Strategies for Diagnosis and Treatment of Adult ADHD in Primary Care

Emerging Challenges in Primary Care: 2016

A NACE Program

Interim Curriculum Outcomes Report
Final Live Outcomes Report

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Curriculum

Live Regional Symposia Launch Date: August 13, 2016 through October 29, 2016

- The live symposia was held in 10 cities.

Pre-symposia Self Assessment Activity Launch Date: July 15, 2016 End Date: October 29, 2016

- Results were utilized by faculty to emphasize education in areas that address local practice gaps and barriers.

Enduring Symposium Webcast: Launch Date: October 25, 2016 End Date: September 24, 2017

- http://naceonline.com/CME-Courses/course_info.php?course_id=791

Flipped Classroom Enduring Activity with live webinar delivered via the RealCME Platform: Anticipated Launch Date: January 1, 2017 End Date: December 31, 2017

- This enduring activity utilizes a flipped classroom design that includes foundational self-study components along with an online live event where all learners will have the opportunity to interact with a multi-specialty faculty and other learners. This combination of both asynchronous (enduring) and synchronous (live) components, allow for the curriculum pathways to be tailored to the needs of the audience.

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Cities and Dates

Emerging Challenges in Primary Care: Update 2016
Conference Schedule

April 30, 2016 Miami, FL	June 25, 2016 Raleigh, NC	**September 17, 2016** **Ft. Lauderdale, FL**
May 7, 2016 Baltimore, MD	June 25, 2016 Tampa, FL	**September 24, 2016** **San Antonio, TX**
May 14, 2016 St. Louis, MO	**August 13, 2016*** **Denver, CO**	**October 10, 2016*** **Uniondale, NY**
May 21, 2016 Atlanta, GA	**August 20, 2016** **Sacramento, CA**	**October 15, 2016** **Nashville, TN**
June 4, 2016 Birmingham, AL	**August 27, 2016*** **Troy, MI**	**October 22, 2016*** **San Diego, CA**
June 11, 2016 Columbus, OH	**September 10, 2016** **Anaheim, CA**	**October 29, 2016** **Houston, TX**

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***Simulcast and Live Conference**

** **Bolded** cities are where the lecture was given

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Background

- Attention deficit hyperactivity disorder (ADHD) is a neurological disorder that impacts all facets of life. ADHD had historically been assumed to be a childhood disorder, however, there is growing evidence to suggest it persists into adulthood. Prevalence of the disorder ranges from 8-10% in children, 9.6% in adolescents, and 4.4% in adults. While estimates vary, up to 65% of children will continue to experience the disorder into adulthood.
- Symptomology varies throughout the lifespan with adults experiencing symptoms such as inattention, disorganization, lack of planning, forgetfulness/easily losing things, difficulty completing projects, inadequate time management, and marked impulsivity.
- Individuals affected by ADHD are at greater risk for accidents, arrests/incarceration, termination of employment, academic failure, substance abuse/misuse, & sexually transmitted diseases.
- This curriculum has been designed for healthcare providers who diagnose and/or treat ADHD in a primary care setting.

ADHD PRE-SYMPOSIA SURVEY RESULTS BY PROFESSION

Scale: 1=Very Poor | 2=Poor | 3=Neutral | 4=Good | 5=Excellent

ADHD SURVEY QUESTIONS	N	MD	DO	NP	PA	ALL
How would you rate knowledge of common clinical presentations of Attention-Deficit/Hyperactivity Disorder (ADHD)?	544	3.21	3.07	2.89	2.88	3.03
How would you rate your awareness of the extent of functional impairment associated with untreated ADHD?	544	3.17	3.21	2.88	2.97	3.01
How would you rate your awareness of the risk for other psychiatric disorders in patients with ADHD?	544	3.08	3.29	2.91	2.82	2.98
How would you rate your awareness of the risk for other psychiatric disorders in patients with ADHD?	544	2.91	3.0	2.72	2.38	2.79
How likely are you to also screen for ADHD in an adult patient for whom psychiatric evaluation is indicated?	544	2.97	3.29	2.69	2.85	2.83
How would you rate your knowledge about appropriate treatment selection for ADHD management?	544	2.98	3.07	2.69	2.65	2.82
How would you rate your ability to appropriately monitor patients on pharmacotherapy for ADHD to improve compliance, minimize side effects, and maximize treatment outcomes?	544	2.75	2.71	2.5	2.41	2.6
How would you rate your confidence in using ADHD tools/scales for treatment and follow-up monitoring?	544	2.77	2.86	2.59	2.62	2.67

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Learning Objectives:

1. Describe ADHD symptom profiles and common presentations in a primary care setting
2. Identify risks for coexisting disorders in adult patients with ADHD with emphasis on anxiety disorders, mood disorders, and substance use/abuse disorders
3. Implement appropriate pharmacologic treatment for adults diagnosed with ADHD designed to improve compliance, minimize side effects and maximize outcomes in a busy primary care setting
4. Use adult ADHD assessment and treatment tools for assessment, treatment and follow-up monitoring

ReportIndex

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2	**Executive Summaries Moore's Levels 1 - 5**	• Participation • Learning Domains • Outcomes Analyses Overview

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9	**Predictive Modeling**	• Model Construction • Identification and Description of Model Drivers • Predicted Magnitude of Change
10	**Curriculum Summary of Results**	• Summary of Curriculum Findings

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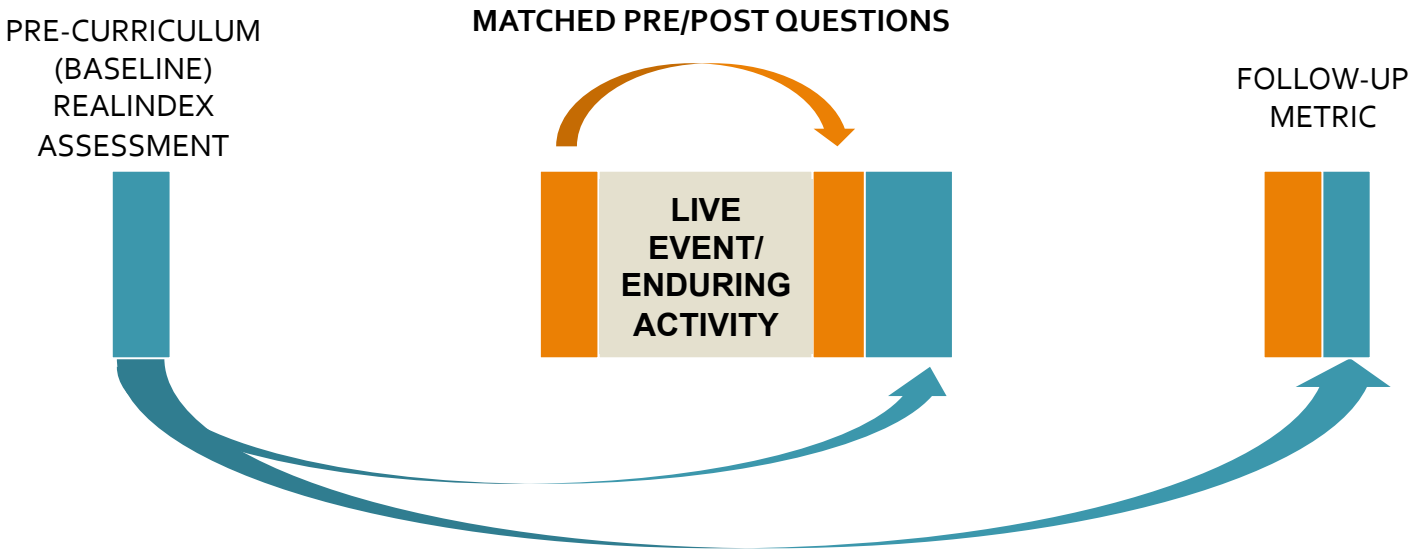
Curriculum Data Collection via RealMeasure® Outcomes Assessment Methodology*

ACTIVITY OUTCOMES PROTOCOL

- Measure Moore's Levels 1–4
- Paired Pre- and Post-Test questions
- Employs Knowledge, Competence, Confidence, and practice strategy questions

CURRICULUM OUTCOMES PROTOCOL

- Measure Moore's Levels 1–5
- Learning Objectives
- RealIndex™ question:
  - Prior to the activity
  - After completion of the activity



