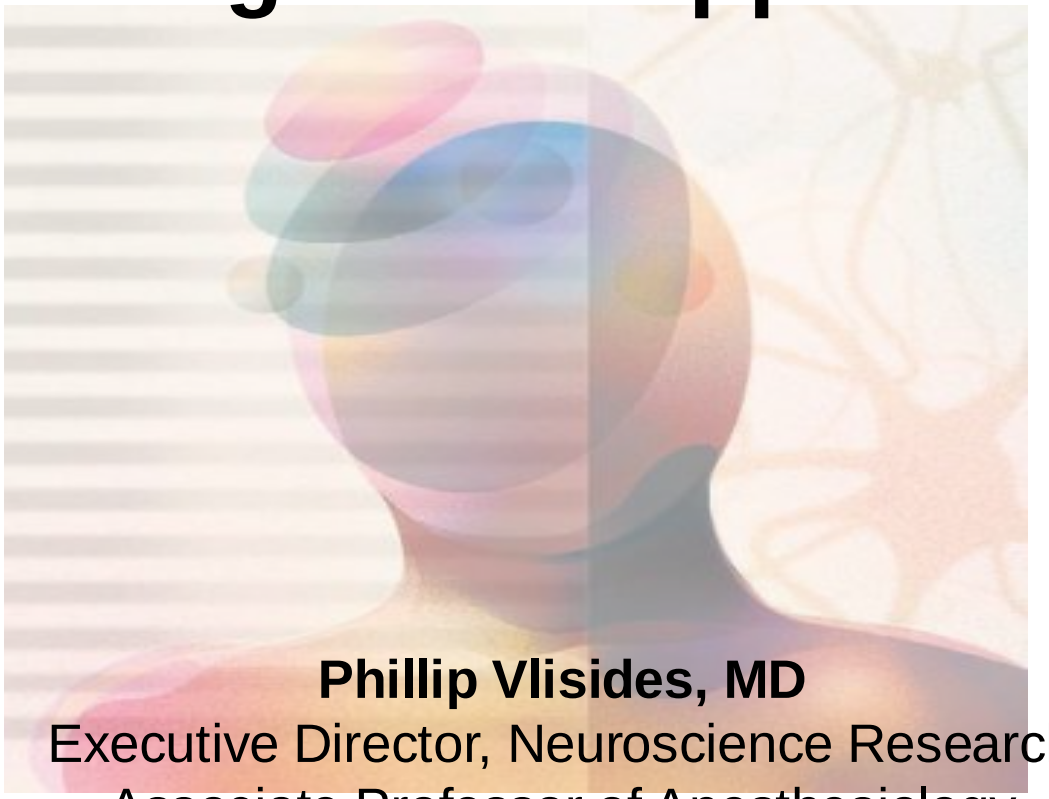
Postoperative Delirium: Challenges and Opportunities



Phillip Vlisides, MD
Executive Director, Neuroscience Research
Associate Professor of Anesthesiology
Department of Anesthesiology
Michigan Medicine
Ann Arbor, MI USA

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- Other Disclosures: Blue Cross Blue Shield of Michigan (ASPIRE CQI)

Delirium

- Common (10-70%)
- Increased mortality
- Cognitive decline
- Functional decline
- Healthcare costs (>$140 billion annually)

