Overview of neuropsychiatric symptoms in neurodegeneration

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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.

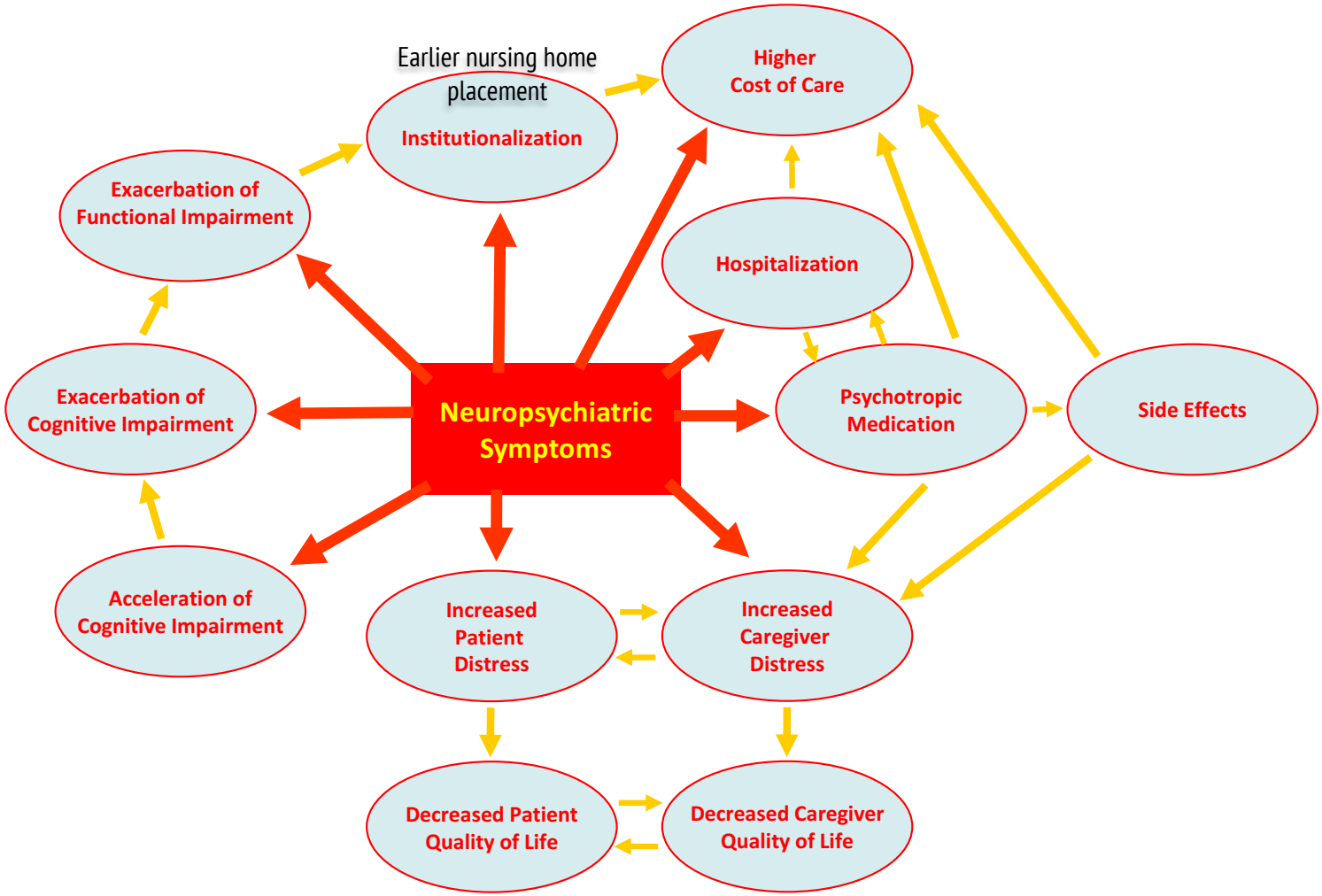
"I can cope with the memory problems, but what I find very difficult is that my husband thinks I'm having an affair with the neighbour. He's always suspicious that there's someone else in the house at night. He gets agitated and hits me."

- 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.

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

Neuropsychiatric symptoms (NPS)

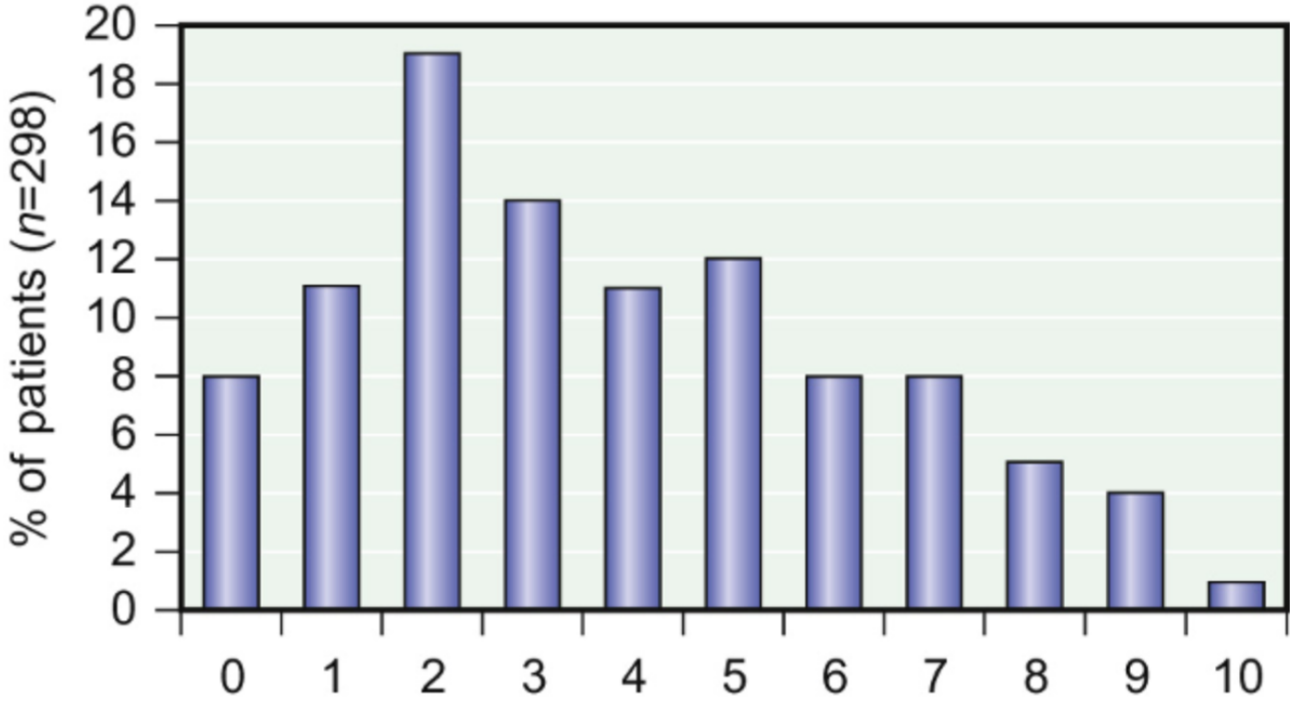
What are they?

