Aging in Adults with Down Syndrome

Brian Chicoine, MD and Hannah Graham, MD

Advocate Medical Group Adult Down Syndrome Center January 29, 2024





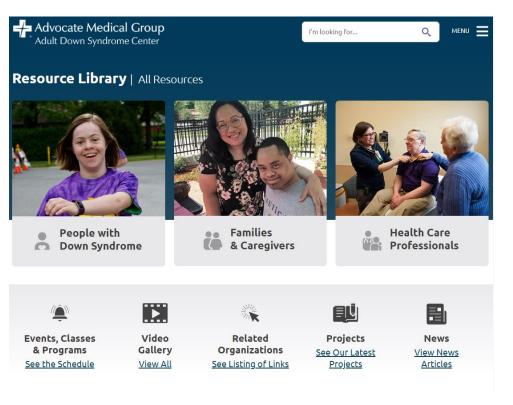
Please note:

- This webinar is intended for families, caregivers, health care professionals, and service providers of individuals with Down syndrome.
- The information in this webinar is provided for educational purposes only and is not intended to serve as a substitute for a medical, psychiatric, mental health, or behavioral evaluation, diagnosis, or treatment plan by a qualified professional.
- We recommend that you bring specific questions about an individual with Down syndrome to their medical and/or therapy providers.

Objectives

- Identify similarities and differences in aging of adults with Down syndrome compared to adults without Down syndrome.
- Discuss common conditions associated with aging of adults with Down syndrome (including Alzheimer's disease).
- Describe strategies for supporting adults with Down syndrome in promoting their health as they age.

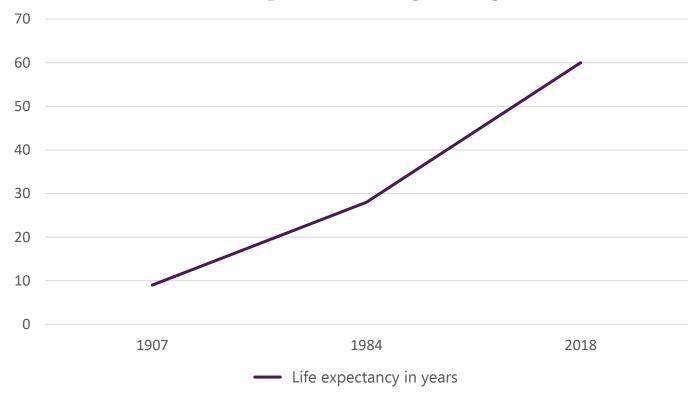
Resource Library



https://adscresources.advocatehealth.com/

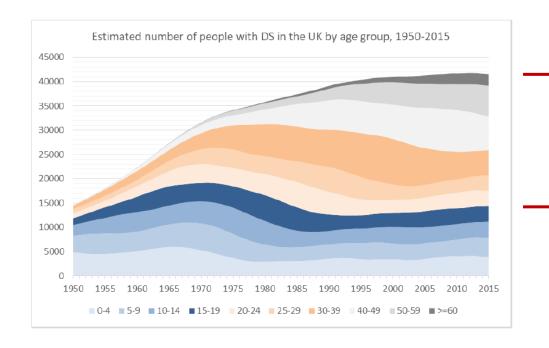
Today, people with Down syndrome are living *longer* and *healthier* than any other time in the past.

Life expectancy in years



There are more adults with Down syndrome living now than ever before.

People with DS in the United Kingdom



Estimated # of people with DS 20 years of age or older

Aging

Similarities

- Becoming more set in one's ways
- Slowing down
- Different activity preferences

Differences

- Earlier aging
- Living arrangements
- Health conditions

Common Conditions

Cataracts

- More common in people with Down syndrome
- Treatment
 - Monitored until it affects vision
 - Surgery
 - May require general anesthesia
 - Eyes drops post-surgery

Hearing loss

- Occurs at a younger age?
- Person with Down syndrome may not be able to explain their hearing difficulties
 - Behavior change
 - Loss of skills
- Hearing aids

Osteoarthritis

- Is it more common?
- Does it occur at a younger age?
- Is it underreported?
- How does it present?

Osteoporosis

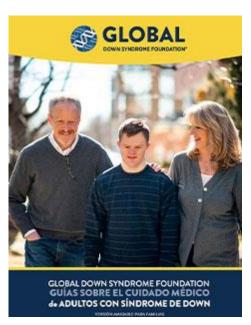
- Is it more common?
- Are DEXA scans accurate?
- Is the pathophysiology different indicating treatment should be different?

