GEMs of the Week

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What's in this week's issue?

Week of May 26 - May 30, 2025

SPOTLIGHT:
Weight Loss Intervention in Primary Care

- **Impact of Continuity Clinics on Reducing Emergency Department Visits**
- **It’s Getting Hot in Here: Extreme Heat and Preterm Deliveries**

Weight Loss Intervention in Primary Care

A closer look at weight loss interventions in primary care: a systematic review and meta-analysis

Perreault L, Kramer ES, Smith PC, Schmidt D, Argyropoulos C. A closer look at weight loss interventions in primary care: a systematic review and meta-analysis. Front Med (Lausanne). 2023 Nov 23;10:1204849. doi: 10.3389/fmed.2023.1204849. PMID: 38076252; PMCID: PMC10701393.

KEY TAKEAWAY: Weight loss interventions in primary care results in greater weight loss at six months compared to usual care.

STUDY DESIGN: Systematic review and meta-analysis of seven randomized controlled trials (N=2,187)

LEVEL OF EVIDENCE: STEP 2 (downgraded due to high heterogeneity and lack of generalizability)

BRIEF BACKGROUND INFORMATION: Obesity is a significant health concern across many different populations. Many primary care providers are offering weight loss interventions; however, the effectiveness of these interventions is unclear. This study investigated the impact of various weight loss interventions on weight loss.

PATIENTS: Overweight and obese adults, with or without weight-associated comorbidities

INTERVENTION: Various weight loss interventions

CONTROL: Usual care

PRIMARY OUTCOME: Weight change

METHODS (BRIEF DESCRIPTION):

- Participants were adults 40–60 years old with a body mass index (BMI) of >25.
- Included patients had obesity with risk factors including prediabetes, type 2 diabetes (T2DM), hypertension (HTN), dyslipidemia, or metabolic syndrome.
- Studies were excluded if interventions were delivered solely by medical assistants, health coaches, dietitians, or behavioral health providers, if patients were referred to commercial weight loss programs, or if bariatric surgery was involved.
- Interventions included: Anti-obesity medications (orlistat, rimonabant, etc.) and various lifestyle modifications (counseling, low-calorie diets, meal replacements, behavioral therapy)
- Physicians were trained in behavior change techniques and advanced counseling strategies.
- Control groups received usual care (5–7 minutes of counseling), placebo pills, or minimal lifestyle counseling without additional interventions.
- The duration of the interventions ranged from 6–24 months.
- The primary outcome measured weight changes from baseline at six months.
- Modified intention-to-treat analysis was used in most studies.

INTERVENTION (# IN THE GROUP): Not available

COMPARISON (# IN THE GROUP): Not available

FOLLOW-UP PERIOD: Six months

RESULTS:

Primary Outcome –

- Various weight loss intervention resulted in greater weight loss compared to usual care at six months (7 studies, N=2,187; mean difference [MD] –3.5 kg; 95% CI, –5.6 to –1.5; I^2=86%).

LIMITATIONS:

- Only seven studies met the inclusion criteria limiting the generalizability of findings.
- High heterogeneity was present in the included studies.
- Many studies had short follow-up periods, so the long-term outcome is unable to be determined.
- Limited data on the cost-effectiveness of these interventions

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Impact of Continuity Clinics on Reducing Emergency Department Visits

The Impact of Primary Care Clinic and Family Physician Continuity on Patient Health Outcomes: A Retrospective Analysis from Alberta, Canada

McDonald T, Ronksley PE, Cook LL, et al. The Impact of Primary Care Clinic and Family Physician Continuity on Patient Health Outcomes: A Retrospective Analysis From Alberta, Canada. *Ann Fam Med*. 2024;22(3):223-229. doi:10.1370/afm.3107

KEY TAKEAWAY: Complete and high clinic continuity reduced emergency department (ED) visits and hospitalization across most patient complexity levels, while low clinic continuity increased both outcomes compared to no continuity.

STUDY DESIGN: Retrospective cross-sectional study

LEVEL OF EVIDENCE: STEP 3

BRIEF BACKGROUND INFORMATION: Prior research has established that continuity of care with a specific physician is associated with reduced ED visits and hospitalizations. This study examined whether continuity of care within a specific clinic, but not necessarily the same physician, was also associated with reduced ED visits and hospitalizations.

