# Survey of Ventilator Waveform Interpretation Among ICU Professionals

## Abstract

**Background:**The interpretation of ventilator waveforms is essential for effective and safe mechanical ventilation but requires specialized training and expertise. This study aimed to investigate the ability of ICU professionals to interpret ventilator waveforms, identify areas requiring further education and training, and explore the factors influencing their interpretation skills.

**Methods:**We conducted an international online anonymous survey of ICU professionals (physicians, nurses, and respiratory therapists [RTs]), with ≥ 1 y of experience working in the ICU. The survey consisted of demographic information and 15 multiple-choice questions related to ventilator waveforms. Results were compared between professions using descriptive statistics, and logistic regression (expressed as odds ratios [ORs; 95% CI]) was performed to identify factors associated with high performance, which was defined by a threshold of 60% correct answers.

**Results:**A total of 1,832 professionals from 31 countries or regions completed the survey; 53% of respondents answered ≥ 60% of the questions correctly. The 3 questions with the most correct responses were related to waveforms that demonstrated condensation (90%), pressure overshoot (79%), and bronchospasm (75%). Conversely, the 3 questions with the fewest correct responses were waveforms that demonstrated early cycle leading to double trigger (43%), severe under assistance (flow starvation) (37%), and early/reverse trigger (31%). Factors significantly associated with ≥ 60% correct answers included years of ICU working experience (≥ 10 y, OR 1.6 [1.2-2.0], *P* < .001), profession (RT, OR 2.8 [2.1-3.7], *P* < .001), highest degree earned (graduate, OR 1.7 [1.3-2.2], *P* < .001), workplace (teaching hospital, OR 1.4 [1.1-1.7], *P* = .008), and prior ventilator waveforms training (OR 1.7 [1.3-2.2], *P* < .001).

**Conclusions:**Slightly over half respondents correctly identified ≥ 60% of waveforms demonstrating patient-ventilator discordance. High performance was associated with ≥ 10 years of ICU working experience, RT profession, graduate degree, working in a teaching hospital, and prior ventilator waveforms training. Some discordances were poorly recognized across all groups of surveyed professionals.

**Keywords:**ICUs; mechanical ventilation; patient-ventilator discordance; ventilator; waveform interpretation.

# Toolkit on Creating a Young Nephrologists Committee: An ISN Young Nephrologists Committee Project to Empower Young Nephrologists Worldwide

No abstract available

# Decrease in platelet count in patients with AKI and its association with major adverse kidney events

## Abstract

**Introduction:**A reduction in platelet count in critically ill patients is a marker of severity of the clinical condition. However, whether this association holds true in acute kidney injury (AKI) is unknown. We analyzed the association between platelet reduction in patients with AKI and major adverse kidney events (MAKE).

**Methods:**In this retrospective cohort, we included AKI patients at the Hospital Civil of Guadalajara, in Jalisco, Mexico. Patients were divided according to whether their platelet count fell >21% during the first 10 days. Our objectives were to analyze the associations between a platelet reduction >21% and MAKE at 10 days (MAKE10) or at 30-90 days (MAKE30-90) and death.

**Results:**From 2017 to 2023, 400 AKI patients were included, 134 of whom had *a* > 21% reduction in platelet count. The mean age was 54 years, 60% were male, and 44% had sepsis. The mean baseline platelet count was 194 x 103 cells/µL, and 65% of the KDIGO3 patients met these criteria. Those who underwent hemodialysis (HD) had lower platelet counts. After multiple adjustments, a platelet reduction >21% was associated with MAKE10 (OR 4.2, CI 2.1-8.5) but not with MAKE30-90. The mortality risk increased 3-fold (OR 2.9, CI 1.1-7.7, *p* = 0.02) with a greater decrease in the platelets (<90 x 103 cells/µL). As the platelets decreased, the incidence of MAKE was more likely to increase. These associations lost significance when accounting for starting HD.

**Conclusion:**In our retrospective cohort of patients with AKI, *a* > 21% reduction in platelet count was associated with MAKE. Our results are useful for generating hypotheses and motivating us to continue studying this association with a more robust design.