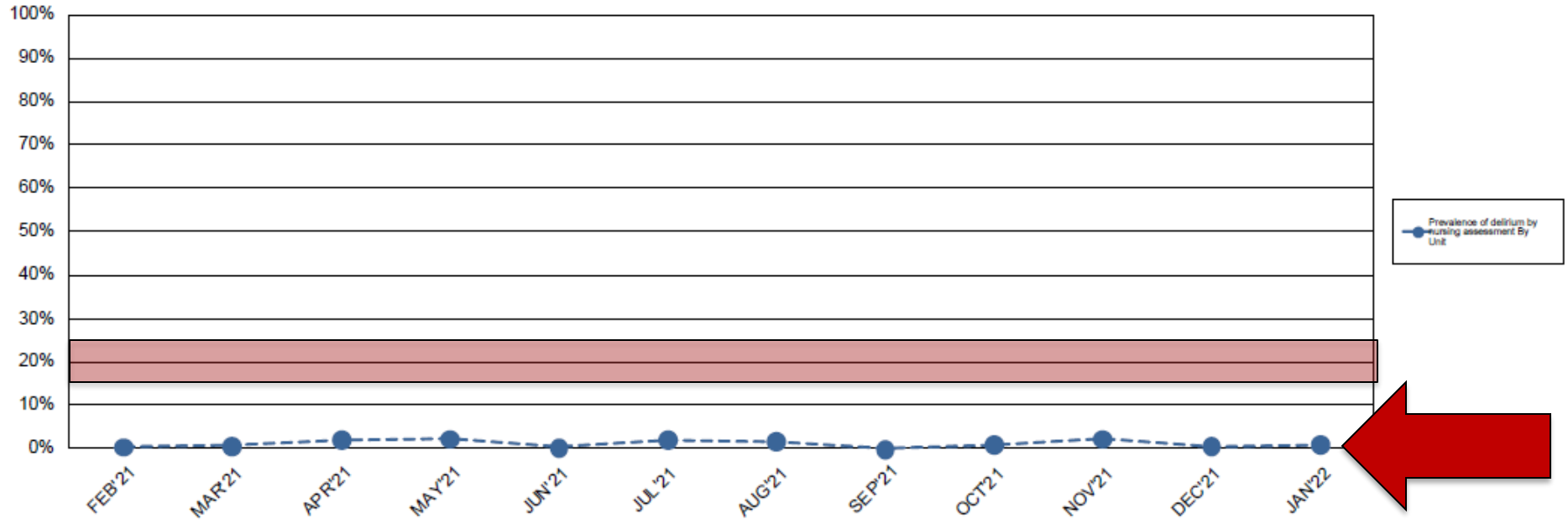
Gou RY et al. *JAMA Surg* 2021
Gottesman RF et al. *Ann Neurol*. 2010
Saczynski JS et al. *N Engl J Med*. 2012
Koster S et al. *Ann Thorac Surg.* 2012
Leslie DL et al., *J Am Geriatr Soc* 2011

Identification

Prevention

Prevalence of delirium by nursing assessment By Unit

	FEB'21 n=226	MAR'21 n=295	APR'21 n=248	MAY'21 n=218	JUN'21 n=250	JUL'21 n=243	AUG'21 n=288	SEP'21 n=246	OCT'21 n=235	NOV'21 n=215	DEC'21 n=202	JAN'22 n=217	YTD n = 2,883
Patients assessed with postitive CAM-Assessment	0%	1%	2%	2%	0%	2%	2%	0%	1%	2%	0%	1%	1.18%



RESEARCH Open Access

Barriers to delirium screening and management during hospital admission: a qualitative analysis of inpatient nursing perspectives

Jacqueline Ragheb[1], Alexandra Norcott[2], Lakeshia Benn[3,4], Nirav Shah[1], Amy McKinney[1], Lillian Min[2,5] and Phillip E. Vlisides[1,6*]

Phase I

Ragheb J. et al. *BMC Health Services Research* (2023)

Theme
1. Delirium Screening Challenges and Perceptions
2. Organizational Culture Towards Delirium
3. Competing Clinical Priorities
4. Desired Improvements

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"When it came to our CAM tool…I don't necessarily know that someone sat down with me and went through each step of it, but it was just more of an expectation that I knew I need to chart [it] every night" (Participant 7).

Theme
1. Delirium Screening Challenges and Perceptions
2. Organizational Culture Towards Delirium
3. Competing Clinical Priorities
4. Desired Improvements

"I think that a lot of the CAM scoring is dependent on the person who is doing the scoring. It can be very…individualized based on the perception of the individual" (Participant 3).

Theme
1. Delirium Screening Challenges and Perceptions
2. Organizational Culture Towards Delirium
3. Competing Clinical Priorities
4. Desired Improvements

"Once someone screens positive for delirium, nothing happens after that. [With sepsis], the charge nurse gets a page, the nurse gets a page, [the] doctor…that's with the sepsis screening. There's nothing like that that exists with the delirium." (Participant 5).

Theme
1. Delirium Screening Challenges and Perceptions
2. Organizational Culture Towards Delirium
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4. Desired Improvements

"If you don't show me the added value, I'm not doing it. I've got enough stuff that I've got to do…And so, you may tell me you've got to document this, but if I know it's not going to make a difference in the care that's being provided to my patient, I don't see the added value." (Participant 11).