PATIENTS: Patients who had primary care visits

INTERVENTION: Complete, high, and low continuity with a specific clinic

CONTROL: No continuity with a specific clinic

PRIMARY OUTCOME: ED visits and hospitalizations

METHODS (BRIEF DESCRIPTION):

- The study population consisted of randomly selected adult and pediatric patients in Alberta who had at least three primary care visits between 2015–2018
- Obstetric patients were excluded due to anticipated hospitalization for delivery.
- Continuity within a specific clinic but not with a specific physician was reflected by the group care rate (GCR), calculated by dividing the number of visits within a specific clinic by the total number of primary care visits.
    - None: Patients with no clinic continuity
    - Not applicable (NA): Patients who saw one physician exclusively (no group care)
    - Low clinic continuity: GCR 1–50%
    - High clinic continuity: GCR 51–99%
    - Complete clinic continuity: GCR 100%
- Patients also were stratified into low, moderate, and high complexity groups based on the clinical risk grouper (CRG) methodology, with level one corresponding to the least complex, healthiest patients, up to level nine corresponding to the most complex, sickest patients.
    - Low complexity: CRG levels 1–2
    - Moderate complexity: CRG levels 3–4
    - High complexity: CRG levels 5–9
- Numbers of ED visits and hospitalizations during the study period were determined by accessing public databases.
- A univariate analysis was used to compare demographics like gender, age, and region among patients with varying levels of physician and clinic continuity.
- A multivariate analysis was conducted to calculate incidence rate ratios for ED visits and hospitalizations for each level of clinic continuity and patient complexity.

INTERVENTION (# IN THE GROUP):

- Complete clinic continuity: 244,751
- High clinic continuity: 190,633
- Low clinic continuity: 167,033

COMPARISON (# IN THE GROUP): 350,180

FOLLOW-UP PERIOD: Three years

RESULTS:

Primary Outcome –

- Complete clinic continuity reduced ED visits across all complexities compared to no clinic continuity.
    - Low (incidence rate ratio [IRR] 0.79; 95% CI, 0.78–0.80)
    - Moderate (IRR 0.81; 95% CI, 0.80–0.83)
    - High (IRR 0.71; 95% CI, 0.71–0.73)
- High clinic continuity reduced ED visits across all complexities compared to no clinic continuity.
    - Low (IRR 0.94; 95% CI, 0.93–0.95)
    - Moderate (IRR 0.97; 95% CI, 0.95–0.99)
    - High (IRR 0.94; 95% CI, 0.92–0.95)
- Low clinic continuity was associated with increased ED visits across all complexities compared to no clinic continuity.

- Low (IRR 1.04; 95% CI, 1.03–1.1)
- Moderate (IRR 1.1; 95% CI, 1.04–1.1)
- High (IRR 1.04; 95% CI, 1.04–1.1)

- Complete clinic continuity reduced hospitalizations across all complexities compared to no clinic continuity.
  - Low (IRR 0.77; 95% CI, 0.75–0.78)
  - Moderate (IRR 0.83; 95% CI, 0.80–0.86)
  - High (IRR 0.69; 95% CI, 0.67–0.70)
- High clinic continuity reduced hospitalizations for low and high complexities compared to no clinic continuity.
  - Low (IRR 0.97; 95% CI, 0.95–0.98)
  - High (IRR 0.97; 95% CI, 0.95–0.99)
- High clinic continuity did not reduce hospitalization for moderate complexity compared to no clinic continuity (IRR 1.02; 95% CI, 0.99–1.1).
- Low clinic continuity increased hospitalizations across all complexities compared to no clinic continuity.
  - Low (IRR 1.1; 95% CI, 1.1–1.1)
  - Moderate (IRR 1.1; 95% CI, 1.1–1.2)
  - High (IRR 1.1; 95% CI, 1.1–1.1)

LIMITATIONS:

- Patients with a fewer total number of visits were more likely to be categorized under the high continuity group.
- Continuity calculations account for quantity but not quality of primary care visits.
- Lack of randomization of patients and clinics in a single Canadian province limits external validity.
- Patient complexity may impact hospitalization rates, independent of continuity.
- The study did not exclude focused practice visits such as addiction medicine visits.

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It's Getting Hot in Here: Extreme Heat and Preterm Deliveries

Preterm and Early-Term Delivery After Heat Waves in 50 US Metropolitan Areas

Darrow LA, Huang M, Warren JL, et al. Preterm and Early-Term Delivery After Heat Waves in 50 US Metropolitan Areas. *JAMA Netw Open*. 2024;7(5):e2412055. Published 2024 May 1. doi:10.1001/jamanetworkopen.2024.12055

KEY TAKEAWAY: Exposure to heat waves minimally increases the risk of preterm and early-term deliveries in metropolitan areas, with a greater risk among patients ≥29 years old, those with a high school education or less, and individuals from racial or ethnic minority groups.

