



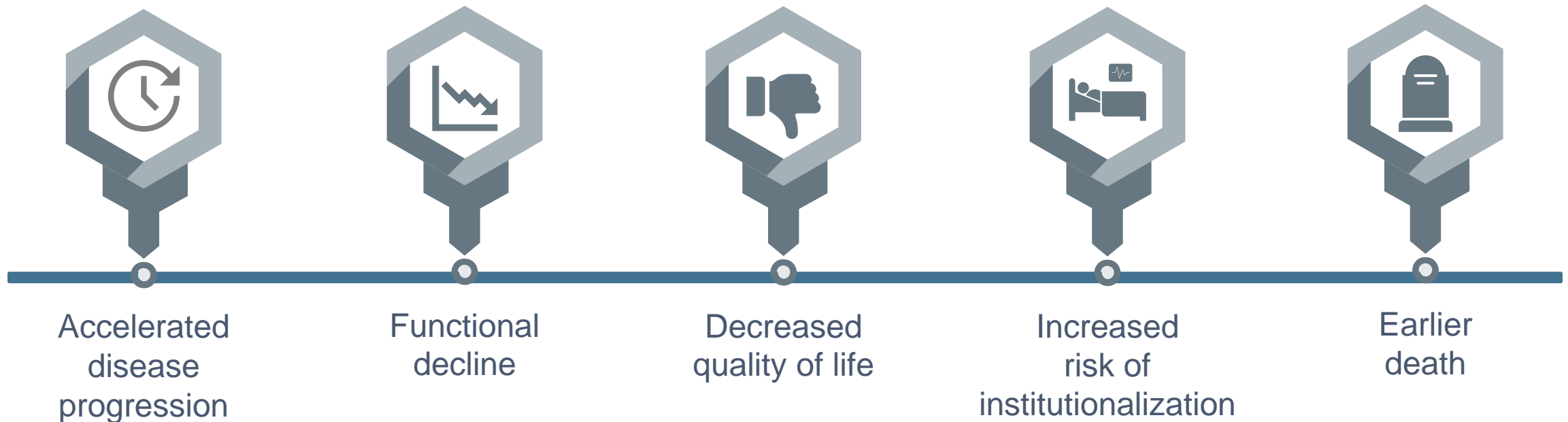
# Agitation Associated with Alzheimer's Dementia

Disease State Education: Clinical, Humanistic, & Economic Burden

This program is paid for by Otsuka  
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# AAD worsens the impact of an already devastating and burdensome disease

- AAD is a complex, stressful, and costly aspect of care and has been associated with:<sup>1-5</sup>



AAD, agitation associated with Alzheimer's dementia.

1. Banerjee, S., Smith, S. C., Lamping, D. L., Harwood, R. H., Foley, B., Smith, P., Knapp, M. (2006). Quality of life in dementia: more than just cognition. An analysis of associations with quality of life in dementia. *Journal of Neurology Neurosurgery and Psychiatry*, 77(2), 146-148. doi:10.1136/jnnp.2005.072983
2. Halpern, R., Seare, J., Tong, J., Hartry, A., Olaoye, A., & Aigbogun, M. S. (2019). Using electronic health records to estimate the prevalence of agitation in Alzheimer disease/dementia. *International Journal of Geriatric Psychiatry*, 34(3), 420-431. doi:10.1002/gps.5030
3. Koenig, A. M., Arnold, S. E., & Streim, J. E. (2016). Agitation and irritability in Alzheimer's disease: evidenced-based treatments and the black-box warning. *Current Psychiatry Reports*, 18(1), doi:10.1007/s11920-015-0640-7
4. Peters, M. E., Schwartz, S., Han, D., Rabins, P. V., Steinberg, M., Tschanz, J.T., & Lyketsos, C. G. (2015). Neuropsychiatric symptoms as predictors of progression to severe Alzheimer's dementia and death: the Cache County Dementia Progression Study. *American Journal of Psychiatry*, 172(5), 460-465. doi:10.1176/appi.ajp.2014.14040480
5. Scarmeas, N., Brandt, J., Blacker, D., Albert, M., Hadjigeorgiou, G., Dubois, B., Stern, Y. (2007). Disruptive behavior as a predictor in Alzheimer disease. *Archives of Neurology*, 64(12), 1755-1761. doi:10.1001/archneur.64.12.1755

