is one of the three types of frontotemporal dementia (FTD)

Behavioral-Dysexecutive FTD	Progressive Nonfluent Aphasia	Semantic Dementia
Clinical Features		
Change in personality and behavior that results in impairment in social interpersonal conduct, with emotional blunting, loss of insight, and the absence of prominent anterograde amnesia	Prominent difficulty with expressive speech characterized by nonfluency, speech hesitancy, word-finding difficulty, labored speech, apraxia of speech, phonemic paraphasias, and agrammatism; the absence of prominent anterograde amnesia	Prominent loss of vocabulary and anomia affecting expressive speech and impairment of comprehension of word meaning in the context of fluent speech production; the absence of prominent anterograde amnesia
Neuropsychological features consistent with diagnosis		
Prominent executive deficits; relatively preserved learning and delayed recall; relatively preserved visuospatial functions	Prominent deficits in spontaneous speech; deficits in verbal fluency and naming; relatively preserved learning and delayed recall; relatively preserved visuospatial functions	Prominent anomia and impaired semantic knowledge; relatively preserved learning and delayed recall; relatively preserved visuospatial functions
Structural Imaging features consistent with diagnosis		
Focal asymmetric or symmetric cortical atrophy of the anterior temporal and/or prefrontal regions	Focal cortical atrophy of anterior temporal lobe or prefrontal regions greater left than right	Focal cortical atrophy of anterior temporal lobe greater left than right
Functional Imaging features consistent with diagnosis		
Focal asymmetric or symmetric frontal and/or temporal hypoperfusion	Focal frontal and/or temporal hypoperfusion, left greater than right	Focal frontal and/or temporal hypoperfusion, left greater than right

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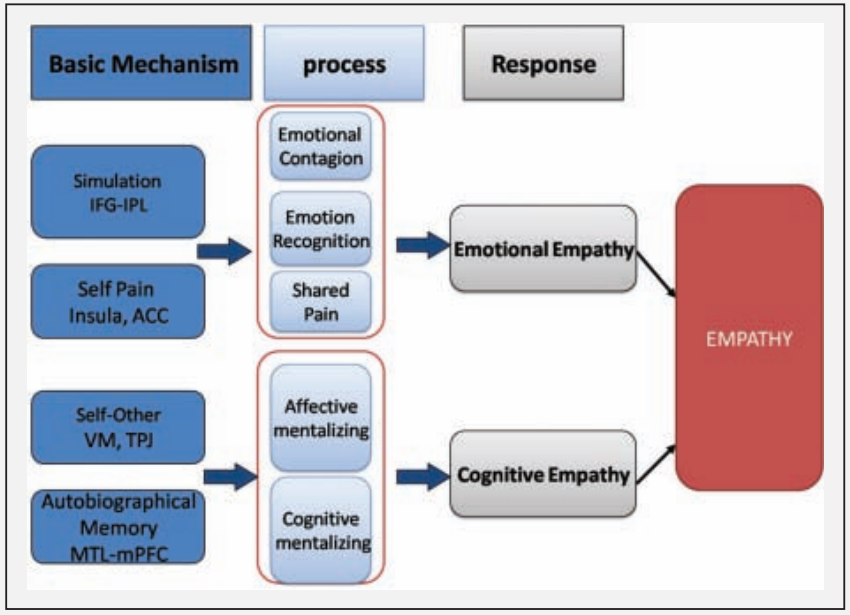
Loss of empathy can be a key feature – not captured by Neuropsychiatric Inventory

What is empathy?

Different definitions for different investigators

- One perspective distinguishes between emotional and cognitive empathy
- The emotional and cognitive responses of an individual to the experiences of others



- **Emotional empathy:** capacity to experience affective reactions to the observed experiences of others or share a "fellow feeling"
- **Cognitive empathy:** capacity to engage in the cognitive process of adopting another's psychological point of view

Empathic concern is one measures of emotional empathy

Assessed by the Interpersonal Reactivity Index

- Rate on a 5-interval scale how these statements describe you: A [Does not describe me well].....through to E [Very well]

- I often have tender, concerned feelings for people less fortunate than me
- Sometimes I don't feel very sorry for other people when they are having problems
- When I see someone being taken advantage of, I feel kind of protective towards them
- Other people's misfortunes do not usually disturb me a great deal
- When I see someone being treated unfairly, I sometimes don't feel very much pity for them
- I am often quite touched by things that I see happen
- I would describe myself as a pretty soft-hearted person

Perspective taking is one measure of cognitive empathy

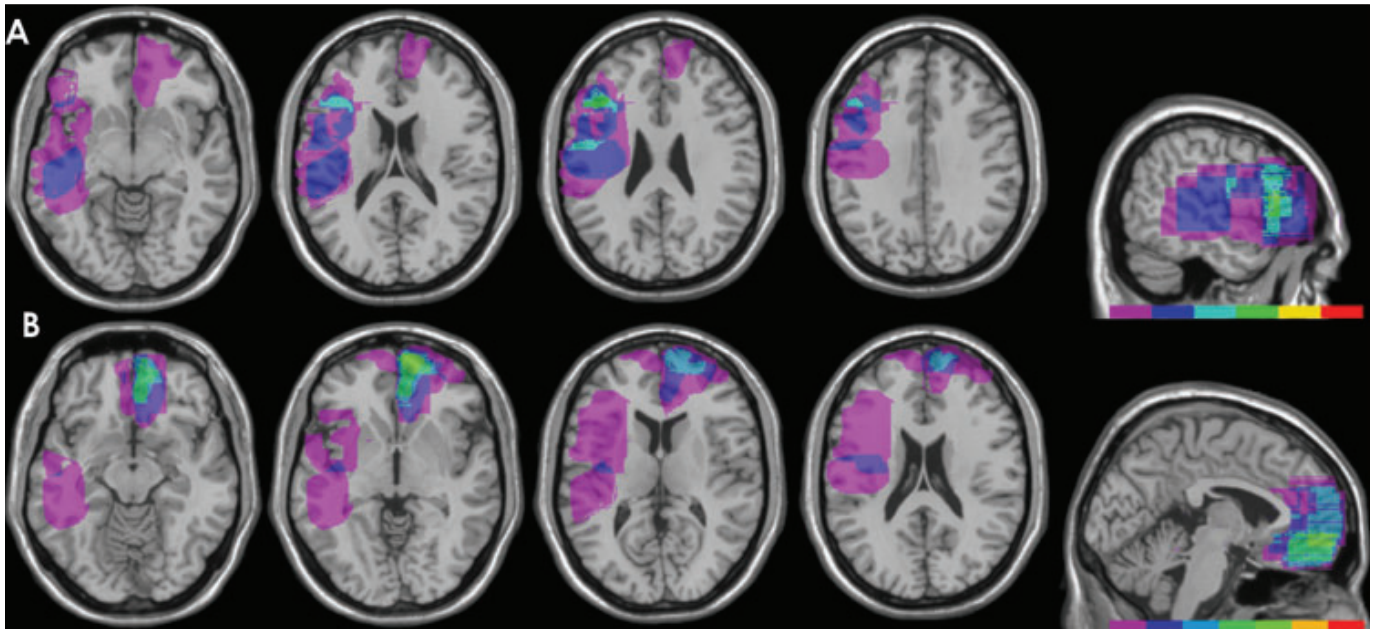
Assessed by the Interpersonal Reactivity Index

