Deprescribing and Delirium, Co-hosted by USDeN and NIDUS (2022)

Presenter: Noll L. Campbell, PharmD

Time	Section
02:55	**USDeN Announcements** • Junior Investigator Intensive Program • USDeN Annual Meeting
04:59	**NIDUS** • Join NIDUS to connect to Delirium Research • Organizational structure
09:21	**Introduction to main presenter Dr. Noll Campbell**
11:57	**Objectives** • Discuss existing literature summarizing the relationship between medications and delirium outcomes • Describe prior trials attempting to deprescribe deliriogenic medications in the acute care setting • Identify opportunities for deprescribing research that can add value to delirium care
13:03	**Neurotransmitter Hypotheses of Delirium** • Very complex • Overlays of neurotransmitters and medication effects
14:33	**Medications and Delirium** • Ever implicated in etiology, seldom the exclusive answer/solution • Among the strongest risk factors for delirium in hospitalized and critically ill older adults • Toxicities represent a small proportion of reversible cases • Ever desired as a primary mode of treatment, but not consistently appropriate

18:17	**Trial 1: eCHAMP**
	• Evaluate the efficacy of screening and CDSS at reducing exposure to potentially inappropriate anticholinergics, urinary catheters, and physical restraints
	• Outcomes: orders of geriatric consult, D/C orders for anticholinergics, D/C orders for restraints and catheters
	• Methods→ ingrained alert system into electronic medical record system→ example CDS: Promethazine
	• Results→ increases in discontinuation orders, higher use of antipsychotic on patients with MCI
	• Lessons Learned
	  o Deprescribing
	  ▪ Low rates of deprescribing in general, low rates of provider engagement with alerts, alerts followed existing template but design not user friendly
	  o Delirium
	  ▪ Unable to determine impact of deprescribing alerts on delirium outcomes, no influence on pre-hospital use of deliriogenic medications

27:19	**Study 2: PMD**
	• Determine the impact of a multicomponent pharmacologic intervention on delirium outcomes
	• Tried to address the neurotransmitter pathways (deficiency in acetylcholine, excess amounts of dopamine, and GABAergic systems)
	• PMD Intervention
	  o Haloperidol 0.5 or 1mg TID x 7 days
	  o Anticholinergic reduction: similar alerts in EMR as in eCHAMP for 20 strong anticholinergics, twice-daily pharmacist surveillance throughout hospital stay
	• Benzodiazepine reduction
	  o Pharmacist surveillance (only), dose reduction following standard recommendations
	• Results
	• Lessons Learned

	○ Deprescribing ▪ Rates of initiation unchanged, slight reduction in duration ▪ Continued poor provider interaction with alerts ▪ Lacks deprescribing best practices published in recent years ○ Delirium ▪ Unable to determine impact of deprescribing (alone) on clinical outcomes ▪ Sample size insufficient to evaluate those receiving "high dose" of intervention ▪ Acute exposure was only target
34:07	**Medication Relationships of Interest** • Time plot (pre-hospital period, hospital period, post-hospital period) • Pre-hospital use (precipitating vs. predisposing factor?) • In-hospital, pre-delirium use (does initiation vs. continuation vs. discontinuation influence delirium outcomes) • Post-delirium use (does initiation vs. continuation vs. discontinuation in the recovery phase influence LTCI/Dementia)
39:45	**Relevant Deprescribing Opportunities** • Pre-hospital medication use (can pre-hospital deprescribing reduce risk of delirium?) • In-hospital, pre-delirium use (does deprescribing in the acute environment (if conducted effectively) result in harm or benefit?) • Post-delirium use (does deprescribing at discharge influence delirium recovery or long-term cognitive impairment)
40:41	**Justification for Pre-Hospital Assessment (Hypotheses)** • Medications with central activity known to compromise cognition (BBB prevents certain medications from crossing into CNS) • BBB is compromised in APOE4 carriers regardless of cognitive status (evident in cognitively normal, more prominent in cognitive impairment) • ARB theorized to stabilize the BBB • Timeline for pharmacologic impact on BBB needs to be tested • Direct impacts of medications on dementia and MCI
44:12	**Relevant Outcomes of Interest** • Each link between medication and delirium outcomes should evaluate: ○ Delirium incidence ○ Delirium severity ○ Delirium duration ○ Long-term cognition ○ Emotional distress ○ Health-related Quality of Life
45:50	**Justification for Improvement in Deprescribing Methods** • Prior work does NOT represent failure, just negative results
46:44	**Study 3: Outpatient Anticholinergic Deprescribing** • Prevent potential harms to brain health by reducing the use of medications with anticholinergic adverse cognitive effects • Context→ prior attempts to reduce exposure have failed in inpatient studies; majority of prescriptions coming from primary care • Design/Development: Ideation ○ Brainstorm interventions for multiple targets, without constraints
48:50	**Deprescribing as Behavior Change** • Behavior that is→ infrequent, complicated, lacks immediate feedback, benefits delayed • May be influenced by behavioral economic principles (salience, priming, etc.)

50:15	**Development Phase (Executed)** • Physician/provider-focused support • Staff/MA-focused support
52:00	**Implementation Phase** • Cluster randomized trial of 10 primary care clinics within Eskenazi Health • Eskenazi Health is one of the nation's largest safety net health systems, and includes 10 FQHC's • Pre-post comparison by group: intervention dates: 4/1/2019-3/31/2020; comparison dates: 4/1/2018-3/31/2019

52:30	**Evaluation**
	• Process Measures:
	  o 259 alerts directed towards providers (15% opened, order changed in 1.2% of all alerts, NNR= 86)
	  o 276 alerts directed towards MA (4.7% confirmed action taken)

53:08	**Study 3 (BSL): Lessons Learned**
	• Deprescribing
	  o Complex interventions in EMR have multiple opportunities to fail
	  o EMR-based deprescribing interventions risk inability to evaluate clinical impact
	• Delirium
	  o Unable to evaluate clinical outcome without change in process/fidelity measure

53:44	**Summary** • It remains unknown if deprescribing during hospitalization influences delirium outcomes • Deprescribing methods need to be enhanced in order to evaluate the impact on clinical outcomes • Potential deprescribing opportunities exist in the pre- peri- and post-delirium journey that could improve outcomes
54:40	**Questions and Answers**