

Supplemental Table 3: Study Characteristics – All Studies

Study	Setting	Site	Design	Follow Up (Years)	IBD Patients (n)	IBD Type	SpA Criteria	MSK Evaluation	Rheum Input	SpA NOS	AS	Axial SpA	Peripheral SpA
Al-Jarallah, 2012[11]*	Clinic	SC	CS	-	125	CD/UC	-	Exam - other	No	CD: 32.1% UC: 40.9%	-	CD: 3.7% UC: 2.3%	CD: 29.6% UC: 36.4%
Al-Jarallah, 2013[12]*	Clinic	SC	CS	-	130	CD/UC	-	Exam - other	No	CD: 31.7% UC: 40%	IBD: 8.5%	CD: 11.8% UC: 11.1%	CD: 29.4% UC: 35.6%
Arora, 2010[74]	Pop	MC	CS	-	3142	CD/UC	-	Chart	No	-	IBD: 2.6% CD: 2.0% UC: 3.2%	-	IBD: 0.7% CD: 0.9% UC: 0.5%
Atay, 2019[75]	Clinic	SC	CS	-	228	CD/UC	mNY	Chart	No	-	CD: 7.0% UC: 2.9%	-	-
Bae, 2017[76]	Pop	MC	CS	-	40843	CD/UC	-	Chart	Yes	-	IBD: 0.5% CD: 0.5% UC: 0.5%	-	-
Bandinelli, 2011[13]*	Clinic	SC	CS	-	121	CD/UC	-	Exam - rheum	Yes	-	-	-	-
Bandinelli, 2014[14]*	Clinic	SC	Long	3	81	CD/UC	mNY	Exam - rheum	Yes	-	-	CD: 29.1% UC: 23.1%	-
Bandyopadhyay, 2015[15]*	Clinic	SC	CS	-	120	CD/UC	ASAS (A)	Exam - rheum	Yes	-	IBD: 18% CD: 19% UC: 16%	IBD: 20% CD: 21% UC: 19%	IBD: 23% CD: 24% UC: 21%
Barreiro-de Acosta, 2007[16]*	Clinic	SC	CS	-	173	CD	-	Exam - rheum	Yes	-	CD: 2.3%	CD: 6.9%	CD: 17.9%
Bernstein, 2001[77]	Pop	MC	CS	-	4544	CD/UC	-	Chart	No	-	Male <sup>1</sup> IBD: 4.2% CD: 5.7% UC: 3%	-	-
											Female IBD: 4% CD: 4.3% UC: 3.6%		

Bertolini, 2020[17]*	Clinic	MC	CS	-	148	CD/UC	ASAS (A/P)	Exam - rheum	Yes	IBD: 37.8% CD: 30.8% UC: 41.5%	-	IBD: 8.1% CD: 5.9% UC: 10.4%	IBD: 29.7% CD: 25% UC: 31.2%
Beslek, 2009[18]*	Clinic	SC	CS	-	122	CD/UC	mNY, ESSG	Exam - rheum	Yes	IBD: 28.7% CD: 57.1% UC: 20.2%	IBD: 8.2% CD: 14.3% UC: 6.4%	-	IBD: 15.6% CD: 39.3% UC: 8.5%
Bruining, 2008[78]	Clinic	SC	CS	-	357	CD	-	Chart	No	-	-	CD: 2.2%	-
Card, 2016[79]	Pop	MC	CS	-	56097	CD/UC	-	Chart	No	Arthritis NOS IBD: 20.7% CD: 19.1% UC: 20.0%	IBD: 1.1% CD: 1.3% UC: 0.9%	IBD: 0.7% CD: 0.7% UC: 0.6%	-
										"All other inflammatory arthropathies" IBD: 1.4% CD: 1.6% UC: 1.1%			
Christodoulou, 2002[19]*	Clinic	SC	CS	-	256	CD/UC	-	Self-report, chart	No	-	-	CD: 16.2% UC: 4.2%	CD: 5.4% UC: 2.3%
D'Inca, 2009[20]*	Clinic	MC	Long	1	651	CD/UC	ESSG, mNY	Exam - rheum	Yes	-	IBD: 1.4% CD: 1.9% UC: 1%	IBD: 4.9% CD: 7.5% UC: 3.1%	IBD: 3.7% CD: 5.6% UC: 2.3%
De Kock, 2017[80]	Clinic	SC	CS	-	80	CD	ASAS (A)	Chart	No	-	-	CT Erosions CD: 22.5% CT Sclerosis CD: 21.3% CT Ankylosis CD: 7.5%	-