- 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	☐	☐	☐☐☐☐	☐☐☐	☐☐	☐☐☐☐☐☐

Frequency of one or more NPS

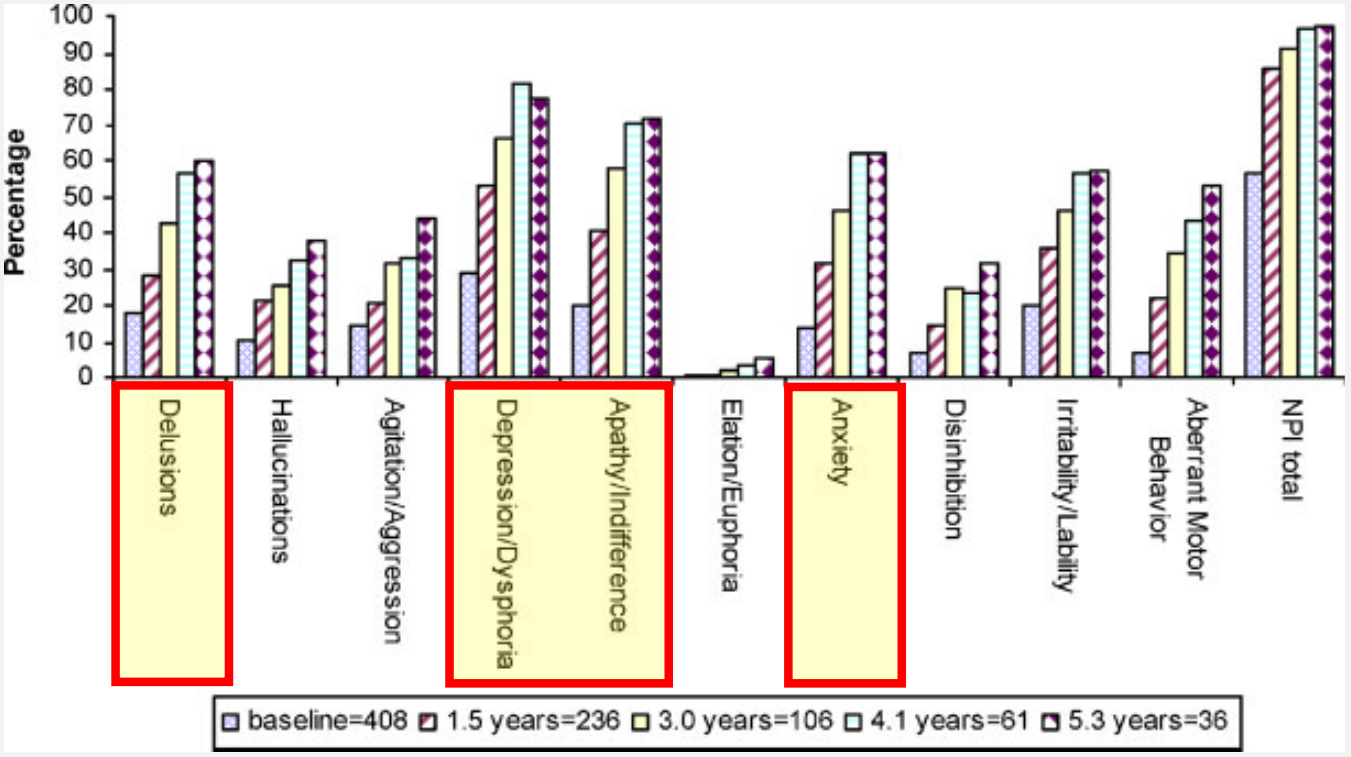
Most patients suffer more than one or more neuropsychiatric symptom



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

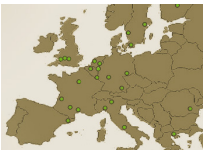
European Alzheimer Disease Consortium | *N*=2354 cases with Alzheimer's

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

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

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L. Appetite/Eating Changes	☐	☐	☐☐☐☐	☐☐☐	☐☐	☐☐☐☐☐☐

NPI questions for apathy

If caregiver says Yes to screening question proceed to ask detailed questions

G. APATHY/INDIFFERENCE (NA)

Has the patient lost interest in the world around him/her? Has he/she lost interest in doing things or does he/she lack motivation for starting new activities? Is he/she more difficult to engage in conversation or in doing chores? Is the patient apathetic or indifferent?

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

1. Does the patient seem less spontaneous and less active than usual?	☐ Yes	☐ No
2. Is the patient less likely to initiate a conversation?	☐ Yes	☐ No
3. Is the patient less affectionate or lacking in emotions when compared to his/her usual self?	☐ Yes	☐ No
4. Does the patient contribute less to household chores?	☐ Yes	☐ No
5. Does the patient seem less interested in the activities and plans of others?	☐ Yes	☐ No
6. Has the patient lost interest in friends and family members?	☐ Yes	☐ No
7. Is the patient less enthusiastic about his/her usual interests?	☐ Yes	☐ No
8. Does the patient show any other signs that he/she doesn't care about doing new things?	☐ Yes	☐ No

If the screening question is confirmed, determine the frequency and severity of the apathy/indifference.

NPI questions for apathy

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

Frequency:

- ☐ 1. Rarely – less than once per week.
- ☐ 2. Sometimes – about once per week.
- ☐ 3. Often – several times per week but less than every day.
- ☐ 4. Very often – nearly always present.

Severity:

- ☐ 1. Mild – apathy is notable but produces little interference with daily routines; only mildly different from patient's usual behavior; patient responds to suggestions to engage in activities.
- ☐ 2. Moderate – apathy is very evident; may be overcome by the caregiver with coaxing and encouragement; responds spontaneously only to powerful events such as visits from close relatives or family members.
- ☐ 3. Severe – apathy is very evident and usually fails to respond to any encouragement or external events.

Distress: How emotionally distressing do you find this behavior?

- ☐ 0. Not at all
- ☐ 1. Minimally (almost no change in work routine)
- ☐ 2. Mildly (almost no change in work routine but little time rebudgeting required)
- ☐ 3. Moderately (disrupts work routine, requires time rebudgeting)
- ☐ 4. Severely (disruptive, upsetting to staff and other residents, major time infringement)
- ☐ 5. Very Severely or Extremely (very disruptive, major source of distress for staff and other residents, requires time usually devoted to other residents or activities)

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?

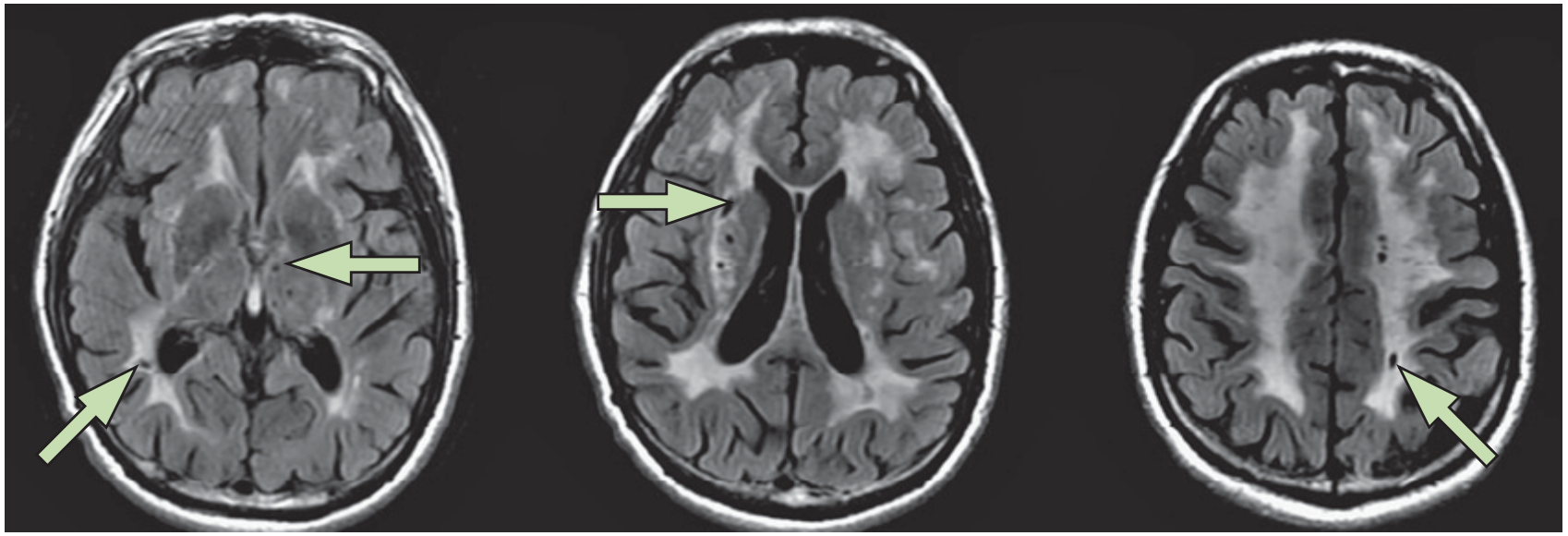
☐ Yes (if yes, please proceed to subquestions)
☐ No (if no, please proceed to next screening question) ☐ N/A

