

complex species ($n = 353$, 55.6%). There was a total of 4,363 ESBL infections from 2019 to 2023, and most were urine ($n = 3,550$, 81.4%) or blood specimens ($n = 457$, 10.5%). Most ESBL case-patients were female ($n = 3,030$, 69.4%) with a mean age of 61.2 years. The majority of isolates were identified as *Escherichia coli* ($n = 2,932$, 67.2%), followed by *Klebsiella pneumoniae* ($n = 368$, 8.4%). Validation results are pending, including sensitivity and specificity of the algorithms. DISCUSSION/SIGNIFICANCE OF IMPACT: Demographic characteristics of CRE and ESBL case-patients were similar to findings from traditional public health surveillance. The algorithms will supplement traditional surveillance methods, inform future epidemiological research using EHR data, as well as contribute to the development of standardized EHR-based definitions for CRE and ESBL.

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Anti-hypertensives identified as therapeutic candidates for uterine fibroids using genetically informed drug repurposing approaches*

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OBJECTIVES/GOALS: We aimed to discover treatment candidates for uterine fibroids, a common benign tumor with adverse impacts on quality of life. Repurposing already approved medications for fibroids can expedite treatment option expansion. Using genetic proxies, we identified novel fibroid drug candidates and estimated their effect on risk of fibroid diagnosis. METHODS/STUDY POPULATION: We performed a genetically predicted gene expression (GPGE) analysis using S-PrediXcan and GTEx tissue models with multi-ancestry genome-wide association study (GWAS) summary statistics of fibroids (cases = 74,294, controls = 465). There were 81 genes significantly associated with fibroid risk. Querying drug-gene interaction databases identified 56 approved medications that target these genes, including two antihypertensives, hydralazine, and spironolactone. Using independent multi-ancestry GWAS summary statistics ($N = 635,969$) for systolic (SBP) and diastolic blood pressure (DBP), we conducted GPGE analyses. Blood pressure (exposure) and fibroids (outcome) GPGE summary statistics in the same tissues were used for two-sample Mendelian randomization (MR) analyses to proxy medication effects. RESULTS/ANTICIPATED RESULTS: GPGE analyses identified hydralazine/tumor protein P53 (TP53) activity and spironolactone/thyroid hormone receptor beta (THRB) activity as drug-gene candidate pairs. Both drugs increase gene activity of their paired gene. Increased TP53 expression was associated with SBP in four tissues (exposure). The MR results indicated hydralazine use, proxied by increased TP53 expression, may reduce fibroid risk by 42% per standard deviation of gene expression (odds ratio [OR] = 0.58, $p = 1.43E-12$). Increased THRB expression was associated with DBP in eight tissues and were included in the MR (exposure). The MR results suggest spironolactone use, proxied by increased THRB expression, may reduce fibroid risk by 23% per standard deviation of gene expression (OR = 0.77, $p = 5.94E-6$). DISCUSSION/SIGNIFICANCE OF IMPACT: We provide biologically plausible evidence for repurposing hydralazine and spironolactone for reducing risk of fibroid diagnosis. Repurposing these hypertension medications could provide novel preventative

treatments for fibroids, particularly for individuals disproportionately affected by both conditions.

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Bridging research and practice: Investigating barriers and facilitators in the translational journey of transcranial magnetic stimulation

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OBJECTIVES/GOALS: This systematic review aims to identify and synthesize evidence on the barriers and facilitators impacting the implementation of transcranial magnetic stimulation (TMS) in clinical practice, enhancing understanding for improved adoption and efficacy. METHODS/STUDY POPULATION: This systematic review follows PRISMA guidelines to identify relevant literature on barriers and facilitators to TMS in North America. We conducted a comprehensive search of databases including PubMed, Scopus, and PsycINFO, targeting studies published from 2000 onward. Eligible studies include qualitative and quantitative research focusing on adults aged 18 years and older in the USA and Canada. Two independent reviewers screened titles, abstracts, and full texts, extracting data on barriers and facilitators related to TMS implementation. RESULTS/ANTICIPATED RESULTS: We anticipate identifying a diverse range of barriers and facilitators related to TMS implementation in North America. Expected barriers may include limited clinician knowledge, patient resistance, and logistical challenges in clinical settings. Facilitators could encompass supportive institutional policies, clinician training, and positive patient outcomes. The synthesis of findings will highlight key themes, guiding future research and practice. We aim to produce actionable recommendations for stakeholders, ultimately enhancing the effective integration of TMS in clinical care for adult populations. DISCUSSION/SIGNIFICANCE OF IMPACT: This review will provide crucial insights into the barriers and facilitators of TMS implementation, informing clinicians, policymakers, and researchers. By highlighting actionable strategies, it aims to enhance TMS accessibility and efficacy, ultimately improving patient outcomes and advancing neurotherapeutic practices in North America.

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Prevalence of port-site metastasis in laparoscopic surgeries for gynecologic cancers and its risk factors: A systematic review and meta analysis*

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OBJECTIVES/GOALS: Port-site metastasis (PSM), defined as the spread of malignancies to the abdominal wall at the site of surgical ports, poses a significant challenge in cancer management. The objective of this summary overview is to describe the prevalence of and risk factors associated with PSM in various gynecological cancers after laparoscopic surgery. METHODS/STUDY POPULATION: Study design: Systematic Review and Meta analysis Search strategy: All international databases, without language limitations, from January 1990 to December 2023. Inclusion/exclusion criteria: Cohort, case-control, or cross-sectional observational studies reporting the frequency of, or risk factors for PSM in young and