													CT Syndesmo pytes CD: 7.5%
De Vlam, 2000[21]*	Clinic	SC	CS	-	103	CD/UC	ESSG, mNY	Exam - rheum	Yes	IBD: 35% CD: 32% UC: 44%	IBD: 10% CD: 9% UC: 12%	IBD: 32% CD: 35% UC: 24%	IBD: 10% CD: 9% UC: 12%
Ditisheim, 2015[22]*	Pop	MC	CS	-	2401	CD/UC	ASAS (P)	Self-report	Yes	IBD: 25.4% <sup>2</sup> CD: 28% UC: 21.9%	-	-	IBD: 18.6% CD: 21.2% UC: 15.1%
Dmowska-Chalaba, 2015[23]*	Clinic	SC	CS	-	51	CD/UC	ASAS (A/P)	Exam - other	Yes	IBD: 56.9% CD: 58.3% UC: 55.6%	-	IBD: 43.1%	-
Dorofeyev, 2009[81]	Clinic	SC	CS	-	319	UC	-	Exam - other	No	UC: 15.1%	-	-	-
Duricova, 2017[24]*	Pop	MC	CS	-	628	UC	-	Exam - other	No	UC: 6%	-	UC: 1.5%	UC: 4.2%
Fatemi, 2016[25]*	Clinic	SC	CS	-	273	CD/UC	mNY	Exam - rheum	Yes	-	CD: 2.1% UC: 0%	-	CD: 5.2% UC: 4%
Gotler, 2015[26]*	Clinic	SC	CS	-	286	CD/UC	ASAS (A)	Self-report, chart	Yes	-	-	IBD: 9.1% <sup>3</sup>	-
Hammoudeh, 2018[27]*	Clinic	SC	CS	-	127	CD/UC	ASAS (A/P)	Exam - rheum	Yes	IBD: 11% CD: 10.9% UC: 11.1%	IBD: 3.2%	IBD: 3.2% CD: 6.5% UC: 1.2%	IBD: 43.3% CD: 41.3% UC: 44.4%
Hiller, 2019[28]*	Pop	MC	Long	-	3298	CD/UC	-	Exam - other	Yes	CD: 48.8% <sup>4</sup> UC/IBDU: 34.6%	CD: 6.9% UC/IBDU: 3.1%	-	-
Hwangbo, 2010[82]	Clinic	SC	CS	-	163	CD/UC	mNY	Chart	No	-	-	IBD: 16.6% CD: 20.1% UC: 12.2%	-
Isene, 2015[29]*	Pop	MC	Long	10	1145	CD/UC	-	Exam - other	Yes	-	CD: 1.6% <sup>5</sup> UC: 1%	CD: 2.1% <sup>5</sup> UC: 1.5%	CD: 9.1% <sup>5</sup> UC: 5.5%
Kamo, 2015[30]*	Clinic	SC	CS	-	137	CD/UC	-	Self-report	No	-	-	-	IBD: 40.9% <sup>6</sup>

Karmiris, 2016[31]*	Clinic	MC	CS	-	1860	CD/UC	-	Exam - rheum	Yes	-	IBD: 2.1% CD: 3.4% UC: 0.6%	IBD: 4.6% CD: 7% UC: 1.9%	IBD: 11.9% CD: 15.5% UC: 7.7%
Kelly, 2019[83]	Clinic	SC	CS	-	316	CD/UC	Other#	Chart	Yes	-	-	IBD: 15.5% CD: 14.6%	IBD: 12.4%
Lakatos, 2003[32]*	Clinic	SC	Long	25	873	CD/UC	-	Exam - rheum	Yes	-	-	CD: 10.2% UC: 3.2%	CD: 14.6% UC: 4.9%
Lanna, 2008[33]*	Clinic	SC	CS	-	130	CD/UC	mNY	Exam - rheum	Yes	IBD: 16.2% CD: 19.7% UC: 11.9%	IBD: 6.2% CD: 11.3% UC: 0%	IBD: 9.2% CD: 14.1% UC: 3.4%	IBD: 3.9% CD: 5.6% UC: 1.7%
Leclerc-Jacob, 2014[84]	Clinic	SC	CS	-	186	CD/UC	ASAS (A)	Chart	Yes	-	-	IBD:16.7% CD: 17.6% UC: 14.6%	-
Liu, 2016[85]	Clinic	SC	CS	-	194	CD	mNY	Chart	No	-	CD: 4.1%	-	-
Luchetti 2019[34]*	Clinic	SC	Long	2	262	CD/UC	ASAS (A/P)	Exam - rheum	Yes	IBD: 30.5% CD: 28.9% UC:33.3%	IBD: 2.7%	IBD: 14.9%	IBD: 15.7%
Malaty, 2017[86]	Clinic	SC	CS	-	626	CD/UC	-	Chart	No	-	IBD: 2.1% CD: 2.1% UC: 1.9%	-	IBD: 7% CD: 8% UC: 6%
Mocelin, 2015[35]*	Clinic	SC	CS	-	100	CD	ASAS (A/P)	Chart	Yes	CD: 6%	CD: 3%	CD: 2%	CD: 1%
Nguyen, 2006[87]	Clinic	MC	CS	-	1126	CD/UC	-	Chart	No	-	IBD: 1.2%	IBD: 2.1%	-
Orchard, 2009[36]*	Clinic	SC	CS	-	44	CD	mNY^	Exam - other	No	-	CD: 18.2%	CD: 38.6%	-
Ossum 2018: Axial[37]*	Pop	MC	CS	-	470	CD/UC	ASAS (A), mNY	Self-report <sup>7</sup>	Yes	-	IBD: 4.5% CD: 5.1% UC: 4.1%	IBD: 7.7% CD: 10.9% UC: 6.1%	-
Ossum, 2018: Peripheral[38]*	Pop	MC	CS	-	470	CD/UC	ASAS (P)	Self-report <sup>7</sup>	Yes	-	-	-	pSpA: IBD: 26.1% CD: 26.2% UC: 28.7%
													pArthritis:

														IBD: 16.2% CD: 19.3% UC: 16.2%
Ozdil, 2004[88]	Clinic	SC	Long	5±2 (mean)	116	UC	-	Chart	No	-	-	UC: 12.1%	UC: 1.7%	
Palm, 2001[39]*	Pop	MC	CS	-	521	CD/UC	mNY	Exam - rheum	Yes	-	IBD: 1.3%	-	IBD: 11.9% CD: 14.3% UC: 10.8%	
Palm, 2002[40]*	Pop	MC	CS	-	406	CD/UC	mNY, ESSG	Exam - rheum	Yes	-	IBD: 3.7% CD: 6.0% UC: 2.6%	IBD: 1% <sup>8</sup>	-	
Paparo, 2012[89]	Clinic	SC	CS	-	221	CD	Other <sup>##</sup>	Chart	No	-	-	CD: 24%	-	
Peeters, 2008[41]*	Clinic	MC	CS	-	251	CD	mNY	Chart	Yes	-	CD: 6.4%	CD: 25.9%	CD: 28.7%	
Picchianti- Diamanti, 2020[42]*	Clinic	MC	CS	-	347	CD/UC	ASAS (A/P)	Exam - rheum	Yes	-	-	-	-	
Pokharna, 2004[43]*	Clinic	SC	CS	-	46	UC	mNY	Other provider physical exam	No	-	-	UC: 0%	UC: 2.2%	
Queiro, 2000[44]*	Clinic	SC	Long	4	62	CD/UC	Amor, ESSG, mNY	Exam - other	Yes	Amor: IBD: 11.3% CD: 11.4% UC: 11.1% ESSG: IBD: 18.8% CD: 8.6% UC: 14.8%	IBD:3.2% CD:2.9% UC:3.7%	IBD: 24.2% CD: 22.9% UC: 25.9%	IBD: 30.7% CD: 28.6% UC: 33.3%	
Repiso, 2006[90]	Clinic	SC	CS	-	157	CD	-	Chart	No	CD: 1.9%	-	CD: 5.7%	CD: 3.8%	
Ricart, 2004[45]*	Clinic	SC	CS	-	243	CD/UC	-	Self-report	No	-	IBD: 3.7% CD: 6.5% UC: 0%	-	-	
Rovisco, 2016[46]*	Clinic	SC	CS	-	76	CD/UC	ASAS (A/P)	Exam - rheum	Yes	-	-	-	-	