# AAD worsens the impact of an already devastating and burdensome disease

- Agitation in long-term care residents with Alzheimer's disease and other forms of dementia has been associated with:

**Numerically higher medication use with agitation**

**5** median medications with agitation vs **4** without agitation

**An increased likelihood compared with patients without agitation of:**

**Infections**



**18%** more likely with agitation

**Fractures**



**29%** more likely with agitation

**Falls**



**58%** more likely with agitation

**Other neuropsychiatric symptoms<sup>a</sup>**



**111%** more likely with agitation

<sup>a</sup>Additional neuropsychiatric symptoms include depression, anxiety, delusion, and hallucinations. AAD, agitation associated with Alzheimer's dementia.

1. Fillit, H., Aigbogun, M. S., Gagnon-Sanschagrin, P., Cloutier, M., Davidson, M., Serra, E., Crossberg, G. (2021). Impact of agitation in long-term care residents with dementia in the United States. *International Journal of Geriatric Psychiatry*, 36(12), 1959-1969. doi:10.1002/gps.5604

# Agitation increases the risk for institutionalization for patients with Alzheimer's dementia



Agitation in community-dwelling patients with Alzheimer's disease and other forms of dementia can result in earlier placement in long-term care<sup>1-2</sup>



Behavioral symptoms, such as agitation, have been found to be a predictor of nursing home admission in patients with dementia<sup>1-2</sup>

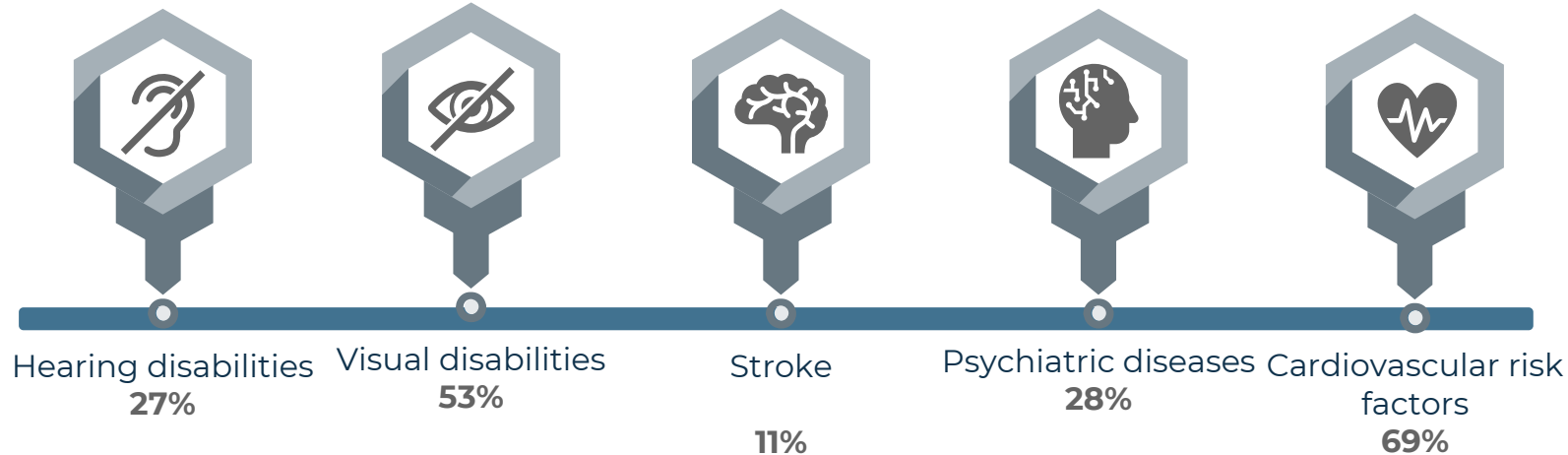


Patients with cognitive impairment or Alzheimer's dementia and agitation are **3.7× more likely** to be admitted to an institution—requiring assistance with activities related to daily living—compared to patients without agitation<sup>1</sup>

