

Development and Use of the UB-CAM in Practice and Research

Presenter: Edward R. Marcantonio, MD, SM

Time	Section
01:54	<u>Introduction of Edward Marcantonio</u>
03:55	<u>Today's Talk</u> <ul style="list-style-type: none"> • Brief overview of delirium • Improving delirium recognition at the bedside: 3D-CAM and UB-CAM • UB-CAM Practicum • What to do if delirium is identified
04:36	<u>Why should we care about delirium? A brief overview</u>
04:44	<u>Delirium is common</u> <ul style="list-style-type: none"> • Among medical inpatients 70 and older there is a rate of about 30-40% • Among surgery patients 70 and older there is a rate of about 15-50% depending on type of surgery • Among intensive care unit patients 18 and older there is a rate of about 50-70%
05:38	<u>Delirium is Morbid, Costly</u> <ul style="list-style-type: none"> • After adjusting for confounders... <ul style="list-style-type: none"> ○ Delirium is associated with increased complications, length of hospital stay, and a decreased discharge to home ○ Delirium is associated with decreased long-term function, cognition, and an increase in dementia and nursing home placement ○ Delirium is associated with increased risk of death both in the hospital and long-term • Costs of delirium: <ul style="list-style-type: none"> ○ \$60K over 1 year after delirium episode ○ Translates to \$164 billion annually in the U.S.
06:24	<u>Delirium: Long Term Cognitive Decline</u> <ul style="list-style-type: none"> • Graph from paper about SAGES I cohort which had patients with major scheduled surgery and were followed for 6 years • Patients with delirium both had a bigger dip at 1 month than the patients without delirium and an accelerated long-term cognitive decline over the 6 years
07:50	<u>Delirium is Preventable</u> <ul style="list-style-type: none"> • Multicomponent strategies: HELP, proactive geriatrics consultation, reduced sedation, mobilization in the ICU
08:25	<u>Delirium Treatment?</u> <ul style="list-style-type: none"> • NIDUS White Paper: importance of studying delirium treatment interventions • Delirium (non)identification is one of the biggest barriers to treatment (identification not an issue for prevention) • Delirium Abatement Program (DAP) Trial <ul style="list-style-type: none"> ○ Identification rates: 41% DAP vs. 12% U.C. (usual care) ○ Good news: intervention > tripled recognition ○ Bad news: > 50% of cases still not recognized
10:09	<u>Improving Delirium Identification at the Bedside</u>
10:35	<u>Identifying Delirium</u> <ul style="list-style-type: none"> • Less than 50% of delirium cases identified in the hospital (hypoactive, DSD most likely missed) • Simple, standardized approaches easier to integrate into research, practice • Most used/best validated: Confusion Assessment Method (CAM) algorithm
11:15	<u>CAM Diagnostic Algorithm</u> <ul style="list-style-type: none"> • Feature 1: Acute change, fluctuating course • Feature 2: Inattention

