# Personalized medicine and nutrition in hepatology for preventing chronic liver disease in Mexico

## Abstract

Chronic liver disease is a global health issue. Patients with chronic liver disease require a fresh approach that focuses on the genetic and environmental factors that contribute to disease initiation and progression. Emerging knowledge in the fields of Genomic Medicine and Genomic Nutrition demonstrates differences between countries in terms of genetics and lifestyle risk factors such as diet, physical activity, and mental health in chronic liver disease, which serves as the foundation for the implementation of Personalized Medicine and Nutrition (PerMed-Nut) strategies. Most of the world's populations have descended from various ethnic groupings. Mexico's population has a tripartite ancestral background, consisting of Amerindian, European, and African lineages, which is common across Latin America's regional countries. The purpose of this review is to discuss the genetic and environmental components that could be incorporated into a PerMed-Nut model for metabolic-associated liver disease, viral hepatitis B and C, and hepatocellular carcinoma in Mexico. Additionally, the implementation of the PerMed-Nut approach will require updated medicine and nutrition education curricula. Training and equipping future health professionals and researchers with new clinical and investigative abilities focused on preventing liver illnesses in the field of genomic hepatology globally is a vision that clinicians and nutritionists should be concerned about.

**Keywords:**Genomex diet; Mexico; diet-related adaptive genes; genetics; genomic medicine in hepatology; hepatopathogenic diet; nutrients; training.

**Clinical predictors for mechanical ventilation assistance in Guillain-Barré syndrome**

**Abstract**

**Background:**Guillain-Barré syndrome (GBS) frequently leads to respiratory failure and autonomic dysfunction, resulting in approximately one-third of patients requiring mechanical ventilation.

**Objective:**This study aimed to identify clinical predictors for mechanical ventilation in patients with GBS.

**Methods:**This research was conducted from 2010 to 2021 using registries from a tertiary hospital in an upper middle-income Latin American country. Participants were categorized into two groups based on their ventilation status. Demographic data were collected, and independent predictors of the need for mechanical ventilation were determined through multivariate logistic regression analysis.

**Results:**Dysautonomic events occurred in 36% of the patients, with 17% requiring mechanical ventilation; the average duration of intubation was 1.16 ± 3.18 days. The multivariate analysis indicated that bulbar dysfunction significantly increased the likelihood of requiring mechanical ventilation by 19-fold (OR 18.67, 95% CI 5.85-59.42), followed by ophthalmoplegia, which increased the likelihood by sixfold (OR 5.68, 95% CI 1.28-25.19).

**Conclusion:**Bulbar dysfunction, dysautonomia, and lower Medical Research Council (MRC) scores were significant predictors of the need for mechanical ventilation in hospitalized GBS patients. These findings support the need for close monitoring and early admission to the intensive care unit (ICU) admission for at-risk patients.

**Keywords:**Guillain-Barré syndrome; acute autoimmune polyneuropathy; clinical predictor; mechanical ventilation; respiratory failure.

**Norepinephrine dose reporting: are we looking at different sides of the same coin?**

*No abstract available*

**Impact of treatment and clinical characteristics on the survival of children with medulloblastoma in Mexico**

**Abstract**

**Introduction:**Data on medulloblastoma outcomes and experiences in low- and middle-income countries, especially in Latin America, is limited. This study examines challenges in Mexico's healthcare system, focusing on assessing outcomes for children with medulloblastoma in a tertiary care setting.

**Methods:**A retrospective analysis was conducted, involving 284 patients treated at 21 pediatric oncology centers in Mexico.

**Results:**High-risk patients exhibited markedly lower event-free survival than standard-risk patients (43.5% vs. 78.3%, p<0.001). Influential factors on survival included anaplastic subtype (HR 2.4, p=0.003), metastatic disease (HR 1.9, p=0.001); residual tumor >1.5cm², and lower radiotherapy doses significantly impacted event-free survival (EFS) and overall survival (OS). Platinum-based chemotherapy showed better results compared to the ICE protocol in terms of OS and EFS, which was associated with higher toxicity. Patients under 3 years old displayed notably lower OS and EFS compared to older children (36.1% vs. 55.9%, p=0.01).