1. Jones, E., Aigbogun, M. S., Pike, J., Berry, M., Houle, C. R., & Husbands, J. (2021). Agitation in dementia: real-world impact and burden on patients and the healthcare system. *Journal of Alzheimer's Disease*, 83(1), 89-101. doi:10.3233/jad-210105  
2. Kales, H. C., Gitlin, L. N., & Lyketsos, C. G. (2015). Assessment and management of behavioral and psychological symptoms of dementia. *BMJ*, 350, h369. doi:10.1136/bmj.h369

# AAD is associated with substantial patient burden and long-term consequences

- Patients with Alzheimer's disease and clinically significant agitation have a range of comorbidities<sup>1</sup>
- In 262 patients with AAD, comorbidities included:<sup>1</sup>



**In patients with dementia, behavioral disturbances including agitation are associated with increased comorbidities, compared with those without behavioral disturbances<sup>2</sup>**

AAD, agitation associated with Alzheimer's dementia.

1. De Mauleon, A., Delrieu, J., Cantet, C., Vellas, B., Andrieu, S., Rosenberg, P. B., Soto Martin, M. (2021). Longitudinal course of agitation and aggression in patients with Alzheimer's disease in a cohort study: Methods, Baseline and longitudinal results of the A3C study. *Journal of Prevention of Alzheimer's Disease*, 8(2), 199-209. doi:10.14283/jpad.2020.66
2. Aigbogun, M. S., Stellhorn, R., Hartry, A., Baker, R. A., & Fillit, H. (2019). Treatment patterns and burden of behavioral disturbances in patients with dementia in the United States: a claims database analysis. *BMC Neurology*, 19(1), 33

# AAD is associated with substantial patient burden and long-term consequences

**Compared with nonagitated patients with early cognitive impairment or Alzheimer's disease dementia,<sup>a</sup> agitation is associated with increased:**



## Hospitalization

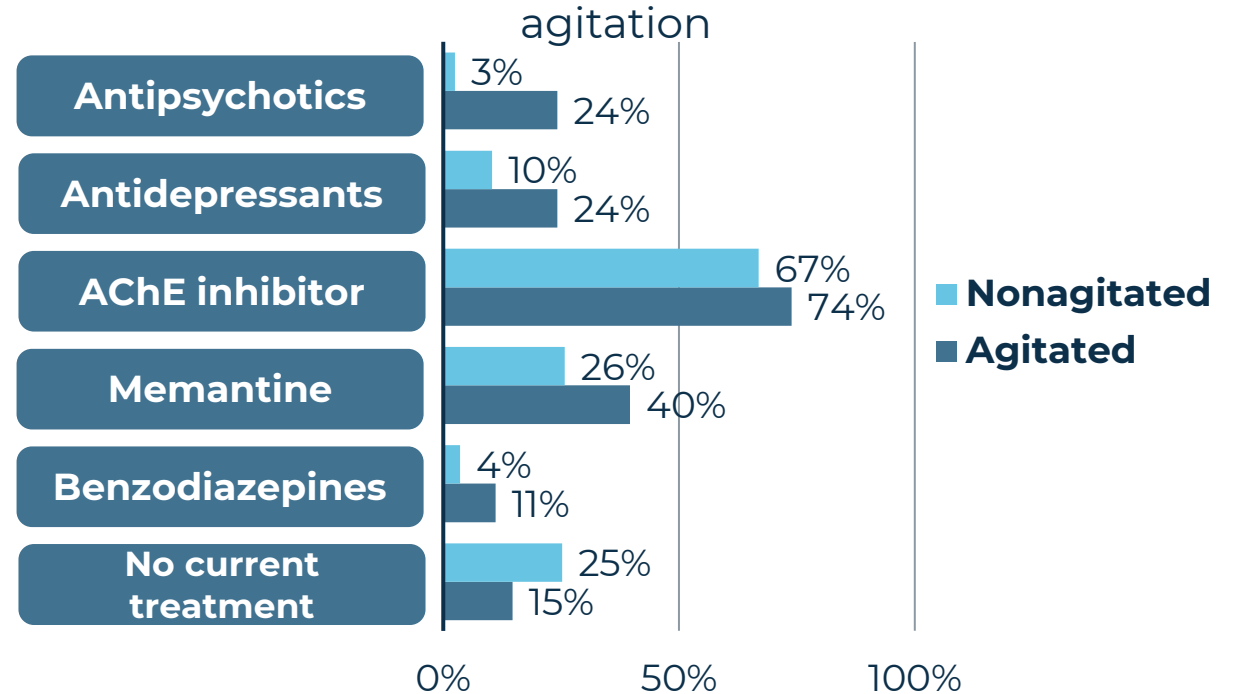
**2x more mean visits** in those with agitation vs without agitation



