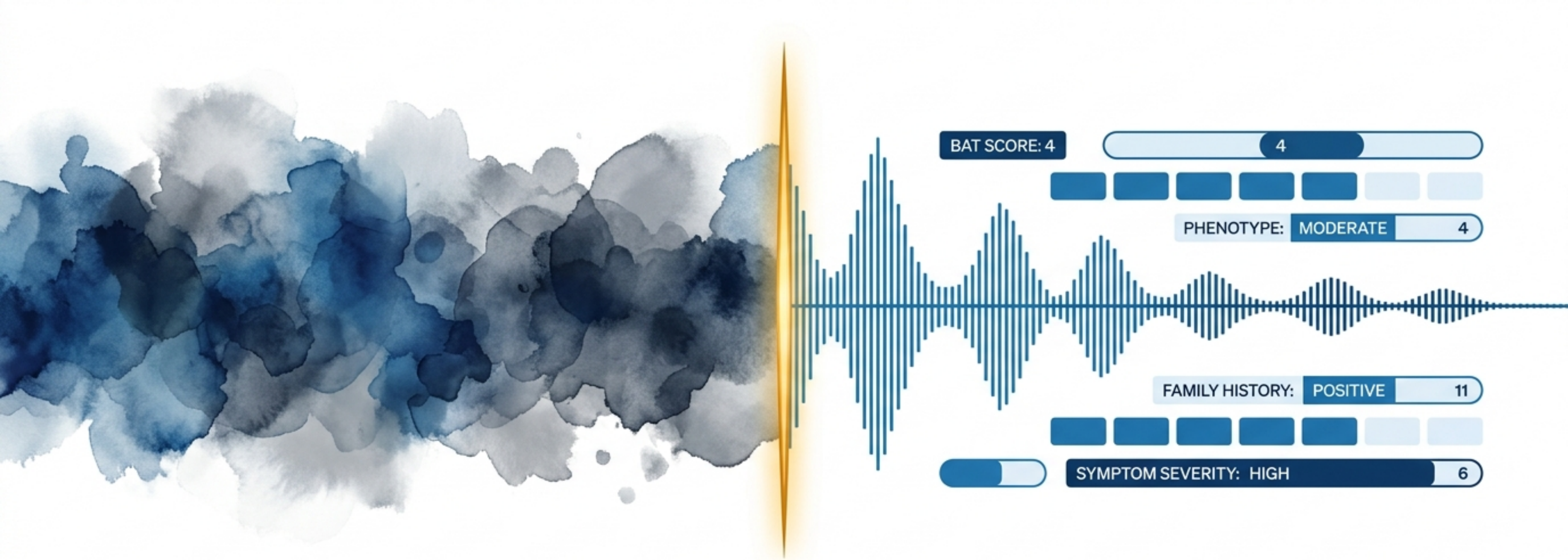


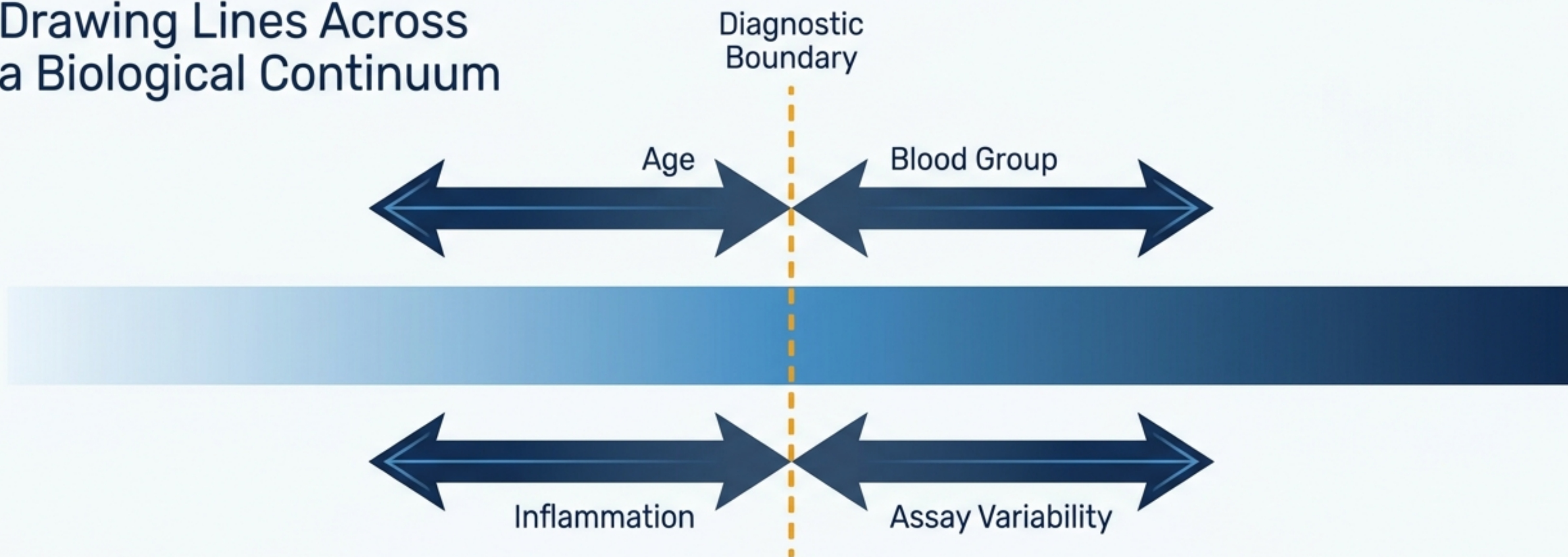


Structured Listening

Mastering Bleeding Assessment Tools in VWD Diagnosis

A Clinical Guide for Hematologists and Primary Care Physicians

Drawing Lines Across a Biological Continuum



The Core Problem

Von Willebrand Disease is a continuous and heterogeneous biological disorder.

The Classification Gap

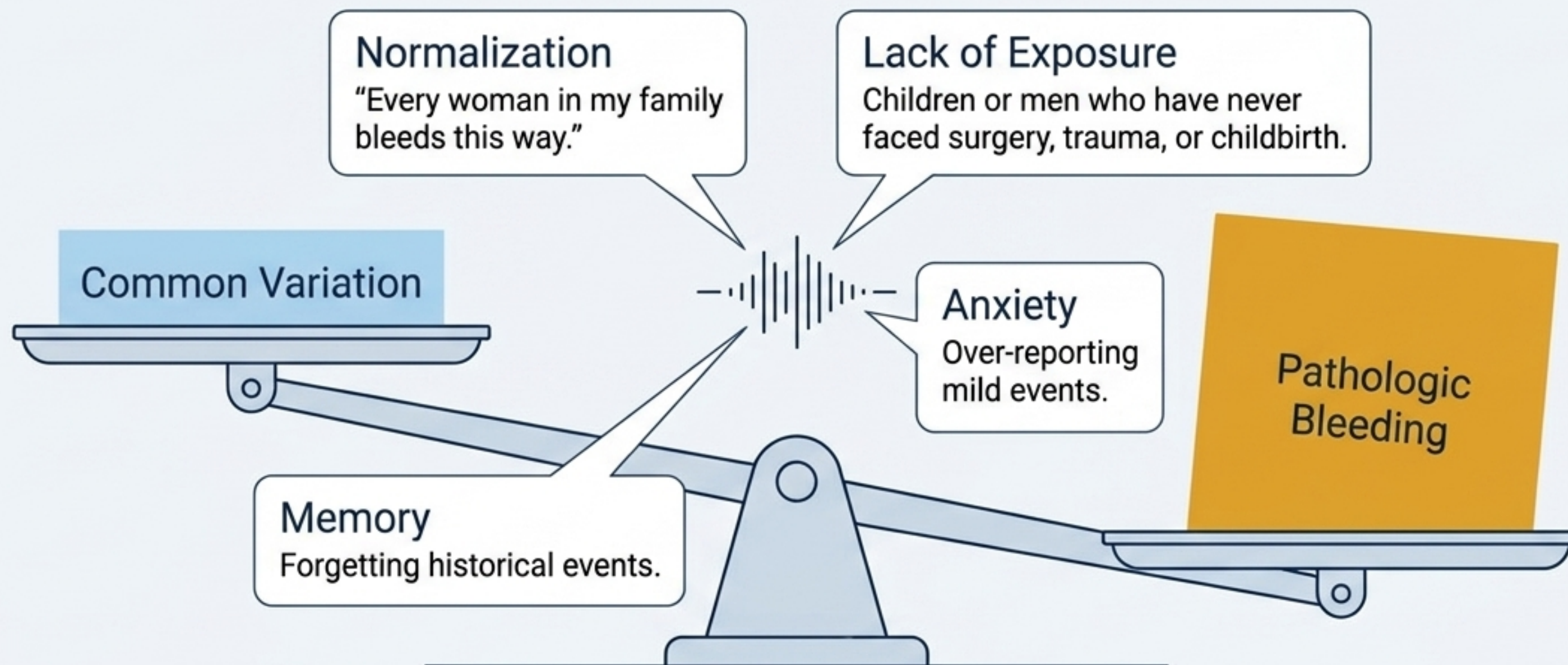
Classification systems and diagnostic boundaries (like the < 50 IU/dL threshold) do not perfectly describe biology.

The Clinical Tool

They are clinical tools designed to help physicians reason, organize care, and communicate across a messy biological spectrum.

Unstructured History Magnifies the Noise

Distinguishing normal variation from a pathologic tendency requires structure.



Key Insight: Absence of bleeding is sometimes simply an absence of hemostatic challenge.