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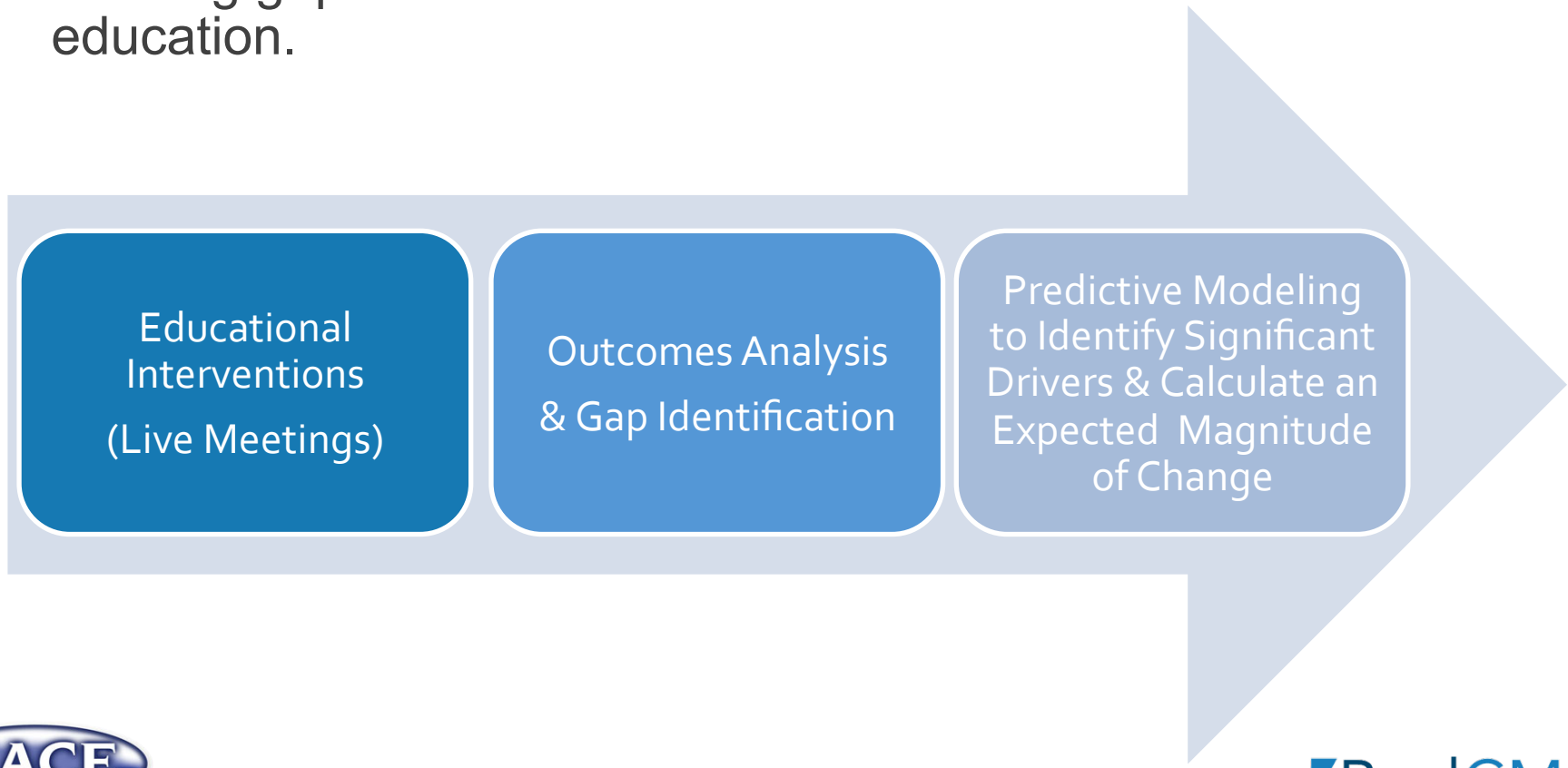
PredictiveModeling

Predictive modeling was employed following a portion of the meeting series to identify the significant drivers that address the observed learning gaps to be addressed in future education.



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Executive Summary

Outcomes at Moore's Levels 1-5

Level 1 (Participation):

Live Meeting Location (Date)	Attendees	Started Pre-Test	Started Post-Test	
Denver, CO (August 13, 2016)	153	109	103	67.32%
Sacramento, CA (August 20, 2016)	111	72	80	64.84%
Troy, MI (August 27, 2016)	223	146	137	61.43%
Anaheim, CA (Sept. 10, 2016)	172	95	115	66.86%
Ft. Lauderdale, FL (Sept 17, 2016)	300	174	157	52.33%
San Antonio, TX (Sept. 24, 2016)	126	96	95	75.40%
Uniondale, NY (Oct. 8, 20160	291	180	202	69.41%
Nashville, TN (Oct. 15, 2016)	166	125	120	72.30%
San Diego, CA (Oct. 22, 2016)	122	91	89	73.00%
Houston, TX (Oct 29, 2016)	207	127	127	61.35%
All Meetings to Date	1871	1215	1225	65.50%

Level 2 (Satisfaction): Learners indicated a high level of satisfaction with this curriculum including approximately 90% of post-curriculum respondents (*N*=113) who indicated it was relevant to their practice.

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Executive Summary

Outcomes at Moore's Levels 1-5

Levels 3-5 (Knowledge, Competence, Confidence, and Performance):
Statistically significant gains were measured from Pre-Test across the program, in all learning domains across.

Outcome Indicator (*N* = 1,322 matched learners only)	**Pre-Test Avg. Score (SD)**	**Post-Test Avg. Score (SD)**	**% Change (Significance)**
Knowledge	39.10% (39.83)	73.15% (36.47)	**87.08%***
Competence	90.06% (29.93)	93.06% (25.41)	**3.33%***
Confidence	1.89 (0.98)	3.19 (0.99)	**68.78%***
Practice Strategy**	2.25 (1.41)	4.09 (1.19)	**81.77%***
RealIndex**	71.33% (25.73)	84.33% (21.80)	**18.22%***

*Indicates statistical significance at the $p < .0005$ Level.
**Performance Level 5 metric

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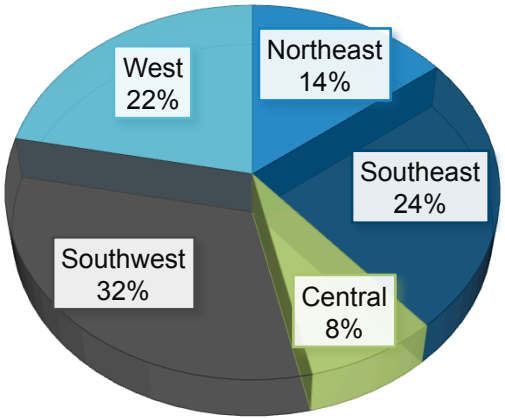
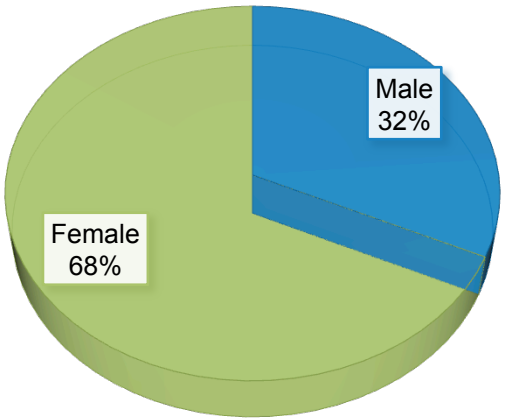
Level 1: Demographics