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.

Apathy and disinhibition can co-exist

*An example from CADASIL**



* Cerebral Autosomal Dominant Arteriopathy with Subcortical Infarcts and Leukoencephalopathy

Reyes *et al* (2013) *Neurology*

Apathy and disinhibition can co-exist

An example from CADASIL

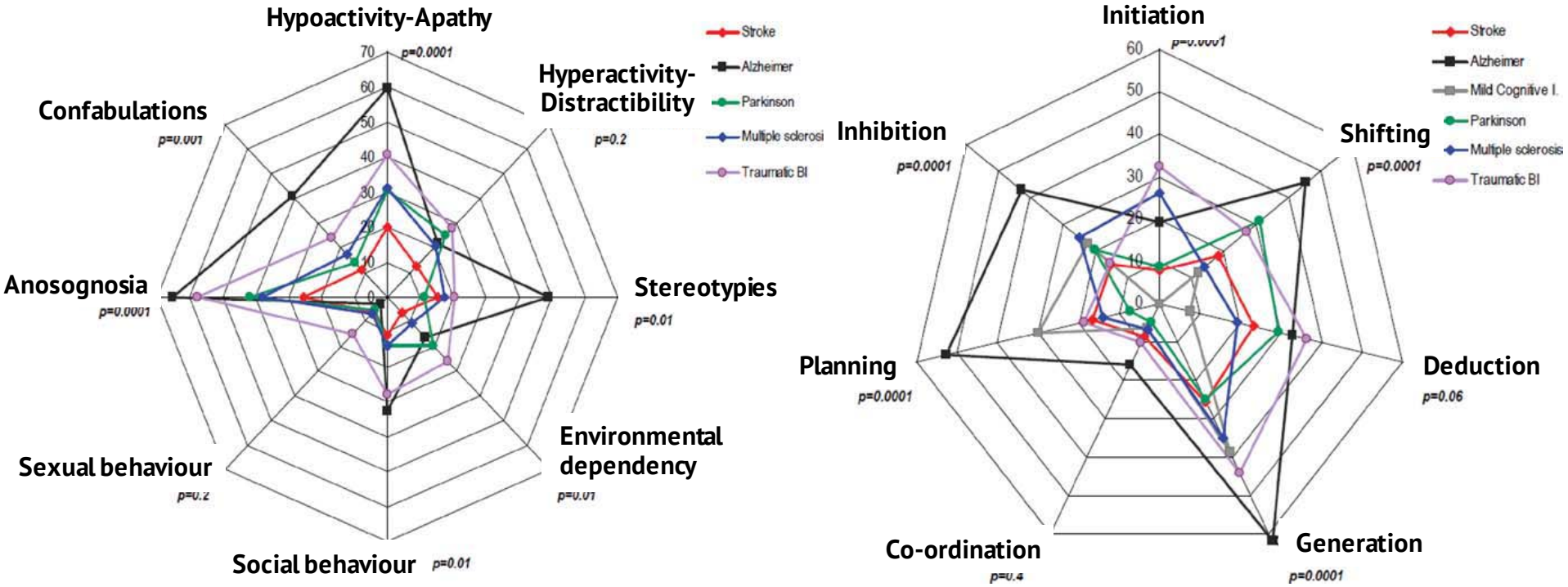
Behavioral disturbance	Cohort (n = 132)	Apathetic (n = 54)	Nonapathetic (n = 78)	*p*	*p**
Total NPI score, mean (SD)	15.3 (16.0)	29.0 (14.9)	5.8 (7.6)	<0.0001	—
At least one behavioral disturbance, % (n)	75 (99)	94.4 (51)	61.5 (48)	<0.0001	
Depression/dysphoria, % (n)	46.2 (61)	61.1 (33)	35.9 (28)	0.0048	0.02
Disturbed sleep, % (n)	44.7 (59)	64.8 (35)	30.8 (24)	0.0001	0.31
Irritability/lability, % (n)	43.1 (57)	64.8 (35)	28.2 (22)	<0.0001	0.0003
Anxiety, % (n)	37.1 (49)	40.7 (22)	34.6 (27)	0.47	0.71
Apathy, % (n)	41.0 (54)	—	—	—	—
Agitation/aggression, % (n)	26.6 (35)	53.7 (29)	7.7 (6)	<0.0001	<0.0001
Disturbed appetite, % (n)	16.0 (21)	31.5 (17)	5.1 (4)	<0.0001	0.003
Disinhibition, % (n)	13.7 (18)	27.8 (15)	3.9 (3)	<0.0001	0.008
Euphoria, % (n)	7.5 (10)	14.8 (8)	2.6 (2)	0.009	0.20
Aberrant motor behavior, % (n)	6.0 (8)	14.8 (8)	0.0 (0)	0.0005	0.0007
Delusion, % (n)	2.2 (3)	3.7 (2)	1.3 (1)	0.36	NA
Hallucination, % (n)	0.7 (1)	1.9 (1)	0.0 (0)	0.23	NA

132 cases from a multicentre study

Reyes *et al* (2013) *Neurology*

Overlap with dysexecutive syndrome

Associated with both behavioural and cognitive deficits



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

NPI-Q questionnaire for caregiver

Rapid screening – without interview and no index of frequency

NPI-Q SUMMARY

	No	Severity	Caregiver Distress
Delusions	0	1 2 3	0 1 2 3 4 5
Hallucinations	0	1 2 3	0 1 2 3 4 5
Agitation/Aggression	0	1 2 3	0 1 2 3 4 5
Dysphoria/Depression	0	1 2 3	0 1 2 3 4 5
Anxiety	0	1 2 3	0 1 2 3 4 5
Euphoria/Elation	0	1 2 3	0 1 2 3 4 5
Apathy/Indifference	0	1 2 3	0 1 2 3 4 5
Disinhibition	0	1 2 3	0 1 2 3 4 5
Irritability/Lability	0	1 2 3	0 1 2 3 4 5
Aberrant Motor	0	1 2 3	0 1 2 3 4 5
Nighttime Behavior	0	1 2 3	0 1 2 3 4 5
Appetite/Eating	0	1 2 3	0 1 2 3 4 5
TOTAL			

Cambridge Behavioural Inventory

Also rapid screening – without interview

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

Also rapid screening – without interview

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 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

Take the history properly

If you don't ask you won't know. It will save you time in the long run.

