

**Appendix**

TABLE E-1 Parameters of Included Studies

Authors	Year	Level of Evidence	Type of Arthroplasty	No.	Infected Cases	Mean Age* (yr)	Male/Female*	Biomarker
Lee et al. <sup>47</sup>	2010	IV	Knee	56	14 (25.0%)	69.6	7/49	Leukocyte count, PMN%
Ghanem et al. <sup>33</sup>	2008	III	Knee	429	161 (37.5%)	67	48%/52%	Leukocyte count, PMN%
Deirmengian et al. <sup>22</sup>	2014	II	Hip & knee	149	37 (24.8%)	65	70/79	CRP, $\alpha$ -defensin
Gallo et al. <sup>44</sup>	2008	IV	Knee	115	49 (42.6%)	69.8, 62	17/32, 25/41	Culture, PCR
Deirmengian et al. <sup>23</sup>	2014	II	Hip & knee	95	29 (30.5%)	66/67	12/17, 32/34	CRP; $\alpha$ -defensin; IL-6, 8, 10, 1 $\beta$ ; VEGF; G-CSF
Ronde-Oustau et al. <sup>49</sup>	2014	IV	Knee	31	10 (32.3%)	69.8, 79.8, 74.3	80%, 54.5%, 70% female	CRP
Guenther et al. <sup>45</sup>	2014	IV	Hip & knee	161	47 (29.2%)	67		LE
Janz et al. <sup>46</sup>	2013	IV	Hip	102	37 (36.3%)	67.7		Culture
Randau et al. <sup>48</sup>	2014	IV	Hip & knee	120	48 (40.0%)	67.94	47/73	IL-6
Buttaro et al. <sup>18</sup>	2015	I	Hip	76	38 (50.0%)	67	43/33	CRP
Tetreault et al. <sup>27</sup>	2014	II	Hip & knee	119	32 (26.9%)	59.9	57/62	CRP
Wetters et al. <sup>40</sup>	2012	III	Hip & knee	223	39 (17.5%)	63.3	97/126	LE
Tischler et al. <sup>28</sup>	2014	II	Hip & knee	189	52 (27.5%)	63	90/99	LE
Parvizi et al. <sup>25</sup>	2012	II	Knee	66 (64)				CRP
Jacovides et al. <sup>24</sup>	2011	II	Knee	74	31 (41.9%)	65	33/40	CRP, IL-6 & 8, VEGF
Panousis et al. <sup>37</sup>	2005	III	Hip & knee	91	12 (13.3%)	66	35/56	Culture, PCR
Cipriano et al. <sup>19</sup>	2012	I	Hip & knee	871	146 (18%), 19 (31%)	66.7, 63.3	333/477, 13/48	Leukocyte count, PMN%
Omar et al. <sup>36</sup>	2015	III	Hip	80	21 (26.3%)	65	36/44	Leukocyte count, PMN%, CRP
Frangiamore et al. <sup>32</sup>	2016	III	Hip & knee	90	31 (34.4%)	65, 63	18/41, 21/10	IL-6, 8, 10, 1 $\beta$ ; G-CSF
Trampuz et al. <sup>39</sup>	2004	III	Knee	133	34 (25.6%)	71	78/55	Leukocyte count, PMN%
Dinneen et al. <sup>43</sup>	2013	IV	Hip & knee	75	34 (45.3%)	70.3		Leukocyte count, PMN%
Lenski and Scherer <sup>35</sup>	2014	III	Hip & knee	69	31 (44.9%)			Leukocyte count, IL-6

Yi et al. <sup>42</sup>	2014	III	Hip	73	36 (49.3%)	60	39/34	Leukocyte count, PMN%
Bingham et al. <sup>29</sup>	2014	III	Hip & knee	55	19 (34.5%)			Leukocyte count, $\alpha$ -defensin, culture
Bedair et al. <sup>20</sup>	2011	II	Knee	146 (142)	19 (13.0%)	66.1	61/85	Leukocyte count, PMN%, CRP
Fink et al. <sup>30</sup>	2008	III	Knee	145 (144)	40 (27.6%)	68.4	63/81	Culture
Kwon et al. <sup>34</sup>	2016	III	Hip	62	7 (11.3%)	59.1	43/19	Leukocyte count, PMN%
Wyles et al. <sup>41</sup>	2013	III	Hip	39	4 (10.3%)	60	16/23	Leukocyte count, PMN%, CRP
Frangiamore et al. <sup>31</sup>	2016	III	Hip & knee	116 (102)	24 (31%)	63.3	49/53	$\alpha$ -defensin
Parvizi et al. <sup>26</sup>	2011	II	Knee	108	30 (27.8%)	64	56% female	LE
Bonanzinga et al. <sup>17</sup>	2017	I	Hip & knee	156	33 (21.2%)		66/90	$\alpha$ -defensin
Shahi et al. <sup>38</sup>	2016	III	Knee	106		65	65/41	$\alpha$ -defensin
Deirmengian et al. <sup>21</sup>	2015	II	Hip & knee	46	23 (50.0%)	63, 67	10/13, 8/15	$\alpha$ -defensin, LE

