## Preoperative Anemia as a Risk Factor for Postoperative Complications Following Open Reduction Internal Fixation of Distal Radius Fractures

Alexander R. Garcia, BS<sup>1</sup>, Kenny Ling, MD<sup>2</sup>, Samer Al-Humadi, MD<sup>2</sup>, David Komatsu, PhD<sup>2</sup>, Edward D. Wang, MD<sup>2</sup>

<sup>1</sup>Renaissance School of Medicine at Stony Brook University, Stony Brook, NY, USA, <sup>2</sup>Department of Orthopaedics and Rehabilitation, Stony Brook University, Stony Brook, NY, USA.

Alexander.garcia@stonyrookmedicine.edu

Disclosures: Alexander R. Garcia (N), Kenny Ling (N), Samer Al-Humadi (N), David Komatsu (N), Edward D. Wang (N)

INTRODUCTION: The incidence of distal radius fractures (DRF) in the United States is over 640,000 cases per year and is projected to increase. The overall prevalence of anemia in the United States increased from 5.71% in 2005 to 6.86% in 2018. Therefore, preoperative anemia may be an important risk factor to consider prior to surgical fixation of a distal radius fracture. The purpose of this study was to investigate preoperative anemia and its association with short-term complications following surgical treatment of distal radius fractures.

METHODS: The American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) database was queried for all patients who underwent open reduction internal fixation (ORIF) of DRF between 2015 and 2020. The initial pool of patients was divided into cohorts based on preoperative hematocrit. Multivariate logistic regression, adjusted for all significantly associated patient demographics and comorbidities, was used to identify associations between preoperative anemia and postoperative complications following ORIF of DRF.

RESULTS SECTION: A total of 22,923 patients who underwent ORIF of DRF were identified in NSQIP from 2015 to 2020. Of the 12,068 patients remaining after exclusion criteria, 9,616 (79.7%) patients were included in the normal cohort, 2,238 (18.5%) patients were included in the mild anemia cohort, and 214 (1.8%) patients were included in the severe anemia cohort. Compared to the reference cohort, patients with any anemia were independently associated with higher rates of reintubation (OR 6.51, 95% CI 1.29-32.80; p = 0.023), blood transfusion (OR 11.83, 95% CI 3.95-35.45; p < 0.001), septic shock (OR 10.76, 95% CI 1.19-97.02; p = 0.034), readmission (OR 2.10, 95% CI 1.60-2.76, p < 0.001), non-home discharge (OR 2.22, 95% CI 1.84-2.68; p < 0.001), and mortality (OR 2.70, 1.03-7.07; p = 0.043).

DISCUSSION: We hypothesized that preoperative anemia is associated with non-home discharge. Preoperative anemia, both mild and severe, were clinically significant predictors for postoperative complications within 30-days following ORIF of DRF. Severe anemia was associated with higher rates of blood transfusion, non-home discharge, and mortality compared to mild anemia. A major limitation is that NSQIP inherently excludes cases performed for trauma, which likely excludes cases of DRF ORIF in poly-trauma patients. While this does not allow us to investigate a certain portion of DRF cases, it may be beneficial to our analysis, as anemia is much more difficult to control in a poly-trauma setting. The NSQIP database only allows us to investigate postoperative complications within 30 days of the procedure only.

SIGNIFICANCE/CLINICAL RELEVANCE: Distal Radius fractures occur largely in elderly populations that may be at higher risk for preoperative anemia. By analyzing complications with preoperative anemia surgeons can better determine patients at increased risk of complications.

Level of Evidence: Level III; Retrospective Cohort Comparison; Prognosis Study

Keywords: distal radius fracture, open reduction internal fixation, preoperative anemia, postoperative complication

sble 1. Patient demographic ficate statistical significance	s/comorbidities in pati e with p < 0.05.	ens with and withou						statistical significance with p <	0.06			stients with no anem	,					
	Normal	Any Anemia	Mild Anemia	Severe Anemia	Any vs no anemia	Mild vs no anemia	Severe vs mild anemia	statistical significance with p	0.03.									
