Differential Diagnosis for Depressive Disorders:
A Step-by-Step Assessment of a Complex Case

Feb 2, 2015

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Disclosures

- NIH R01 MH066647 (PI: E. Youngstrom)
- NIH R01 MH073967 (PI: R.L. Findling)
- OMDH Grant for CBT (PI: J.K. Youngstrom)
- NC TraCS Grant (PI: Melissa Jenkins)
- E. Youngstrom consults with Lundbeck and Otsuka about neurocognitive and mood assessment
- No speakers bureaus, pharma supported talks, stock ownership, test sales….

Objectives

- Learn base rates in different settings, such as public schools, outpatient services, forensic settings, and inpatient units; and how to use these benchmarks to evaluate efficiently

- Use assessment procedures to aid in differential diagnosis and measuring response to treatment

- Apply new methods for interpreting test results, including methods taking into account clinical settings where we work
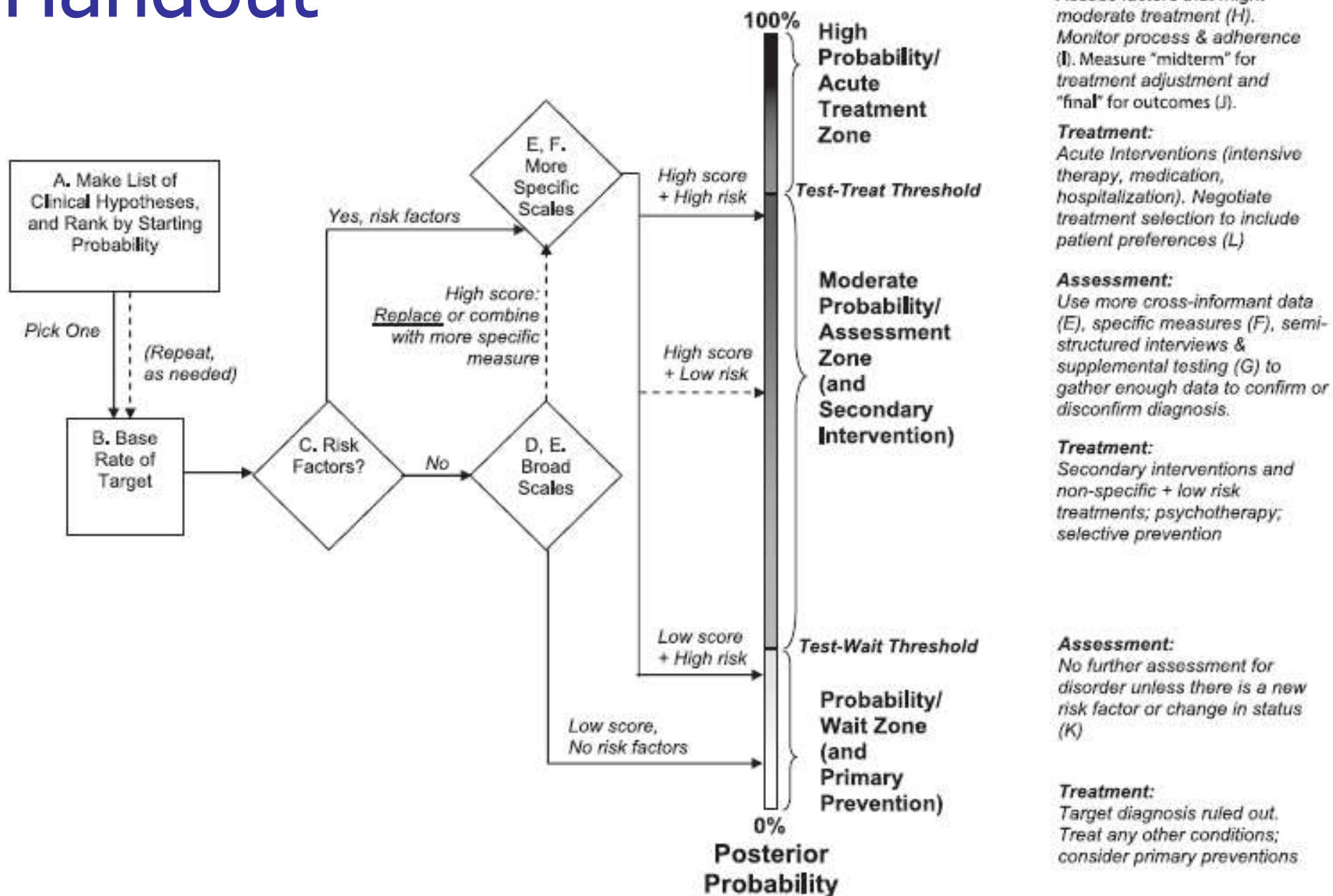
Objectives

- Shortcuts to work faster!

- Be more accurate!

- Get better results!

Handout

Figure 1. Mapping Assessment Results Onto Clinical Decision Making. *Note.* Letters refer to assessment step in Table 1.

Handout

Table 1

Twelve Steps in Implementing Evidence-Based Assessment and Applying It to Individual Cases

Assessment Step	Rationale	Steps to Put in Practice
A. Identify most common diagnoses in our setting	Planning for the typical issues helps ensure that appropriate assessment tools are available and routinely used	Review practice database, notes, reports; generate "short list" of most common diagnoses and clinical issues
B. Benchmark base rates	Base rate is an important starting point to anchor evaluations and prioritize order of investigation	Select a sample of cases (six months, random draw from past year) and tally local base rate; compare to benchmarks from other practices and published rates; identify any potential mismatches
C. Evaluate risks and moderators	Risk factors raise "index of suspicion," and he combination of multiple risk factors elevate probability into "assessment" or possibly "treatment" zones	Make short checklist of key risk factors; make second list of factors that might change treatment selection or moderate outcome; develop plan for how to routinely assess them
D. Synthesize intake instruments into revised probabilities	Probably already using in practice; upgrading the value for formulation and decision-making by clarifying what the scores mean vis changing probability for common conditions	Make a table crossing assessment instruments with common presenting problems. Identify gaps in coverage. Make cheat sheet with key information about assessment for each application.
E. Interpret cross-informant data patterns	High scores across settings or informants often mean worse pathology; do not over-interpret common patterns.	Gather collateral information to revise case formulation; consider parent, spouse, roommate; also behavioral traces such as Facebook postings. Anticipate typical level of agreement.
F. Add narrow and incremental assessments to clarify diagnoses	Often more specific measures will show better validity, or incremental value supplementing broad measures	Have follow-up tests available and criteria for when they should be used. Organize so that key information is easy to integrate
G. Add necessary intensive methods to finalize diagnoses and formulation	If screening and risk factors put revised probability in the "assessment zone," what are the evidence-based methods to confirm or rule out the diagnosis in question?	Do (semi-)structured interview or review checklist with client to confirm sufficient criteria; supplement with other methods as needed to cross treatment threshold.
H. Finish assessment for treatment planning and goal setting	Rule out general medical conditions, other medications; family functioning, quality of life, personality, school adjustment, comorbidities also must be considered	Develop systematic ways of screening for medical conditions and medication use. Assess family functioning, personality, comorbidity, SES and other potential treatment moderators.
I. Measure processes ("dashboards, quizzes and homework")	Check learning of therapy skills, evidence of early response or need for change in intervention	Track homework, session attendance, life charts, mood check-ins at each visit, medication monitoring, therapy assignments, daily report cards (Weisz et al., 2011).
J. Chart progress and outcome ("midterm and final exams")	Repeat assessment with main severity measures – interview and/or parent report most sensitive to treatment effects; if poor response, revisit diagnoses.	Make cheat sheet with Jacobson & Truax (1991) benchmarks for measures routinely used; track homework, progress on skills; Youth Top Problems (Weisz et al., 2011).
K. Monitor maintenance; relapse warnings	Consolidating treatment gains and planning for maintenance are core features of excellent termination planning, and crucial to long term management of many problems	Develop list of key predictors, recommendations about next action if starting to worsen.
L. Seek and use client preferences	Client beliefs and attitudes influence treatment seeking and engagement, and are vital for balancing risks and benefits.	Assess client concordance with treatment plan; ask about cultural factors that might affect treatment plan and engagement

Lea

- 18 yo WF
- Middle of senior year
- Coming to outpatient clinic
- Presenting problem:
  - Trouble with attention
    - Can't stay focused
    - Grades dropping
  - Getting anxious and stressed about graduating (and **if** she'll graduate)
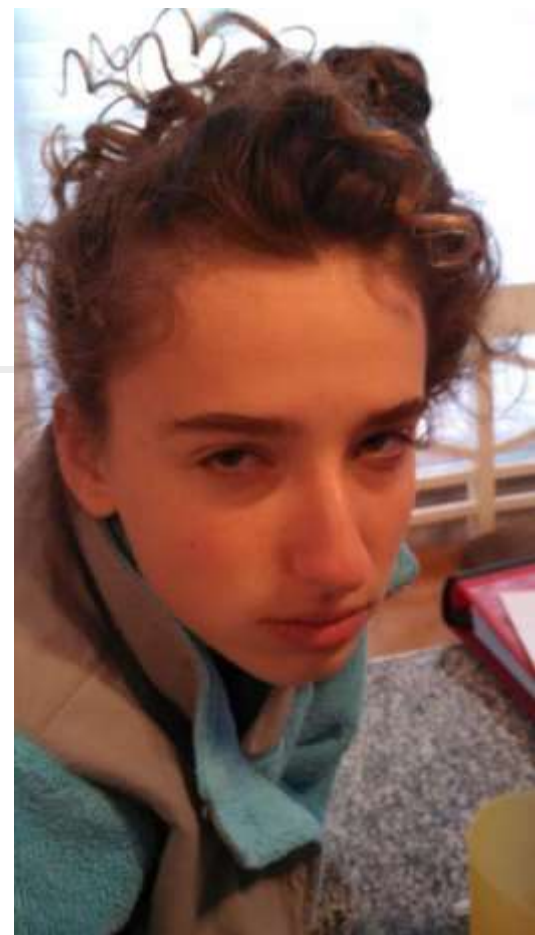
What do you think is going on?

- Diagnosis?
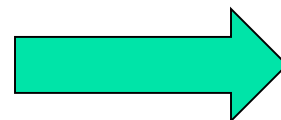
- What's your assessment plan?

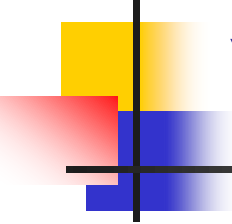- Treatment options?

Detective Work: Evidence-Based Assessment

Expanding number of diagnoses

DSM-III Diagnostic and Statistical Manual of Mental Disorders

DSM-III-R Diagnostic and Statistical Manual of Mental Disorders

DSM-IV Diagnostic and Statistical Manual of Mental Disorders

DSM-IV-TR Diagnostic and Statistical Manual of Mental Disorders

DSM-5

More than 365 diagnoses –
One for every day of the year!

*How long would it take to consider **all** of them?*
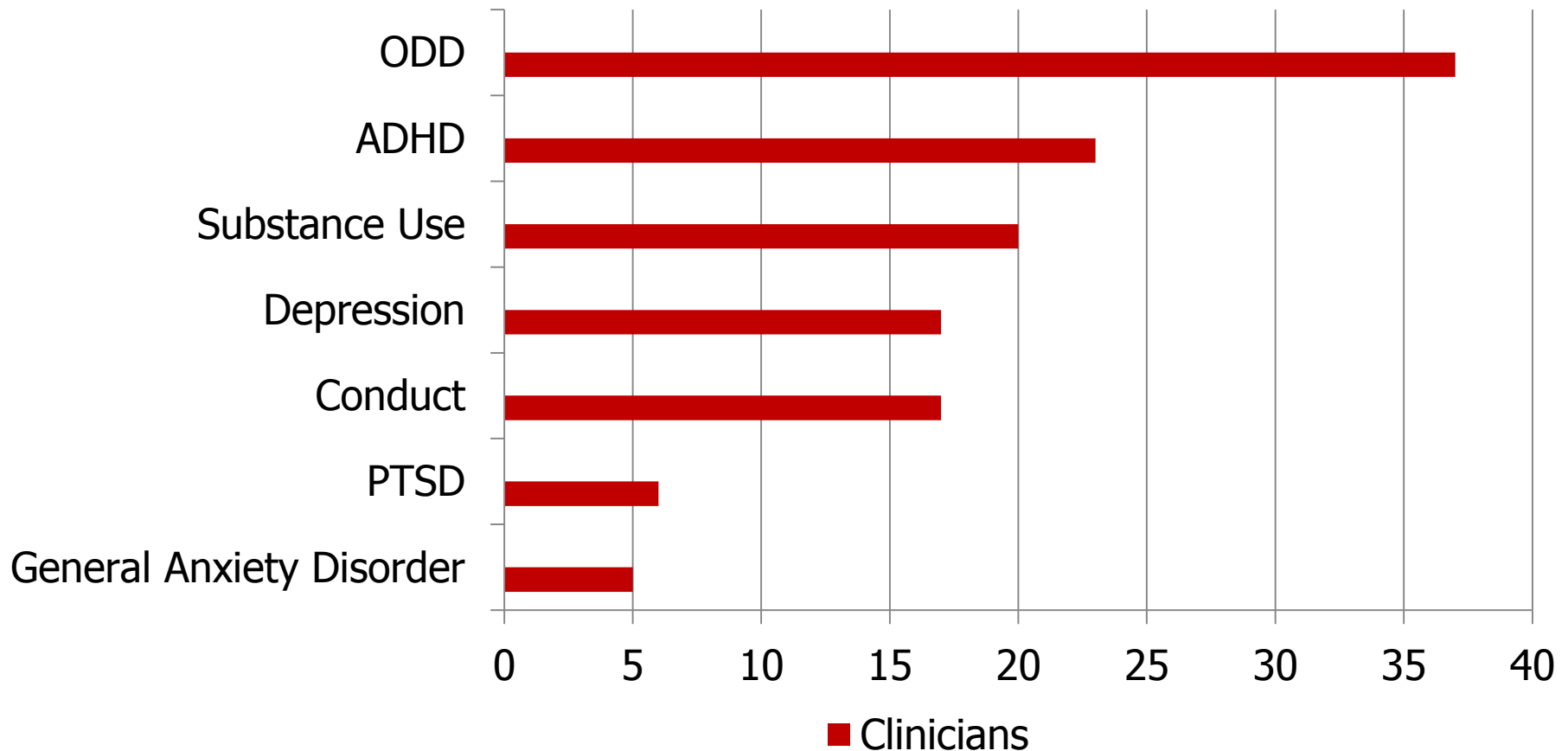
Pareto's 80:20 Law
"Law of the vital few"

