

The Diabetes Connection: Preventing Stroke and Preserving Cognition

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Disclosure

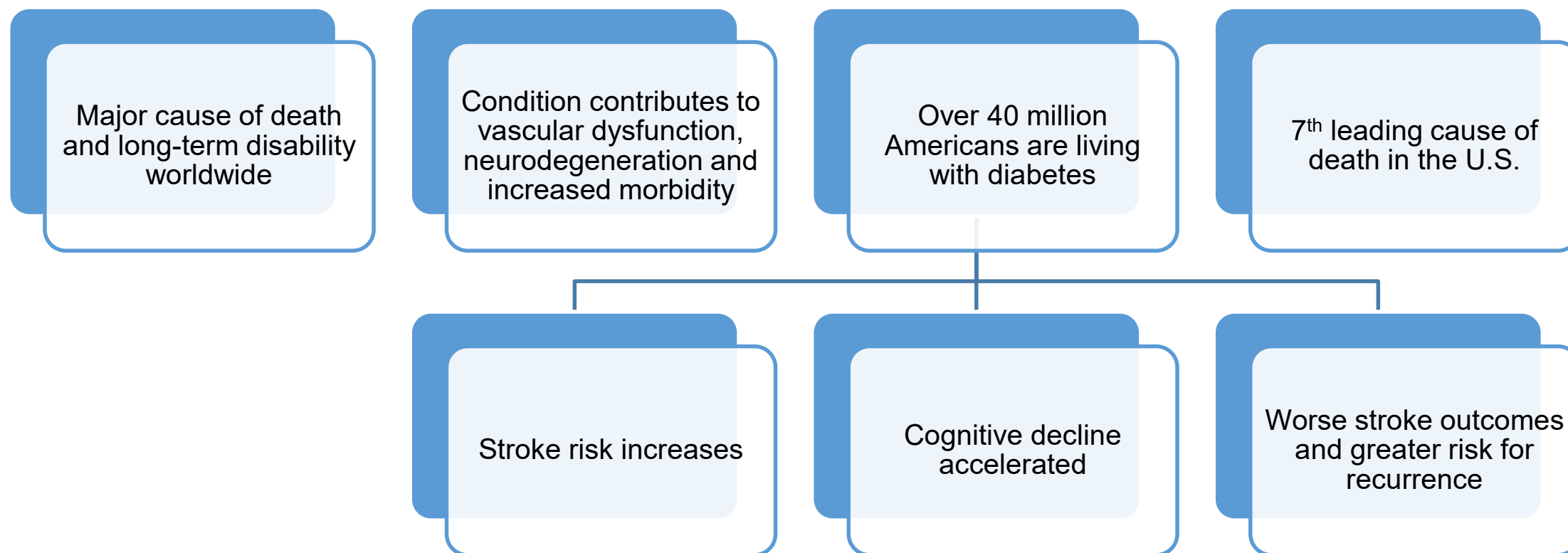
In the past 24 months, I have not had any financial relationships with any ineligible companies.