**Keywords:**Acute kidney injury; hemodialysis; major adverse kidney events; platelets; thrombocytopenia.

# Nutritional interventions in children with acute lymphoblastic leukemia undergoing antineoplastic treatment: a systematic review

## Abstract

**Background:**A compromised nutritional status jeopardizes a positive prognosis in acute lymphoblastic leukemia (ALL) patients. In low- and middle-income countries, ~ 50% of children with ALL are malnourished at diagnosis time, and undergoing antineoplastic treatment increases the risk of depleting their nutrient stores. Nutrition interventions are implemented in patients with cancer related malnutrition. We aimed to evaluate the effect of nutrition interventions in children diagnosed with ALL under treatment.

**Methods:**Using a predefined protocol, we searched for published or unpublished randomized controlled trials in: Cochrane CENTRAL, MEDLINE, EMBASE, LILACS, and SciELO, and conducted complementary searches. Studies where at least 50% of participants had an ALL diagnosis in children ≤ 18 years, active antineoplastic treatment, and a nutrition intervention were included. Study selection and data extraction were conducted independently by three reviewers, and assessment of the risk of bias by two reviewers. Results were synthesized in both tabular format and narratively.

**Results:**Twenty-five studies (out of 4097 records) satisfied the inclusion requirements. There was a high risk of bias in eighteen studies. Interventions analyzed were classified by compound/food (n = 14), micronutrient (n = 8), and nutritional support (n = 3). Within each group the interventions and components (dose and time) tested were heterogeneous. In relation to our primary outcomes, none of the studies reported fat-free mass as an outcome. Inflammatory and metabolic markers related to nutritional status and anthropometric measurements were reported in many studies but varied greatly across the studies. For our secondary outcomes, fat mass or total body water were not reported as an outcome in any of the studies. However, some different adverse events were reported in some studies.

**Conclusions:**This review highlights the need to conduct high-quality randomized controlled trials for nutrition interventions in children with ALL, based on their limited number and heterogeneous outcomes.

**Registration of the review protocol:**Guzmán-León AE, Lopez-Teros V, Avila-Prado J, Bracamontes-Picos L, Haby MM, Stein K. Protocol for a Systematic Review: Nutritional interventions in children with acute lymphoblastic leukemia undergoing an tineoplastic treatment. International prospective register of systematic reviews. 2021; PROSPERO CRD:42,021,266,761 ( https://www.crd.york.ac.uk/prospero/display\_record.php?RecordID=266761 ).

**Keywords:**Malnutrition; Nutrition intervention; Pediatric acute lymphoblastic leukemia; Systematic review.

SGLT2i treatment during AKI and its association with major adverse kidney events

## Abstract

**Background:**The association between the administration of sodium-glucose cotransporter 2 inhibitors (SGLT2is) during acute kidney injury (AKI) and the incidence of major adverse kidney events (MAKEs) is not known.

**Methods:**This retrospective cohort study included patients with AKI and compared the outcomes for those who were treated with SGLT2is during hospitalization and those without SGLT2i treatment. The associations of SGLT2i use with MAKEs at 10 and 30-90 days, each individual MAKE component, and the pre-specified patient subgroups were analyzed.

**Results:**From 2021 to 2023, 374 patients were included in the study-316 without SGLT2i use and 58 with SGLT2i use. Patients who were treated with SGLT2is were older; had a greater prevalence of diabetes, hypertension, chronic heart failure, and chronic kidney disease; required hemodialysis less often; and presented stage 3 AKI less frequently than those who were not treated with SGLT2is. Logistic regression analysis with nearest-neighbor matching revealed that SGLT2i use was not associated with the risk of MAKE10 (OR 1.08 [0.45-2.56]) or with MAKE30-90 (OR 0.76 [0.42-1.36]). For death, the stepwise approach demonstrated that SGLT2i use was associated with a reduced risk (OR 0.08; 0.01-0.64), and no effect was found for kidney replacement therapy (KRT). The subgroups of patients who experienced a reduction in the risk of MAKEs in patients with AKI treated with SGLT2is were those older than 61 years, those with an eGFR >81, and those without a history of hypertension or DM (*p* ≤ 0.05 for all).

