Prolonged Loss of Consciousness Scenario:

Because Loss of Consciousness is an urgent situation, and any life-threatening diagnosis may be causing it, initial patient stabilization and appropriate intervention is done in this case and the rest of the steps of the Epi-logical approach occur parallel to each other as more and more information is gathered.

Building Probable Diagnoses, Managing Urgent Situation, Weighing and Removing Anchor Bias:

A 29-year-old male is being seen in the emergency room with a loss of consciousness. The patient was brought by an ambulance, and the following information is available. The patient was found unresponsive at his apartment by his girlfriend, who had tried to contact him earlier. When the patient did not respond to several text messages and phone calls, she went over to see him. The patient was on the floor next to his writing desk, and the computer screen was on. After the girlfriend called 911, she discovered that the patient had been working on a spreadsheet and the last time he saved that document was 45 minutes prior. Paramedics found the patient's vitals to be BP 118/68, HR 102, T96, O2 Sat 95%, and he appeared to be a healthy weight for his height. The patient did not open his eyes to any stimuli, he did not utter any words upon prompting or spontaneously, and he had a normal flexion posture making his Glasgow Coma Score 6. The patient's pupils are normal size and reactive to light.
There were no signs of head trauma. The patient did not have any particular smell or cuts on his skin, and no signs of dehydration. The cardiovascular exam is consistent with a normal rate and rhythm, with no murmur, and no jugular venous distention. The pulmonary exam is consistent with decreased breath sounds bilaterally and occasional crackles at bases, with no swelling. The abdominal exam is unremarkable. The finger stick blood sugar was 299 gm/dl. Paramedics started intravenous line, oxygen, and took an EKG strip and portable chest X-Ray which are shown below.

EKG: Normal sinus tachycardia, non-specific T wave changes, with no Q waves or bundle branch block.

Chest X-Ray: Widespread pulmonary edema, no signs of consolidation or pleural effusion, normal cardiac shadow, costo-phrenic and cardio-phrenic angles, and normal ribs, sternum and spine.

A review of medical records shows that the patient has a history of well controlled insulin dependent diabetes. The last HgbA1C a month ago was 6.8% and creatinine was 1.1 mg/dl. This patient's routine medications are long acting insulin 32 units/day, ACE inhibitor, and a low dose statin. There is no mental health illness, and no history of smoking, illicit drug, or alcohol use.

Based upon the information so far, which differentials are more likely?

The discussion and rationale are provided below.

System and differentials	Reasoning	Likely/unlikely

Neurologic causes – CVA, meningitis, encephalitis	No risk factors. No sign of focal neurologic deficit. No fever. Pupils symmetrical	Unlikely
Cardiovascular	No risk factors for CAD. No murmur (HOCM). No swelling. Occasional crackles and pulmonary edema. EKG inconsistent with ischemia	Unlikely. There is mild suspicion for left ventricular failure due to pulmonary edema, but no additional supportive evidence
Pulmonary	Normal oxygen saturation. Decreased air entry. Crackles. Chest XR consistent with pulmonary edema	Likely an underlying pulmonary process. Pulmonary edema present but no clear etiology. No signs of pneumonia. Some degree of suspicion for pulmonary embolism, as in some cases it may present with pulmonary edema. CT scan must be ordered.
Metabolic acidosis	Diabetes with high blood sugar, although not high enough for ketoacidosis. No alcohol use. No sign/risk for acute renal failure. No salicylate overdose.	Unlikely. Arterial blood gases must be obtained to rule out DKA.
Endocrine	No history/sign of thyroid disease. Normal to high HR, blood pressure and exam not consistent. Blood pressure not low enough for Addison disease.	Unlikely
Renal failure	No history/sign of kidney disease although risk factor (DM) present. No swelling. Recent creatinine normal. No acute injury.	Unlikely
Hepatic failure	No history/sign of liver disease.	Unlikely
GI fluid loss	No sign of dehydration. No recent gastroenteritis.	Unlikely
Heme/DIC	No history of trauma/bleeding. Skin exam not consistent with DIC	Unlikely
Sepsis	No fever. No recent infection	Unlikely
ETOH use/drugs	No history	Unlikely

At this point a pulmonary cause is most likely, and a cardiovascular cause is somewhat likely. Additional labs and work up must include metabolic panel, complete blood count, urinalysis, a cardiac work up, a CT scan of chest, and arterial blood gases. Serum troponins are normal. The metabolic panel is consistent with elevated creatinine and normal anion gap. The complete blood count is normal. Urinalysis is consistent with hemoglobinuria. The CT chest shows non-specific pulmonary edema and is negative for pulmonary embolism, consolidation (pneumonia), mass or any other lesion. Arterial blood gases are normal. Co-oximetry venous levels at 45%. The final diagnosis: all elements of clinical features and lab tests confirm the diagnosis of acute CO poisoning.