	<ul style="list-style-type: none"> • Feature 3: Disorganized thinking • Feature 4: Altered level of consciousness • Diagnosis of Delirium: requires presence of Features 1 and 2 and either 3 or 4
11:44	<p><u>Clinician Challenges- CAM</u></p> <ul style="list-style-type: none"> • Most clinicians do not know: <ul style="list-style-type: none"> ○ What questions to ask ○ How to map errors on cognitive testing to specific CAM features ○ The threshold of “errors” at which a CAM feature is present ○ How to put it altogether to make a diagnosis of delirium
12:18	<p><u>3D-CAM Project</u></p> <ul style="list-style-type: none"> • Using modern measurement theory, to develop a structured diagnostic assessment for CAM-defined delirium that can be completed in 3 minutes (3D-CAM) • To prospectively validate the 3D-CAM in older general medicine patients
12:49	<p><u>Deriving the 3D-CAM</u></p> <ul style="list-style-type: none"> • Data: >4500 CAM research assessments collected in previous studies • IRT (item response theory): identify items “most informative” to presence/absence of each feature • Reduced the pool to 36 items • Multivariable modeling: final set of 20 items, set threshold for CAM feature presence
13:37	<p><u>IRT Curves: Inattention</u></p> <ul style="list-style-type: none"> • Item information curves for Month of the year backwards (MOYB) and Days of the week backwards (DOWB). These items had the best information content at the 50th percentile • Did this type of analysis for each of the CAM features and identified the pool of most informative items
15:29	<p><u>3D-CAM Contents</u></p> <ul style="list-style-type: none"> • Table of CAM Features, Cognitive Testing & Patient Symptom Probes, and Interviewer Observations • Threshold: for any 1 positive item, it triggers the feature
17:06	<p><u>Validating the 3D-CAM</u></p> <ul style="list-style-type: none"> • General medicine patients at BIDMC (N=201, avg. age was 84, 28% had dementia; reference standard assessment by clinician; 3D-CAM blinded to reference standard) • Results: median admin time—3 minutes; test characteristics—95% sensitivity, 94% specificity =; excellent performance—patients with dementia
18:02	<p><u>3D-CAM Materials, Severity</u></p> <ul style="list-style-type: none"> • Instrument, training materials are free (American Geriatrics Society Co-Care, American Delirium Society, Delirium Central, Multiple translations available) • 3D-CAM-S delirium severity measure <ul style="list-style-type: none"> ○ Does not require any additional items ○ “Raw” method: add up “positive” items ○ Score 0-20, 20 being the worst
19:06	<p><u>Use of 3D-CAM</u></p> <ul style="list-style-type: none"> • REGAIN: RCT of General vs. Spinal Anesthesia for Hip Fracture • PCORI funded, 1600 patients, 50 sites • 3D-CAM integrated into study protocols • Standardized delirium outcome measure • Results ended up surprisingly showing no difference between general and regional anesthesia for the primary outcome of functional recovery and for delirium
20:21	<p><u>READI: Researching Efficient Approaches to Delirium Identification</u></p>
20:43	<p><u>UB-2</u></p> <ul style="list-style-type: none"> • Can we get it shorter? → ultra-brief screens <ul style="list-style-type: none"> ○ Initial screen to rule our delirium quickly

	<ul style="list-style-type: none"> ○ NOT diagnostic: only modest specificity ● The best single item was MOYB: detects >80% ● UB-2: Best 2 item screen (DOW (the day of the week—orientation, MOYB) <ul style="list-style-type: none"> ○ Sensitivity 93%, Specificity 62% ○ Takes 35 seconds to administer
22:26	<p><u>UB-CAM: Ultra-brief CAM</u></p> <ul style="list-style-type: none"> ● UB-CAM Delirium Identification Protocol <ul style="list-style-type: none"> ○ Flow chart of the steps to take to administer the UB-CAM ● In READI study, tested the full 3D-CAM and 3D-CAM with skip pattern <ul style="list-style-type: none"> ○ Skip pattern: since 1 wrong item triggers the feature, then if 1 item is wrong/“positive” you skip the rest of the items in the feature
24:09	<p><u>READI Main Results</u></p> <ul style="list-style-type: none"> ● 527 hospitalized older adults, followed them for 924 days <ul style="list-style-type: none"> ○ BIDMC & PA, community hospital ○ Over 1/3 with dementia/AD ○ 399 MDs, RNs, CNAs vs. Reference Standard ● Main findings: <ul style="list-style-type: none"> ○ UB-CAM completed >97% cases ○ Average completion time: 1 min 15 secs ○ Overall accuracy= 89% (do lose a little bit of accuracy for the speed compared to 3D-CAM) ○ RNs=MDs, CNAs can administer UB-2 ○ Skip pattern decreased the admin time with no decrease in accuracy
26:07	<p><u>READI Implementation</u></p> <ul style="list-style-type: none"> ● Qualitative research→ identifying barriers and facilitators to implementation ● Cost analysis→ annual cost for daily screen in 300 bed hospital < salary of 1 FTE of discipline doing the screening
27:03	<p><u>UB-CAM Delirium Screen App</u></p> <ul style="list-style-type: none"> ● Made the app more available for general use ● Available for free in the apple and google app stores
27:48	<p><u>3D-CAM/READI Collaborators</u></p> <ul style="list-style-type: none"> ● Thanking all the collaborators
28:12	<p><u>QR Code to download the UB-CAM from the app store</u></p>
29:20	<p><u>Training Videos</u></p> <ul style="list-style-type: none"> ● Developed by Kerry Palihnich ● 2 assessments on the same day ● Follow along with the App <ul style="list-style-type: none"> ○ Day of week shown on the screen ○ Code: correct/incorrect or present/not present ○ Hit “Next” to move to the next question ● <i>The training videos are played for the practicum portion of this webinar.</i>
37:08	<p><u>Clinical Use of UB-CAM (Early Experience)</u></p> <ul style="list-style-type: none"> ● UB-CAM has been implemented in EPIC (NYU Health System, UMass) ● Age-Friendly Health Systems (recommend UB-CAM as part of “4Ms”) ● Currently testing implementation “to scale” in new study
37:59	<p><u>READI-SET-GO (Researching Efficient Approaches to Delirium Identification: Sustaining Effective Translation to create Gero-friendly Organizations)</u></p> <ul style="list-style-type: none"> ● Using a stepped-wedge design, to implement systematic delirium identification using the UB-CAM on 6 acute med-surg wards at 3 hospitals in ALL hospitalized older adults ● Determine the impact UB-CAM implementation on:

	<ul style="list-style-type: none"> ○ Aim 1: accuracy of delirium detection ○ Aim 2: Patient, family care partner, and hospital staff outcomes ○ Aim 3: Rate of delirium-related complications, Use of antipsychotics, restraints
39:20	<p><u>Research Use of UB-CAM</u></p> <ul style="list-style-type: none"> ● Hospital-wide UB-CAM screening: used for secondary data analyses ● Prospective studies, Clinical trials: UB-CAM could be used as screen to ID patients for a treatment trial; UB-CAM positives likely need confirmation with the full 3D-CAM (measures severity)
40:39	<p><u>What to do if you identify delirium?</u></p>
40:48	<p><u>Delirium Abatement Program—Four Key Steps</u></p> <ul style="list-style-type: none"> ● Step 1: identify delirium (early) ● Step 2: Assess/treat contributing factors ● Step 3: Prevent complications ● Step 4: Restore function
41:14	<p><u>Step 1: Identify Delirium</u></p> <ul style="list-style-type: none"> ● Administer a validation screening tool at least daily (qshift better=twice daily) ● Use CAM-based screening tool appropriate to the setting (CAM-ICU→ ICU, B-CAM→ ED, UB-CAM→ Med/surg) ● Document results in EHR
41:56	<p><u>Step 2: Correct reversible factors</u></p> <ul style="list-style-type: none"> ● Drugs: especially high risk ● Electrolyte imbalance (dehydration) ● Lack of drugs (withdrawal, uncontrolled pain) ● Infection ● Reduced sensory input (vision, hearing) ● Intracranial (CVA, subdural, etc.—rare) ● Urinary retention/fecal impaction ● Myocardial/Pulmonary
42:25	<p><u>Step 3: Prevent Complications</u></p> <ul style="list-style-type: none"> ● Immobility and falls ● Urinary incontinence ● Pressure injury ● Feeding disorders-malnutrition
42:45	<p><u>Step 4: Restore Function</u></p> <ul style="list-style-type: none"> ● Environmental modifications ● Cognitive reconditioning ● Rehabilitate activities of daily living ● Family education, support, and participation ● Discharge planning and education
43:38	<p><u>Take Home Points</u></p> <ul style="list-style-type: none"> ● Delirium: <ul style="list-style-type: none"> ○ Short- and long-term adverse outcomes, high cost ○ Delirium is preventable ○ Poor identification remains barrier to treatment ● Delirium Identification tools: <ul style="list-style-type: none"> ○ 3D-CAM: 3-minute diagnostic assessment ○ UB-CAM: app-facilitated 75-second screen ● UB-CAM Delirium Screening: <ul style="list-style-type: none"> ○ Hospital-wide delirium identification programs ○ Research use—initial screen for treatment trials

45:05

Questions and Answers