- Rate on a 5-interval scale how these statements describe you: A [Does not describe me well].....through to E [Very well]

- I sometimes find it difficult to see things from the "other guy's" point of view
- I try to look at everybody's side of a disagreement before I make a decision
- I sometimes try to understand my friends better by imagining how things look from their perspective
- If I'm sure I'm right about something, I don't waste much time listening to other people's arguments
- Before criticizing somebody, I try to imagine how I would feel if I were in their place
- I believe that there are two sides to every question and try to look at them both.
- When I'm upset at someone, I usually try to "put myself in his shoes" for a while

Emotional and cognitive empathy are dissociable

In patients with focal brain lesions



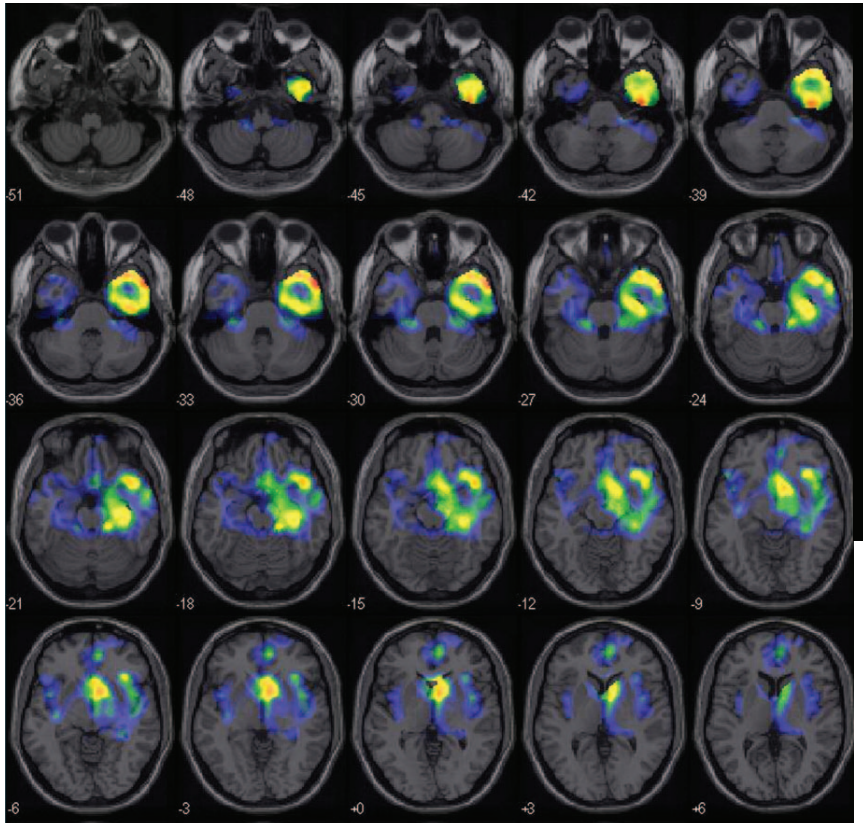
Empathic concern

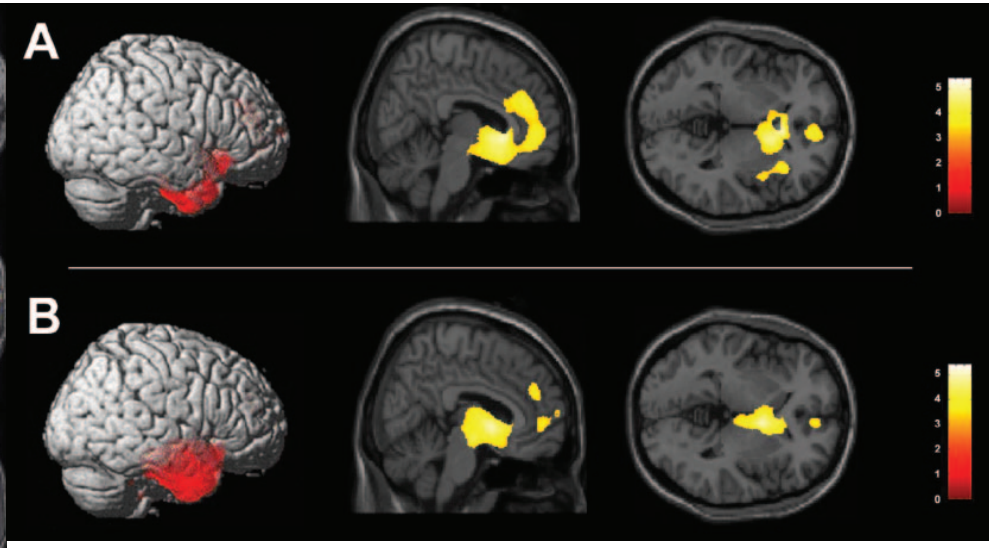
Perspective taking

Shamay-Tsoory *et al* (2009) *Brain*

Altered empathy in FTD

Associated with atrophy in a right hemisphere system | temporal pole, insula and medial frontal regions