\*More than 1 value is given for studies in which values were reported for separate subgroups instead of the series as a whole.

TABLE E-2 Diagnostic Accuracy of Leukocyte Count, PMN%, CRP, and  $\alpha$ -Defensin\*

Authors	Year	Leukocyte Count	PMN%	CRP	$\alpha$ -Defensin
Lee et al. <sup>47</sup>	2010	AUC 0.85, threshold 3,800 cells/ $\mu$ L: SE 0.86, SP 0.79	AUC 0.7, threshold 89%: SE 0.72, SP 0.62		
Ghanem et al. <sup>33</sup>	2008	AUC 0.963 (CI 0.946-0.980), threshold 1,100 cells/ $\mu$ L: SE 0.907 (CI 0.851-0.947), SP 0.881 (CI 0.836-0.917), PPV 0.872 (CI 0.856-0.907), NPV 0.915 (CI 0.875-0.943)	AUC 0.975 (CI 0.959-0.990), threshold 64%: SE 0.95 (CI 0.904-0.978), SP 0.947 (CI 0.913-0.971), PPV 0.916 (CI 0.863-0.951), NPV 0.969 (CI 0.942-0.986)		
Deirmengian et al. <sup>22</sup>	2014			Threshold 3 mg/L: SE 0.973 (CI 0.858-0.996), SP 0.786 (CI 0.698-0.858)	SE 0.973 (CI 0.858-0.996), SP 0.955 (CI 0.899-0.985)
Deirmengian et al. <sup>23</sup>	2014			Threshold 12.2 mg/L: SE 0.9 (CI 0.73-0.98), SP 0.97 (CI 0.9-1), AUC 0.987	Threshold 4.8 $\mu$ g/mL: SE 1 (CI 0.88-1), SP 1 (CI 0.95-1), AUC 1
Ronde-Oustau et al. <sup>49</sup>	2014			Threshold 2.78 mg/L: SE 1 (CI 0.692-1), SP 0.818 (CI 0.482-0.977), +LR 5.5; threshold 5.365 mg/L: SE 0.9 (CI 0.555-0.998), SP 0.909 (CI 0.587-0.998), +LR 9.9	
Buttaro et al. <sup>18</sup>	2015			Threshold 9.5 mg/L: SE 0.9 (CI 0.708-0.986), SP 0.94 (CI 0.845-0.987), PPV 0.87 (CI 0.663-0.97), NPV 0.96 (CI 0.87-0.994), +LR 16.36 (CI 5.4-49.5), -LR 0.1 (CI 0.03-0.36), AUC 0.968 (CI 0.924-1)	
Tetreault et al. <sup>27</sup>	2014			Threshold 6.6 mg/L: SE 0.88 (CI 0.82-0.93), SP 0.85 (CI 0.79-0.91), PPV 0.68 (CI 0.6-0.77), NPV 0.95	