- 20% of diagnoses will cover more than 80% of the cases we see
- Concentrate on the common problems
- Have a good plan for assessing, treating them
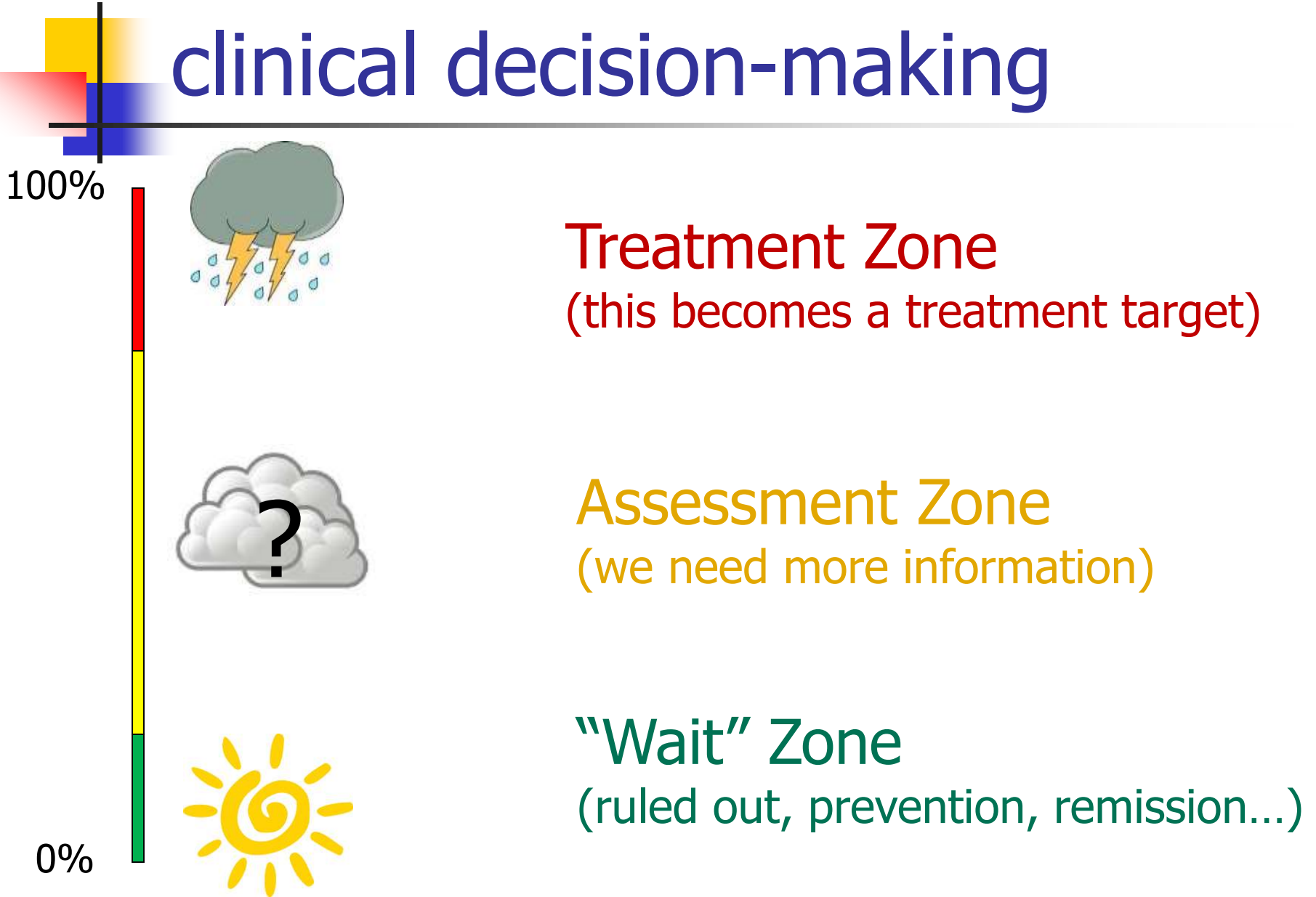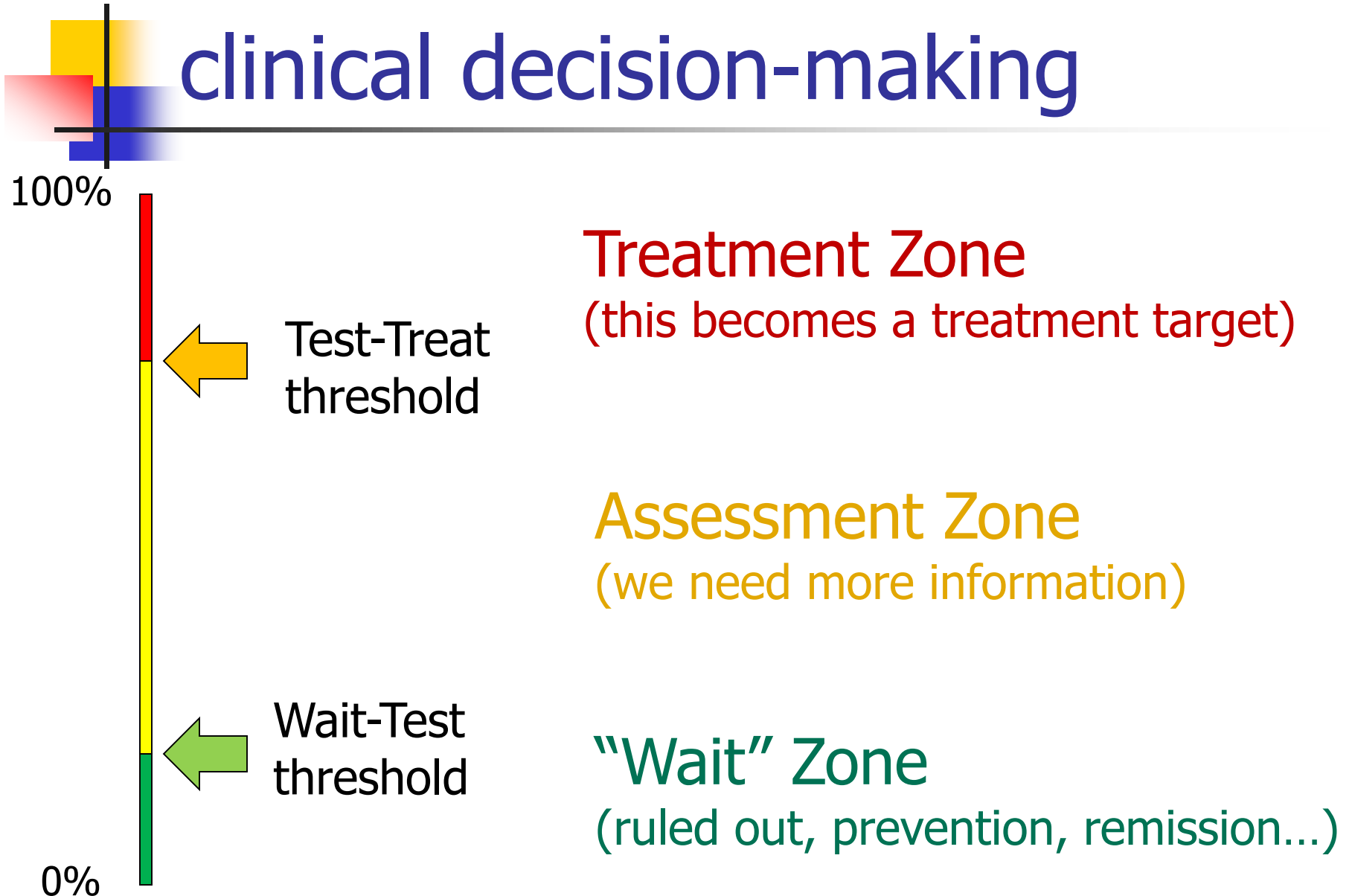
Rates of common diagnoses

Rettew et al., 2009

Probabilities:
Thinking like the weather forecast

The weather meets clinical decision-making

100%

Treatment Zone
(this becomes a treatment target)

? **Assessment Zone**
(we need more information)

"Wait" Zone
(ruled out, prevention, remission…)

0%

The weather meets clinical decision-making

100%

Treatment Zone
(this becomes a treatment target)

← Test-Treat threshold

Assessment Zone
(we need more information)

← Wait-Test threshold

"Wait" Zone
(ruled out, prevention, remission...)

0%

Where to start?

EBA for Diagnosis and Treatment
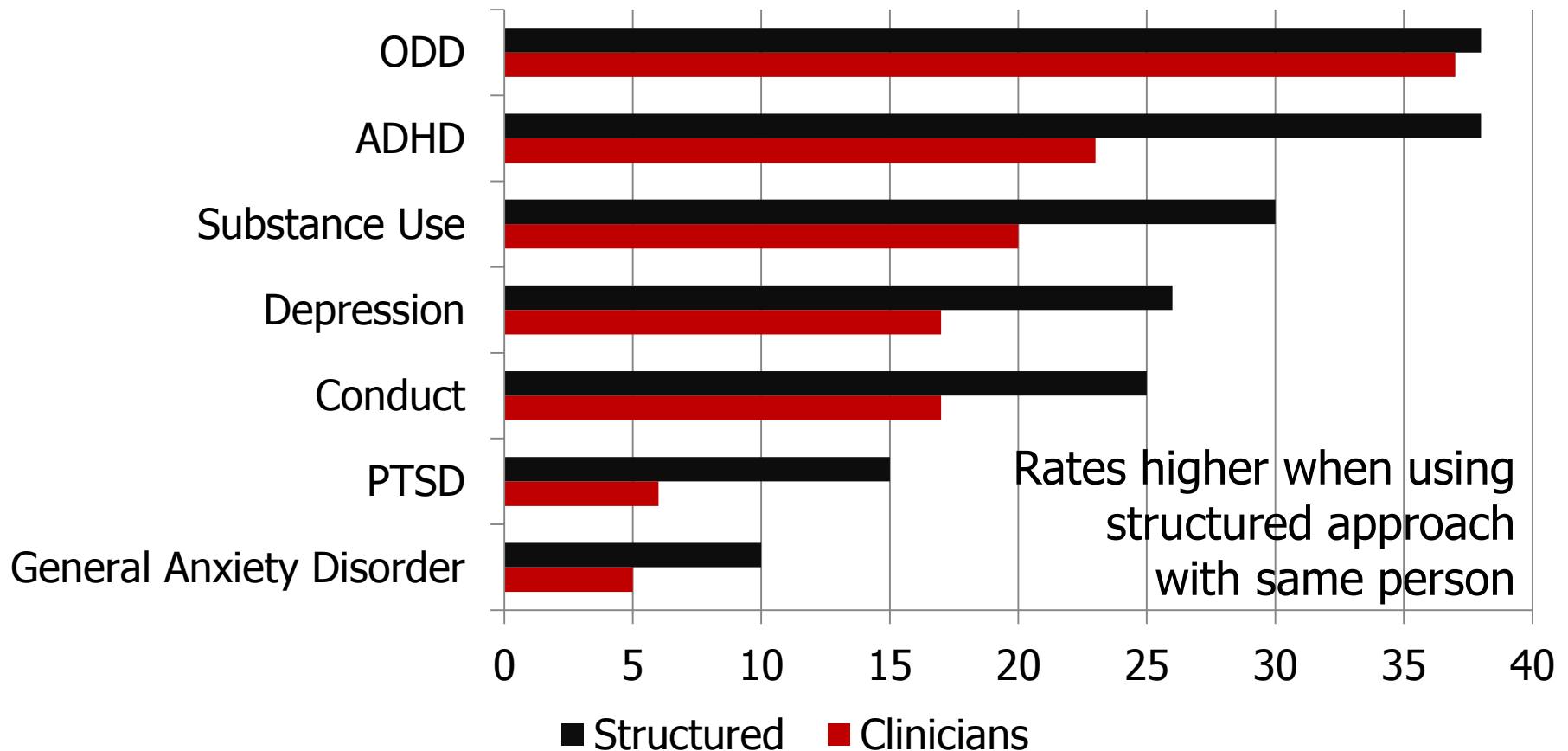
Epidemiological

Clinical

Table 2

Benchmarks From Epidemiological Studies and Medicaid Surveillance

Diagnosis or Target Condition	NCS-R					NCS-A	SAMHSA Medicaid Data	Rettew et al. (2009) SDI	Rettew clinical
	All Ages	18-29 Years*	30-44 Years	45-49 Years	60+ Years				
Any Disorder	46%	52%	55%	47%	26%		>99%	–	–
Any Anxiety	29%	30%	35%	31%	15%	32%	–	–	–
Specific Phobia	12%	13%	14%	14%	7%	19%	–	15%	6%
PTSD	7%	6%	8%	9%	3%	5%	–	9%	3%
Generalized Anxiety Disorder	6%	4%	7%	8%	4%	2%	–	10%	5%
Panic Disorder	5%	4%	6%	6%	2%	2%	–	11%	12%
Social Phobia	5%	14%	14%	12%	7%	9%	–	20%	6%
Separation Anxiety	5%	2%	2%	1%	1%	8%	–	18%	8%
Any Impulse Control Disorder	25%	27%	23%	–	–	20%	–	–	–
ODD	9%	10%	8%	–	–	13%	–	38%	37%
Conduct Disorder	9%	11%	8%	–	–	7%	5%	25%	17%
ADHD	8%	8%	8%	–	–	9%	18%	38%	23%
Intermittent Explosive Disorder	5%	7%	6%	5%	2%	–	–	–	–
Any Mood Disorder	21%	21%	25%	23%	12%	14%	20%	–	–
MDD	17%	15%	20%	19%	11%	12%	–	26%	17%
Bipolar I & II	4%	6%	5%	4%	1%	3%	–	–	–
Dysthymia	3%	2%	3%	4%	1%	(included above)	–	8%	10%
Any Substance Abuse Disorder	15%	17%	18%	15%	6%	11%	53%	30%	20%

Note. Statistics adapted from (Kessler, Berglund, Demler, Jin, & Walters, 2005; Merikangas et al., 2010; Substance Abuse and Mental Health Services Administration, 2012).

Rates of common diagnoses --we underestimate them!

Rates higher when using structured approach with same person

Legend: ■ Structured ■ Clinicians

Why the gap?

- Our brain is wired to:
  - React quickly
  - Make a hypothesis
  - Look for confirming evidence
  - Discount contradictory evidence
- One diagnosis is enough for billing
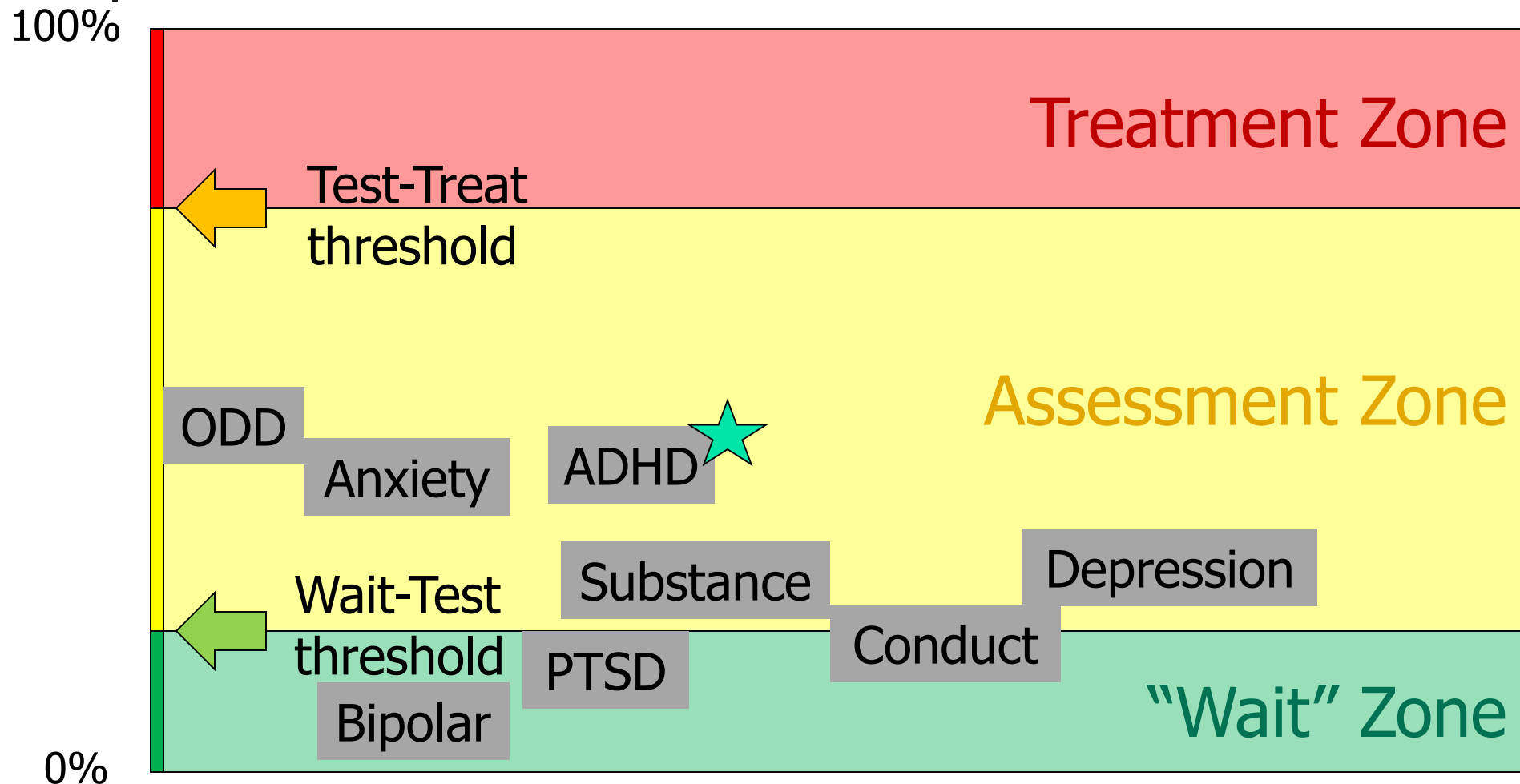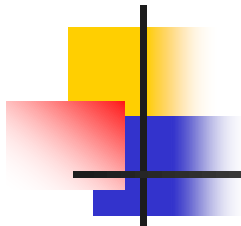 - No push to find all comorbidities

Quick Solutions

- Always consider the common issues (A,B)
  - Look for evidence to rule them out
  - Don't wait to be reminded
- Always list more than one hypothesis (C)
  - Look for evidence for each
  - Don't play "favorites" at beginning

Think about where you are working ("Bet the base rate")

100%

Treatment Zone

← Test-Treat threshold

Assessment Zone

ODD

Anxiety

ADHD ★

Substance

Depression

← Wait-Test threshold

Conduct

PTSD

Bipolar

"Wait" Zone

0%

Learn good thinking habits

- Debiasing strategies:
  - Competing hypotheses
  - Look for disconfirming evidence
  - Don't call off search when find one plausible suspect

