lead to increased mutual understanding of CER principles, enhanced appreciation for diverse forms of expertise, and strengthen trust.

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Comparative cardiovascular risk burden across autoimmune diseases: Evidence from a primary care cohort

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OBJECTIVES/GOALS: To generate phenotype-specific insights that support tailored prevention strategies and advance precision cardiovascular risk management within Gulf health systems. METHODS/STUDY POPULATION: We analyzed collected primary care records and retained 14,616 complete cases. A composite CV risk index was constructed using a Framingham-based general CVD algorithm from standard clinical variables. "High risk" was defined as the top cohort quartile. Between-group differences were tested with the Kruskal–Wallis test followed by Dunn's multiple comparisons with Benjamini–Hochberg adjustment. We then modeled (i) the binary high-risk outcome using multivariable logistic regression and (ii) the continuous index using linear regression. Adjusted models included body mass index (BMI), log(ESR + 1), log(CRP + 1), and statin use; variables embedded in the index were not re-adjusted to avoid over-adjustment. RESULTS/ANTICIPATED RESULTS: The proportion above the high-index threshold differed by group: RA 29.4%, no autoimmune 25.7%, multiple-autoimmune 23.9%, SLE 19.8%, and Hashimoto's 12.7%. The Kruskal–Wallis test was significant ($H=68.6$, $df=4$, $p<10-13$), with Dunn tests (BH-adjusted) showing RA > no autoimmune and SLE, and Hashimoto < all groups. In adjusted logistic regression, odds of high index were higher in RA (OR 1.20, 95% CI 1.06–1.37), lower in Hashimoto (OR 0.49, 95% CI 0.40–0.60), and not clearly different in SLE or multiple-autoimmune. Higher BMI (OR/unit 1.08), ESR (OR/log 1.06), and statin use (OR 4.97) were strongly associated. DISCUSSION/SIGNIFICANCE OF IMPACT: In a large primary care cohort, RA showed modestly higher CV risk than non-autoimmune patients after adjustment, while Hashimoto's showed lower burden. Findings support targeted control of risk factors, especially blood pressure, weight, and inflammation in autoimmune populations.

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Pregnancy outcomes following hormonal intrauterine device discontinuation: A prospective cohort study

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OBJECTIVES/GOALS: The objective is to determine the relationship between prior progestin intrauterine device (IUD) use, duration of use, and adverse pregnancy outcomes and also to examine the return-time to fertility and whether demographic factors modify the effect of IUD use on pregnancy outcomes. METHODS/STUDY POPULATION: This is a prospective cohort study of 600 pregnant adults between 10 and 28 weeks of gestation who have not delivered a fetus. We will compare participants with and without prior progestin IUD use. Participants are recruited via flyers posted in university-associated OB-GYN clinics and via the health portal, MyChart. Participants complete a comprehensive contraception, medical, and pregnancy history and receive compensation. Pregnancies are followed until 6 weeks post-delivery, and outcomes are collected via the electronic health record. Pregnancy outcomes will be analyzed using multivariable logistic regression with adjustment for confounders, with sensitivity analyses stratified by duration of prior progestin IUD use. RESULTS/ANTICIPATED RESULTS: We will characterize the prevalence and duration of progestin IUD use in the cohort and evaluate demographic factors associated with IUD use compared to other contraceptive methods. We will compare the rates of placental abnormalities, as well as miscarriage, preterm birth, hypertensive disorders of pregnancy, including preeclampsia and gestational hypertension, and other complications, between participants with prior progestin IUD use versus non-use. Among participants with prior IUD use, we will examine whether the risk of adverse pregnancy outcomes is associated with the length of use. We will also examine the time between the last contraceptive use and conception. DISCUSSION/SIGNIFICANCE OF IMPACT: An association between prior progestin IUD use and pregnancy outcomes would be a novel finding and will have clinical implications for how contraceptive history may inform counseling and reproductive care. We hope that this study will rationalize the need for well-powered, larger studies to investigate the robustness of our study findings.

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Dual roles of β2-adrenergic signaling in the progression of acute myeloid leukemia*

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OBJECTIVES/GOALS: To determine how loss of sympathetic nerves and β2-adrenergic receptor (Adrb2) signaling remodels the leukemic bone marrow niche, alters immune responses against leukemia, and influences acute myeloid leukemia (AML) progression. METHODS/STUDY POPULATION: AML was modeled using MLL-AF9-driven murine leukemia and human AML xenografts (MOLM-13 and patient-derived samples) in NOD scid gamma (NSG) mice. Sympathetic signaling was disrupted chemically with 6-hydroxydopamine or genetically using Adrb2 knockout mice. Leukemic burden,

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