**Keywords:**CNS tumors; brain tumor; childhood; clinical characteristics; low and middle income countries; medulloblastoma; survival.

***MTHFR* 677C>T and 1298A>C Variants in Mothers of Infants with Down Syndrome from Western Mexico**

**Abstract**

***Background:*** Several studies in mothers of infants with Down syndrome (DS) (MoIDS) have suggested that the 677C>T and 1298A>C variants of the 5,10-methylentetrahydrofolate reductase (*MTHFR*) gene can increase the risk of having a child with DS. ***Aim:*** This study aimed to evaluate the *MTHFR* 677C>T and 1298A>C variants as potential maternal risk factors for DS. ***Materials and Methods:*** Using TaqMan allelic discrimination assay, we genotyped 95 MoIDS and 164 control mothers from western Mexico. Data were analyzed using logistic regression analysis. ***Results:*** We found that MoIDS had a significantly higher risk for the *MTHFR* 677TT genotype (adjusted odds ratio [aOR] = 3.4, 95% confidence interval [95% CI]: 1.1-10.6), and the *MTHFR* 677T allele (aOR = 1.5, 95% CI: 1.0-2.3), particularly in MoIDS <35 years of age. ***Conclusions:*** Our findings indicate that the presence of the 677TT genotype and 677T allele of the *MTHFR* 677C>T variant are maternal risk factors for DS in Mexican MoIDS.

**Keywords:**Down syndrome; MTHFR; Mexicans; maternal age; maternal risk factors.

**Implementing Standard Diagnosis and Treatment for Locally Advanced Breast Cancer Through Global Research in Latin America: Results From a Multicountry Pragmatic Trial**

**Abstract**

**Purpose:**Breast cancer mortality rates in Latin America (LA) are higher than those in the United States, possibly because of advanced disease presentation, health care disparities, or unfavorable molecular subtypes. The Latin American Cancer Research Network was established to address these challenges and to promote collaborative clinical research. The Molecular Profiling of Breast Cancer Study (MPBCS) aimed to evaluate the clinical characteristics and treatment outcomes of LA participants with locally advanced breast cancer (LABC).

**Patients and methods:**The MPBCS enrolled 1,449 participants from Argentina, Brazil, Chile, Mexico, and Uruguay. Through harmonized procedures and quality assurance measures, this study evaluated clinicopathologic characteristics, neoadjuvant chemotherapy response, and survival outcomes according to residual cancer burden (RCB) and the type of surgery.

**Results:**Overall, 711 and 480 participants in the primary surgery and neoadjuvant arms, respectively, completed the 5-year follow-up period. Overall survival was independently associated with RCB (worse survival for RCBIII-adjusted hazard ratio, 8.19, *P* < .001, and RCBII [adjusted hazard ratio, 3.69, *P* < .008] compared with RCB0 [pathologic complete response or pCR]) and type of surgery (worse survival in mastectomy than in breast-conserving surgery [BCS], adjusted hazard ratio, 2.97, *P* = .001). The hormone receptor-negative-human epidermal growth factor receptor 2-positive group had the highest proportion of pCR (48.9%). The analysis of the ASCO Quality Oncology Practice Initiative breast module revealed high compliance with pathologic standards but lower adherence to treatment administration standards. Notably, compliance with trastuzumab administration varied widely among countries (33.3%-88.7%).

**Conclusion:**In LABC, we demonstrated the survival benefit of BCS and the prognostic effect of the response to available neoadjuvant treatments despite an important variability in access to key treatments. The MPBCS represents a significant step forward in understanding the real-world implementation of oncologic procedures in LA.