## Institutionalization

**3.7x higher rate** in those with agitation vs without agitation

In those with cognitive impairment or Alzheimer's disease dementia,<sup>a</sup> current medication use is more common in those with agitation vs those without



<sup>a</sup>Including mixed Alzheimer's disease and vascular dementia.  
AChE, acetylcholinesterase.

1. Jones, E., Aigbogun, M. S., Pike, J., Berry, M., Houle, C. R., & Husbands, J. (2021). Agitation in dementia: real-world impact and burden on patients and the healthcare system. *Journal of Alzheimer's Disease*, 83(1), 89-101. doi:10.3233/jad-210105

# Agitation in patients with Alzheimer's dementia is associated with high caregiver burden



Symptoms of agitation in patients with dementia can be a source of embarrassment and anxiety for caregivers<sup>1</sup>



The presence of neuropsychiatric symptoms such as agitation relates to caregiver burden, with the burden of care increasing with severity of agitation<sup>2-5</sup>

## Agitation & caregiver burden

Informal caregivers of patients with cognitive impairment or dementia **spend more than 20 additional hours per week** actively helping patients with clinically significant agitation<sup>5</sup>



Increased caregiver distress coupled with agitation can lead to institutionalization of patients with dementia<sup>5</sup>



1. Cohen-Mansfield, J. (2008). Agitated behavior in persons with dementia: the relationship between type of behavior, its frequency, and its disruptiveness. *Journal of Psychiatric Research*, 43(1), 64-69. doi:10.1016/j.jpsychires.2008.02.003
2. Allegri, R. F., Sarasola, D., Serrano, C. M., Taragano, F. E., Arizaga, R. L., Butman, J., & Loñ, L. (2006). Neuropsychiatric symptoms as a predictor of caregiver burden in Alzheimer's disease. *Neuropsychiatric Disease and Treatment*, 2(1), 105-110
3. Grossberg, G. T., Kohegyi, E., Mergel, V., Josiassen, M. K., Meulien, D., Hobart, M., . . . Cummings, J. L. (2020). Efficacy and safety of brexpiprazole for the treatment of agitation in Alzheimer's dementia: two 12-week, randomized, double-blind, placebo-controlled trials. *The American Journal of Geriatric Psychiatry*, 28(4), 383-400. doi:10.1016/j.jagp.2019.09.009
4. Mohamed, S., Rosenheck, R., Lyketsos, C. G., & Schneider, L. S. (2010). Caregiver burden in Alzheimer disease: cross-sectional and longitudinal patient correlates. *The American Journal of Geriatric Psychiatry*, 18(10), 917-927. doi:10.1097/JGP.0b013e3181d5745d
5. Okura, T., & Langa, K. M. (2011). Caregiver burden and neuropsychiatric symptoms in older adults with cognitive impairment: the Aging, Demographics, and Memory Study (ADAMS). *Alzheimer Disease and Associated Disorders*, 25(2), 116-121. doi:10.1097/WAD.0b013e318203f208



# AAD is associated with an increased economic burden for both healthcare systems and individuals

- In a real-world study of 1,349 patients with early cognitive impairment or Alzheimer's dementia, patients identified as having agitation demonstrated significantly higher healthcare resource utilization and costs than patients without agitation

**Increased rates of institutionalization**

**Increased rates of hospitalization**

**More consultations with a healthcare professional**

**A higher overall cost**

	<b>Nonagitated</b>	<b>Agitated</b>
Percentage institutionalized	3.2%	11.9%
Mean number of hospitalizations for any reason in the past 12 months	0.2	0.4
Mean number of consultations with any HCP in the past 12 months	4.3	6.5
Mean total direct healthcare costs	\$9,243	\$20,041