haracteristic			Number 96		p-value	p-value	p-value		Normal	Any Ane	mia	Mild Anemia	Severe A	nemia	Any vs no	Mild vs no	Severe vs	
otal ige	9,616 100.0%	2,452 100.0%	2,238 100.0%	214 100.0%	< 0.001	<0.001	0.966		(n=9,616)	(n=2,4	52)	(n=2,238)	(n=2	14)	anemia	anemia	mild anemia	
18-39	1,179 12,3%	204 8,3%	192 8,6%	12 5,6%	V0.001	Q0.001	0.900	Complication	Number %	Number	96	Number %	Number	96	p-value	p-value	p-value	
40-64	4,542 47.256	959 39.1%	869 38.8%					Pneumonia	5 0.05%	3	0.12%	2 0.09%	1	0.4796	0.036	0.100	0.223	
IS-74	2,405 25.0%	648 26.4%	598 26.7%	50 23.4%				Superficial incisional SSI	28 0.29%	- 11	0.45%	10 0.45%	1	0.4796	0.224	0.244	0.966	
75	1,490 15.5%	641 26.1%	579 25.9%	62 29.0%				Deep incisional SSI	5 0.05%		0.1296	2 0.09%	i	0.4796	0.241	0.517	0.177	
y mass index (kg/m²) :18 5	211 2.256	94 3.8%	70 3 5%	15 7.0%	0.073	0.032	0.106	Organ/Space SSI	5 0.05%		0.08%	2 0.09%	Ô	0.00%	0.590	0.517	0.999	
8.5-29.9	6,048 62,9%	1,567 63,9%	1,444 64,5%					Wound dehiscence	5 0.05%		0.00%	0 0.00%	0	0.00%	0.999	0.999	0.999	
0.0-34.9	1,880 19.6%	447 18.2%	403 18.0%	44 20.6%														
5.0-39.9	842 8.8% 635 6.6%	191 7.8% 153 6.2%	179 8.0% 133 5.9%					Reintubation	2 0.02%		0.29%	5 0.22%	2	0.93%	0.001	0.005	0.087	
40.0 ler	035 0.0%	153 6.2%	133 5.9%	20 9.3%	0.211	0.590	0.012	Pulmonary embolism	7 0.07%		0.12%	3 0.13%	0	0.00%	0.452	0.376	0.999	
emale	7.304 76.0%	1.892 77.2%	1.712 76.5%	190 84.1%	0.221	0.250	0.011	Ventilator >48 hours	0 0.00%		0.16%	3 0.13%	1	0.47%		-	0.279	
ale	2,312 24.0%	560 22.8%	526 23.5%	34 15.9%				Urinary tract infection	36 0.37%	21	0.86%	16 0.71%	5	2.34%	0.005	0.057	0.036	
ional status					<0.001	<0.001	< 0.001	Stroke	5 0.05%	1	0.04%	1 0.04%	0	0.00%	0.824	0.890	0.999	
dependent apandent	9,443 98.2% 173 1.8%	2,344 95.6% 108 4.4%	2,150 96.1%	194 90.7% 20 9.3%				Cardiac arrest	0 0.00%	5	0.20%	3 0.13%	2	0.93%		-	0.033	
classification	1/3 1.070	100 4,476	00 3.970	20 9.3%	< 0.001	<0.001	< 0.001	Myocardial infarction	9 0.09%	3	0.12%	3 0.13%	0	0.00%	0.688	0.590	0.999	
2	6,482 67.4%	1,154 47.1%	1,084 48.4%	70 32.7%				Blood transfusions	4 0.04%	26	1.06%	11 0.49%	15	7.01%	< 0.001	< 0.001	< 0.001	
3	3,134 32.6%	1,298 52.9%	1,154 51.6%	144 67.3%				Deep vein thrombosis	8 0.08%		0.12%	2 0.09%	1	0.4796	0.569	0.928	0.177	
etes mellitus					< 0.001	< 0.001	0.547		5 0.05%		0.24%	5 0.22%	1	0.4796	0.010	0.021	0.500	
o on-invalin	8,679 90.3% 628 6.5%	2,022 \$2.5% 230 9.4%	1,846 \$2.5% 214 9.6%	176 \$2.2% 16 7.5%				Sepsis										
sulin	309 3.2%	200 8.2%	178 8.0%	22 10.3%				Septic shock	1 0.01%		0.20%	4 0.18%	1	0.47%	0.007	0.011	0.390	
ent smoker					0.189	0.081	0.068	Readmission	137 1.42%	104		91 4.07%	13	6.07%	< 0.001	< 0.001	0.167	
0	7,871 81.9%	2,035 \$3.0%	1,867 83.4%	168 78.5%				Reoperation	99 1.03%	30	1.22%	27 1.21%	3	1.40%	0.405	0.463	0.804	
es D	1,745 18.1%	417 17.0%	371 16.6%	46 21.5%				Non-home discharge	265 2.76%	244	9.95%	199 8.89%	45	21.03%	< 0.001	< 0.001	< 0.001	
	9,228 96.0%	2,258 92.1%	2,072 92.6%	186 86.9%	<0.001	<0.001	0.004	Mortality	7 0.07%	- 11	0.45%	6 0.27%	5	2.34%	< 0.001	0.019	< 0.001	
No is estive heart failure	388 4.0%	194 7.9%	166 7.4%	28 13.1%	<0.001	<0.001	0.004	eer										
io s estive heart failure								Table 3. Multivariate analy	ysis of 30-day p	ostoperativ	compl	lications in patie	nts with p	reoperati				associa