				(CI 0.91-0.99), A 0.86 (CI 0.79-0.92), AUC 0.9 (CI 0.82-0.97)	
Parvizi et al. <sup>25</sup>	2012			Individual ELISA AUC 0.84 (CI 0.64-1.04), threshold 0.06 mg/L: SE 0.7, SP 1, PPV 1, NPV 0.625, A 0.8; multiplex ELISA AUC 0.91 (CI 0.82-0.99), threshold 3.7 mg/L: SE 0.84, SP 0.971, PPV 0.955, NPV 0.892, A 0.915	
Jacovides et al. <sup>24</sup>	2011			AUC 0.92 (CI 0.85-0.99), threshold 3.605 mg/L: SE 0.871, SP 0.977, PPV 0.964, NPV 0.915, A 0.933	
Cipriano et al. <sup>19</sup>	2012	Noninflammatory arthritis threshold 3,450 cells/ $\mu$ L: SE 0.91 (CI 0.81-0.94), SP 0.93 (CI 0.91-0.95), PPV 0.77 (CI 0.73-0.9), NPV 0.98 (CI 0.97-0.99), AUC 0.945; inflammatory arthritis threshold 3,444 cells/ $\mu$ L: SE 0.882 (CI 0.79-0.97), SP 0.8 (CI 0.69-0.91), PPV 0.68 (CI 0.56-0.81), NPV 0.93 (CI 0.91-1.01), AUC 0.938	Noninflammatory arthritis threshold 78%: SE 0.955 (CI 0.94-0.97), SP 0.873 (CI 0.85-0.9), PPV 0.64 (CI 0.6-0.68), NPV 0.99 (CI 0.98-1), AUC 0.95; inflammatory arthritis threshold 75%: SE 1, SP 0.818 (CI 0.71-0.93), PPV 0.71 (CI 0.59-0.84), NPV 0.99 (CI 0.98-1), AUC 0.936		
Omar et al. <sup>36</sup>	2015	Threshold 3,089 cells/ $\mu$ L: SE 0.85 (CI 0.734-0.929), SP 0.863 (CI 0.651-0.971), AUC 0.92 (CI 0.89-0.99)	Threshold 72.1%: SE 0.9 (CI 0.795-0.962), SP 0.901 (CI 0.708-0.989), AUC 0.94 (CI 0.89-0.99)	Threshold 2.5 mg/L: SE 0.955 (CI 0.867-0.999), SP 0.933 (CI 0.843-0.999), AUC 0.96 (CI 0.9-0.99)	
Trampuz et al. <sup>39</sup>	2004	Threshold 1,700 cells/ $\mu$ L: SE 0.94 (CI 0.8-0.99), SP 0.88 (CI 0.8-0.93), PPV 0.73 (CI 0.57-0.85), NPV 0.98 (CI 0.92-1), +LR 8 (CI 5-13), -LR 0.1 (CI 0-0.3); 2,000 cells/ $\mu$ L: SE 0.91 (CI 0.76-0.98), SP 0.89 (CI 0.81-0.94), PPV 0.74 (CI 0.58-0.86), NPV 0.97 (CI 0.91-0.99),	Threshold 65%: SE 0.97 (CI 0.85-1), SP 0.98 (CI 0.93-1), PPV 0.94 (CI 0.81-0.99), NPV 0.99 (CI 0.95-1), +LR 48 (CI 12-190), -LR 0 (CI 0-0.2); 75%: SE 0.94 (CI 0.8-0.99), SP 0.98 (CI 0.93-1), PPV 0.94 (CI 0.8-0.99), NPV 0.98 (CI 0.93-1), +LR 47 (CI 12-184), -LR 0.1 (CI 0-0.2);		