Cognitive Strategies vs. Diagnosis As Usual

- Randomized control trial, 2-arm
- N = 137 clinician participants
- Case vignette methodology
- Web administration via Qualtrics software
  - Randomized:
    - Treatment or Control group
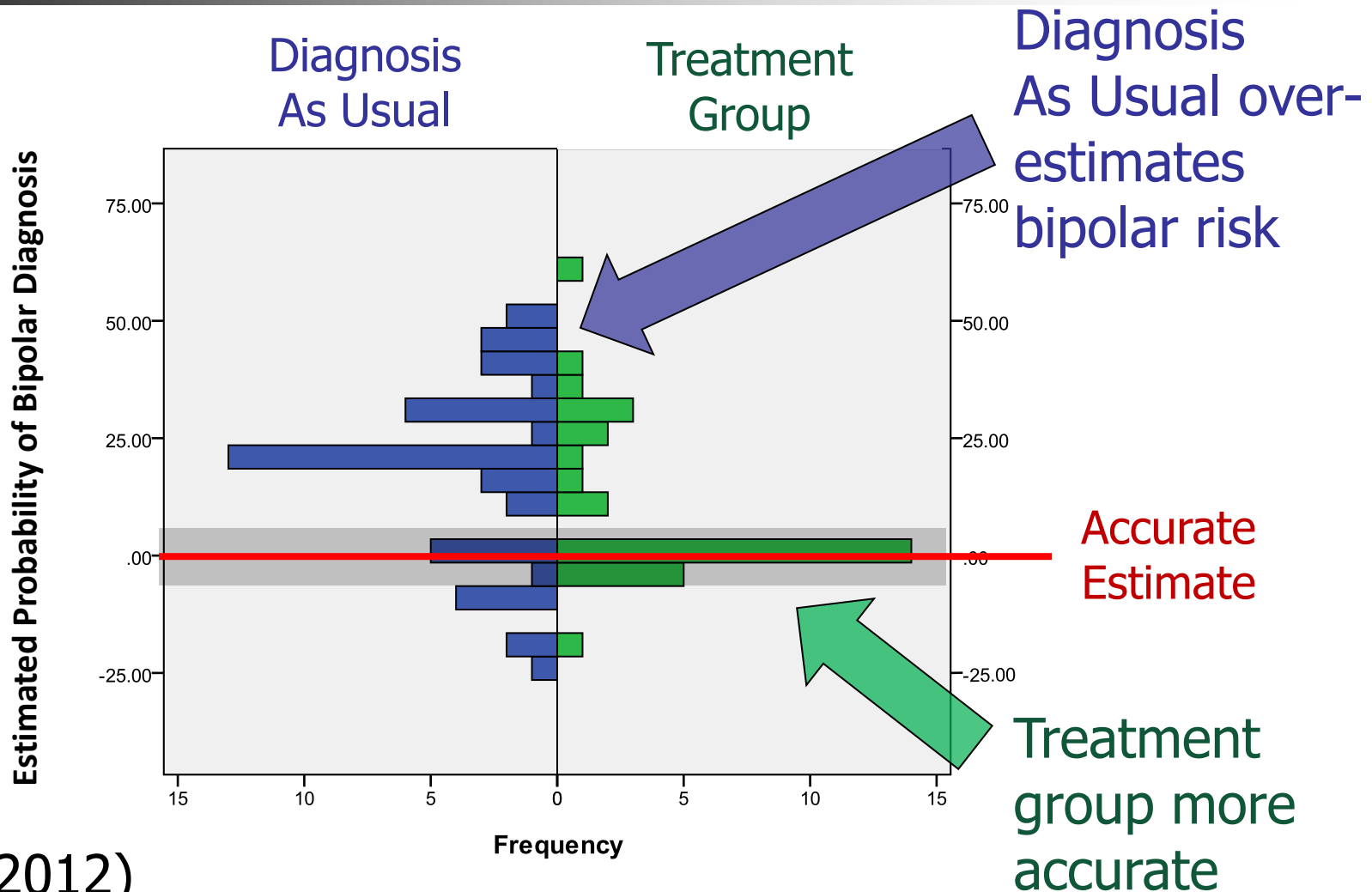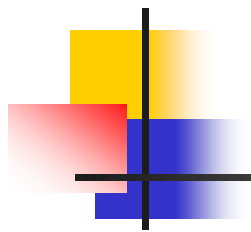   - Race/ethnicity of vignette characters

Jenkins (2012)

Intervention

- 20 minutes
- Web tutorial
- Four cognitive debiasing strategies
- Treatment group more accurate across all four vignettes:
  - Accuracy $F = 10.37$, $p < .0005$, $R^2 = .22$
  - Fewer Errors $F = 10.86$, $p < .0005$, $R^2 = .23$

Jenkins (2012)

Cognitive de-biasing increases accuracy

Jenkins (2012)

Applying these to Lea

- Presenting problem: Attention, grades, stress
  - Sounds like ADHD?
- Common conditions at clinic (Pareto 80:20):
  - ODD, Anxiety, **ADHD**, Depression, Substance
- Could these other diagnoses also explain presenting problem?
- …Better check all of them!
  - What would help rule them out?

Another Solution: Checklists

- Checklists as a simple way of eliminating human error

- Used in medicine, engineering, arena rock, other complex endeavors

- Atul Gawande –
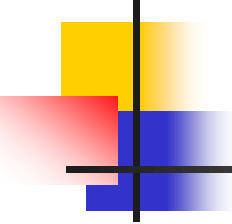 *The Checklist Manifesto*
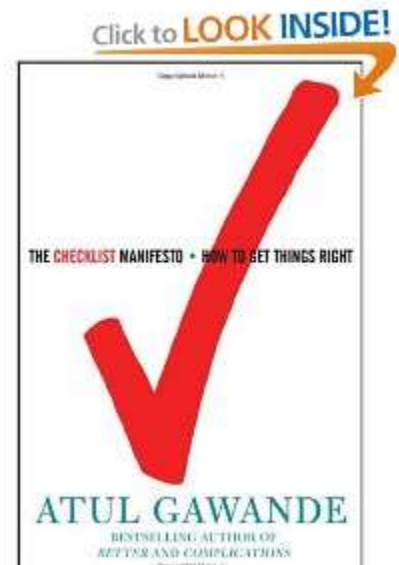
Possible Checklists

- DSM Diagnostic Criteria
- Rule-outs or other diagnoses to consider
  - General medical condition
  - Medication induced
  - Due to some other disorder
  - Environmental factors
  - Cultural factors
- Side effects, treatment response
- Could be "notes to self" about treatment planning

Use a broad measure to get data about several issues quickly

- Achenbach System of Empirically Based Assessment (ASEBA)
  - Youth Self Report – How does Lea's report compare to 11-18 year old females?
  - Child Behavior Checklist – caregiver report
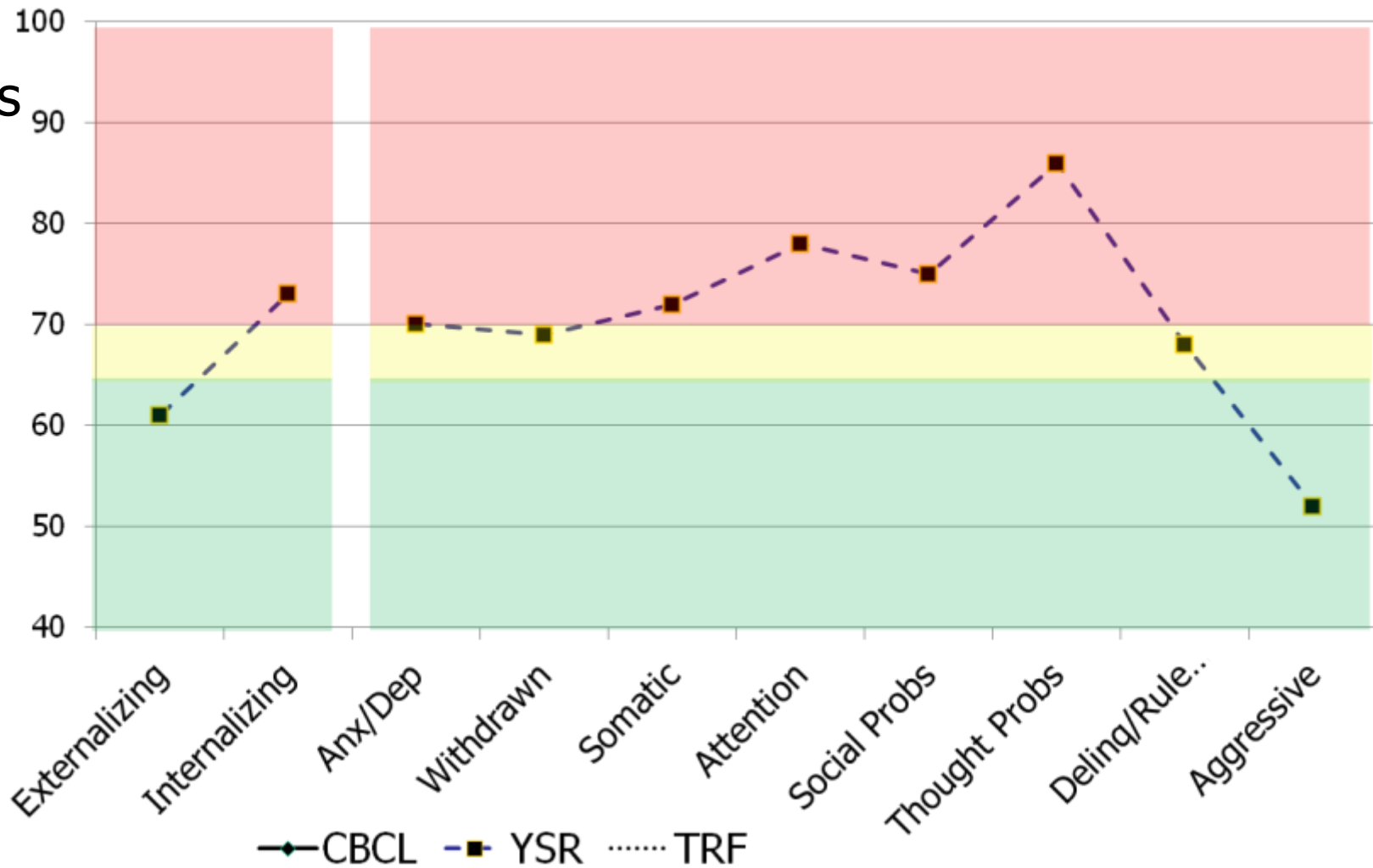- Strengths & Difficulties Questionnaire (SDQ)
  - Free alternative

Reading the Achenbach
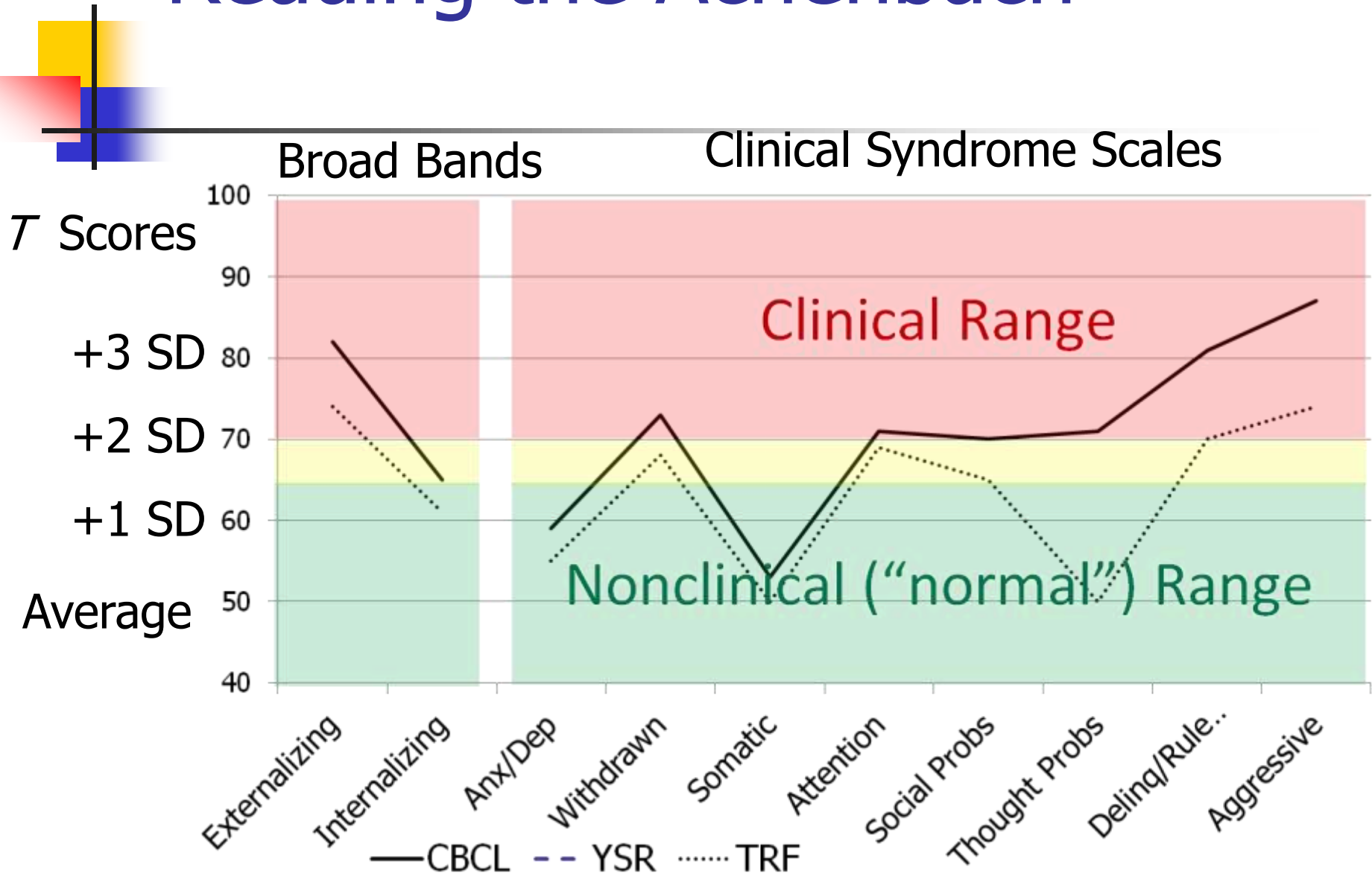
Lea's Youth Self Report scores

T Scores

Check the details & probes
(Drotar, Stein, & Perrin, 1995)

YSR

Sleep problems – bipolar clue?

0 1 ② 71. I am self-conscious or easily embarrassed

⓪ 1 2 72. I set fires

0 1 ② 73. I can work well with my hands

0 ① 2 74. I show off or clown

0 ① 2 75. I am too shy or timid

0 1 ② 76. I sleep less than most kids

⓪ 1 2 77. I sleep more than most kids during day and/or night (describe): ____

0 1 ② 78. I am inattentive or easily distracted

0 1 ② 79. I have a speech problem (describe): ____ impediment – sometimes I don't say real words

0 1 ② 80. I stand up for my rights

⓪ 1 2 81. I steal at home

⓪ 1 2 82. I steal from places other than home

0 1 ② 100. I have trouble sleeping (describe): I don't sleep.

0 ① 2 101. I cut classes or skip school

0 ① 2 102. I don't have much energy

0 1 ② 103. I am unhappy, sad, or depressed

⓪ ① 2 104. I am louder than other kids

0 ① ② 105. I use drugs for nonmedical purposes (*don't* include alcohol or tobacco) (describe): ____ marijuana alc sp?

Substance issues

0 1 ② 106. I like to be fair to others

0 1 ② 107. I enjoy a good joke

0 1 ② 108. I like to take life easy

0 1 ② 109. I try to help other people when I can

⓪ 1 2 110. I wish I were of the opposite sex
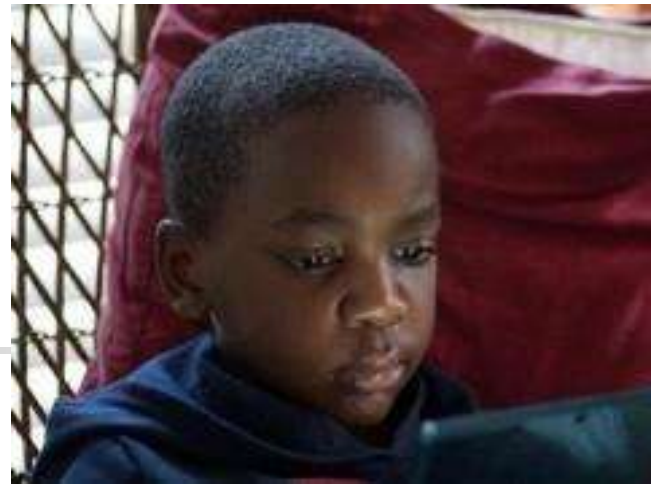
The tool is only as good as the way we use it

- Illustrate with a second case
- We can look at our audience participation compared to 610 clinicians in USA and Canada
- Handout step (d) – synthesize info to revise probabilities

DeShawn

- 7 year old black male

- referred because of extreme aggression and distractibility,
  motor agitation at school

- Dad has been diagnosed with Bipolar I and treated for several years with lithium and divalproex.