Level 1: Participation – Demographics

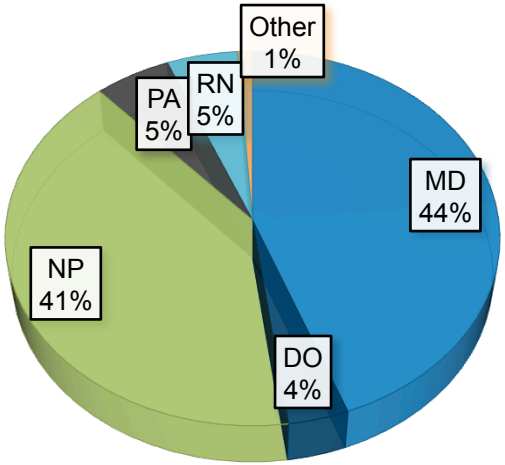
REGION



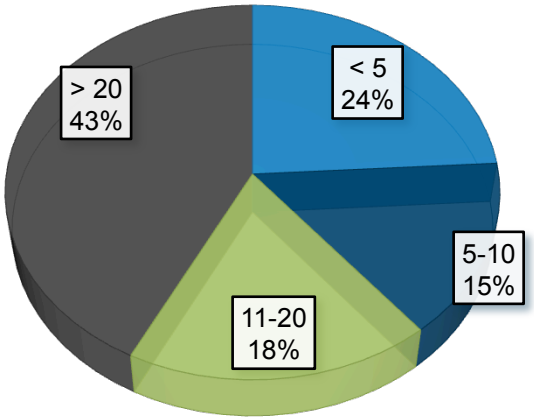
GENDER



PROFESSION



YEARS IN PRACTICE



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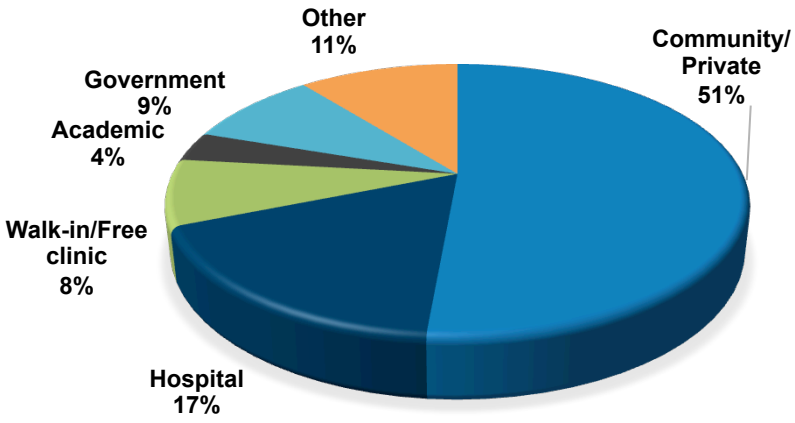
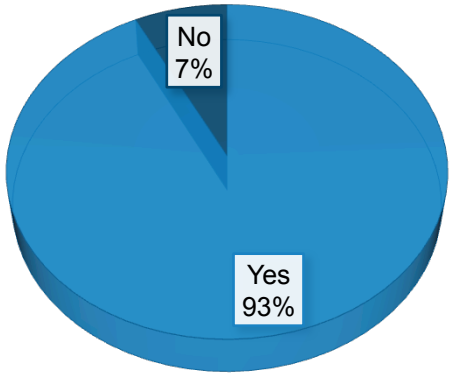
Level 1: Participation – Demographics

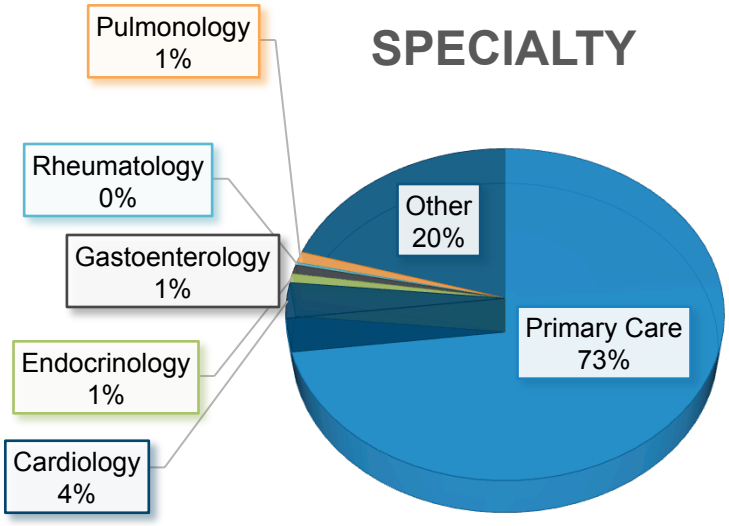
TYPE OF PRACTICE



IS YOUR PRACTICE MAINLY DEVOTED TO PATIENT CARE?



SPECIALTY



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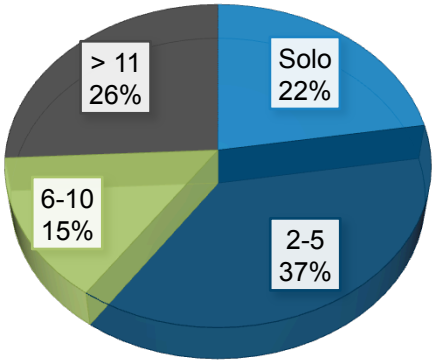
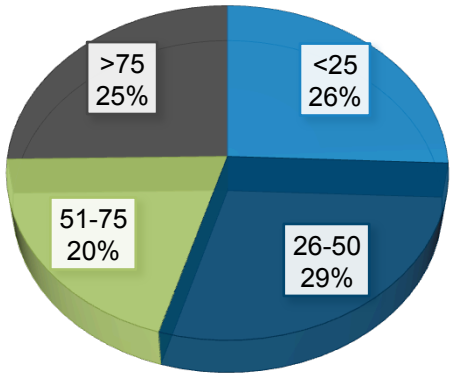
Level 1: Participation – Demographics

NUMBER OF PROVIDERS IN YOUR PRACTICE



NUMBER OF PATIENTS SEEN EACH WEEK



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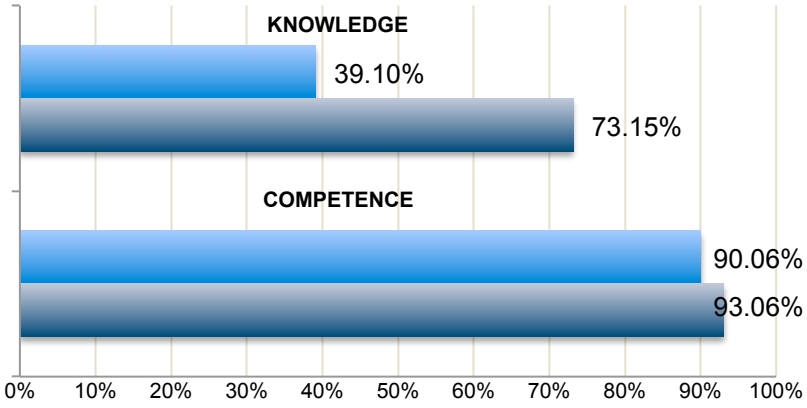
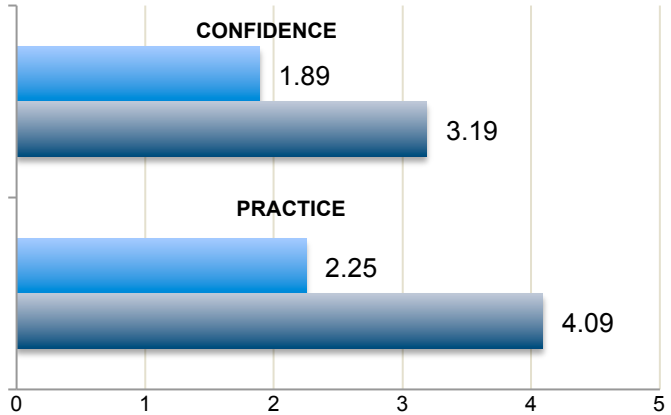
Levels 3-5: Outcomes Metrics

Levels 3-4 - Learning Domain Summary

Outcome Indicator	Pre-Test Avg. Score (SDS)	Post-Test Avg. Score (SDS)	% Change	P - Value
Knowledge	39.10% (39.83)	73.15% (36.47)	**87.08%***	< .0005
Competence	90.06% (29.93)	93.06% (25.41)	**3.33%***	< .0005
Confidence	1.89 (0.98)	3.19 (0.99)	**68.78%***	< .0005
Practice strategy	2.25 (1.41)	4.09 (1.19)	**81.77%***	< .0005

SDS = Standard deviation score





Statistically significant and substantial gains (p < .0005) were shown across the program in all domains. Learner score scatter (as measured by the standard deviation scores SDSs) improved to more moderate levels by Post-Test indicating that the majority of learners' scores reflect the reported averages. The majority of the gains are above established benchmarks, which estimate gains ranging from 15% to 20% by Post-Test.

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Level 3 - Learning Objectives

Learning Objective	Pre-Test Avg. Score (SD)	Post-Test Avg. Score (SD)	% Change	P - Value
1. Describe ADHD symptom profiles and common presentations in a primary care setting	84.46% (21.80)	94.23% (16.27)	**11.57%**	< .0005
2. Identify risks for coexisting disorders in adult patients with ADHD with emphasis on anxiety disorders, mood disorders, and substance use/abuse disorders	58.63% (32.44)	74.76% (31.62)	**27.51%**	< .0005
3. Implement appropriate pharmacologic treatment for adults diagnosed with ADHD designed to improve compliance, minimize side effects and maximize outcomes in a busy primary care setting	54.59% (33.64)	73.27% (33.08)	**34.22%**	< .0005
4. Use adult ADHD assessment and treatment tools for assessment, treatment and follow-up monitoring	90.06% (29.93)	93.06% (25.41)	**3.33%**	< .003

Significant (p < .003-.0005) gains were measured for all Knowledge and Competence questions mapped to the curriculum Learning Objectives (LOs). Observed gains by Post-Test ranged from 3% to 34%. LO3 demonstrated the greatest gain by Post-Test (34%) from the lowest Pre-Test average (55%). LO1 & 4 showed modest gains; however, averages at Pre- and Post-Test were the highest measured across the analyses. The gains observed were largely above historical benchmarks, which show average estimates of 20% by Post-Test.

