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## Type 2 diabetes mellitus: Isn't it time to update the terminology?

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## Why to update the terminology

The term diabetes mellitus gives the impression that it is only a disease of high blood sugar, with the excretion of sugar in the urine

Acute and chronic complications, including microvascular and macrovascular complications, are common in T2DM

The glucocentric approach is replaced by overall risk reduction (multi-risk strategy), and the organ protective approach indicates our knowledge about the pathophysiology of the illness

Multidirectional interaction between metabolic diseases such as T2DM, cardiovascular disease, and chronic kidney disease is well established

Cardiovascular and renal complications are integral parts of T2DM

Long-term remission of T2DM was achievable through weight reduction

Weight reduction is associated with improvement/remission of hypertension, dyslipidemia, metabolic dysfunction associated fatty liver disease, and other obesity-associated conditions in addition to T2DM

“Twin cycle hypothesis”: Chronic excess fat accumulation leads to hepatic and pancreatic dysfunction, leading to the development of T2DM

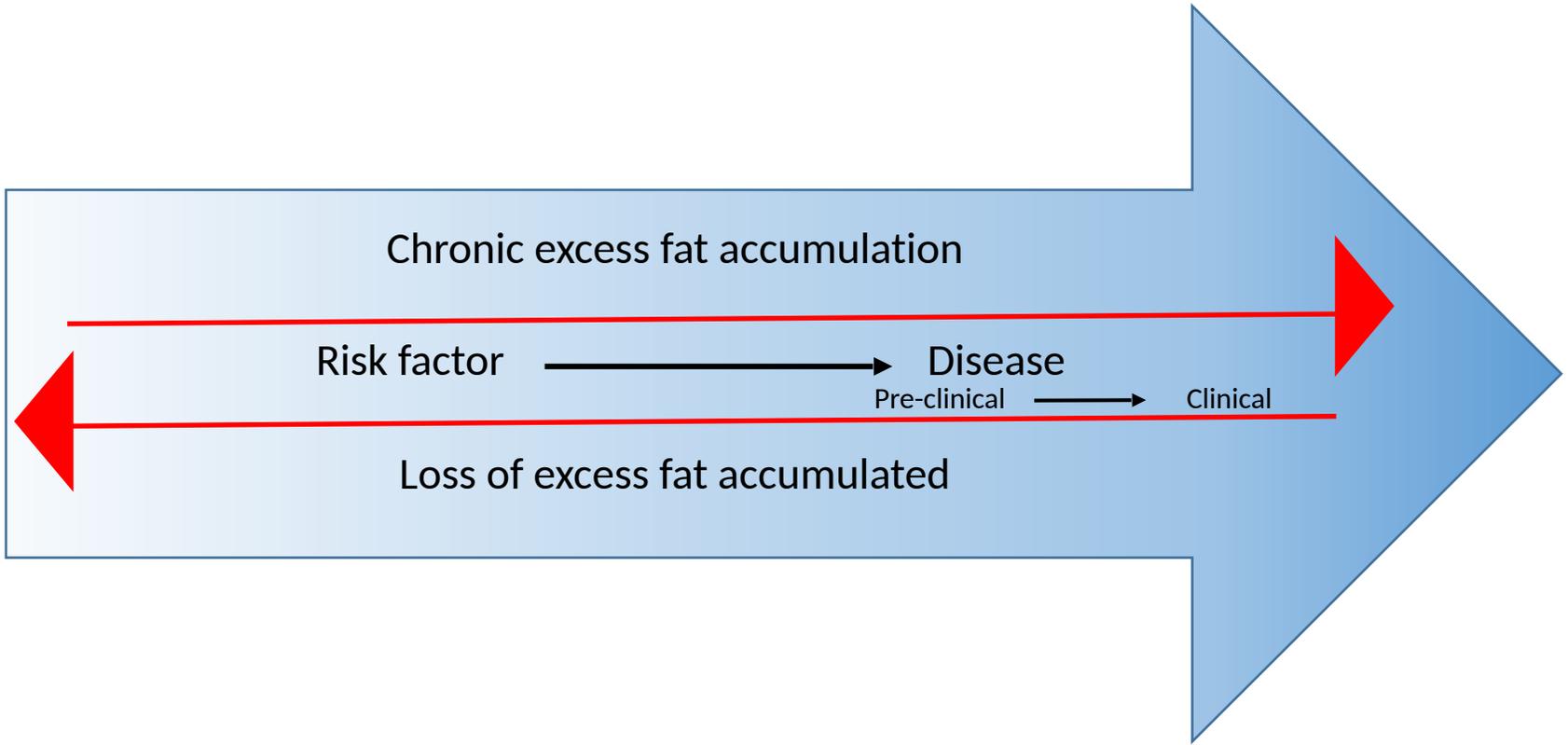
The strong pathophysiological link between diabetes and obesity is well described by the term ‘diabesity’