		+LR 8 (CI 5-15), -LR 0.1 (CI 0-0.3); 5,000 cells/ $\mu$ L: SE 0.21 (CI 0.09-0.38), SP 1 (CI 0.96-1), PPV 1 (CI 0.59-1), NPV 0.79 (CI 0.7-0.85), +LR $\infty$ , -LR 0.8 (CI 0.7-0.9)	90%: SE 0.59 (CI 0.41-0.75), SP 1 (CI 0.96-1), PPV 1 (CI 0.83-1), NPV 0.88 (CI 0.8-0.93), +LR $\infty$ , -LR 0.4 (CI 0.3-0.6)		
Dinneen et al. <sup>43</sup>	2013	Threshold 1,500 cells/ $\mu$ L: SE 0.895 (CI 0.783-0.997), SP 0.913 (CI 0.827-0.999), AUC 0.99	Threshold 65%: SE 0.897 (CI 0.795-0.999), SP 0.866 (CI 0.761-0.971), AUC 0.958		
Lenski and Scherer <sup>35</sup>	2014	Threshold 23,000 cells/ $\mu$ L: SE 0.6 (CI 0.407-0.766), SP 0.943 (CI 0.814-0.984), +LR 10.5 (CI 2.63-41.87), -LR 0.42 (CI 0.26-0.69), AUC 0.807			
Yi et al. <sup>42</sup>	2014	Threshold 12,800 cells/ $\mu$ L: SE 0.89 (CI 0.81-0.96), SP 1 (CI 1-1), PPV 1 (CI 1-1), NPV 0.88 (CI 0.8-0.96), A 0.94 (CI 0.88-1), AUC 0.98	Threshold 89%: SE 0.81 (CI 0.71-0.9), SP 0.9 (CI 0.83-0.97), PPV 0.91 (CI 0.84-0.98), NPV 0.79 (CI 0.7-0.89), A 0.85 (CI 0.76-0.93), AUC 0.91		
Bingham et al. <sup>29</sup>	2014	SE 0.95 (CI 0.72-0.99), SP 0.85 (CI 0.69-0.94)			SE 1 (CI 0.79-1), SP 0.95 (CI 0.83-0.99)
Bedair et al. <sup>20</sup>	2011	Threshold 27,800 cells/ $\mu$ L: SE 0.84 (CI 0.78-0.9), SP 0.99 (CI 0.98-1), PPV 0.94 (CI 0.9-0.98), NPV 0.98 (CI 0.95-1); adjusted synovial fluid leukocyte count threshold 10,536 cells/ $\mu$ L: SE 0.94 (CI 0.9-0.99), SP 0.92 (CI 0.87-0.97), PPV 0.7 (CI 0.61-0.78), NPV 0.99 (CI 0.97-1)	Threshold 89%: SE 0.84 (CI 0.78-0.9), SP 0.69 (CI 0.62-0.77), PPV 0.29 (CI 0.22-0.37), NPV 0.97 (CI 0.94-1)	Threshold 166 mg/dL: SE 0.53 (CI 0.43-0.62), SP 0.86 (CI 0.79-0.92), PPV 0.43 (CI 0.34-0.53), NPV 0.9 (CI 0.84-0.95); threshold $\geq$ 95 mg/dL: SE 0.68 (CI 0.6-0.77), SP 0.66 (CI 0.57-0.74), PPV 0.3 (CI 0.21-0.38), NPV 0.91 (CI 0.85-0.96)	
Kwon et al. <sup>34</sup>	2016	Threshold 730 cells/ $\mu$ L: SE 0.86 (CI 0.77-0.94), SP 0.8 (CI 0.71-0.9), AUC 0.86 (CI 0.65-1); threshold 12,600 cells/ $\mu$ L: SE 0.14 (CI 0.06-0.23), SP 0.96 (CI 0.92-1.01)	Threshold 65%: SE 1 (CI 1-1), SP 0.7 (CI 0.58-0.83), AUC 0.86 (CI 0.61-1); threshold 91%: SE 0.17 (CI 0.07-0.27), SP 0.89 (CI 0.81-0.98)		
Wyles et al. <sup>41</sup>	2013	SE 1 (CI 0.398-1), SP 0.571 (CI 0.394-0.737)	SE 1 (CI 0.398-1), SP 0.971 (CI 0.851-0.999)	SE 0.75 (CI 0.194-0.994), SP 0.676 (CI 0.495-0.826)	
Frangiamore et al. <sup>31</sup>	2016				Threshold 5.2 mg/L: SE 1 (CI 0.86-1), SP 0.98 (CI

					0.9-1), PPV 0.96 (CI 0.8-0.99), NPV 1 (CI 0.93-1), +LR 54 (CI 8-376), -LR 0
Bonanzinga et al. <sup>17</sup>	2017				SE 0.97 (CI 0.92-0.99), SP 0.97 (CI 0.92-0.99), PPV 0.88 (CI 0.81-0.92), NPV 0.99 (CI 0.96-0.99)
Shahi et al. <sup>38</sup>	2016				SE 1 (CI 0.884-1)
Deirmengian et al. <sup>21</sup>	2015				SE 1 (CI 0.85-1), SP 1 (CI 0.85-1)

\*A = accuracy, AUC = area under curve, CI = 95% confidence interval, SE = sensitivity, SP = specificity, PPV = positive predictive value, NPV = negative predictive value, +LR = positive likelihood ratio, -LR = negative likelihood ratio, and ELISA = enzyme-linked immunosorbent assay.

