7 Top Family Medicine Articles from 2024

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January 30, 2025

Disclosures

- No conflicts or commercial interests to declare

Sources

- *American Family Physician* collections
- *JAMA, BMJ, NEJM, Lancet* top article lists

Learning Objectives

- Review and analyze findings from 7 articles from 2024 addressing common and important topics in family medicine
- Critically appraise observational studies, randomized controlled trials, and umbrella reviews and place in context of existing literature.
- Evaluate and change practice in light of new evidence.

What I'll Do

01. Run the list

02. Present a brief clinical case

03. Present study context & design, major findings & limitations

04. Repeat 6x

05. Take questions & wrap up

The Articles

- Ortolá R, Sotos-Prieto M, García-Esquinas E, et al. **Alcohol consumption patterns and mortality among older adults with health-related or socioeconomic risk factors**. JAMA Network Open. 2024;7(8):e2424495.

- Aronne J, Sattar N, Horn DB, et al. **Continued treatment with tirzepatide for maintenance of weight reduction in adults with obesity: the SURMOUNT-4 randomized clinical trial.** JAMA. 2024;331(1):38-48.

- The BALANCE Investigators (see references). **Antibiotic treatment for 7 versus 14 days in patients with bloodstream infections.** New Engl J Med. 2024 Nov 20. doi:10.1056/NEJMoa2404991. Online ahead of print.

The Articles (continued)

- St Peter SD, Noel-McDonnell HR, Hall NJ, et al. **Appendectomy versus antibiotics for acute uncomplicated appendicitis in children: an open label, international, multi-centre, randomized, noninferiority trial**. *Lancet* 2025;405(10474): 233-240.

- Lane MM, Gamage E, Du S, et al. **Ultra-processed food exposure and adverse health outcomes: umbrella review of epidemiological meta-analyses**. BMJ 2024;384:e077310.

- Ebell MH. **PREVENT equations for assessing cardiovascular risk**. *Am Fam Physician.* 2024;110(3):305-306

- Gupta V, Mastromarino P, Garg R. **Effectiveness of prophylactic oral and/or vaginal probiotic supplementation in the prevention of recurrent urinary tract infections: a randomized, double-blind, placebo-controlled trial**. Clin Infect Dis. 2024;78(5):1154-1161

Case 1

You're seeing a 72 year old man for a Medicare AWV

He reports drinking 2 glasses of wine nightly for heart health and has for years.

He recently heard something from a friend about new research on alcohol risks, and shakes his head as he says "I don't know what to believe anymore."

JAMA Network | Open

Original Investigation | Public Health

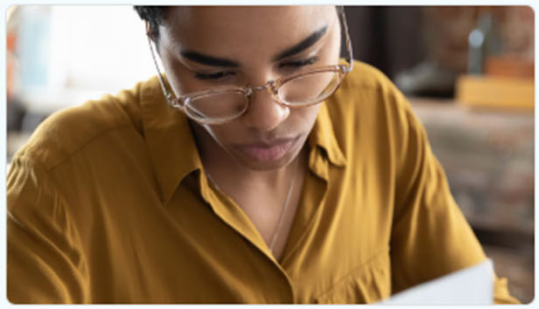
Alcohol Consumption Patterns and Mortality Among Older Adults With Health-Related or Socioeconomic Risk Factors

Rosario Ortolá, MD, PhD; Mercedes Sotos-Prieto, PhD; Esther García-Esquinas, PhD; Iñaki Galán, PhD; Fernando Rodríguez-Artalejo, PhD

About Moderate Alcohol Use

KEY POINTS

- Drinking excessively increases your risk of getting sick, injured, or dying sooner.
- You can choose not to drink alcohol, drink less, or drink in moderation to lower these risks, compared to drinking excessively.
- However, even moderate drinking may increase your risk of death and other alcohol-related harms, compared to not drinking.



Moderate drinking

Moderate alcohol use is:

- For men—two drinks or less in a day.
- For women—one drink or less in a day.

Compared with drinking excessively, moderate drinking reduces your risk of negative health effects.

ON THIS PAGE

Source: CDC 2025. Alcohol use. U.S. Department of Health and Human Services.

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Population-level risks of alcohol consumption by amount, geography, age, sex, and year: a systematic analysis for the Global Burden of Disease Study 2020

GBD 2020 Alcohol Collaborators †

- **Theoretical minimum risk exposure level varied by *age* and not by gender:**
  - Ages 15-39 – estimate ranged from 0 to 0.603 (95% CI 0.4-1) standard drinks per day
  - Age 40+ - estimate 0.114 (0-0.403) to 1.87 (0.5-3.30) standard drinks per day
  - Age 65+ - estimate 0.636-0.656 (0.5-1) standard drinks per day

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ARTICLES · Volume 400, Issue 10347, P185-235, July 16, 2022 · *Open Access* Download Full Issue

Population-level risks of alcohol consumption by amount, geography, age, sex, and year: a systematic analysis for the Global Burden of Disease Study 2020

GBD 2020 Alcohol Collaborators †

- The conditions driving disability and death associated with alcohol also varied by age
  - Ages 15-39 – majority of DALYs from injuries – auto, self-harm, interpersonal violence
  - Age 40-64 – cardiovascular disease, intracerebral hemorrhage become major issues, cancer prevalence rises, injuries remain common
  - Age 65+ - ischemic heart disease, ischemic and hemorrhagic stroke most common

JAMA Network | Open

Original Investigation | Public Health

Alcohol Consumption Patterns and Mortality Among Older Adults With Health-Related or Socioeconomic Risk Factors

Study Type

Prospective cohort from UK Biobank, a population registry

Population

Adults age 60+ in UK, current drinkers

Exposure

Low risk drinking: men > 2.86-20 grams/day

- women >2.86-10g/day

Moderate risk – men >20-40g/day, women >10-20g/day

Heavy – men > 40g/day, women > 20 g/day

Comparison

Occasional drinking (2.86 grams/day or less)

Outcomes

CV, cancer, and all-cause mortality

1 standard drink contains 14 grams alcohol
2.86 g/day = ~1.5 drinks per week
10 g/day = ~ 7/10 of a drink per day
20 g/day = just under 1.5 drinks per day
40 g/day = just under 3 drinks per day

Key Results

Table 2. Association of Mean Alcohol Intake Status With Mortality in Older Drinkers From the UK Biobank Cohort

	All-cause mortality			Cancer mortality			CVD mortality		
Alcohol intake status[a]	Deaths, No./total No.	HR (95% CI)[b]	*P* value for interaction	Deaths, No./total No.	HR (95% CI)[b]	*P* value for interaction	Deaths, No./total No.	HR (95% CI)[b]	*P* value for interaction
Occasional	1097/12 049	1 [Reference]	NA	526/12 045	1 [Reference]	NA	232/12 045	1 [Reference]	NA
Low risk	6114/56 015	1.06 (1.00-1.13)	NA	3012/55 988	1.11 (1.01-1.22)[c]	NA	1273/55 988	0.97 (0.84-1.11)	NA
Moderate risk	4789/41 674	1.10 (1.03-1.18)[d]	NA	2418/41 652	1.15 (1.05-1.27)[d]	NA	926/41 652	0.95 (0.82-1.10)	NA
High risk	3833/25 365	1.33 (1.24-1.42)[e]	NA	1915/25 353	1.39 (1.26-1.53)[e]	NA	784/25 353	1.21 (1.04-1.41)[c]	NA

Moderate & high risk drinking & all cause mortality

Anything more than occasional drinking & cancer mortality

High risk drinking only with CV mortality

Key Results

- No health or socioeconomic risk factors = no total or cancer mortality risk from low to moderate risk drinking
- Presence of health risk factors makes low risk drinking translate to higher cancer mortality risk & moderate drinking translate to higher total mortality
- Presence of socioeconomic risk factors makes low risk drinking translate to higher cancer and total mortality risk
- Wine preference (80% or more of alcohol) and drinking only during meals associated with *lower* all cause and cancer mortality only amongst people with health or socioeconomic risk factors
- Small effect sizes for all of these estimates – hazard ratios with 95% confidence intervals between 1.01 and 1.63 (when risks higher) and between 0.78 and 0.97 (when risks lower)

Critique

- Strengths – large population sample, detailed baseline data, up to 15 years of follow-up, accounted for patients excluded from evaluation, appropriate testing for interaction with for sociodemographic, lifestyle, and diagnoses
    - Use of occasional drinkers instead of abstainers as control group – key difference from past research
- Limitations – only collected EtOH use data at baseline and not at intervals over time; patient self-reporting; possibility of residual confounders; > 90% of subjects white race/ethnicity

Case 2

A 47 year old woman taking tirzepatide for weight loss for the last year and a half wishes to discuss stopping the medication. She has tolerated it well, has vastly improved dietary quality and is walking 1-3 miles 5-6 days per week.

She has met her weight loss goal, down 40 lbs from a baseline of 230 lbs, and wants to maintain on her own.

How do you counsel her on how best to proceed?