- Listen to the patient. *Take me through your day*
- But also see the caregiver alone to obtain independent, collateral history
- Otherwise lots of things will remain unsaid and you won't know full context
- If information is not forthcoming, probe gently about how things are:
    - *Are there any new stresses at home or work for the caregiver?*
    - *What about family, financial or domestic concerns?*
    - *Have there been any changes in medication or compliance?*
    - *Sleep disturbance?*
    - *Mood?*
    - *False beliefs?*
    - *Altered, inappropriate behaviour?*

Take the history properly

If you want, use the screening questions of NPI to 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?

Take the history properly

If you want, use the screening questions of NPI to act as prompts

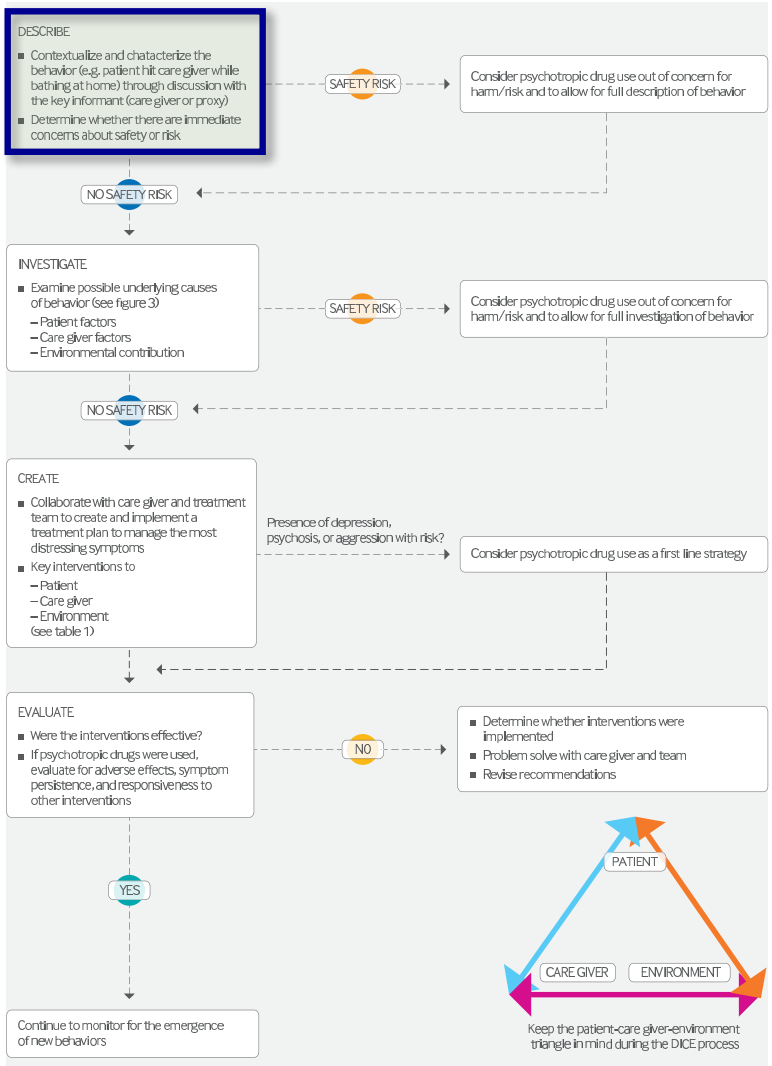
Elation/Euphoria	Does the patient appear to feel too good or act excessively happy?
Apathy/Indifference	Does the patient seem less interested in his/her usual activities or in the activities and plans of others?
Disinhibition	Does the patient seem to act impulsively, for example, talking to strangers 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?