What's you diagnostic hypothesis at this point?
Chances of bipolar?
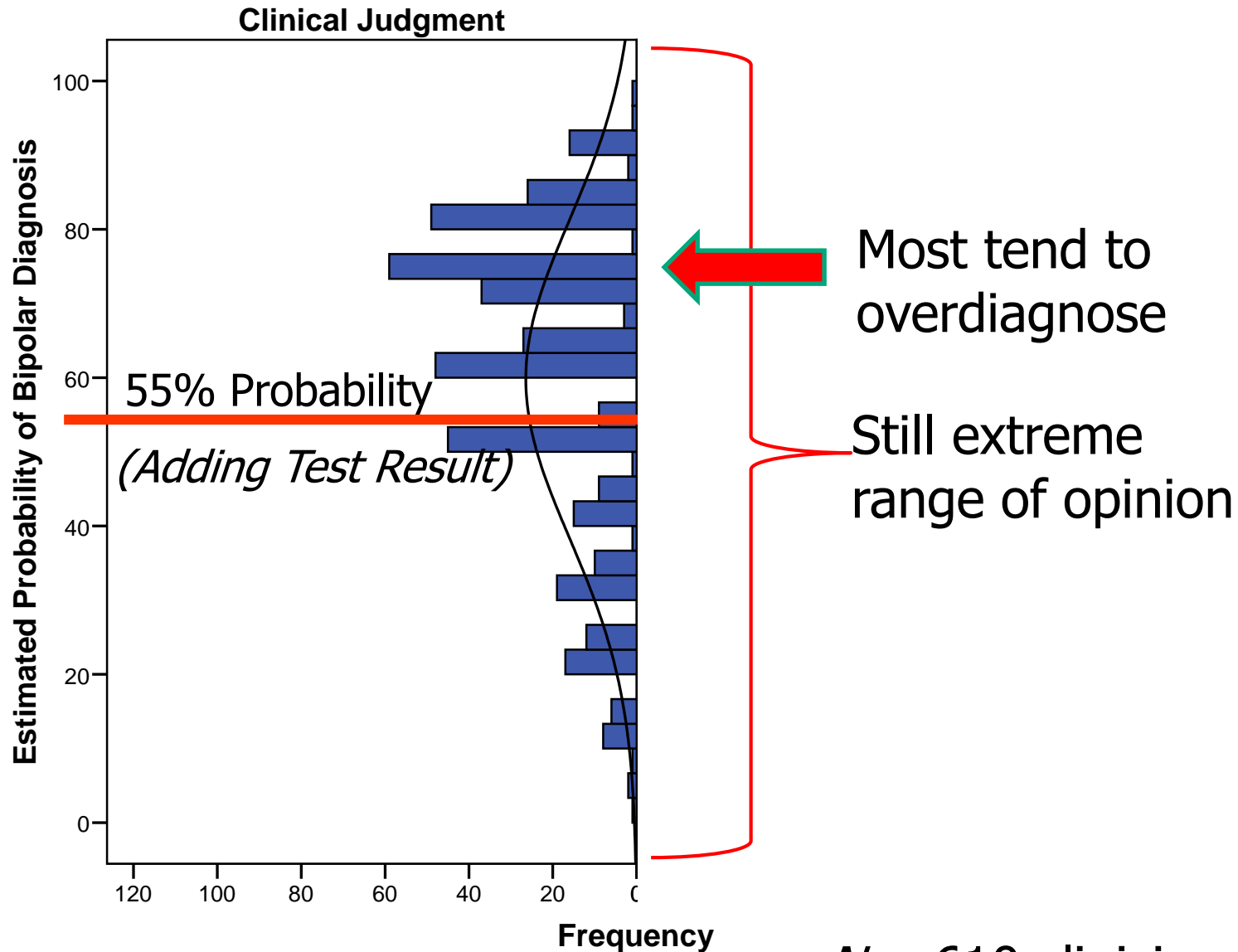
Add a Test

- Mom completes CBCL, and he earns an Externalizing $T = 84$
- What do you think likelihood is of bipolar now?

Wide Range of Clinical Opinion

Clinical Judgment

Estimated Probability of Bipolar Diagnosis

55% Probability

(Adding Test Result)

Frequency

Most tend to overdiagnose

Still extreme range of opinion

N = 610 clinicians, 13 sites

Using a Nomogram
Add a CBCL Test Result

Box #3

.1%

1%

99%

Pre-test
Prob.

LR+ (3.9)

1000

100

10

1

.1

.01

.001

Likelihood
Ratio

99%

68%

1%

.1%
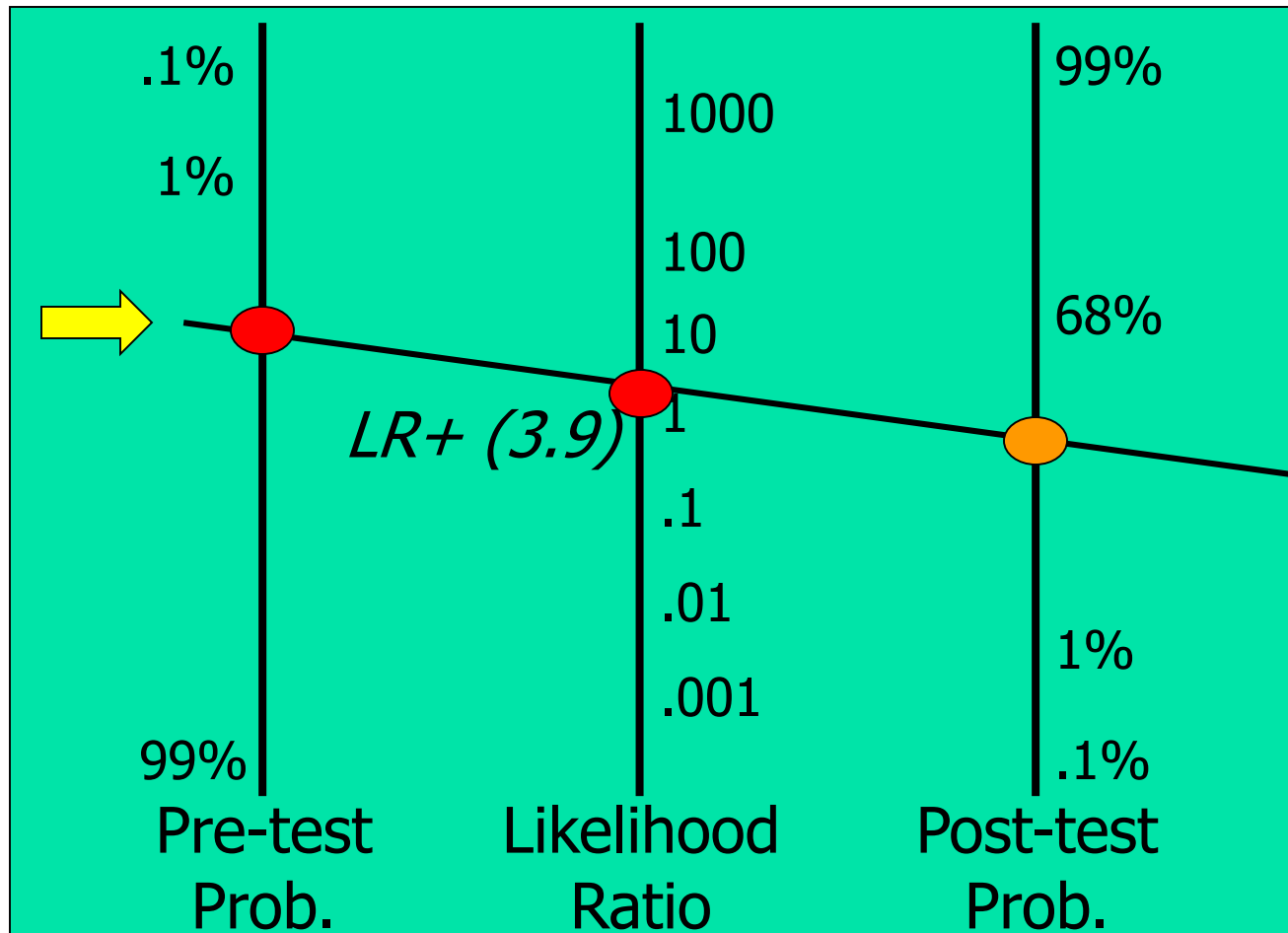
Post-test
Prob.
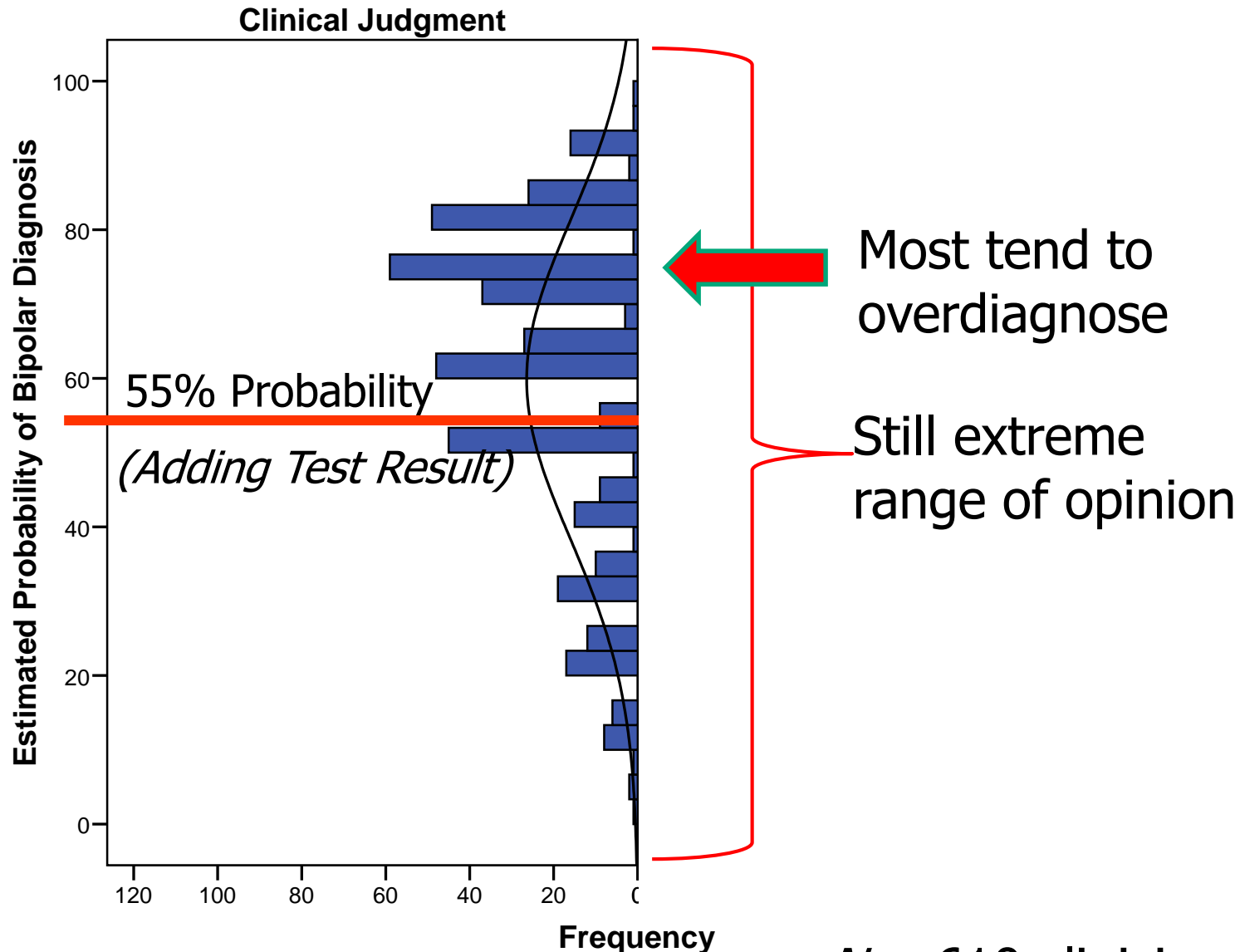
Connect dots and read post-test prob.

???
Box #4

Is the Nomogram Worth Using?

Clinical Judgment

Most tend to overdiagnose

Still extreme range of opinion

55% Probability

(Adding Test Result)

N = 610 clinicians, 13 sites

Is the Nomogram Worth Using?
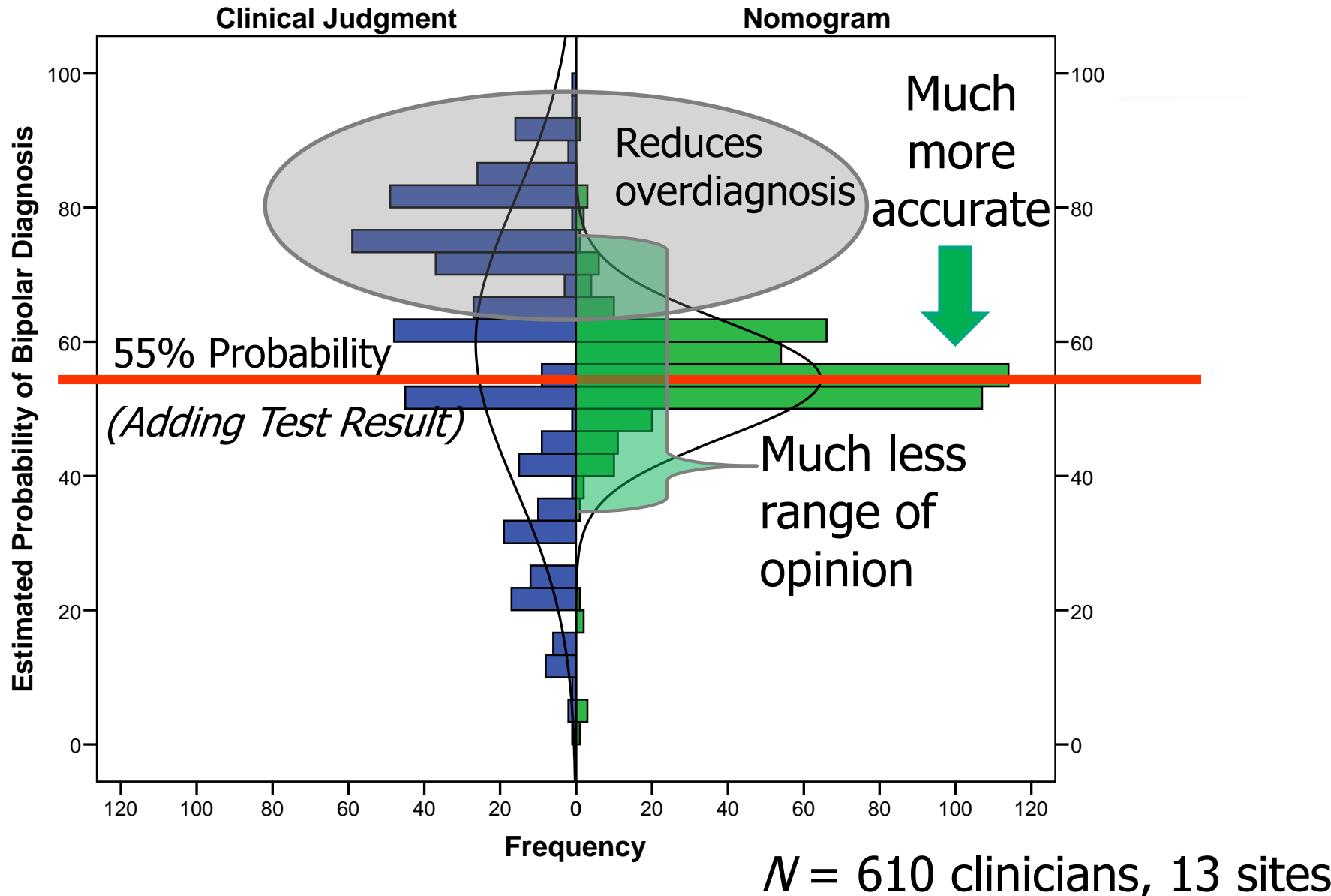
Evidence Based Approach

Clinical Judgment   **Nomogram**

Reduces overdiagnosis

Much more accurate

55% Probability

(Adding Test Result)

