

TABLE E-1 Restrictive Transfusion Threshold Studies in Orthopaedics*†					
Study†	Patient Group	Hemoglobin Trigger (No. of Patients)		Transfusion Rate (%)	
		Liberal	Restrictive	Liberal	Restrictive
Carson et al. <sup>71</sup> (1998)	Hip fractures with hemoglobin level of <10 g/dL postop.	<10 g/dL (42)	<8 g/dL or symptomatic (42)	97.6	45.2§
Carson et al. <sup>72</sup> (2011)	Hip fractures with history of, or risk factors for, cardiovasc. disease	<10 g/dL (1007)	<8 g/dL or symptomatic (1009)	96.3	40.9§
Foss et al. <sup>73</sup> (2009)	Hip fractures	<10 g/dL (60)	<8 g/dL (60)	74	37§
So-Osman et al. <sup>77</sup> (2010)	Primary or revision THA or TKA	Standard protocol (304)**	Age and risk stratified (299)	NR	NR
So-Osman et al. <sup>76</sup> (2013)	Primary or revision THA or TKA	Most liberal (304)	Most restrictive (299)††	39.1	26.4§
Naylor et al. <sup>75</sup> (2010)	Primary TKA	Standard (93)	New (347)§§	41	18§
Grover et al. <sup>74</sup> (2006)	Primary TKA or THA without cardiovasc. disease	<10 g/dL (109)	<8 g/dL (109)	43	34***

\*Reproduced, with modification, from: Munoz M, Leal-Noval SR. Restrictive transfusion triggers in major orthopaedic surgery: effective and safe? Blood Transfus. 2013;11(2):169-171. Reproduced with permission. †TKA = total knee arthroplasty, THA = total hip arthroplasty, DVT = deep venous thrombosis, PE = pulmonary embolism, and NR = not reported. ‡All studies are Level I except Naylor et al.<sup>75</sup>, which is a Level II. §Significant difference. #Duration of stay for U.S. patients. \*\*Inconsistent protocol at each study site; see reference for details of each protocol. ††This study reported only in-hospital mortality rates. ‡‡This study is based on the 2010 data by the same group<sup>77</sup>. One of that earlier study's flaws was that one hospital's standard policy was more restrictive than the new policy. As a result, they reanalyzed their data after reclassifying that hospital's standard policy as the more restrictive protocol and the new protocol as the liberal protocol. §§Hemoglobin level of <10 g/dL for high risk, ≤9 g/dL for symptomatic, and ≤7.5 g/dL for asymptomatic. ##Study described six-month mortality rates. \*\*\*No statistical comparison was done.

TABLE E-1 (continued)									
Thirty-Day Mortality (%)		Cardiovascular Complications (%)		Mean Duration of Stay (days)		Infections (%)		DVTs or PEs (%)	
Liberal	Restrictive	Liberal	Restrictive	Liberal	Restrictive	Liberal	Restrictive	Liberal	Restrictive
2.4	2.4	2.4	2.4	6.4	6.2	4.8	0	0	2.4
5.2	4.3	13.9	14.8	3.67#	3.97#	8.3	5.9	1.2	0.8
0	8§	2	10§	18.4	17.0	18	10	3	2
0.7	0.3††	7.6	11.4	10.2	9.6	10.1	6.0	NR	NR
1.00††	–	8.9	10.0	9.0	9.0	10.2	5.4§	NR	NR
0	1##	4	4	6.4	6.2	26.2	20	11	8
0.9	0††	1.8	4.6***	7.5	7.3	4.6	3.7	4.6	6.4