o stive heart failure s tension	383 4.0% 9,585 99.7% 31 0.3%	194 7.9% 2,420 98.7% 32 1.3%	166 7.4% 2,213 98.9% 25 1.1%	28 13.1% 207 96.7% 7 3.3%				eer	ysis of 30-day p	ostoperativ	compl	lications in patie	nts with p	reoperati				associa
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s s settive heart failure s tension s minated cancer	383 4.0% 9,585 99.7% 31 0.3% 6,002 62.4% 3,614 37.6%	194 7.9% 2,420 98.7% 32 1.3% 1,162 47.4% 1,290 52.6%	166 7.4% 2,213 98.9% 25 1.1% 1,064 47.5% 1,174 52.5%	28 13.1% 207 96.7% 7 3.3% 98 45.8% 116 54.2%	<0.001	<0.001	0.011	Table 3. Multivariate analy demographics and comorbi	ysis of 30-day poidities. Bold p-v	ostoperative alues indica Any	e compl ste stati vs <b>no a</b>	lications in patie istical significand anemia	nts with p	reoperati < 0.05.	ive anemia, nemia	adjusted fo	r significantly ere vs mild an	ıemia
ention  insted cancer	388 4.0% 9,585 99.7% 31 0.3% 6,002 62.4% 3,614 37.6% 9,596 99.8%	194 7.9% 2,420 98.7% 32 1.3% 1,162 47.4% 1,290 52.6% 2,430 99.1%	166 7.4% 2,213 98.9% 25 1.1% 1,064 47.5% 1,174 52.5% 2,218 99.1%	28 13.1% 207 96.7% 7 3.3% 98 45.8% 116 54.2% 212 99.1%	<0.001 <0.001 <0.001	<0.001 <0.001 <0.001	0.011 0.625 0.952	Table 3. Multivariate analydemographics and comorbi	ysis of 30-day p idities. Bold p-v 	ostoperative alues indica Any OR	e compl ite stati vs no a 95%	lications in patie istical significand memia CI p-value	nts with p	reoperati < 0.05. l vs no an 95% C	ive anemia, nemia I p-valu	adjusted fo	er significantly ere vs mild an 95% CI	emia p-valı
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o istive beart failure istive beart failure mension is initiated cancer is initiated cancer cound wound on the control of the	388 4.0% 9,585 99.7% 31 0.3% 6,002 62.4% 3,614 37.6% 20 0.2% 9,595 99.8% 20 0.2% 9,410 97.9% 206 2.1% 9,357 97.3% 259 2.7% 9,350 97.5% 236 2.5%	194 7.9% 2,420 98.7% 32 1.3% 1,162 47.4% 1,190 52.6% 2,430 99.1% 22,348 95.8% 104 4.2% 2,338 95.4% 114 4.6% 2,300 93.8% 152 6.2%	166 7.4% 2,213 98.9% 25 1.1% 1,064 47.5% 1,174 52.5% 2,218 99.1% 2,0 0.9% 2,147 95.9% 91 4.1% 2,132 95.3% 106 4.7% 2,105 94.1% 133 5.9%	28 13.15 207 96.75 7 3.35 98 45.85 116 54.25 212 99.15 2 0.95 201 93.95 13 6.15 206 96.35 8 3.75 19 8.95	<0.001 <0.001 <0.001 <0.001 <0.001	<0.001 <0.001 <0.001 <0.001 <0.001	0.011 0.625 0.952 0.167 0.509	Table 3. Multivariate analy demographics and comorby  Complication Pneumonin Reimbotsi Urinary tra Cardiac an Bilood tran Sepsis	ysis of 30-day p idities. Bold p-v tion a on act infection rest sfusions	OR 1.35 6.51 1 1.48 11.83 3 2.63	vs no a 95% 0 0.60-3 .29-32 0.85-2 .95-35	lications in patie istical significance in the interest of the istical significance in	Mild OR 5.71 7.03 3.06	vs no as 95% C 1.05-31.0 2.16-22.9 0.83-11.2	nemia  7 p-valu  17 0.04  18 00 0.00  17 0.09	Sev e OR	ere vs mild an 95% CI 	0.17 0.13 0.13 <0.00