TABLE E-3 Diagnostic Accuracy of LE, IL-6, IL-8, and IL-10\*

Authors	Year	LE	IL-6	IL-8	IL-10
Deirmengian et al. <sup>23</sup>	2014		Threshold 2.3 ng/mL: SE 0.89 (CI 0.71-0.98), SP 0.97 (CI 0.89-1), AUC 0.95	Threshold 6.5 ng/mL: SE 1 (CI 0.87-1), SP 0.95 (CI 0.87-0.99), AUC 0.992	Threshold 32 pg/mL: SE 0.89 (CI 0.72-0.98), SP 0.89 (CI 0.79-0.96), AUC 0.93
Guenther et al. <sup>45</sup>	2014	SE 1, SP 0.965, PPV 0.82, NPV 1			
Randau et al. <sup>48</sup>	2014		Threshold 2,100 pg/mL: SE 0.625 (CI 0.436-0.789), SP 0.857 (CI 0.715-0.946), AUC 0.76 (CI 0.64-0.88); threshold 9,000 pg/mL: SE 0.469 (CI 0.291-0.653), SP 0.976 (CI 0.874-0.999), AUC 0.76 (CI 0.64-0.88)		
Wetters et al. <sup>40</sup>	2012	Threshold 3,000 µL: SE 0.929, SP 0.888, PPV 0.75, NPV 0.972; positive culture or presence of draining sinus tract as gold standard: SE 0.933, SP 0.77, PPV 0.378, NPV 0.987 & SE 1, SP 0.868, PPV 0.737, NPV for 193 cases with reop.			
Tischler et al. <sup>28</sup>	2014	Threshold +/++: SE 0.792 (CI 0.659-0.892), SP 0.808 (CI 0.733-0.871), PPV 0.618 (CI 0.492-0.733), NPV 0.901 (CI 0.843-0.954); threshold ++: SE 0.66 (CI 0.517-0.785), SP 0.971 (CI 0.926-0.992), PPV 0.897 (CI 0.758-0.971), NPV 0.88 (CI 0.817-0.927)			
Jacovides et al. <sup>24</sup>	2011		AUC 0.95 (CI 0.89-1), threshold 4,270 pg/mL: SE 0.871, SP 1, PPV 1, NPV 0.915, A 0.946	AUC 0.94 (CI 0.87-1), threshold 8,790 pg/mL: SE 0.903, SP 0.977, PPV 0.966, NPV 0.935, A 0.947	
Frangiamore et al. <sup>32</sup>	2016		Threshold 8,671 pg/mL: SE 0.81 (CI 0.63-0.93), SP 0.96 (CI 0.88-1), PPV 0.93, NPV 0.9, +LR 22.18, -LR 0.2, AUC 0.89	Threshold 7,779.5 pg/mL: SE 0.74 (CI 0.55-0.88), SP 0.91 (CI 0.8-0.97), PPV 0.82, NPV 0.86, +LR 8.16, -LR 0.28, AUC 0.86	Threshold 48.7 pg/mL: SE 0.76 (CI 0.57-0.9), SP 0.85 (CI 0.72-0.93), PPV 0.73, NPV 0.87, +LR 5.03, -LR 0.28, AUC 0.86

Lenski and Scherer <sup>35</sup>	2014		Threshold 30,750 pg/mL: SE 0.909 (CI 0.722-0.975), SP 0.947 (CI 0.754-0.991), +LR 17.27 (CI 2.55-116.9), -LR 0.1 (CI 0.03-0.36), AUC 0.959		
Parvizi et al. <sup>26</sup>	2011	Threshold ++: SE 0.806 (CI 0.619-0.919), SP 1 (CI 0.945-1), PPV 1 (CI 0.834-1), NPV 0.933 (CI 0.854-0.972); threshold +/++: SE 0.935 (CI 0.772-0.988), SP 0.867 (CI 0.771-0.929), PPV 0.725 (CI 0.559-0.849), NPV 0.973 (CI 0.897-0.995)			
Deirmengian et al. <sup>21</sup>	2015	Threshold ++: SE 0.688 (CI 0.414-0.889), SP 1 (CI 0.844-1)			

\*A = accuracy, AUC = area under curve, CI = 95% confidence interval, SE = sensitivity, SP = specificity, PPV = positive predictive value, NPV = negative predictive value, +LR = positive likelihood ratio, and -LR = negative likelihood ratio.