**High Mortality of COVID-19 in Young Mexican Patients With Rheumatic Diseases: Comparative Analysis Versus the General Population**

*No abstract available*

**Association of c.+677 C>T (rs1801133) and c.+1298 A>C (rs1801131) *MTHFR* genetic variants with cardiometabolic and disease risk in systemic lupus erythematosus patients: A cross-sectional study**

**Abstract**

Systemic lupus erythematosus (SLE) patients present a high prevalence of cardiometabolic risk, associated with worse clinical manifestations and mortality. Folate, an essential micronutrient that participates in vital immune cellular functions, could positively affect the cardiometabolic and disease risk in SLE, through the methylenetetrahydrofolate reductase (MTHFR) enzyme, which participates in the folate metabolism, where single nucleotide variants (SNVs) have been described as a potential genetic risk factor for SLE. The aim of this study was to determine the association of the c.+677 C>T (rs1801133) and c.+1298 A>C (rs1801131) *MTHFR* genetic variants with cardiometabolic risk and clinical disease variables in SLE patients. A case-control study was conducted on 394 unrelated Mexican-mestizo women: 199 with SLE according to the 1997 SLE-ACR criteria and 196 control subjects (CS). Folic acid and homocysteine levels were evaluated by immunoassays. Genotyping of *MTHFR* genetic variants was carried out by allelic discrimination. No significant differences were found for folic acid (*p* = .15) and homocysteine serum levels (*p* = .59) between groups. According to the CC c.+677 *MTHFR* genotype, this was associated with low cardiovascular disease (CVD) risk by the Castelli index (OR = 0.42; *p* = .03) in SLE patients. The TC (OR = 1.3; *p* = .03) and the TA (OR = 1.6; *p* < .01) haplotypes from c.+677 C>T plus c.+1298 *MTHFR* were associated with SLE risk, while the CC *MTHFR* haplotype (OR = 0.5; *p* = .01) was found as a non-risk factor for the disease. In conclusion, the TC and the TA *MTHFR* haplotypes are associated with disease risk; meanwhile, the CC c.+677 *MTHFR* genotype confers lower cardiometabolic risk in Mexican-mestizo SLE patients.

**Keywords:**MTHFR variants; folic acid; genetic risk; homocystein

# Relationship of serum and dietary vitamin D with high cardiometabolic risk in Mexican systemic lupus erythematosus patients: A cross-sectional study

## Abstract

**Objetive:** Serum and dietary vitamin D could influence clinical disease activity and cardiometabolic outcomes in systemic lupus erythematosus (SLE). This study aimed to assess the relationship of serum and dietary vitamin D with cardiometabolic risk in Mexican SLE patients and healthy subjects (HS).**Methods:** 224 SLE patients and 201 HS were included in this cross-sectional study. Serum calcidiol was measured using a competitive enzyme-linked immunosorbent assay (ELISA). Vitamin D dietary intake was assessed by collecting three 24h food records. Dietary patterns (DPs) were identified using principal component analysis (PCA). Cardiometabolic status was analyzed through biochemical measurements and cardiometabolic indexes.**Results:** Calcidiol deficiency (<20 ng/mL) was associated with 1.66-fold higher risk of excess weight by body mass index (BMI) (≥25 kg/m2) (p = .02), 2.25-fold higher risk to low high-density lipoprotein-cholesterol (HDL-C) (<40 mg/dL) (p < .001), and 1.74-fold higher risk to high triglycerides (TG) ≥150 mg/dL (p = .02). Inadequate vitamin D dietary intake was associated with 1.92-fold higher risk of presenting non-healthy waist circumference (WC) (>80 cm) (p < .01), 2.05-fold higher risk of android waist to hip ratio (WHR ≥85) (p < .01), and 1.72-fold higher risk to excess weight (p = .02). Non-adherence to a DP rich in vitamin D food sources was associated with higher WC, WHR, triglycerides, and lower high-density lipoprotein-cholesterol (HDL-C); furthermore, in HS, non-adherence to the DP rich in vitamin D food sources provided 2.11-fold higher risk to calcidiol deficiency.**In Cconclusion:** A pattern of Calcidiol deficiency, inadequate vitamin D dietary intake, and non-adherence to a DP rich in vitamin D food sources was related to high cardiometabolic risk in SLE patients and HS.