What Bleeding Assessment Tools Actually Are



What it is **NOT**

A VWF laboratory assay

A subtype classifier

A final clinical verdict

A converter of history into objective lab data



What it **IS**

A standardized catalog of bleeding domains

A weighted scoring system for symptoms

An instrument for improving reproducibility

A tool for **structured listening**

The Shared Language of ISTH-BAT Thresholds



Adult Males
Normal range: 0-3
Positive at: ≥ 4



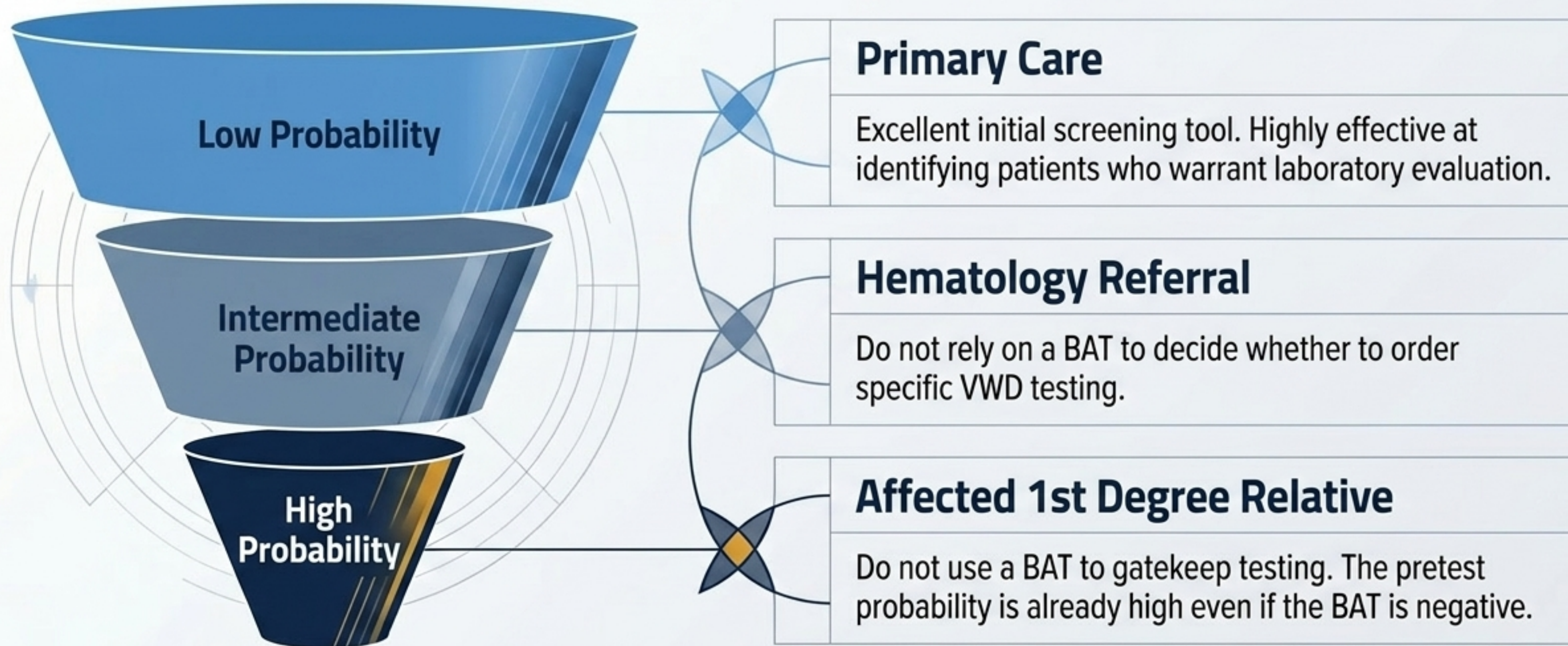
Adult Females
Normal range: 0-5
Positive at: ≥ 6



Children
Normal range: 0-2
Positive at: ≥ 3

Key Insight: Abnormal is not synonymous with diagnostic. A positive BAT opens a diagnostic pathway; it does not close one.

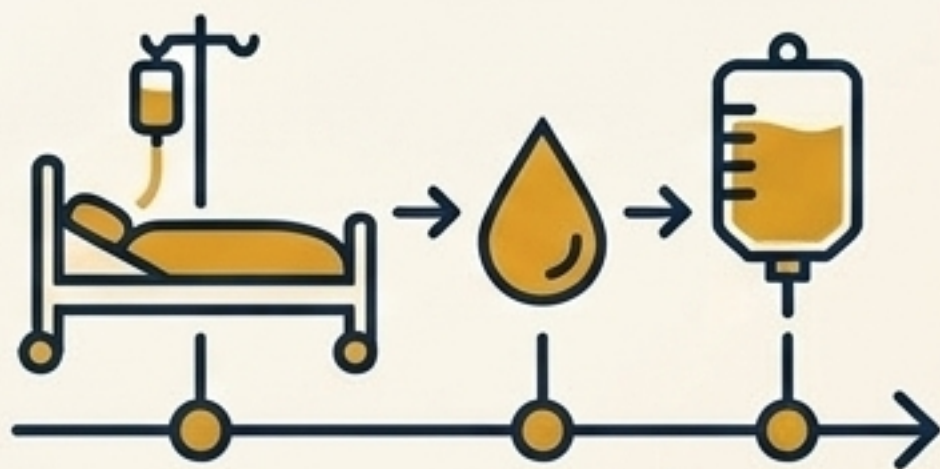
The Bayesian Reality of Pretest Probability



Takeaway: Guidelines formalize intuition. A BAT shifts prior probability up or down—it never replaces it.