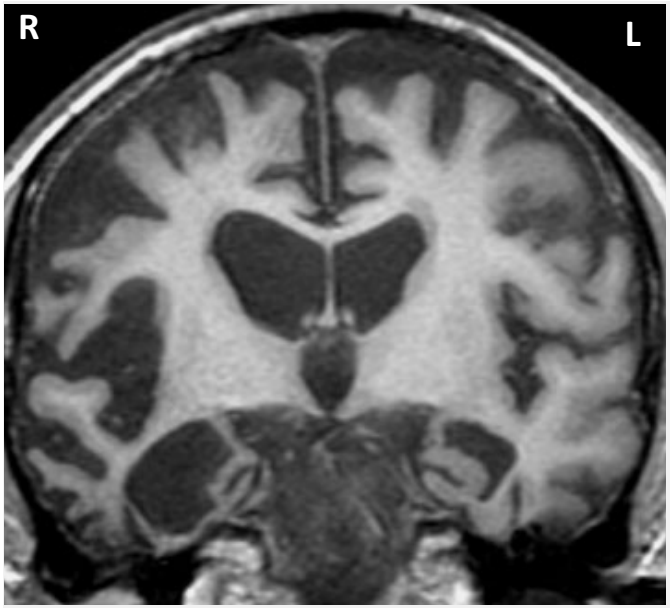


Based on Interpersonal Reactivity Index but using informants' assessments of patients' behaviour

Rankin *et al* (2006) *Brain*

An FTD syndrome associated with right temporal atrophy

In a pattern which is close to a 'mirror image' of semantic dementia patients



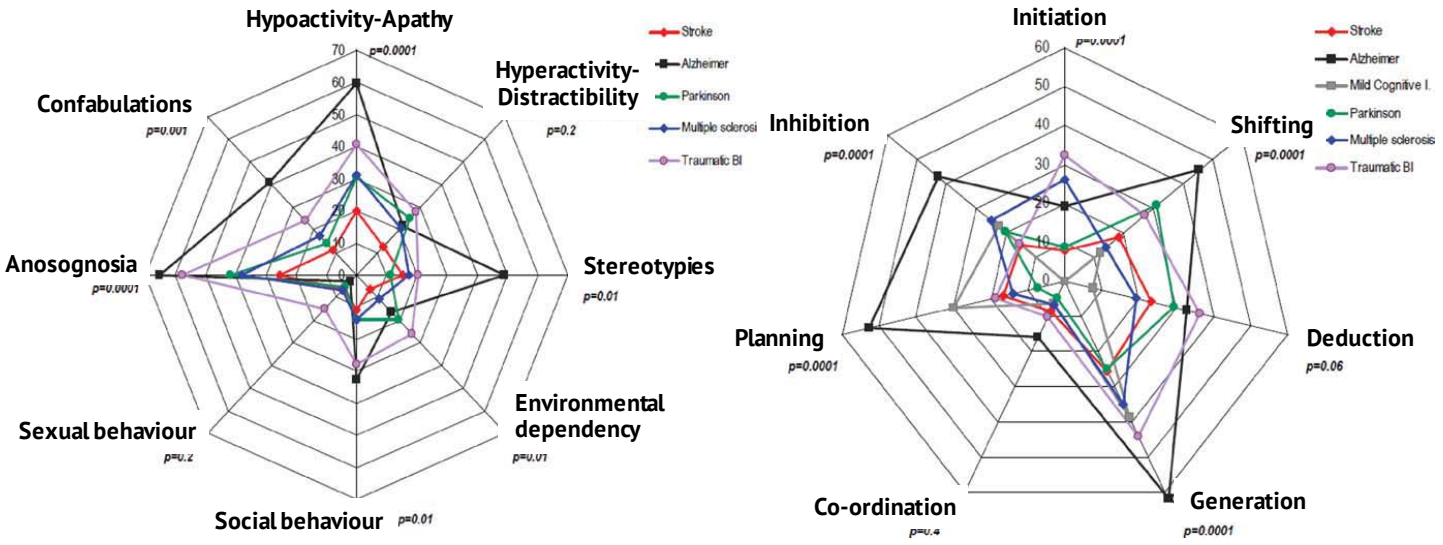
A frontotemporal dementia syndrome associated with striking right temporal lobe atrophy and

- Prosopagnosia
- Topographical disorientation
- Disinhibition
- Apathy
- Loss of empathy
- Hyper-religiosity
- Aggression

Chan *et al* (2009) *Brain*

Behavioral change can be feature of dysexecutive syndrome

Dysexecutive syndrome associated with both behavioural and cognitive deficits



Godefroy *et al* (2010) *Ann Neurol*

Is behavioural change accounted for by cognitive deficits?

- In other words, is the ***behavioural change*** in the dysexecutive syndrome simply attributable to the deficits in ***cognitive control*** measured – and operationally defined – by performance on neuropsychological or experimental tasks?

- Theoretically, what might we need to make a claim to the contrary?

- Let's examine empathy
- Can deficits in ***empathy*** be explained by deficits in ***cognitive control*** processes?

Empathy in bvFTD assessed using an experimental task

Empathy for pain task probes intentionality and empathic concern (plus other measures)

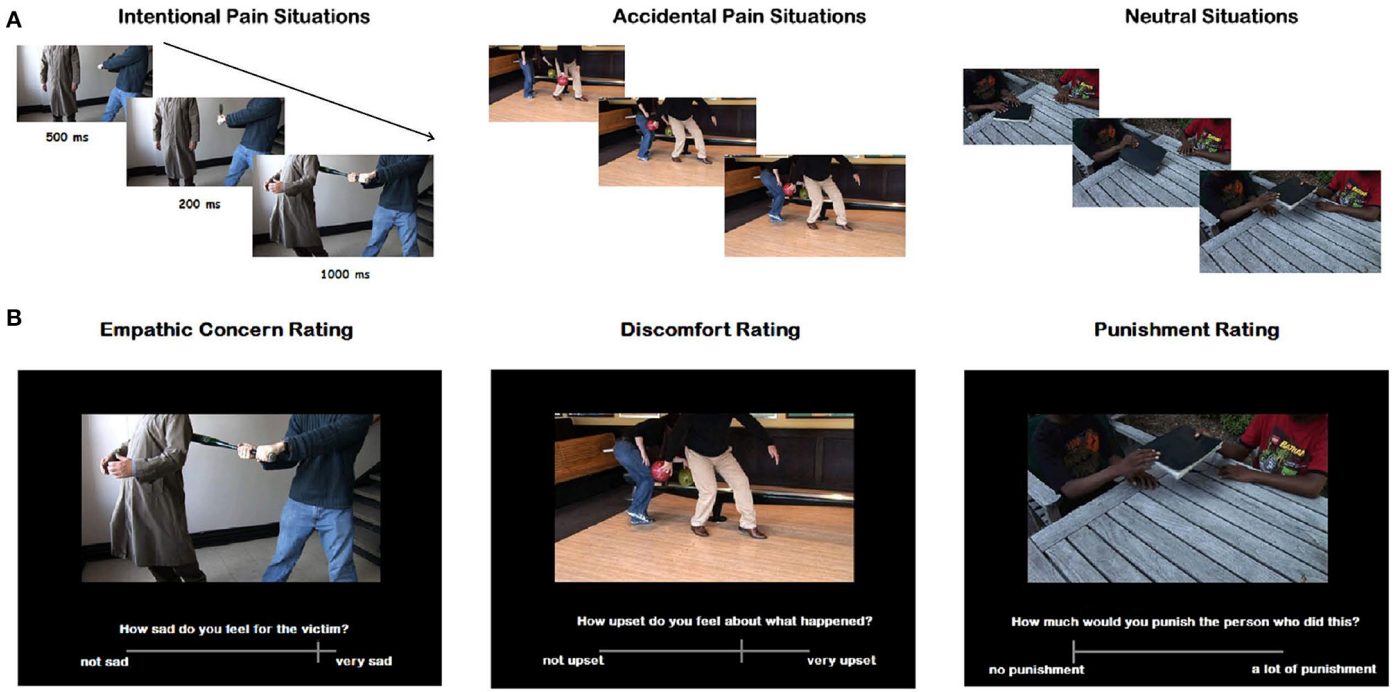
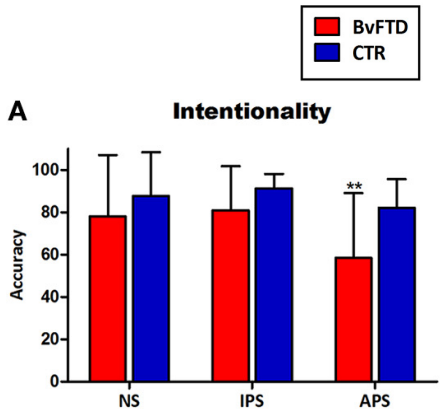