**Conclusion:**The use of SGLT2is during AKI had no effect on short- or medium-term MAKEs, but some subgroups of patients may have experienced benefits from SGLT2i treatment.

**Keywords:**acute kidney injury; death; kidney replacement therapy; major adverse kidney events; sodium–glucose transporter type 2 inhibitor.

Strategies to address diabetic kidney disease burden in Mexico: a narrative review by the Mexican College of Nephrologists

## Abstract

Chronic kidney disease (CKD) is a growing global public health challenge worldwide. In Mexico, CKD prevalence is alarmingly high and remains a leading cause of morbidity and mortality. Diabetic kidney disease (DKD), a severe complication of diabetes, is a leading determinant of CKD. The escalating diabetes prevalence and the complex regional landscape in Mexico underscore the pressing need for tailored strategies to reduce the burden of CKD. This narrative review, endorsed by the Mexican College of Nephrologists, aims to provide a brief overview and specific strategies for healthcare providers regarding preventing, screening, and treating CKD in patients living with diabetes in all care settings. The key topics covered in this review include the main cardiometabolic contributors of DKD (overweight/obesity, hyperglycemia, arterial hypertension, and dyslipidemia), the identification of kidney-related damage markers, and the benefit of novel pharmacological approaches based on Sodium-Glucose Co-Transporter-2 Inhibitors (SGLT2i) and Glucagon-Like Peptide-1 Receptor Agonists (GLP-1 RA). We also address the potential use of novel therapies based on Mineralocorticoid Receptor Antagonists (MRAs) and their future implications. Emphasizing the importance of multidisciplinary treatment, this narrative review aims to promote strategies that may be useful to alleviate the burden of DKD and its associated complications. It underscores the critical role of healthcare providers and advocates for collaborative efforts to enhance the quality of life for millions of patients affected by DKD.

**Keywords:**GLP-1; Mexico; chronic kidney disease; diabetes; diabetic kidney disease; iSLG

Exploring Heavy Metal and Metalloid Exposure in Children: A Pilot Biomonitoring Study near a Sugarcane Mill

## Abstract

Sugarcane production has been linked to the release of heavy metals and metalloids (HM/MTs) into the environment, raising concerns about potential health risks. This study aimed to assess the levels of 19 HM/MTs in children living near a sugarcane mill through a pilot biomonitoring investigation. We investigated sex-related differences in these element levels and their correlations. A cross-sectional study was conducted, analyzing data from 20 children in the latter part of 2023. Spearman correlation coefficients with 95% confidence intervals (CIs) were used to assess the relationships between urinary HM/MT levels. Detectable levels of 17 out of the 19 HM/MTs were found across the entire study sample, with arsenic and copper detectable in 95% of the children. Titanium exhibited higher levels in boys compared to girls (p = 0.017). We identified 56 statistically significant correlations, with 51 of them being positive, while the remaining coefficients indicated negative relationships. This study characterized HM/MT levels in school-aged children residing near a sugarcane mill through a pilot biomonitoring investigation. Further research employing larger sample sizes and longitudinal assessments would enhance our understanding of the dynamics and health impacts of HM/MT exposure in this vulnerable population.

**Keywords:**child; environmental exposure; heavy; metalloids; metals.

Nonelective cesarean section is associated with the prevalence of asthma among Mexican children who attended childcare centers

## Abstract

**Background:**The cesarean section (CS) mode of delivery can influence the prevalence of bronchial asthma (BA), allergic rhinitis (AR), or atopic dermatitis (AD) by promoting modifications in the infantile microbiome.

**Objective:**To analyze the prevalence of asthma in children who were born through CS and attended childcare centers.

**Methods:**The data were obtained through an online survey that was answered anonymously by one of the parents; the survey inquired about the route of delivery of the child and the prevalence of BA, AR, and AD.

