GEMs
GOOD EVIDENCE MATTERS

GEMs of the Week

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What's in this week's issue?

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SPOTLIGHT: Bribery or Contingency Management? Either Way, It Improves Abstinence from Stimulant Use in Those Receiving MOUD

Bribery or Contingency Management? Either Way, It Improves Abstinence from Stimulant Use in Those Receiving MOUD

GEMs GOOD EVIDENCE MATTERS SPOTLIGHT

Contingency management for patients receiving medication for opioid use disorder: a systematic review and meta-analysis

Bolívar HA, Klemperer EM, Coleman SRM, DeSarno M, Skelly JM, Higgins ST. Contingency Management for Patients Receiving Medication for Opioid Use Disorder: A Systematic Review and Meta-analysis [published correction appears in JAMA Psychiatry. 2022 Mar 1;79(3):272]. *JAMA Psychiatry*. 2021; 78(10):1092–1102. doi:10.1001/jamapsychiatry.2021.1969

KEY TAKEAWAY: Contingency management increases abstinence from stimulants as well as treatment adherence in patients receiving medication for opioid use disorder (MOUD).

STUDY DESIGN: Systematic review of 74 prospective experimental studies (N=10,444); meta-analysis of 60 studies (4 within-subject studies, 1 randomized-by-clinic study, 55 RCTs; N=7,000)

LEVEL OF EVIDENCE: STEP 1

BRIEF BACKGROUND INFORMATION: Medication assisted treatment is effective for patients with opioid use disorder but can be undermined by increasingly common concurrent stimulant use. Prior studies have found contingency management, a behavioral intervention where patients earn rewards for behavioral changes, to significantly reduce stimulant use.

PATIENTS: Adults receiving MOUD

INTERVENTION: Monetary-based contingency management intervention

CONTROL: No-incentives comparison

OUTCOME: Abstinence from stimulant use, polysubstance use, illicit opioid use, and cigarette smoking, improvement in therapy attendance, medication adherence

METHODS (BRIEF DESCRIPTION):

- Comprehensive literature review of experimental prospective studies.
- Studies evaluated end-of-treatment outcomes following monetary-based contingency management vs no-incentive interventions in patients receiving MOUD.
- Outcomes were measured by negative urine drug screens, longest duration of abstinence, number/percentage of counseling sessions attended, and number/percentage of medication doses accepted.
- Weighted mean effect size estimates (Cohen d) with 95% CIs were calculated for each outcome.

INTERVENTION (# IN THE GROUP): Not available

COMPARISON (# IN THE GROUP): Not available

FOLLOW UP PERIOD: Varied by outcome measure (range 0.71–52 weeks)

RESULTS:

Compared to no-incentive comparisons, contingency management was significantly associated with increased:

- Abstinence from psychomotor stimulant use (18 trials, N=1,839; d=0.70; 95% CI, 0.49–0.92)
- Abstinence from two or more drugs (18 trials, N=2,746; d=0.46; 95% CI, 0.30–0.62)
- Abstinence from illicit opioid use (9 trials, N=1,257; d=0.58; 95% CI, 0.30–0.86)
- Abstinence from cigarette smoking (3 trials, N=205; d=0.78; 95% CI, 0.43–1.1)
- Therapy attendance (10 trials, N=1,357; d=0.43; 95% CI, 0.22–0.65)
- Medication adherence (9 trials, N=868; d=0.75; 95% CI, 0.30–1.1)

LIMITATIONS:

- Measures of abstinence and treatment adherence varied by study, increasing heterogeneity.
- Dosing of MOUD varied by study, and most studies were utilizing methadone, which could alter external validity.

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Let's Take a Break (TAB) from Smoking

Effect of Technology-Assisted Brief Abstinence Game on Long-term Smoking Cessation in Individuals Not Yet Ready to Quit

Houston TK, Chen J, Amante DJ, et al. Effect of Technology-Assisted Brief Abstinence Game on Long-term Smoking Cessation in Individuals Not Yet Ready to Quit: A Randomized Clinical Trial. *JAMA Intern Med*. 2022; 182(3):303–312. doi:10.1001/jamainternmed.2021.7866

KEY TAKEAWAY: Engaging smokers who are not yet ready to quit with Take a Break (TAB), a gamified behavior intervention, may lead to modest statistically significant decreases in time-to-first-quit-attempt and on-going smoking cessation.