Original Investigation

FREE

December 11, 2023

Continued Treatment With Tirzepatide for Maintenance of Weight Reduction in Adults With Obesity

The SURMOUNT-4 Randomized Clinical Trial

Louis J. Aronne, MD[1]; Naveed Sattar, MD[2]; Deborah B. Horn, DO, MPH[3]; et al

» Author Affiliations | Article Information

JAMA. 2024;331(1):38-48. doi:10.1001/jama.2023.24945

Continued Treatment With Tirzepatide for Maintenance of Weight Reduction in Adults With Obesity

The SURMOUNT-4 Randomized Clinical Trial

Study Type

Randomized controlled trial

Population

Adults, 70 sites, USA, Brazil, Taiwan & Argentina, BMI 30+ or 27+ with at least one weight-related complication

Trial enrollment required 36 weeks of open-label lead-in treatment period, had to tolerate reaching 10-15 mg weekly dose

Excluded: diabetes, other weight loss med in last 3 months, planned obesity surgery

Intervention

10-15 mg tirzepatide weekly for 52 weeks

Comparison

Weekly placebo injection

Outcomes

Primary: % change in body weight between week 36 and 88

Secondary: various weight maintenance & regain metrics

Figure 1. Flow of Participants in the SURMOUNT-4 Trial

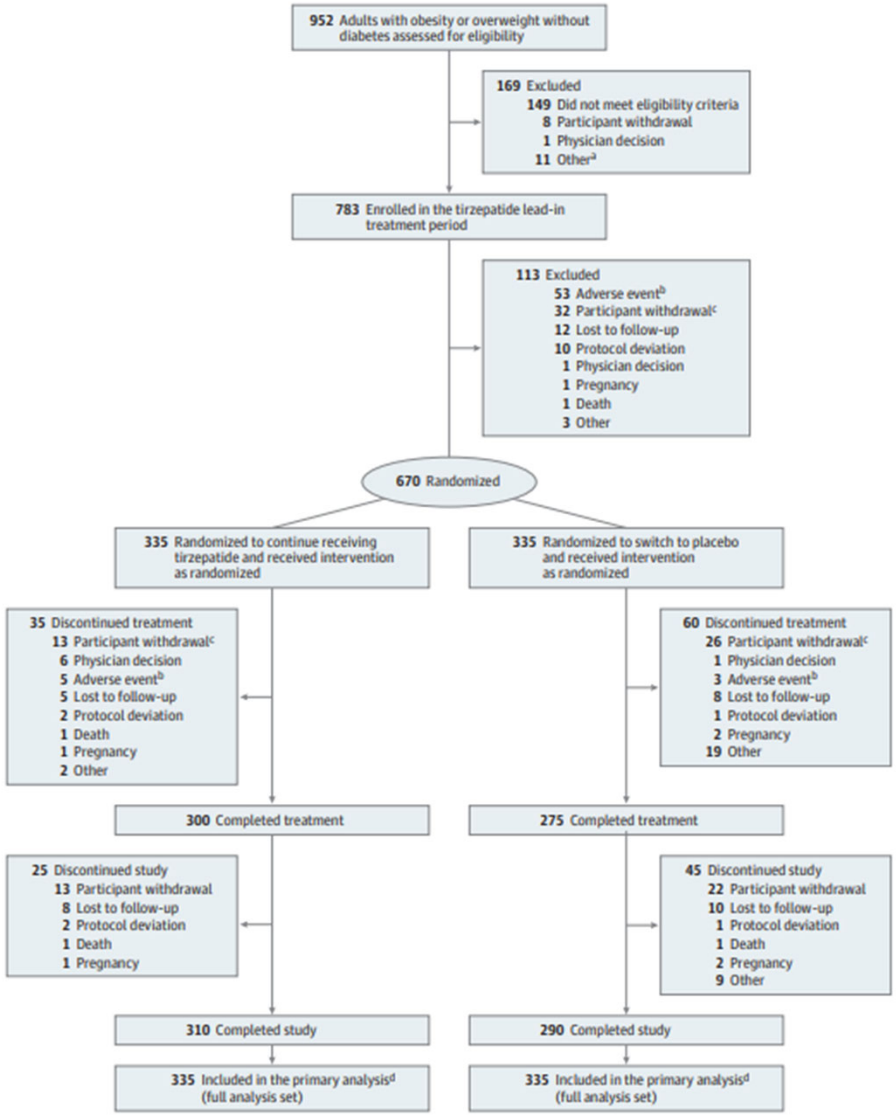


Figure 2. Effect of Tirzepatide vs Placebo on Body Weight and Waist Circumference

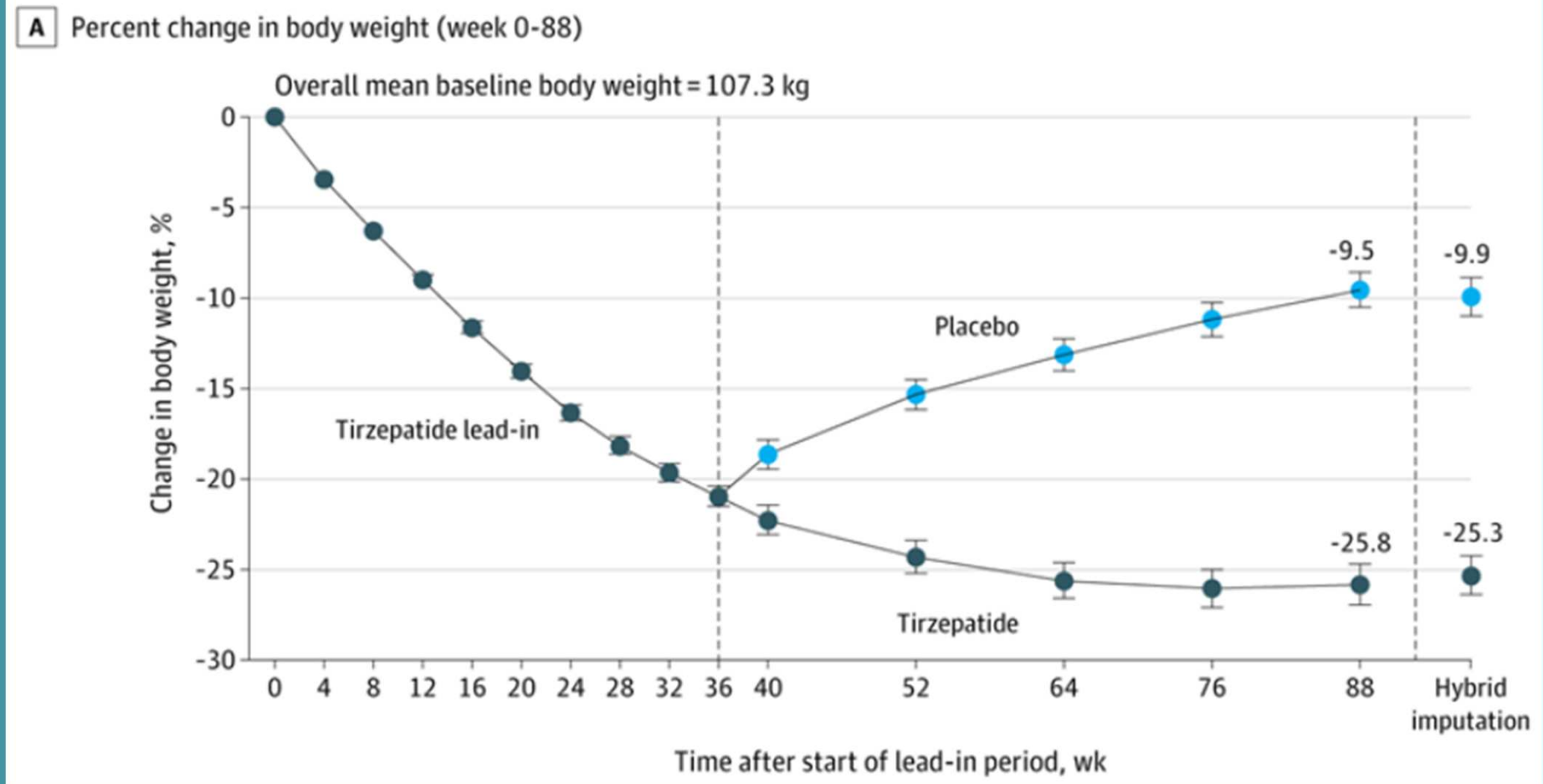


Table 2. Primary and Secondary End Points (Treatment Regimen Estimand)[a]