is the beart failure is the beart failure is consistent of the con	9,585 99,794 31 0,394 6,002 62,494 9,505 99,594 20 0,294 9,410 97,994 205 2,194 9,410 97,994 205 2,794 9,357 97,394 259 2,794 9,359 97,594 259 2,794 9,350 97,594 256 2,595 9,615 100,094	194 7.9% 2,420 98.7% 32 1.3% 1,162 47.4% 1,290 52.6% 2,430 99.1% 2,248 95.8% 104 4.2% 2,338 95.4% 114 4.6% 125 6.2% 2,432 99.9%	166 7.456 2,213 98.956 25 1.156 1,004 47.576 1,174 52.576 2,218 99.156 20 0.956 2,147 95.956 91 4.156 2,132 95.356 106 4.756 2,105 94.156 133 5.956 2,234 99.856	28 13.15 207 96.75 7 3.356 98 45.856 116 54.256 212 99.156 20 99.356 13 6.156 206 96.356 8 3.756 19 91.156 19 8.956	<0.001 <0.001 <0.001 <0.001 <0.001 <0.001	<0.001 <0.001 <0.001 <0.001 <0.001	0.011 0.625 0.952 0.167 0.509	Table 3. Multivariate analy demographics and comorbic prographics and comorbic programmes and pr	ysis of 30-day poidities. Bold p-vition a on act infection rest sfusions	Any OR 1.35 6.51 1.48 11.83 2.63 10.76 1	vs no a 95% 0 0.60-3. .29-32. 0.85-2. .95-35. 0.72-9. .19-97.	itications in patie istical significance internia CI p-value .03 0.463 .80 0.023 .57 0.168 0.001 .69 0.145 .02 0.034	Mild OR	reoperati < 0.05. I vs no ar 95% C 1.05-31.0 2.16-22.9 0.83-11.2 1.01-90.9	nemia  I p-valu  17 0.04	Sev e OR	ere vs mild an 95% CI  0.73-5.62 0.66-25.68 3.29-19.03	0.17 0.13 0.13 <0.00
o intro beart failure intr	388 4.0% 9,585 99.7% 31 0.3% 6,002 62.4% 3,614 37.6% 20 0.2% 9,595 99.8% 20 0.2% 9,410 97.9% 206 2.1% 9,357 97.3% 259 2.7% 9,350 97.5% 236 2.5%	194 7.9% 2,420 98.7% 32 1.3% 1,162 47.4% 1,190 52.6% 2,430 99.1% 22,348 95.8% 104 4.2% 2,338 95.4% 114 4.6% 2,300 93.8% 152 6.2%	166 7.4% 2,213 98.9% 25 1.1% 1,064 47.5% 1,174 52.5% 2,218 99.1% 2,0 0.9% 2,147 95.9% 91 4.1% 2,132 95.3% 106 4.7% 2,105 94.1% 133 5.9%	28 13.15 207 96.75 7 3.35 98 45.85 116 54.25 212 99.15 2 0.95 201 93.95 13 6.15 206 96.35 8 3.75 19 8.95	<0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001	<0.001 <0.001 <0.001 <0.001 <0.001 <0.001	0.011 0.625 0.952 0.167 0.509 0.091	Table 3. Multivariate analy demographics and comorby  Complication Pneumonin Reimbotsi Urinary tra Cardiac an Bilood tran Sepsis	ysis of 30-day poidities. Bold p-vition a on act infection rest sfusions	Any OR 1.35 6.51 1.48 11.83 2.63 10.76 1	vs no a 95% 0 0.60-3 .29-32 0.85-2 .95-35	itications in patie istical significance internia CI p-value .03 0.463 .80 0.023 .57 0.168 0.001 .69 0.145 .02 0.034	Mild OR 5.71 7.03 3.06	vs no as 95% C 1.05-31.0 2.16-22.9 0.83-11.2	nemia  I p-valu  17 0.04	Sev e OR	ere vs mild an 95% CI 	0.1° 0.1° 0.1° <0.00
ention beart failure ention sinated cancer round wound to corrold use ag disorders saion prior to surgery two duration (minutes)	9,585 99,794 31 0,394 6,002 62,494 9,505 99,594 20 0,294 9,410 97,994 205 2,194 9,410 97,994 205 2,794 9,357 97,394 259 2,794 9,359 97,594 259 2,794 9,350 97,594 256 2,595 9,615 100,094	194 7.9% 2,420 98.7% 32 1.3% 1,162 47.4% 1,290 52.6% 2,430 99.1% 2,248 95.8% 104 4.2% 2,338 95.4% 114 4.6% 125 6.2% 2,432 99.9%	166 7.456 2,213 98.956 25 1.156 1,004 47.576 1,174 52.576 2,218 99.156 20 0.956 2,147 95.956 91 4.156 2,132 95.356 106 4.756 2,105 94.156 133 5.956 2,234 99.856	28 13.15 207 96.75 7 3.356 98 45.856 116 54.256 212 99.156 20 99.356 13 6.156 206 96.356 8 3.756 19 91.156 19 8.956	<0.001 <0.001 <0.001 <0.001 <0.001 <0.001	<0.001 <0.001 <0.001 <0.001 <0.001	0.011 0.625 0.952 0.167 0.509	Table 3. Multivariate anal demographics and comorb Complica Pneumoni Reimubati Urinary tra Cardiac an Blood tran Septis Septis Septis	ysis of 30-day pidities. Bold p-vition a a on act infection rest sfusions ck on	Any OR 1.35 6.51 1.48 11.83 2.63 10.76 1 2.10	vs no a 95% 0.60-3. .29-32. 