STUDY DESIGN: Multisite, randomized clinical trial

LEVEL OF EVIDENCE: STEP 2

BRIEF BACKGROUND INFORMATION: Brief, non-cessation experiences such as practice quit attempts or Nicotine Replacement Therapy (NRT) sampling trials may lead to later abstinence in current smokers. However, engaging smokers who are not ready to quit is challenging.

PATIENTS: Current adult smokers who have not yet set a quit date

INTERVENTION: TAB and NRT sampling

CONTROL: NRT (lozenges) sampling only

OUTCOME: Quit attempts by 90-days and within six-months
Secondary Outcomes: Days abstinent during first three-weeks, six-month point prevalence smoking cessation

METHODS (BRIEF DESCRIPTION):

- 2,959 current smokers from four urban US health care systems were screened for eligibility via questionnaire (I am not thinking about quitting, I am thinking about quitting, or I have set a quit date).
- Exclusion criteria: Participants with a set quit date, non-English speakers, or active depression
- Randomized site-level 1:1 allocation of 433 participants into two groups.
- TAB, a three-week gamified experience, was used to engage the intervention group in practice quit attempts and NRT sampling via five behavioral components: motivational text messages, challenge quizzes, brief abstinence goal setting with a Tobacco Treatment Specialist, mobile health apps for cravings management, and participation reward points/leaderboard.
- Smoking cessation at six-months validated by carbon monoxide (CO) level.
- Intention-to-treat analysis

INTERVENTION (# IN THE GROUP): 160
COMPARISON (# IN THE GROUP): 171

FOLLOW UP PERIOD: Six months

RESULTS:

- Time to first quit attempt by 90-days occurred earlier in the TAB group vs the NRT only group (HR = 1.7; 95% CI, 1.1–2.6).
- The average quit attempts in six-months were higher in the TAB group vs the NRT only group (IRR 1.7; 95% CI, 1.3–2.2).
- On average, the TAB group had a greater number of days abstinent in the first three-weeks compared to the NRT only group (3.0% vs 2.4%; β coefficient 0.60; 95% CI, 0.07–1.1).
- On average, the TAB group had a higher CO level-verified smoking cessation at six-month follow-up compared to the NRT only group (OR 1.9; 95% CI, 1.0 –3.7).

LIMITATIONS:

- Many people who were eligible declined to participate (2,183 of 2,616).
- Generalizability of the study also limited by excluding non-English speakers (49%) and those with active depression symptoms (20%).
- It also included people who are thinking of quitting but have not set a quit date, thus, a slightly more motivated population.

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Want to Quit Smoking? Consider Trying E-Cigarettes

A Randomized Trial of E-Cigarettes Versus Nicotine-Replacement Therapy

Hajek P, Phillips-Waller A, Przulj D, et al. A Randomized Trial of E-Cigarettes versus Nicotine-Replacement Therapy. *N Engl J Med*. 2019; 380(7):629–637. doi:10.1056/NEJMoa1808779

KEY TAKEAWAY: E-cigarettes are more effective than nicotine replacement therapy for smoking cessation.
STUDY DESIGN: Multicenter, individually randomized controlled trial
LEVEL OF EVIDENCE: STEP 2

BRIEF BACKGROUND INFORMATION: Although e-cigarette use has its own risks, it is expected that they would have less risks compared to typical cigarettes. Nicotine e-cigarettes have been shown to be effective in smoking cessation compared to nicotine-free products, but it is unclear if they are more effective than other nicotine replacement therapies. As the use of e-cigarettes increase, it would be beneficial to see if their use can help reduce smoking cessation.

PATIENTS: Nicotine cigarette smokers
INTERVENTION: Electronic cigarettes
CONTROL: Nicotine replacement therapy
OUTCOME: Sustained abstinence for one year
Secondary Outcomes: Withdrawal, respiratory symptoms

METHODS (BRIEF DESCRIPTION):

- Eligible participants were non-pregnant, non-breastfeeding adult smokers who were currently not using e-cigarettes or nicotine replacement products and had no strong preference for either modality of quitting.
- Each participant was randomly assigned to either the e-cigarette group or nicotine replacement therapy group.
- E-cigarette participants were provided with a One Kit starter pack and were then responsible for purchasing their own e-cigarette supplies once the starter pack was complete.
- The nicotine replacement group was provided three months of their desired product (patch, gum, lozenge, etc.) and were responsible for their own supplies afterwards.
- All participants were provided multisession, behavioral support per the UK stop-smoking service practice.
- Primary outcome: Participants were contacted at 26 and 52 weeks and self-reported level of abstinence from smoking. Successful abstinence was confirmed with expired carbon monoxide level less than 8 ppm.
- Secondary outcome: Participants self-reported presence of withdrawal symptoms (urge, irritability) at one and four weeks. Withdrawal frequency was rated between 1 (not at all) and 6 (all the time). Participants also self-reported presence of shortness of breath, wheezing, cough, and phlegm at 52 weeks.

