Root Cause Analysis Report

Patient Re-admitted, 2nd Surgery Required, Stay Extended

Problem Statement

Report Number	RCA-2016-06-09-2016-044	**RCA Owner**	Brian Hughes
Report Date	9/29/2016	**RCA Facilitator**	Brian Hughes

Focal Point: Patient Re-Admitted, 2nd Surgery Required, Stay Extended

When

Start Date: 8/30/2016	End Date: 9/10/2016
Start Time: 3:30PM	End Time: N/A
Unique Timing	Re-admitted, 2nd surgery after initial hernia repair operation failed and after patient had traveled 150 miles back home. Hospital stay extended upon discovery of clostridium difficile during 2nd hospitalization.

Where

Facility	A Major Hospital - Seattle, WA (Performed initial surgery)

Actual Impact

Patient Safety	Extended pain, discomfort	
Customer Service	Healthcare costs are not transparent. Estimated total additional costs.	$250,000.00
Cost	Extended rehab costs	
Cost	Family required to take time away from work	
Reputation (Internal)	Impact to Hospital goal of zero re-admittance	
Cost	2nd surgery/recovery costs	
Risk Score	Probability of Recurrence = 2 (Scale of 1 - 5) Impact of Recurrence = 5 (Scale of 1 - 5) Note: This is a Sologic risk matrix - UW has it's own risk scoring process. In either case, this event should score as high-risk.	
Patient Safety	Second abdominal surgery	
Cost	Emergency room costs at Memorial	
Cost	Transportation costs (including a medical jet)	

Actual Impact Total: $250,000.00

Frequency	
Frequency Note	Unknown frequency of re-admission, 2nd surgery

Potential Impact

Patient Safety	Potential patient mortality due to occluded bowel and/or subsequent attempts to repair.
Other Impacts	Potential negative impacts on the patient's family
Legal	Potential legal liability exposure
Cost	All costs could potentially be much higher
Reputation (Internal)	Potential negative impact to internal hospital goals
Reputation (External)	Potential negative impact to hospital reputation

Potential Impact Total: $0.00

Report Summaries

Executive Summary

This example examines an actual case of hospital re-admittance which included a second surgery. While recovering from the second surgery, the patient contracted a clostridium difficile infection which extended his stay for an extra two days. The re-admittance was complicated by the fact that the patient had to be transported by air (Lear jet) due to the fact that he lives 150 miles away from the hospital.

This is an interesting case because it involves a highly experienced surgeon and well-respected hospital facility. The surgical team participated in this RCA by providing very detailed information regarding the information available to them, how they processed it, and what decisions resulted from that process. They were actively involved and interested in learning from the experience.

It should be noted that all turned out okay – the patient is now well on the pathway to recovery.

Cause and Effect Summary

On 8/30/2016 a male in his mid-seventies went to the hospital to have what was initially thought to be a dime-sized hernia repaired. Given the fact that this patient treats kidney failure with peritoneal dialysis, a process that involves filling and subsequently draining the abdomen with fluid, the surgical team decided to place the hernia repair mesh between the inner abdominal lining and the layer of abdominal muscles. This would keep the mesh from coming in contact with the dialysis fluid, thereby lessoning the risk of infection or other complications.

Once the operation was begun, the damaged area turned out to be much larger. The plan did not change – however the area of the repair was much larger. The surgical team thought this to be the best possible plan. And there have been no past complications.

The operation was a success. The patient was sent to post-op, and then admitted for overnight observation. The next day, after receiving hemodialysis, the patient was released. The patient was strongly advocating for release. And there is systemic pressure on hospitals from insurance companies to limit stays. A family member then drove the patient 150 miles back to his home.

Over the next two days, it was determined that the patient was not recovering as expected. He had no appetite, felt nauseous, was bloated/distended, and had not moved his bowels since before surgery. The following morning, he was feeling extremely ill and asked to be taken to the emergency room of the local hospital (different from where the surgery was performed). The local hospital examined him and ordered an X-ray. The X-ray was inconclusive, so they ordered a CT scan. The CT scan revealed a suspected blockage in the bowel. They were in contact with the surgeon who performed the hernia operation, who recommended that he be admitted and treated until the blockage resolved – a process they estimated would take a few days.

After further examination of the CT film, it was determined that the patient's initial hernia operation had failed. The stitches inside the abdomen had pulled out due to the integrity of the abdominal tissue. This patient's abdomen was compromised by the process of peritoneal dialysis. Additional stresses were present because the patient is also obese and he has had numerous past surgeries. A portion of his small bowel had become occluded (trapped) inside

the area where the stiches had torn out. This small bowel occlusion was causing the distressing symptoms.