Theme
1. Delirium Screening Challenges and Perceptions
2. Organizational Culture Towards Delirium
3. Competing Clinical Priorities
4. Desired Improvements

"I feel like there's less of an investment from… executive leadership…because it's not directly tied to a quality measure. You know, it is not a [hospital acquired infection], but really it is affecting length of stay. So, I think as much as we can get buy-in from executive leadership…" (Participant 3).

Theme
1. Delirium Screening Challenges and Perceptions
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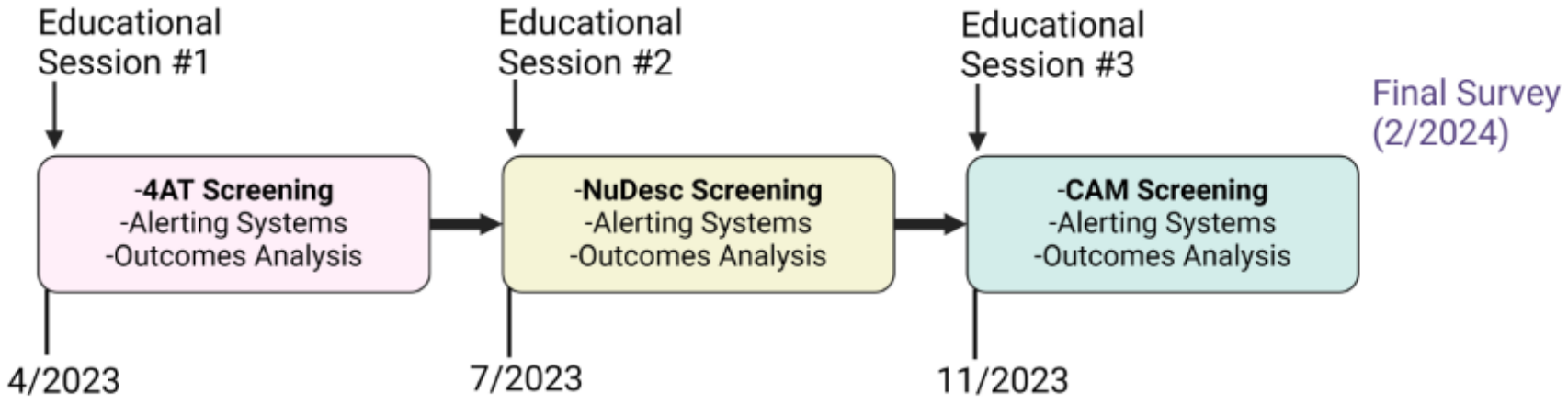
"What if [an alert] could just serve as an initial reminder, like, 'you're CAM positive, here's your reminder - check with your physician about initiating delirium protocols?'" (Participant 16).

"Yeah, if [a positive delirium screen] triggered, 'initiate delirium bundle,' and we sort of knew what that meant and what to do about it, that would be really helpful" (Participant 6).

Michigan Recommendations and Alerting for Delirium Alleviation in Real-Time (M-RADAR)

- **Objective**: Test a multicomponent program for delirium screening, charting, and management in older, hospitalized adults
  - Comparison of different delirium screening tools (4AT, NuDesc, CAM)



Phase II

(Submitted; under review)

Michigan Recommendations and Alerting for Delirium Alleviation in Real-Time (M-RADAR)

- **Objective**: Test a multicomponent program for delirium screening, charting, and management in older, hospitalized adults
  - Comparison of different delirium screening tools (4AT, NuDesc, CAM)
  - Recurrent delirium education and training
  - Pager/MiChart alerts sent to primary teams upon positive delirium screen
  - Delirium order sets

Phase II

(Submitted; under review)

Prevention

- Reduced delirium incidence (OR 0.47, 95% CI 0.37 – 0.59)
- Fall rate reduced by 42% (OR 0.58, 95% CI 0.35 – 0.95)
- Saved $1600-$3800/patient in hospital costs, $16,000 per person-year in terms of long-term costs

Hospital Elder Life Program: Systematic Review and Meta-analysis of Effectiveness

Tammy T. Hsieh, M.D., M.P.H., Tinghan Yang, M.D., Sarah L. Gartaganis, M.S.W., M.P.H., Jirong Yue, M.D., Sharon K. Inouye, M.D., M.P.H.