STUDY DESIGN: Retrospective cohort study

LEVEL OF EVIDENCE: STEP 3

BRIEF BACKGROUND INFORMATION: Preterm and early term births are associated with increased rates of infant morbidity and mortality. Previous research suggests that heat waves could increase rates of preterm and early term delivery due to factors including dehydration, heat stress, and exacerbation of underlying medical issues such as hypertension. The study aimed to assess the association between heat waves and preterm vs early term delivery.

PATIENTS: Patients with singleton births

INTERVENTION: Exposure to a heat wave

CONTROL: Expected preterm and early term birth rates

PRIMARY OUTCOME: Actual preterm and early term births

METHODS (BRIEF DESCRIPTION):

- The authors conducted a retrospective cohort analysis of the rate of preterm and early term births in the 50 most populated metropolitan statistical areas (MSAs) in the United States in May to September from 1993 through 2017.
- Patients with single gestation pregnancies in the target MSAs (n=53,154,816) were included in the study sample and data was collected from the National Vital Statistics System at the National Center for Health Statistics (NCHS) including gestational age, maternal age, ethnicity, race, parity, fetal sex, and education levels.
    - The majority of included pregnant patients were 25–34 years old (54%), 17% identified as non-Hispanic Black, and 26% identified as Hispanic.
- Records with multiple gestations, incomplete gestational age information, and those with birth at 27 weeks or less were excluded from the study.
- Meteorological data for each MSA, which included maximum and minimum daily temperatures, was acquired from Daymet.
- Preterm birth was defined as birth from 28w0d to 36w6d and early term birth was defined as birth from 37w0d to 38w6d.
- Heat wave exposure was defined in three distinct ways:
    - Number of total days in a four day or seven day window above the 97.5th percentile threshold temperature (degrees Celsius) for the MSA.
    - Number of consecutive days in a four day or seven day window above the 97.5th percentile threshold temperature for the MSA.
    - Mean number of degrees over the 97.5th percentile threshold for the metropolitan calculated as a continuous variable over a four day or seven day window.
- A regression model was used to calculate the number expected preterm and early-term births for each day between May to September and used as the control metric for the rate ratio calculation.
- The primary outcome was the number of preterm births (28w0d to 36w6d) and early-term births (37w0d to 38w6d) each day compared to the expected number based on the regression model.
- A secondary analysis stratified the primary outcome by maternal education level, maternal age, maternal race and ethnicity, infant sex, and live birth order.

INTERVENTION (# IN THE GROUP): Not available

COMPARISON (# IN THE GROUP): Not available

FOLLOW-UP PERIOD: Not available

RESULTS:

Primary Outcome –

- Four consecutive days of mean temperatures above the MSAs 97.5th percentile threshold increased the rate of:
    - Preterm delivery (rate ratio [RR] 1.02; 95% CI, 1.01–1.03)
    - Early term delivery (RR 1.01; 95% CI, 1.01–1.02)

- Heat-waves consisting of ≥4 total days of above the threshold yielded nearly identical results.
- For each one degree mean temperature above the MSA's 97.5th percentile threshold in the four days prior to birth, there was an associated increased rate of:
  - Preterm delivery (RR 1.01; 95% CI, 1.002–1.02)
  - Early term delivery (RR 1.01; 95% CI, 1.004–1.01)

Secondary Analysis –

- Among patients with a high school education level or less, a one degree increase in temperature above the threshold in the four days prior to birth was associated with an increased rate of:
  - Preterm delivery (RR 1.01; 95% CI, 1.004–1.02)
  - Early term delivery (RR 1.02; 95% CI, 1.01–1.02)
- Among non-Hispanic Black patients, a one degree increase in temperature over the threshold in the four days prior to birth was associated with an increased rate of:
  - Preterm delivery (RR 1.02; 95% CI, 1.002–1.03)
  - Early term delivery (RR 1.01; 95% CI, 1.003–1.02)
- Among patients ≥29 years old, from an ethnic or racial minority, and with a high school education level or less, a one degree temperature increase over the threshold in the four days prior to birth was associated with an increased rate of:
  - Preterm delivery (RR 1.04; 95% CI, 1.02–1.06)
  - Early term delivery (RR 1.03; 95% CI, 1.02–1.05)

LIMITATIONS:

- The study assessed population level associations and did not account for individual behavioral responses to heat waves.
- The study did not control for health behaviors, medical conditions, and pregnancy complications that could have influenced delivery timing other than multiple gestations.
- The study did not include data on rural areas, which may limit the generalizability of the findings to non-urban populations.
- Data was collected from 1993–2017, during which time heat waves were less frequent and severe than those observed in recent years, potentially underestimating future risks.

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