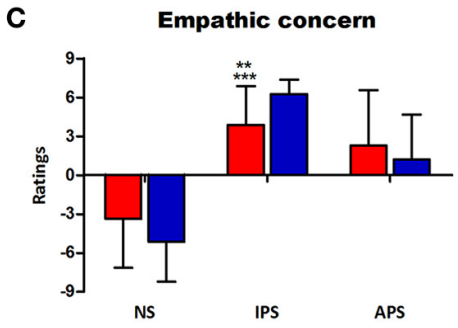
FIGURE 1 | (A) Examples of the visual stimuli used for each category. The durations of the first, second, and third picture were 1000, 200, and 1000 ms, respectively. **(B)** Examples of the questions designed to assess different empathy aspects. Each question was answered using a computer-based visual analog scale.

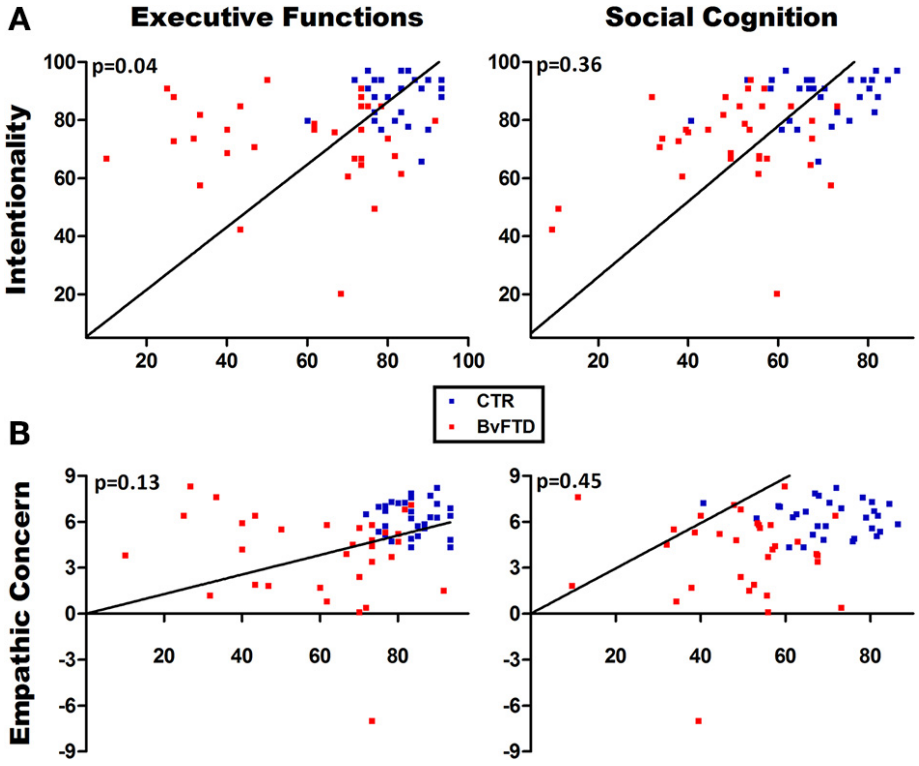
Baez *et al* (2014) *Frontiers in Aging Neuroscience*

Empathic concern not explained by executive function deficit

But intentionality (Was action performed on purpose?) could be accounted for by executive impairments