https://help.agscocare.org/

HELP Volunteer Protocols	
Intervention	**Description**
Orientation	• Daily orientation • Orientation board
Cognitively Stimulating Activities	• Cognitive stimulation activities twice daily
Early mobilization	• Ambulation and range of motion activities
Sleep enhancement	• Sleep and bedtime procedures • Noise reduction procedures
Vision protocol	• Visual aids (e.g., glasses, magnifying lenses), adaptive equipment, large print books • Daily reinforcement of use
Hearing protocol	• Portable amplifying devices and special communication techniques, with daily reinforcement; Ear wax clearing as needed
Fluid repletion	• Encourage fluids twice daily
Feeding assistance	• Feeding assistance and encouragement during meals

CLINICAL INVESTIGATION

Feasibility of Alerting Systems and Family Care Partner Support for Postoperative Delirium Prevention

Phillip E. Vlisides, MD,† Nathan Runstadler, BS,* Selena Martinez, BS,* Jacqueline W. Ragheb, MD,‡ Graciela Mentz, PhD,* Aleda Leis, PhD,§ Amanda Schoettinger, MSW,‖ Kimberly Hickey, MSN,¶ Amy McKinney, MA,* Joseph Brooks, MSML,# Mackenzie Zierau, BSN,** Alexandra Norcott, MD,†††‡‡ Lona Mody, MD,†† Sharon K. Inouye, MD, MPH,§§‖‖ Michael S. Avidan, MBBCh,¶¶ and Lillian Min, MD†††##*

American Geriatrics Society CoCare® HELP HOSPITAL ELDER LIFE PROGRAM

OAIC National Coordinating Center
Claude D Pepper Older Americans Independence Centers

MICHR

MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

Enrolled (n=60)

Withdrawn (n=3)
- Surgery cancelled (n=2)
- Staff availability (n=1)

Randomized (n=57)

Allocation

Allocated to standard care (n=15)
- Received allocated intervention (n=15)

Allocated to enhanced HELP (n=12)
- Received allocated intervention (n=10)
- Did not receive allocated intervention (withdrawal, n=1; ICU transfer=1)

Allocated to family interventions (n=14)
- Received allocated intervention (n=11)
- Did not receive allocated intervention (COVID hospital closure, n=1; surgery cancelled, n=1, withdrawal, n=1)

Allocated to enhanced HELP and family (n=16)
- Received allocated intervention (n=13)
- Did not receive allocated intervention (COVID hospital closure, n=2; surgery cancelled, n=1)

American Geriatrics Society CoCare® HELP M HOSPITAL ELDER LIFE PROGRAM

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Alerting System Fidelity

By postoperative day one:

- **13/24 (54%)** participants enrolled in alerting arms
- **0/26 (0%)** in non-alerting arms (p<0.001)