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Level 5 – Performance: The RealIndex

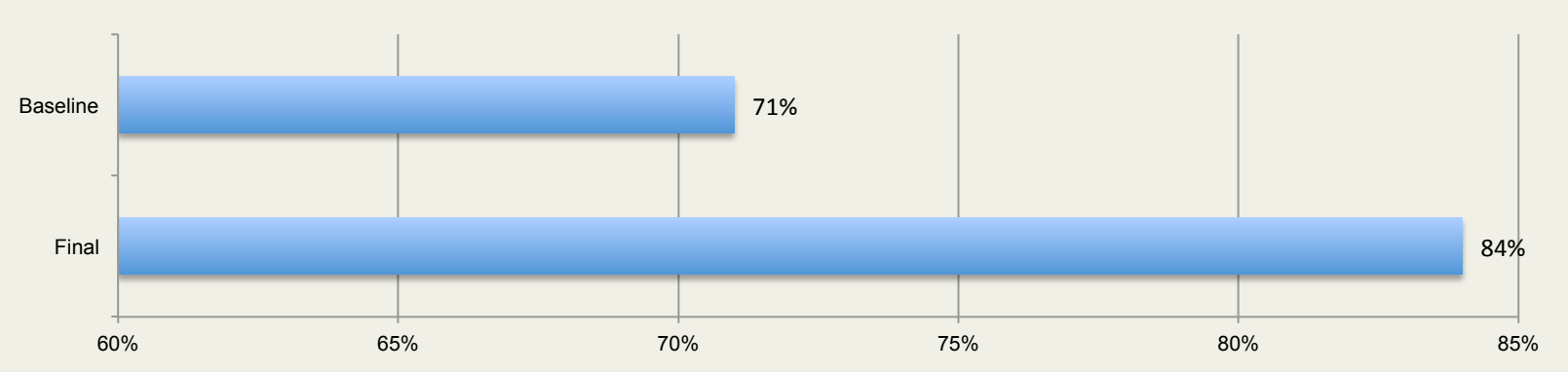
A 39-year-old woman presents with a complaint of anxiety after losing her job in marketing. On questioning, she says she lost her job because she had trouble organizing her work and completing tasks. She also reports problems controlling her temper and notes a feeling of restlessness and frequently being overwhelmed by life. She has a girl and a boy, aged 10 and 13. The boy has always had trouble in school. His teachers say he is often disruptive and does not complete assignments on time.

After reviewing the brief scenario above, please rate each of the statements as consistent with or not consistent with best clinical practice:

Consistent	**Not Consistent**
Ask patient about her developmental history	Diagnose anxiety disorder and recommend SSRI
Ask to interview husband, or other family member	Initiate empiric therapy with methylphenidate

Level 5 - Performance Change: RealIndex

	Curriculum Intervention				Intervention Effect		
N	Baseline Avg. Score (SD)	Final Avg. Score (SD)	% Change	P - Value	Average Effect Size	% Non-Overlap Baseline - Final	Power
1312	71.33% (25.73)	84.33% (21.80)	**18.22%**	< .0005	0.437	29.67	0.812



A substantial and significant gain (18%, $p < .0005$) was measured from baseline to the final RealIndex, which resulted in a moderate effect size (d=0.44) that achieved significant power (30% non-overlap).

- This improvement is above historical benchmarks that show Performance gains ranging from 5%-10% from baseline.
- Standard deviation scores (SDSs) also improved across the curriculum, indicating that the majority of learners demonstrated greater consistency in performance.

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Levels 3-5 - Learning Domain Summary: By Location

Anaheim(*N* =95-115)

Outcome Indicator	Pre-Test Avg. Score (SD)	Post-Test Avg. Score (SD)	% Change	*P* – Value
Knowledge	31.11% (40.76)	67.78% (39.17)	**117.87**	< .0005
Competence	84.29% (36.65)	85.71% (35.24)	**1.68**	-
Confidence	1.92 (1.00)	3.12 (0.95)	**62.50**	< .0005
Practice	2.15 (1.31)	4.01 (1.17)	**86.51**	< .0005
ReallIndex	74.92% (24.67)	78.85% (23.07)	**5.25**	-

Denver(*N* =103-109)

Outcome Indicator	Pre-Test Avg. Score (SD)	Post-Test Avg. Score (SD)	% Change	*P* – Value
Knowledge	45.09% (35.48)	91.96% (22.81)	**103.95**	< .0005
Competence	96.19% (19.23)	99.05% (9.80)	**2.97**	-
Confidence	2.06(1.04)	3.67 (0.95)	**78.16**	< .0005
Practice	2.27(1.45)	3.72 (1.40)	**63.88**	< .0005
ReallIndex	79.28% (21.01)	96.30% (10.93)	**21.47**	< .0005

Ft. Lauderdale (*N* =157-174)

Outcome Indicator	Pre-Test Avg. Score (SD)	Post-Test Avg. Score (SD)	% Change	*P* - Value
Knowledge	44.89% (40.78)	75.81% (36.48)	**68.88**	< .0005
Competence	89.36% (30.94)	93.62% (24.53)	**4.45**	-
Confidence	1.84 (1.00)	3.13 (1.03)	**70.11**	< .0005
Practice	2.20(1.37)	4.26 (1.05)	**131.52**	< .0005
ReallIndex	60.44% (28.62)	90.49% (19.20)	**49.72**	< .0005

Houston(*N* =127-127)

Outcome Indicator	Pre-Test Avg. Score (SD)	Post-Test Avg. Score (SD)	% Change	*P* - Value
Knowledge	28.97% (37.65)	75.79% (34.84)	**161.62**	< .0005
Competence	85.39% (35.51)	89.90% (30.32)	**5.28**	-
Confidence	1.93 (0.97)	3.04 (0.88)	**57.51**	< .0005
Practice	2.54 (1.49)	4.02 (1.14)	**58.27**	< .0005
ReallIndex	72.20% (26..08)	75.95% (25.27)	**5.19**	< .0005

Levels 3-5 - Learning Domain Summary: By Location

Nashville(N =120-125)

Outcome Indicator	Pre-Test Avg. Score (SD)	Post-Test Avg. Score (SD)	% Change	*P* - Value
Knowledge	37.92% (42.50)	77.08% (34.84)	**103.27**	< .0005
Competence	92.78% (26.01)	95.88% (19.98)	**3.34**	-
Confidence	1.90 (0.81)	3.04 (0.93)	**60.00**	< .0005
Practice	2.42 (1.34)	3.86 (1.27)	**59.50**	< .0005
ReallIndex	76.06% (24.75)	85.38% (19.59)	**12.25**	< .0005

Sacramento (N =72-80)

Outcome Indicator	Pre-Test Avg. Score (SD)	Post-Test Avg. Score (SD)	% Change	*P* - Value
Knowledge	37.14% (35.80)	62.86% (37.80)	**69.25**	< .0005
Competence	87.72% (33.11)	94.74% (22.52)	**8.00**	-
Confidence	1.86 (0.92)	3.18 (1.05)	**70.97**	< .0005
Practice	2.18 (1.41)	3.88 (1.42)	**77.98**	< .0005
ReallIndex	73.12% (24.15)	83.85% (20.25)	**14.67**	< .0005

San Antonio (N =95-96)

Outcome Indicator	Pre-Test Avg. Score (SD)	Post-Test Avg. Score (SD)	% Change	*P* - Value
Knowledge	41.76% (38.20)	63.19% (36.39)	**51.32**	< .0005
Competence	84.62% (36.31)	85.90% (35.03)	**1.51**	-
Confidence	2.01 (1.02)	3.31 (1.00)	**64.68**	< .0005
Practice	2.77 (1.50)	4.37 (0.91)	**57.76**	< .0005
ReallIndex	68.09% (25.41)	87.59 % (17.61)	**26.64**	< .0005

San Diego(N =89-91)

Outcome Indicator	Pre-Test Avg. Score (SD)	Post-Test Avg. Score (SD)	% Change	*P* - Value
Knowledge	62.63% (35.24)	92.93% (18.91)	**48.38**	< .0005
Competence	94.32% (23.28)	90.91% (28.91)	**-3.61**	-
Confidence	2.02 (1.11)	3.81 (0.89)	**88.61**	< .0005
Practice	2.08 (1.34)	4.42 (0.85)	**112.5**	< .0005
ReallIndex	76.46 % (21.80)	91.67% (15.87)	**19.90**	< .0005

Levels 3-5 - Learning Domain Summary: By Location

Troy (N =137-146)

Outcome Indicator	Pre-Test Avg. Score (SD)	Post-Test Avg. Score (SD)	% Change	*P* - Value
Knowledge	37.22% (42.03)	64.29% (40.63)	**67.35**	< .0005
Competence	88.90% (31.60)	93.33% (25.04)	**5.00**	-
Confidence	2.05 (1.06)	3.00 (0.96)	**46.34**	< .0005
Practice	2.52 (1.43)	3.72 (1.38)	**47.62**	< .0005
ReallIndex	72.30% (24.69)	73.37% (26.38)	**1.50**	-

Uniondale (N =182-202)

Outcome Indicator	Pre-Test Avg. Score (SD)	Post-Test Avg. Score (SD)	% Change	*P* - Value
Knowledge	30.20% (37.07)	62.87% (37.43)	**108.18**	< .0005
Competence	92.05% (27.14)	96.03% (19.60)	**4.32**	-
Confidence	1.55 (0.80)	2.96 (0.93)	**90.97**	< .0005
Practice	1.81 (1.33)	4.40 (1.02)	**143.10**	< .0005
ReallIndex	70.13% (26.37)	82.38% (21.42)	**17.47**	< .0005

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Item-Level/Gap Analysis
(Including Analysis of Demographic Correlations)

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Knowledge

Question Prevalence

According to the National Comorbidity Survey Replication, what is the approximate prevalence of mood disorders in adults with ADHD?