Don’t just reach for the prescription pad

Drug treatments are not often effective and may not be the solution

DICE Approach to the patient

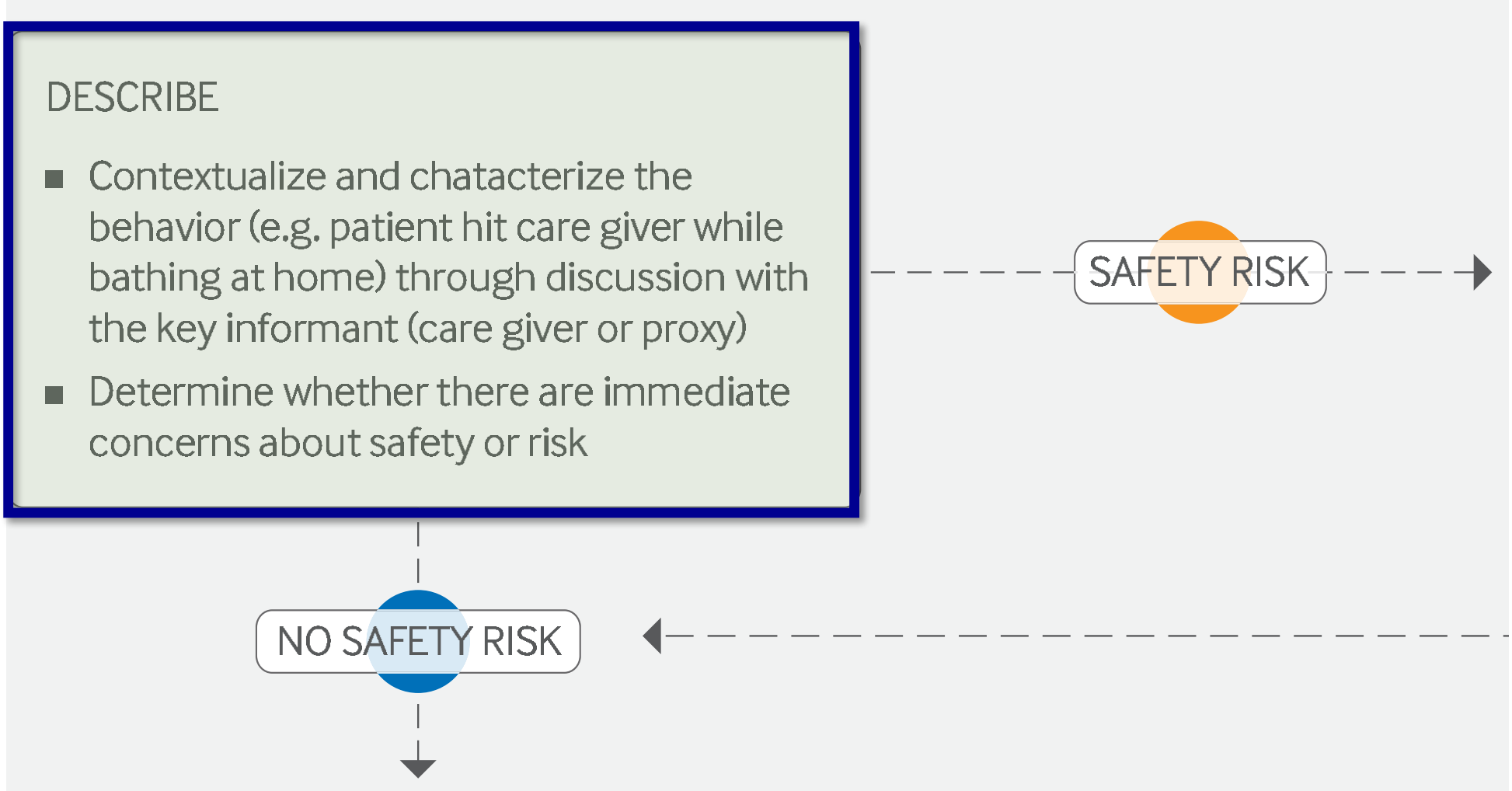
Describe Investigate Create Evaluate



Kales, Gitlin & Lyketsos (2015) *BMJ*

DICE Approach to the patient

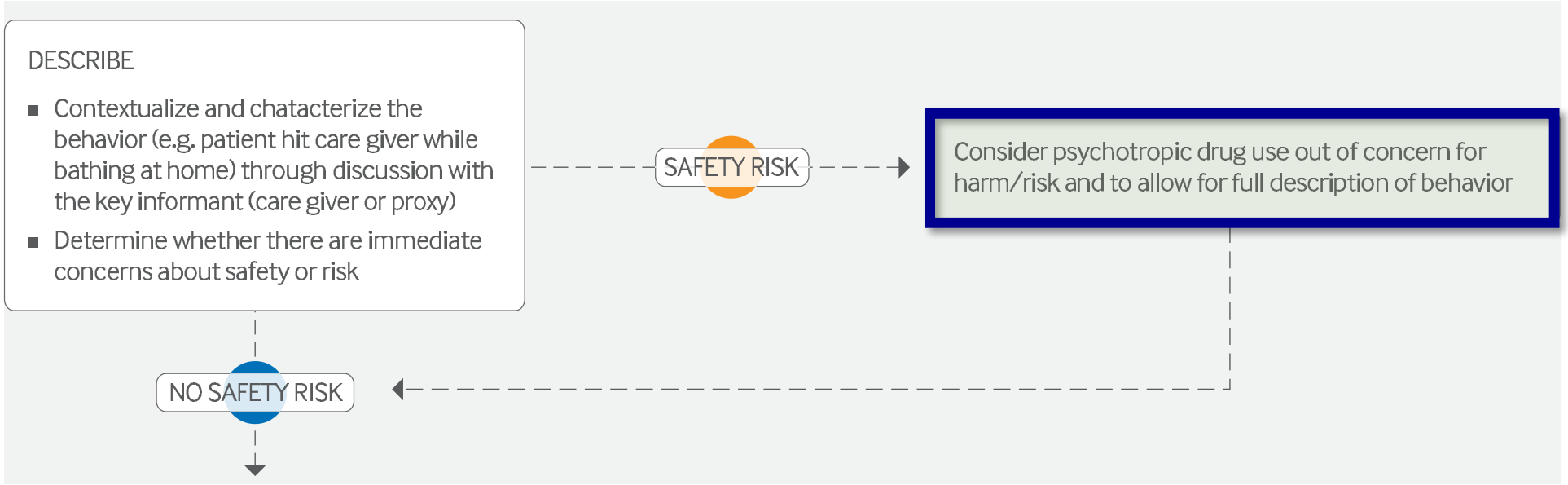
D: *Describe the problem*



Kales, Gitlin & Lyketsos (2015) *BMJ*

DICE Approach to the patient

D: *Describe the problem*



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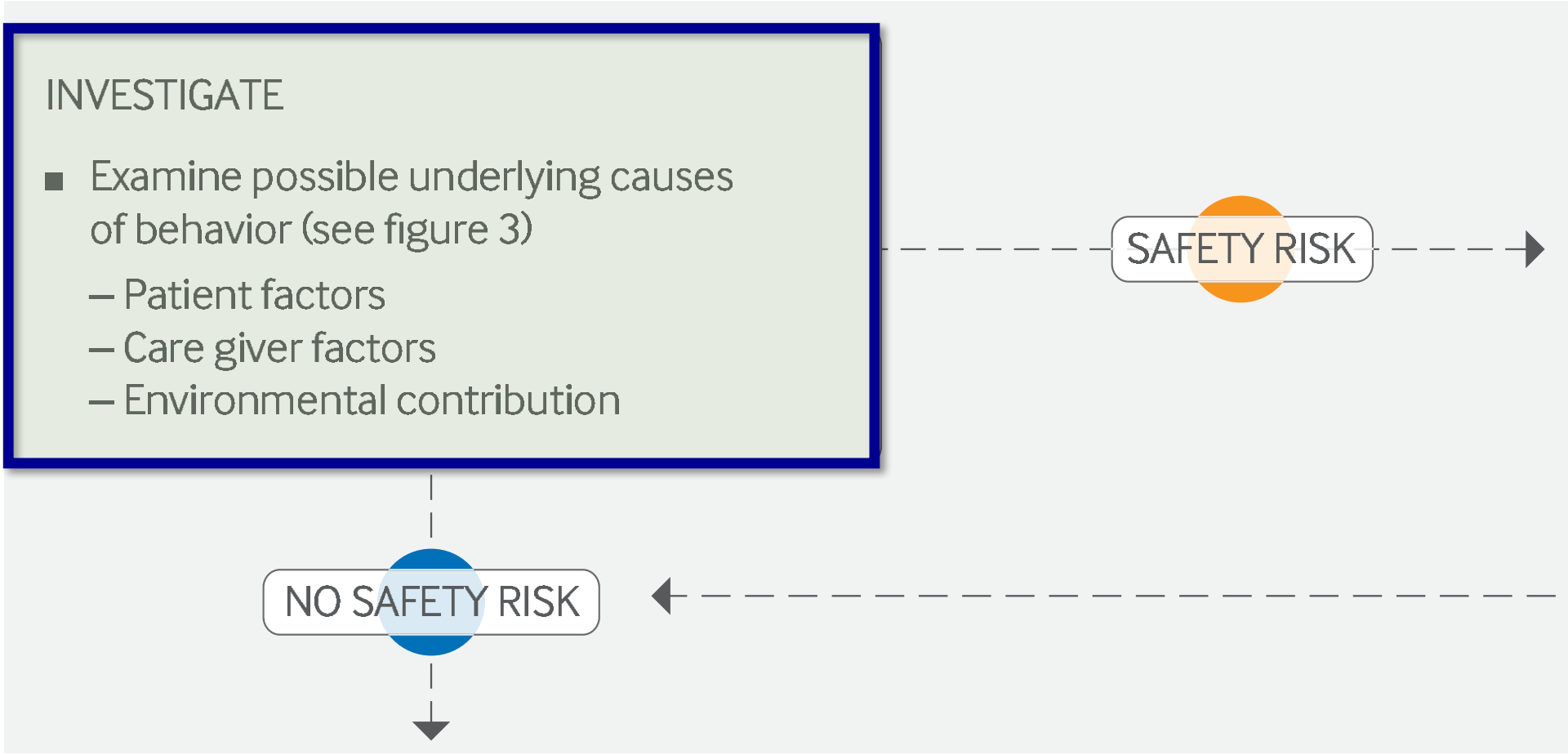
DICE Approach to the patient