Objectives

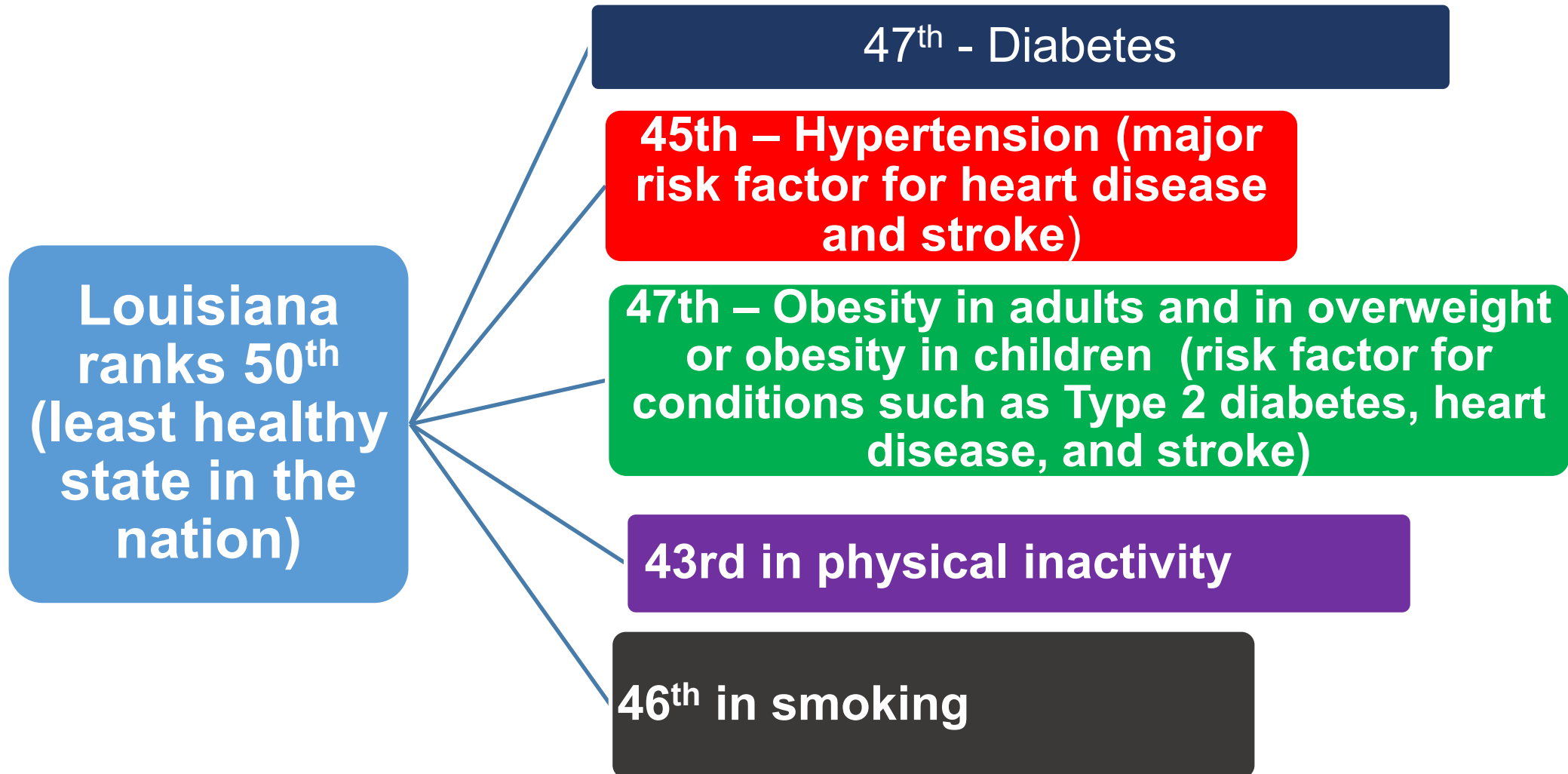
- 1. Describe the pathophysiological mechanisms linking diabetes mellitus to increased risk of stroke and cognitive impairment.**
- 2. Identify modifiable cardiovascular and metabolic risk factors that contribute to stroke and cognitive decline in patients with diabetes.**
- 3. Evaluate evidence-based strategies for glycemic, blood pressure and lipid management to reduce the risk of stroke and preserve cognitive function.**
- 4. Apply lifestyle interventions to develop patient centered prevention plans that support brain health and improve outcomes in patients with diabetes.**

Diabetes: The Clinical Urgency

Every 2 minutes an American Adult with diabetes is hospitalized with a stroke



The Louisiana Connection



Louisiana Behavioral Risk Factor Surveillance System Data

2023 CONDITIONS/RISK FACTORS (% PREVALENCE)	REGION									STATE
	1	2	3	4	5	6	7	8	9	
DIABETES	16.2	15.4	17.0	15.8	15.2	17.3	16.3	15.4	16.2	16.1
OVERWEIGHT	31.9	32.8	36.7	32.6	25.7	32.6	31.6	32.2	31.9	32.1
OBESE	35.5	35.5	42.8	38.4	49.0	40.5	43.3	41.6	41.4	39.9
STROKE	3.8	5.4	5.0	4.1	7.3	5.6	4.0	6.2	5.1	4.9

Top 2 Regions for:

Diabetes: Regions 6 and 3

Overweight: Regions 3 and 4, 6

Obese: Regions 5 and 7

Stroke: 5 and 8

Region 1: Jefferson, Orleans, Plaquemines, and St. Bernard

Region 3: Assumption, Lafourche, St. Charles, St. James, St. John the Baptist, St. Mary, and Terrebonne

Region 4: Acadia, Evangeline, Iberia, Lafayette, St. Landry, St. Martin, and Vermilion

Region 5: Allen, Beauregard, Calcasieu, Cameron, Jeff Davis

Region 6: Avoyelles, Catahoula, Concordia, Grant, La Salle, Rapides, Vernon, and Winn

Region 7: Bienville, Bossier, Caddo, Claiborne, De Soto, Natchitoches, Red River, Sabine, and Webster.