The local healthcare team decided that they could not repair the hernia locally. So they decided to send him back to the surgeon that conducted the original surgery. This required an air ambulance (Lear jet).

The patient was immediately sent to the OR upon arrival. The hernia was again repaired, but this time using a much larger piece of mesh that covered most of the abdominal wall. The patient was then admitted to the hospital.

After a few days, the patient developed diarrhea. The surgical team thought that this was due to the quantity of stool softeners prescribed. But when it did not clear up after a few days, a family member requested a test for clostridium difficile. The family member requested this test because his mother died from hospital-acquired clostridium difficile in 2007.

The test confirmed that the patient had contracted clostridium difficile. Therefore, his stay was extended by two days.

Solutions

SO-0001	**Solution**	Do not release patients until all systems have normalized.		
	Cause(s)	Patient released after 1st surgery		
	Note	This can be prioritized based on patient risk. In this case, this patient had several conditions that distinguished him from other patients. He had a history of abdominal surgeries, was obese, and was a peritoneal dialysis patient.		
	Assigned		**Criteria**	Passed
	Due		**Status**	Selected
	Term	short	**Cost**	$10,000.00
SO-0002	**Solution**	Consider potential tissue integrity weaknesses when deciding on repair types.		
	Cause(s)	Overall condition of patient's abdominal wall = suboptimal		
	Note	This particular surgical team will likely keep this experience in mind going forward, but it would be helpful to share with other such teams who may not have the same level of experience.		
	Assigned		**Criteria**	Passed
	Due		**Status**	Selected
	Term	short	**Cost**	$500.00
SO-0004	**Solution**	Make different arrangements to prioritize successful recovery.		
	Cause(s)	Patient had appointments at home 150 miles away		
	Note	This patient was prioritizing other appointments based on the best-case scenario. A range of scenarios should be considered when prioritizing recovery.		
	Assigned		**Criteria**	Passed
	Due		**Status**	Selected
	Term		**Cost**	$0.00
SO-0005	**Solution**	Examine whether insurance company pressure compromises patient care.		
	Cause(s)	Systemic pressure from insurance companies to limit hospital time		
	Note	Insurance companies want to limit hospital stays. This is not always a bad thing - patients are at-risk of infection and other complications when they stay in the hospital longer. However, if this pressure is causing additional harm in enough cases, it should be re-examined.		
	Assigned		**Criteria**	Passed
	Due		**Status**	Selected

	Term	long	**Cost**	$5,000.00
SO-0006	**Solution**	Caution family members to respond sooner to problematic symptoms.		
	Cause(s)	Patient, family, waited for situation to resolve at home		
	Note	The family and patient chose to wait these troubling symptoms out. They need to recognize the symptoms of life-threatening complications and be encouraged to act on them sooner.		
	Assigned		**Criteria**	Passed
	Due		**Status**	Selected
	Term	short	**Cost**	$0.00
SO-0007	**Solution**	Test patients for C-Diff when diarrhea does not resolve.		
	Cause(s)	Test not ordered by medical team		
	Note	C-diff infections are prevalent in many healthcare facilities. Unresolved diarrhea requires testing.		
	Assigned		**Criteria**	Passed
	Due		**Status**	Selected
	Term	short	**Cost**	$5,000.00

Evidence

EV-0001	**Evidence**	Statements (Patient)
	Cause(s)	Obesity (pressures, tensions, etc.) Thought that patient symptoms were the normal result of surgery No experience with intestinal occlusion Confirmation bias - just wanted everything to be okay Duration of occlusion = 3 days Request by family member Patient tested for C-Diff Hospital (nurse) honored request for testing Symptoms became worse Patient entered local hospital Patient resides 150 miles from Hospital Patient was tolerating the symptoms reasonably well
	Location(s)	Verbal statements
	Attachment(s)	
	Contributor	Brian Hughes
	Type	
	Quality	★★★★☆
EV-0002	**Evidence**	Statements (Family members)
	Cause(s)	Returned to hospital 3 days after initial release Thought that patient symptoms were the normal result of surgery No experience with intestinal occlusion Confirmation bias - just wanted everything to be okay Patient, family, waited for situation to resolve at home Past history - family member's mother died from hospital c-diff Family member knows early detection key to successful recovery Family member recognized symptoms Request by family member Hospital (nurse) honored request for testing Patient was tolerating the symptoms reasonably well
	Location(s)	Verbal statements
	Attachment(s)	
	Contributor	Brian Hughes
	Type	
	Quality	★★★★☆