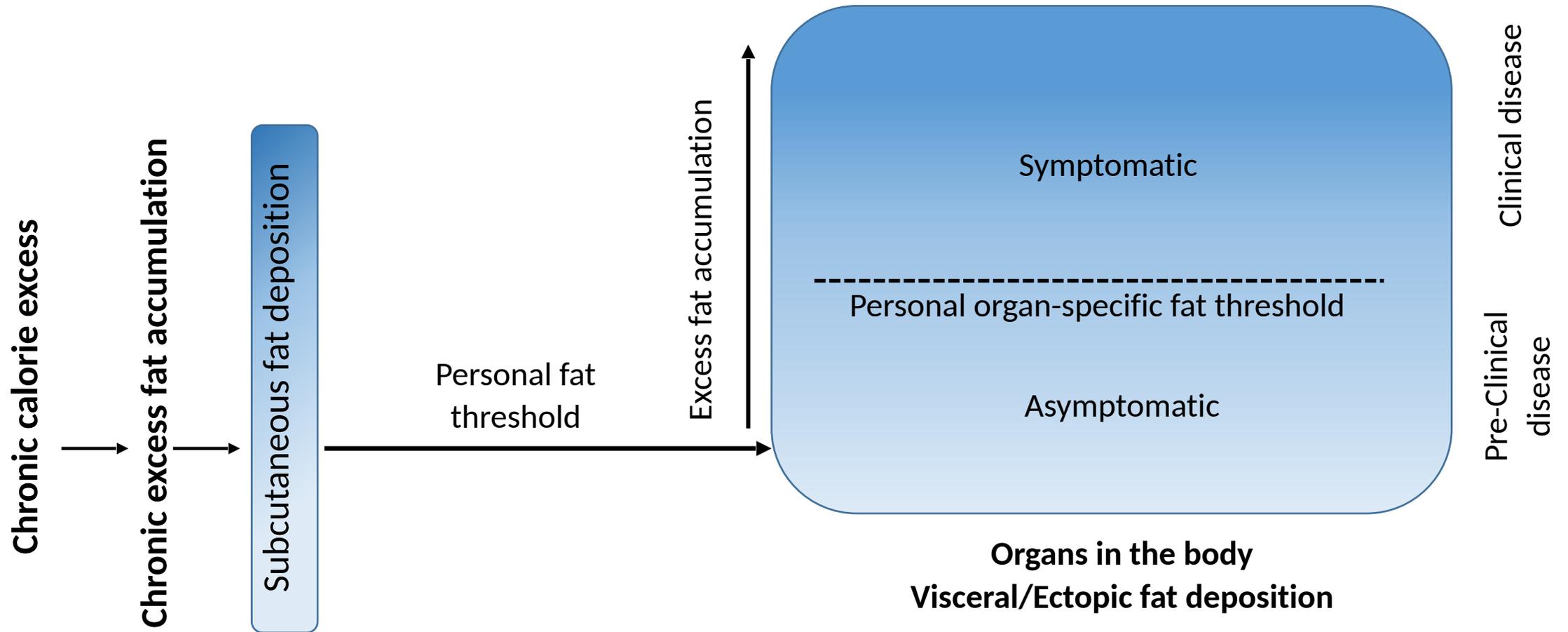
T2DM in people with normal body weight and even in lean individuals, develops when the “personal fat threshold” is crossed

“Thin fat obesity” indicates that even in people with a normal body mass index can have increased fat deposition in the visceral organs

Term for non-alcoholic fatty liver disease has been updated to metabolic dysfunction associated fatty liver disease/metabolic dysfunction associated steatotic liver diseases

The new terminology reflects the pathophysiological basis of T2DM from other types of diabetes





# Classification of adiposity-induced metabolic dysfunction associated disease

Metabolic dysfunction associated endocrine diseases

Metabolic dysfunction associated hyperglycemic diseases

- Metabolic dysfunction associated cardiovascular diseases

Metabolic dysfunction associated gastrointestinal diseases

Metabolic dysfunction associated hepatobiliary diseases

- Metabolic dysfunction associated fatty liver diseases/metabolic dysfunction associated steatotic liver diseases