Region 8: E. Carroll, Caldwell, Franklin, Jackson, Lincoln, Madison, Morehouse, Ouachita, Richland, Tensas, Union, W. Carroll

Obesity

Strongly associated with insulin resistance and T2DM, contributing to systemic inflammation and worsening other components of metabolic syndrome, such as hypertension and dyslipidemia.

Excess body weight leads to
↑B/P, altered lipid
metabolism, and increased
inflammation, all of which ↑
the risk of stroke.

Hypertension

Interacts synergistically with hyperglycemia to cause arterial stiffness and increased cerebral pressure, compounding the risk of ischemic stroke.

T2DM, coexisting with hypertension, plays a role in promoting endothelial dysfunction, impairing normal function of blood vessels.

Places persons with both conditions at a ↑ risk for thrombus formation, which can lead to ischemic events such as stroke or heart attack.

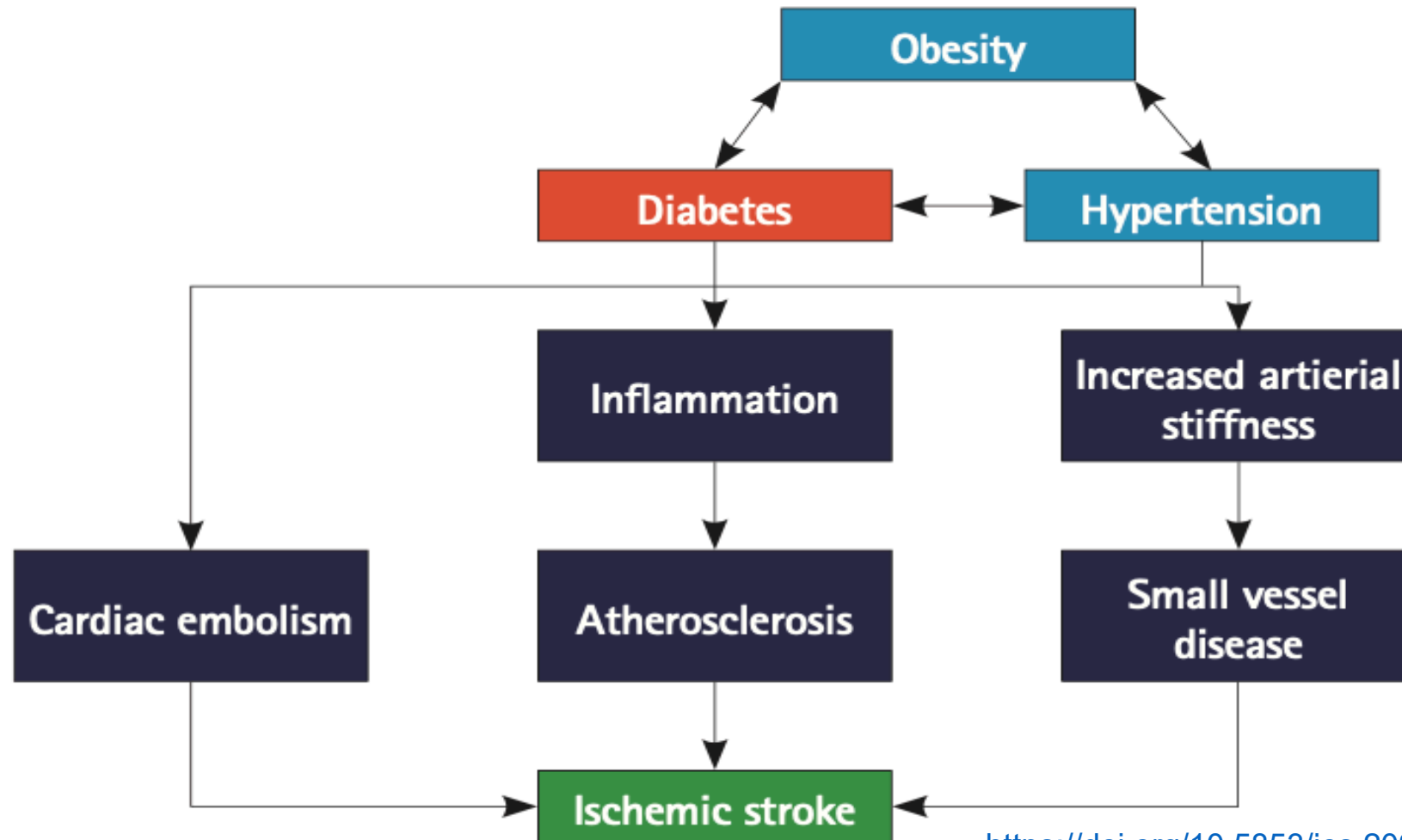
Dyslipidemia

Characterized by elevated levels of LDL cholesterol and triglycerides, along with reduced HDL cholesterol.

Contributes to the development of atherosclerosis, a major precursor to ischemic stroke.

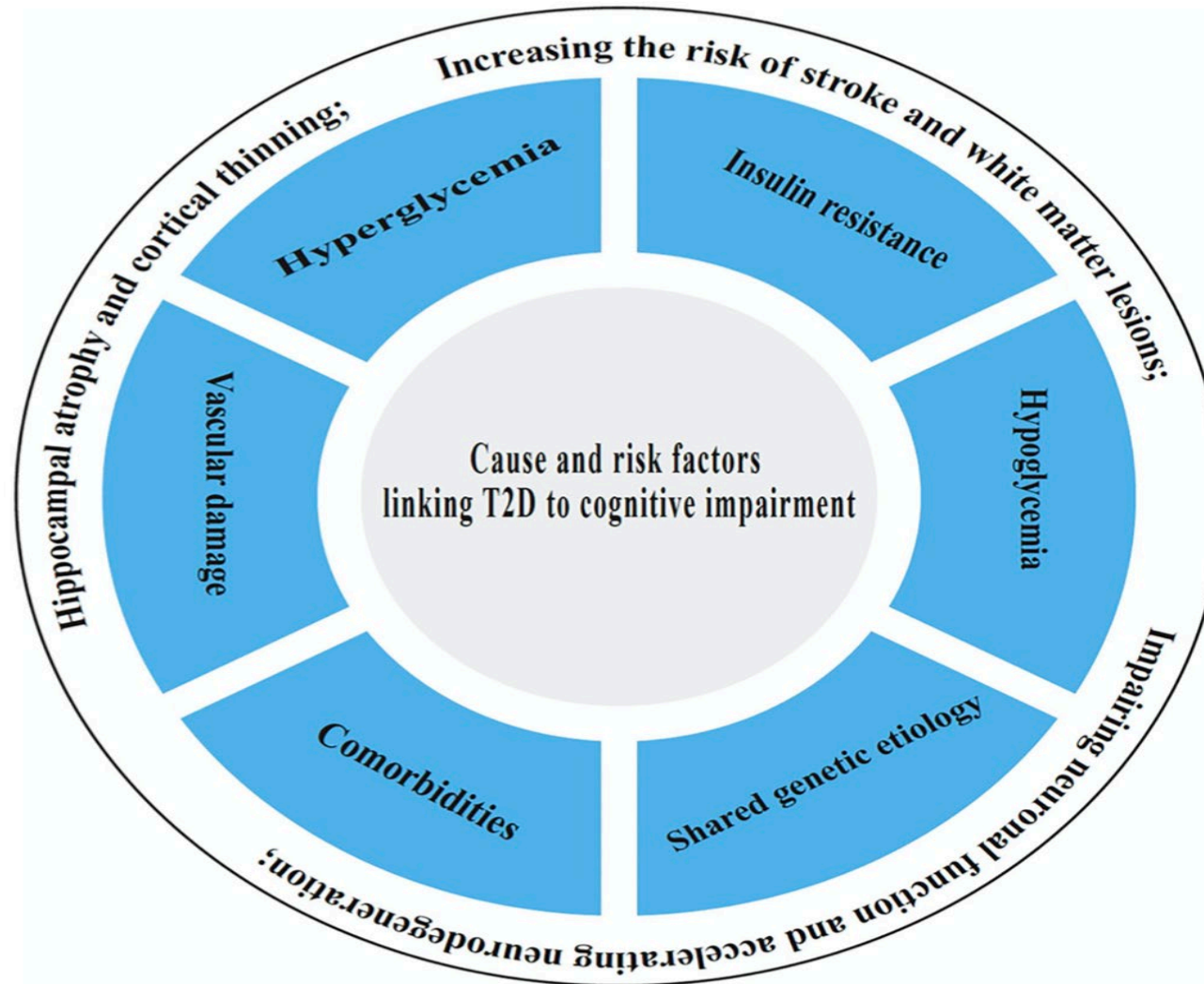
In diabetic patients, worsens endothelial dysfunction and destabilizes arterial plaques, further increasing the risk of stroke.