Sahli, 2018[47]*	Clinic	SC	CS	-	64	CD/UC	ASAS (A), Amor	Exam - rheum	Yes	-	IBD: 26.5%	IBD: 14.1% <sup>9</sup>	-
Salvarani, 2001[48]*	Clinic	MC	CS	-	160	CD/UC	mNY, ESSG	Exam - rheum	Yes	IBD: 18.1% CD: 18.6% UC: 17.3%	IBD: 3.1% CD: 5.1% UC: 2%	IBD: 3.6% CD: 5.9% UC: 2.4%	IBD: 10.6% CD: 10.2% UC: 11.2%
Shivashankar, 2012[91]	Pop	MC	CS	-	311	CD	ESSG,ASAS (A/P), mNY	Chart	Yes	CD: 14.5%	CD: 0.6%	CD: 1.6%	CD: 7.1%
Shivashankar, 2013[92]	Pop	MC	CS	-	365	UC	ESSG, ASAS (A/P), mNY	Chart	Yes	UC: 14.8% (ASAS) 3.6% (ESSG)	UC: 0.3%	UC: 1.6%	UC: 4.7%
Singla, 2017[93]	Clinic	SC	CS	-	209	CD	-	Chart	No	CD: 2.9%	CD: 1%	CD: 2.4%	-
Steer, 2003[49]*	Clinic	SC	CS	-	134	CD	mNY	Exam - other	Yes	-	CD: 6.7%	CD: 23.1%	-
Stolwijk, 2013[50]*	Clinic	SC	CS	-	350	CD/UC	-	Self-report, chart	Yes	-	-	IBD: 5.1% CD: 6.3% UC: 3.7%	pSpA IBD: 5.7% CD: 7.3% UC: 3.7%
													pArthritis: IBD: 9.4% CD: 12.1% UC: 5.1%
Subramaniam, 2015[51]*	Clinic	SC	CS	-	140	CD/UC	ASAS (A/P)	Self-report, chart	Yes	IBD: 33.6% CD: 37.5% UC: 25%	IBD: 4.3%	IBD: 11.4% CD: 12.5% UC: 9.1%	IBD: 41%
Tureyen, 2002[94]	Clinic	SC	CS	-	62	CD/UC	mNY	Chart	No	-	IBD: 4.8% CD: 6.9% UC: 3%	IBD: 27.4% CD: 24.1% UC: 30.3%	-
Turkcapar, 2006[52]*	Clinic	SC	CS	-	162	CD/UC	mNY, ESSG	Exam - rheum	Yes	IBD: 45.7% CD: 48.7% UC: 42.8%	IBD: 9.9% CD: 11.5% UC: 8.3%	IBD: 45.7% CD: 48.7% UC: 42.8%	IBD: 14.8% CD: 15.4% UC: 14.3%

Van Erp, 2016[53]*	Clinic	SC	Long	1	255	CD/UC	ASAS (A/P), Amor, ESSG, mNY	Exam - other	Yes	IBD: 40.6%	IBD: 2.6%	IBD: 3.9%	IBD: 9.7%
Vavricka, 2011[1]*	Pop	MC	CS	-	950	CD/UC	-	Physician survey	No	-	IBD: 4.1% CD: 5.7% UC: 1.6%	-	IBD: 28.6% CD: 33.3% UC: 21.3%
Yamamoto-Furusho, 2018[95]	Clinic	SC	CS	-	295	UC	-	Chart	No	-	UC: 2.7%	UC: 5.4%	UC: 46.8%
Yi, 2012[96]	Clinic	SC	CS	-	153	CD	-	Chart	No	CD: 4.6%	CD: 0.7%	-	-
Yuksel, 2011[54]*	Clinic	SC	CS	-	357	CD/UC	-	Exam - rheum	Yes	-	-	-	IBD: 18.5% CD: 28.3% UC: 13.5%
Zippi, 2014[97]	Clinic	SC	CS	-	811	CD/UC	-	Chart	No	-	IBD 1.6%: CD: 2.3% UC: 1.4%	-	IBD: 28% CD: 30.6% UC: 27.1%

Pop: population, SC: single center, MC: multicenter, Long: longitudinal, CD: Crohn's disease, UC: ulcerative colitis, IBDU: inflammatory bowel disease unspecified, Rheum: Rheumatologist, SpA: spondyloarthritis, AS: ankylosing spondylitis, pSpA: peripheral SpA, A: axial, P: peripheral, mNY: Modified New York Criteria, ESSG: European Spondyloarthropathy Study Group, Rheum: rheumatologist, IBD: inflammatory bowel disease, #: Number, Yrs: years

<sup>1</sup> Patients with ≥ 1 contact with health system

<sup>2</sup> Mixed inflammatory articular disease

<sup>3</sup> 2009 ASAS MRI criteria

<sup>4</sup> "Arthritis/arthritis," did not distinguish between the two entities

<sup>5</sup> First extraintestinal manifestation only

<sup>6</sup> Mono, oligo, and polyarthralgia, did not mention arthritis

<sup>7</sup> Used rheumatologist physical exam from 5 year follow up study

<sup>8</sup> Reported 1% based on patients who had imaging. Estimated prevalence 2% based on expected results if imaged all patients

<sup>9</sup> Isolated sacroiliitis

\* Prospectively enrolled

# Chan ARD 2015

## Dale Acta Radiol Diag 1985

^ Adapted for MRI