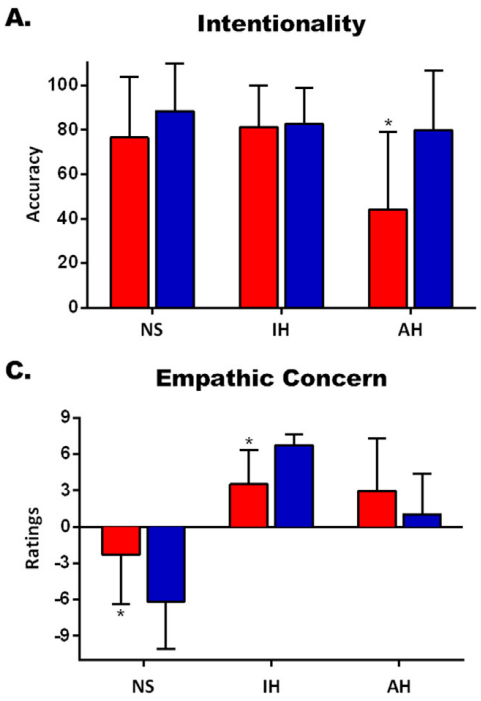


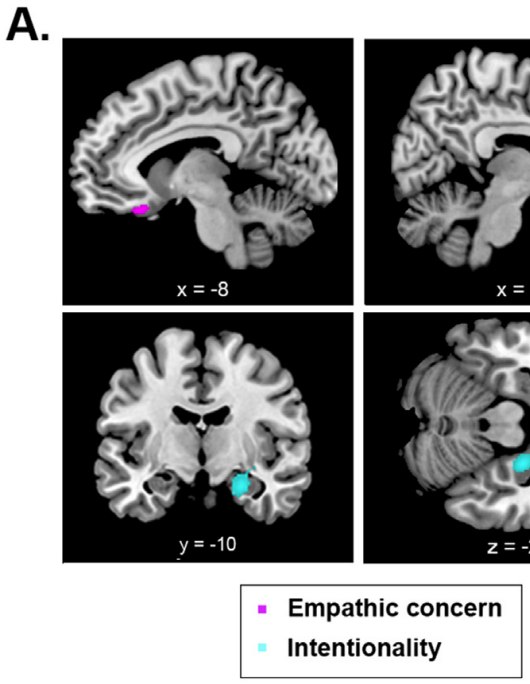


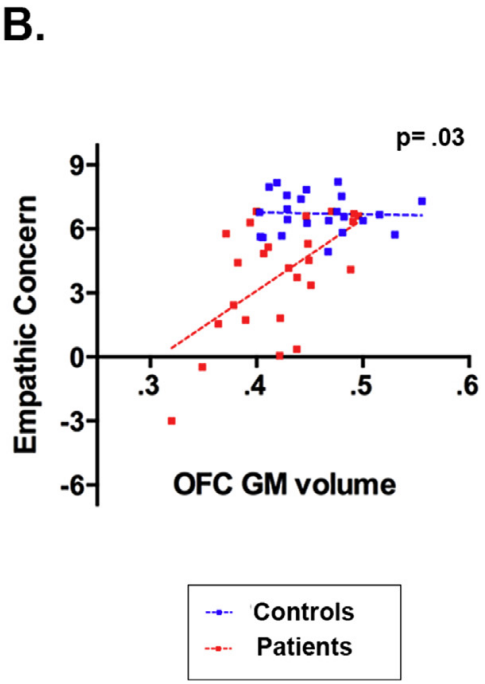
Baez *et al* (2014) *Frontiers in Aging Neuroscience*

Empathic concern in bvFTD related to orbitofrontal cortex

Atrophy here relates to lower scores of empathic concern







Baez *et al* (2016) *Cortex*

Management of behavioural change

How can it be treated?

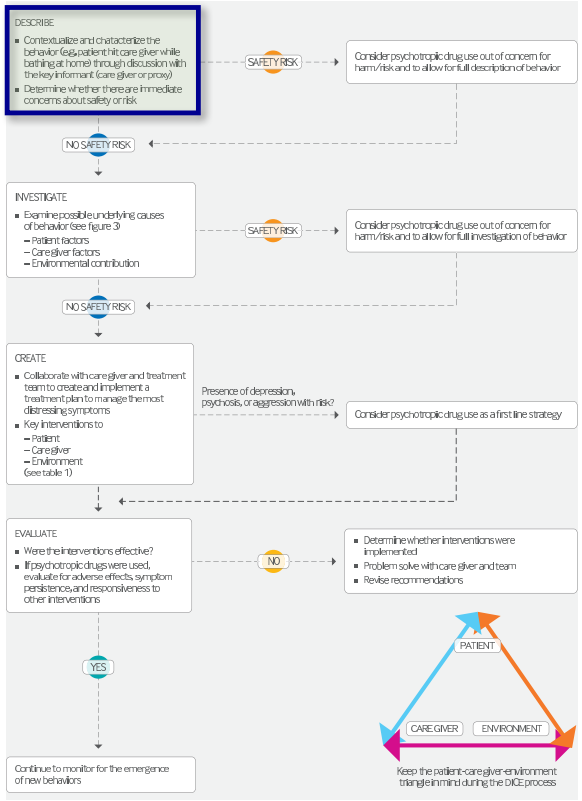
Drug treatments are often not effective

Although they sometimes have to be used as a last resort or for safety of patient, carer or public

Non-pharmacological approaches with strongest evidence base are those that involve family caregiver interventions, e.g,. training given to caregivers by occupational therapists to customize activity based on patient's current & previous interests and cognitive & physical abilities.