**Results:**A total of 525 children were included. The frequency of births by vaginal, elective CS, or nonelective CS was 34.1%, 37.9%, and 28.0%, respectively, and the prevalence of BA, AR, and AD was 4.8%, 19.8%, and 12.4%, respectively. Multivariate analyses identified nonelective CS as a factor associated with the prevalence of BA (odds ratio: 3.51, *P* = 0.026).

**Conclusion:**Our study shows that being born through nonelective CS can increase the probability of BA in children who attended daycare centers.

**Keywords:**Allergic diseases; cesarean section; prevalence; transversal study.

Pancreatic Pseudocyst and Obesity: Video Case Report of Management with the One-Stage Procedure

## Abstract

Reports of pancreatic pseudocyst drainage during metabolic bariatric surgery are extremely rare. Our patient is a 38-year-old female suffering from obesity grade IV and presents a persistent symptomatic pancreatic pseudocyst 8 months after an episode of acute biliary pancreatitis. After an extensive evaluation and considering other treatment options, our multidisciplinary team and the patient decided to perform a one-stage procedure consisting of laparoscopic cystogastrostomy, cholecystectomy, and one-anastomosis gastric bypass. After bringing the patient to the operating room, the surgeon performed an anterior gastrostomy to access the stomach's posterior wall, followed by a 6-cm cystogastrostomy on both the stomach's posterior wall and the cyst. Next, a cholecystectomy which involved dissecting the triangle of Calot was performed. Then, an 18-cm gastric pouch using a 36-Fr calibration tube was created. The cystogastrostomy was left in the remaining stomach. Finally, gastrojejunal anastomosis is done. The patient's postoperative course proceeded smoothly, leading to her home discharge on the third postoperative day. At the 1-year follow-up, the patient had lost 56 kg and was symptom-free; a computer tomography scan showed that the pancreatic pseudocyst had resolved. This case shows a video of a successful laparoscopic cystogastrostomy, cholecystectomy, and one-anastomosis gastric bypass (OAGB) used to treat persistent abdominal pain and obesity grade IV. We also conduct a bibliographic review.

**Keywords:**Acute pancreatitis; Bariatric surgery; Cholelithiasis; Obesity; Pancreatic pseudocyst.

Ataxia-telangiectasia in Latin America: clinical features, immunodeficiency, and mortality in a multicenter study

## Abstract

Ataxia-telangiectasia (AT) is a rare genetic disorder leading to neurological defects, telangiectasias, and immunodeficiency. We aimed to study the clinical and immunological features of Latin American patients with AT and analyze factors associated with mortality. Referral centers from 9 Latin American countries participated in this retrospective cohort study, and 218 patients were included. Median (IQR) ages at symptom onset and diagnosis were 1.0 (1.0-2.0) and 5.0 (3.0-8.0) years, respectively. Most patients presented recurrent airway infections, which was significantly associated with IgA deficiency. IgA deficiency was observed in 60.8% of patients and IgG deficiency in 28.6%. T- and B-lymphopenias were also present in most cases. Mean survival was 24.2 years, and Kaplan-Meier 20-year-survival rate was 52.6%, with higher mortality associated with female gender and low IgG levels. These findings suggest that immunologic status should be investigated in all patients with AT.

**Keywords:**Ataxia telangiectasia; Immunologic deficiency syndromes; Latin America; Primary immunodeficiency diseases; Survey.

