Biobehavioral Research
A Collaborative Partnership in Research
Focused on Obesity and Bariatric Surgery

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Weight loss surgery tied to increase in drinking

Published October 16, 2012

Gastric bypass surgery may double a patient's risk for alcohol problems

By CBS News Staff CBS News June 18, 2012, 2:33 PM

Gastric bypass and alcohol: mix with caution

March 10, 2011|Melissa Healy, Los Angeles Times
AUD Prevalence

- King et al., 2012 – LABS-2 Data - JAMA
  - AUDIT used to determine AUD
    - Preop: n=106 (7.6%)
    - 1Yr Post-op: n=101 (7.3%)
    - 2Yr Post-op: n=133 (9.3%)*
      - * statistically significant increase from baseline and from one year
  
  - 7.9% of participants without preoperative AUD had postoperative AUD
7-Year Follow-Up - LABS

King et al., 2017 - SOARD
Research in Fargo on AUD

• **R03, NIH, 2009**
  – Steffen & Engel
    • Ecological momentary assessment and laboratory Assessment to Evaluate the Development of AUD

• **R01, NIH, 2014**
  – Steffen (NDSU) & Engel (Sanford CBR)
    • Laboratory-based assessment of the pharmacokinetics and impairment associated with alcohol consumption.
Engel, Steffen, et al. 2020
Presented at the *Obesity Society* annual meeting
Where to Next...

- Mechanisms for this finding are currently largely unknown.

- Competing Continuation of R01

- Sanford Profile/NDSU funded collaboration
  - Drs. Steffen, Engel, Williams
  - Evaluating alcohol-related reward and naturalistic drinking patterns (SCRAM)
The “Microbiome”

- Trillions of microorganisms (microbiota or microbes) made up of thousands of species of bacteria, fungi, parasites, and viruses (aka “bugs”).

- Largest numbers are in the intestines – particularly the colon.

- Other organ systems have their own microbiome – it is not a phenomenon isolated to the intestine/gut.

- The microbiome consists of both symbiotic and pathogenic organisms.
  - Research is often focused on dysbiosis - unfavorable shifts in the microbiome due to disease, diet, drugs, etc.
Microbiome Gut-Brain Axis

“The microbes in the gut send messages in the brain and are able to influence cognition, mood, executive function, emotional regulation, stress response, pain, and social behavior.”

Adaes, 2019
NIDDK Funding - 
1R01AA022336-01A1 & 3R01AA022336-01A1S1

- RFA issued by NIDDK - 2016
  - Psychosocial and Behavioral Mechanisms in Bariatric Surgery (R01)

- “Mechanisms that Predict Weight Trajectory after Bariatric Surgery: the Interactive Roles of Behavior and Biology” (R01DK112585-01)
  - Grant focused on the intersection of behavior and biology – “Biobehavioral”
• Data Collection Centers & Investigative Team
  – Sanford Center for Biobehavioral Research/North Dakota State University – Fargo, ND
    • Kristine Steffen (Grant PI)
    • Ross Crosby (Co-Investigator - Biostatistician)
    • James Mitchell (Co-Investigator - Bariatrics)

  – Cleveland Clinic Lerner College of Medicine at Case Western Reserve University – Cleveland, OH
    • Leslie Heinberg (Grant PI)
1R01AA022336-01A1 & 3R01AA022336-01A1S1

• Data Collection Centers & Investigative Team
  – University of North Carolina – Chapel Hill, NC
    • Christine Peat (Co-Investigator – Psychological Assessment)
    • Ian Carroll (Co-Investigator – Microbiome)
  
  – University of North Carolina – Charlotte, NC
    • Anthony Fodor (Co-Investigator – Metagenomic Sequencing)
  
  – Brown University, Providence, RI
    • Dale Bond (Co-Investigator – Physical Activity)
  
  – Kent State University, Kent, OH
    • John Gunstad (Co-Investigator – Cognitive Functioning)
What’s Next?

• Collaborative R01 in data analysis evaluating the relationship of the microbiome with Anorexia Nervosa
  – Partnership between UNC (Ian Carroll), Sanford CBR (Wonderlich) and NDSU (Steffen)

• Collaborative R01 focused on the intersection between behavior and biology between NDSU and Sanford CBR
  – Steffen, Engel, Schaefer, Williams, Crosby, Wonderlich
What’s Next?

• R01 Competing Continuation – June 2021
  – The microbiome appears related to weight outcomes…how?
  – Evaluate the combined contribution of the microbiome and behavioral variables to energy balance and weight outcomes following surgery.

• R01 Animal Study – October 2021
  – Collecting pilot data with Cleveland Clinic.
  – Colonize germ free mice with human microbiome to evaluate the impact on weight and psychiatric status.
Thank You!

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