I: *Investigate the problem*



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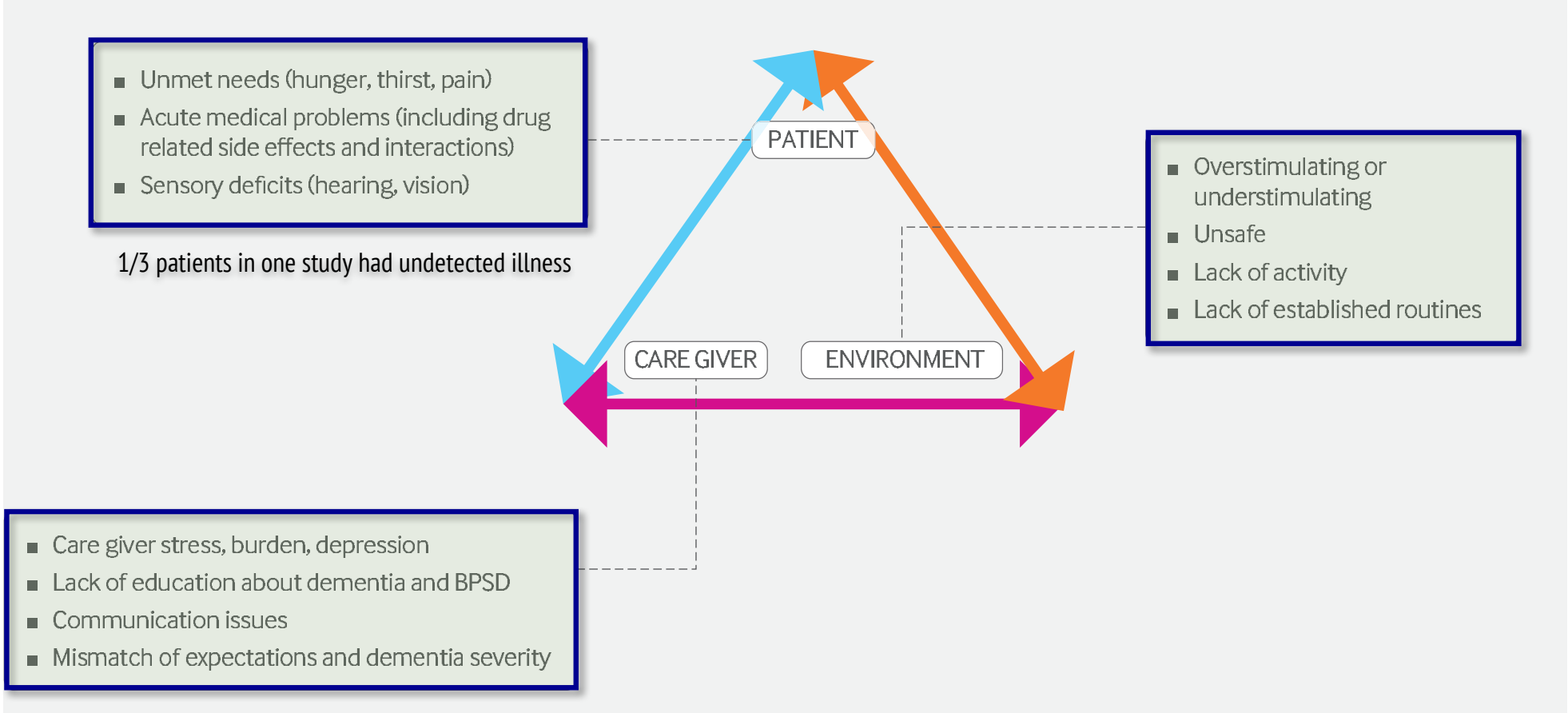
DICE Approach to the patient

Modifiable causes of behavioural and psychological symptoms



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DICE Approach to the patient

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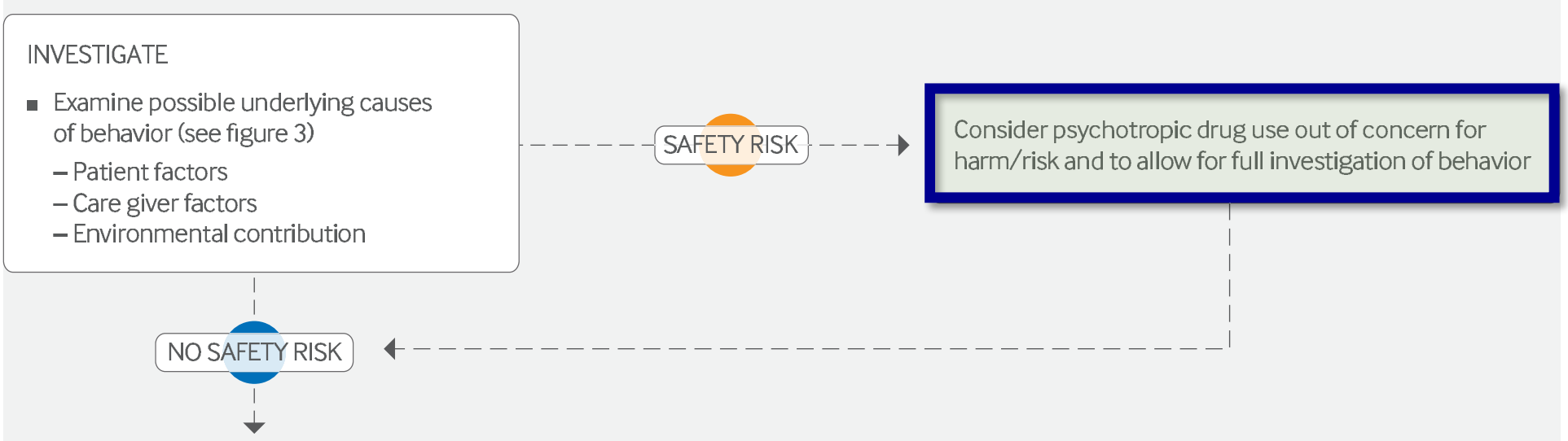

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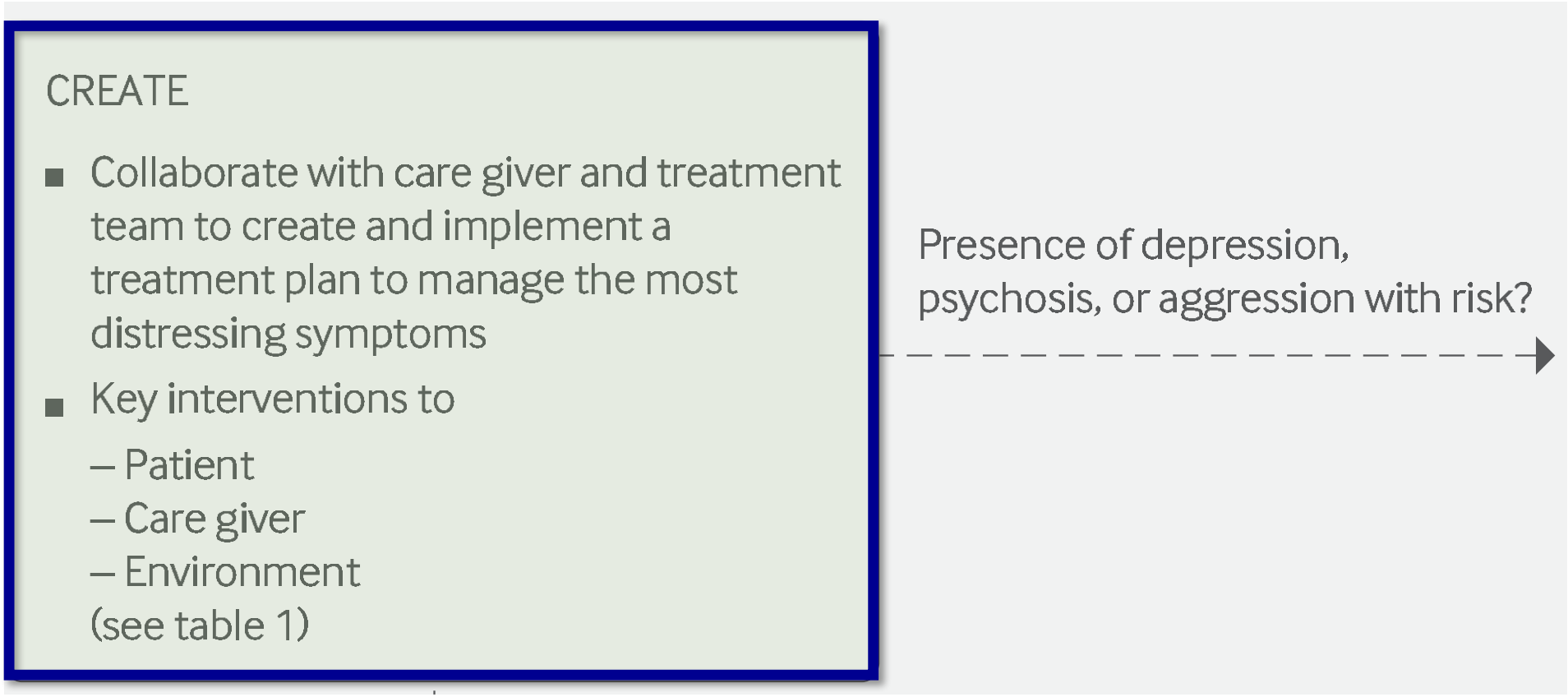
DICE Approach to the patient

