Methods. A systematic search of the PubMed, Embase, LILACS, SciELO, and Web of Science databases was performed on 2 August 2021. A standard form was used to extract data from the studies selected in the screening process. The ROBINS-I tool was used to analyze risk of bias and RevMan 5.4 software was used to perform the meta-analysis.

Results. Four observational studies met the inclusion criteria. The overall evidence quality was moderate. The studies included women aged from 28 to 91 years with non-palpable breast cancer. The results demonstrated similar effectiveness between RSL and ROLL for rates of positive surgical margins (risk ratio [RR] 0.83, 95% confidence interval [CI]: 0.50, 1.39; 763 patients) and reoperation (RR 1.14, 95% CI: 0.75, 1.74; 1,550 patients). Regarding the rate of disease recurrence, RSL was superior to ROLL (RR 0.50, 95% CI: 0.29, 0.87; 939 patients).

Conclusions. The results demonstrate that the ROLL and RSL techniques are equivalent with respect to rates of positive surgical margins and reoperation, although patients undergoing RSL had lower rates of disease recurrence. However, there is a tendency to favor the RSL technique because of the longer interval between implantation and surgery, which is possible due to the longer half-life of iodine-125 (59.4 days). This also means that radioactive seed implantation can occur before neoadjuvant chemotherapy, so the tumor bed remains marked if further interventions are required, obviating the need for another invasive procedure before surgery.

PD32 Cost-Utility Of Selective Internal Radiation Therapy Using Y-90 Resin Microspheres For Chemotherapy-Refractory Metastatic Colorectal Cancer In Brazil

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Introduction. There were an estimated 55,102 new cases of colorectal cancer (CRC) in Brazil in 2020, comprising 9.3 percent of all newly diagnosed cancers, and making it the third most common cancer in the Brazilian population. Up to half of all patients with CRC will develop liver metastases, and the prognosis for these patients is poor. The objective of the present analysis was to evaluate the cost-utility of selective internal radiation therapy (SIRT) using Y-90 resin microspheres versus best supportive care (BSC) in patients with unresectable, liver-dominant, chemotherapy-refractory metastatic CRC (mCRC).

Methods. A three-state partitioned survival model was developed in Microsoft Excel to evaluate the cost-utility of SIRT using Y-90 resin microspheres versus BSC. Membership of the three model states of pre-progression, post-progression and death was governed by parametric models of Kaplan-Meier data from a retrospective, interventional study. Costs associated with SIRT using Y-90 resin microspheres, BSC, and adverse events were obtained from Brazilian

sources and reported in 2021 United States dollars (USD). Future costs and effects were discounted at 5 percent. One-way and probabilistic sensitivity analyses (PSA) were performed. A willingness-to-pay threshold of USD 53,936 was used based on a 2017 review of Brazilian healthcare technology adoption.

Results. The base case analysis showed that Y-90 resin microspheres would result in an increase of 0.76 QALYs versus BSC, increasing quality-adjusted life expectancy from 0.67 QALYs to 1.43 QALYs. The improvement in quality-adjusted life expectancy was accompanied by an increase in costs from USD 9,884 to USD 40,399 over the model time horizon, corresponding to an increase of USD 30,515, and yielding an incremental cost-utility ratio (ICUR) of USD 40,265 per QALY gained. PSA showed there was a 90.8 percent likelihood of cost-effectiveness at USD 53,936 per QALY gained.

Conclusions. SIRT using Y-90 resin microspheres was cost-effective versus BSC in the treatment of unresectable, liver-dominant mCRC patients and should be considered for incorporation in the Brazilian Private Healthcare System.

PD33 Development And Validation Of A Machine Learning-Based Prediction Model For COVID-19 Diagnosis Using Patients' Metabolomic Profile Data

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Introduction. We aimed to develop and validate machine learning (ML) -based algorithms to predict COVID-19 diagnosis as well as to identify new biomarkers associated with the disease.

Methods. Initially, 96 blood samples of patients diagnosed with COVID-19 (Thaizhou Hospital, China) were analyzed through liquid chromatography coupled to mass spectrometry. Samples of patients presenting other pneumonias or severe acute respiratory syndrome, but with negative RT-PCR for SARS-CoV-2, were used as positive controls. Samples from healthy volunteers were used as negative controls. The final database included around 1000 metabolites. Exploratory analyses for the development of ML-based models using principal component analysis (PCA) were performed. Leverage plot versus studentized residuals method was used to detect outliers. Three supervised ML-based models were developed: discriminant analysis by partial least squares (PLS-DA), artificial neural networks discriminant analysis (ANNDA) and k-nearest neighbors (KNN). Samples for the training (70%) and testing sets (30%) were randomly selected using the Kenrad Stone algorithm. Models' performance was evaluated considering accuracy, sensitivity and specificity. Analyses were conducted in SOLO (Eigenvector-Research).