Menopause

- Occurs at a slightly younger age in women with Down syndrome
- Same treatment options for women with and without Down syndrome
- Association with memory

GLOBAL Medical Care Guidelines





Link to GLOBAL website



Alzheimer's Disease

The connection between AD & DS

- By age 40, nearly all people with Down syndrome have the **brain pathology** of Alzheimer's disease.
- HOWEVER, **symptoms** of Alzheimer's disease are uncommon before age 40.
- Prevalence
 - Estimates vary
 - 55% in those ages 50-59
 - Greater than 75% in those ages 60 and older

Diagnosis age

- Age when people with Down syndrome are diagnosed with Alzheimer's disease
 - Around 54-55 years old

Why is it more common?

- Amyloid precursor protein (APP)
- Chronic inflammation?
- Metabolic abnormalities?

Symptoms

- Psychological changes
- Memory impairment
- Loss of previously mastered skills
- Incontinence
- Weight loss

- Seizures
 - Higher rate (50-80% vs. 2-25%)
- Unsteady gait
- Swallowing difficulties

Diagnosis

History and physical exam

Rule out other causes

Neuropsychological testing

Limitations

Imaging

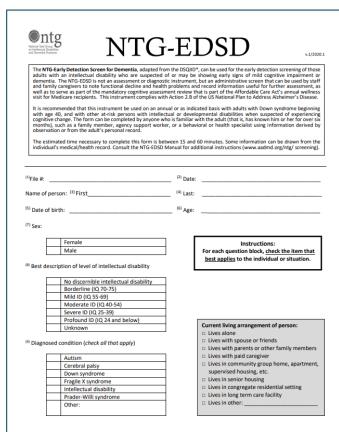
• MRI? CT?

Diagnosis

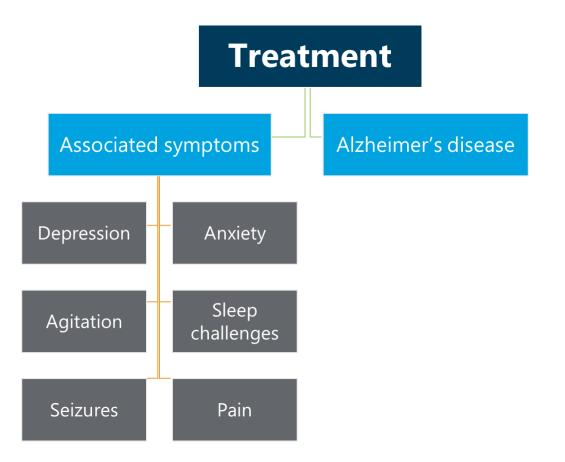
 National Task Group on Intellectual Disabilities and Dementia Practices