TABLE E-4 Diagnostic Accuracy of IL-1 $\beta$ , VEGF, G-CSF, Culture, and PCR\*

Authors	Year	IL-1 $\beta$	VEGF	G-CSF	Culture	PCR
Gallo et al. <sup>44</sup>	2008				SE 0.435 (CI 0.352-0.477), SP 0.938 (CI 0.858-0.978), PPV 0.87 (CI 0.705-0.953), NPV 0.634 (CI 0.58-0.661), A 0.691 (CI 0.598-0.785)	SE 0.714 (CI 0.615-0.755), SP 0.97 (CI 0.917-0.991), PPV 0.926 (CI 0.798-0.979), NPV 0.865 (CI 0.818-0.884), A 0.881 (CI 0.818-0.944)
Deirmengian et al. <sup>23</sup>	2014	Threshold 3.1 pg/mL: SE 0.96 (CI 0.82-1), SP 0.95 (CI 0.87-0.99), AUC 0.966	Threshold 2.3 ng/mL: SE 0.75 (CI 0.55-0.89), SP 0.77 (CI 0.65-0.87), AUC 0.85	Threshold 15.4 pg/mL: SE 0.82 (CI 0.62-0.94), SP 0.92 (CI 0.82-0.97), AUC 0.859		
Janz et al. <sup>46</sup>	2013				SE 0.66, SP 0.96, A 0.84	
Jacovides et al. <sup>24</sup>	2011		AUC 0.9 (CI 0.84-0.97), threshold 9,745 pg/mL: SE 0.774, SP 0.915, PPV 0.857, NPV 0.86, A 0.859			
Panousis et al. <sup>37</sup>	2005				SE 0.7, SP 0.95, A 0.9, PPV 0.78, NPV 0.92	SE 0.92, SP 0.74, A 0.76, PPV 0.34, NPV 0.98
Frangiamore et al. <sup>32</sup>	2016	Threshold 8.26 pg/mL: SE 0.9 (CI 0.74-0.98), SP 0.87 (CI 0.76-0.95), PPV 0.8, NPV 0.94, +LR 7.1, -LR 0.11, AUC 0.92		Threshold 3.9 pg/mL: SE 0.74 (CI 0.55-0.88), SP 0.86 (CI 0.73-0.94), PPV 0.73, NPV 0.86, +LR 5.1, -LR 0.3, AUC 0.83		
Bingham et al. <sup>29</sup>	2014				SE 0.69 (CI 0.43-0.86), SP 0.88 (CI 0.72-0.95)	
Fink et al. <sup>30</sup>	2008				SE 0.725 (CI 0.587-0.863), SP 0.952 (CI 0.912-0.992), PPV 0.853 (CI 0.734-1), NPV 0.901 (CI 0.845-0.957), A 0.89	

\*A = accuracy, AUC = area under curve, CI = 95% confidence interval, SE = sensitivity, SP = specificity, PPV = positive predictive value, NPV = negative predictive value, +LR = positive likelihood ratio, and -LR = negative likelihood ratio.

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LEE ET AL.

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TABLE E-5 Threshold Values Reported in Literature for Diagnosis of Periprosthetic Joint Infection