Much less range of opinion

Estimated Probability of Bipolar Diagnosis

Frequency

N = 610 clinicians, 13 sites

Lea's updated probabilities

Treatment Zone

Test-Treat
threshold

Assessment Zone

Anxiety
49%

Depression
39%

Substance
37%

ADHD
21%

Wait-Test

ODD
6%

Bipolar
9%

PTSD
2%

Conduct
2%

"Wait" Zone

100%

0%
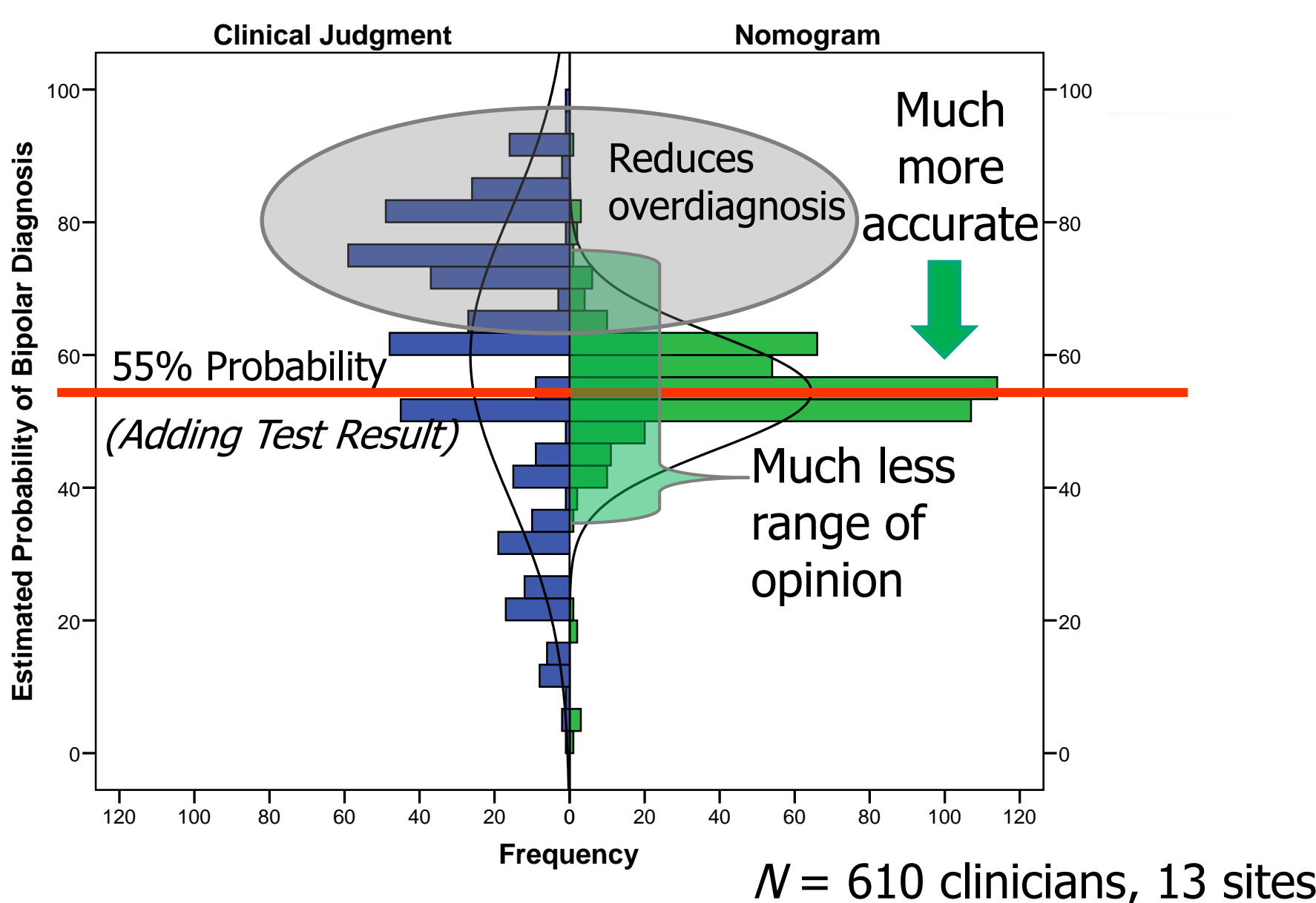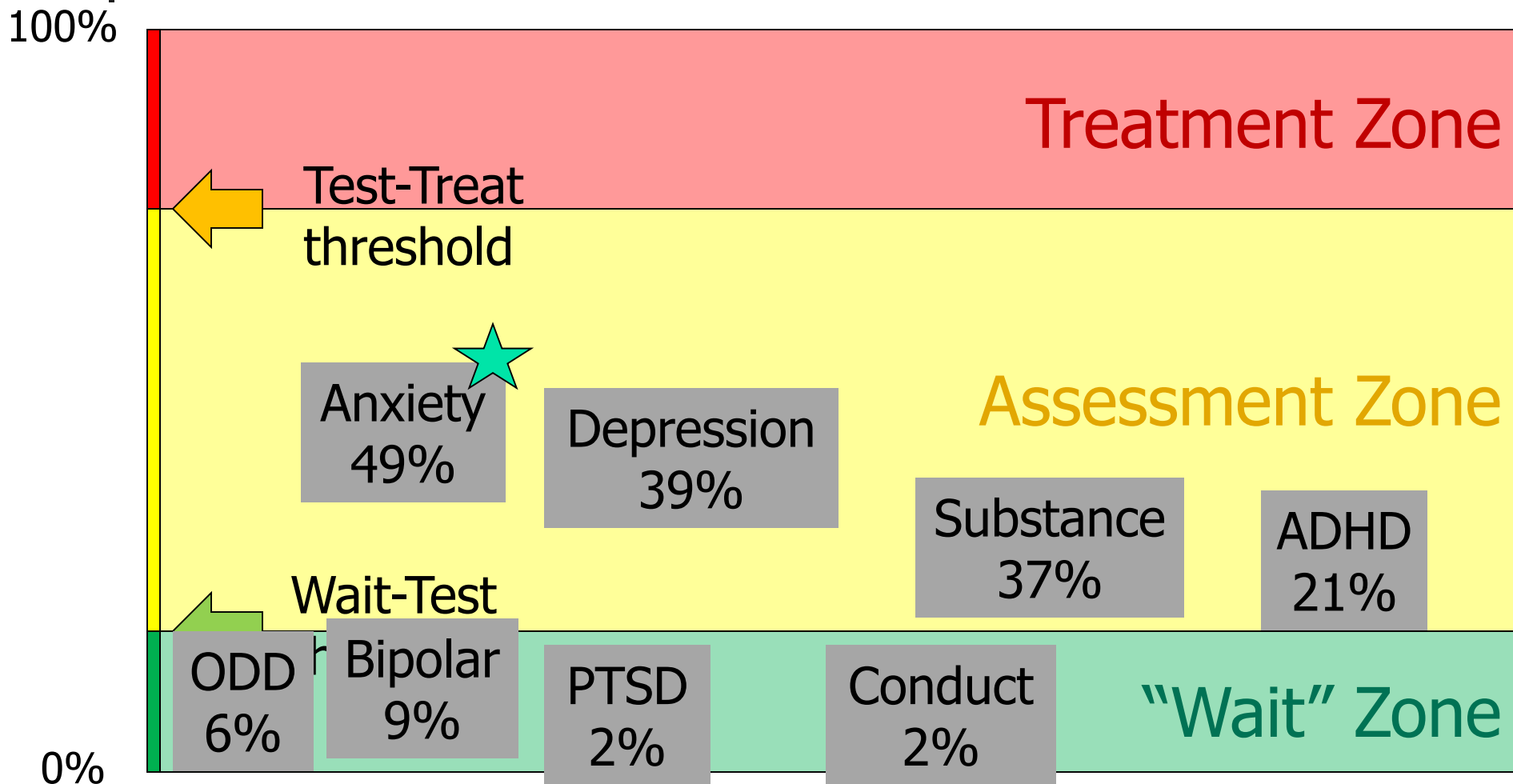
Next step:
Get another perspective (E)

- Routine with children and adolescents to get caregiver; often teacher ratings
- Lea "on the bubble"
  - 18 years old
  - Has left home
  - Now living with older sister
    - Choice point:
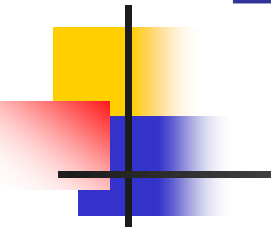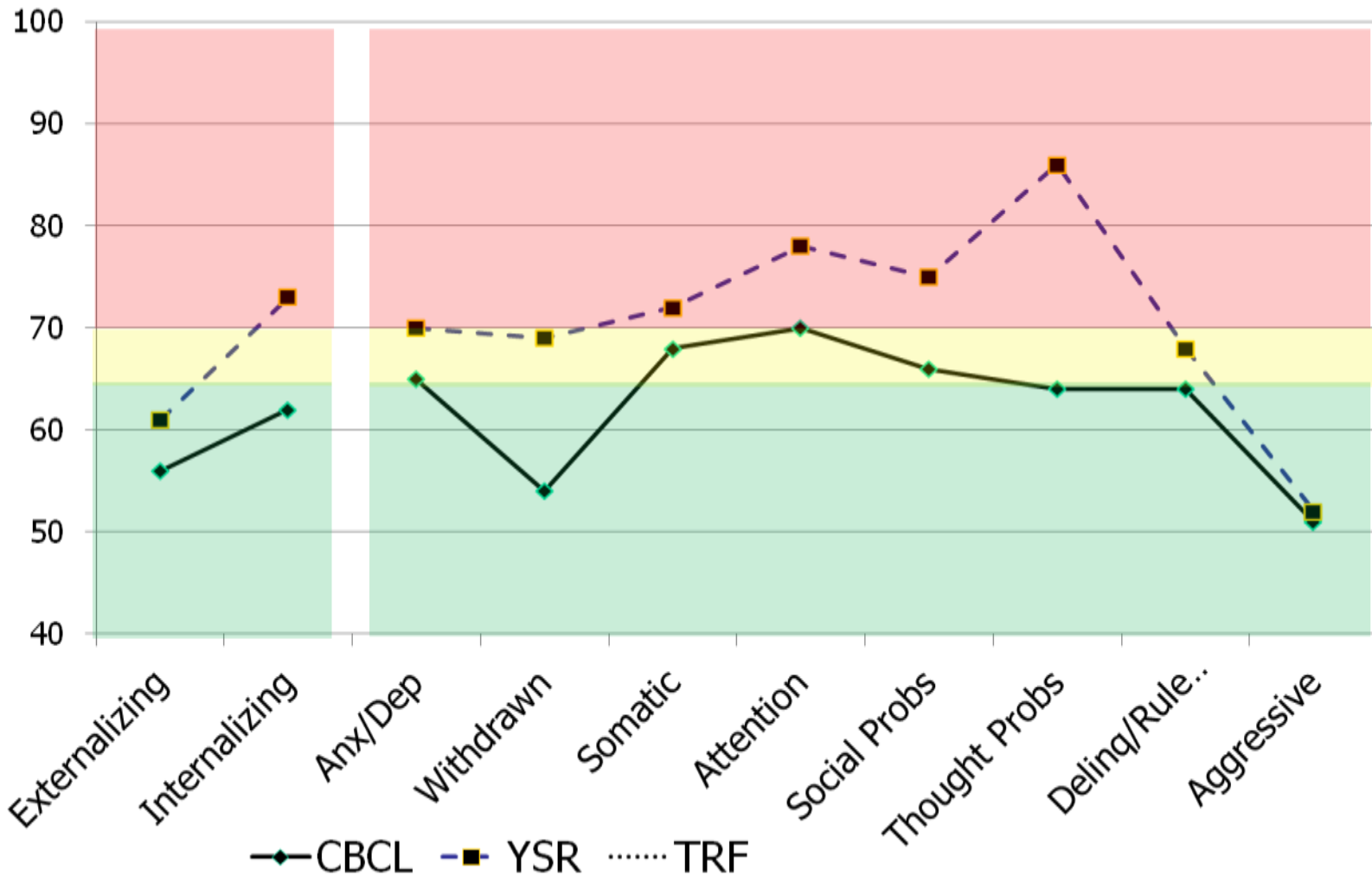   Older sister or bio mom's perspective?

Lea's CBCL Scores (Big sister!)

T Scores

Check the details & probes
(Drotar, Stein, & Perrin, 1995)

CBCL

CBCL – "Lea"

Please print. Be sure to answer all items.

Below is a list of items that describe children and youths. For each item that describes your child *now or within the past 6 months*, please circle the *2* if the item is *very true or often true* of your child. Circle the *1* if the item is *somewhat or sometimes true* of your child. If the item is *not true* of your child, circle the *0*. Please answer all items as well as you can, even if some do not seem to apply to your child.

0 = Not True (as far as you know)	1 = Somewhat or Sometimes True	2 = Very True or Often True

0 1 2	1. Acts too young for his/her age	0 ① 2 32. Feels he/she has to be perfect
0 1 2	2. Drinks alcohol without parents' approval (describe): *She drinks moderately with approval*	0 ① 2 33. Feels or complains that no one loves him/her
		0 1 2 34. Feels others are out to get him/her
		0 1 2 35. Feels worthless or inferior
0 1 2	3. Argues a lot	
0 ① 2	4. Fails to finish things he/she starts	0 1 ② 36. Gets hurt a lot, accident-prone
		0 1 2 37. Gets in many fights
0 1 2	5. There is very little he/she enjoys	
0 1 2	6. Bowel movements outside toilet	0 1 2 38. Gets teased a lot
		0 ① 2 39. Hangs around with others who get in trouble
0 1 2	7. Bragging, boasting	
0 1 ②	8. Can't concentrate, can't pay attention for long	0 1 2 40. Hears sounds or voices that aren't there (describe): _____
0 1 2	9. Can't get his/her mind off certain thoughts; obsessions (describe): _____	
		0 ① 2 41. Impulsive or acts without thinking

Check the details & probes
(Drotar, Stein, & Perrin, 1995)

Sleep problems – bipolar clue?

CBCL

⓪	1	2	71. Self-conscious or easily embarrassed
⓪	1	2	72. Sets fires
⓪	1	2	73. Sexual problems (describe): _____
⓪	1	2	74. Showing off or clowning
⓪	1	2	75. Too shy or timid
0	1	②	76. Sleeps less than most kids
0	1	②	77. Sleeps more than most kids during day and/or night (describe): *will go through sleepless periods, then sleep for big periods*
0	1	②	78. Inattentive or easily distracted
0	1	2	79. Speech problem (describe):

0	①	2	99. Smokes, chews, or sniffs tobacco
0	1	②	100. Trouble sleeping (describe): *trouble getting to sleep + staying asleep*
0	①	2	101. Truancy, skips school
⓪	1	2	102. Underactive, slow moving, or lacks energy
0	①	2	103. Unhappy, sad, or depressed
⓪	1	2	104. Unusually loud
0	①	2	105. Uses drugs for nonmedical purposes (*don't* include alcohol or tobacco) (describe): *Marijuana*
0	1	2	106. Vandalism
0	1	2	107. Wets self during the day
0	1	2	108. Wets the bed

More substance issues

Another Step:
Ask about risk factors (c)

- Why did Lea move in with sister?

Family Index of Risk for Mood (FIRM)

An Inexpensive Family Index of Risk for Mood Issues Improves Identification of Pediatric Bipolar Disorder

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Centro Clinico del Sur, Montevideo, Uruguay, and University of North Carolina at Chapel Hill

Eric A. Youngstrom
University of North Carolina at Chapel Hill and Case Western Reserve University

James Phelps
Samaritan Mental Health, Corvallis, Oregon

Melissa M. Jenkins and Jennifer Kogos Youngstrom
University of North Carolina at Chapel Hill

Robert L. Findling
Case Western Reserve University School of Medicine

Family history of mental illness provides important information when evaluating pediatric bipolar disorder (PBD). However, such information is often challenging to gather within clinical settings. This study investigates the feasibility and utility of gathering family history information using an inexpensive method practical for outpatient settings. Families ($N = 273$) completed family history, rating scales, and the Mini-International Neuropsychiatric Interview (Sheehan et al., 1998) and the Kiddie Schedule for Affective Disorders and Schizophrenia for School-Age Children (Kaufman et al., 1997) about youths 5–18 (median = 11) years of age presenting to an outpatient clinic. Primary caregivers completed a half-page Family Index of Risk for Mood issues (FIRM). All families completed the FIRM quickly and easily. Most (78%) reported 1+ relatives having

Lea's FIRM

Family Index of Risk for Mood (FIRM)

Please indicate whether any of your (blood) relatives have had any of these concerns:

Other than the child in this study

	Grandparents	Parents	Aunts/Uncles	Brothers/Sisters	Children
Suicide	☐	☐	☐	☐	☐
Alcohol/Drug Problems	☑	☑	☑	☐	☐
Mental Hospital	☐	☐	☐	☐	☐
Depression Problems	☑	☑	☑	☐	☐
Manic or Bipolar	☐	☑	☐	☐	☐

Has a health professional ever [told] you that you have manic-depressive illness or bipolar disorder? ☐ Yes ☐ No