Outcome	Least-squares mean (95% CI)		Absolute difference (95% CI)[b]	*P* value
	Tirzepatide (n = 335)	Placebo (n = 335)		
Primary end point[c]				
Change in body weight from wk 36 to 88, %	−5.5 (−6.8 to −4.2)	14.0 (12.8 to 15.2)	−19.4 (−21.2 to −17.7)	<.001
Key secondary end points[c,d]				
Change in body weight from wk 36 to 88, kg	−4.7 (−5.7 to −3.6)	11.1 (10.1 to 12.2)	−15.8 (−17.3 to −14.3)	<.001
Change in waist circumference from wk 36 to 88, cm	−4.3 (−5.3 to −3.2)	7.8 (6.9 to 8.8)	−12.1 (−13.5 to −10.6)	<.001
Participants maintaining ≥80% of body weight lost during 36-wk lead-in at wk 88, No. (%)	300 (89.5)	55 (16.6)	44.0 (24.9 to 77.5)	<.001
Participants achieving body weight reduction from wk 0 to 88, No. (%)				
≥5%	326 (97.3)	235 (70.3)	20.3 (7.7 to 53.3)	<.001
≥10%	309 (92.1)	155 (46.2)	26.1 (12.6 to 54.1)	<.001
≥15%	282 (84.1)	87 (25.9)	32.6 (16.4 to 64.8)	<.001
≥20%	233 (69.5)	42 (12.6)	46.1 (20.7 to 102.9)	<.001
Change in body weight from wk 36 to 64, %	−5.4 (−6.3 to −4.6)	10.0 (9.0 to11.0)	−15.4 (−16.8 to −14.1)	<.001
Exploratory end point[e]				
Participants achieving ≥25% body weight reduction from wk 0 to 88, No. (%)	183 (54.5)	17 (5.0)	61.5 (25.9 to 146.1)	<.001

Table 3. Adverse Events During the Double-Blind (Week 36 to 88) and Safety Follow-Up Period (Safety Analysis Set)

Adverse events	No. (%) Tirzepatide (n = 335)	Placebo (n = 335)
Participants with ≥1 adverse event	202 (60.3)	187 (55.8)
Serious adverse events	10 (3.0)	10 (3.0)
Death[a,b]	1 (0.3)	1 (0.3)
Adverse events leading to treatment discontinuation[c]	6 (1.8)	3 (0.9)
Diarrhea	2 (0.6)	0
Cardiac failure congestive	1 (0.3)	0
Abdominal pain	1 (0.3)	0
Vomiting	1 (0.3)	0
Pancreatic enzymes increased	1 (0.3)	0
Adenocarcinoma of colon	0	1 (0.3)
Colorectal cancer	0	1 (0.3)
Non-Hodgkin lymphoma	0	1 (0.3)
Adverse events occurring in ≥5% of participants in any treatment group[c]		
COVID-19	47 (14.0)	50 (14.9)
Diarrhea	36 (10.7)	16 (4.8)
Nausea	27 (8.1)	9 (2.7)
Vomiting	19 (5.7)	4 (1.2)
Upper respiratory tract infection	8 (2.4)	18 (5.4)
Adverse events of special interest		
Severe or serious hepatic events	0	0
Malignancies	3 (0.9)	3 (0.9)
Adjudicated pancreatitis[b]	0	0
Adjudicated major adverse cardiovascular events[b]	3 (0.9)	0
Severe or serious arrhythmias and cardiac conduction disorders	0	0
Severe or serious gastrointestinal events[d]	6 (1.8)	1 (0.3)
Severe or serious acute gallbladder disease	0	3 (0.9)
Severe or serious kidney disorders	0	0
Severe or serious major depressive disorder or suicidal ideation	0	0
Severe or serious hypersensitivity	0	0
Hypoglycemia (blood glucose <54 mg/dL)	2 (0.6)	0
Other adverse events of interest[c]		
Cholelithiasis	1 (0.3)	1 (0.3)
Acute cholecystitis	0	3 (0.9)

Critique

- Strengths – random sequence generation (computer), randomization, double blinding, all participants accounted for, intention-to-treat analysis, thorough collection of adverse events data
    - Lead-in period helps capture real-world conditions

- Limitations – drug manufacturer sponsored, single trial, white predominant population
    - Exclusion criteria: diabetes (1 or 2), use of meds associated with weight loss or gain in last 3 months

Case 3

You're getting ready to discharge a 62 year old woman hospitalized for pyelonephritis with E coli bacteremia and sepsis.

She's received 3 days of IV ceftriaxone and 1 day of PO cefuroxime. Last fever was on day of admission, other vitals normalized by middle of day 2. She feels great, is ambulating, tolerating food well and wishes to go home.

How long do you treat with antibiotics?

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Antibiotic Treatment for 7 versus 14 Days in Patients with Bloodstream Infections

Author: The BALANCE Investigators, for the Canadian Critical Care Trials Group, the Association of Medical Microbiology and Infectious Disease Canada Clinical Research Network, the Australian and New Zealand Intensive Care Society Clinical Trials Group, and the Australasian Society for Infectious Diseases Clinical Research Network* Author Info & Affiliations

Published November 20, 2024 | DOI: 10.1056/NEJMoa2404991 |

Study Type

Randomized controlled trial, open label, noninferiority design

Population

Adults in 74 hospitals in 7 countries with positive blood culture with pathogen

Excluded *S. aureus*, certain infections requiring prolonged treatment like endocarditis, severe immunocompromise

Intervention

Short course antibiotics – 7 days (team chose antibiotic, dose, route, frequency)

