Glucose metabolism is a complex process consisting of several physiologic mechanisms that function to regulate serum glucose levels and maintain them within a fairly narrow range in healthy individuals. Hypoglycemia is characterized by a reduction in plasma glucose concentration to a level low enough, typically less than 60 mg/dL, to cause symptoms or systemic effects, classically adrenergic stimulation or altered mental status. Hypoglycemia is most frequently seen in patients with diabetes following insulin injection or intake of oral hypoglycemic agents. In the patient without diabetes, hypoglycemia is much less common and often warrants further investigation to determine the cause.

Hospitalized patients are high risk for hypoglycemia because acute and chronic illness can cause altered counterregulatory responses and the development of life-threatening sequelae. Controlling blood glucose in hospitalized patients is important as both hyperglycemia and hypoglycemia are associated with increased cost, length of stay, morbidity and mortality. Avoidance and recognition of hypoglycemia is essential to patient safety and studies have confirmed higher mortality rates with spontaneous rather than iatrogenic hypoglycemia. Therefore, hypoglycemia of unclear cause may be viewed as a biomarker systemic disease and mandates appropriate investigation to determine the etiology.

In reviewing data from hypoglycemia evaluations performed within our institution it is appears that the workup is often incomplete or yields uninterpretable results.

While this data is limited and represents a very small subset of patients, it is supportive of the need for a standardized institutional 'hypoglycemic diagnostic protocol’ that will allow for staff to obtain relevant laboratory data needed to complete the diagnostic workup without delaying treatment. We are confident that implementation of this simple, user-friendly and cost-effective protocol will lead to improved patient outcomes and institutional quality measures.

In review of charts of 11 patients recently admitted to Thomas Jefferson University Hospital (TJUH) for whom a complete biochemical evaluation of hypoglycemia was obtained:

- 2/11 (18%) of evaluations yielded clinically significant data, 82% of initial testing was inconclusive (Fig 1.)
- 1/11 (9%) of patients for whom the workup was performed had true hypoglycemia (<60mgdL)
- 4/11 patients (36%) lacked confirmatory blood glucose levels (Fig 2)

In almost half of all cases, testing had to be repeated. (Fig 3.)