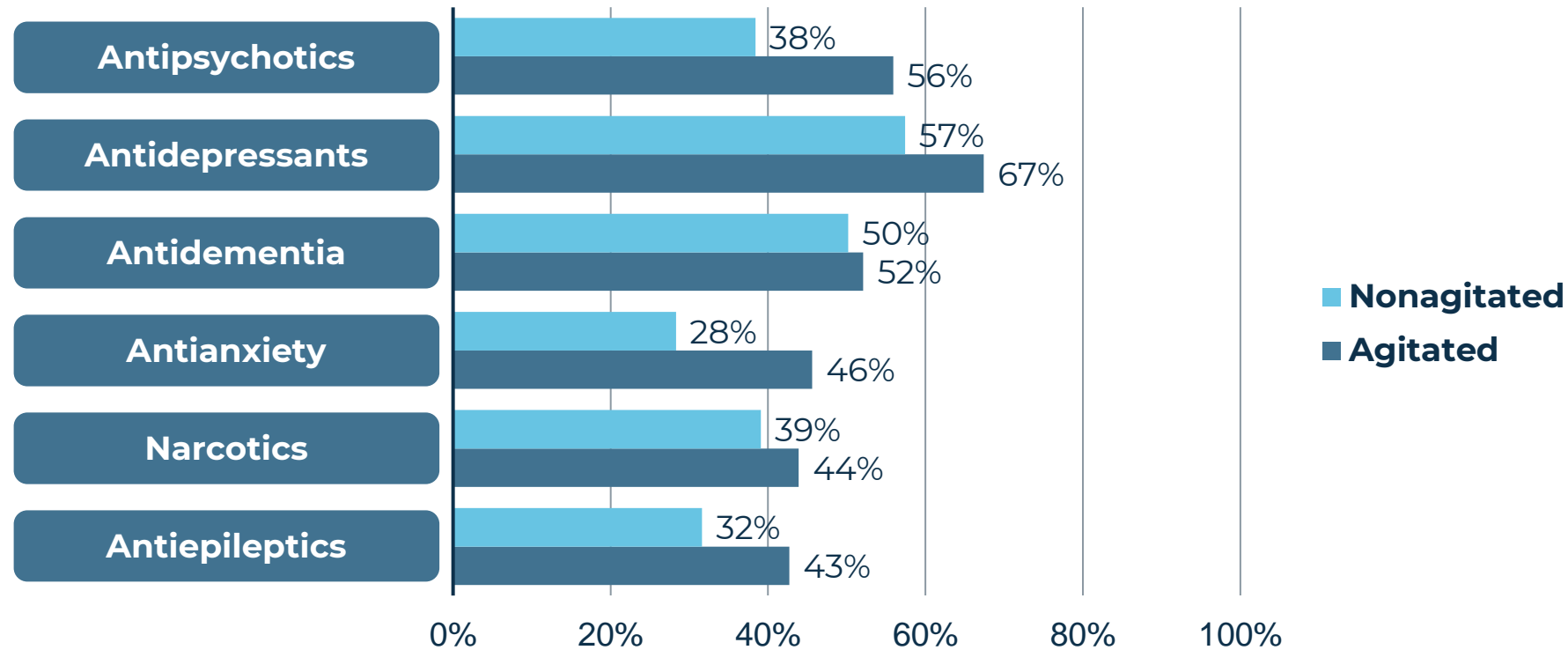
AAD, agitation associated with Alzheimer's dementia; HCP, healthcare professional.

1. Jones, E., Aigbogun, M. S., Pike, J., Berry, M., Houle, C. R., & Husbands, J. (2021). Agitation in dementia: real-world impact and burden on patients and the healthcare system. *Journal of Alzheimer's Disease*, 83(1), 89-101. doi:10.3233/jad-21010

# Nursing Home Slides

# AAD is associated with substantial patient burden and long-term consequences

- In long-term care patients with Alzheimer's disease dementia and other forms of dementia, medication use is more common in those with agitation vs those without agitation