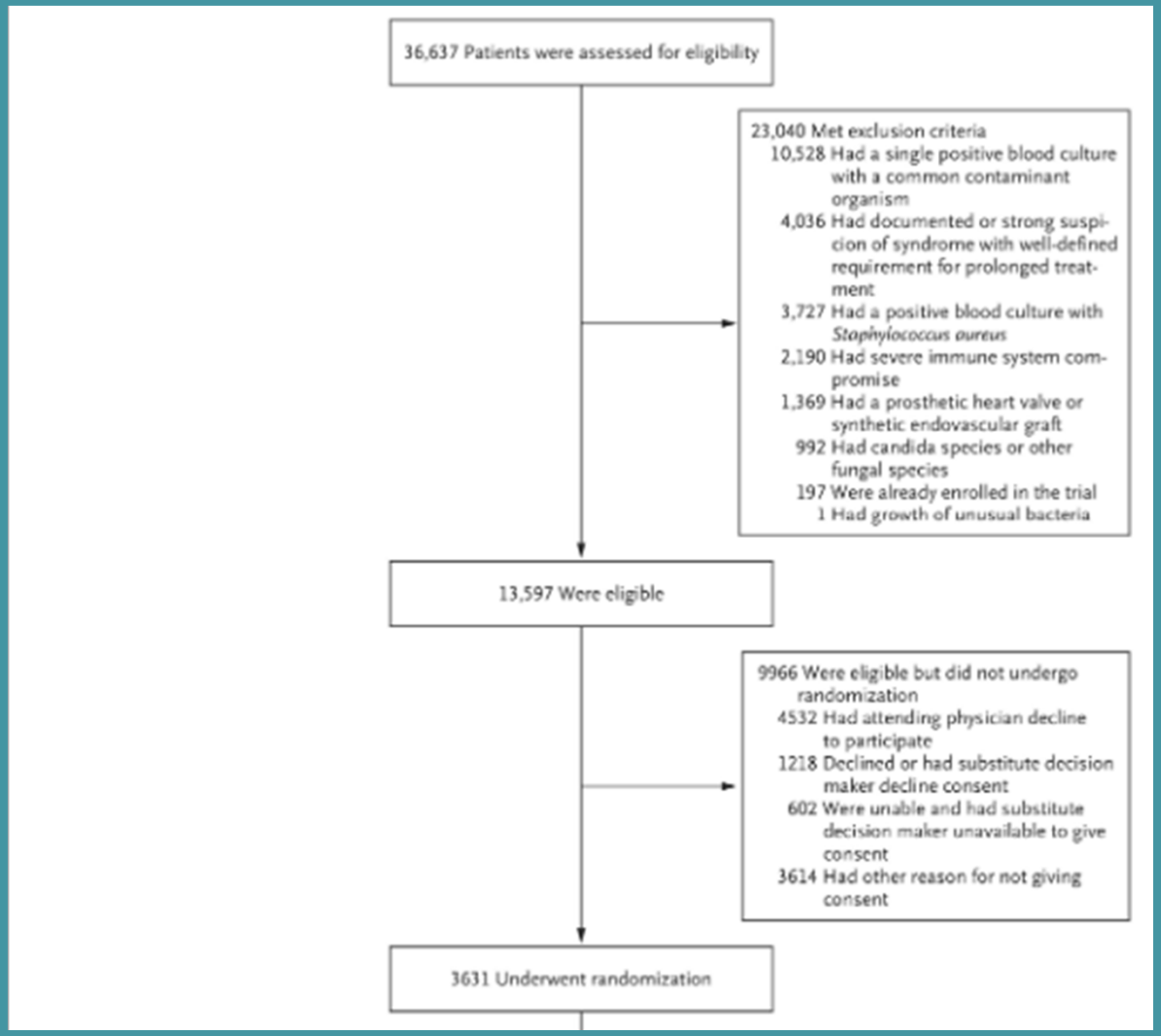
Comparison

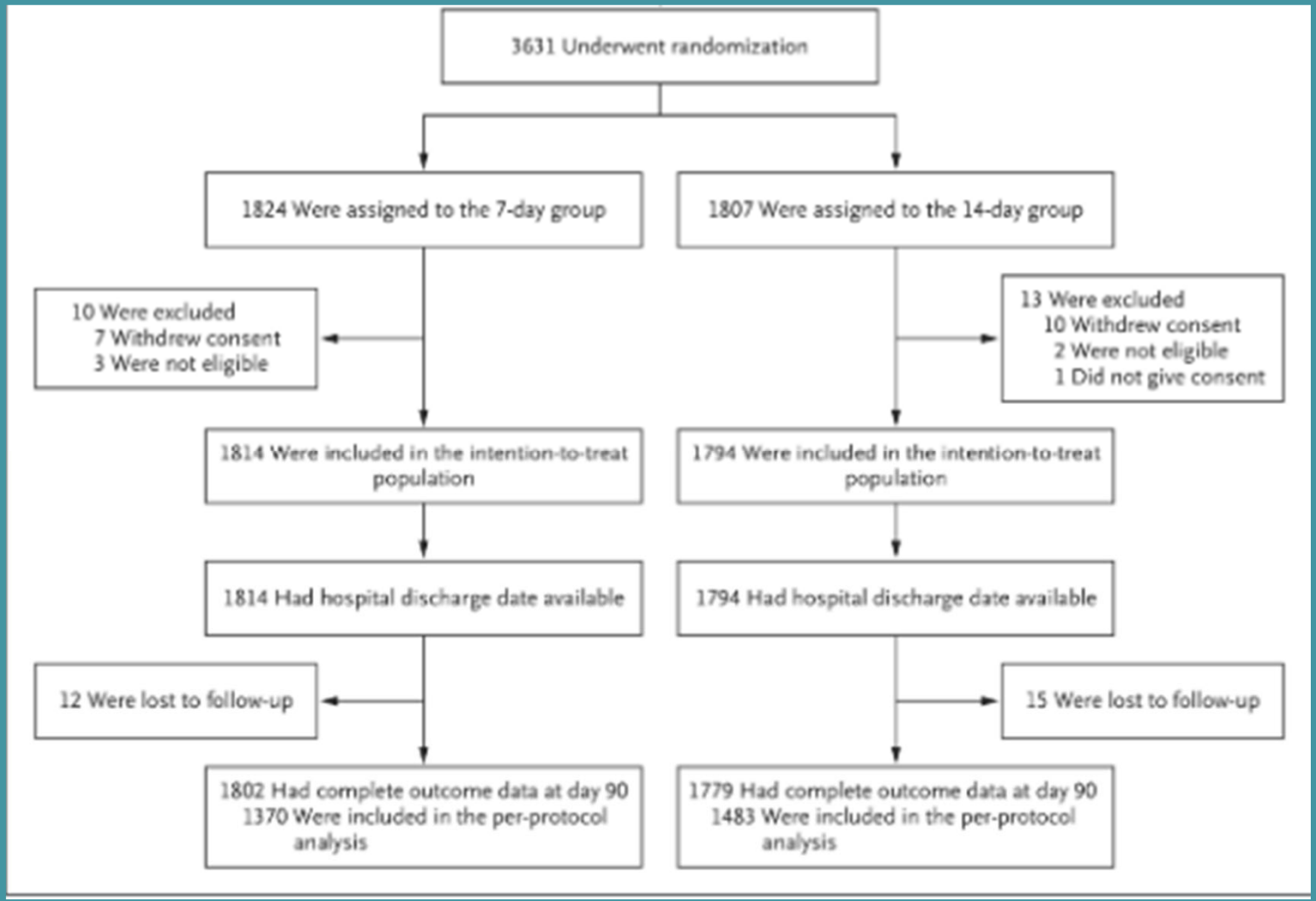
14 days of antibiotics (team chose antibiotic)

Outcomes

Mortality at 90 days (primary)

Many secondary outcomes


36,637 Patients were assessed for eligibility
23,040 Met exclusion criteria
10,528 Had a single positive blood culture with a common contaminant organism
4,036 Had documented or strong suspicion of syndrome with well-defined requirement for prolonged treatment
3,727 Had a positive blood culture with *Staphylococcus aureus*
2,190 Had severe immune system compromise
1,369 Had a prosthetic heart valve or synthetic endovascular graft
992 Had candida species or other fungal species
197 Were already enrolled in the trial
1 Had growth of unusual bacteria
13,597 Were eligible
9966 Were eligible but did not undergo randomization
4532 Had attending physician decline to participate
1218 Declined or had substitute decision maker decline consent
602 Were unable and had substitute decision maker unavailable to give consent
3614 Had other reason for not giving consent
3631 Underwent randomization


3631 Underwent randomization
1824 Were assigned to the 7-day group
1807 Were assigned to the 14-day group
10 Were excluded
7 Withdrew consent
3 Were not eligible
13 Were excluded
10 Withdrew consent
2 Were not eligible
1 Did not give consent
1814 Were included in the intention-to-treat population
1794 Were included in the intention-to-treat population
1814 Had hospital discharge date available
1794 Had hospital discharge date available
12 Were lost to follow-up
15 Were lost to follow-up
1802 Had complete outcome data at day 90
1370 Were included in the per-protocol analysis
1779 Had complete outcome data at day 90
1483 Were included in the per-protocol analysis

Characteristic	Overall (N=3608)	7-Day Group (N=1814)	14-Day Group (N=1794)
Male sex — no. (%)	1922 (53.3)	974 (53.7)	948 (52.8)
Median age (IQR) — yr	70 (59–80)	70 (58–80)	70 (59–80)
Median SOFA score on day 0 (IQR)†	4 (2–8)	4 (2–8)	5 (2–8)
Enrolled in ICU — no. (%)	1986 (55.0)	997 (55.0)	989 (55.1)
Enrolled in hospital ward — no. (%)	1622 (45.0)	817 (45.0)	805 (44.9)
Receiving mechanical ventilation — no. (%)	766 (21.2)	374 (20.6)	392 (21.9)

Characteristic	Overall (N=3608)	7-Day Group (N=1814)	14-Day Group (N=1794)
Source of acquisition of bacteremia — no. (%)			
Community	2722 (75.4)	1380 (76.1)	1342 (74.8)
Hospital ward	483 (13.4)	231 (12.7)	252 (14.0)
ICU	403 (11.2)	203 (11.2)	200 (11.1)
Source of bacteremia — no. (%)			
Urinary tract	1523 (42.2)	757 (41.7)	766 (42.7)
Intraabdominal or hepatobiliary	679 (18.8)	337 (18.6)	342 (19.1)
Lung	469 (13.0)	229 (12.6)	240 (13.4)
Vascular catheter	229 (6.3)	116 (6.4)	113 (6.3)
Skin, soft tissue, or both	187 (5.2)	104 (5.7)	83 (4.6)
Other	67 (1.9)	37 (2.0)	30 (1.7)
Undefined or unknown	454 (12.6)	234 (12.9)	220 (12.3)

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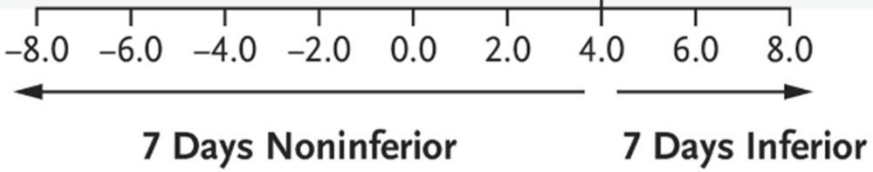
Characteristic	Overall (N=3608)	7-Day Group (N=1814)	14-Day Group (N=1794)
Most commonly isolated pathogens in blood cultures — no. (%)‖			
Escherichia coli	1582 (43.8)	805 (44.4)	777 (43.3)
Klebsiella species	552 (15.3)	273 (15.0)	279 (15.6)
Enterococcus species	250 (6.9)	119 (6.6)	131 (7.3)
Coagulase-negative staphylococci	174 (4.8)	81 (4.5)	93 (5.2)
Pseudomonas species	170 (4.7)	80 (4.4)	90 (5.0)
Streptococcus pneumoniae	164 (4.5)	86 (4.7)	78 (4.3)
Enterobacter species	157 (4.4)	80 (4.4)	77 (4.3)
Proteus species	133 (3.7)	58 (3.2)	75 (4.2)
Serratia species	86 (2.4)	38 (2.1)	48 (2.7)
S. pyogenes	74 (2.1)	39 (2.1)	35 (2.0)
S. agalactiae	75 (2.1)	40 (2.2)	35 (2.0)
Number and type of organisms — no. (%)			
Monomicrobial, gram-negative	2562 (71.0)	1299 (71.6)	1263 (70.4)
Monomicrobial, gram-positive	625 (17.3)	323 (17.8)	302 (16.8)
Polymicrobial	421 (11.7)	192 (10.6)	229 (12.8)

Analysis	7 Days	14 Days	Risk Difference (95% CI)
	no. of events/total no.		*percentage points*
Intention-to-treat	261/1802	286/1779	−1.6 (−4.0 to 0.8)
Per-protocol	178/1370	222/1483	−2.0 (−4.5 to 0.6)
Modified intention-to-treat	247/1788	272/1765	−1.6 (−3.9 to 0.7)



7-day group

- 14.5% mortality at 90 days in intention - to-treat analysis
- 13% in per-protocol analysis
- 23.9 % protocol nonadherence (mainly longer courses)
- Median Rx length 8 days (7-11 interquartile range)

14-day group

- 16.1% mortality in intention-to-treat analysis
- 15% in per-protocol analysis
- 16.5% protocol nonadherence (5.8% shorter, 10.7% longer courses)
- Median Rx length 14 days (14-15)

Critique

- Strengths – random sequence generation, randomization, groups well matched at baseline, all participants accounted for
  - intention-to-treat and per-protocol analysis both conducted for noninferiority design,with small noninferiority margin (4%)
  - blinding through treatment day 7
  - ICU and ward settings; diversity of primary infection sites and microbes
  - reasonable, objective and hard clinical primary outcome
- Limitations – no blinding beyond day 7; nonadherence rates

Case 4

You're seeing a 14 year old male in the ER for acute RLQ pain and vomiting.