**Keywords:**Calcidiol; cardiometabolic risk; diet; dietary patterns; dyslipidemia; hypovitaminosis D; systemic lupus erythematosus.

**Continuous and differential improvement in worldwide access to hematopoietic cell transplantation: activity has doubled in a decade with a notable increase in unrelated and non-identical related donors**

**Free article**

**Abstract**

Promoting access to and excellence in hematopoietic cell transplantation (HCT) by collecting and disseminating data on global HCT activities is one of the principal activities of the Worldwide Network for Blood and Marrow Transplantation, a non-Governmental organization in working relations with the World Health Organization. HCT activities are recorded annually by member societies, national registries and individual centers including indication, donor type (allogeneic/autologous), donor match and stem cell source (bone marrow/peripheral blood stem cells/cord blood). In 2018, 1,768 HCT teams in 89 countries (six WHO regions) reported 93,105 (48,680 autologous and 44,425 allogeneic) HCT. Major indications were plasma cell disorders and lymphoma for autologous, and acute leukemias and MDS/MPN for allogeneic HCT. HCT number increased from 48,709 in 2007. Notable increases were seen for autoimmune diseases in autologous and hemoglobinopathies in allogeneic HCT. The number of allogeneic HCT more than doubled with significant changes in donor match. While HCT from HLA identical siblings has seen only limited growth, HCT from non-identical related donors showed significant increase worldwide. Strongest correlation between economic growth indicator of gross national income/capita and HCT activity/ten million population was observed for autologous HCT (r=0.79). HCT from unrelated donors showed strong correlation (r=0.68), but only moderate correlation (r=0.51) was detected from related donors. The use of HCT doubled in about a decade worldwide at different speed and with significant changes regarding donor match as a sign of improved access to HCT worldwide. Although narrowing, significant gaps remain between developing and non-developing countries.

**Incidence and risk factors for catheter-associated urinary tract infection in 623 intensive care units throughout 37 Asian, African, Eastern European, Latin American, and Middle Eastern nations: A multinational prospective research of INICC**

**Abstract**

**Objective:**To identify urinary catheter (UC)-associated urinary tract infection (CAUTI) incidence and risk factors.

**Design:**A prospective cohort study.

**Setting:**The study was conducted across 623 ICUs of 224 hospitals in 114 cities in 37 African, Asian, Eastern European, Latin American, and Middle Eastern countries.

**Participants:**The study included 169,036 patients, hospitalized for 1,166,593 patient days.

**Methods:**Data collection took place from January 1, 2014, to February 12, 2022. We identified CAUTI rates per 1,000 UC days and UC device utilization (DU) ratios stratified by country, by ICU type, by facility ownership type, by World Bank country classification by income level, and by UC type. To estimate CAUTI risk factors, we analyzed 11 variables using multiple logistic regression.

**Results:**Participant patients acquired 2,010 CAUTIs. The pooled CAUTI rate was 2.83 per 1,000 UC days. The highest CAUTI rate was associated with the use of suprapubic catheters (3.93 CAUTIs per 1,000 UC days); with patients hospitalized in Eastern Europe (14.03) and in Asia (6.28); with patients hospitalized in trauma (7.97), neurologic (6.28), and neurosurgical ICUs (4.95); with patients hospitalized in lower-middle-income countries (3.05); and with patients in public hospitals (5.89).The following variables were independently associated with CAUTI: Age (adjusted odds ratio [aOR], 1.01; *P* < .0001), female sex (aOR, 1.39; *P* < .0001), length of stay (LOS) before CAUTI-acquisition (aOR, 1.05; *P* < .0001), UC DU ratio (aOR, 1.09; *P* < .0001), public facilities (aOR, 2.24; *P* < .0001), and neurologic ICUs (aOR, 11.49; *P* < .0001).

**Conclusions:**CAUTI rates are higher in patients with suprapubic catheters, in middle-income countries, in public hospitals, in trauma and neurologic ICUs, and in Eastern European and Asian facilities.Based on findings regarding risk factors for CAUTI, focus on reducing LOS and UC utilization is warranted, as well as implementing evidence-based CAUTI-prevention