Pathophysiological Relationship Between Diabetes and Stroke



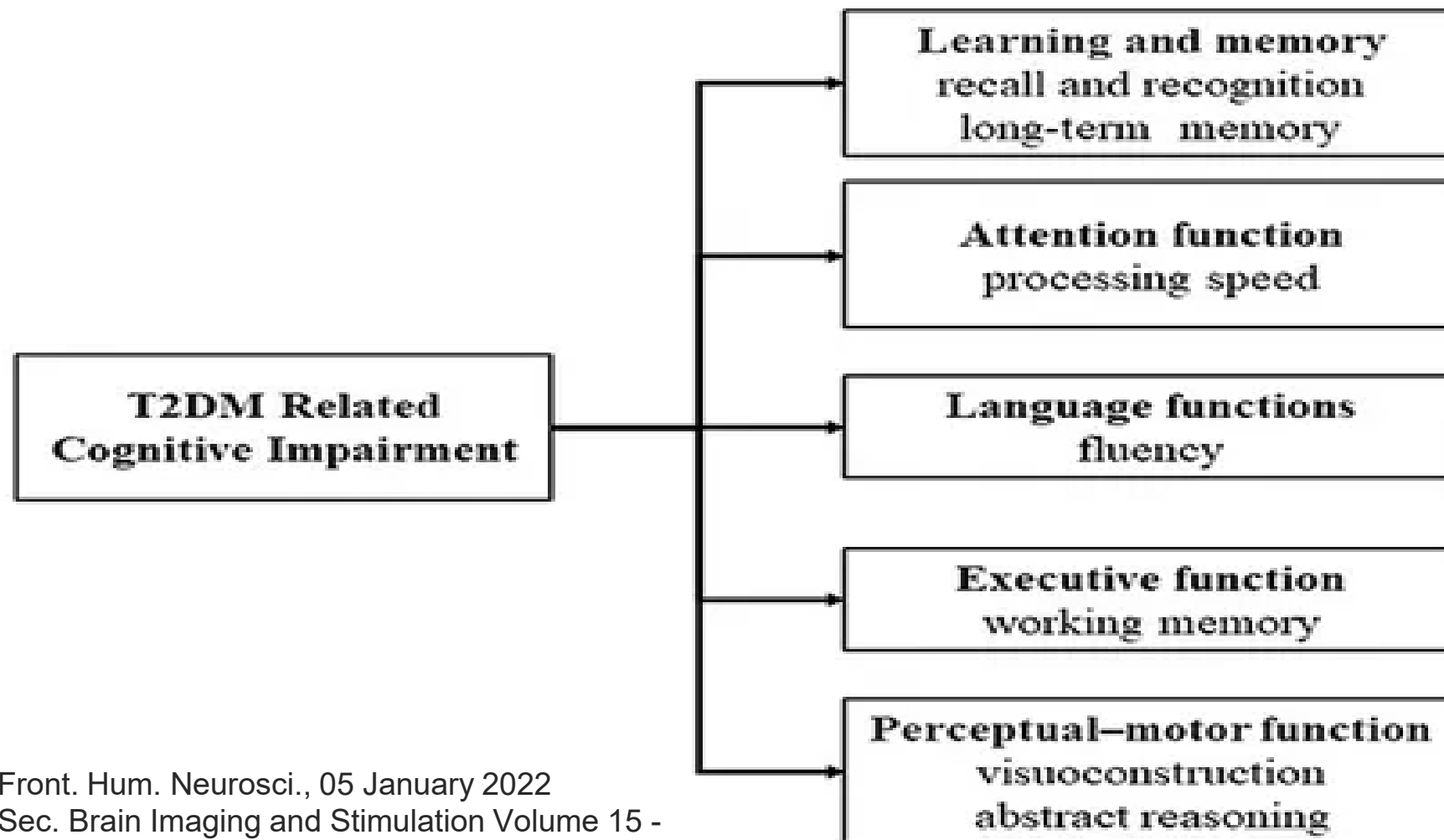
<https://doi.org/10.5853/jos.2022.02306>