Correct Answer	Choice	Pre-Test (*N* =1193) %	Post-Test (*N* =1242) %
	10%	**3.8**	**3.1**
	20%	**19.0**	**6.8**
	30%	**42.1**	**21.8**
X	**40%**	**35.1**	**68.2**

Question FDA-Approved Treatments

All of the following agents are specifically FDA-approved for the treatment of ADHD in adults, EXCEPT:

Correct Answer	Choice	Pre-Test (*N* = 1009) %	Post-Test (*N*=1180) %
	Atomoxetine	**14.7**	**7.1**
	Lisdexamfetamine	**13.5**	**4.6**
X	**Amphetamine IR**	**42.7**	**78.9**
	Oros Methylphenidate	**29.1**	**9.4**

Competence

Question Screening

A 42-year-old man presents for a checkup. He asks if there is something that can help improve his concentration. On questioning, he notes that he has difficulty starting and completing work projects, prioritizing activities, and keeping a regular schedule. He is easily distracted and cannot hold a conversation for more than a few minutes. He is recently divorced and worried about losing joint custody of his children. His 14-year-old son was recently diagnosed with ADHD.

Correct Answer	Choice	Pre-Test (*N* =1104) %	Post-Test (*N* = 1240) %
	Diagnose ADHD	**3.5**	**4.8**
	Initiate empiric therapy with atomoxetine	**1.1**	**2.4**
X	**Screen for ADHD using validated rating scale**	**89.4**	**90.5**
	Identify generalized anxiety disorder and refer for treatment	**6.0**	**2.3**

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Confidence

Question Diagnostics & management

Please rate your confidence in your ability to diagnose and manage ADHD in adult patients:

Choice	Pre-Test (*N*=1261) %	Post-Test (*N*=1227) %
Not at all confident	**43.5**	**3.9**
Slightly confident	**33.3**	**21.6**
Moderately confident	**16.4**	**39.5**
Pretty much confident	**4.8**	**24.4**
Very confident	**2.1**	**10.5**

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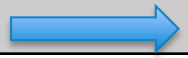
Practice Strategy

Question Use of validated screening tools

How often do/will you use validated rating scales to screen for ADHD in adult patients presenting with symptoms of inattention, hyperactivity, and/or impulsivity:

Choice	Pre-Test (*N* = 1220)	Post-Test (*N* = 1202)
Never	**45.6**	**6.1**
Rarely	**17.7**	**5.2**
Sometimes	**14.9**	**14.0**
Often	**11.1**	**22.4**
Always	**10.7**	**52.3**



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The RealIndex

A 39-year-old woman presents with a complaint of anxiety after losing her job in marketing. On questioning, she says she lost her job because she had trouble organizing her work and completing tasks. She also reports problems controlling her temper and notes a feeling of restlessness and frequently being overwhelmed by life. She has a girl and a boy, aged 10 and 13. The boy has always had trouble in school. His teachers say he is often disruptive and does not complete assignments on time.

After reviewing the brief scenario above, please rate each of the statements as consistent with or not consistent with best clinical practice:

Consistent	**Not Consistent**
Ask patient about her developmental history (BL: 66.4% → Final: 71.9%)	Diagnose anxiety disorder and recommend SSRI (BL: 30% → Final: 46.6%)
Ask to interview husband, or other family member (BL: 49.1% → Final: 70.7%)	Initiate empiric therapy with methylphenidate (BL:44.1% → Final: 45.0)

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Correlational Analysis with Demographic Data (Levels 1-5)

- **Gender was positively correlated with learner performance fo**r Competence items ($p \leq .05$), with female average scores significantly higher than males. Gender was also positively correlated with Confidence ($p \leq .05$), with males reporting higher confidence than females.
- **Region was found to have a significant correlation ($p \leq .05$) with learner performance**. Learners practicing in the Central and Southwest part of the US declined in performance items at Post-Test, while learners from the Southeast demonstrated the greatest increase in average improvement by Post-Test.
- **Years in practice was found to be a predictor of performance**($p \leq .05$). Practitioners who have practiced 11-20 years exhibited a decrease in their Post-Test performance suggesting that they may suffer from functional fixedness.
- **When type of practice was analyzed** Confidence was negatively correlated with type of practice ($p \leq .05$) at Pre-Test for academic and government practice; but comparable to other practice types at Post-Test.
- A significant ($p \leq .05$) relationship was found between **the number of clinicians in a learner's practice and Post-Test scores**. Learners' proficiency was positively related to practice size, with solo practitioners' Post-Test scores lower for all domains, except Confidence where they reported marginally higher confidence than other cohorts. Equally, solo practitioners reported the lowest likelihood to engage in practice change.
- A positive linear correlation ($p \leq .001$) was observed between **the number of patients seen on by a learner (on a weekly basis)** and learner proficiency across the activity; learners who see more patients performed with more mastery; with the exception of Confidence. There is an inverse relationship between self-reported confidence and number of patients seen with those who see more patients reporting lower confidence.

Summary of Outcomes Analyses (Levels 1-5)

Statistically significant gains were measured from Pre-Test to Post-Test for all learning domains.

- While learners showed procedural proficiency for Competence item(s), they lacked the ability to engage in appropriate applied competency. This was evidenced in persistent gaps identified related to:
  - diagnostics,
  - effective pharmaceutical selection, and
  - co-morbidities

Summary of Gap Analysis

A persistent **learning gap related to diagnostics, prevalence of co-morbidities, as well as implementing appropriate pharmaceutical treatment** were present across learning domain categories:

1. **Knowledge** At Post-Test, 32% of learners continued to incorrectly select the prevalence of co-morbid mood disorder often present with ADHD in adults. This may also suggest difficulty with differential diagnostics for psychological disorders; particularly those that may have symptom overlap.
2. **Performance behavior** 53% of learners erroneously selected diagnose anxiety disorder and recommend SSRI, at Post-Test, suggesting they are challenged by potential comorbidities frequently associated with adult ADHD.
3. **Performance behavior** 55% incorrectly endorsed initiate empiric therapy with methylphenidate option at Post-Test, providing further evidence that learners remained unsure of treatment management of adult ADHD, particularly for the most suitable evidenced-based treatments.

The above performance gaps are illustrative of learners' persistent difficulty in identifying ADHD in adults, as well as struggling with comorbidity, and selection of pharmaceutical interventions.