DICE Approach to the patient

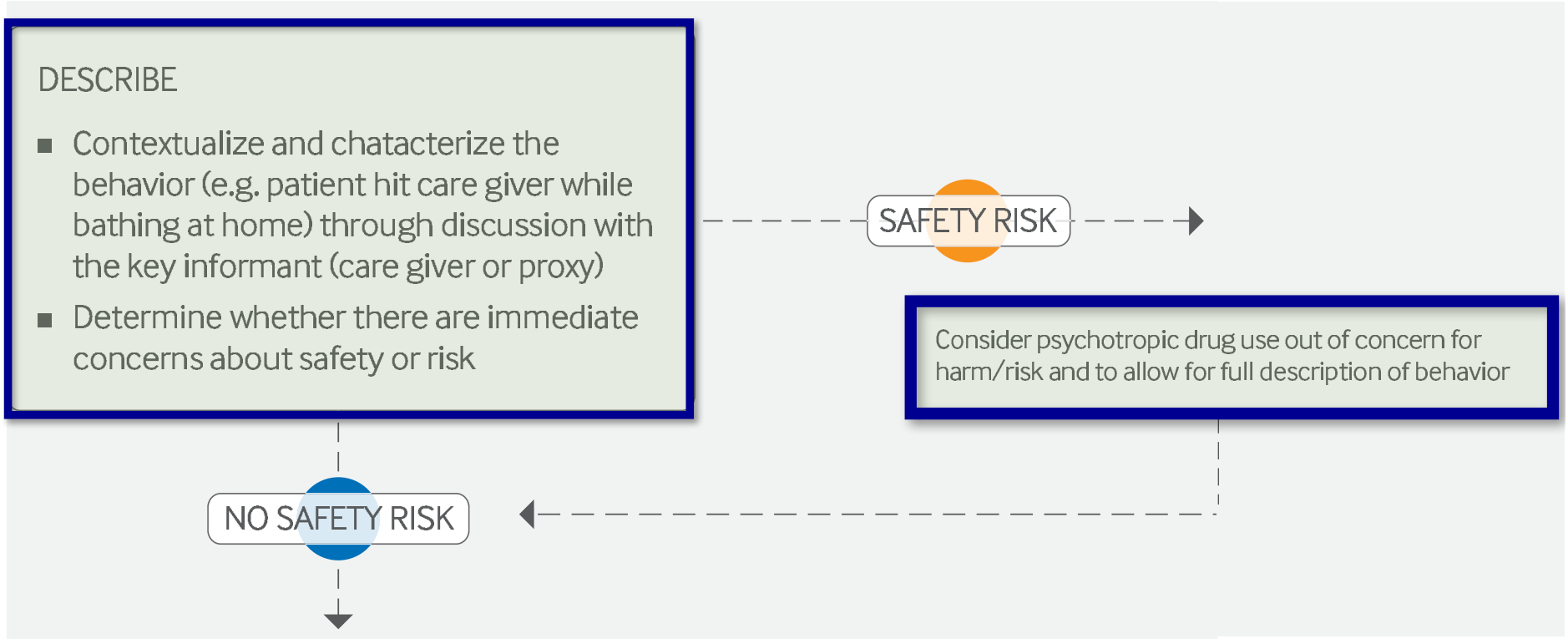
Describe Investigate Create Evaluate



Kales, Gitlin & Lyketsos (2015) *BMJ*

DICE Approach to the patient

D: *Describe the problem*



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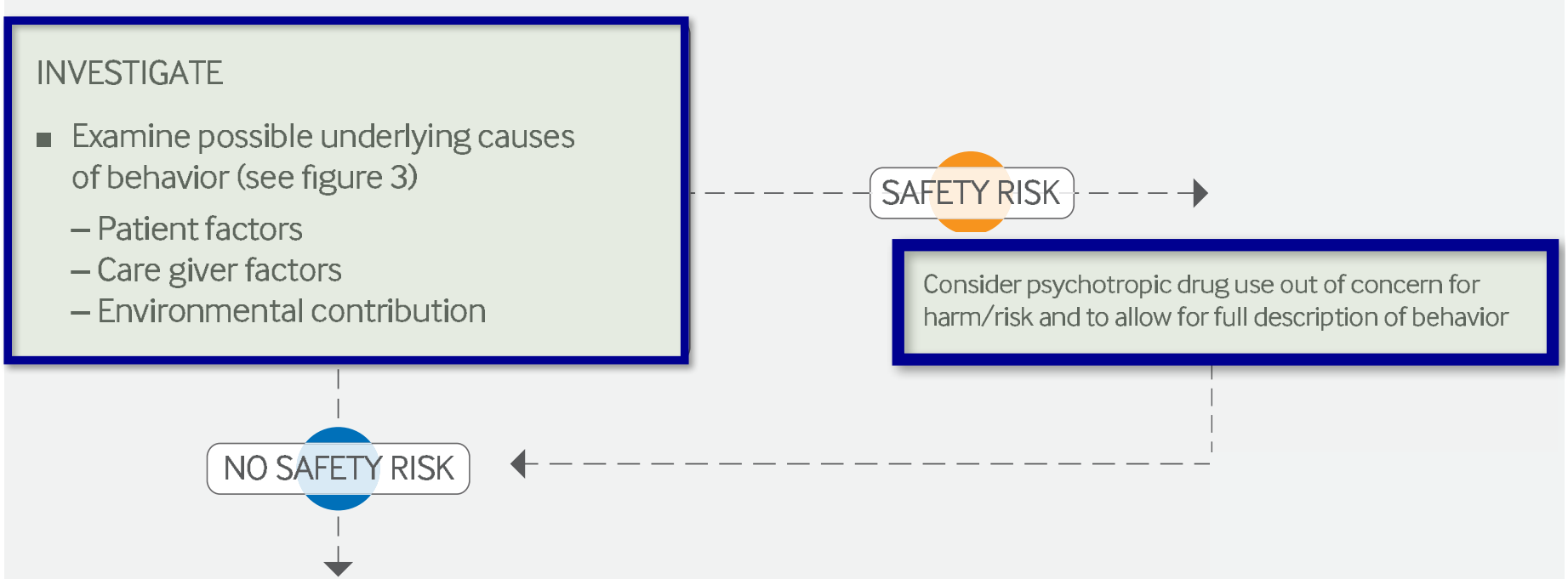
DICE Approach to the patient

I: *Investigate the problem*



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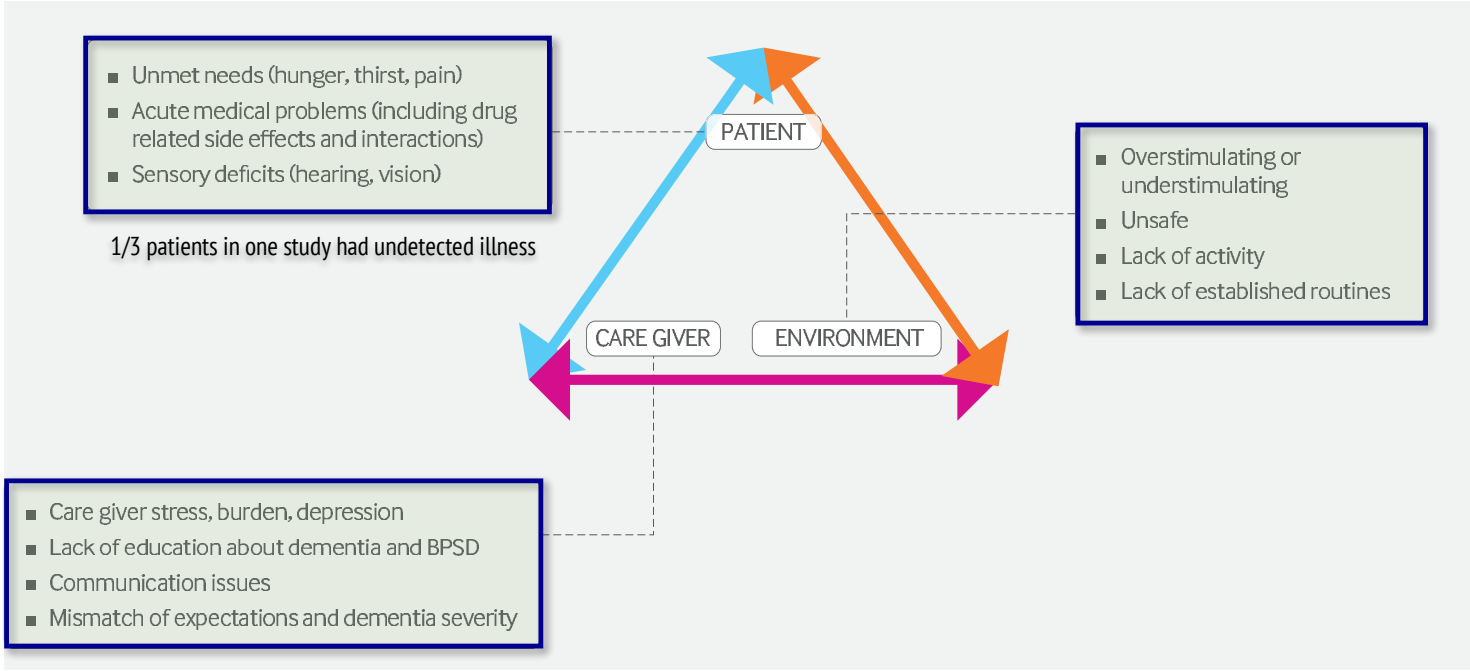
DICE Approach to the patient