Causes and Risk Factors Connecting T2D to Cognitive Impairment



Diabetes and Cognitive Dysfunction

Domains of T2DM related Cognitive Impairment



Cognitive Decline in T1DM versus T2DM

- **Cognitive decline is more common & severe in T2DM compared to T1DM, especially in older adults.**

Both T1DM & T2DM are associated with cognitive impairment, but T2DM confers a higher risk & faster progression of cognitive decline & dementia

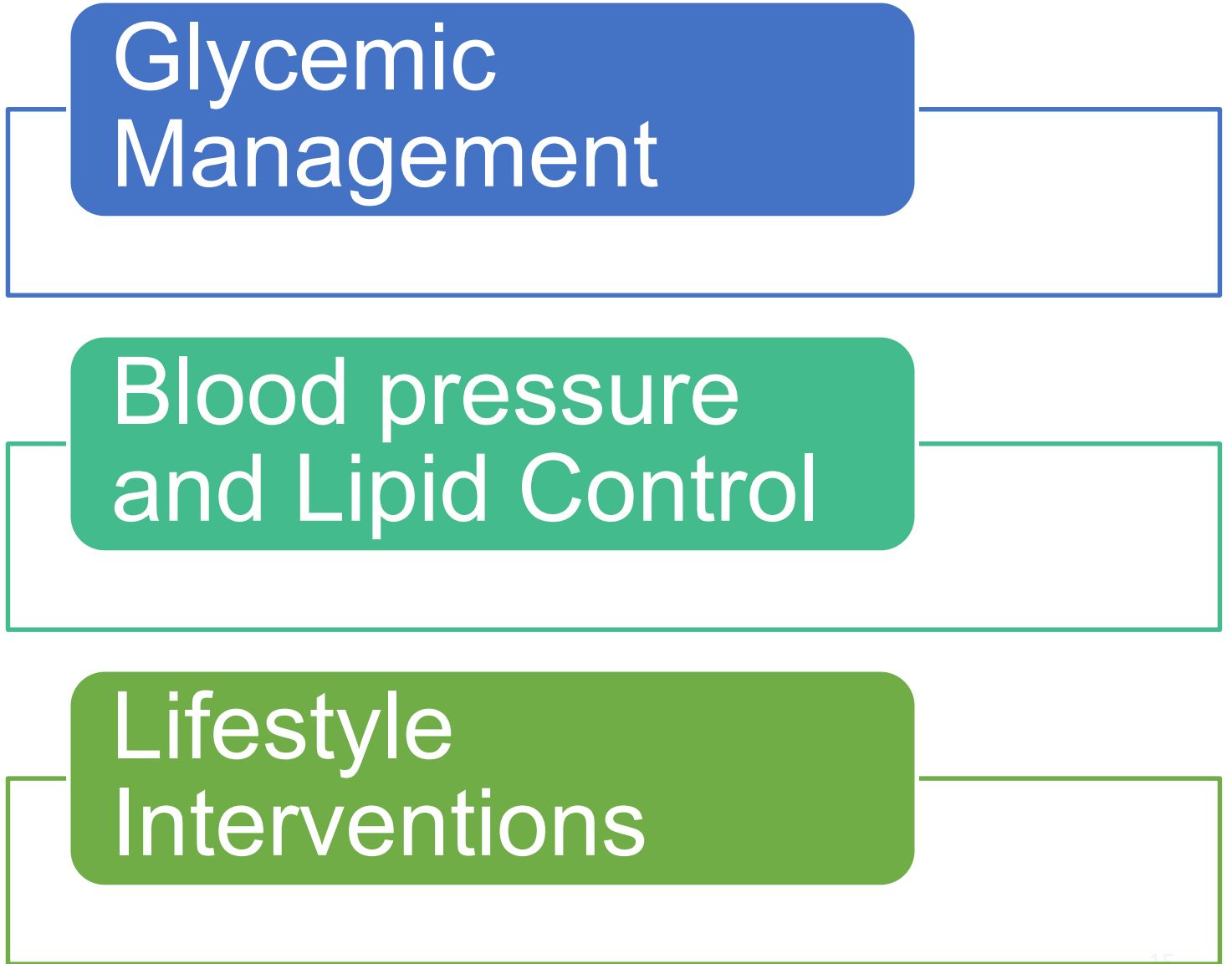
- Direct comparisons in youth suggest differences in cognitive function between T1DM & T2DM are largely explained by *modifiable factors* such as central adiposity and mental health, rather than diabetes type.
- In older adults, the population burden of cognitive impairment is *much greater in T2DM* due to its higher prevalence and older age of onset.
- Data on cognitive decline in older adults with T1DM is limited. Available data suggest that while both types confer risk, the magnitude & clinical impact are greater in T2DM.