 Early Detection Screen for Dementia

NTG-EDSD



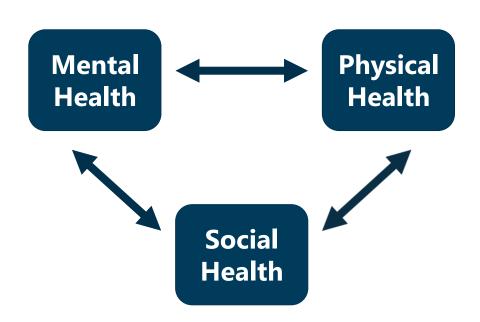


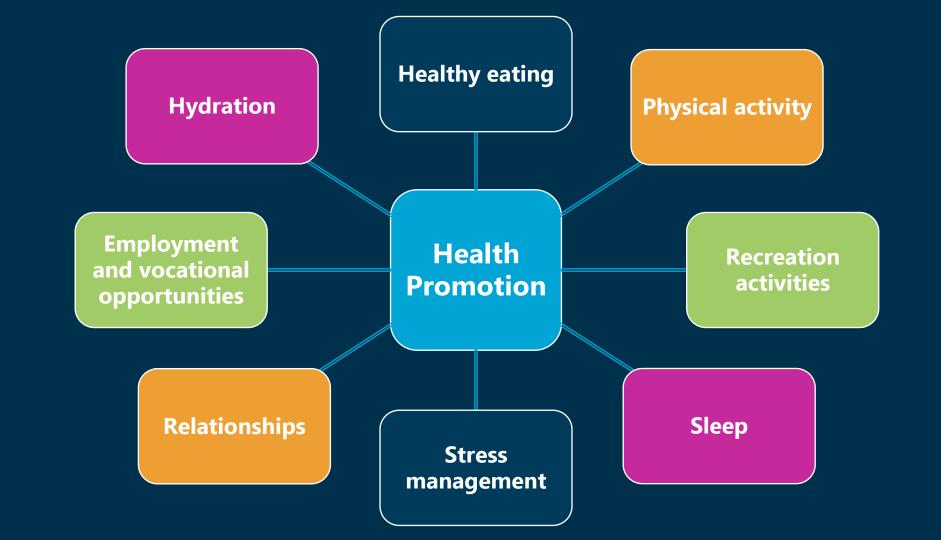


Healthy Aging

Promoting healthy aging

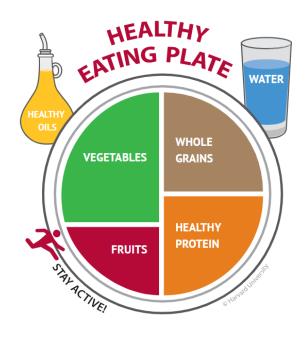
- Includes optimizing physical, mental, and social health
- Health promotion
- Medical care





HEALTHY EATING

- Maintain a healthy diet and weight
- No one diet is best
 - DASH
 - Mediterranean
 - MIND
 - Combines Mediterranean and DASH
 - Intermittent fasting?



Harvard University

Tips

- Reduce processed foods in diet
- Add green, leafy vegetables to meals
 - Smoothies, pasta, soup, eggs
- Make food swaps
 - Grilled instead of fried food
 - Cauliflower pizza crust
 - Zucchini noodles



HYDRATION

- Dehydration is common in many people with Down syndrome.
- Symptoms
 - Fatigue
 - Dizziness
 - Confusion



Tips

- Limit pop/soda
- Try seltzer or sparkling water
- Flavor water with fruit



PHYSICAL ACTIVITY

- 30 minutes, 5 or more days per week
- Many benefits
- Preferences may change with age



Tips

- Make it fun
- Be active throughout the day
- Incorporate a variety of types of physical activity (aerobic, strength, stretching)

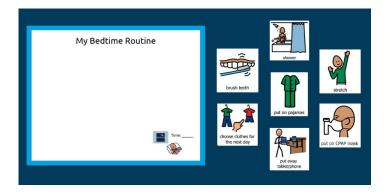


SLEEP

- Symptoms
 - Fatigue
 - Confusion
- Sleep hygiene
- Sleep apnea



- Create a bedtime routine
- Review current medications
- Consider natural products
- Talk with health care provider about prescription medications, if needed



MENTAL STIMULATION

- Paid or volunteer work
- Games, puzzles, activities

ACTIVITIES TO AVOID BOREDOM & HAVE FUN!

Arts and Crafts



Draw

Paint

Color

Sing

Write a story

Write a song

Scrapbook

Do origami

Make jewelry





Knit or crochet Take photos Make pottery Act in a play Make a collage Make movies Play an instrument Create a new playlist **Learning and Thinking**





Play a board game Read a book Listen to a podcast or audiobook Research an interesting topic Plan a vacation Fix something **Build something** Do a crossword or word search Learn a new skill

Do a jigsaw puzzle

 Change the activities as an individual ages

Fruits and Veggies Word Search

Fruits and veggies are **healthy foods**. We should eat them every day.

U	L	0	Ν	F	U	Z	Н	U	T	G	R	Α	Р	Е	S	1	Р
٧	U	S	K	D	W	Α	-1	U	K	Р	1	G	Р	0	1	Р	F
0	Р	W	С	Α	R	R	0	T	S	Χ	M	Υ	Р	С	Υ	1	В
С	W	Α	Н	-1	٧	Е	X	Υ	M	Е	٧	J	Z	Q	Υ	Ν	Α
Р	Е	Α	С	Н	Е	S	F	Р	Е	Ρ	Р	Е	R	S	Α	Е	Ν
-1	J	C	U	С	U	M	В	Е	R	S	٧	Н	Υ	٧	P	Α	Α
В	R	0	С	С	0	L	1	В	С	M	Α	C	L	M	P	Р	Ν
Е	Р	В	0	Α	W	Α	T	Е	R	Μ	Е	L	0	Ν	L	Р	Α
0	Е	U	F	Α	X	J	M	W	C	J	K	В	Α	В	Е	L	S
T	Υ	В	S	٧	M	M	K	Н	J	U	0	J	W	D	S	Е	0
D	С	T	T	Χ	Е	Z	U	G	X	Т	Υ	W	Q	J	В	Е	Α
M	R	Z	S	U	Q	F	0	D	U	С	Е	L	Е	R	Υ	Α	J