0.85-2. .95-35. 0.72-9. .19-97. 1.60-2.	lications in paties istical significance in the interest of th	Mild OR	reoperati < 0.05. I vs no ar 95% C 1.05-31.0 2.16-22.9 0.83-11.2 1.01-90.9 1.55-2.7	nemia  I p-valu  17 0.04  19 0.00  17 0.09  17 0.09  18 0.09  18 0.09  18 0.09  18 0.09	Sev e OR 2.02 - 4.12 1 7.91 3 9 - 1	ere vs mild an 95% CI  0.73-5.62 0.66-25.68 3.29-19.03	0.1° 0.1° 0.1° <0.00
tive heart failure  mation  mation cancer  ound wound  n  g disorders  g disorders  ve duration (minutes)  3	9,535 9,794 31 0,394 6,002 62,134 9,504 93,614 37,696 9,509 99,594 200 0,294 9,410 97,994 205 2,794 9,357 97,394 229 2,794 9,350 97,594 226 2,594 9,615 100,094 1,095 2,406 1,096 2,514	2,420 98.7% 32 1.3% 1.162 47.4% 1.200 52.0% 2.450 99.1% 22 0.9% 2.460 99.1% 4.2% 2.300 98.9% 1.164 4.2% 2.300 98.9% 1.25 2.200 0.8% 600 24.5% 1.105 48.7% 660 660 24.5% 1.105 48.7% 660 24.5% 660 24.5% 1.105 48.7% 660 24.5% 1.105 48.7% 660 24.5% 1.105 48.7% 660 24.5% 1.105 48.7% 660 24.5% 1.105 48.7% 660 24.5% 1.105 48.7% 660 24.5% 1.105 48.7% 660 24.5% 1.105 48.7% 660 24.5% 1.105 48.7% 660 24.5% 1.105 48.7% 660 24.5% 1.105 48.7% 660 24.5% 1.105 48.7% 660 24.5% 660 24.5% 1.105 48.7% 660 24.5% 660 24.5% 1.105 48.7% 660 24.5% 660 24.5% 1.105 48.7% 660 24.5%	2,113 98,9% 1,10%	28 13.145 207 96.715 7 3.376 7 3.376 98 45.876 121 99.155 2 0.976 201 92.976 13 61.75 10 92.576 10 7.576 10 92.576 10 7.576 38 27.116 38 40.274	<0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001	<0.001 <0.001 <0.001 <0.001 <0.001 <0.001	0.011 0.625 0.952 0.167 0.509 0.091	Table 3. Multivariate analy demographics and comorbinate parameters of the property of the pro	ysis of 30-day pidities. Bold p-vition a a on act infection rest sfusions ck on	Any OR 1.35 6.51 1.48 11.83 2.63 10.76 1 2.10 2.22	vs no a 95% 0 0.60-3. .29-32. 0.85-2. .95-35. 0.72-9. .19-97. 1.60-2. 1.84-2.	lications in patie istical significance in the istical significance is in the interest in	Mild OR	reoperati < 0.05. vs no an 95% C 1.05-31.0 2.16-22.9 0.83-11.2 1.01-90.9 1.55-2.7 1.67-2.4	nemia T p-valu 17 0.04	Sev e OR 2.02 - 4.12 1 7.91 3 - 9 1 2.04	ere vs mild an 95% CI 	0.17 0.13 <0.00
control to the sear failure control to the sear failure control to the sear failure control to the search to the s	9,233 99,7% 131 0,3%	2,420 98.7% 2,139 1,162 1,769 2,209 9,1% 2,249 95.8% 114 4.8% 2,309 2,309 6,249 2,248 9.58% 114 4.8% 2,309 2	2,13 98,9% 1,10% 1,00% 1	28 13.156 207 96.756 7 3.356 98 45.355 116 54.256 212 99.156 2 0.956 13 6.156 2 3.756 19 91.156 19 8.956 100 92.556 15 7.556 58 27.156	<0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001	<0.001 <0.001 <0.001 <0.001 <0.001 <0.001	0.011 0.625 0.952 0.167 0.509 0.091	Table 3. Multivariate anal demographics and comorb Complica Pneumoni Reimubati Urinary tra Cardiac an Blood tran Septis Septis Septis	ysis of 30-day pidities. Bold p-vition a a on act infection rest sfusions ck on	Any OR 1.35 6.51 1.48 11.83 2.63 10.76 1 2.10 2.22	vs no a 95% 0.60-3. .29-32. 0.85-2. .95-35. 0.72-9. .19-97. 1.60-2.	lications in patie istical significance in the istical significance is in the interest in	Mild OR	reoperati < 0.05. I vs no ar 95% C 1.05-31.0 2.16-22.9 0.83-11.2 1.01-90.9 1.55-2.7	nemia T p-valu 17 0.04	Sev e OR 2.02 - 4.12 1 7.91 3 - 9 1 2.04	ere vs mild an 95% CI  0.73-5.62 0.66-25.68 3.29-19.03	0.1° 0.1° 0.1° <0.00