Metabolic dysfunction associated neurological diseases

Metabolic dysfunction associated genitourinary diseases

Metabolic dysfunction associated circulatory diseases

Metabolic dysfunction associated respiratory diseases

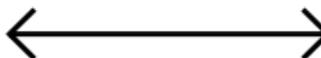
Metabolic dysfunction associated musculoskeletal diseases

Metabolic dysfunction associated immune diseases

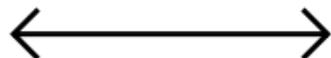
Metabolic dysfunction associated sexual diseases/dysfunction

Metabolic dysfunction associated integumentary diseases

**Normal**

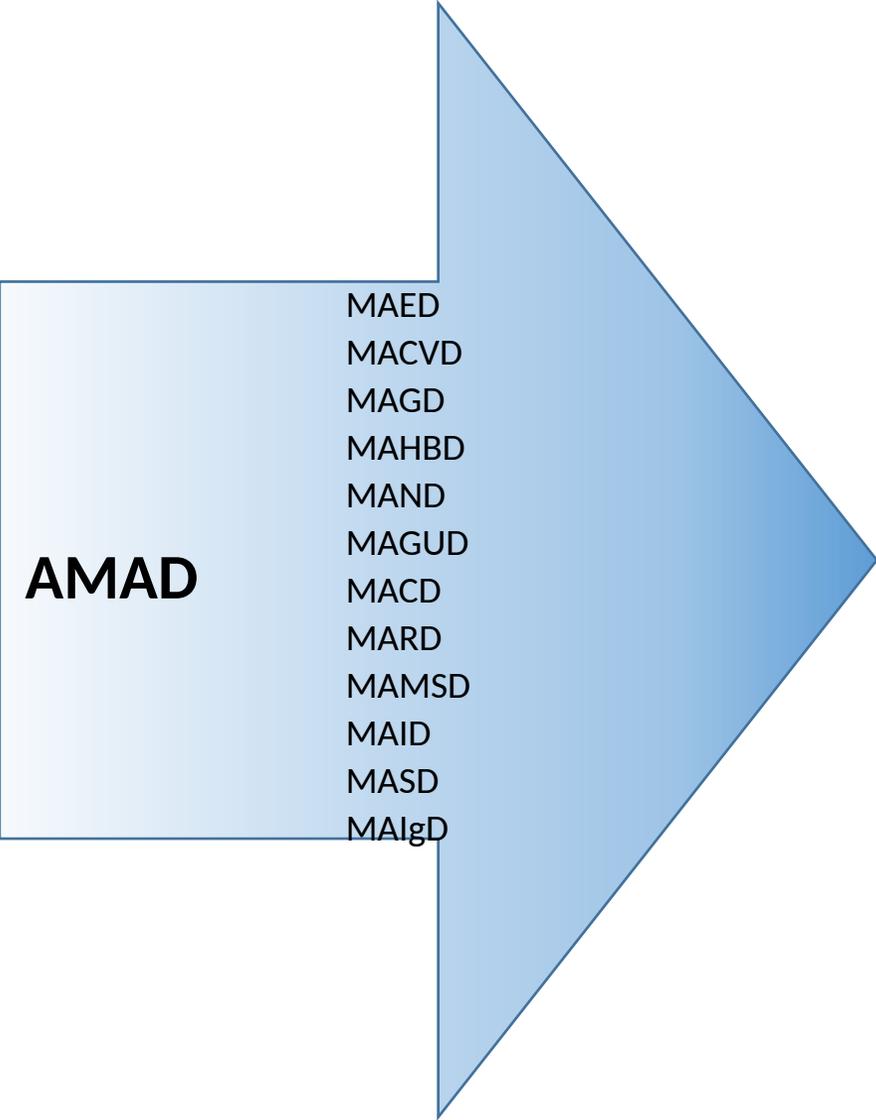


**Obesity**

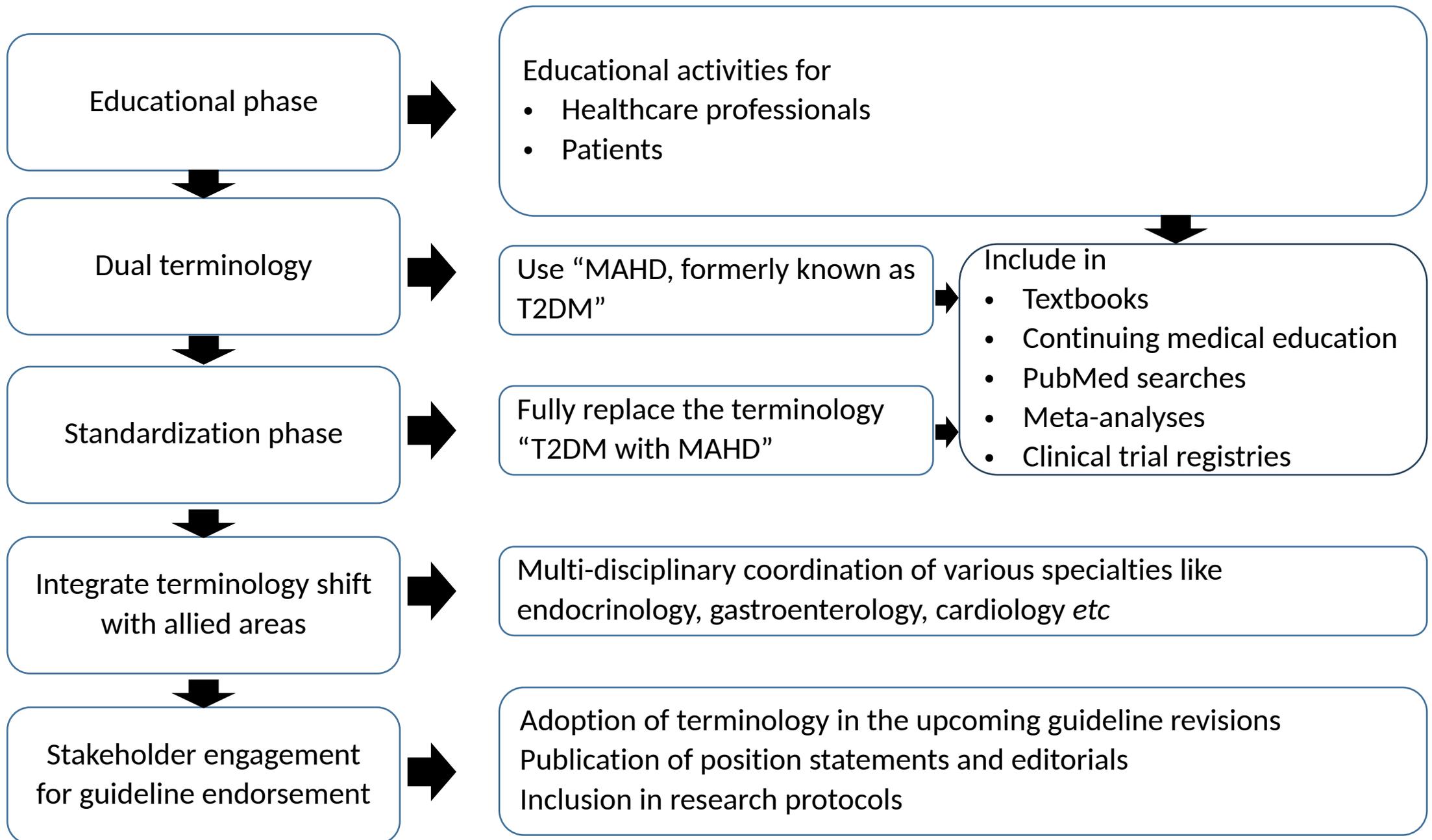


**AMAD**

- MAED
- MACVD
- MAGD
- MAHBD
- MAND
- MAGUD
- MACD
- MARD
- MAMSD
- MAID
- MASD
- MAIgD



| Advantages of updating to MAHD   | Limitations/ arguments   |
|--|--|
| The new terminology reflects the pathophysiological basis of the disease   | Terms “associated disease” and “metabolic dysfunction” lack clear and standardized definitions<br><br>The new terminology simply exchanges one form of stigma (sugar-related) for another (weight-related) |
| The new terminology (AMAD and MAHD) echoes with the existing terminology with similar pathophysiological mechanisms. e.g., Metabolic dysfunction associated fatty liver diseases |  |
| The new terminology is honest and transparent of the major pathophysiological mechanism, thereby providing clarity in care   |  |
| It groups all the currently considered different diseases with the same pathology into an umbrella of a single disease   |  |
| It helps in early diagnosis of other components of AMAD  |  |
| It helps multidisciplinary collaboration and holistic care   |  |
| It conveys a message of hope and empowerment, reinforcing the idea that early intervention can halt or even reverse the course of the disease                                    |  |
| It reflects the interconnections between various metabolic disease and CVD, CKD, necessitating early screening for associated problems   |  |
| It emphasizes the central role of lifestyle medicine in the promotion of overall health from multiple diseases due to excess fat accumulation                                    |  |
| It helps to differentiate other types of diabetes with different pathophysiological mechanisms into different categories   |  |



# THANK YOU

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