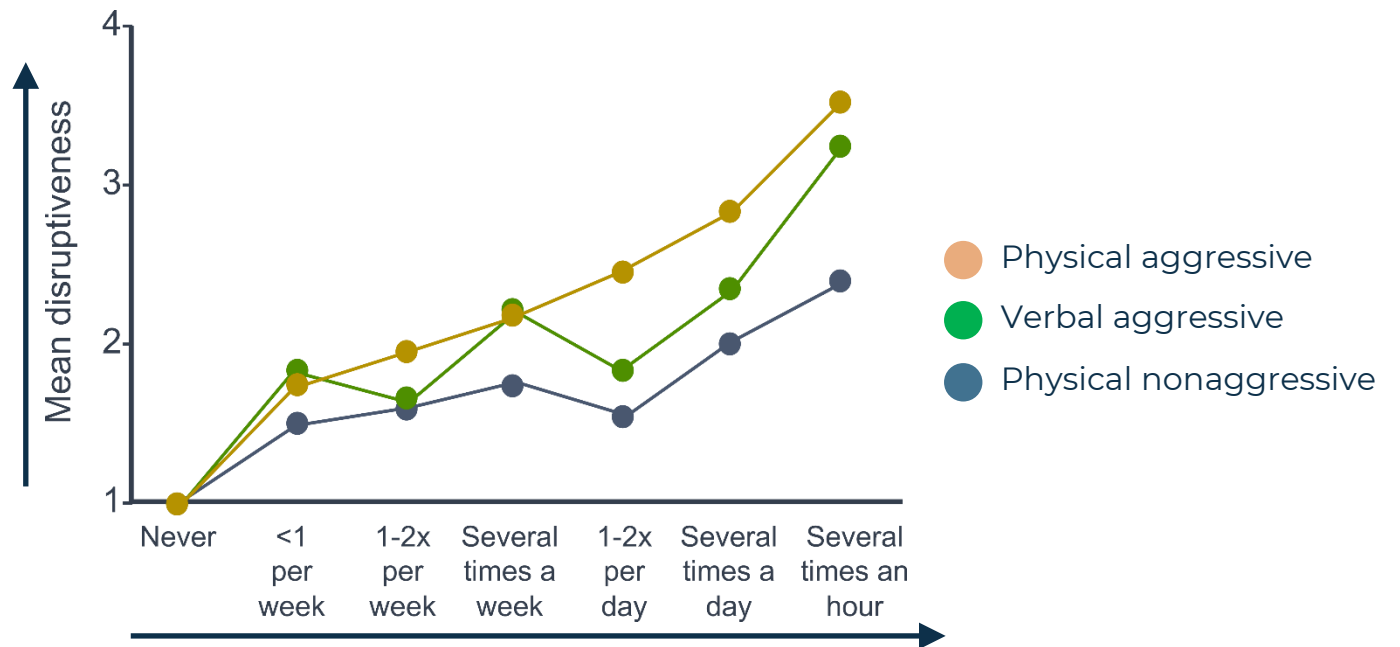
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1. Fillit, H., Aigbogun, M. S., Gagnon-Sanschagrin, P., Cloutier, M., Davidson, M., Serra, E., Grossberg, G. (2021). Impact of agitation in long-term care residents with dementia in the United States. *International Journal of Geriatric Psychiatry*, 36(12), 1959-1969. doi:10.1002/gps.5604

# Agitation in patients with Alzheimer's dementia is associated with high caregiver burden

- Among professional caregivers in nursing homes for people with dementia, agitation was associated with the highest mean distress score among neuropsychiatric symptoms, and the score increased with symptom severity<sup>1</sup>

In nursing homes caring for people with dementia, the disruptiveness of agitated behaviors measured using the Cohen-Mansfield Agitation Inventory (CMAI) increases with frequency for all behavior types<sup>2</sup>



CMAI, Cohen-Mansfield Agitation Inventory.

1. Zwijsen, S. A., Kabboord, A., Eefsting, J. A., Hertogh, C. M., Pot, A. M., Gerritsen, D. L., & Smalbrugge, M. (2014). Nurses in distress? An explorative study into the relation between distress and individual neuropsychiatric symptoms of people with dementia in nursing homes. *International Journal of Geriatric Psychiatry*, 29(4), 384-391. doi:10.1002/gps.4014
2. Cohen-Mansfield, J. (2008). Agitated behavior in persons with dementia: the relationship between type of behavior, its frequency, and its disruptiveness. *Journal of Psychiatric Research*, 43(1), 64-69. doi:10.1016/j.jpsychires.2008.02.003

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