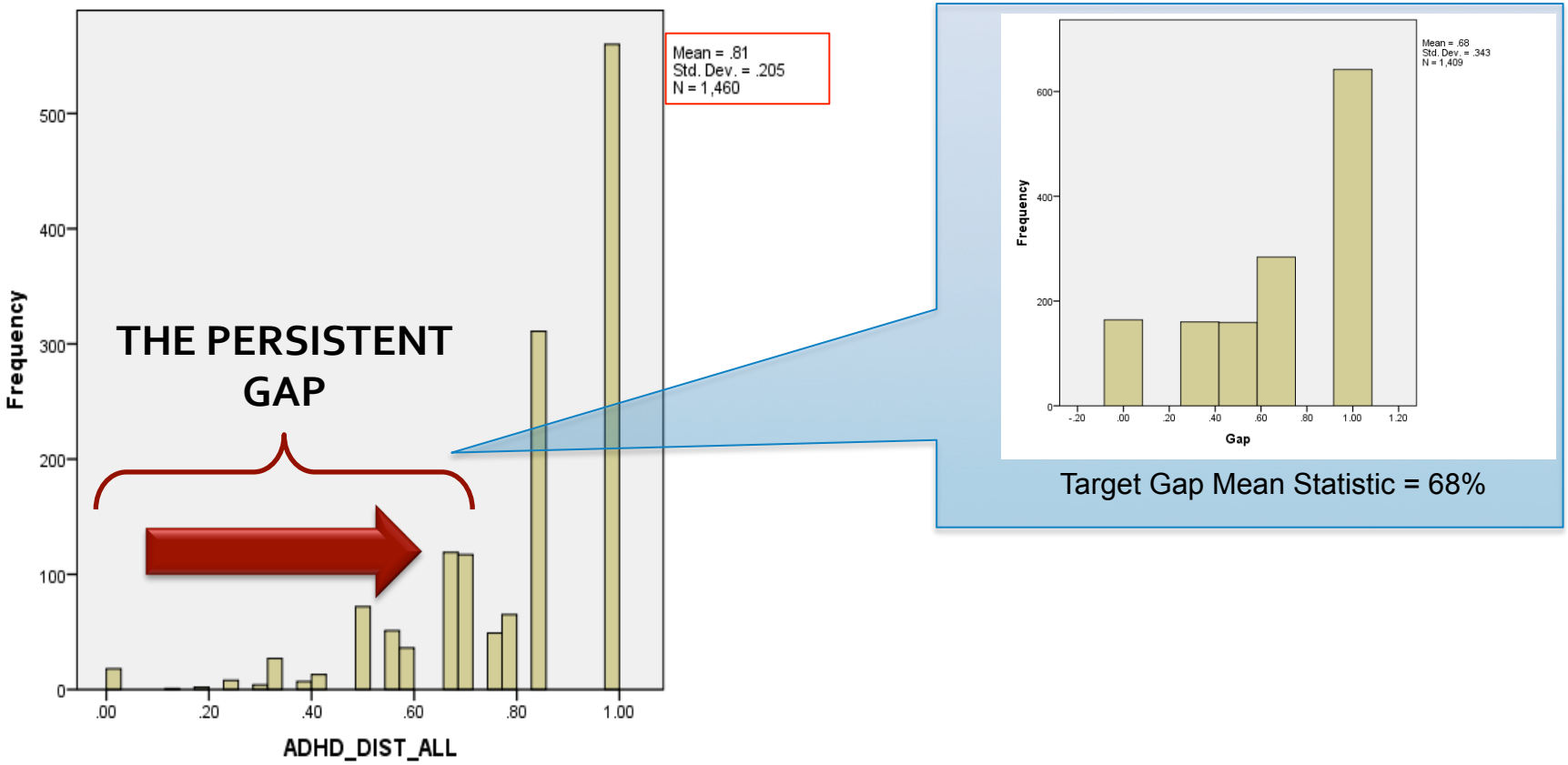
Confidence ratings related to diagnosis and management of ADHD in adults presented a conundrum. Frequently, learners' performance exceeded their perceived confidence in their abilities. This may be due to the high degree of procedural proficiency, for use of validated ADHD tools, that 'masked' persistent learning gaps.

Predictive Modeling


TARGET GAP

The Target-Gap Score

A significant gap was identified related to **diagnosis of ADHD**. In order to identify the specific drivers responsible for this gap, a composite target-gap score was created to model against.



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The Target-Gap Score: Diagnostics, ADHD management including treatment choices

The lowest-scoring items from Post-Test made up the Target-Gap Composite Score.

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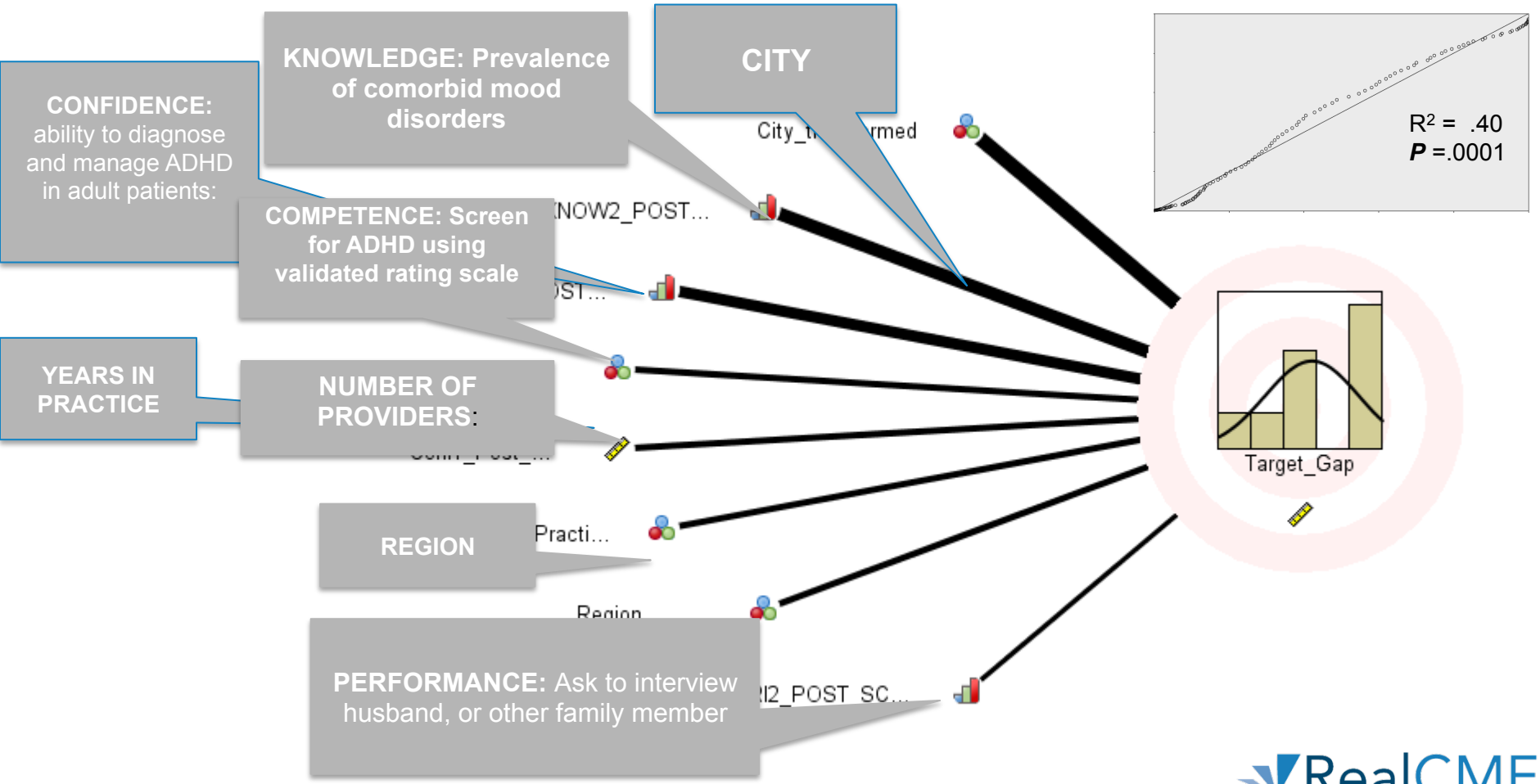
The Model: Identifying Significant Drivers

The Composite Gap Score serves as our **Target:**

All questions across the learning domains (including knowledge, competence, confidence, and practice strategy), as well as learner demographics were analyzed to identify positive and/or negative predictors of learners' target (or gap).

8 statistically significant drivers were identified, accounting for nearly 40% of the variance (individual scoring patterns) in the data:



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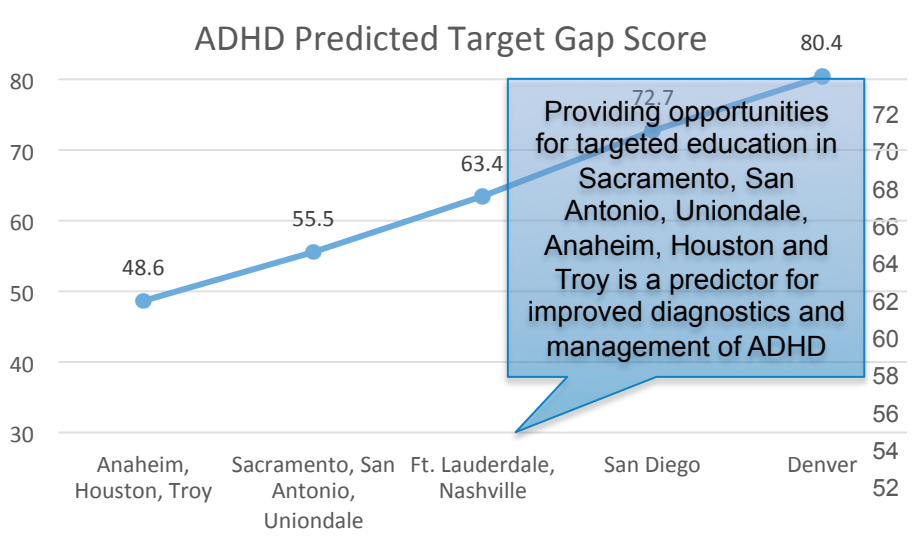
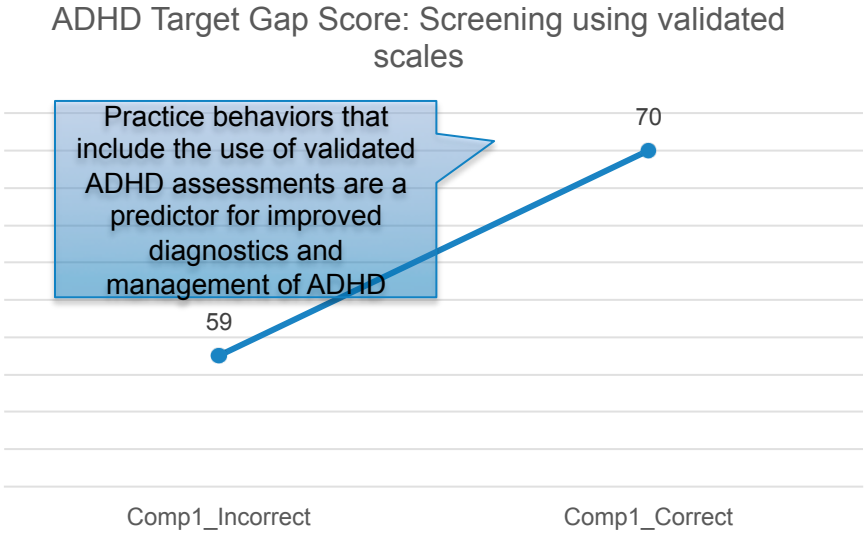
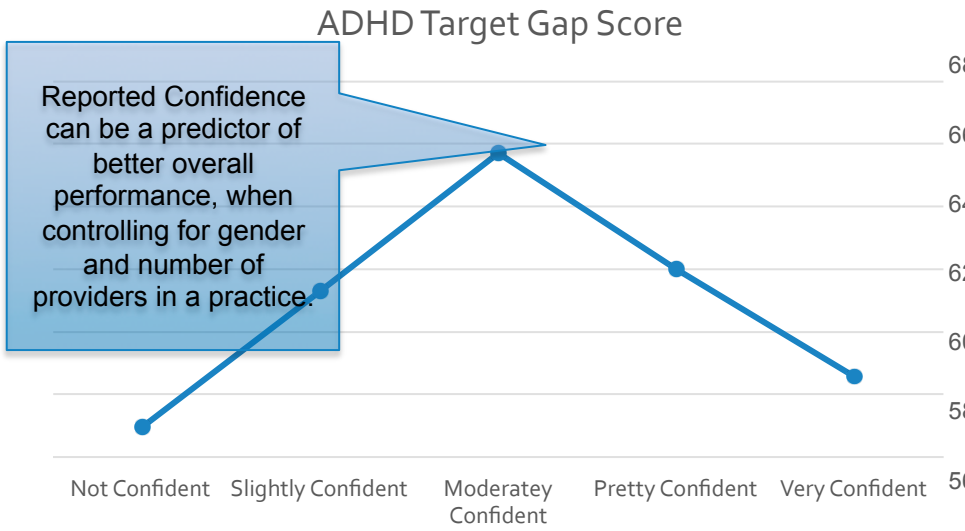
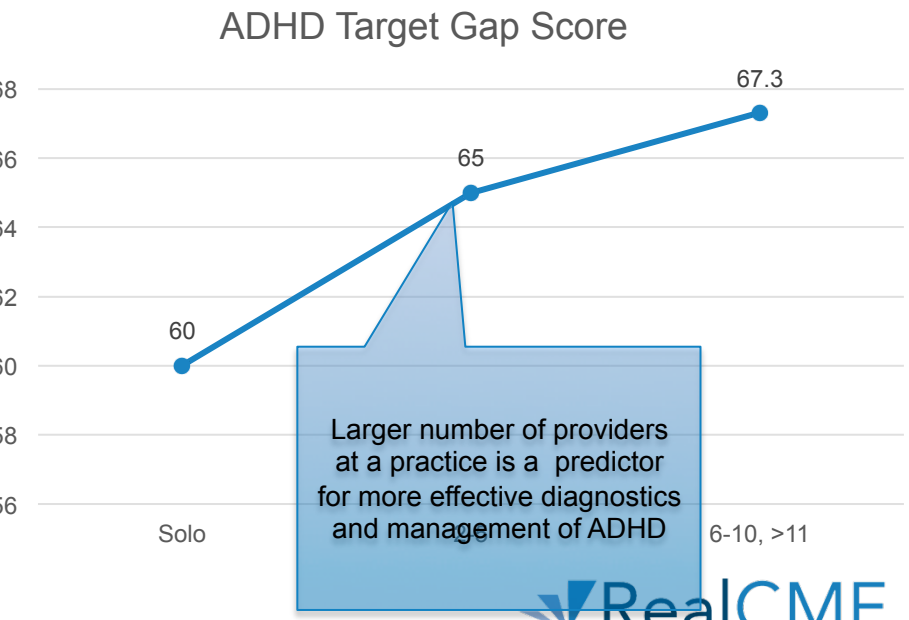
Identifying Important Drivers: Significant Effects









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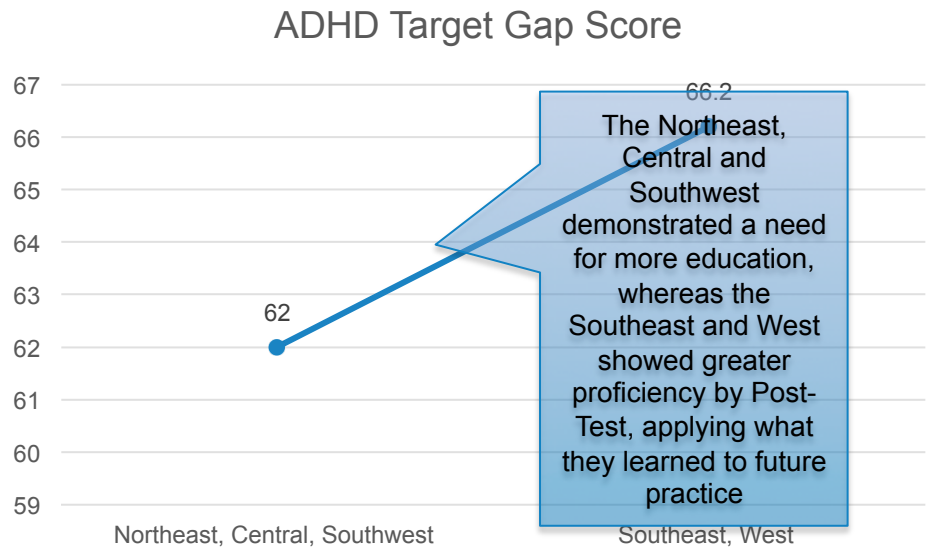