to the season of	382 4.0% 9.7% 9.7% 9.7% 9.7% 9.7% 9.7% 9.7% 9.7	194 7.9% 2,420 92.7% 32 139 1,102 47.4% 1,200 52.9% 1,102 52.9% 1,04 42% 2,338 95.4% 1,04 42% 2,338 95.4% 1,04 42% 2,00 92.8% 1,04 42% 2,00 92.8% 1,05 42% 2,00 92.8% 1,05 42% 2,00 92.8% 1,05 42% 2,00 92.8% 1,05 42% 1,05	166 7.4% 2,213 98.9% 25 11% 11,064 47.5% 11,174 52.5% 2,118 99.1% 2,117 95.9% 2,147 95.9% 2,147 95.9% 2,147 95.9% 2,147 95.9% 4,150 4.1% 133 5.9% 4 0.2% 542 2,248 92.3% 542 2,248 92.3% 542 2,248 92.3% 542 2,248 92.3%	28 13.145 207 96.715 7 3.376 7 3.376 98 45.876 121 99.155 2 0.976 201 92.976 13 61.75 10 92.576 10 7.576 10 92.576 10 7.576 38 27.116 38 40.274	<0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001	<0.001 <0.001 <0.001 <0.001 <0.001 <0.001	0.011 0.625 0.952 0.167 0.509 0.091	Table 3. Multivariate analy demographics and comorb more and and comorb more and and comorb more and comorb mo	ysis of 30-day pydidities. Bold p-v- tion  a  on  act infection  rest  safusions  ck  ck  on  discharge  icic Cl. confidence  sugary. Safy py  sugary. Safy py  Safy	Any OR 1.35 6.51 1 1.48 2.63 10.76 1 2.10 2.22 2.70 Interval peraitive completions are seeming (ab assessment (	e complete statis  95% 0.60-3. 29-32. 0.85-2. 95-35. 0.72-9. 119-97. 11.60-2. 11.84-2. 11.03-7.  ations in p	lications in patie strical significance tementa   CT p-value   03.80	Mild OR	95% C 1.05-31.0 2.16-22.9 0.83-11.2 1.01-90.9 1.55-2.7 1.67-2.4 0.57-5.1 iffied by the t	nemia  I p-valu  1 0.04  1 0.09  1 0.09  3 0.04  3 <0.00  9 <0.00  1 0.33  time between les	Sev	ere vs mild an 95% CI 	0.17 0.13 <0.00
o testivo beaut failure de mention la manifora de mention la minimate cancer de mention (minimates) de de mention facilità de men	382 4.0% 9.7% 9.7% 9.7% 9.7% 9.7% 9.7% 9.7% 9.7	2,420 92.7% 12,420 92.7% 132 11,462 41,47% 1,260 52.6% 1,460 99.1% 2,460 99.1% 2,460 99.1% 1,460 42% 1,460 91.8% 1,460 42% 1,460 91.8% 1,460 42% 1,460 91.8% 1,460 42% 1,460 91.8% 1,460 42% 1,460 1,4	2,213 98,295 2,313 98,295 2,313 98,295 1,176 1,174 52,295 2,218 99,196 2,127 95,396 2,137 95,396	28 13.1% 207 96.7% 7 33.4% 98 45.8% 116 54.2% 12 99.1% 12 99.1% 13 51.1% 13 51.1% 10 8.9% 10 3.7% 10 8.9% 10 7.5%	<0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.002	<0.601 <0.601 <0.601 <0.601 <0.601 <0.601 0.601 0.601	0.011 0.625 0.952 0.167 0.509 0.091	Table 3. Multivariate analy demographics and comorbinate programmes and comorbinate programmes and comorbinate programmes and complex cardiac and Blood trans Sepais Septic sho Readmissis Non-home Mortality OR, edds rat Table 5. Multivariate was determined prior to complexity.	ysis of 30-day pydidities. Bold p-v tion a on at infection rest sfusions ck on discharge in: Cl. confidence is super, 80d p-day pono	Any OR 1.35 6.51 1 1.48 2.63 10.76 1 2.10 2.22 2.70 Interval peraitive completions are seeming (ab assessment (	vs no a 95% (0.60-3. 29-32. 0.85-295-35. 0.72-910-0711-09-711-03-712-03-112-03-713-03-713-03-713-03-713-03-713-03-713-03-713-03-713-03-713-03	lications in patie strical significance anemia CT p-value CT p-value CT p-value 0.03 0.463 0.00 0.023 0.065 0.001 0.05 0.001 0.000 0	Mild OR	95% C 1.05-31.0 2.16-22.9 0.83-11.2 1.01-90.9 1.55-2.7 1.67-2.4 0.57-5.1 iffied by the t	nemia  I p-valu  O 0.04  O 0.00  I 0.0	Sev e OR 4 2.02 - 4.12 1 1 2.04 5 7.02	ere vs mild an 95% CI 	0.17 0.13 <0.00