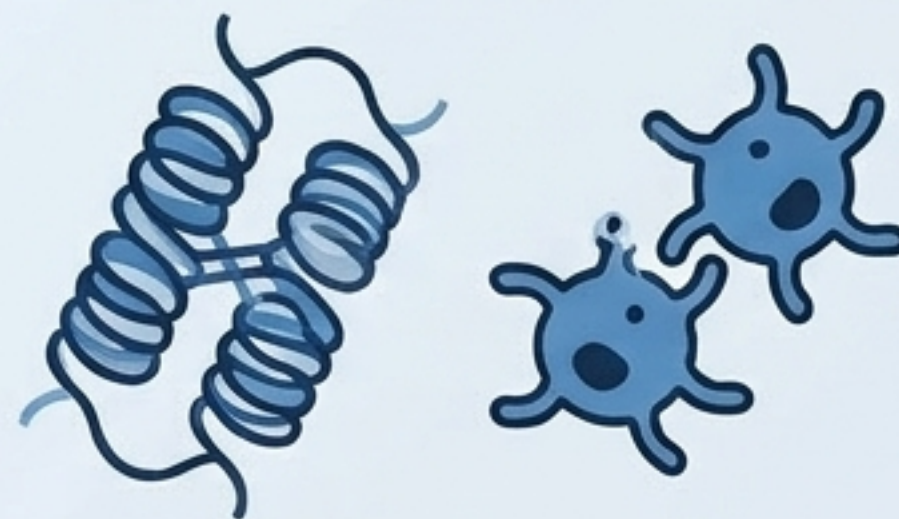
BATs Measure Experience, Not Pathophysiology

A BAT catalogs bleeding burden and the interventions required to stop it. It does not measure VWF antigen, activity, or clearance.



Experience

Clinical Example: A history of transfusion-requiring postpartum hemorrhage yields a high score. It proves abnormal bleeding burden, but does not prove VWF-specific pathophysiology.



Biology

Clinical Example: Occasional childhood bruising yields a low score, but does not rule out mild VWD. Molecular defects may exist without significant prior hemostatic challenge.

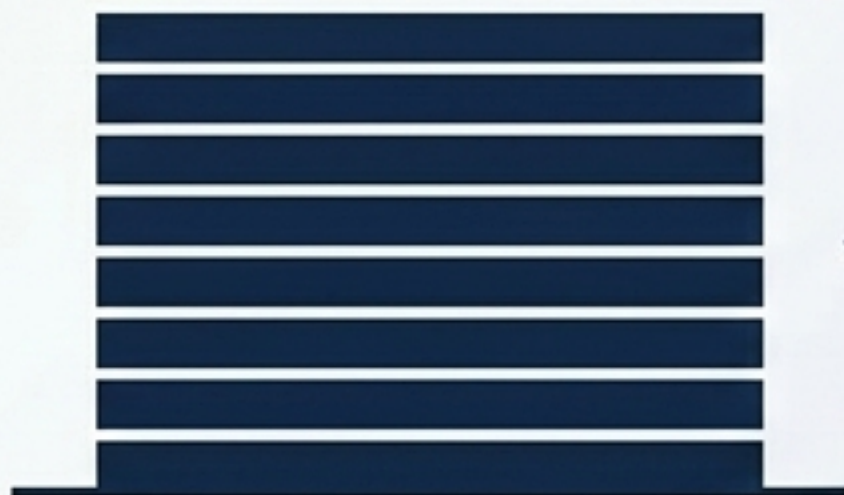
The Cutoff Trap

BATs reduce subjectivity, but do not abolish clinical judgment.
Treating a cutoff as diagnostic truth is a **trap**.

Above the cutoff $\neq$ Inherited disease.

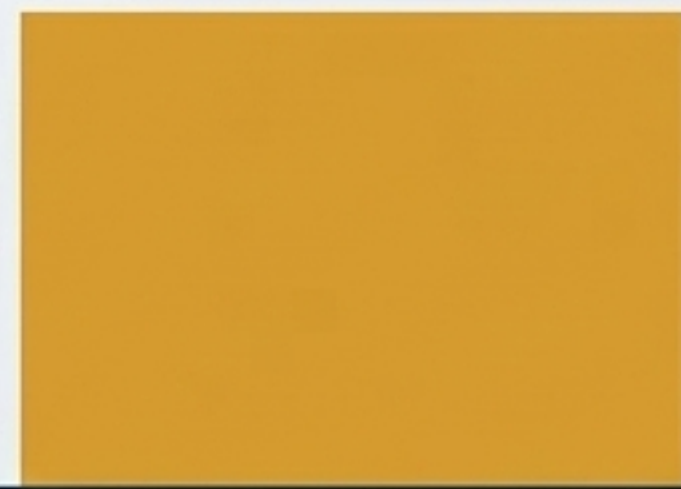
Below the cutoff $\neq$ No disease.