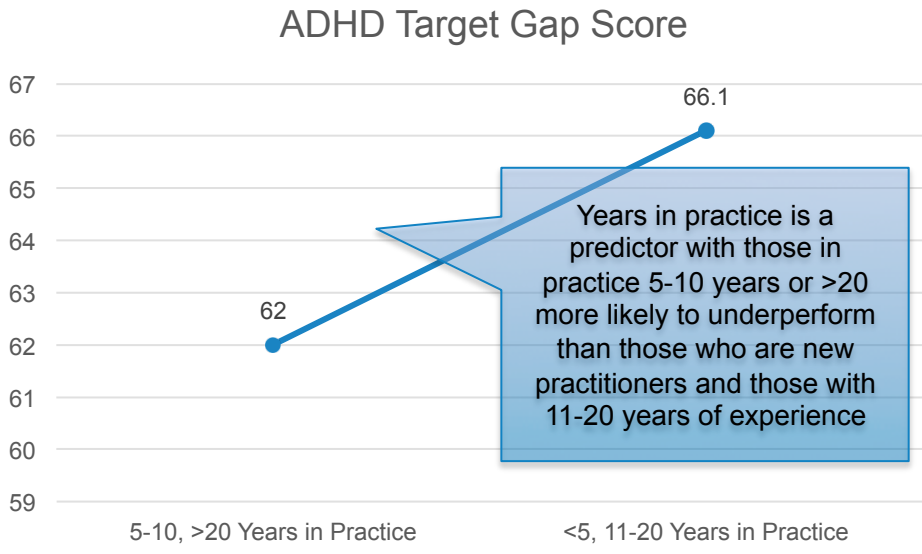

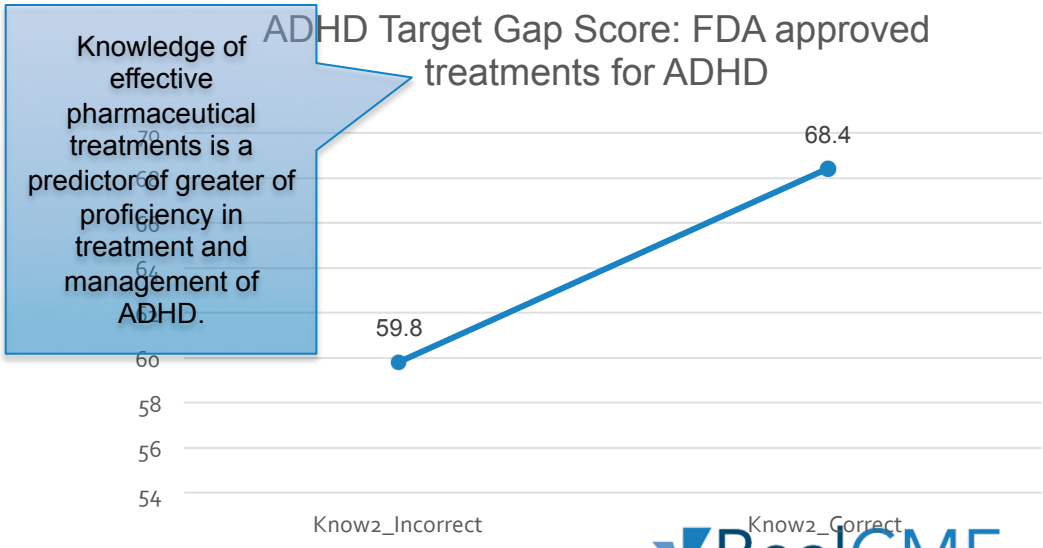

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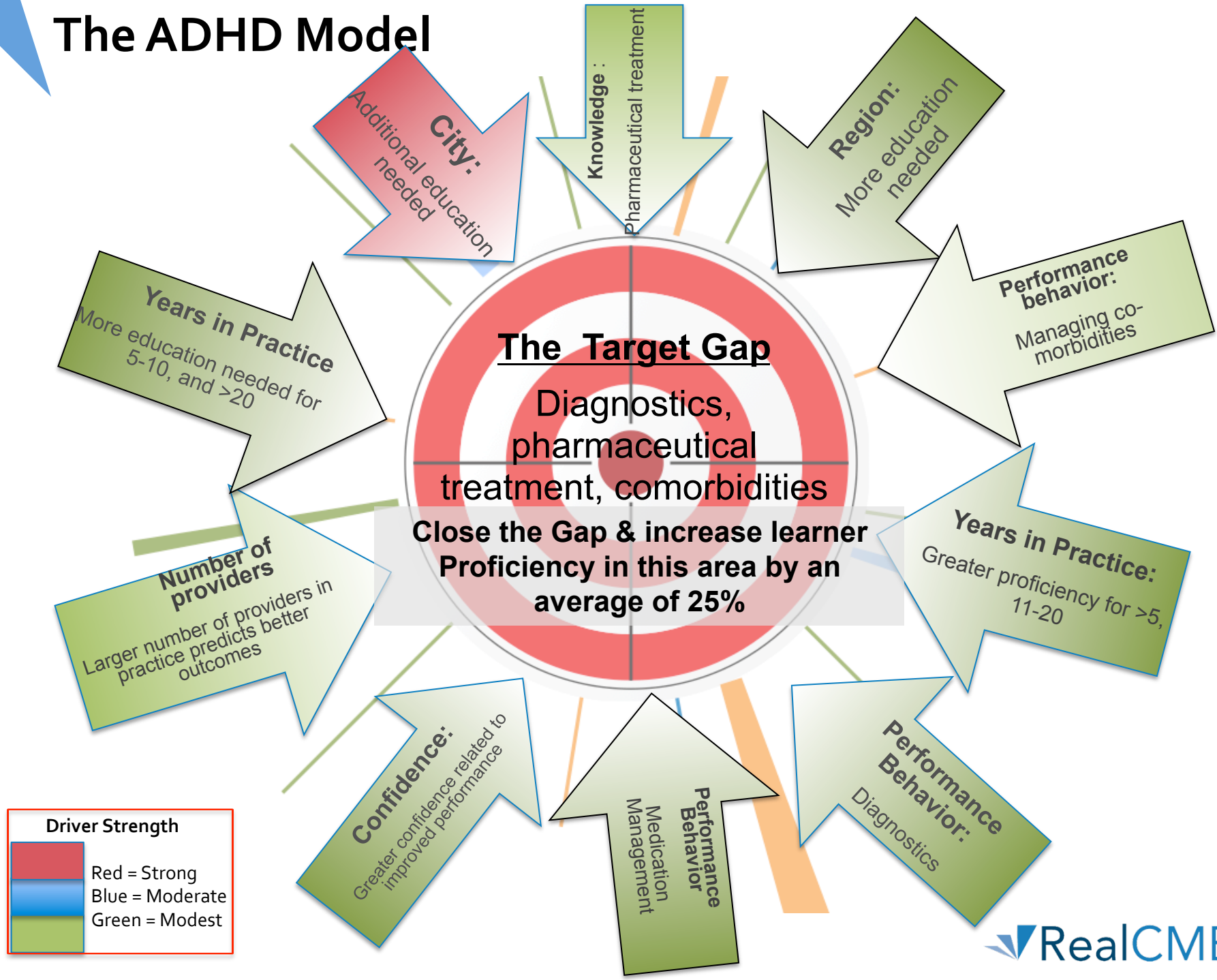
The ADHD Model



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ADHD Summary of Findings

- Results from the advanced analysis revealed a **significant and substantial gap concerning diagnostics, pharmaceutical treatment and comorbidity.**
- The predictive modeling procedure identified 8 drivers that, if addressed in future education, will lead to an estimated 25% **(magnitude of change) improvement in learners' overall proficiency in this area**.
  - Drivers (areas of focus to improve identified gap):
    1. City (Demo) – **Anaheim, Houston, Troy, Sacramento, San Antonio, and Uniondale**
    2. Knowledge – **Appropriate pharmaceutical interventions**
    3. Competency – **Use of appropriate screening tools**
    4. Number of Providers – **Solo, 2-5 practice disadvantaged**
    5. Confidence– **Greater confidence is related to better performance**
    6. Years in Practice – **5-10, >20 predicted lower scores**
    7. Region – **Northeast, Central and Southwest need more education**
    8. Performance – **Diagnostics, pharmaceutical treatment, co-morbidties**

Strategies for Diagnosis and Treatment of Adult ADHD in Primary Care

What specific skills or practice behaviors have you implemented for patients with ADHD since this CME activity?
(Comments received from attendees at 4 week follow up - *N*=113)

- Educating patients more often
- Using validated screening tools
- Using longer acting meds
- More aware of comorbidities
- I am more vigilant in detecting red flags to diagnose ADHD
- More aware that ADHD has high genetic (hereditary) tendencies and that 65% persists in adulthood
- Recognize present and past behaviors as an indication for the diagnosis
- I now ask a more detailed history, including childhood
  - Going into patients' psychological history
- Know how to select the right drug for ADHD

~50% referred to improved screening of patients using validated rating scales
~20% expressed increased awareness of co-morbidities
~20% expressed improved history taking
~10% indicated greater awareness of appropriate medication management

Strategies for Diagnosis and Treatment of Adult ADHD in Primary Care

What specific barriers have you encountered that may have prevented you from successfully implementing strategies for patients with diabetes since this CME activity? (Comments received from attendees at 4 week follow up - N=113)

- Patient inability to pay for treatment
- Cost and formulary limitations
- Lack of time
- Patient non-compliance
- Insurance coverage
- Time consuming to educate patients to take medicine regularly and keep appointment
- Patient reluctance to do testing
- Need more experience
- Too few patients with ADHD
- Sometimes insurance requires patients seen by a specialist for treatment
- Policy changes to implement standardized screening tools
- Institutional protocols

Barriers include: insurance coverage, cost of medications, patient non-compliance with testing and treatment, institutional barriers and lack of time

Areas for Future Education

- While learners demonstrated great procedural proficiency, in particular identifying the need to use validated ADHD tools to facilitate diagnosis, they otherwise demonstrated an overall lack of applied proficiency for the diagnosis and treatment of ADHD in adults.
- Persistent gaps suggest difficulties with evidenced-based pharmaceutical treatment and co-morbidities that should be addressed with further education.
  - Learners would benefit from education that emphasizing screening and diagnostics, evidenced-based treatments, and challenges of comorbid disorders, in depth.
  - Post-curriculum, learners' qualitative responses suggest that they often assume that patients are already diagnosed and receiving treatment by specialists, in particular psychiatrists, suggesting that learners may need additional training which emphasizes missed opportunities for screening and managing adult ADHD including the evaluation of comorbidities and misdiagnoses.