

Incidence and Implications of Re-intubation after Cardiac Surgery

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Introduction

- Complications after cardiac surgery can significantly impact a patient's hospital length of stay
- Increasing length of stay correlates with an increase in healthcare burden

We sought to examine the incidence and investigate the implications of re-intubations after cardiac surgery



Methods

- The study utilized retrospective data from the State Inpatient Database (SID), Healthcare Cost and Utilization Project, AHRQ
- Contains records of patients discharged from non-federal, non-psychiatric community hospitals
- More than 100 clinical/non-clinical variables available
- Patients underwent either aortic valve, mitral valve, coronary bypass surgery or a combination
 - 2006-2011
 - New York, Florida and California



Patient Demographics and Hospital Information

	Endotracheal Re-Intubation		No Intubation		Total Cardiac Cases		P-value
	N (%)		N (%)		N (%)		
Total	25054 (6.7)		348747 (93.3)		373801		
Patient Demographics							
State							<0.0001
California	8255	(6.0)	129402	(94.0)	137657		
Florida	9552	(7.5)	117159	(92.5)	126711		
New York	7247	(6.6)	102186	(93.4)	109433		
Age							<0.0001
Mean, Mean +/-5%	69.1 (68.9, 69.3)		66.9 (66.9, 67.0)				
Age by category							<0.0001
<45	1012	(4.0)	14091	(4.0)	15103	(4.0)	
45-54	2080	(8.3)	38072	(10.9)	40152	(10.7)	
55-64	4603	(18.4)	82082	(23.5)	86685	(23.2)	
65-74	7330	(29.3)	108763	(31.2)	116093	(31.1)	
>75	10029	(40.0)	105739	(30.3)	115768	(31.0)	
Gender							<0.0001
Male	15292	(61.0)	239673	(68.8)	254965	(68.2)	
Female	9761	(39.0)	108953	(31.3)	118714	(31.8)	
Deyo Index, average							<0.0001
Mean, Mean +/-5%	2.5 (2.5, 2.6)		1.7 (1.7, 1.7)				
Hospitalization Information							
Length of stay							<0.0001
Mean, Mean +/-5%	23.2 (23.0, 23.5)		9.9 (9.9, 9.9)				
Disposition							<0.0001
Routine	4004	(16.0)	113707	(32.6)	117711	(31.5)	
Transfer to short-term hospital	888	(3.5)	2498	(0.7)	3386	(0.9)	
Transfer to other	9357	(37.4)	65439	(18.8)	74796	(20.0)	
Home health care	6307	(25.2)	162418	(46.6)	168725	(45.1)	
Against medical advice	52	(0.2)	299	(0.1)	351	(0.1)	
Died	4391	(17.5)	4271	(1.2)	8662	(2.3)	
Discharged alive, destination unknown	54	(0.2)	101	(0.0)	155	(0.0)	



Postoperative complications and procedures

	Endotracheal Re-Intubation		No Intubation		Total Cardiac Cases		P-value
	N	(%)	N	(%)	N	(%)	
Total	25054	(6.7)	348747	(93.3)	373801		
Complications							
In-hospital mortality Cardiac or Pulmonary Complications	4391	(17.5)	4271	(1.2)	8662	(2.3)	<0.0001
CVA or Stroke	4515	(18.0)	41666	(12.0)	46181	(12.4)	<0.0001
Pulmonary Embolism	2024	(8.1)	12374	(3.6)	14398	(3.9)	<0.0001
Sepsis	4985	(19.9)	5617	(1.6)	10602	(2.8)	<0.0001
Shock	5407	(21.6)	9506	(2.7)	14913	(4.0)	<0.0001
Pneumonia	9497	(37.9)	23871	(6.8)	33368	(8.9)	<0.0001
Myocardial Infarction	7873	(31.4)	99458	(28.5)	107331	(28.7)	<0.0001
Acute renal failure	11009	(43.9)	51406	(14.7)	62415	(16.7)	<0.0001
Hemorrhage	9521	(38.0)	95379	(27.4)	104900	(28.1)	<0.0001
Infection	5593	(22.3)	27569	(7.9)	33162	(8.9)	<0.0001
Acute respiratory failure	20931	(83.5)	96506	(27.7)	117437	(31.4)	<0.0001
Procedures							
Postoperative blood transfusions	13826	(55.2)	160208	(45.9)	174034	(46.6)	<0.0001



Discussion

- Higher frequency of other post-operative complications in patients who require post-operative re-intubation
- Re-intubated patients had higher frequency of blood transfusion
- Further investigation
 - Breakdown by cardiac procedures
 - Timing of primary extubation
 - Timing between primary extubation and reintubation
 - Association with co-morbidities
- Limitations
 - Coding of co-morbidities
 - Variability in post operative care
 - Secondary data source