Lea's dad has bipolar disorder, inconsistent with treatment; Drinking heavily

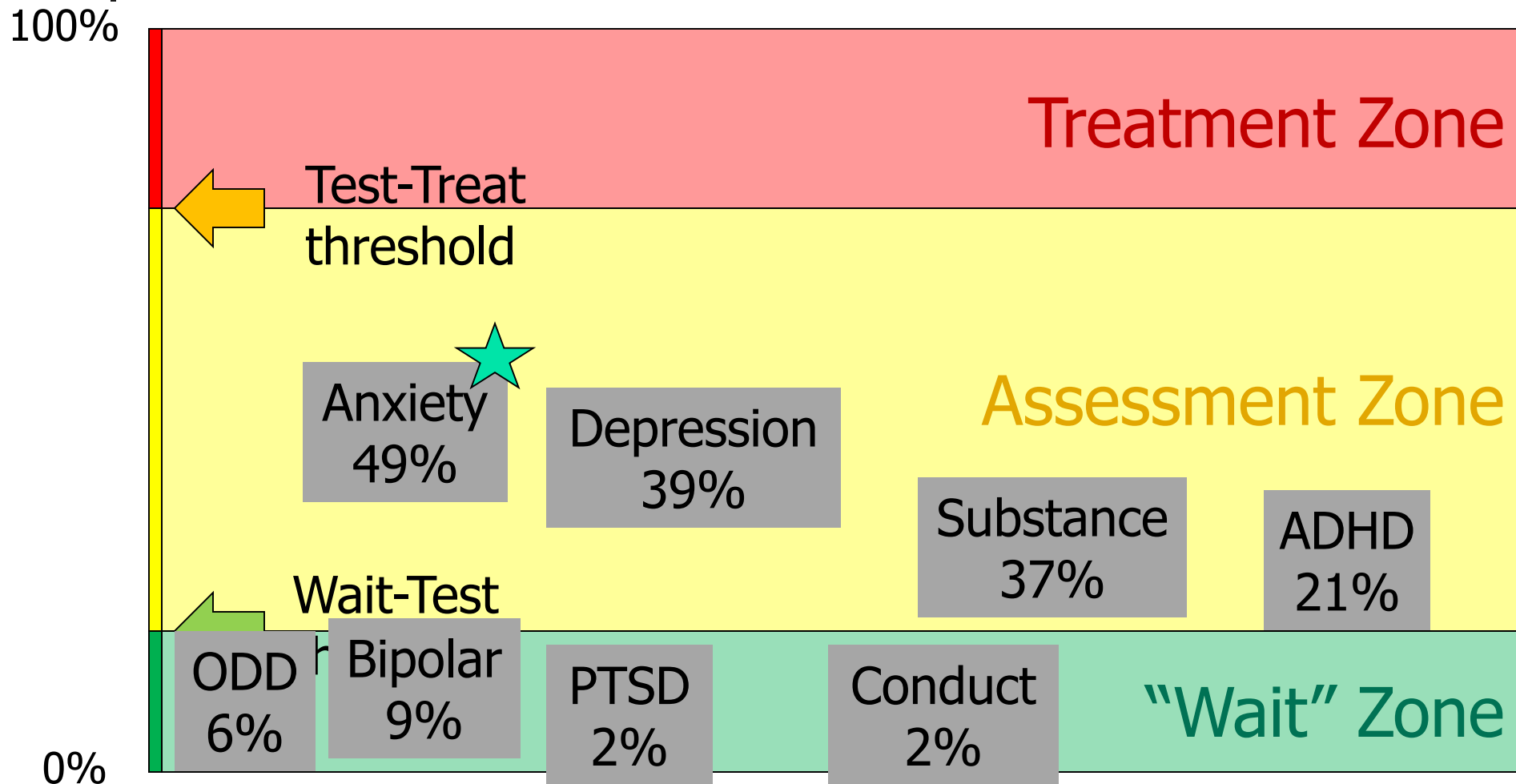Perez Algorta et al., 2012, *Psych Assess*

Another Step:
Ask about risk factors

- Why did Lea move in with sister?
- Dad has bipolar and history of substance problems
  - Bipolar is highly heritable
    - How much does this change Lea's risk?
    - First degree relative – **5x more risk**
  - Any other bipolar risk factors?
    - Early onset depression – 1/3 becomes bipolar
    - Sleep disturbance

Lea's re-updated probabilities

100%

Treatment Zone

Test-Treat threshold

Assessment Zone

Anxiety 49%

Depression 39%

Substance 37%

ADHD 21%

Wait-Test

ODD 6%

Bipolar 9%

PTSD 2%

Conduct 2%

"Wait" Zone

0%

Adding more information (G)

Table 3

Scores and Interpretive Information for Applying EBA Approach to Lea (18-year-old White female presenting to an outpatient clinic)

| Common Diagnostic Hypotheses (Step A) | Starting Probability (Step B) | Broad Measure (Step D) | | | Cross-Informant (Step E) | | | Confirmation (Step G) | Treatment Phase | | |
		Scale & Score	DLR (Source)	Revised Probability	Next Test Score	DLR (Source)	Revised Probability[b]		Process (Step I)	Outcome (Step J)	Maintenance (Step K)
Depression	21%	YSR T Internal: 73	2.43 (local data)	39%	CBC Internal Raw: 14	0.90 (E. A. Youngstrom, 2013b)	37%	MINI (Sheehan et al., 1998): Major Depressive Episode	Youth Top Problems (Weisz et al., 2011)	Beck Depression Inventory (Beck & Steer, 1987)	Worsening of mood or energy symptoms
Hypomania/ Mania	32%[a]	YSR T External: 61	1.15 (Youngstrom et al., 2004)	37%	CBC T External 56	0.53 (Youngstrom et al., 2004)	16%	MINI: Hypomanic Episode→ Bipolar II	Smartphone mood app		" "
ADHD	8%	YSR T Attention Probs: 78	1.36 (local data)	11%	CBC T Attention Probs: 70	2.19 (local data)	21%[c]	MINI: ADHD Predominantly Inattentive Type	CAARS	CAARS	Monitor schoolwork completion rate
Anxiety	29%	YSR T Internal: 73	2.35 (Van Meter et al., under review)	49%	CBC T Internal 63	0.98 (Van Meter et al., under review)	48%	–	–	Not a primary focus	–
Substance Issues	15%	YSR #2: 0 YSR #99: 2 YSR #105: 1.5	3.4 (local data)	37%	CBC #2: 0 CBC #99: 1 CBC #105: 1 (marijuana)	5.6 (local data)	77%	MINI: Substance Abuse – past cannabis and Xanax™ abuse	Check in at therapy sessions	Not agreed as a treatment goal	Contact therapist if usage back at prior level

Note. Steps H (finish treatment planning and goal setting) and L (seek and use client preferences) are discussed in text though not mentioned in Table 3.

[a] Our starting probability was based on the prevalence of bipolar spectrum disorder in the NCS in Lea's age range (6%, see Table 2), then adjusted for the history of bipolar disorder in a first degree relative (DLR = 5.0), resulting in a revised probability of 32% (see marked up nomogram in Figure 2; Step C).
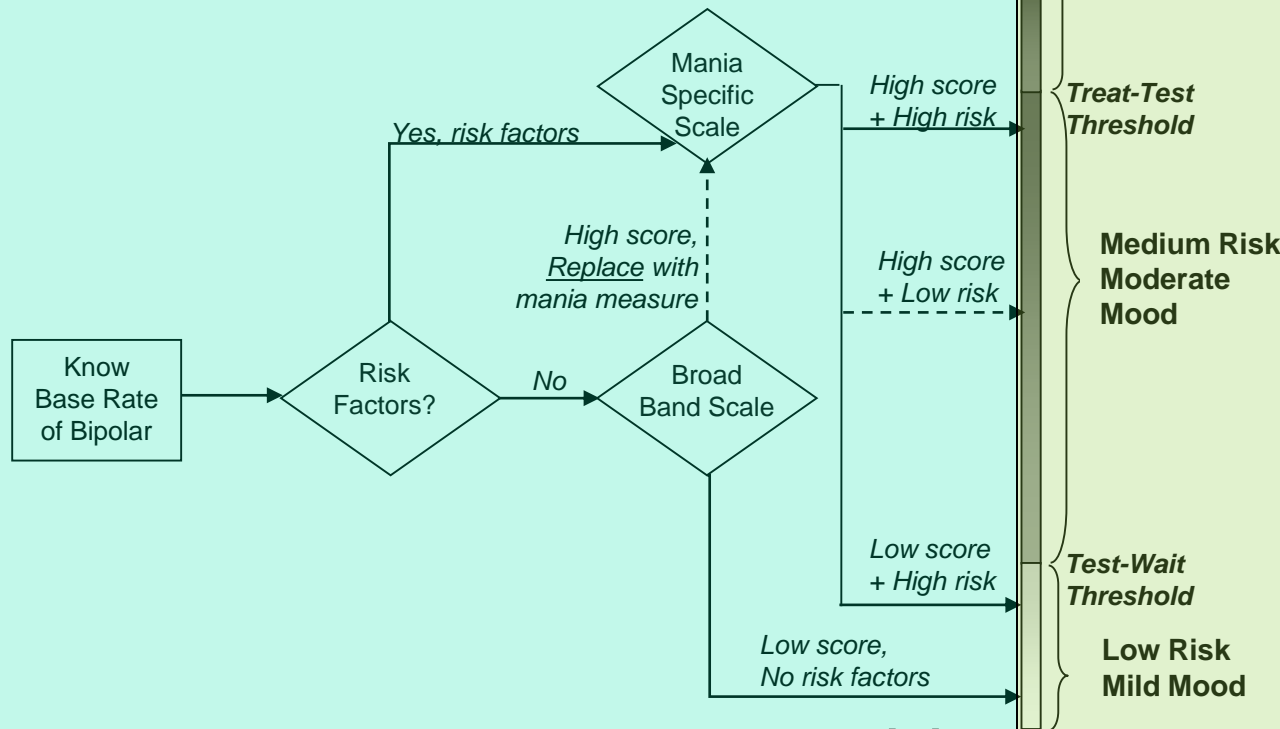
[b] Readers can compare their impressions based on the presenting problem and test scores with the EBA estimates in this column. The estimates often are different, but the EBA approach is much more consistent across sets of clinicians as well as often being less biased (Jenkins et al., 2011).

[c] We could replace the CBC and YSR with the CAARS scores, as the CAARS provides more coverage of ADHD symptoms, and more information about severity (Step F). Van Voorhees et al. (2011) report that the combination of CAARS $T > 65$ from both self and observer had a DLR 2.6 for the inattentive subtype. Combining the initial base rate estimate of 8% for ADHD with a DLR of 2.6 yields a revised probability of 18%, essentially confirming the estimate of 21% obtained via the CBC and YSR.
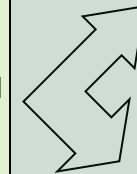
Evidence Based Algorithm

Graded Treatment Options

Road Map to Better Assessment

Know Base Rate of Bipolar → Risk Factors?

- Yes, risk factors → Mania Specific Scale
- No → Broad Band Scale

High score, *Replace* with mania measure

- High score + High risk
- High score + Low risk
- Low score + High risk
- Low score, No risk factors

High Risk Severe Mood

Treat-Test Threshold

Medium Risk Moderate Mood

Test-Wait Threshold

Low Risk Mild Mood

Decision Thresholds (EBM)

Treatment:
Aggressive Interventions (medication, hospitalization)

Assessment:
Switch to Process (life chart, CBT 3 & 5 column charts) and Outcome measures

Treatment:
Secondary interventions and non-specific + low risk treatments

Assessment:
Intensive assessment-- including semi-structured interviews, collateral informants, additional treatment history, prospective life charting
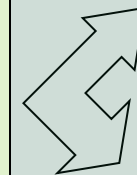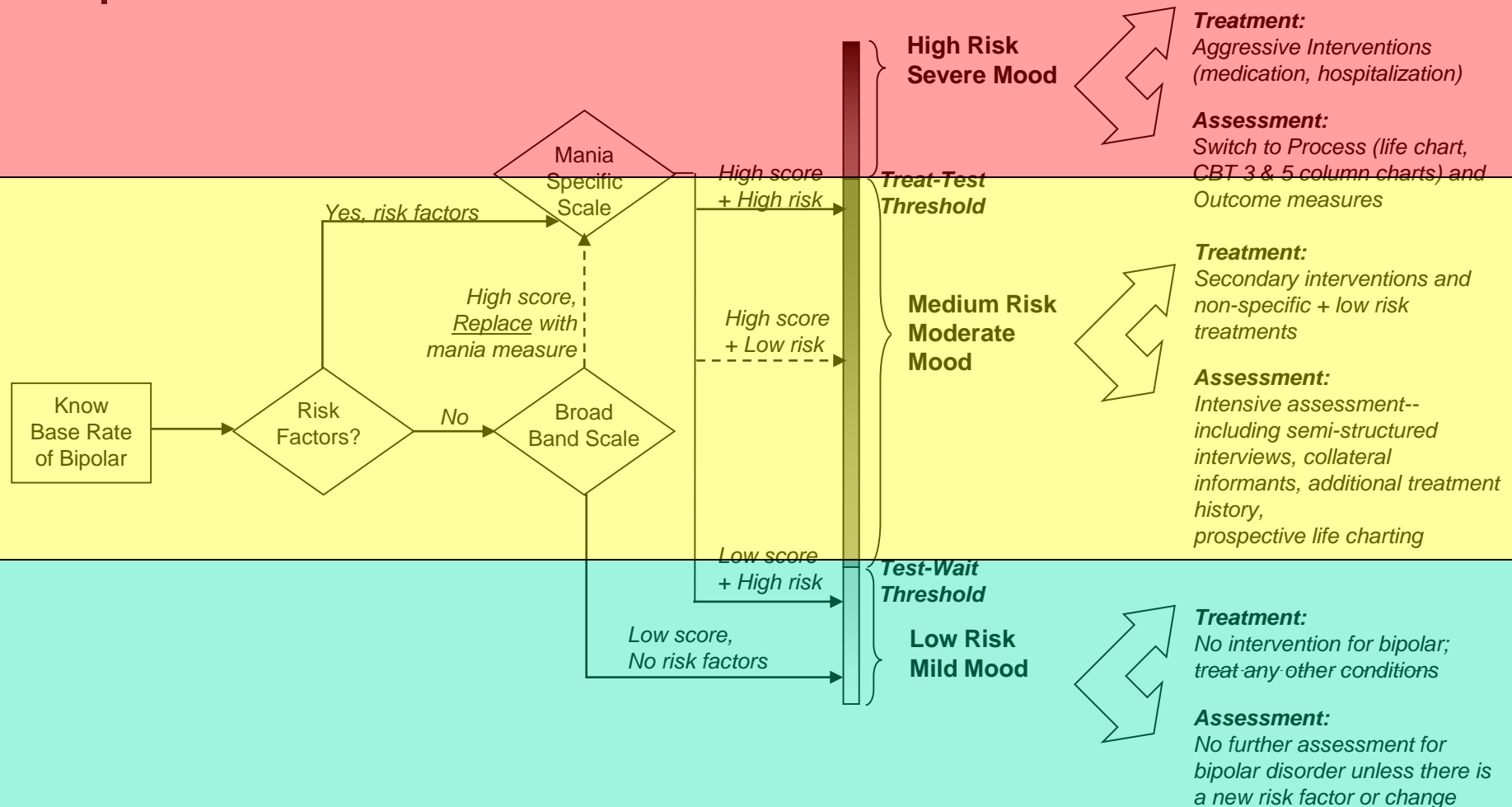
Treatment:
No intervention for bipolar; treat any other conditions

Assessment:
No further assessment for bipolar disorder unless there is a new risk factor or change

Evidence Based Algorithm

Time and costs so far:

- Could use checklists (YSR, CBCL, FIRM) as part of intake
  - 0 min in session to complete; 0-10 min to discuss
  - Achenbach costs $1.25; free alternatives
- Base rates: Know ahead of time
  - 0 session minutes; 0 cost
- Debiasing strategies
  - 0 added session minutes, 0 cost
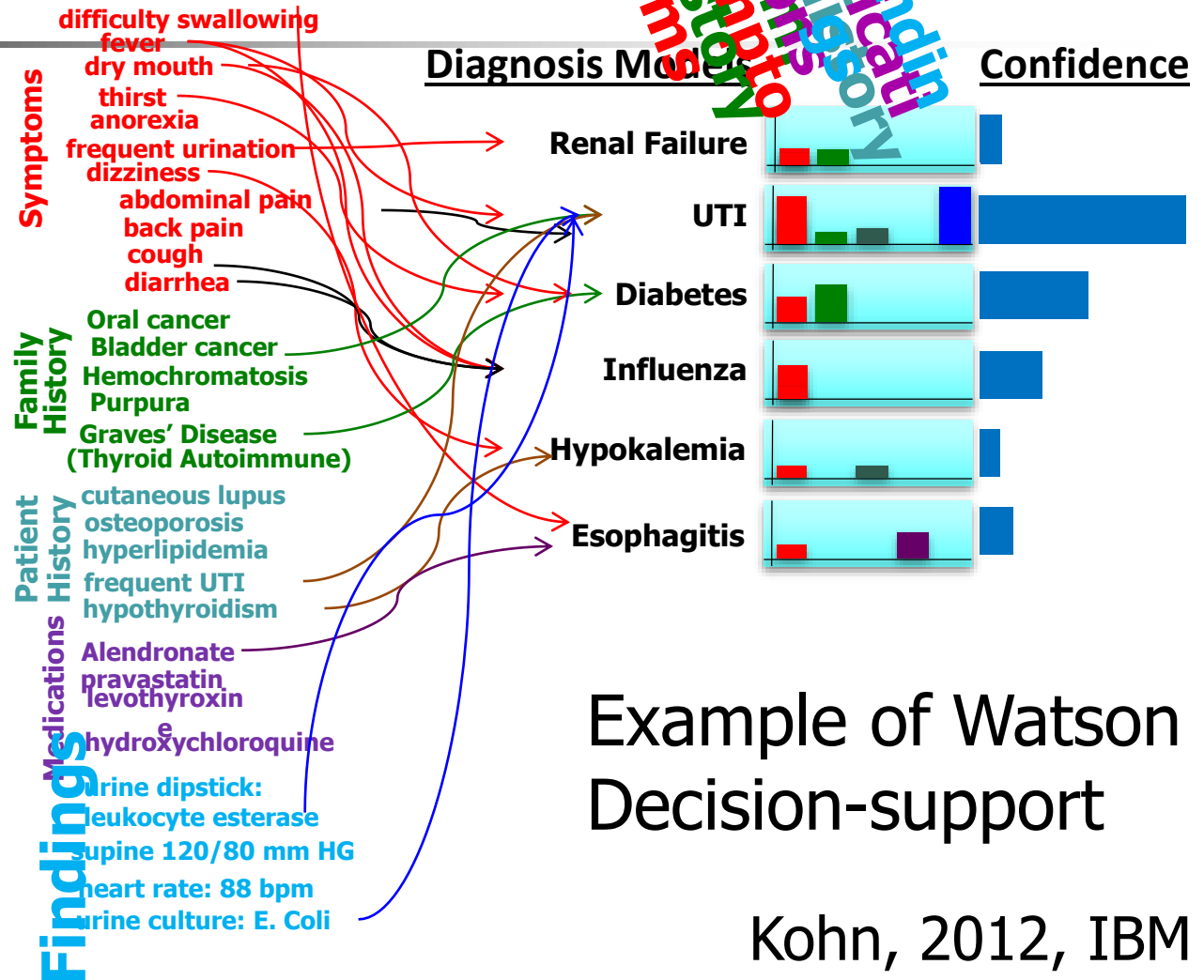
IBM Watson wins on *Jeopardy!*