INTERVENTION (# IN THE GROUP): 439
COMPARISON (# IN THE GROUP): 447

FOLLOW UP PERIOD: Mean time of one year

RESULTS:
Primary Outcome –

- One year abstinence was greater in the e-cigarette group vs the nicotine replacement therapy group (18% vs 9.9%, respectively; RR 1.8; 95% CI, 1.3–2.6).

Secondary Outcomes –

- There was no difference in withdrawal, shortness of breath, or wheezing between groups.
- Having a cough at 52 weeks was less likely in the e-cigarette group vs the nicotine replacement group (31% vs 40% respectively; RR 0.8; 95% CI, 0.6–0.9).
- Having phlegm at 52 weeks was less likely in the e-cigarette group vs the nicotine replacement group (25% vs 37%, respectively; RR 0.7; 95% CI, 0.6–0.9).

LIMITATIONS:

- The study was not blinded as participants were aware of their product assignment, but data analysis was able to be blinded from treatment assignment.
- Starter kits and behavioral support were limited to UK guidelines.

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Lipoprotein(a) and CAD Advancement

Association of Lipoprotein(a) With Atherosclerotic Plaque Progression

Kaiser Y, Daghem M, Tzolos E, et al. Association of Lipoprotein(a) With Atherosclerotic Plaque Progression. *J Am Coll Cardiol*. 2022; 79(3):223–233. doi:10.1016/j.jacc.2021.10.044

KEY TAKEAWAY: Elevated lipoprotein(a) advances plaque formation leading to MI and therefore medications that target lipoprotein(a) could be beneficial as a preventive treatment.

STUDY DESIGN: Prospective cohort study

LEVEL OF EVIDENCE: STEP 3

BRIEF BACKGROUND INFORMATION: Lipoprotein(a) has been associated with increased risk of MI, but the cause is unknown. The goal of this cohort study was to evaluate the association between lipoprotein(a) and necrotic plaque progression through coronary computed tomography angiography over a 12-month period.

PATIENTS: Adults with CAD

INTERVENTION: Low high lipoprotein(a) levels

CONTROL: High lipoprotein(a) levels

OUTCOME: Progression of coronary low-attenuation plaque

METHODS (BRIEF DESCRIPTION):

- 191 participants greater than 40 years old with multivessel CAD in Edinburg, UK without coronary intervention in the past three months were included in the study.
- Exclusion Criteria: CABG or ACS three months prior to the start of the study or less
- Lipoprotein(a) levels were calculated using the Friedewald equation at baseline and at 12 months. Levels >70 mg/dL were considered elevated.
- Coronary CTAs were obtained at baseline and at 12 months. Imaging was used to calculate coronary calcium score and plaque analysis. Calcium results were quantified through the Agatson score.
- Plaque volumes were obtained through specialized software, "Autoplaque", which measured total plaque volume, calcific plaque volume, non-calcific plaque volume, fibro-fatty plaque volume, and low-attenuation plaque (necrotic core).

INTERVENTION (# IN THE GROUP): 43

COMPARISON (# IN THE GROUP): 148

FOLLOW UP PERIOD: 12 months

RESULTS:

Primary Outcome –

- Lipoprotein (a) levels >70 mg/dL were associated with increased low attenuation plaque volume compared to lipoprotein(a) levels <70 mg/dL (β = 12% for each 50 mg/dL increase; 95% CI, 2.0–21%).
- Participants with lipoprotein(a) >70 mg/dL showed increased fibro-fatty plaque volumes compared to participants with lipoprotein(a) <70 mg/dL in a 12-month span (fibro-fatty plaque volumes β = 7.0% for each 50 mg/dL increase; 95% CI, 0.9–13%).
- Lipoprotein(a) levels were not associated with progression of:
  - Total plaque volume (β = 0.81; 95% CI, −5 to 3.4)
  - Calcific plaque volume (β = −13; 95% CI, -45 to 19)
  - Non-calcific plaque volume (β = −1; 95% CI, −5.2 to 3.2)

LIMITATIONS:

- Single center study.
- Population of study was mainly white males.
- Small study size of 191 people.

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