APPLES BANANAS BROCCOLI CARROTS CELERY CUCUMBERS GRAPES PEACHES PEPPERS PINEAPPLE SALAD WATERMELON

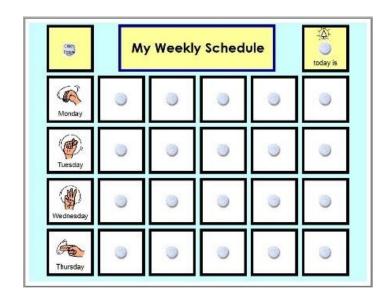


SOCIAL ENGAGEMENT

- Family, friends, housemates
- Recreation activities



 Change the frequency and/or length as an individual ages

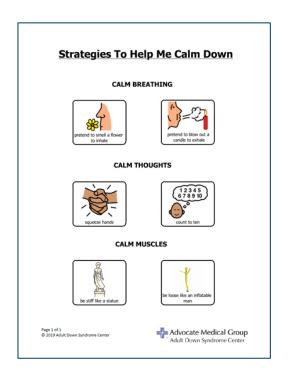


MENTAL WELL-BEING

- Stress management
- Life stressors associated with aging
- Empathy radar



- Practice stress management techniques
- Work with a mental health provider
 - Consider therapies (talk, music, art, etc.)



Key Points

- The life expectancy of people with Down syndrome is about 60 years old.
- There are similarities and differences in the aging process between adults with Down syndrome and adults without Down syndrome.
- Some health conditions are more common in adults with Down syndrome as they age.
- There are many lifestyle choices that people with Down syndrome can make to be healthy as they age.

Resources

DSMIG-USA

- <u>Down Syndrome</u>
 <u>Medical Interest Group</u>
 - Membership
 - Speaker Series
 - Project ECHO



Adult Down Syndrome Center

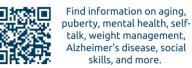
- Resource Library
- **Email List**
- Facebook
- **Instagram**