- **Natural language, unlike chess**
- Largest *Jeopardy!* in 5 years
  - 34.5M *Jeopardy!* Viewers
  - 1.3B+ web impressions
- Over 10,000 Media Stories
- 11,000 attend watch events
- 2.5M+ Videos Views
- 12,582 Twitter
- 25,763 Facebook Fans

14 February, 2011

Putting the proper pieces together at the point of impact can be life changing

Symptoms
- difficulty swallowing
- fever
- dry mouth
- thirst
- anorexia
- frequent urination
- dizziness
- abdominal pain
- back pain
- cough
- diarrhea

Family History
- Oral cancer
- Bladder cancer
- Hemochromatosis
- Purpura
- Graves' Disease (Thyroid Autoimmune)

Patient History
- cutaneous lupus
- osteoporosis
- hyperlipidemia
- frequent UTI
- hypothyroidism

Medications
- Alendronate
- pravastatin
- levothyroxine
- hydroxychloroquine

Findings
- urine dipstick: leukocyte esterase
- supine 120/80 mm HG
- heart rate: 88 bpm
- urine culture: E. Coli

Diagnosis Models   **Confidence**

- Renal Failure
- UTI
- Diabetes
- Influenza
- Hypokalemia
- Esophagitis

Example of Watson Decision-support

Kohn, 2012, IBM

Next step:
Semi-structured diagnostic interview

- Structured: Make sure you cover the key symptoms, and the contending hypotheses
- Semi:
  - Use language you and client understand
  - Scratch & sniff
- Options: MINI, SCID, KSADS...

Practical issues with semi-structured

- Hurt rapport?
  - No, patients prefer them (Bruchmuller et al., 2011)
- Take long?
  - Not if targeted, or use skip outs
- Not reimbursed
  - MedicAid, insurance will pay if show "medical necessity"
  - Working earlier steps counts as "yes"!

Lea after MINI

- Bipolar II (depression + hypomania)
- Substance abuse
- ADHD Predominantly inattentive

What is bipolar II?

- Major depression + hypomania *"Moodquakes"*
  - Could be mixed depression, mixed hypomania
- How different from ordinary depression?
  - Poor response to antidepressants
  - Higher risk of suicide and NSSI
  - Higher risk of substance misuse
  - Often more atypical features
    - Hypersomnia, increased appetite
- Changes prognosis, and treatment

Pick treatment goals

- Lea not on board with substance as focus of treatment
    - Would fight "diagnosis" (Step L!)
- Lea agreed with depression as focus of treatment
    - Bipolar II as a way of describing type of depression
    - Focusing on **stability** versus **activation**
    - Agreed to be honest about substance use, see if it changed as depression went down

Setting Goals (H)

- Severity measures
  can help define goals
  - Some have norms
  - Benchmarks for comparison
- Get client input (L)
  - Goals should be motivating
  - Measurable

Clinically significant change

- (1) showing <u>reliable change</u> (RCI)
- (2) passing a benchmark that indicates a change in functioning
  - Away - Leaving clinical range
  - Back - Entering nonclinical range
  - Crossing Closer –
    Moving closer to nonclinical than clinical

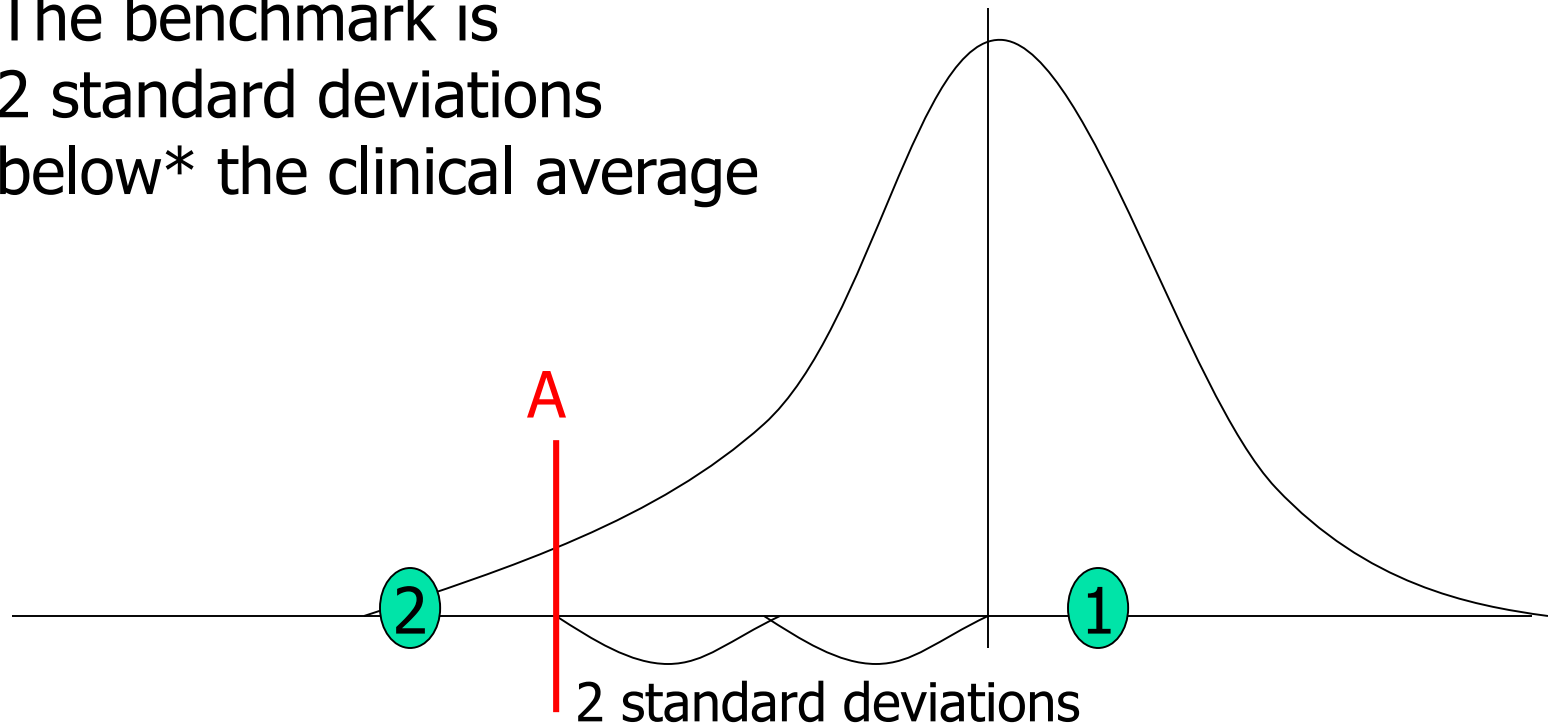# Three Benchmarks: The ABCs of Change

- <u>A</u>way from the Clinical distribution of scores

- <u>B</u>ack into the nonclinical range of scores

- <u>C</u>rossing closer to the nonclinical than the clinical range of scores

<u>A</u>way from the Clinical

Clinical Average

The benchmark is
2 standard deviations
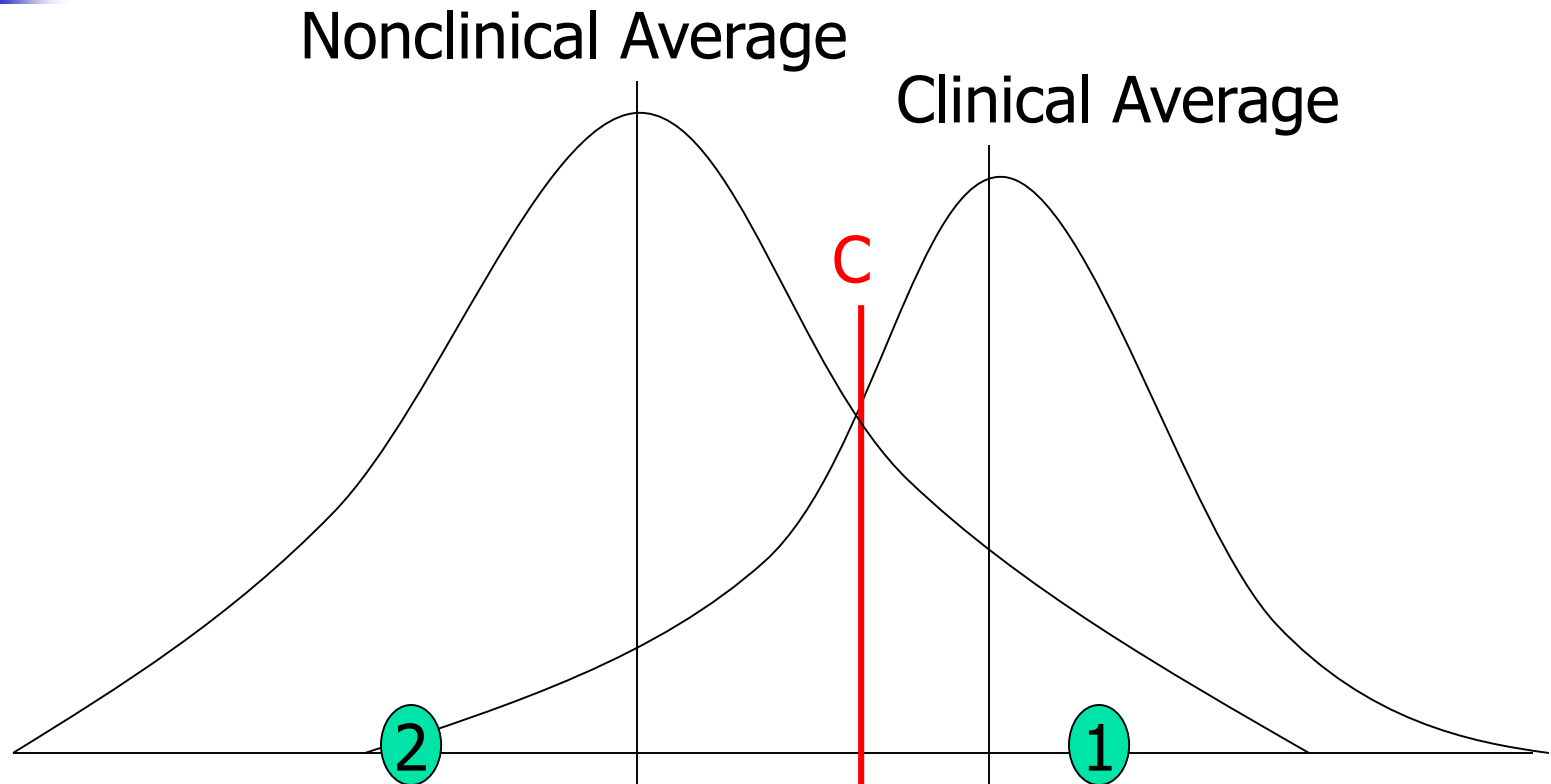below* the clinical average

A

2

1

2 standard deviations

*Assuming that higher scores show more impairment

Back into the Nonclinical Range

Nonclinical Average

The benchmark is
2 standard deviations above*
the nonclinical average

B

2

1

2 standard deviations

Crossing closer to the nonclinical than clinical

Nonclinical Average

Clinical Average

C

2

1
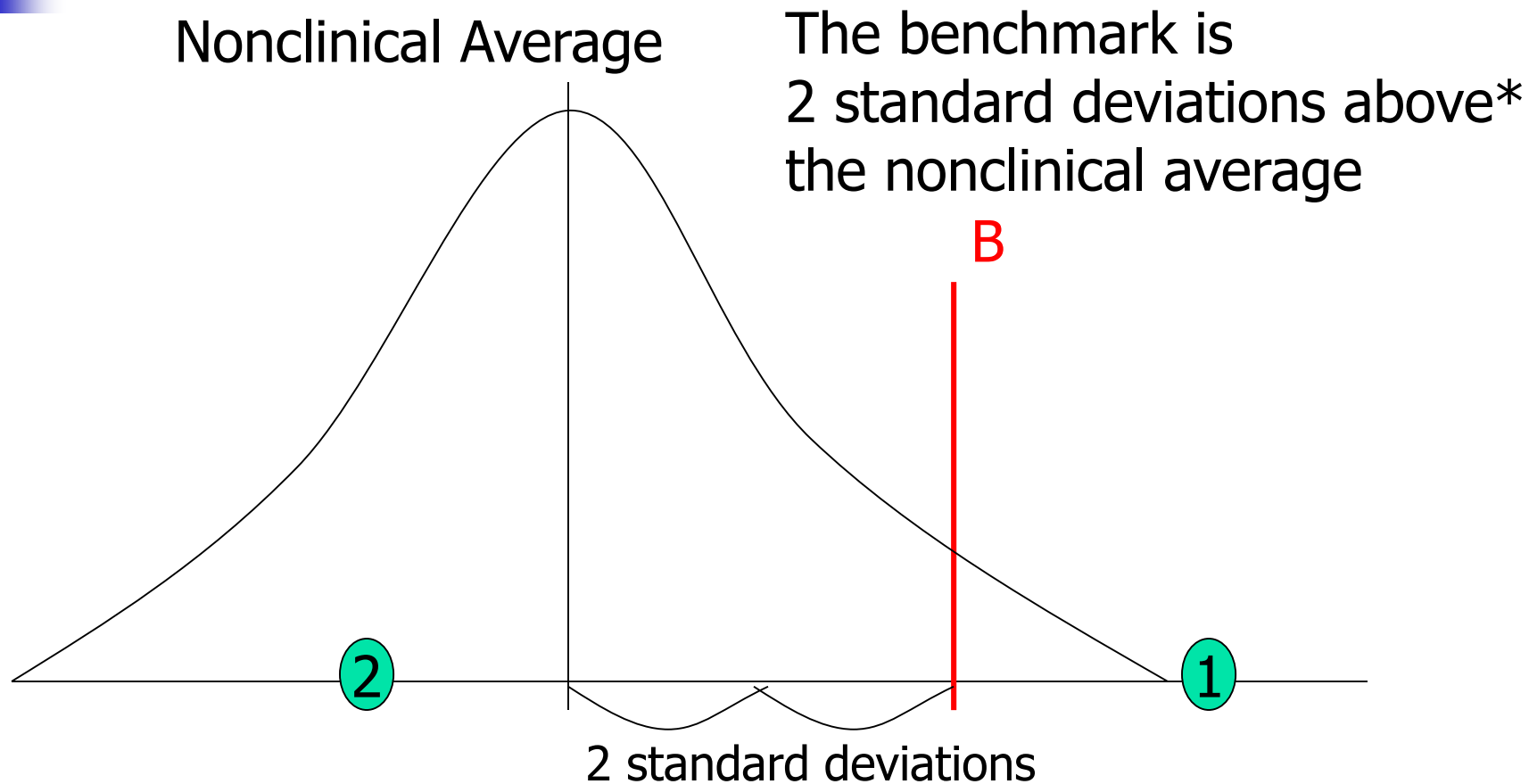
The benchmark is crossing the weighted average of the two means

Defining goals with YSR (J)

- High scores:
  - Thought problems
    - Some discussion and normalization reduced score immediately
  - Internalizing
    - This could be a good "midterm" & "final" exam
    - Improving: 8 points (73 − 8 = 65 as target)
    - ABCs: Back= 70, Closer= 54, Away= 36
  - Attention: See if it improves with stress reduction (& decreased substances...)

Progress measures (I,J)

- Need to be short
  (asking client to repeat them)
- Focus on goals
- Can check progress quickly
  - Like bathroom scale for diet

Progress measures for Lea

- Mood: Smartphone mood app (daily use; $3.99 at App Store)
- Attention problems: CAARS or other rating scale, every other session
- Substance: ask about drinks and tokes each session (brief and low key; just charting trends)

Typical improvement?

