learning method, called SuperLearner, to model a binary classification for high vs. low insulin users. Features included in the algorithm were collected prior to prediction time, including weight, height, age, sex, race, insurance status, A1c categories (normal, high, panic high, and missing), creatinine, diet, steroid use in prior 48 hours, admission BG, summary statistics of BG, numerous counts of relevant lab values in quantiles, history of basal insulin use, and counts of major diagnosis code groups. Prior insulin doses were not considered to better simulate admission insulin dosing.
Compared to using only weight in the model, with an area under the receiver operating curve (AUROC) of 0.59, our machine learning algorithm showed excellent predictive ability, with an AUROC of 0.85 (95% CI: 0.84 - 0.87) and area under the precision recall curve (AUPRC) of .65 (95% CI: 0.64 - 0.68) vs 0.29 with the weight-only model. Although it will need to be validated prospectively, our algorithm could be used to emphasize basal-bolus insulin on admission in patients predicted to require more insulin, whereas those predicted to require less could be started on sliding scale insulin or considered for oral anti-hyperglycemics.

Diabetes Mellitus and Glucose Metabolism

DIABETES IN THE HOSPITAL

Serum Branch Chain Amino Acids (BCAAs) Are Elevated Due to Decreased Catabolism in Patients With Ketosis-Prone Diabetes at the Time of Presentation With DKA

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Patients with "A-β+" Ketosis-Prone Diabetes (KPD) develop diabetic ketoacidosis (DKA) despite lacking islet autoantibodies and a phenotype of T1D, have good beta cell function and can come off insulin therapy 4–8 weeks after the DKA episode. When near-normoglycemic and stable on metformin, they have accelerated BCAA catabolism which promotes ketogenesis (Patel SG et al, *Diabetes* 2013). Here we measured BCAAs, their metabolites and acylcarnitine esters (C5,C3) in blood samples obtained from adults with DKA (N=74) compared to those with non-ketotic hyperglycemic crisis (N=21) at the time of acute presentation to the emergency center, and to healthy controls (N=17). Of the DKA patients, 53 were classified as likely A-β+ KPD based on absence of GAD65Ab and C-peptide levels or clinical features, and the 21 patients with non-ketotic hyperglycemia were classified as T2D. Serum concentrations of leucine, isoleucine and valine and their respective branch chain keto acids (BCKA) were higher ($p<0.05$) in KPD patients compared to T2D and control. The ratio of each BCKA to its precursor BCAA was calculated as an index of its rate of transamination. Serum KIC/Leu, KMV/Ile and KIV/Val were significantly lower ($p<0.05$) in KPD compared to T2D. The ratio of each acylcarnitine to its precursor BCKA was calculated as an index of its rate of entry and metabolism within mitochondria. Serum C5/KIC, C5/KMV and C5/KIC+KMV were lower ($p<0.05$) in KPD patients compared to T2D patients. Serum C3/KIV, C3/KMV and C3/KIV+KMV were significantly lower ($p<0.05$) in KPD patients compared to controls. Since KIC can be converted to acetoacetate and then reduced to β-hydroxybutyrate (BHOB), and KIC and KMV can be metabolized to acetyl CoA, the ratios of KIC+KMV/C2 and KIC/BHOB were calculated as indicators of their relative conversion to acetyl CoA and acetoacetate respectively. KIC+KMV/C2 was significantly lower ($p<0.001$) in KPD than T2D and control and KIC/BOHB was lower ($p<0.001$) in KPD than T2D. Acetyl carnitine was markedly elevated in the KPD group, indicating accelerated production of acetyl CoA from free fatty acids. During acute DKA, KPD patients have higher serum BCAAs because their catabolism is decreased, due to slower rate of transamination in the cytosol by BCAA transaminase 1 (BCAT1) and slower rate of entry into mitochondria and metabolism to acetyl CoA and acetoacetate by BCAT2, BCKA dehydrogenase and other catabolic enzymes. This is diametrically opposite to their profile in the stable, near-normoglycemic state, when BCAA catabolism is accelerated. We propose that during acute DKA, accelerated flux of fatty acids to acetyl CoA diminishes carnitine and NAD+ availability for mitochondrial transport and metabolism of BCAA catabolites in KPD patients, whereas in the near-normoglycemic state they have heightened dependence on BCAA catabolism for energy production through acetyl CoA and ketogenesis.

Diabetes Mellitus and Glucose Metabolism

DIABETES IN THE HOSPITAL

The Weight of Words: A Mixed Methods Study to Understand Indian Doctors' Perspectives and Experiences of Patient Communication

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Background: Effective doctor communication can lead to increased treatment adherence and improved self-management among individuals living with diabetes. Yet, there is limited research in India which examines how doctors communicate, especially in terms of verbal and nonverbal communication. **Aims:** (1) To examine communication in clinic (verbal, nonverbal and basic content) among Indian doctors specialized in diabetes and endocrine care, and (2) to explore doctors' styles of verbal and nonverbal communication. **Methods:** Using a mixed methods design, a survey containing quantitative (n=834) and qualitative (n=648) elements was filled out by doctors specialized in the fields of diabetes and endocrinology in India. Questions in the quantitative section included questions such as addressing