Beware of Score Saturation



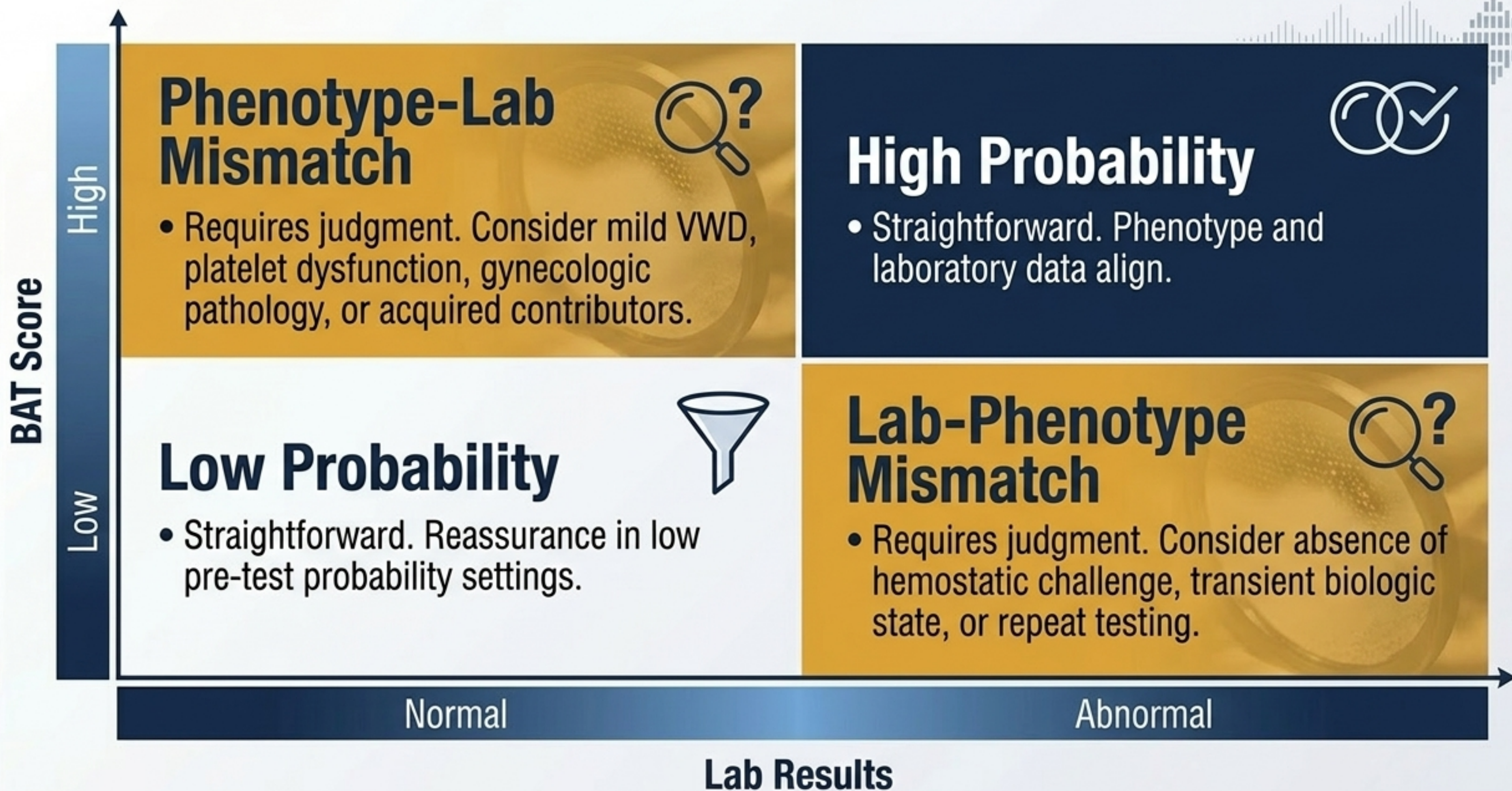
Years of recurrent moderate bleeding events.

Both yield the
same score.
They do not imply the
same mechanism.