Van Duinkerken E., & Ryan, C.M. (2020). Diabetes mellitus in the young and the old: Effects on cognitive functioning across the life span. *Neurobiology of Disease*. 134 <https://doi.org/10.1016/j.nbd.2019.104608>

Cognitive Decline in T2DM

- **T2D accounts for >90% of all diabetes**
 - Onset in mid-life or in older adults - often other chronic health conditions co-exist
 - Increase in T2D in adolescence and younger adults in large part associated with the global healthcare epidemic of obesity
- **There is compelling evidence that adults with T2D have an increased risk of neurocognitive dysfunction.**
 - Studies have tried to develop a “**cognitive profile**” with the following predominant deficits: information processing disorder (63% of studies), disorders of attention & concentration (50%), memory loss (44%)
 - **Neuroimaging studies** show *whole brain & frontal white matter volume reduction*, and diffuse white matter microstructural abnormalities (likely microvascular)

Prevention Strategies: A Multifactorial Approach



Glycemic
Management

Blood pressure
and Lipid Control

Lifestyle
Interventions

Pharmacologic Interventions

Pharmacological management of diabetes should be viewed not only through the lens of glycemic control but also as a strategy for vascular brain protection

GLP-1 Receptor Agonists*

- Improve glycemic control
- Reduce CV event
- Neuroprotection

SGLT2 Inhibitors

- Reduce glucose reabsorption
- Cardiovascular and renal benefits
- Effect on stroke prevention less robust

* Strongest diabetes-specific evidence for stroke risk reduction.

Hypertension and Lipid Control

Hypertension

- ADA guidelines emphasize intensive B/P management in persons with diabetes
- Preferred agents:
 - ACE inhibitors
 - Angiotensin receptor blockers
 - Thiazide-type diuretics
 - Calcium channel blockers

Lipid Control

- Lipid-lowering therapy – cornerstone of stroke prevention
- Statins reduce atherosclerotic plaques and risk of ischemic stroke for most adults with diabetes, particularly those with additional CV risk
- Additional agents - i.e., Ezetimibe, PCSK9 inhibitor

Evidence-Based Pharmacological Agents in Reducing Stroke Risk in Diabetes

Type 1 Diabetes

- Statin therapy
- Antihypertensive therapy (particularly ACE inhibitors - ACEI or ARBs)
- Antiplatelet therapy (secondary prevention)
- Intensive insulin therapy for optimal glycemic control

Type 2 Diabetes

- GLP-1 RAs – Strongest diabetes-specific evidence (Semaglutide, Dulaglutide, Liraglutide)
- Statins (Highest overall level of evidence)
- Antihypertensive therapy (ACEI/ARB-based)
- Antiplatelet therapy (secondary prevention)
- Pioglitazone (especially for recurrent stroke)
- SGLT2 inhibitors (cardiovascular benefit but no clear stroke reduction)



Source: Dementia prevention, intervention, and care: 2024 report of the Lancet standing Commission, Livingston, Gill et al. The Lancet, Volume 404, Issue 10452, 572–628

Life's Essential 8 as the Foundation for Prevention

Healthy diet

Physical
activity

Healthy
weight

Healthy
sleep

Avoidance of
tobacco
products

Blood
pressure
control*

Cholesterol
management

Blood
glucose
control

*Hypertension continues to be the strongest modifiable risk factor for stroke.