Follow-Up Study of 17-β Estradiol, Prolactin and Progesterone with the Kinetics and Prevalence of *T. gondii* Infection in Pregnant Women

## Abstract

Toxoplasmosis is an infection caused by the parasite *Toxoplasma gondii.* One-third of the world's population has come into contact with this parasite. In Mexico, the prevalence is between 15% and 50% in the general population and 34.9% in women with high-risk pregnancies. In pregnancy, the highest incidence of infection occurs in the third trimester and fetal damage is inversely proportional to gestational age. Maternal hormones play a fundamental role in the immune response. There are very few studies, with controversial results, on the levels of increased hormones and their relationship to the kinetics of *T. gondii* infections during pregnancy. The aim was to determine the serum levels of 17-β estradiol, prolactin, and progesterone, and their association with anti-*T. gondii* antibodies' kinetics in pregnancy. Fifty-two pregnant patients were studied. A questionnaire with sociodemographic and clinical aspects was used. Afterward, 10 mL of venous blood was collected by venipuncture every trimester. The concentrations of 17-β estradiol, progesterone, and prolactin were measured, using the ELISA method. In addition, anti-*Toxoplasma* IgG and IgM antibodies were also determined in the first, second, and third trimester. The prevalence of anti-*Toxoplasma* IgG antibodies was 26.92% in the first and second trimester and 32.7% in the third trimester. In seropositive women, 17-β estradiol increased in the second and third trimesters of pregnancy. Progesterone increased significantly *p* < 0.039 in the third trimester in these women, while prolactin increased in the second trimester with a statistical significance of *p* < 0.021. In addition, 17-β estradiol, progesterone, and prolactin are associated with *T. gondii* infection during pregnancy. New studies are necessary to clarify the specific mechanisms of immune response related to these hormones during pregnancy.

**Keywords:**17-β estradiol; intrauterine growth restriction; progesterone; prolactin; toxoplasmosis.

Unraveling the non-fitness status of NK cells: Examining the NKp30 receptor and its isoforms distribution in HIV/HCV coinfected patients

**Free article**

## Abstract

**Background:**HIV/HCV coinfection is associated with a rapid progression to liver damage. Specifically, NK cell population dysregulation is of particular interest, as these cells have been shown to block HCV replication effectively and have an anti-fibrogenic activity. The NKp30 receptor is linked to tumor cell lysis and has a crucial role during viral infections. In the present study, we determined the subpopulations of NK cells based on CD56 and CD16 expression, NKp30 receptor expression, its isoforms A, B, and C, along with the cytotoxicity molecules in patients with HIV/HCV.

**Results:**evidenced by the APRI and FIB-4 indices, the HCV-infected patients presented greater liver damage than the HIV and HIV/HCV groups. The HCV group presented a decreased expression of NKp30 isoform A, and NK cell frequency was not different between groups; however, CD56brigth subpopulation, NKp30 receptor, and CD247 adaptor chain were decreased in HIV/HCV patients; further, we described increased levels of soluble IL-8, IL-10, IL-12, and IL-23 in the serum of HIV/HCV patients.

**Conclusions:**HCV and HIV/HCV patients have multiple parameters of non-fitness status in NK cells; awareness of these dysfunctional immunological parameters in HIV/HCV and HCV patients can elucidate possible novel therapeutics directed towards the improvement of NK cell fitness status, in order to improve their function against liver damage.

**Keywords:**Coinfection; HCV; HIV; Liver damage; NK cells; NKp30.

Randomized Controlled Trial

# Effectiveness of an intervention to improve ART adherence among men who have sex with men living with HIV: a randomized controlled trial in three public HIV clinics in Mexico

## Abstract

We conducted a parallel-group randomized controlled trial in three HIV clinics in Mexico to evaluate a user-centred habit-formation intervention to improve ART adherence among MSM living with HIV. We randomized 74 participants to the intervention group and 77 to the control group. We measured adherence at one, four, and ten months through medication possession ratio and self-reported adherence. Additionally, we measured viral load, CD4 cell count, major depression disorder symptoms, and alcohol and substance use disorder at baseline, fourth and tenth months. We found no statistically significant effect on adherence between groups. However, the intervention demonstrated positive results in major depression disorder symptoms (21% vs. 6%, *p* = 0.008) and substance use disorder (11% vs. 1%, *p* = 0.018) in the fourth month. The latter is relevant because, in addition to its direct benefit, it might also improve the chances of maintaining adequate adherence in the long term. This trial was retrospectively registered at ClinicalTrials.gov (trial number ) on 8 January 2018.**Trial registration:** ClinicalTrials.gov identifier.