EV-0003	**Evidence**	Statements (Surgical Team)
	Cause(s)	Patient involvement in care is valued by the hospital Patient had appointments at home 150 miles away Most hernia operations are successful Patient strongly desired to leave hospital and go home - hospital listened Systemic pressure from insurance companies to limit hospital time Failures of this type have not occurred with this surgical team in past Generally considered to be a better repair method Mesh is a possible place for infection to take hold Decision by surgical team to limit hernia repair mesh exposure to PD fluid Chosen repair method (Stitch fascia, add mesh layer, stitch muscle) 1st hernia repair failed (Fascia layer [inner-most layer] repair failed) Size of of abdominal weakness zone(s) required ~ 6 inches Size of initial hernia repair approximately 6 inches Size of open area created by failure large enough for intestine Small intestine became occluded in inner tissue layer Normal internal pressures, motion, etc. Size of intestine small enough for hole in abdomin Blood flow to intestine severely restricted Occlusion severity level = high Cannot be treated externally Reducing the intestinal occlusion required a 2nd surgery 2nd surgery required Request by family member Hospital (nurse) honored request for testing
	Location(s)	Verbal statements
	Attachment(s)	
	Contributor	Brian Hughes
	Type	
	Quality	★★★★☆
EV-0004	**Evidence**	Statements (ER Staff)
	Cause(s)	Complexity of patient, situation Local hospital did/could/would not treat Patient sent via air flight Ground travel was not available
	Location(s)	Verbal statements
	Attachment(s)	
	Contributor	Brian Hughes
	Type	
	Quality	★★★★☆
EV-0005	**Evidence**	Pictures from Second Surgery

	Cause(s)	Small intestine became occluded in inner tissue layer Size of open area created by failure large enough for intestine Size of initial hernia repair approximately 6 inches Size of of abdominal weakness zone(s) required ~ 6 inches Blood flow to intestine severely restricted
	Location(s)	
	Attachment(s)	Hernia Repair - Small Bowel 1.JPG, Hernia Repair - Group.JPG, Hernia Repair - Abdominal Wall 2.JPG, Hernia Repair - Abdominal Wall 1.JPG
	Contributor	Brian Hughes
	Type	Photo
	Quality	★★★★★
EV-0006	**Evidence**	Patient medical history
	Cause(s)	Patient released after 1st surgery Returned to hospital 3 days after initial release Patient re-admitted History of multiple surgeries Peritoneal dialysis (pressure changes, tissue saturation, etc.) Overall condition of patient's abdominal wall = suboptimal Obesity (pressures, tensions, etc.) Past hernia surgery in same site failed (different Dr, hospital) Size of of abdominal weakness zone(s) required ~ 6 inches Test not ordered by medical team Patient tested for C-Diff C-Diff test = positive for toxin B Patient discovered to have clostridium difficile (C-diff - toxin B) C-Diff vector options Hospital stay extended 2 Days Symptoms became worse Patient entered local hospital
	Location(s)	
	Attachment(s)	
	Contributor	
	Type	
	Quality	★★★★★
EV-0007	**Evidence**	NIH Article on C-Diff
	Cause(s)	Doctor recommendation to stay in hospital
	Location(s)	http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3088840/
	Attachment(s)	
	Contributor	Brian Hughes
	Type	URL
	Quality	★★★★★

EV-0008	**Evidence**	No evidence available
	Cause(s)	Patient entered hospital with C-Diff? Patient contracted C-Diff in hospital?
	Location(s)	
	Attachment(s)	
	Contributor	
	Type	
	Quality	★★★★★

Actions

AC-0002	**Action**	Why didn't the medical team recognize the symptoms and order the c-diff test?
	Cause(s)	Test not ordered by medical team
	Assigned	Brian Hughes
	Date	9/11/2016

Notes

NO-0001	**Note**	Patient did not experience any abnormal impacts, motions, etc.
	Cause(s)	

Chart Key
- Transitory
- Non Transitory
- Transitory Omission
- Non Transitory Omission
- Undefined
- Chart Quality Alert
- Focal Point
- Evidence
- Notes
- Solutions
- Actions

Patient Re-Admitted, 2nd Surgery Required, Stay Extended

Patient re-admitted

Patient released after 1st surgery

Solutions

Do not release patients until all systems have normalized.

Criteria Pass Status Selected

This can be prioritized based on patient risk. In this case, this patient had several conditions that distinguished him from other patients. He had a history of abdominal surgeries, was obese, and was a peritoneal dialysis patient.

Most hernia operations are successful → END

Terminated Because: Desired State

Patient strongly desired to leave hospital and go home - hospital listened

Patient involvement in care is valued by the hospital → END

Terminated Because: Desired State

Patient had appointments at home 150 miles away → END

Terminated Because: Other causual paths more productive

Solutions

Make different arrangements to prioritize successful recovery.