Mediterranean and MIND Diet Strategies

Diabetes Management Goal	Mediterranean Diet Strategy	MIND Diet Strategy
Improve glycemic control	Whole grains, legumes, vegetables, healthy fats	Whole grains, beans, vegetables, berries
Reduce hypertension	DASH-like emphasis on fruits and vegetables	High intake of leafy greens and vegetables
Improve lipid profiles	Olive oil, nuts, fish	Olive oils, nuts, fish
Prevent stroke	Reduced red meat and saturated fat; increase cardioprotective foods	Similar approach with greater emphasis on neuroprotective foods
Preserve cognition	Promote vascular health and cerebral perfusion	Emphasize berries and leafy greens associated with slower cognitive decline
Reduce inflammation	Antioxidant-rich foods	Antioxidant-rich vegetables and berries

Life Course Approach to Risk Reduction

EARLY LIFE

Less Education -5%

MIDLIFE

Hearing loss – 7%
High LDL, Cholesterol - 7%**
Depression - 3%
TBI – 3%
Physical Inactivity - 2%
Diabetes - 2%
Smoking -2%
Hypertension – 2%
Obesity -1%
Excessive Alcohol -1%

LATE LIFE

Social Isolation 5%
Air pollution – 3%
Visual Loss - 2%**

45%
Potentially
Modifiable

Percentage (%) reduction in cases of dementia if this risk factor eliminated

** Added in 2024

<https://www.alzint.org/news-events/news/lancet-commission-identifies-two-new-risk-factors-for-dementia-and-suggests-45-of-cases-could-be-delayed-or-reduced/>

References and Resource Links

- American Diabetes Association Professional Practice Committee.(2026). Cardiovascular disease and risk management. Standards of care in diabetes – 2026. *Diabetes Care*, 49 (Supplement 1): S216-S245. <https://doi.org/10.2337/dc26-S010>
- America’s Health Rankings: <https://www.americashealthrankings.org/explore/states/LA#rankings>
- Biessels, G. J., & Despa, F. (2018). Cognitive decline and dementia in diabetes mellitus: Mechanisms and clinical implications. *Nature Reviews Endocrinology*, 14(10), 591–604. <https://doi.org/10.1038/s41574-018-0048-7>
- Bushnell, C., et al. (2024). 2024 guideline for the primary prevention of stroke; A guideline from the American Heart Association/American Stroke Association, 55(12). <https://doi.org/10.1161/STR.0000000000000475>
- Chen, X., Huang, Y., & Xiong, X. (2025). Mechanisms underlying cognitive impairment and management strategies in type 2 diabetes. *Frontiers in Endocrinology*, 16, Article 1655768. <https://doi.org/10.3389/fendo.2025.1655768>
- Diabetes Care (2025). Standards of care in diabetes. American Diabetes Association, 48, Issue Supplement_1 https://diabetesjournals.org/care/article/48/Supplement_1/S207/157549/10-Cardiovascular-Disease-and-Risk-Management
- Livingston, G. et al. (2024). Dementia prevention, intervention, and care: 2024 report of the Lancet standing Commission. [https://doi.org/10.1016/S0140-6736\(24\)01296-0](https://doi.org/10.1016/S0140-6736(24)01296-0)
- Mosenzon, O., Cheng, A. Y. Y., Rabinstein, A. A., & Sacco, S. (2023). Diabetes and stroke: What are the connections? *Journal of Stroke*, 25(1), 26–38. <https://doi.org/10.5853/jos.2022.02306>
- Prentza et al. (2024). Antidiabetic treatment and prevention of ischemic stroke: A systematic review. *Journal of Clinical Medicine*, 13(9), 5786; <https://doi.org/10.3390/jcm13195786>
- Primary Prevention of Stroke: AHA and American Stroke Association: <https://www.guidelinecentral.com/guideline/7082/#section-4018190>

References and Resource Links

- “The Alzheimer’s Association Clinical Practice Guideline for the Diagnostic Evaluation, Testing, Counseling and Disclosure of Suspected Alzheimer’s Disease and Related Disorders (DETeCD-ADRD): Validated Clinical Assessment Instruments,” Atri et al. <https://doi.org/10.1002/alz.14335>
- The Alzheimer’s Association Clinical Practice Guideline for the Diagnostic Evaluation, Testing, Counseling and Disclosure of Suspected Alzheimer’s Disease and Related Disorders (DETeCD-ADRD): Executive Summary of Recommendations for Primary Care,” Atri, et al. <https://doi.org/10.1002/alz.14333>
- <https://odphp.health.gov/our-work/nutrition-physical-activity/physical-activity-guidelines/current-guidelines>
- <https://www.alz.org/professionals/health-systems-medical-professionals/cognitive-assessment>
- The MIND diet: Healthful diet linked to reduced risk of cognitive impairment: <https://www.nih.gov/news-events/nih-research-matters/healthful-diet-linked-reduced-risk-cognitive-decline>



Questions?

Thank You

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