Ultrasound was available and suggested acute appendicitis

You are considering offering antibiotics as an option for treatment while you await surgical consultation.

Appendicectomy versus antibiotics for acute uncomplicated appendicitis in children: an open-label, international, multicentre, randomised, non-inferiority trial

Shawn D St Peter, Janelle R Noel-MacDonnell, Nigel J Hall, Simon Eaton, Janne S Suominen, Tomas Wester, Jan F Svensson, Markus Almström, E Pete Muenks, Marianne Beaudin, Nelson Piché, Mary Brindle, Ali MacRobie, Richard Keijzer, Helene Engstrand Lilja, Ann-Marie Kassa, Tim Jancelewicz, Andreana Butter, Jacob Davidson, Erik Skarsgard, Yap Te-Lu, Shireen Nah, Andrew R Willan, Agostino Pierro

The Lancet

Volume 405, Issue 10474, 18–24 January 2025, Pages 233-240

Appendicectomy versus antibiotics for acute uncomplicated appendicitis in children: an open-label, international, multicentre, randomised, non-inferiority trial

Study Type

Randomized clinical trial

Noninferiority design – 20% inferiority margin

Population

Kids 5-16 with simple appendicitis – USA, Sweden, Singapore, Canada, Finland

Exclusion: suspected perforation, mass or phlegmon, pregnant, antibiotics to at least 2 doses, malignancy, prior appendicitis

Intervention

Antibiotics (based on standards of facility) for 12 hours – 2 days in-house, then 10 day Rx amox-clav or cipro-metronidazole

Comparison

Laparoscopic appendectomy

Outcomes

Treatment failure – in Abx group, defined as need for appendectomy within 1 year

- In appendectomy group – normal appendix during surgery, surgical complication requiring general anesthesia within 1 year

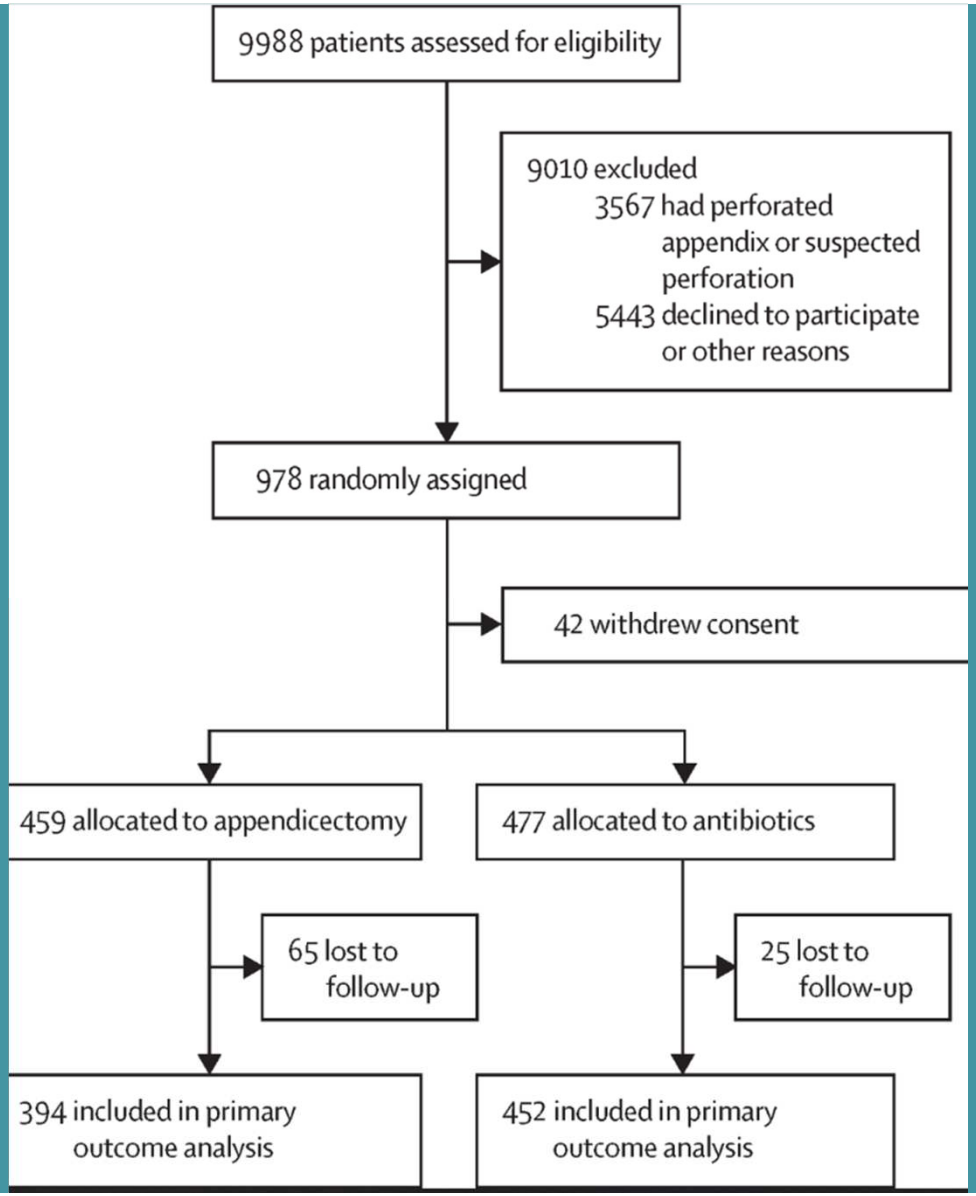

9988 patients assessed for eligibility
9010 excluded
3567 had perforated appendix or suspected perforation
5443 declined to participate or other reasons
978 randomly assigned
42 withdrew consent
459 allocated to appendicectomy
477 allocated to antibiotics
65 lost to follow-up
25 lost to follow-up
394 included in primary outcome analysis
452 included in primary outcome analysis

Table 2. Breakdown of primary outcomes

	Treatment failure, n (%)
Appendicectomy group (n=394)	
Normal pathology	27 (7%)
Complication requiring general anaesthetic within 1 year*	1 (<1%)
Antibiotic group (n=452)	
Failure of initial antibiotic treatment†	72 (16%)
Recurrence and subsequent appendicectomy	81 (18%)

Data are from the population with 12-month follow-up data.

Antibiotics inferior to appendectomy – 34% failure rate vs 7%
Absolute difference 26.7%, 90% confidence interval 22.4-30.9%

Critique

- Strengths – random sequence generation, randomization, explicit & rational noninferiority design; findings consistent with the previous adult RCT on this (CODA trial); no industry funding (no funding period)
- Limitations – no blinding possible; did not track reasons for declining entry into trial

  - Consent process carried out by residents

  - loss of patients to follow-up, more in appendectomy group

Case 5

You're in a wellness visit with a 51 year old woman who wishes to discuss an anti-inflammatory diet for a variety of reasons. She's specifically concerned about ultra-processed foods.

Her mother has hand arthritis and she believes she is starting to manifest it herself.
She medium well-controlled anxiety for which she takes sertraline and works with a therapist.
She takes lisinopril for HTN and has a strong family Hx of both T2DM and ASCVD.

NOVA Classification

- Foods categorized into 4 groups
- Widely used, though not without critiques

Group 1. Unprocessed or minimally processed foods

Unprocessed (or natural) foods are edible parts of plants (seeds, fruits, leaves, stems, roots) or of animals (muscle, offal, eggs, milk), and also fungi, algae and water, after separation from nature. Minimally processed foods are natural foods altered by processes that include removal of inedible or unwanted parts, and drying, crushing, grinding, fractioning, filtering, roasting, boiling, non-alcoholic fermentation, pasteurization, refrigeration, chilling, freezing, placing in containers and vacuum-packaging. These processes are designed to preserve natural foods, to make them suitable for storage, or to make them safe or edible or more pleasant to consume. Many unprocessed or minimally processed foods are prepared and cooked at home or in restaurant kitchens in combination with processed culinary ingredients as dishes or meals.

Source: Monteiro CM et al. Public Health Nutr. 2017;21(1):5-17.

Group 2. Processed culinary ingredients

Processed culinary ingredients, such as oils, butter, sugar and salt, are substances derived from Group 1 foods or from nature by processes that include pressing, refining, grinding, milling and drying. The purpose of such processes is to make durable products that are suitable for use in home and restaurant kitchens to prepare, season and cook Group 1 foods and to make with them varied and enjoyable hand-made dishes and meals, such as stews, soups and broths, salads, breads, preserves, drinks and desserts. They are not meant to be consumed by themselves, and are normally used in combination with Group 1 foods to make freshly prepared drinks, dishes and meals.