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

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DICE Approach to the patient

C: *Create and implement a treatment plan*

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

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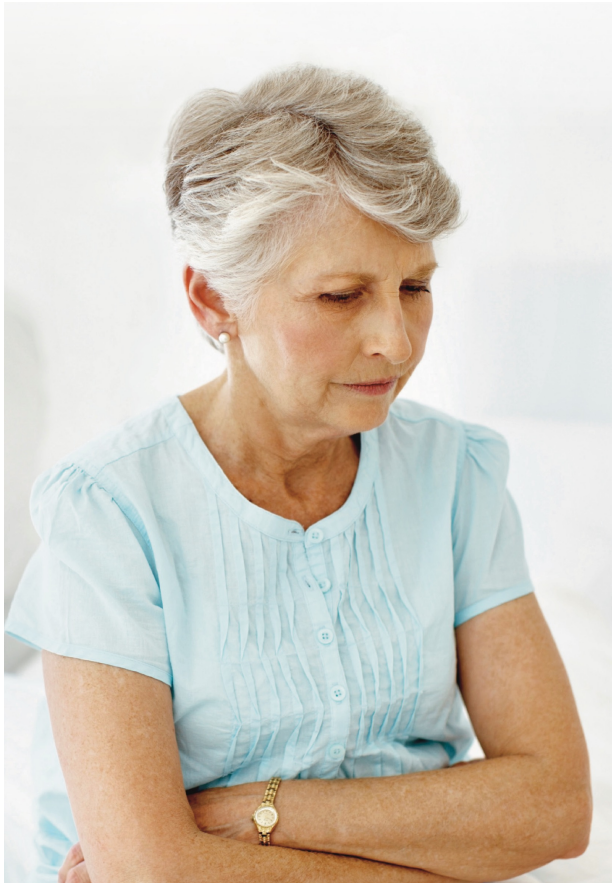
Caregiver resources

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*

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DICE Approach to the patient

C: *Create and implement a treatment plan*

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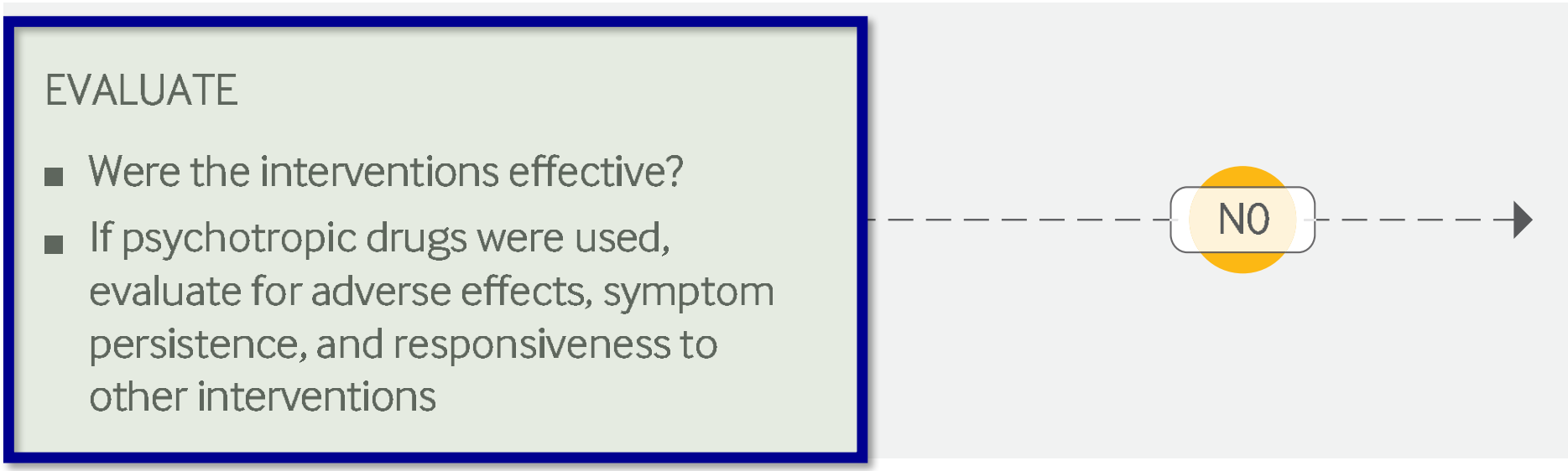
DICE Approach to the patient

E: *Evaluate the effects of treatment plan*



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DICE Approach to the patient

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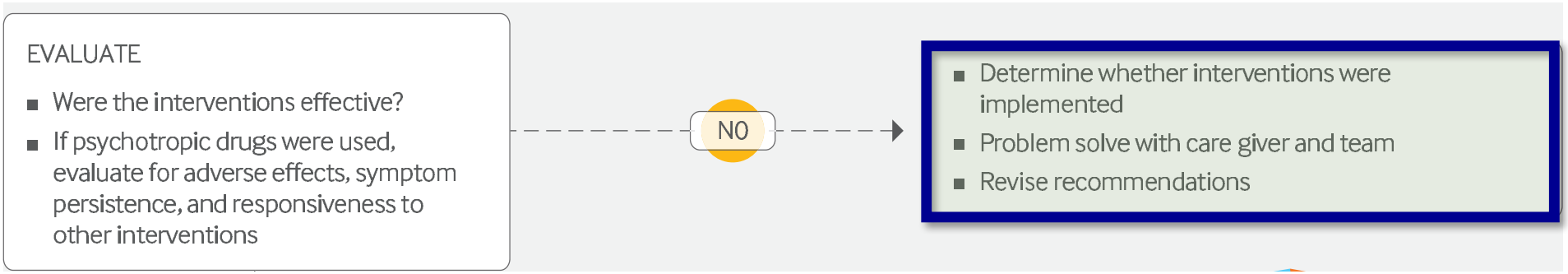

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DICE Approach to the patient

