OUTCOMES

Outcomes-based Evaluations:

The **Moore, Green, and Gallis model** (2009) describes 7 Outcome Levels:

Level		How Evaluated; examples
Level 1	Participation	Sign in; registration
Level 2	Satisfaction	Standard activity evaluation form: level of satisfaction
Level 3A	Learning: Declarative Knowledge (Knows)	-Standard activity evaluation form: attendee opinion-were learning objectives met? -Expanded activity evaluation form: Quiz at end asking for response to learning objectives e.g. list 3 stimulant medications. -Written examinations e.g. Board examination
Level 3B	Learning: Procedural Knowledge (Knows How)	-Can explain knowledge/skill/attitude verbally or in written form
Level 4	Learning: Competence (Shows How)	-Can demonstrate in simulation or practice situation
Level 5	Performance (Does)	-Uses new knowledge/skill/attitude in practice (real-life)
Level 6	Patient Outcome	-Improvement in patient outcome measures -example: 25% reduction in ADHD rating scale scores
Level 7	Community Health	-Improvement in systems (clinic, hospital, community) -Impact beyond your own patients -example: schools screen using Vanderbilt ADHD scale

Outcome Measures:

Outcome Measure	Strengths/Weaknesses
Behavior Change	-Educational activities should be transformative; -If there is no change in behavior after an educational activity then at best, it was entertainment; at worst, it was a waste of time. -Assessing behavior change is difficult and expensive -Behavior Change may be a planned change, an observed change or a reported change. -Behavior Change that is unobserved may be the most important kind as it reflects internalization of the knowledge, skill or attitude.
Sign-in sheet	-"*Eighty percent of success is showing up*"-Woody Allen -Does not indicate learning, retention or change in performance (outcome)
Satisfaction Survey	-Attendee's opinion whether met stated educational objectives (outcome) -Can be done electronically -Can provide feedback to faculty on content and delivery --May not necessarily predict learning, retention or change in performance.

Pre-test/post-test	-Activity participants complete multiple choice questions concerning activity content before and immediately after activity. -This method measures learning that occurred as a result of the activity. -Strength is immediate feedback for participants and the faculty regarding what learning has occurred -May not predict retention of the learning or change in performance.
Audience Response System	-Electronic live audience response system (ARS) uses "clickers" or web-based smartphone application (app) such as Poll Everywhere (www.polleverywhere.com) -Anonymity gives more accurate assessment of audience's understanding but not of individual learner's needs -Can be combined with Case-based/Vignettes to tap into higher order skills -Can be used as pre-test/post-test -Data can be saved; used to revise educational activity or class progress
Post-activity assessment	-Can be incorporated into standard activity evaluation form or separate quiz -ex. Multiple choice from lecture; relevant Board question(s); factual short answer or reflection on lecture, activity or experience - One Minute Paper- talk to peer or write down key point, questions that session raised, points that weren't clear; can occur during or at end; -Variable response and response quality -Verbal responses invite more participation but hard to quantify impact -Written response needs time to write, score and analyze -Written responses can be collected into Portfolio for future mutual review with individual
Direct Observation	-Direct observation of student for use and application of new skills. -Checklist (Mini-CEX) standardizes observations -Patient problems vary in clinic -Variable quality of skill performance across learners -Multiple observations of same individual increases validity -Difficult to schedule observation and review -Multiple agendas challenging to balance
Simulation/ Standarized Patient	-Skill acquisition monitoring (Formative) -safe environment to try it out, make mistakes, get feedback and review; -Can be Competency Assessment (Summative); demonstrates meets a standard -Complicated to arrange; expensive; time-consuming
Commitment to Change (CTC)	-Participants are asked to write one to three changes that they plan to make a change as a result of our activities (Level 4 measurement). -evidence that stating in writing a **commitment to change** (CTC) predicts actual change in practice (Domino 2011); -Measured effectiveness (**performance in practice**-Level 6) requires system for follow-up letter, fax-back or electronic survey and subsequent analysis -Self-report measure but there is data supporting indicative of change. -Requires ongoing contact with learner; needs administrative staff

Patient Outcome	-If learners within the same system can use electronic health record to compare before/after educational activity -Quality improvement methodology can be used -Patient/Family surveys useful for professionalism/communication
Portfolios	-If learners within your program/rotation can collect evidence of change (presentations; written reports; reflections; learning plans; literature searches; community activities; quality improvement projects, etc) -Encourages self-directed learning and "deep learning" -hard to measure; hard to compare learners;
"Community" outcomes	-Difficult to measure broad impact -Maintenance of Certification (MOC) -Participation in "Communities of Learning" might enable systems of measurement as use of Milestones expands to include "Expert" learners.