Source: Monteiro CM et al. Public Health Nutr. 2017;21(1):5-17.

Group 3. Processed foods

Processed foods, such as bottled vegetables, canned fish, fruits in syrup, cheeses and freshly made breads, are made essentially by adding salt, oil, sugar or other substances from Group 2 to Group 1 foods. Processes include various preservation or cooking methods, and, in the case of breads and cheese, non-alcoholic fermentation. Most processed foods have two or three ingredients, and are recognizable as modified versions of Group 1 foods. They are edible by themselves or, more usually, in combination with other foods. The purpose of processing here is to increase the durability of Group 1 foods, or to modify or enhance their sensory qualities.

Source: Monteiro CM et al. Public Health Nutr. 2017;21(1):5-17.

Group 4. Ultra-processed foods

Ultra-processed foods, such as soft drinks, sweet or savoury packaged snacks, reconstituted meat products and pre-prepared frozen dishes, are not modified foods but formulations made mostly or entirely from substances derived from foods and additives, with little if any intact Group 1 food.

Ingredients of these formulations usually include those also used in processed foods, such as sugars, oils, fats or salt. But ultra-processed products also include other sources of energy and nutrients not normally used in culinary preparations. Some of these are directly extracted from foods, such as casein, lactose, whey and gluten. Many are derived from further processing of food constituents, such as hydrogenated or interesterified oils, hydrolysed proteins, soya protein isolate, maltodextrin, invert sugar and high-fructose corn syrup.

Source: Monteiro CM et al. Public Health Nutr. 2017;21(1):5-17.

Additives in ultra-processed foods include some also used in processed foods, such as preservatives, antioxidants and stabilizers. Classes of additives found only in ultra-processed products include those used to imitate or enhance the sensory qualities of foods or to disguise unpalatable aspects of the final product. These additives include dyes and other colours, colour stabilizers; flavours, flavour enhancers, non-sugar sweeteners; and processing aids such as carbonating, firming, bulking and anti-bulking, de-foaming, anti-caking and glazing agents, emulsifiers, sequestrants and humectants.

The overall purpose of ultra-processing is to create branded, convenient (durable, ready to consume), attractive (hyper-palatable) and highly profitable (low-cost ingredients) food products designed to displace all other food groups. Ultra-processed food products are usually packaged attractively and marketed intensively.

Source: Monteiro CM et al. Public Health Nutr. 2017;21(1):5-17.

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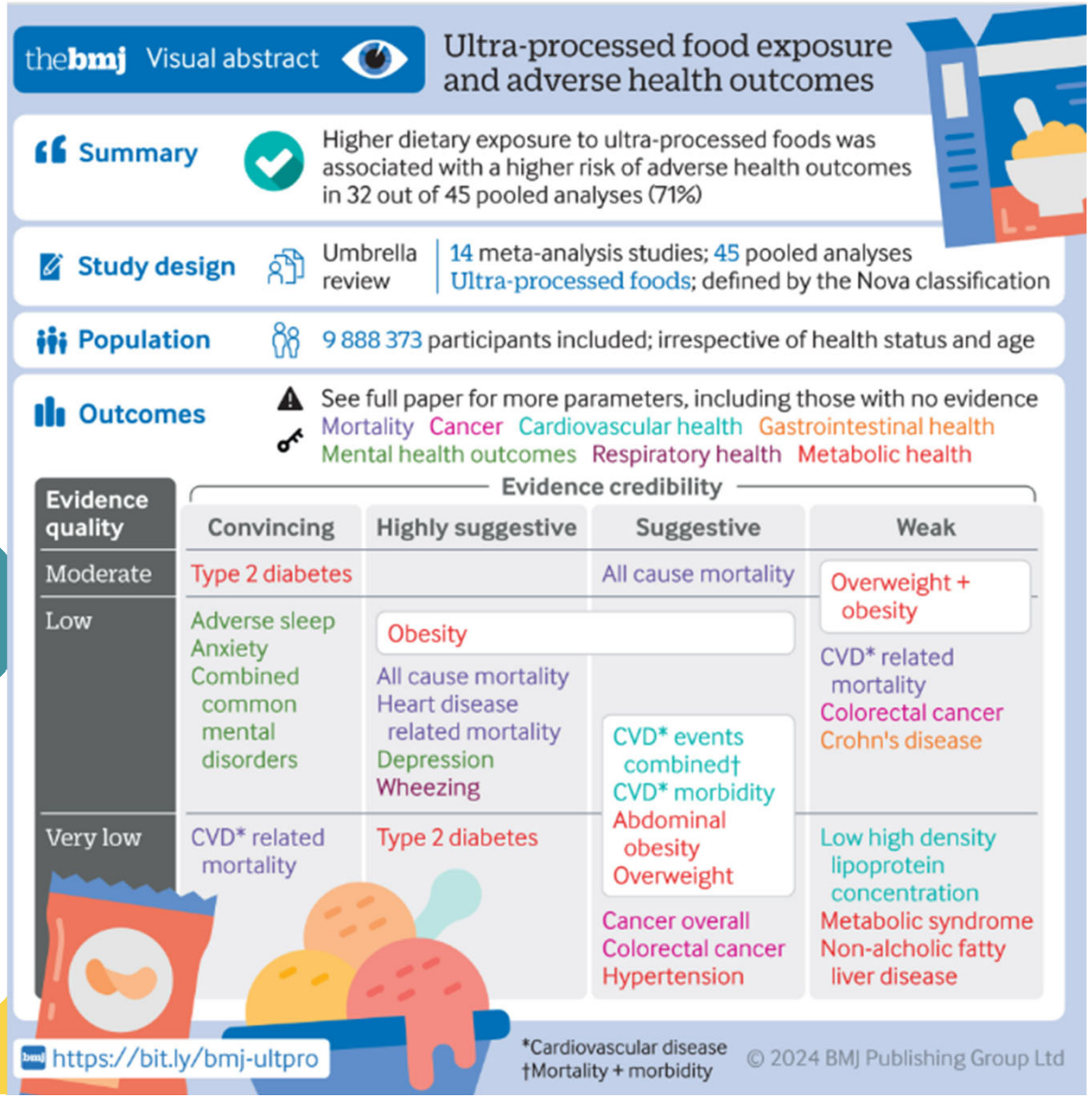
Research

Ultra-processed food exposure and adverse health outcomes: umbrella review of epidemiological meta-analyses

BMJ 2024 ; 384 doi: https://doi.org/10.1136/bmj-2023-077310 (Published 28 February 2024)


thebmj Visual abstract
Ultra-processed food exposure and adverse health outcomes
Summary
Higher dietary exposure to ultra-processed foods was associated with a higher risk of adverse health outcomes in 32 out of 45 pooled analyses (71%)
Study design
Umbrella review
14 meta-analysis studies; 45 pooled analyses
Ultra-processed foods; defined by the Nova classification
Population
9 888 373 participants included; irrespective of health status and age
Outcomes
See full paper for more parameters, including those with no evidence
Mortality Cancer Cardiovascular health Gastrointestinal health
Mental health outcomes Respiratory health Metabolic health
Evidence credibility
Evidence quality
Convincing
Highly suggestive
Suggestive
Weak
Moderate
Type 2 diabetes
All cause mortality
Overweight + obesity
Low
Adverse sleep
Anxiety
Combined common mental disorders
Obesity
All cause mortality
Heart disease related mortality
Depression
Wheezing
CVD* events combined†
CVD* morbidity
Abdominal obesity
Overweight
CVD* related mortality
Colorectal cancer
Crohn's disease
Very low
CVD* related mortality
Type 2 diabetes
Cancer overall
Colorectal cancer
Hypertension
Low high density lipoprotein concentration
Metabolic syndrome
Non-alcholic fatty liver disease
https://bit.ly/bmj-ultpro
*Cardiovascular disease
†Mortality + morbidity
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Dose-response relations

between greater exposure to ultra-processed foods and the risk of adverse health outcomes