Results. The PCA model was able to distinguish the three classes of patients' samples (positive for COVID-19, negative controls, positive controls) with an overall accumulated variance of 94.27 percent. The PLS-DA model presented the best performance (accuracy, sensitivity, and specificity of 93%, 98% and 88%, respectively). Increased levels of the biomarkers uridine (linked to glucose homeostasis, lipid, and amino acid metabolisms), 4-hydroxyphenylacetoylcarnitine (metabolite from the tyrosine metabolism; probably associated with anorexia) and ribothymidine (resulting from oral and fecal microbiota alterations) were significantly associated with COVID-19.

Conclusions. Three different and updated ML-based algorithms were developed to predict COVID-19 diagnosis; PLS-DA led to the most accurate results. High levels of some metabolites were found as potentially predictors of the disease. These biomarkers should be further evaluated as potential therapeutic targets in well-designed clinical trials. These ML-based models can help the early diagnosis of COVID-19 and guide the development of tailored interventions.

PD34 Neuron-specific Biomarkers Associated With Neurological Manifestations In COVID-19: An Evidence Mapping Systematic Review

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Introduction. We aimed to map and synthesize the available evidence on neuron-specific biomarkers related to COVID-19.

Methods. A systematic review and qualitative evidence mapping synthesis was performed (PROSPERO-CRD42021266995). Searches were conducted in PubMed and Scopus, and complemented by manual search (July 2021). We included observational studies of any design assessing neurological biomarkers in adult patients (>18 years; with or without neurological comorbidities) diagnosed with COVID-19. Methodological quality of nonrandomized studies (case-control, cohorts) was assessed using the Newcastle-Ottawa Scale.

Results. Overall, 14 studies (n=485 patients) conducted in Sweden (n=4 articles, 28.5%), Germany (n=3; 21.4%), USA (n=3; 21.4%), Canada, France, Italy and Norway (n=1 study each) were included. The most reported neurological symptoms (n=13 studies, 92.8%) were headache, confusion, general weakness, loss of smell/taste, cognitive impairments and behavioral changes. Prevalent neurological conditions included encephalopathies, neuropathies, myopathies, and delirium; most critical cases presented cerebrovascular events (n=4 studies, 28.5%). Hypertension, diabetes, obesity, dyslipidemia, and chronic lung disease were the most reported comorbidities. Eight different neuron-specific biomarkers were found in primary studies: neurofilament-light chain – NfL (n=10 studies; 71.4%), glial fibrillary acidic-protein – GFAp (n=5; 35.7%), tau protein (n=5; 35.7%), neurofilament-heavy chain – NfH, S100B

protein, ubiquitin C-terminal hydrolase L1 - UCH-L1, neuron-specific enolase and beta protein-amyloid – Aβ (n=1 study each). These biomarkers were found both in cerebrospinal fluid and blood/plasma samples even without an evident cytokine storm. In patients with COVID-19, NfL and GFAp can act as sensitive indicators of neuroaxonal and astrocytic damages, respectively. Increased levels of NfL were significantly associated with severe COVID-19, unconsciousness and longer stay in the intensive care unit (p<0.05). Studies had an overall poor to moderate methodological quality.

Conclusions. We identified eight neuron-specific biomarkers that should be further studied as prognostic factors of COVID-19. These findings can also guide the development of targeted therapies against SARS-CoV-2. Additional well-designed clinical trials are needed to strengthen this evidence and help understand the mechanisms of neurological symptoms and sequelae after COVID-19 infection.

PD35 Mortality And Risk Factors Associated With Dialysis Patients With COVID-19 In A Brazilian Supplementary Health Service

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Introduction. Patients with chronic kidney disease (CKD) and COVID-19 are at high risk of adverse outcomes due to the presence of comorbidities. However, it is still unclear whether dialysis therapy is associated with a worse prognosis in patients infected with SARS-CoV-2. The objectives were to assess mortality and risk factors associated with a worse prognosis of these patients (e.g., age, sex, comorbidities, Intensive Care Admission [ICU] admission, and need for invasive mechanical ventilation [IMV]).

Methods. An observational, descriptive, retrospective study was conducted in the private healthcare maintenance organization (Unimed-BH) of Belo Horizonte and 33 surrounding cities in Brazil. We used data collected from the organization's database. We included adult inpatients with CKD on previous dialysis therapy who tested positive for COVID-19, from February 2020 to June 2021.

Results. During the period, 16182 patients were admitted to Unimed-BH with a diagnosis of COVID-19. Of these, 333 (2%) had dialysis CKD. Male patients were 180 (54%), age ranged from 22.85 to 95.75 years and the mean was 60.91 years. Of the 333 patients, 109 (32.7%) were admitted to the ICU, and 56 (16.8%) required IMV. Among the 14 comorbidities analysed, the mean number of comorbidities was 6, with 93 (27.9%) dyslipidaemia, 74 (22%) diabetic, 270 (81%) hypertensive, 25 (7.5%) asthmatic, 42 (12.6%) with