Criteria Pass Status Selected

This patient was prioritizing other appointments based on the best-case scenario. A range of scenarios should be considered when prioritizing recovery.

Systemic pressure from insurance companies to limit hospital time → END

Terminated Because: Potentially larger, systemic issue

Solutions

Examine whether insurance company pressure compromises patient care.

Criteria Pass Status Selected

Insurance companies want to limit hospital stays. This is not always a bad thing - patients are at-risk of infection and other complications when they stay in the hospital longer. However, if this pressure is causing additional harm in enough cases, it should be re-examined.

Returned to hospital 3 days after initial release

Patient resides 150 miles from Hospital → END

Terminated Because: Other causual paths more productive

Patient sent via air flight

Patient entered local hospital → Symptoms became worse

Connects To: b 1st hernia repair failed (Fascia layer [inner-most layer] repair failed)

Local hospital did/could/would not treat → Complexity of patient, situation → END

Terminated Because: Other causual paths more productive

Ground travel was not available → END

Terminated Because: Other causual paths more productive

b

1st hernia repair failed (Fascia layer [inner-most layer] repair failed)

Chosen repair method (Stitch fascia, add mesh layer, stitch muscle) → Decision by surgical team to limit hernia repair mesh exposure to PD fluid

Failures of this type have not occurred with this surgical team in past → END

Terminated Because: Desired State

Generally considered to be a better repair method → END

Terminated Because: Other causual paths more productive

Mesh is a possible place for infection to take hold → END

Terminated Because: Other causual paths more productive

Connects To: a Overall condition of patient's abdominal wall = suboptimal

Small intestine became occluded in inner tissue layer

Size of open area created by failure large enough for intestine → Size of initial hernia repair approximately 6 inches → Size of of abdominal weakness zone(s) required ~ 6 inches

Overall condition of patient's abdominal wall = suboptimal

Solutions

Consider potential tissue integrity weaknesses when deciding on repair types.

Criteria Pass Status Selected

This particular surgical team will likely keep this experience in mind going forward, but it would be helpful to share with other such teams who may not have the same level of experience.

History of multiple surgeries → END

Terminated Because: Other causual paths more productive

Peritoneal dialysis (pressure changes, tissue saturation, etc.) → END

Terminated Because: Other causual paths more productive

Obesity (pressures, tensions, etc.) → END

Terminated Because: Other causual paths more productive

Past hernia surgery in same site failed (different Dr, hospital) → END

Terminated Because: Different problem

Normal internal pressures, motion, etc. → END

Terminated Because: Other causual paths more productive

Size of intestine small enough for hole in abdomin → END

Terminated Because: Other causual paths more productive

2nd surgery required

Reducing the intestinal occlusion required a 2nd surgery

Occlusion severity level = high

Blood flow to intestine severely restricted → END

Terminated Because: Other causual paths more productive

Duration of occlusion = 3 days

Patient, family, waited for situation to resolve at home

Solutions

Caution family members to respond sooner to problematic symptoms.

Criteria Pass Status Selected

The family and patient chose to wait these troubling symptoms out. They need to recognize the symptoms of life-threatening complications and be encouraged to act on them sooner.

Thought that patient symptoms were the normal result of surgery → END

Terminated Because: Other causual paths more productive

No experience with intestinal occlusion → END

Terminated Because: Other causual paths more productive

Confirmation bias - just wanted everything to be okay → END

Terminated Because: Other causual paths more productive

Patient was tolerating the symptoms reasonably well → END

Terminated Because: Other causual paths more productive

Cannot be treated externally → END

Terminated Because: Other causual paths more productive

Hospital stay extended 2 Days

Patient discovered to have clostridium difficile (C-diff - toxin B)

Patient tested for C-Diff

Request by family member

Family member recognized symptoms → END

Terminated Because: Other causual paths more productive

Family member knows early detection key to successful recovery → Past history - family member's mother died from hospital c-diff → END

Terminated Because: Out of scope for this RCA

Test not ordered by medical team

Solutions

Test patients for C-Diff when diarrhea does not resolve.

Criteria Pass Status Selected

C-diff infections are prevalent in many healthcare facilities. Unresolved diarrhea requires testing.

Hospital (nurse) honored request for testing → END

Terminated Because: Desired State

C-Diff test = positive for toxin B → C-Diff vector options

AND OR

Patient entered hospital with C-Diff?

Patient contracted C-Diff in hospital?

Doctor recommendation to stay in hospital → END

Terminated Because: Other causual paths more productive