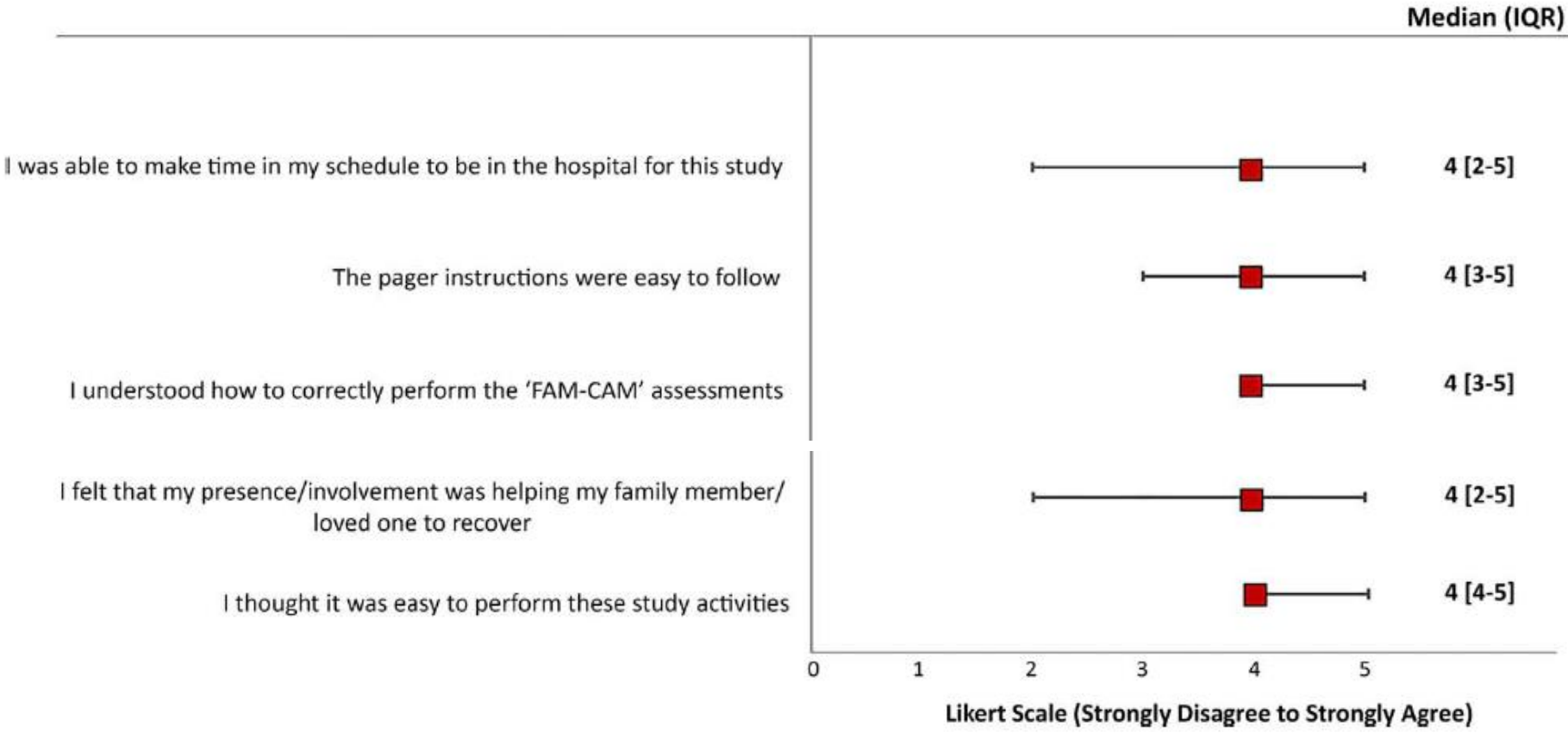
By postoperative day three:

- **22/24 (92%)** enrolled in alerting arms
- **2/26 (8%)** in non-alerting arms (P <0.001).

39 [5-75] minutes per participant vs. 0 [0 to 0] min; *P*<0.001

Family Care Partner Fidelity

Median 18 [11 – 25] bedside hours through postop day three



Family Care Partner Fidelity

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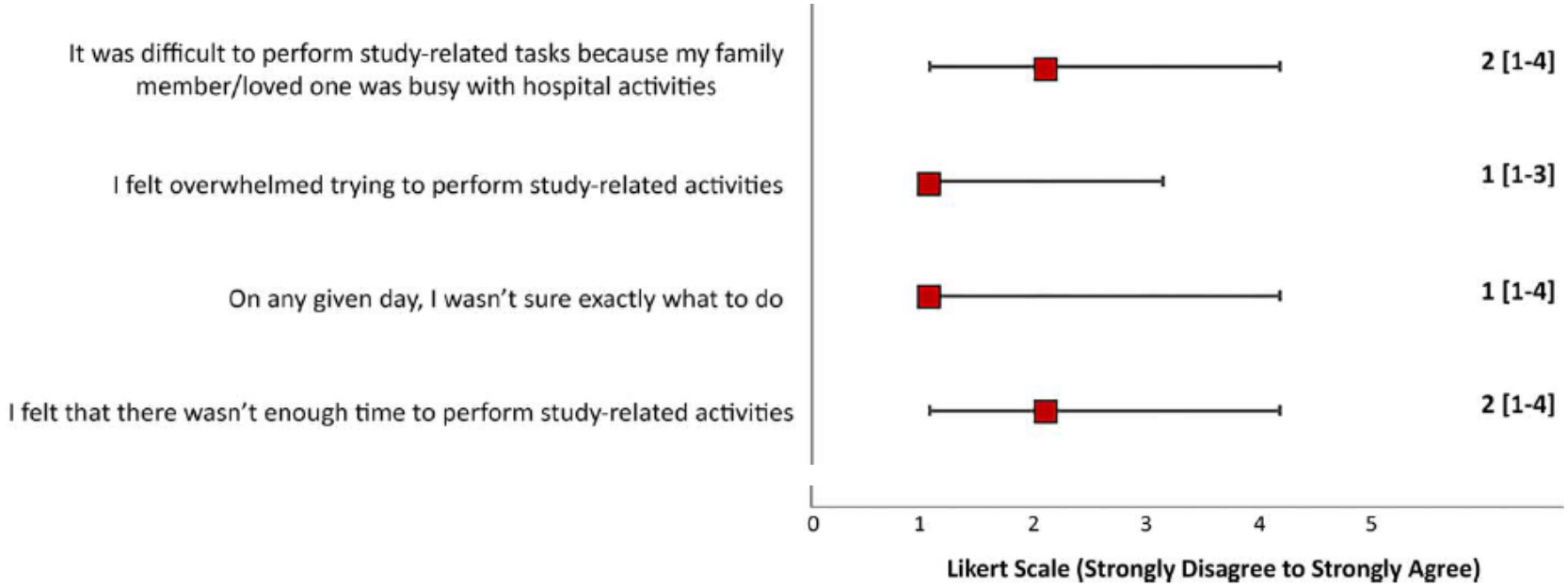


