DIABETIC KETOACIDOSIS

1 Problem

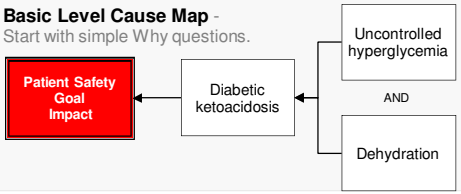
What	Problem(s)	Diabetic ketoacidosis
When	Date	Proactive
	Different, unusual, unique	Poor glycemic control not present on admission; each additional chronic condition increased odds of poor glycemic control by 12%; increased staffing in non-teaching hospitals significantly reduced odds of poor glycemic control
Where	Facility, site	Inpatient hospital
	Task being performed	Inpatient care

Impact to the Goals

Patient Safety	Increased risk of patient death (16 vs 9% when emergencies not present)	
Employee Impact	Second victim	
Compliance	"No-pay" hospital acquired condition	
Organization	Cost of diabetic ketoacidosis*	$42,974
Patient Services	Increased length of stay (14 vs 7 days)	
Labor, Time	Increased treatment requirements	
	Per incident	$42,974
Frequency	11,469 cases in 2007 (CMS)	
	Annualized Cost	$492,868,806

2 Analysis

Basic Level Cause Map -
Start with simple Why questions.



Basic Cause-and-Effect

Like nonketotic hyperosmolar coma, diabetic ketoacidosis results from uncontrolled hyperglycemia. However, with ketoacidosis, dehydration also plays an important role. Diabetic ketoacidosis can also increase risk of death and the costs associated with treatment are no longer reimbursable when the condition is acquired in the hospital.

3 Solutions

No.	Action Item	Cause
1	Maintain blood glucose levels at or below 110 mg/dL	Uncontrolled hyerglycemia
2	Use individualized insulin plan rather than sliding scale	Failure to adjust insulin for other factors
3	Continuous IV infusion of regular insulin	Insulin deficiency
4	Specific glycemic management team	Inadequate control of diabetes
5	Medical nutritional therapy coordinated with insulin control	Failure to adjust insulin based on diet
6	Check glucose levels in children without diagnosed diabetes, patients with vomiting or who require IV for hydration	Unaware of diabetic status
7	Ensure tracking of patient's fluid intake	Inadequate water intake
8	IV fluids for patients who are not drinking	Patient unable to drink

Cause Map

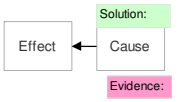
Manifestation of Poor Glycemic Control Part 2

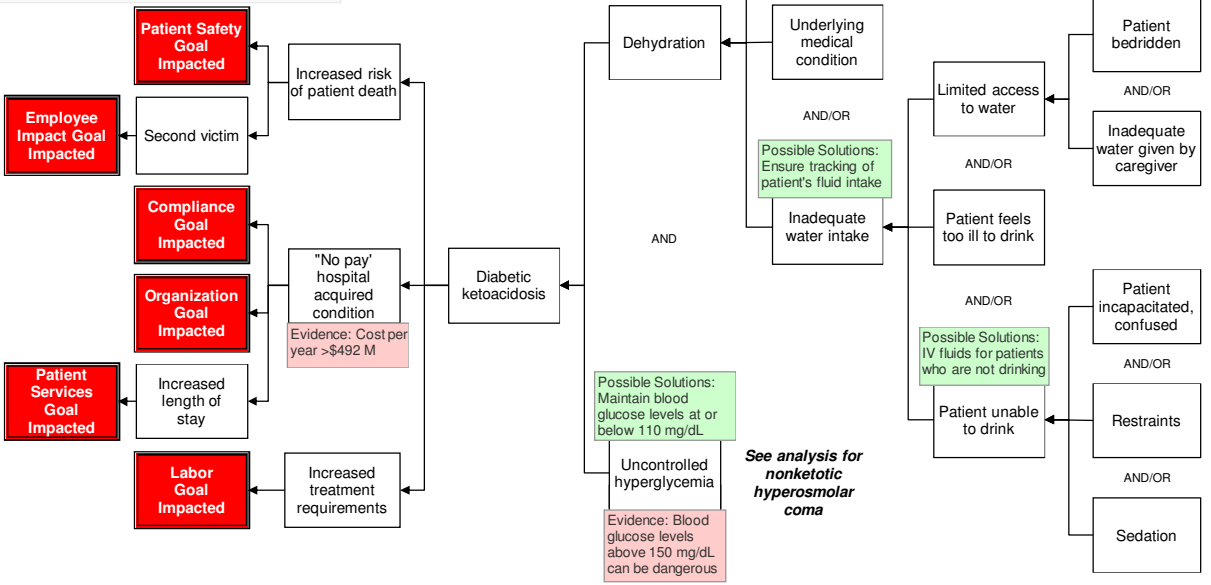
Diabetic ketoacidosis resulting from poor glycemic control within a hospital setting is now considered a hospital-acquired condition by Medicare & Medicaid, meaning that hospitals will not receive additional payment for cases when this condition is acquired during hospitalization.

"We now understand, more than we ever have, the importance of tight glycemic control. We need to implement that knowledge."

- R. Keith Campbell, PharmD, associate dean and professor of pharmacotherapy at Washington State University

More Detailed Cause Map
Add detail as information becomes available.





Cause Mapping is a Root Cause Analysis method that captures basic cause-and-effect relationships supported with evidence.

CAUSE MAPPING
Problem Solving • Incident Investigation • Root Cause Analysis

Step 1	Problem	What's the Problem?
Step 2	Analysis	Why did it happen?
Step 3	Solutions	What will be done?

For a free copy of our Root Cause Analysis Template in Microsoft Excel, used to create this page, visit our web site.