Laboratory Test	Threshold Values*
Leukocyte count	3,800 cells/ $\mu$ L (Lee et al. <sup>47</sup> ), 1,100 cells/ $\mu$ L (Ghanem et al. <sup>33</sup> ), noninflammatory arthritis 3,450 cells/ $\mu$ L (Cipriano et al. <sup>19</sup> ), inflammatory arthritis 3,444 cells/ $\mu$ L (Cipriano et al. <sup>19</sup> ), 3,089 cells/ $\mu$ L (Omar et al. <sup>36</sup> ), 1,700 cells/ $\mu$ L and 2,000 cells/ $\mu$ L (Trampuz et al. <sup>39</sup> ), 1,500 cells/ $\mu$ L (Dinneen et al. <sup>43</sup> ), 23,000 cells/ $\mu$ L (Lenski and Scherer <sup>35</sup> ), 12,800 cells/ $\mu$ L (Yi et al. <sup>42</sup> ), 27,800 cells/ $\mu$ L and 10,536 cells/ $\mu$ L (Bedair et al. <sup>20</sup> ), 730 cells/ $\mu$ L and 12,600 cells/ $\mu$ L (Kwon et al. <sup>34</sup> )
PMN%	89% (Lee et al. <sup>47</sup> ), 64% (Ghanem et al. <sup>33</sup> ), noninflammatory arthritis 78% (Cipriano et al. <sup>19</sup> ), inflammatory arthritis 75% (Cipriano et al. <sup>19</sup> ), 72.1% (Omar et al. <sup>36</sup> ), 65% and 75% (Trampuz et al. <sup>39</sup> ), 65% (Dinneen et al. <sup>43</sup> ), 89% (Yi et al. <sup>42</sup> ), 89% (Bedair et al. <sup>20</sup> ), 65% and 91% (Kwon et al. <sup>34</sup> )
CRP	3 mg/L (Deirmengian et al. <sup>22</sup> ), 12.2 mg/L (Deirmengian et al. <sup>23</sup> ), 2.78 mg/L (Ronde-Oustau et al. <sup>49</sup> ), 9.5 mg/L (Buttaro et al. <sup>18</sup> ), 6.6 mg/L (Tetreault et al. <sup>27</sup> ), individual ELISA 0.06 mg/L (Parvizi et al. <sup>25</sup> ), multiplex ELISA 3.7 mg/L (Parvizi et al. <sup>25</sup> ), 3.6 mg/L (Jacovides et al. <sup>24</sup> ), 2.5 mg/L (Omar et al. <sup>36</sup> ), 166 and 95 mg/dL (Bedair et al. <sup>20</sup> )
$\alpha$ -defensin	4.8 $\mu$ g/mL (Deirmengian et al. <sup>23</sup> ), 5.2 mg/L (Frangiamore et al. <sup>31</sup> )
LE	+ /++ and ++ (Tischler et al. <sup>28</sup> ), + /++ and ++ (Parvizi et al. <sup>26</sup> ), ++ (Deirmengian et al. <sup>21</sup> )
IL-6	2.3 ng/mL (Deirmengian et al. <sup>23</sup> ), 2,100 and 9,000 pg/mL (Randau et al. <sup>48</sup> ), 4,270 pg/mL (Jacovides et al. <sup>24</sup> ), 8,671 pg/mL (Frangiamore et al. <sup>32</sup> ), 30,750 pg/mL (Lenski and Scherer <sup>35</sup> )
IL-8	6.5 ng/mL (Deirmengian et al. <sup>23</sup> ), 8,790 pg/mL (Jacovides et al. <sup>24</sup> ), 7,779.5 pg/mL (Frangiamore et al. <sup>32</sup> )
IL-10	32 pg/mL (Deirmengian et al. <sup>23</sup> ), 48.7 pg/mL (Frangiamore et al. <sup>32</sup> )
IL-1 $\beta$	3.1 pg/mL (Deirmengian et al. <sup>23</sup> ), 8.3 pg/mL (Frangiamore et al. <sup>32</sup> )
VEGF	2.3 ng/mL (Deirmengian et al. <sup>23</sup> ), 9,745 pg/mL (Jacovides et al. <sup>24</sup> )
G-CSF	15.4 pg/mL (Deirmengian et al. <sup>23</sup> ), 3.9 pg/mL (Frangiamore et al. <sup>32</sup> )

\*ELISA = enzyme-linked immunosorbent assay.

TABLE E-6 Abnormal Article Quality as Determined by QUADAS-2

No.	Authors	Year	Evaluations	Risk of Bias*				Applicability Concern*		
				Patient Selection	Index Test	Reference Standard	Flow & Timing	Patient Selection	Index Test	Reference Standard
1	Lee et al. <sup>47</sup>	2010	Leukocyte count, PMN%	H	U	H	L	L	L	U
3	Deirmengian et al. <sup>22</sup>	2014	CRP, $\alpha$ -defensin	L	L	L	U	L	L	L
5	Deirmengian et al. <sup>23</sup>	2014	CRP; $\alpha$ -defensin; IL-6, 8, 10, 1 $\beta$ ; VEGF; G-CSF	L	L	L	U	L	L	L
16	Panousis et al. <sup>37</sup>	2005	Culture, PCR	L	L	H	L	L	L	H
23	Yi et al. <sup>42</sup>	2014	Leukocyte count, PMN%	L	L	L	U	L	L	L
25	Bedair et al. <sup>20</sup>	2011	Leukocyte count, PMN%, CRP	H	L	L	U	L	L	L
27	Kwon et al. <sup>34</sup>	2016	Leukocyte count, PMN%	H	L	L	L	H	L	L
28	Wyles et al. <sup>41</sup>	2013	Leukocyte count, PMN%, CRP	H	L	L	U	H	L	L
32	Shahi et al. <sup>38</sup>	2016	$\alpha$ -defensin	H	L	L	U	H	L	L
33	Deirmengian et al. <sup>21</sup>	2015	$\alpha$ -defensin, LE	H	L	L	U	H	L	L

\*H = high risk, L = low risk, and U = unclear risk.