**Keywords:**ART adherence; HIV; MSM; mental health.

Evidence That Peripheral Leptin Resistance in Omental Adipose Tissue and Liver Correlates with MASLD in Humans

## Abstract

Leptin regulates lipid metabolism, maximizing insulin sensitivity; however, peripheral leptin resistance is not fully understood, and its contribution to metabolic dysfunction-associated steatotic liver disease (MASLD) is unclear. This study evaluated the contribution of the leptin axis to MASLD in humans. Forty-three participants, mostly female (86.04%), who underwent cholecystectomy were biopsied. Of the participants, 24 were healthy controls, 8 had MASLD, and 11 had metabolic dysfunction-associated steatohepatitis (MASH). Clinical and biochemical data and the gene expression of leptin, leptin receptor (*LEPR*), suppressor of cytokine signaling 3 (*SOCS3*), sterol regulatory element-binding transcription factor 1 (*SREBF1*), stearoyl-CoA desaturase-1 (*SCD1*), and patatin-like phospholipase domain-containing protein 2 (*PNPLA2*), were determined from liver and adipose tissue. Higher serum leptin and *LEPR* levels in the omental adipose tissue (OAT) and liver with MASH were found. In the liver, *LEPR* was positively correlated with leptin expression in adipose tissue, and *SOCS3* was correlated with *SREBF1-SCD1*. In OAT, *SOCS3* was correlated with insulin resistance and transaminase enzymes (*p* < 0.05 for all. In conclusion, we evidenced the correlation between the peripheral leptin resistance axis in OAT-liver crosstalk and the complications of MASLD in humans.

**Keywords:**leptin; leptin receptor; metabolic dysfunction-associated steatohepatitis; metabolic dysfunction-associated steatotic liver disease; non-alcoholic fatty liver disease; patatin-like phospholipase domain-containing protein 2; stearoyl-coa desaturase-1; sterol regulatory element-binding transcription factor 1; suppressor of cytokine signaling 3.

Scientific Abstracts Publication Only Pain in rheumatic diseases, including fibromyalgia

**AB0159 CROSS-CULTURAL ADAPTATION AND VALIDATION OF THE NOCIPLASTIC-BASED FIBROMYALGIA FEATURES (Nff) DIAGNOSTIC TOOL IN MEXICAN FIBROMYALGIA PATIENTS**

## Abstract

**Background:** Fibromyalgia (FM) is a generalized painful chronic disorder in which “nociplastic pain” has been recognized as a pathogenic mechanism. The diagnostic tool “Nociplastic-based Fibromyalgia Features (NFF)” was validated in patients with FM, however, it hasn’t been adapted transcultural or validated for it’s application in Mexican patients.

**Objectives:** This study aimed to perform transcultural adaptation and validate a preliminary diagnostic tool in Mexican FM patients.

**Methods:** This cross-sectional study included female FM patients, 18-65 years, and as a control group: primary generalized osteoarthritis (OA) patients, recruited by random sampling, the enrollment took place in the Hospital Civil de Guadalajara “Fray Antonio Alcalde”. A sample size of 42 patients (21 in each group) with a power of 80% was calculated; cross-cultural adaptation of NFF was performed with receiver operating characteristic curve analysis combined with likelihood ratios. A two-tailed alpha value <0.05 was set as significant.

**Results:** A total of 63 patients were recruited: 33 patients with fibromyalgia and 30 patients with primary generalized osteoarthritis. The demographic and clinical characteristics are shown in Table 1. We proved the prediction capacity according to the scores obtained using the ROC curve, AUC was 0.980, 95% IC 0.953 – 1.0; p < 0.001 (Figure 1). The cut off value ≥ 4 points, with a sensitivity of 86.49% (95% IC 71.23- 95.46), and specificity of 96.15% (95% IC 80.36 – 99.90), positive predictive value 96.97% (95% IC 82.34 -99.55), negative predictive value 83.33% (95% IC 68.80-91.90).