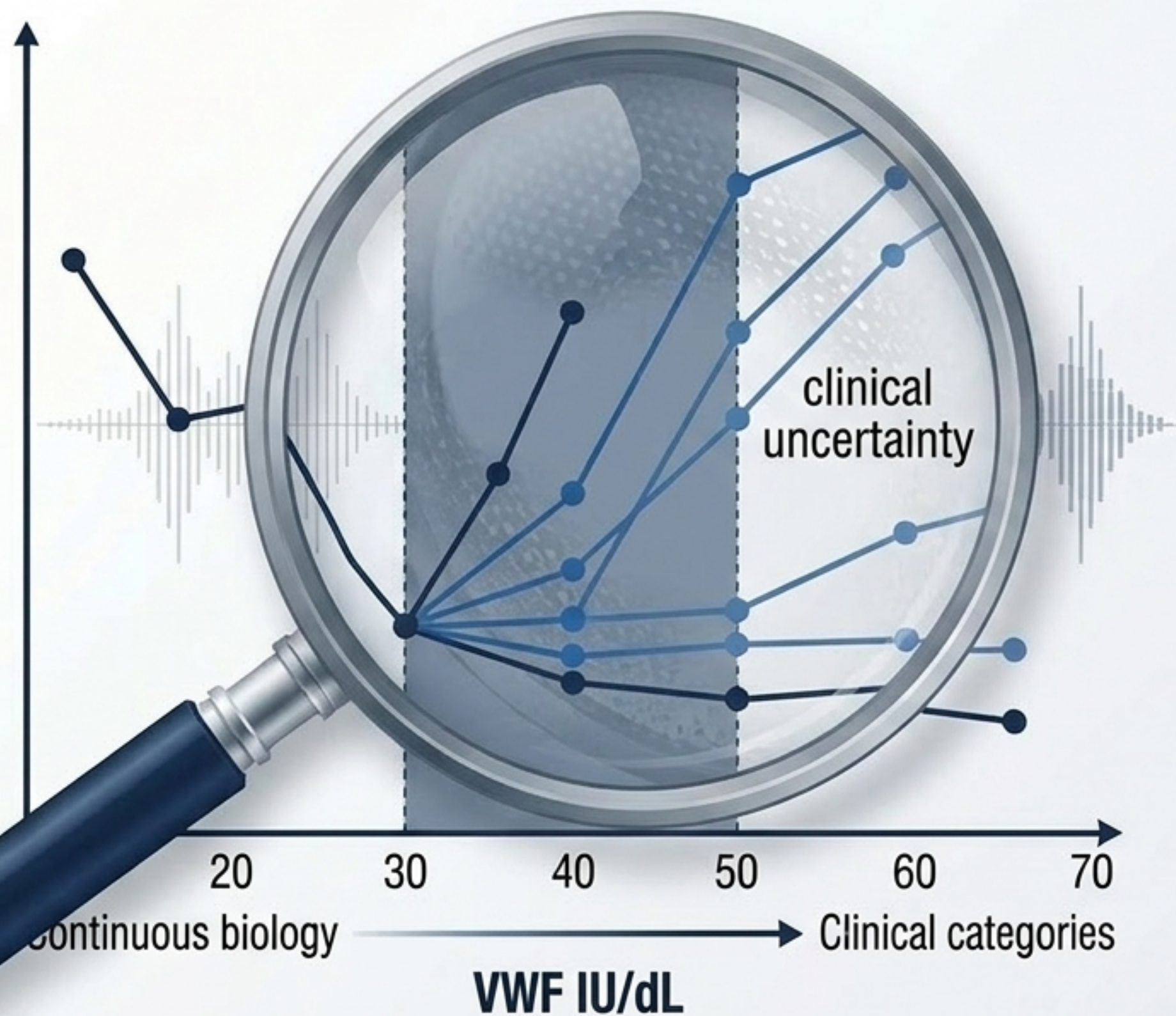


One massive event (e.g., severe postpartum hemorrhage).

The Diagnostic Matrix: Navigating Lab-Phenotype Mismatches



The Low VWF Paradox



The Core Concept

In this mildly reduced VWF range, bleeding phenotype varies widely. Some individuals bleed substantially; others do not.

The Impact

This is where BATs exert their greatest influence—and carry the greatest risk of misinterpretation.