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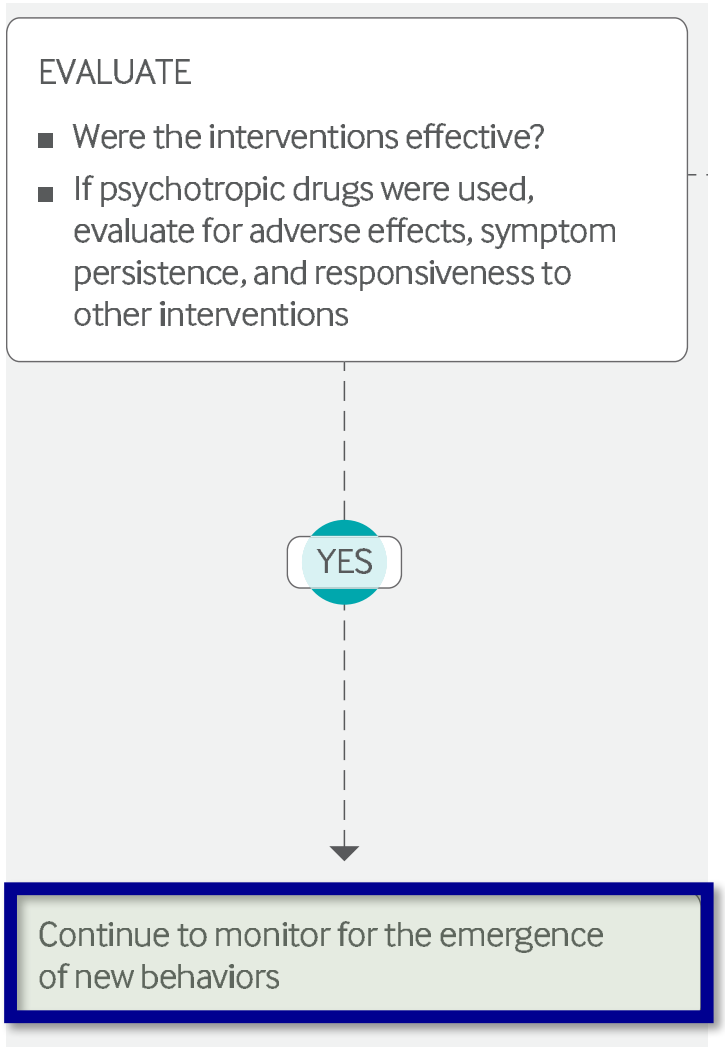

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Drug treatments

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	

Case 1

- 62 yr old active man with Parkinson's disease
- Anxious about his condition
- Worried that his wife has met someone else
- Agitated
- Checking where she goes, which websites she visits and her emails

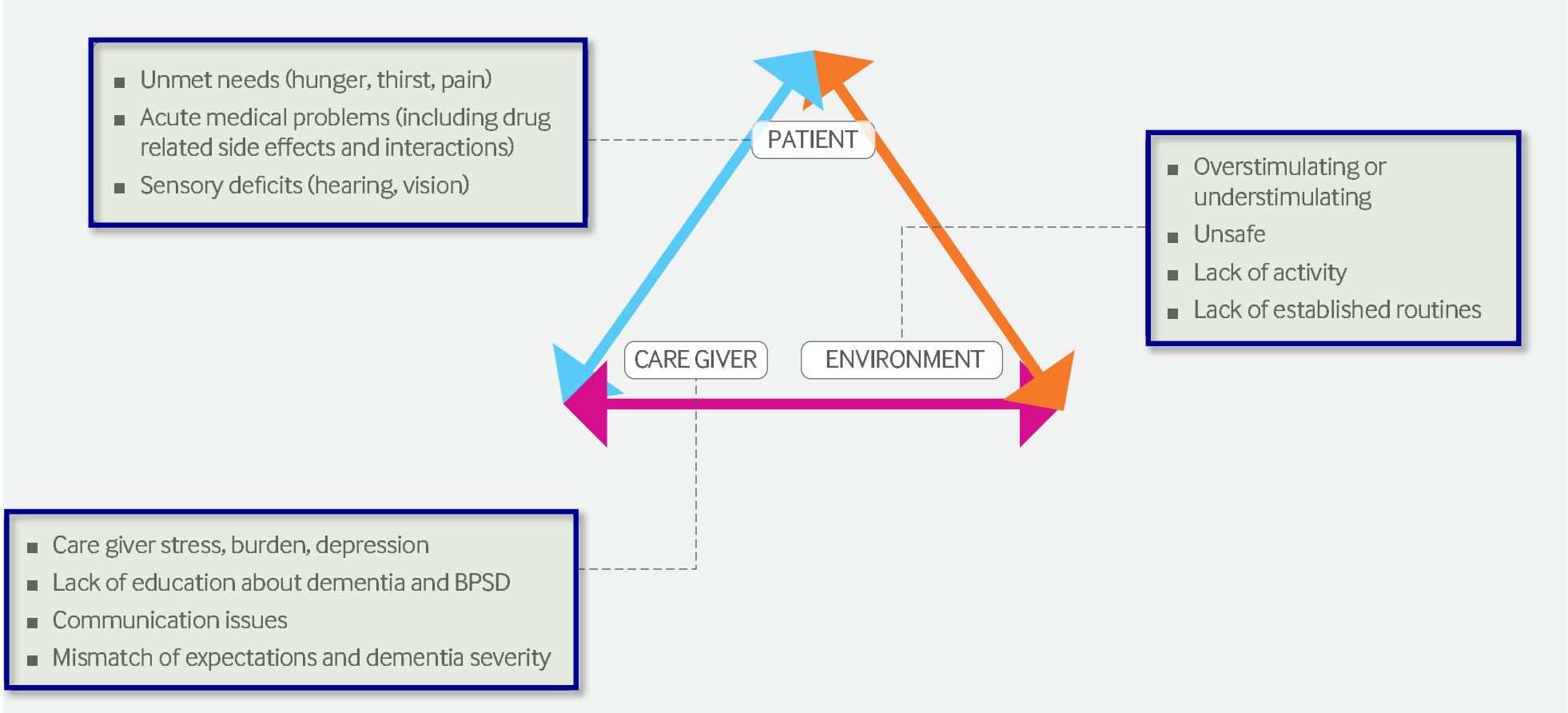
Interview with her alone

- She denies these claims
- Increasingly frustrated by his behaviour
- Seeking more time to do things for herself

- Question her further to see if there is a safety risk

DICE Approach to the patient

Modifiable causes of behavioural and psychological symptoms



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Case 2

- 70 yr old man with Alzheimer's disease
- New onset anger outbursts in a man who was usually very calm
- Verbally aggressive to his wife
- Agitated

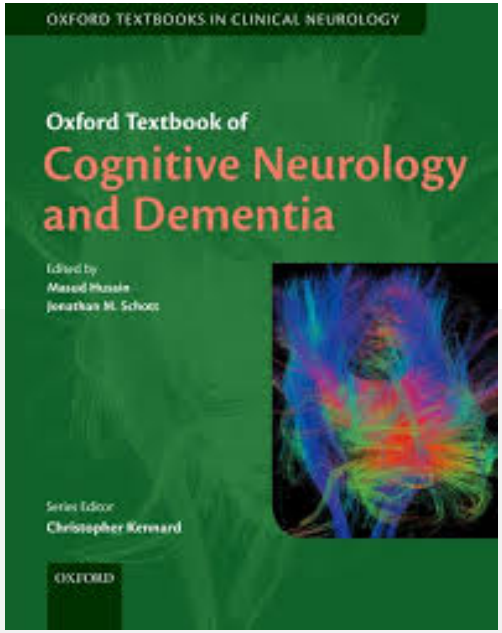
Interview with her alone

- Unaware of trigger factors
- Enquiry about home circumstances reveals his driving license has been revoked
- Wants to drive to social club to meet friends

Case 3

Summary

Neuropsychiatric symptoms have a major impact



- Almost all patients with dementia suffer one or more
- Taking the history properly is vital – including from carer
- Approach to the problem requires careful evaluation – of patient, caregiver and environment
- DICE (Describe, Investigate, Create, Evaluate) may be helpful
- Think twice before using drugs
- Are there non-pharmacological approaches that might work?