- Treatment as usual: $d \sim .2$
- Tracking progress: $d \sim .4\text{-}.6$
  - Imagine going on a diet where you never stepped on a scale?!
  - Measuring more than doubles the outcome

Evidence Based Assessment is fast and frugal

- Time added per patient:
  - < 5 minutes for first 6 steps
  - Remaining steps may already be part of typical assessment or treatment
  - No delay in initiating "Green" or "Yellow" zone treatments
- Expense added:
  - $5 if use life charting app on smartphone
  - All else in public domain, and billable time

Youngstrom et al. (2012) *Israel J Psychiatry*

Evidence Based Assessment produces large effects

- Increased consistency & accuracy of diagnoses
- Greater agreement about next action
- Avoids cultural biases
- Need not reduce clinical control of treatment
- Makes it possible to treat more specifically and use lower "doses" of intervention

For Lea, EBA…

- Found a problem she didn't know she had
  - (limitation of describing the presenting problem)
- Caught a diagnosis not on our radar
- Developed a plan for treatment goals
  - And how to tell if treatment was helping
- Working faster
  - Using base rates, cognitive debiasing
  - Checklists & focused interviewing
- More accurate, and better outcomes

Your next client

- Circle the steps you are confident you'll be able to use – twice
- Circle the "stretch goals" once
- Ask supervisor for support
  - What are common diagnoses?
  - What tools are available to assess?
- Commit to try one step this week…
- Share with your team! (many hands…)s
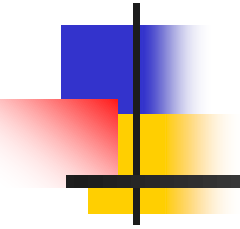
Table 1
Twelve Steps in Implementing Evidence-Based Assessment and Applying It to Individual Cases

Assessment Step	Rationale	Steps to Put in Practice
A. Identify most common diagnoses in our setting	Planning for the typical issues helps ensure that appropriate assessment tools are available and routinely used	Review practice database, notes, reports; generate "short list" of most common diagnoses and clinical issues
B. Benchmark base rates	Base rate is an important starting point to anchor evaluations and prioritize order of investigation	Select a sample of cases (six months, random draw from past year) and tally local base rate; compare to benchmarks from other practices and published rates; identify any potential mismatches
C. Evaluate risks and moderators	Risk factors raise "index of suspicion," and he combination of multiple risk factors elevate probability into "assessment" or possibly "treatment" zones	Make short checklist of key risk factors; make second list of factors that might change treatment selection or moderate outcome; develop plan for how to routinely assess them
D. Synthesize intake instruments into revised probabilities	Probably already using in practice; upgrading the value for formulation and decision-making by clarifying what the scores mean vis changing probability for common conditions	Make a table crossing assessment instruments with common presenting problems. Identify gaps in coverage. Make cheat sheet with key information about assessment for each application.
E. Interpret cross-informant data patterns	High scores across settings or informants often mean worse pathology; do not over-interpret common patterns.	Gather collateral information to revise case formulation; consider parent, spouse, roommate; also behavioral traces such as Facebook postings. Anticipate typical level of agreement.
F. Add narrow and incremental assessments to clarify diagnoses	Often more specific measures will show better validity, or incremental value supplementing broad measures	Have follow-up tests available and criteria for when they should be used. Organize so that key information is easy to integrate
G. Add necessary intensive methods to finalize diagnoses and formulation	If screening and risk factors put revised probability in the "assessment zone," what are the evidence-based methods to confirm or rule out the diagnosis in question?	Do (semi-)structured interview or review checklist with client to confirm sufficient criteria; supplement with other methods as needed to cross treatment threshold.
H. Finish assessment for treatment planning and goal setting	Rule out general medical conditions, other medications; family functioning, quality of life, personality, school adjustment, comorbidities also must be considered	Develop systematic ways of screening for medical conditions and medication use. Assess family functioning, personality, comorbidity, SES and other potential treatment moderators.
I. Measure processes ("dashboards, quizzes and homework")	Check learning of therapy skills, evidence of early response or need for change in intervention	Track homework, session attendance, life charts, mood check-ins at each visit, medication monitoring, therapy assignments, daily report cards (Weisz et al., 2011).
J. Chart progress and outcome ("midterm and final exams")	Repeat assessment with main severity measures – interview and/or parent report most sensitive to treatment effects; if poor response, revisit diagnoses.	Make cheat sheet with Jacobson & Truax (1991) benchmarks for measures routinely used; track homework, progress on skills; Youth Top Problems (Weisz et al., 2011).
K. Monitor maintenance; relapse warnings	Consolidating treatment gains and planning for maintenance are core features of excellent termination planning, and crucial to long term management of many problems	Develop list of key predictors, recommendations about next action if starting to worsen.
L. Seek and use client	Client beliefs and attitudes influence treatment seeking and engagement, and are vital for balancing risks and benefits.	Assess client concordance with treatment plan; ask about cultural factors that might affect treatment plan and engagement

Slides, records, or supervisor

FIRM

Have some go-to checklists (& know what results mean at your clinic)

Semi-structured interview

Progress, outcome tools & benchmarks

Keep talking with client!

Thank You!

Questions, Suggestions, and Comments

- Please send to:
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Chapel Hill, NC 27599-3270
- Eay@unc.edu

Coda: Rating Scales Available in Multiple Languages (inc. Spanish)

- Hypomanic Checklist (HCL)
- Mood Disorders Questionnaire (MDQ)*
- Bipolar Spectrum Disorders Scale (BSDS)
- General Behavior Inventory (GBI)*

•Also validated in some languages as parent report about youth mood and behavior

HCL-32 in 31 language versions

Arab (Egypt)

Arab (Lebanon)

Arab (Morocco)

Bosnian

Bulgarian

Chinese

Chinese (Taiwan)

Croatian

Czech

Dutch

English

Flemish
French
Georgian
German
Greek

Hungarian

Italian
Iranian

Korean

Macedonian

Polish
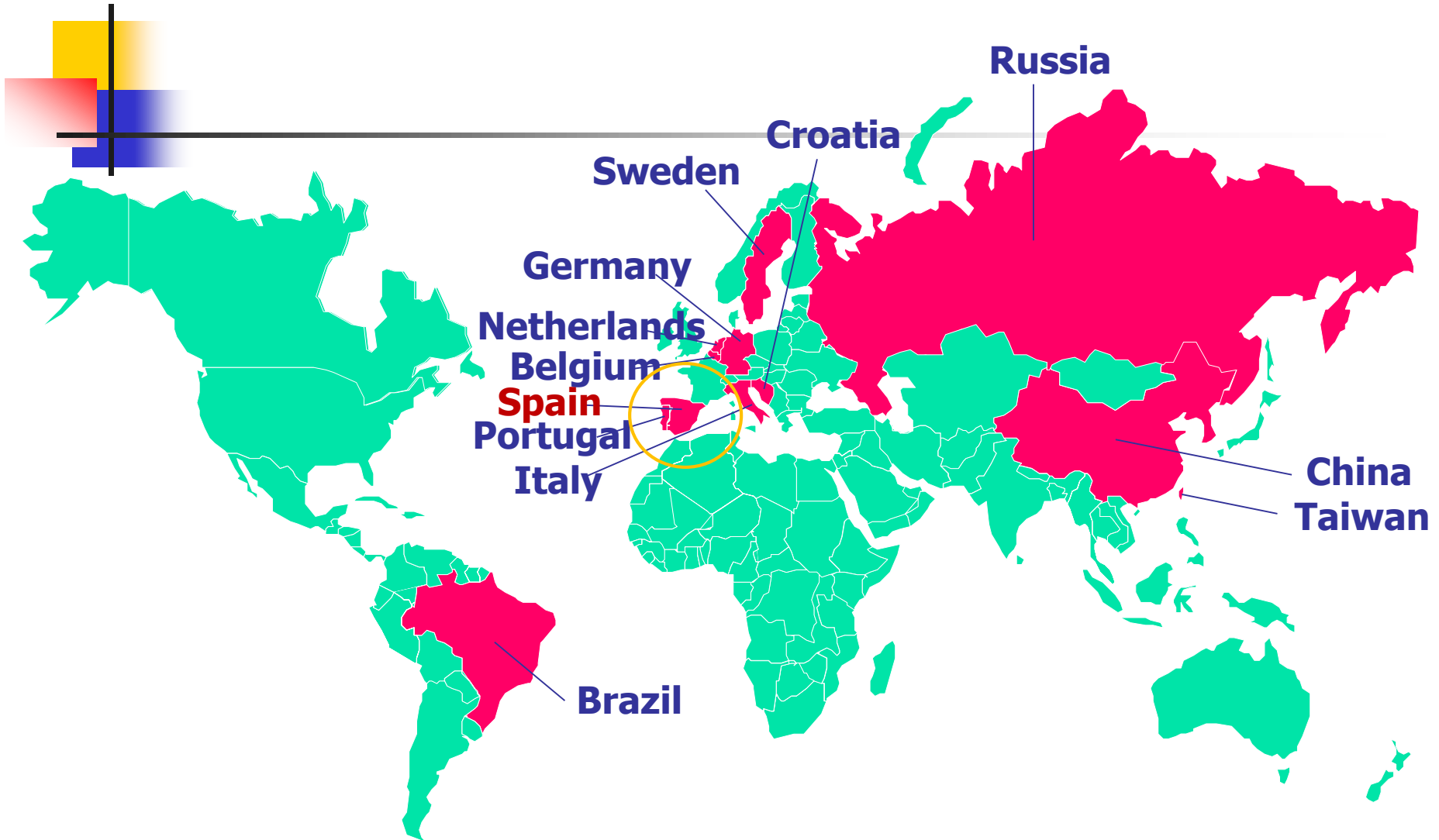Portuguese (Brazil)
Portuguese (Portugal)
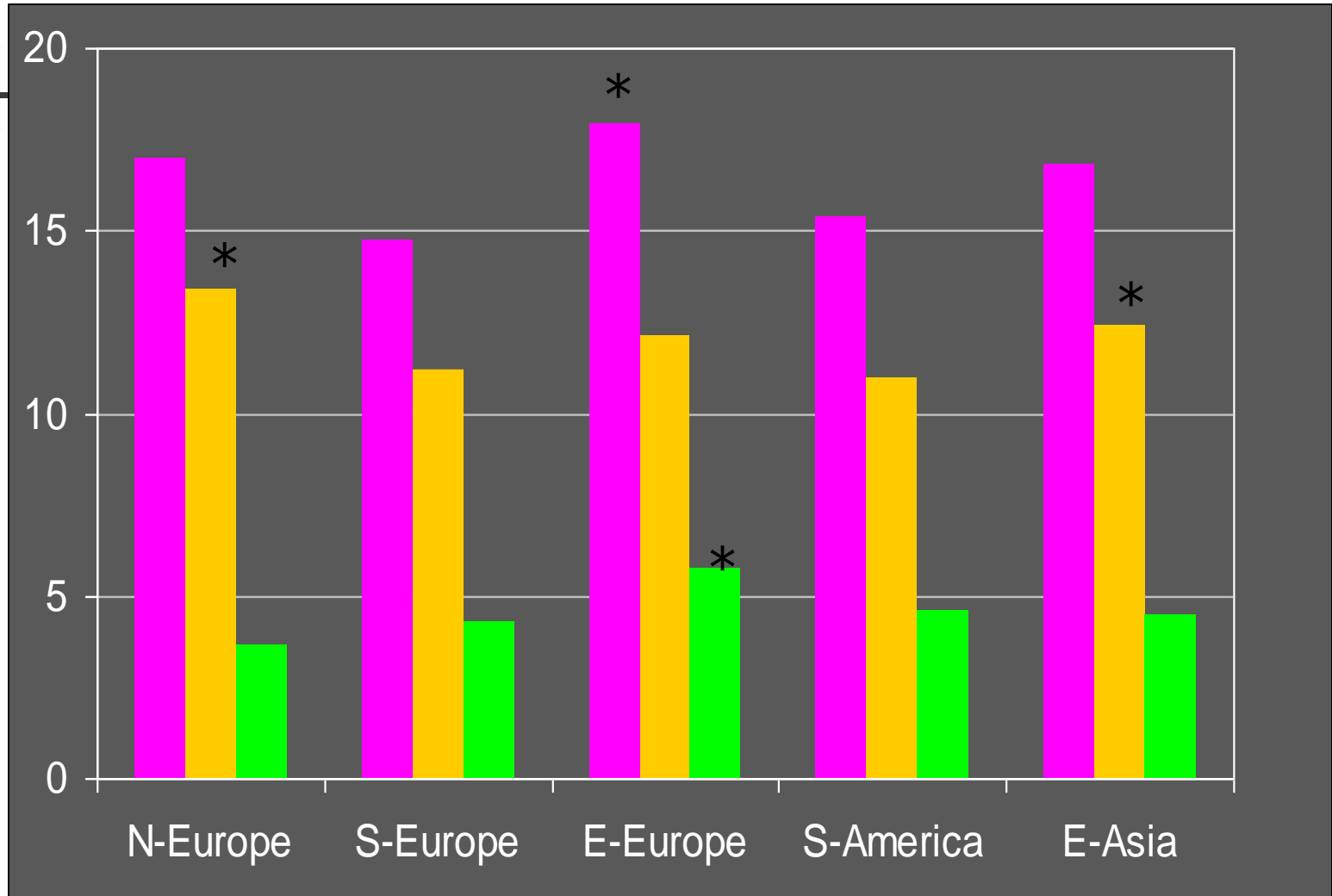Russian
Slovak
Spanish
Swedish
Turkish
Urdu
Vietnamese

Countries with HCL-32 Data

HCL-32 total and factor scores across regions

Legend: ■ Total ■ F1 - Sunny ■ F2 - Dark

all p<.0001(controlled for sex)

Countries with BSDS Data

Countries with GBI Data

Netherlands

South Korea

United States
(English & Spanish)

Brazil

Uruguay

Available as parent and self-report

ICG en Español

INVENTARIO DE COMPORTAMIENTO GENERAL
Versión Auto reporte

Aquí tenemos algunas preguntas acerca de comportamientos que ocurren en la población general. Piense cuan a menudo te ocurren. Usando la escala adjunta abajo, seleccione el número que mejor describe cuan a menudo experimentaste estos comportamientos **durante el año pasado**

0	1	2	3
Nunca o casi nunca	**A veces**	**Frecuente**	**Muy frecuente/Casi constante**

Mantenga los siguientes puntos en consideración.

Frecuencia: Tú puedes haber notado algunos de los comportamientos tan temprano como en la niñez o en la adolescencia temprana, o puedes haberlo notado más recientemente. En cualquier caso, estime cuan frecuentemente ha ocurrido el comportamiento en el último año

Por ejemplo: si tuviste el comportamiento cuando tú tenías 14 años, y lo has notado en el último año, marque su respuesta "a menudo" o "muy a menudo - casi constantemente". Sin embargo, si lo has experimentado una sola vez en tu vida, pero dentro del año pasado, marque tu respuesta "nunca - casi nunca" o "a veces

Transcultural stability

- Factor structure more or less identical in all languages analysed so far
- Symptom profiles, too, are very similar

Measures work

- Differences in levels of symptoms
- Big differences in caregiver awareness
  - Very important:
    - Others notice hypomania first
    - Caregivers drive referrals for mania (in youth and adults)

Reveal key clinical, cultural differences

Translation Rubric (3/5/2014)

- A++. EAY: Replication of good psychometrics in second independent Sample

- A+. EAY: Data collected and psychometrics compared

- A. EAY: Locked & Data collected

- B. WHO: Final version

- C. WHO: Pre-testing and cognitive interviewing (C+ would be evaluating data and blessing or making revisions based on focus group)

- D. WHO: Expert panel Back translation

- E. WHO: Forward Translation

- F. Not claimed; no forward translation in progress

Translation MEGA-Dashboard

Language	Measure								
	GBI			CMRS		FIRM	BSDS	EDI	HC
	Self	Caregiver	Teacher	Caregiver	Teacher	(Self)	Self	Self	Se
ORIGINAL - English	A++	A++	A+	A++	A+	A+	A++	A	A+
Spanish (South America)	A	A		A		A	A+ D	D- D	
Spanish (Latin / Mexico)									
Spanish (Spain)				NS					A
Korean	A+	A+							
Norwegian									
Swedish				D					
Portuguese	D	D		-E					
Arabic				E			E		
German				NS					
Turkish				NS					
Dutch	(A+)								

Unmet need

- 500.000.000 people live in Central and South America
- ~10.000.000 people with bipolar spectrum disorder
- Rating scales could help identify faster
- Sensitive to treatment effects
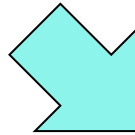- Could be used to help referrals

Meeting the need together

UNC – MECCA

- Online data gathering
- Scoring – real time
  - Clinical tool
- Data files for analysis
- Analysis software

Local Experts

- Translation
- Back translation
- Focus groups
- Cultural expertise
- Enrollment & advocacy

Together

- Review analyses
- Discuss cultural differences
- Disseminate – research and clinical tools