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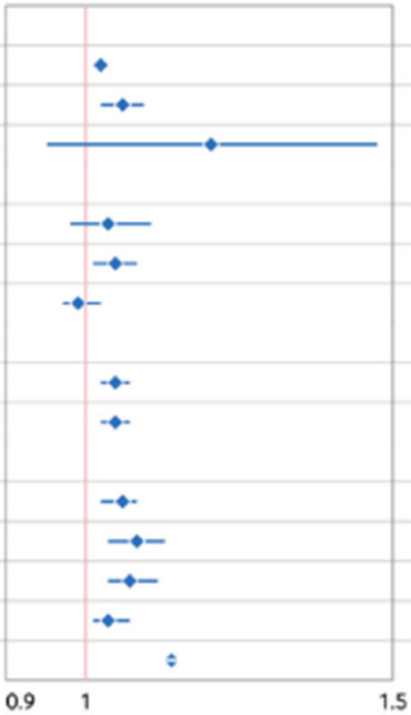
Outcome	Equivalent odds ratio (95% CI)	Equivalent odds ratio (95% CI)	k	Credibility	GRADE
Mortality					
All cause mortality (dose)	1.02 (1.01 to 1.03)		9	III	Moderate
Cardiovascular disease related mortality (dose)	1.05 (1.02 to 1.08)		5	IV	Low
Heart disease related mortality (dose)	1.18 (0.95 to 1.47)		2	V	Low
Cancer					
Breast cancer (dose)	1.03 (0.98 to 1.09)		3	V	Low
Colorectal cancer (dose)	1.04 (1.01 to 1.07)		5	IV	Low
Prostate cancer (dose)	0.99 (0.97 to 1.02)		3	V	Moderate
Cardiovascular Health					
Cardiovascular disease events combined (dose)	1.04 (1.02 to 1.06)		8	III	Low
Cardiovascular disease morbidity (dose)	1.04 (1.02 to 1.06)		2	III	Low
Metabolic Health					
Abdominal obesity (dose)	1.05 (1.02 to 1.07)		6	III	Low
Obesity (dose)	1.07 (1.03 to 1.11)		7	III	Low
Overweight (dose)	1.06 (1.03 to 1.10)		2	III	Low
Overweight + obesity (dose)	1.03 (1.01 to 1.06)		3	IV	Moderate
Type 2 diabetes (dose)	1.12 (1.11 to 1.13)		7	I	Moderate



Article DOI: 10.1136/bmj-2023-077310

Case 6

The same 51 year old woman who wished to discuss the anti-inflammatory diet had a battery of tests at a wellness screening event. She wants your take on her results and whether anything needs to be done about her cholesterol.

BP – 128/78, BMI 26.5

CMP – Creatinine 0.9, glucose 87

Lipids – total cholesterol 228, HDL 68, LDL 140

Hemoglobin A1c - 5.2%

Point-of-Care Guides

PREVENT Equations for Assessing Cardiovascular Risk

Mark H. Ebell, MD, MS

Point-of-Care Guides

PREVENT Equations for Assessing Cardiovascular Risk

Mark H. Ebell, MD, MS

Article Type

Narrative review of observational study (deriving and validating a clinical tool) and online calculator

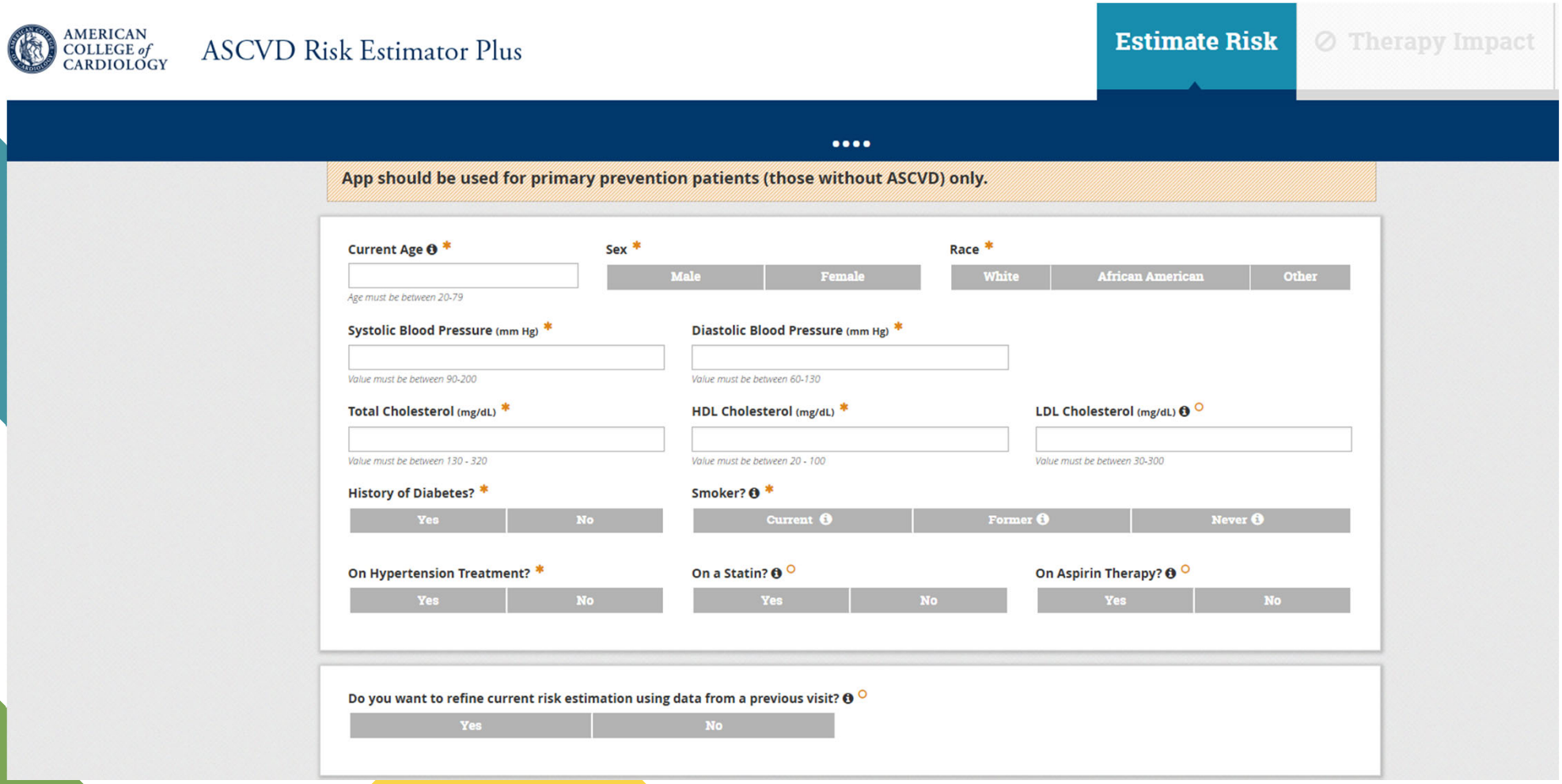
Population

6+ million US adults age 30-79 from 46 observational cohorts, 1992-2017

Outcomes

ASCVD (composite of MI, stroke, and CV death) – 10 and 30 year risk

CHF – 10 and 30 year risk



Source: American College of Cardiology 2023. https://tools.acc.org/ascvd-risk-estimator-plus/#!/calculate/estimate/
Accessed 21 Jan 2025.

Point-of-Care Guides

PREVENT Equations for Assessing Cardiovascular Risk

Mark H. Ebell, MD, MS

- **Critiques of pooled cohort equations / ASCVD calculator:**
  - Tends to overestimate risk, can be by 40%
  - Inclusion of race
  - Risk calculation primarily 10 years – statins are usually much longer term in primary prevention
- **Advantages of PREVENT™ Calculator:**
  - Huge data sets used to derive and validate
  - Includes additional risk factors – HgbA1c, creatinine, urine albumin:Cr, and social deprivation index based on zip code
  - 10 and 30-year estimates
  - CHF added as an outcome

PREVENT™ Calculator

American Heart Association 2025. https://professional.heart.org/en/guidelines-and-statements/prevent-calculator. Accessed 21 Jan 2025.

Case 7

A healthy 74 year old woman has had 4 bouts of acute cystitis in the last 6 months and numerous more over the years since menopause.

Vaginal estrogen was not helpful during a prolonged stretch of recurrent UTIs in her 60s and she does not wish to take daily preventive antibiotics.

Is there anything else that could help?

Clinical Infectious Diseases

MAJOR ARTICLE

IDSA Infectious Diseases Society of America

hivma hiv medicine association

OXFORD

Effectiveness of Prophylactic Oral and/or Vaginal Probiotic Supplementation in the Prevention of Recurrent Urinary Tract Infections: A Randomized, Double-Blind, Placebo-Controlled Trial

Varsha Gupta,[1] Paola Mastromarino,[2] and Ritu Garg[3]

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Clinical Infectious Diseases
MAJOR ARTICLE

Effectiveness of Prophylactic Oral and/or Vaginal Probiotic Supplementation in the Prevention of Recurrent Urinary Tract Infections: A Randomized, Double-Blind, Placebo-Controlled Trial

Study Type

Randomized controlled trial, double blind, single center in India

Population

Women 18-45, premenopausal, 3+ uncomplicated UTI in last year, sterile culture at baseline

Inclusion: negative pregnancy test at trial screening, agreed to use contraception

Exclusion: any Abx in last 2 weeks, abnormal liver/kidney tests, systemic steroids, immunosuppressives, severe systemic illness

Intervention

3 groups:

G2: oral probiotic (lactic acid bacteria & bifidobacteria) + vaginal placebo

G3: vaginal probiotic (lactobacilli) + oral placebo

G4: oral and vaginal probiotic

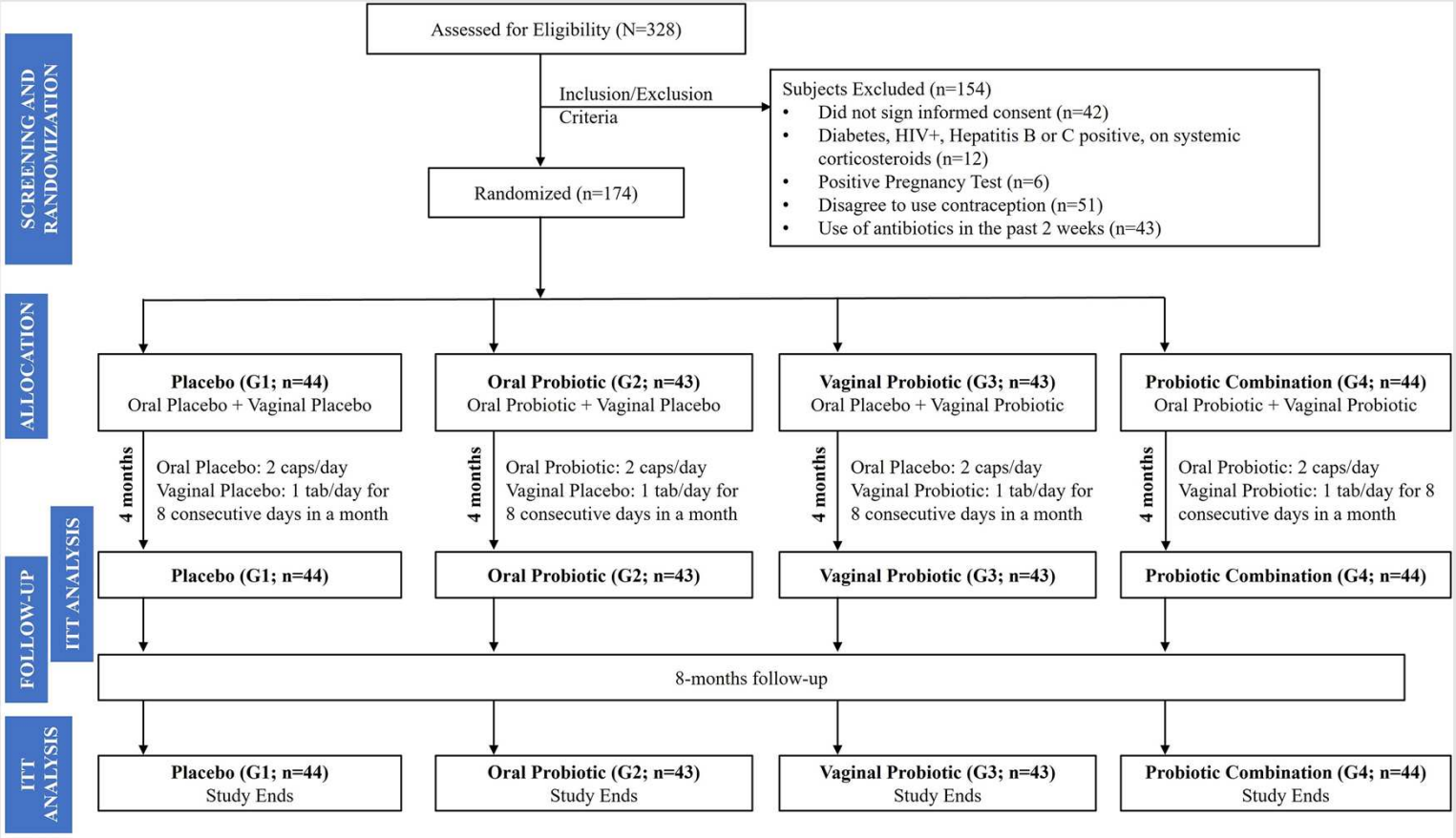
Comparison

G1 group: oral and vaginal placebo

Outcomes

Incidence and number of recurrences of symptomatic UTI at 4 and 12 months

Figure 1. Patient randomization. Abbreviations: G, group; HIV, human immunodeficiency virus; ITT, Intention-to-treat.



Clin Infect Dis, Volume 78, Issue 5, 15 May 2024, Pages 1154–1161, https://doi.org/10.1093/cid/ciad766

Table 2. Number of Symptomatic Urinary Tract Infection Recurrences at 4 Months and 12 Months in the Treatment Groups

Open in new tab

Parameter	Group[a]	Number of UTI Recurrences	Mean UTI Recurrences	*F*-value	*P* Value
Number of symptomatic UTI recurrences at 4 mo	G1	31	2.10 ± 0.97	15.6	<.001
	G2	27	1.63 ± 0.85[b]		
	G3	18	1.06 ± 0.74[b,c]		
	G4	14	1.07 ± 0.79[b,c]		
Number of symptomatic UTI recurrences at 12 mo	G1	42	3.83 ± 1.12	27.3	<.001
	G2	34	3.38 ± 0.92		
	G3	27	2.18 ± 0.74[b,c]		
	G4	24	2.04 ± 0.62[b,c]		

Table 3. Incidence of Symptomatic Urinary Tract Infections at 4 Months and 12 Months in the Treatment Groups

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Parameter	Group[a]	Number of Patients With Urinary Tract Infection Recurrence (%)	Relative Risk (95% Confidence Interval)	*P* Value
Incidence at 4 mo	G1	31/44 (70.45)	1 (reference)	…
	G2	27/43 (61.36)	0.891 (0.66–1.20)	0.754
	G3	18/43 (40.91)	0.594 (0.39–0.88)	.0109[b]
	G4	14/44 (31.82)	0.452 (0.28–0.72)	.0010[b]
Incidence at 12 mo	G1	42/44 (95.45)	1 (reference)	…
	G2	34/43 (77.27)	0.828 (0.70–0.97)	.0269[c]
	G3	27/43 (61.36)	0.658 (0.51–0.83)	.0006[c]
	G4	24/44 (54.55)	0.571 (0.43–0.75)	.0001[c]

Critique

- Strengths – random sequence generation, randomization, blinding, patient-oriented clinical outcomes
- Limitations – small, single center trial in India; minimal discussion of adverse effects & no evidence they were systematically asked about;

  - nature of the intervention & American marketplace is a question

References

- American College of Cardiology. ASCVD Risk Estimator Plus. American College of Cardiology Foundation. Aug 2023. https://tools.acc.org/ascvd-risk-estimator-plus/#!/calculate/estimate/. Accessed 21 Jan 2025.
- American Heart Association ® Professional Heart Daily. The American Heart Association PREVENT ™ Online Calculator. The American Heart Association. 2025. https://professional.heart.org/en/guidelines-and-statements/prevent-calculator. Accessed 21 Jan 2025.
- Aronne J, Sattar N, Horn DB, et al. **Continued treatment with tirzepatide for maintenance of weight reduction in adults with obesity: the SURMOUNT-4 randomized clinical trial.** JAMA. 2024;331(1):38-48.
- The BALANCE Investigators for the Canadian Critical Care Trials Group, the Association of Medical Microbiology and Infectious Disease Canada Clinical Research Network, the Australian and New Zealand Intensive Care Society Clinical Trials Group, and the Australasian Society for Infectious Diseases Clinical Research Network. **Antibiotic treatment for 7 versus 14 days in patients with bloodstream infections.** New Engl J Med. 2024 Nov 20. doi:10.1056/NEJMoa2404991. Online ahead of print.
- Bryazka D, Reitsma MB, Griswold MG, et al. Population-level risks of alcohol consumption by amount, geography, age, sex, and year: a systematic analysis for the Global Burden of Disease Study 2020. Lancet. 2022;400(10347):185-235.
- Ebell MH. **PREVENT equations for assessing cardiovascular risk**. *Am Fam Physician.* 2024;110(3):305-306
- Gupta V, Mastromarino P, Garg R. **Effectiveness of prophylactic oral and/or vaginal probiotic supplementation in the prevention of recurrent urinary tract infections: a randomized, double-blind, placebo-controlled trial**. Clin Infect Dis. 2024;78(5):1154-1161
- Lane MM, Gamage E, Du S, et al. **Ultra-processed food exposure and adverse health outcomes: umbrella review of epidemiological meta-analyses**. BMJ 2024;384:e077310.

References

- Monteiro CA, Cannon G, Moubarac J-C, Levy RB, Louzada MLC, Jaime PC. The UN decade of nutrition, the NOVA food classification and the trouble with ultra-processing. *Public Health Nutri*. 2017;21(1):5-17.
- National Institute on Alcohol Abuse and Alcoholism. Alcohol's effects on health: research-based information on drinking and its impact. National Institutes of Health. Accessed 21 January 2025. https://www.niaaa.nih.gov/alcohols-effects-health/what-standard-drink
- Ortolá R, Sotos-Prieto M, García-Esquinas E, et al. **Alcohol consumption patterns and mortality among older adults with health-related or socioeconomic risk factors**. JAMA Network Open. 2024;7(8):e2424495.
- St Peter SD, Noel-McDonnell HR, Hall NJ, et al. **Appendectomy versus antibiotics for acute uncomplicated appendicitis in children: an open label, international, multi-centre, randomized, noninferiority trial**. *Lancet* 2025;405(10474): 233-240.
- U.S. Centers for Disease Control and Prevention. Alcohol use. U.S. Department of Health and Human Services. Accessed 21 January 2025. https://www.cdc.gov/alcohol/about-alcohol-use/moderate-alcohol-use.html

Questions?