Modifiable causes of behavioural and psychological symptoms



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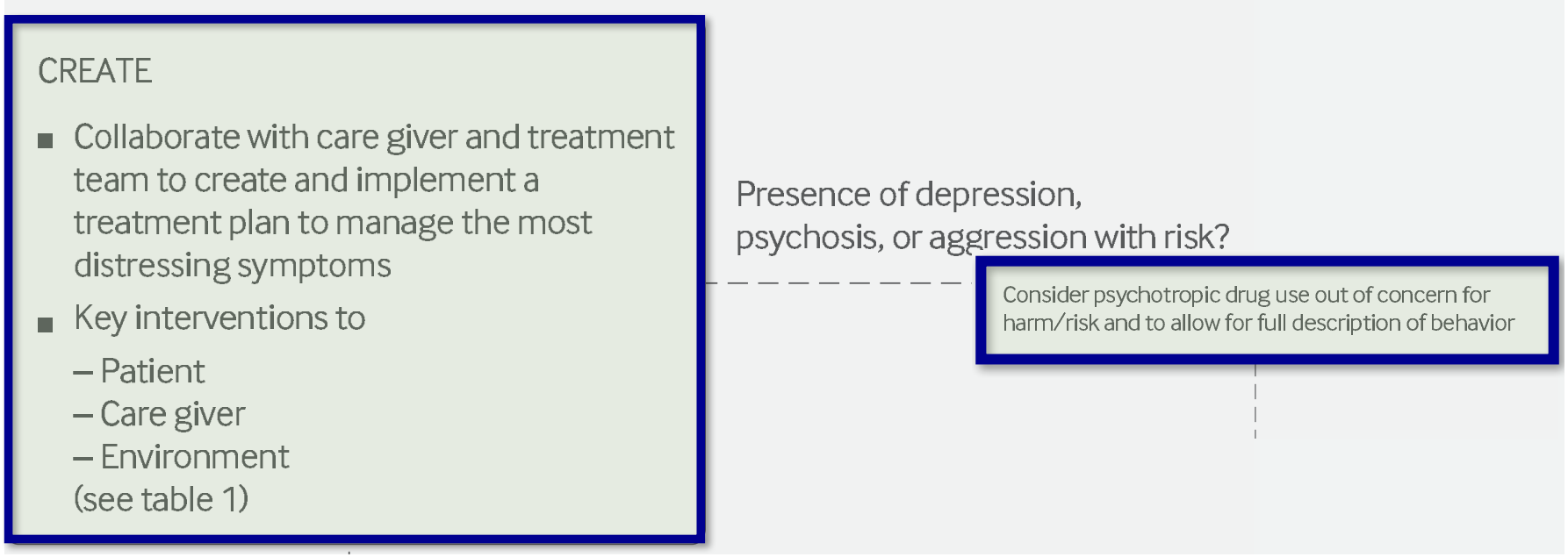
DICE Approach to the patient

C: *Create and implement a treatment plan*



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DICE Approach to the patient

C: *Create and implement a treatment plan*

Modifiable factor	Intervention example
PATIENT	
Unmet needs	• Make sure the person with dementia is getting enough sleep and rest • Deal with fear, hunger, toilet needs
Acute medical problems	Talk to the person's doctor about whether symptoms could have physical (e.g. urinary tract infection or pain) causes or be the result of a drug interaction or side effect
Sensory deficits	Encourage use of eyeglasses or hearing aids; have vision and hearing assessed
CARE GIVER	
Care giver stress, burden, depression	Care givers need to care for themselves by exercising regularly, getting help with care responsibilities, attending their own doctor's appointments, and using stress reduction techniques
Education	Understand that behaviors are not intentional or "on purpose" but are the consequence of a brain disease
Communication	• Use a calm voice • Do not use open ended questions • Keep it simple – do not over explain or discuss what events will be happening in the future • Limit the number of choice offered
ENVIRONMENT	
Overstimulating or understimulating environment	Regulate the amount of stimulation in the home by decluttering the environment, limiting the number of people in the home, and reducing noise by turning off radios and television sets
Unsafe environment	Make sure the person does not have access to anything (e.g. sharp objects) that could cause harm to themselves or others
Lack of activity	• Keep the person engaged in activities that match interests and capabilites • Relax the rules – there is no right or wrong way to perform an activity if the person is safe
Lack of structure or established routines	• Establish daily routines • Changing the time, location, or sequence of dialy activities can trigger outbursts • Allow enough time for activities • Trying to rush activities can also trigger behaviors

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DICE Approach to the patient

C: *Create and implement a treatment plan*

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DICE Approach to the patient

C: *Create and implement a treatment plan*

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Caregiver resources

alzheimer's association®

behaviors

How to respond when dementia causes unpredictable behaviors

2. aggression

Aggressive behavior may be verbal (shouting, name calling) or physical (hitting, pushing). It's important to try to understand what is causing the anger, as it can occur suddenly with no apparent reason or can result from a frustrating situation.

How to respond:

Rule out pain as the cause of the behavior
Pain can cause a person with dementia to act aggressively.

Try to identify the immediate cause
Think about what happened right before, which may have triggered the behavior.

Focus on feelings, not facts
Look for the feelings behind the words or actions.

Try not to get upset
Be positive and reassuring. Speak slowly in a soft tone.

Limit distractions
Examine the person's surroundings and adapt them to avoid other similar situations.

Try a relaxing activity
Use music, massage or exercise to help soothe the person.