o testivo beaut failure de mention la manifora de mention la minimate cancer de mention (minimates) de de mention facilità de men	382 4.0% 9.7% 9.7% 9.7% 9.7% 9.7% 9.7% 9.7% 9.7	2,420 92.7% 12,420 92.7% 132 11,462 41,47% 1,260 52.6% 1,460 99.1% 2,460 99.1% 2,460 99.1% 1,460 42% 1,460 91.8% 1,460 42% 1,460 91.8% 1,460 42% 1,460 91.8% 1,460 42% 1,460 91.8% 1,460 42% 1,460 1,4	166 7.4% 2,213 98.9% 25 11% 11,064 47.5% 11,174 52.5% 2,118 99.1% 2,117 95.9% 2,147 95.9% 2,147 95.9% 2,147 95.9% 2,147 95.9% 4,150 4.1% 133 5.9% 4 0.2% 542 2,248 92.3% 542 2,248 92.3% 542 2,248 92.3% 542 2,248 92.3%	28 13.1% 207 96.7% 7 33.3% 98 45.8% 110 54.2% 121 99.1% 12 99.1% 12 99.1% 13 6.1% 10 91.5% 13 3.7% 16 19 19.5% 16 92.5% 16 92.5% 16 92.5% 17 5.5% 18 92.5% 18 92.5% 18 92.5% 18 92.5% 18 92.5% 18 92.5% 18 92.5% 18 92.5%	<0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001  Mild a	<0.001 <0.001 <0.001 <0.001 <0.001 <0.001  0.0026	0.011 0.625 0.952 0.167 0.509 0.091 <0.001 0.009	Table 3. Multivariate anal demographics and comorb demographics and comorb personal comorb demographics and comorb demographics and comorb demographics and comorb demographics demographic	yuis of 30-day py tion  a  not tinection  reet  strusions  cd. confidence  in C.1. confidence  on discharge  in C.4. confidence  on discharge  on discharge  on discharge  on discharge  on discharge	Any OR 1.35 6.51 1.48 11.83 2.63 10.76 1 2.10 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70	95% 0.60-3. 29-32. 0.85-2. 19-97. 1.60-2. 1.34-2. 1.03-7. ations in p	lications in patie istical significant tension i	mts with p be wi	95% C 1.05-31.0 2.16-22.9 0.83-11.2 1.01-90.9 1.55-2.7 1.67-2.4 0.57-5.1 iffied by the t	nemia  I p-valu  1 0.04  1 0.09  1 0.09  3 0.04  3 <0.00  9 <0.00  1 0.33  time between les	Sev	ere vs mild an 95% CI 	0.1° 0.1° 0.1° <0.00
to the season of	382 4.0% 9.7% 9.7% 9.7% 9.7% 9.7% 9.7% 9.7% 9.7	2,420 92.7% 12,420 92.7% 132 11,462 41,47% 1,260 52.6% 1,460 99.1% 2,460 99.1% 2,460 99.1% 1,460 42% 1,460 91.8% 1,460 42% 1,460 91.8% 1,460 42% 1,460 91.8% 1,460 42% 1,460 91.8% 1,460 42% 1,460 1,4	2011 95.9% 2011 95.9%	28 13.1% 207 96.7% 7 33.4% 98 45.8% 116 54.2% 12 99.1% 12 99.1% 13 51.1% 13 51.1% 10 8.9% 10 3.7% 10 8.9% 10 7.5%	<0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.002	<0.001 <0.001 <0.001 <0.001 <0.001 <0.001  0.0026	0.011 0.625 0.952 0.167 0.509 0.091	Table 3. Multivariate analy demographics and comorbinate programmes and comorbinate programmes and comorbinate programmes and complete programmes and progra	yais of 30-day py didities. Bold p-v- tion  a on  ct infection retail for the state of the state	Any OR 1.35 6.51 1.48 2.63 10.76 1 2.10 2.10 2.22 2.70  nterval indicate statisticemia (lab same semia	e complete stati  95% 0.60-3. 29-32. 0.85-2. 95-35. 0.72-9. 1.60-2. 1.84-2. 1.03-7. ations in partial signification in partial significance in the pa	lications in patie strical significance anemia CT p-value 0.33 0.463 0.003 0.463 0.003 0.463 0.004 0.002 0.004 0.0	Mild OR	1 vs no as 95% C 1.05-31.0 2.16-22.9 0.83-11.2 1.01-90.9 1.55-2.7 1.67-2.4 0.57-5.1 tified by the t	nemia    p-valu	Sev	ere vs mild an 95% CI 	0.1° 0.1° 0.1° <0.00