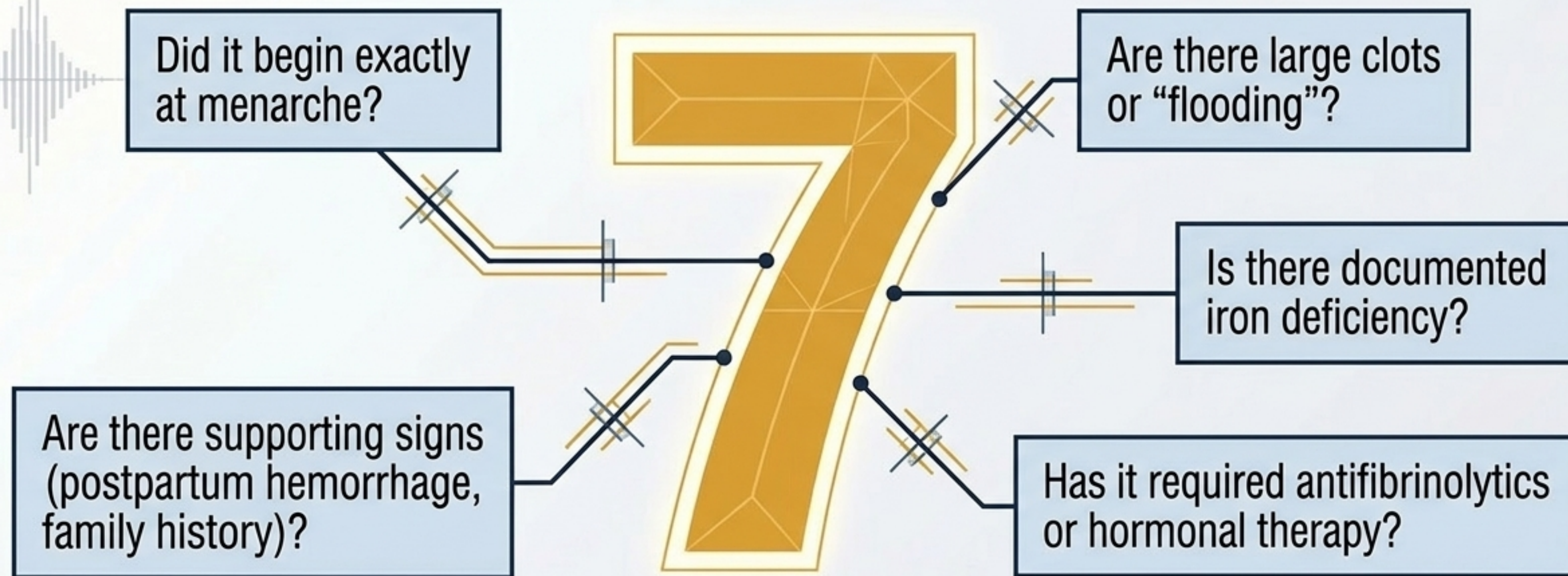
- A convincing BAT makes low VWF clinically meaningful.
- A low BAT lowers concern, but does not erase the biologic signal (especially in children).

Key Insight

Insight: In this range, the BAT does not answer the question. It changes how seriously the question must be pursued.

Unpacking the Score: The Heavy Menstrual Bleeding Case

A BAT score of 7 in an adult female is technically “positive.” If driven entirely by Heavy Menstrual Bleeding (HMB), it cannot be dismissed, but it must be interrogated.



Takeaway: The number is the beginning of interpretation, not the end.

Why Normal Labs Can Lie

Routine Screens Fail

PT, aPTT, and Platelets are often entirely normal in mild VWD.

VWF is Dynamic

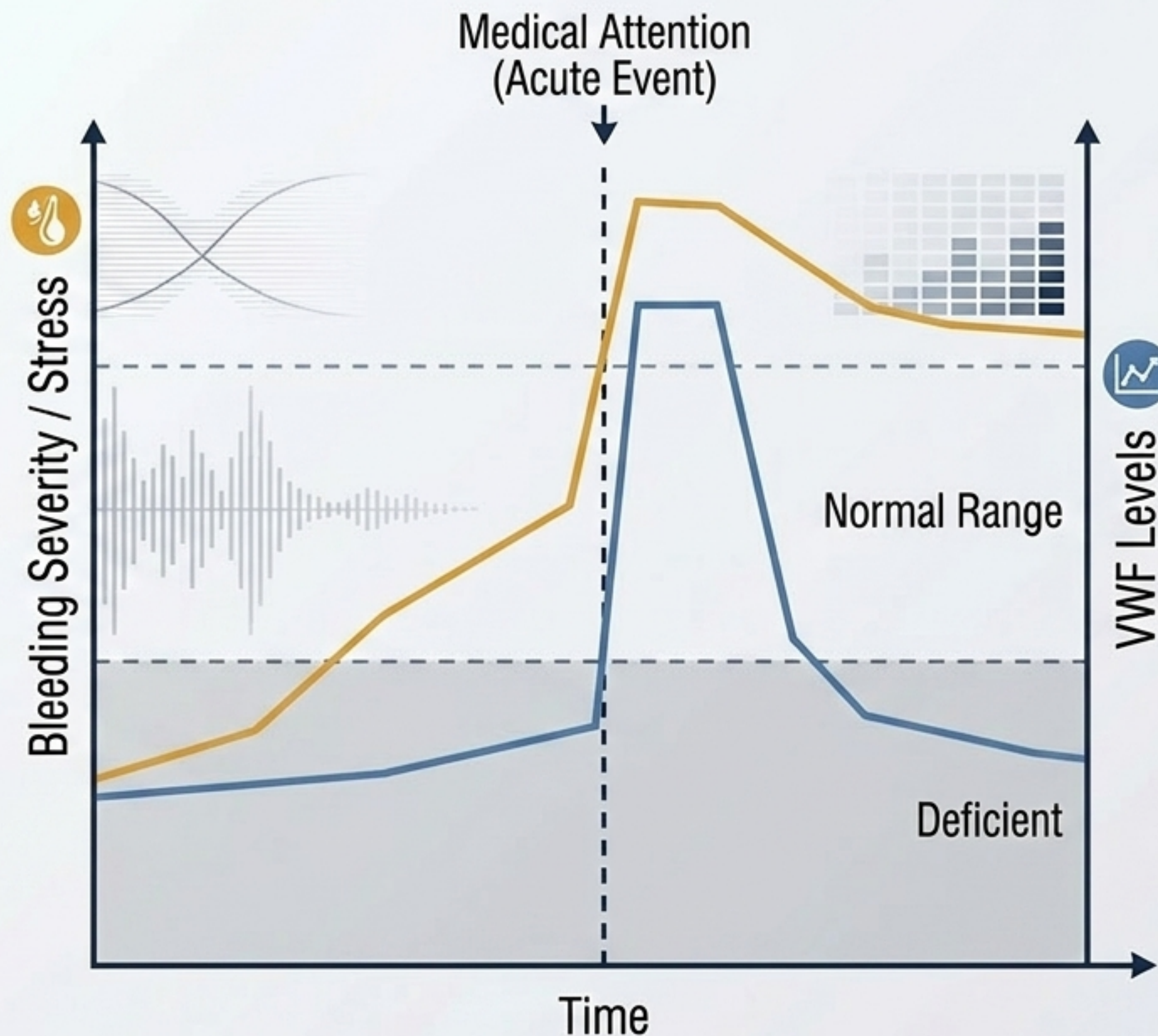
VWF levels are artificially elevated by stress, acute bleeding, pregnancy, and inflammation.