Improving Delirium Prevention. Enhancing Patient Experience.

The Evaluating Novel Healthcare Approaches to Nurturing and Caring for Hospitalized Elders (ENHANCE) trial is investigating common, evidence-based interventions for preventing delirium.

https://enhancetrial.org/

HELP Program Advantages

- Long track record of effectiveness
- Broad real-world implementation

American Geriatrics Society CoCare HELP

Evidence Gaps

- Lack head-to-head comparison
- Superiority for delirium prevention
- Superiority for person- and family-centered outcomes
- Burden on families
- Recognition of delirium
- Barriers to implementation

FAM-HELP Program Advantages

- Evidence of feasibility/efficacy
- Patient preference

Trial Details

3,000
patients and
family members

8
participating
hospitals

5
years total
duration

Sharon K. Inouye, MD, MPH
Marcus Institute for Aging Research
Hebrew SeniorLife
Harvard Medical School Affiliate

ENHANCE

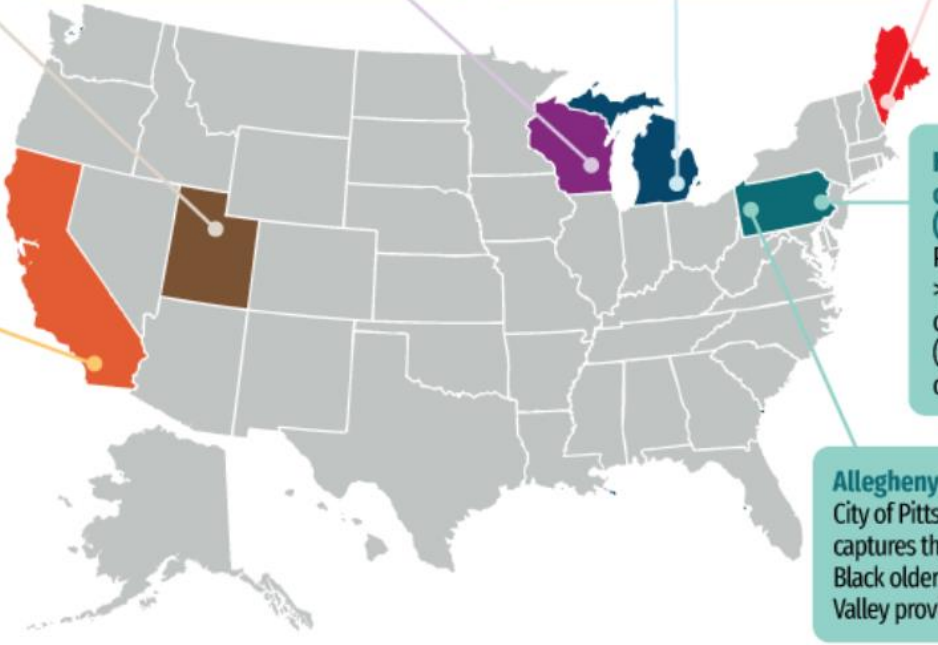
Phillip Vlisides, MD
Michigan Medicine

Meriter Hospital
Serving Madison, WI and Dane County, captures a mix of white (85%), Black (5%), Asian (5%), Native American (5%). >17% of older adults are below the federal poverty level. Catchment area includes a rural population of older adults