FREE HEALTH RESOURCES

for people with Down syndrome, families and caregivers, and professionals



Resource Library



adscresources.advocatehealth.com

Facebook & Instagram









@adultdownsyndromecenter

www.eepurl.com/c7uV1v

Email List





Agitated or Challenging Behavior in People with DS and Alzheimer's Disease

Down Syndrome EyeWiki

Hearing Loss

Menopause

Pneumococcal Vaccines

Recurrent Pneumonia

Reducing Risk of Getting Alzheimer's Disease

Resources on Healthy Ways to Manage Stress

Vision in Adults with DS

Weight Management in Adults with Down Syndrome



Videos and visuals

Be Active Throughout the Day Visual

Create a Bedtime Routine Visual

Fun Activities for Promoting Health

Hydration Video and Visuals

Tips for Eating Health Meals Visual

Ways to be Active Visual

What to Drink Instead of Pop/Soda Visual



Webinars and podcasts

Aging and Alzheimer's Disease in Adults with DS Webinar

Alzheimer's Disease Prevention and Healthy Aging Webinar

Behavior Changes in Individuals with DS Webinar

Decline in Skills and Regression in Adolescents & Adults with DS Webinar





Resource lists by topic

Alzheimer's Disease and Dementia

Decline in Skills and Regression

Nutrition and Weight

Self-Care and Hygiene

Sensory

<u>Sleep</u>

References

- Alagoz O, Hajjar A, Chootipongchaivat S, et al. Benefits and harms of mammography screening for women with Down syndrome: A collaborative modeling study. J Gen Intern Med. 2019;34(11):2374-2381. doi:10.1007/s11606-019-05182-5
- Altuna M, Giménez S, Fortea J. Epilepsy in Down syndrome: A highly prevalent comorbidity. *J Clin Med.* 2021;10(13):2776. doi:10.3390/jcm10132776
- Ballard C, Mobley W, Hardy J, Williams G, Corbett A. Dementia in Down's syndrome. *Lancet Neurol*. 2016;15(6):622-636. doi:10.1016/S1474-4422(16)00063-6
- Bittles AH, Glasson EJ. Clinical, social, and ethical implications of changing life expectancy in Down syndrome. *Dev Med Child Neurol.* 2004;46(4):282-286. doi:10.1017/s0012162204000441
- Chicoine B, Rivelli A, Fitzpatrick V, Chicoine L, Jia G, Rzhetsky A. Prevalence of common disease conditions in a large cohort of individuals with Down syndrome in the United States. *J Patient Cent Res Rev.* 2021;8(2):86-97. Published 2021 Apr 19. doi:10.17294/2330-0698.1824
- Coppus AM, Evenhuis HM, Verberne GJ, et al. Survival in elderly persons with Down syndrome. *J Am Geriatr Soc.* 2008;56(12):2311-2316. doi:10.1111/j.1532-5415.2008.01999.x
- de Graaf G, Buckley F, Skotko BG. Estimation of the number of people with Down syndrome in the United States. *Genet Med*. 2017;19(4):439-447. doi:10.1038/gim.2016.127
- de Graaf G, Buckley F, Skotko BG. Estimation of the number of people with Down syndrome in Europe [published correction appears in *Eur J Hum Genet*. 2022;30(10):1199-1200. *Eur J Hum Genet*. 2021;29(3):402-410. doi:10.1038/s41431-020-00748-y



- Fortea J, Vilaplana E, Carmona-Iragui M, et al. Clinical and biomarker changes of Alzheimer's disease in adults with Down syndrome: A cross-sectional study. *Lancet*. 2020;395(10242):1988-1997. doi:10.1016/S0140-6736(20)30689-9
- Glasson EJ, Sullivan SG, Hussain R, Petterson BA, Montgomery PD, Bittles AH. The changing survival profile of people with Down's syndrome: implications for genetic counselling. *Clin Genet*. 2002;62(5):390-393. doi:10.1034/j.1399-0004.2002.620506.x
- Lai F, Mercaldo N, Wang CM, Hersch GG, Rosas HD. Association between inflammatory conditions and Alzheimer's disease age of onset in Down syndrome. *J Clin Med.* 2021;10(14):3116. doi:10.3390/jcm10143116
- McCarron M, McCallion P, Reilly E, et al. A prospective 20-year longitudinal follow-up of dementia in persons with Down syndrome. *J Intellect Disabil Res.* 2017;61(9):843-852. doi:10.1111/jir.12390
- Menéndez M. Down syndrome, Alzheimer's disease and seizures. *Brain Dev.* 2005;27(4):246-252. doi:10.1016/j.braindev.2004.07.008
- Santoro JD, Patel L, Kammeyer R, et al. Assessment and diagnosis of Down syndrome regression disorder: International expert consensus. *Front. Neurol.* 2022;13.940175. doi:10.3389/fneur2022.940175
- Sinai A, Mokrysz C, Bernal J, et al. Predictors of age of diagnosis and survival of Alzheimer's disease in Down syndrome. J Alzheimers Dis. 2018;61(2):717-728. doi:10.3233/JAD-170624
- Sobey CG, Judkins CP, Sundararajan V, et al. Risk of major cardiovascular events in people with Down syndrome. PLoS One. 2015;10(9):e0137093. doi:10.1371/journal.pone.0137093



- Tournissac M, Leclerc M, Valentin-Escalera J, et al. Metabolic determinants of Alzheimer's disease: A focus on thermoregulation. *Ageing Res Rev.* 2021;72:101462. doi:10.1016/j.arr.2021.101462
- Tsou AY, Bulova P, Capone G, et al. Medical care of adults with Down syndrome: A clinical guideline. *JAMA*. 2020;324(15):1543-1556. doi:10.1001/jama.2020.17024
- Zhu JL, Hasle H, Correa A, et al. Survival among people with Down syndrome: a nationwide population-based study in Denmark. *Genet Med.* 2013;15(1):64-69. doi:10.1038/gim.2012.93
- Zis P, Strydom A. Clinical aspects and biomarkers of Alzheimer's disease in Down syndrome. *Free Radic Biol Med.* 2018;114:3-9. doi:10.1016/j.freeradbiomed.2017.08.024