Caregiver resources

alzheimer's association®

TAKE CARE OF YOURSELF

HOW TO RECOGNIZE AND MANAGE CAREGIVER STRESS

10 COMMON SIGNS OF CAREGIVER STRESS

1. **Denial** about the disease and its effect on the person who has been diagnosed.
   I know Mom is going to get better.
2. **Anger** at the person with Alzheimer's or frustration that he or she can't do the things they used to be able to do.
   He knows how to get dressed — he's just being stubborn.
3. **Social withdrawal** from friends and activities that used to make you feel good.
   I don't care about visiting with the neighbors anymore.
4. **Anxiety** about the future and facing another day.
   What happens when he needs more care than I can provide?
5. **Depression** that breaks your spirit and affects your ability to cope.
   I just don't care anymore.
6. **Exhaustion** that makes it nearly impossible to complete necessary daily tasks.
   I'm too tired for this.
7. **Sleeplessness** caused by a never-ending list of concerns.
   What if she wanders out of the house or falls and hurts herself?

DICE Approach to the patient

C: *Create and implement a treatment plan*

ENVIRONMENT	
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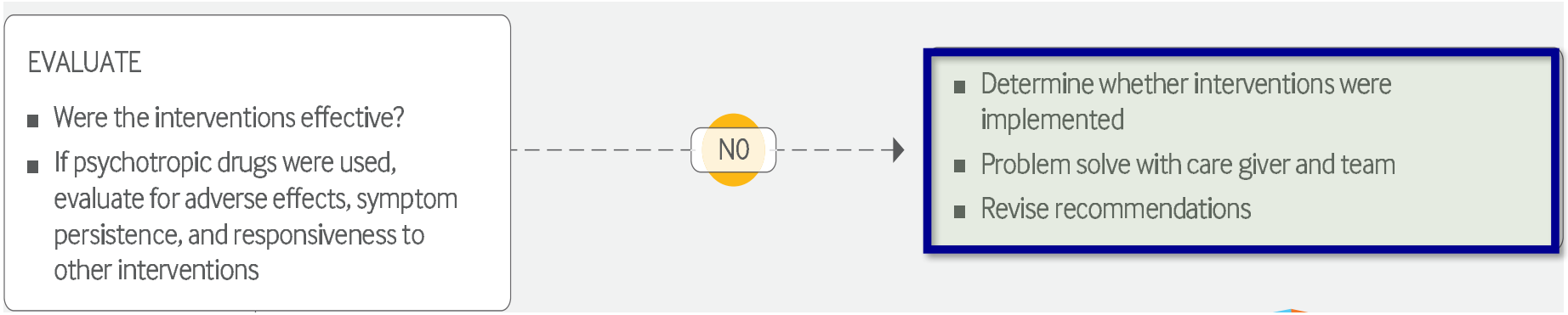
DICE Approach to the patient

E: *Evaluate the effects of treatment plan*



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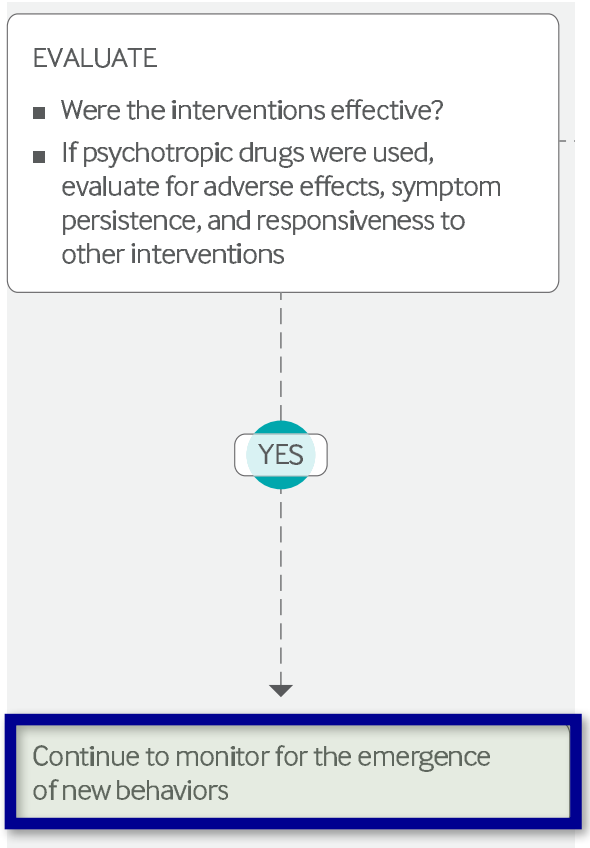
DICE Approach to the patient

E: *Evaluate the effects of treatment plan*



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Drug treatments

Only when really necessary

Antidepressants

- Tricyclics have limited benefit and potential risks
- SSRIs: variable data. Citalopram may be effective for agitation

Antipsychotics

- Variable and poor evidence of efficacy
- Adverse events including increased mortality for both conventional and atypical antipsychotics, but perhaps less for quetiapine

Cholinesterase inhibitors and memantine

- Small but significant effects on neuropsychiatric symptoms

Benozdiazepines

- Evidence lacking for neuropsychiatric symptoms

Mood stabilizers

- Some evidence for use of low dose carbamazepine

New drugs: e.g. Pimavanserin

Medication	Dose (daily)	Adverse effects
Antidepressants		
Citalopram	5 - 20 mg	Dry mouth, falls, headache, GI symptoms, sedation, sexual dysfunction
Paroxetine	5 - 40 mg	
Sertraline	25 - 100 mg	
Trazodone	25 - 300 mg	
Antipsychotics		
Aripiprazole	2.5 - 10 mg	Cerebrovascular events, death, extrapyramidal symptoms, falls, metabolic syndrome, neuroleptic malignant syndrome, QTc prolongation, sedation, sexual dysfunction
Olanzapine	2.5 - 10 mg	
Risperidone	0.25 - 2 mg	
Quetiapine	25 - 200 mg	
Cholinesterase inhibitors		
Donepezil	5 - 10 mg	Bradycardia, confusion, GI symptoms, sedation
Galantamine	4 - 24 mg	
Rivastigmine	1.5 - 12 mg or 4.6- to 9.5-mg patch	
Memantine	7 - 28 mg	Confusion, sedation
Mood stabilizers		
Carbamazepine	100 - 400 mg	Confusion, falls, hyperammonemia, liver dysfunction, sedation, thrombocytopenia
Valproic acid	125 - 1000 mg	

Reading

Core text is available online on SOLO

- For overview of neuropsychiatric symptoms: **Chapter 19**
- See also separate reading list