University of Michigan Hospital
In Ann Arbor, MI, serves a hybrid of rural, suburban, and urban older adults; 19% of older adults in Washtenaw County live below federal poverty level. Diverse groups are Asian (17%), Black (7%), and Hispanic (5%)

Maine Medical Center
Urban regions served are Portland, Brunswick, and Lewiston Auburn. Maine is one of the most rural states in US with the highest mean age of any state; 11% older adults below federal poverty level

University of Utah Hospital
In Salt Lake City, captures a mix of white, Hispanic, and Native American older adults. Serves a large rural population of older adults



Hospital of the University of Pennsylvania (HUP Main and Pavilion)
Philadelphia is home to >312,000 older adults with a diverse range of black (>33%), Hispanic, and Asian older adults

Saddleback Memorial Hospital
In Laguna Hills, CA serves urban region of Orange County, CA with rural population served inland; predominantly white and Asian population. Draws from a large retirement community with average age >80 years

Allegheny General Hospital
City of Pittsburgh and Allegheny County captures the diversity of white and Black older adults. Nearby Monogahela Valley provides rural older adults

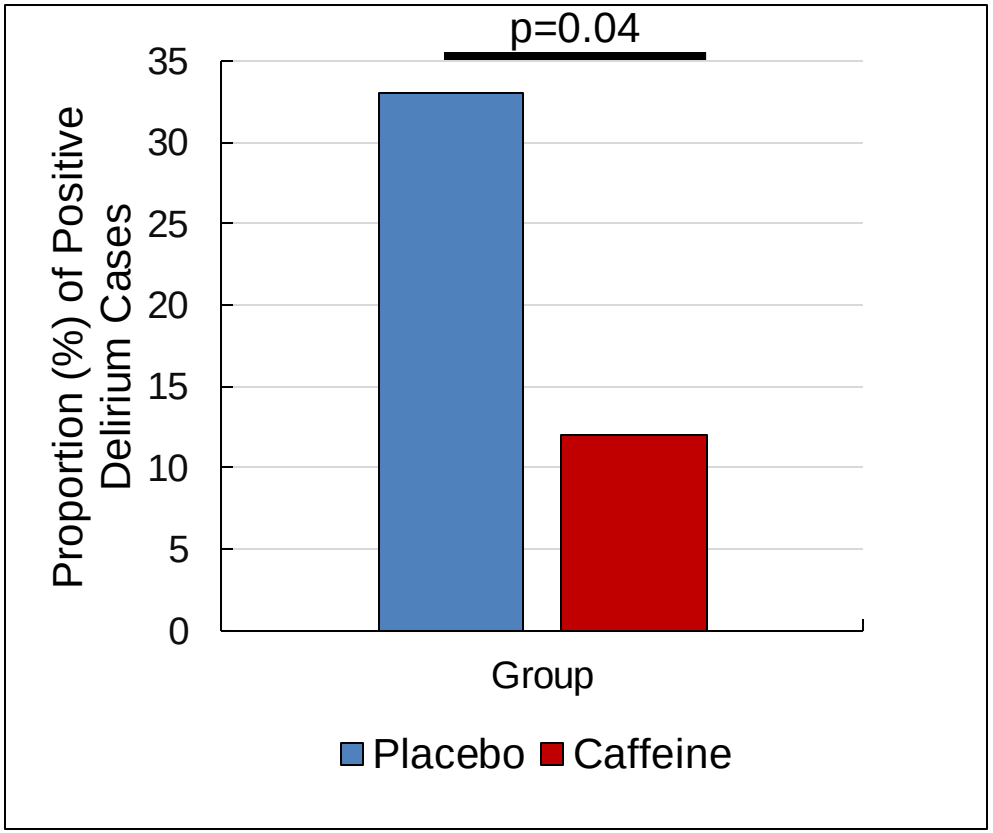
Regional Anesthesia and Acute Pain Medicine