The Diagnostic Paradox

The exact moment a bleeding event brings a patient to medical attention may be the moment their lab results are **least representative** of their **baseline** biology.

Solution

A **reliable** BAT preserves the signal of the bleeding phenotype when the laboratory signal is temporarily blurred.



Where Bleeding Assessment Tools Fail Predictably



Patient Factors

- Recall bias and anxiety.
- Cultural norms and family normalization (“we are just easy bruisers”).



Exposure Factors

- Lack of “hemostatic challenges” (no surgery, major trauma, or dental extractions).
- Hormonal suppression masking heavy menstrual bleeding.

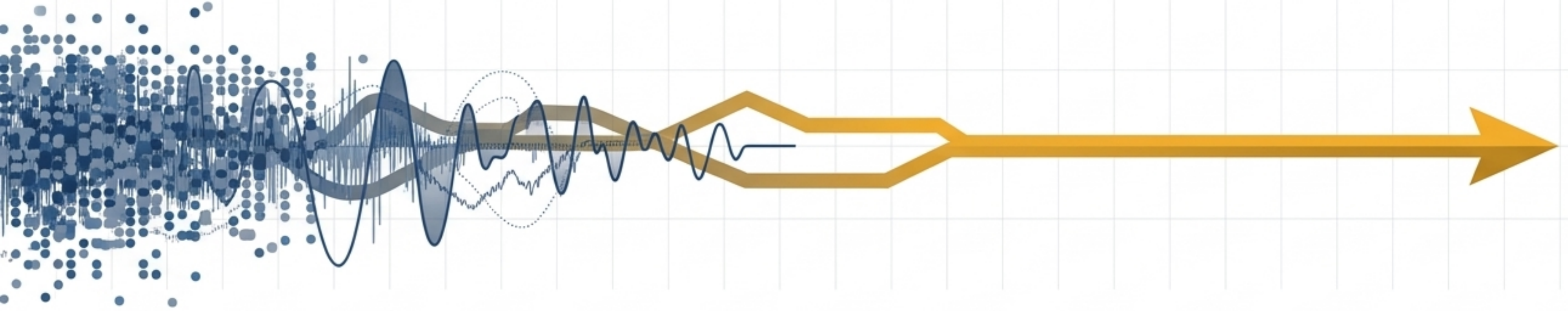


Interpretive Errors

- Assuming a low score definitively excludes disease in an untested patient.
- Ignoring the specific clinical domains driving a high score.

The Evidence Anchor: What Studies Actually Prove

Evidence Stream	What It Shows	Main Limitation
Early Type 1 / MCMDM-1	BATs make bleeding phenotype measurable and correlate inversely with VWF/FVIII.	Correlation is not diagnosis; severity varies widely even at similar VWF levels.
Condensed MCMDM-1	Shows high sensitivity and NPV in primary care.	Cannot be generalized to high-risk hematology referral populations.
ISTH-BAT Standardization	Created shared normal ranges (Males 0-3, Females 0-5, Children 0-2).	These are abnormal bleeding thresholds, not VWD-defining biological thresholds.



Clinical Synthesis: How Experts Interrogate the Score

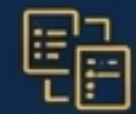
The Wrong Question

“What is the total score?”

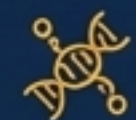
The Right Questions



What is the anatomy of this score?



What does this pattern of bleeding actually mean?



How does it align with the patient's biology and hemostatic exposure?

Final Takeaway: Used critically, BATs discipline history-taking and sharpen probabilistic reasoning. Used uncritically, they become just another threshold to worship.