to the season of	382 4.0% 9.7% 9.7% 9.7% 9.7% 9.7% 9.7% 9.7% 9.7	2,400 98.7% 1,142 47.4% 1,142 47.4% 1,240 99.1% 2,240 99.1% 2,240 99.1% 1,14 429 2,240 99.1% 1,14 429 2,240 99.1% 1,14 429 1,24 99.2% 1,25 62% 2,24 99.2% 1,25 62% 1,	2,113 95,246 2,113 96,246 1,044 47,556 1,044 47,556 1,044 47,556 1,044 97,566 1,044	28 13.1% 207 96.7% 7 33.9% 98 45.89% 116 54.27% 120 99.1% 12 99.11% 12 99.11% 13 6.11% 10 8.25.7% 10 8.25.7% 10 8.25.7% 10 8.25.7% 10 8.25.7% 10 8.25.7% 10 8.25.7% 10 2.27%	<0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.002 Mild a 74	<0.601 <0.601 <0.601 <0.601 <0.601 <0.601 <0.601 <0.6026	6.011 0.625 0.952 0.167 0.509 0.091 <6.001 6.009	Table 3. Multivariate analy demographics and comorby and comorby and comorby and comorby and analysis of the comorby analysis of the c	visis of 30-day py tion  a on cation  a on cation  a on cation  cation  discharge  iic, Cl. confidence is cation  discharge  iic, Cl. confidence  iic, Cl. c	Any OR 1.35 6.51 1.48 11.83 2.63 10.76 1 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.84-171.40	e complete stati  95% 0.60-3. 29-32. 0.85-2. 95-35. 19-97. 1.60-2. 1.84-2. 1.03-7. ations in paral signification of the complete state of the complete sta	itications in patie strical significance strical significance anemia    CT p-value	Mild OR	1.05-31.0 2.16-22.9 0.83-11.2 1.05-31.0 1.05-31.0 1.05-31.0 1.05-31.0 1.05-31.0 1.05-31.0 1.05-31.0 1.05-31.0 1.05-31.0 1.05-31.0	ive anemia  I p-valu  7 0.04	Serv e OR	ere vs mild an 95% CI 	0.17 0.13 <0.00
On the second of	382 4.0% 9.7% 9.7% 9.7% 9.7% 9.7% 9.7% 9.7% 9.7	2,400 98.7% 1,142 47.4% 1,142 47.4% 1,240 99.1% 2,240 99.1% 2,240 99.1% 1,14 429 2,240 99.1% 1,14 429 2,240 99.1% 1,14 429 1,24 99.2% 1,25 62% 2,24 99.2% 1,25 62% 1,	166 7.4% 2.213 96.3% 1,064 47.5% 1,174 22.5% 1,127 22.5% 2.218 90.3% 2.218 90.3% 2.218 90.3% 2.218 90.3% 2.218 90.3% 2.219 90.3% 2.219 90.3% 2.219 90.3% 2.210 90.	28 13.1% 207 96.7% 7 33.3% 98 45.8% 110 54.2% 121 99.1% 12 99.1% 12 99.1% 13 6.1% 10 91.5% 13 3.7% 16 19 19.5% 16 92.5% 16 92.5% 16 92.5% 17 5.5% 18 92.5% 18 92.5% 18 92.5% 18 92.5% 18 92.5% 18 92.5% 18 92.5% 18 92.5%	<0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001  Mild a	<0.601 <0.601 <0.601 <0.601 <0.601 <0.601 <0.601 <0.601 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0.602 <0	0.011 0.625 0.952 0.167 0.509 0.091 <0.001 0.009	Table 3. Multivariate analy demographics and comorbinate programmes and comorbinate programmes and comorbinate programmes and complete programmes and progra	ysis of 30-day py tion  a a a a a a a a a a a a a a a a a a	Any OR 1.35 6.51 1.48 11.83 2.63 10.76 1 2.10 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70 2.22 2.70	e complete stati  95% in a 2	lications in patie strical significance anemia CT p-value 0.33 0.463 0.003 0.463 0.003 0.463 0.004 0.002 0.004 0.0	Mild OR	ereoperati < 0.05. 1 vs no are 95% C 1.05-31.0 2.16-22.9 0.83-11.2 1.01-90.9 1.55-2.7 1.67-2.4 0.57-5.1 infied by the t	nemia    p-valu	Sev	ere vs mild an 95% CI 	