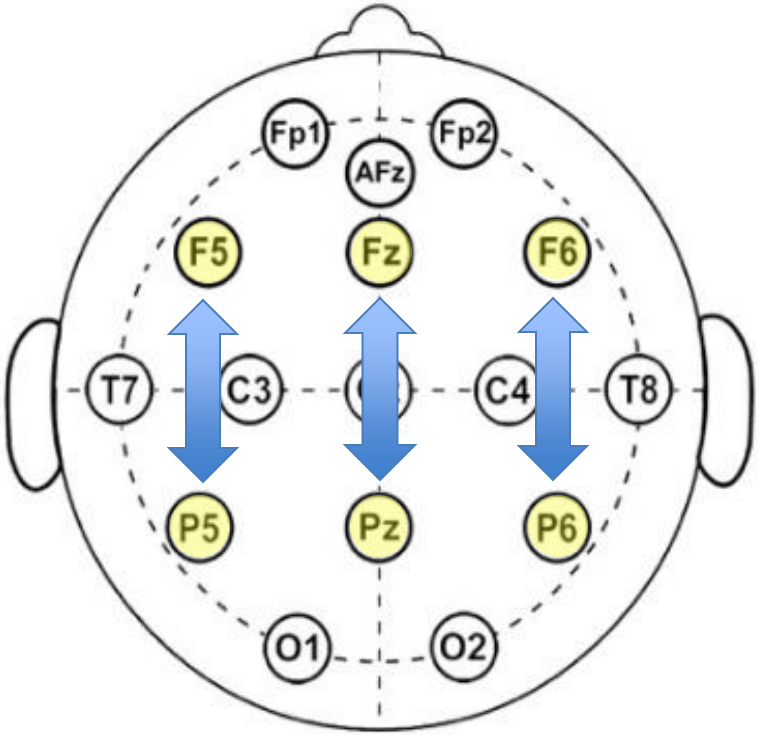
ORIGINAL CLINICAL RESEARCH REPORT

The Effects of Intraoperative Caffeine on Postoperative Opioid Consumption and Related Outcomes After Laparoscopic Surgery: A Randomized Controlled Trial

Phillip E. Vlisides, MD,*† Duan Li, PhD,*† Amy McKinney, MA,* Joseph Brooks, BS,* Aleda M. Leis, MS,* Graciela Mentz, PhD,* Alexander Tsodikov, PhD,‡ Mackenzie Zierau, BSN,* Jacqueline Ragheb, MD,* Daniel J. Clauw, MD,§ Michael S. Avidan, MBBCh,‖ Giancarlo Vanini, MD,*¶ and George A. Mashour, MD, PhD*†¶

Vlisides et al., *Anesth Analg* 2021
Vlisides et al., *BMJ Open* 2023





Caffeine: 4/33, **12%** vs. Placebo: 10/30, **33%;** p=0.04

Open access Protocol

BMJ Open

Caffeine, Postoperative Delirium And Change In Outcomes after Surgery (CAPACHINOS)-2: protocol for a randomised controlled trial

Phillip E Vlisides ,[1,2] Jacqueline Ragheb,[1] Amy McKinney,[1] Graciela Mentz,[1] Nathan Runstadler,[1] Selena Martinez,[1] Elizabeth Jewell,[1] UnCheol Lee,[1,2] Giancarlo Vanini,[1,2] Eva M Schmitt,[3] Sharon K Inouye,[3] George A Mashour[1,2]

Summary

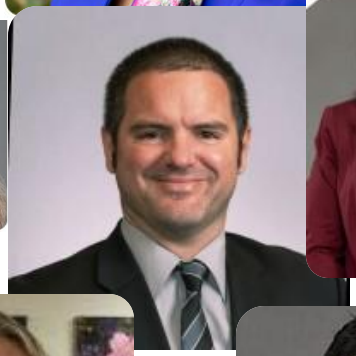
- Delirium screening – need to identify site-level challenges
- Role for alerting systems
- Testing different delirium assessment tools
- Family care partner support may mitigate postoperative delirium risk
- Caffeine (CAPACHINOS-2 – 2027)

Acknowledgements



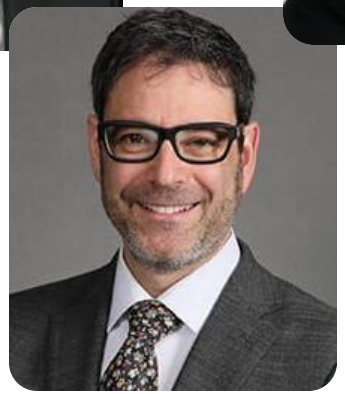












Acknowledgements

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National Center for Advancing Translational Sciences

National Institute on Aging

MICHR

OAIC National Coordinating Center
Claude D Pepper Older Americans Independence Centers

Blue Cross Blue Shield of Michigan

PCORI DE-2022C1-25666

“If the human brain were so simple that we could understand it, we would be so simple that we couldn’t.”

– Emerson M. Pugh