Appendix 1 – search strategy employed in MEDLINE and adapted for EMBASE and the Cochrane Database

1. Exp Intestine, Large/
2. C?ecum.ti,ab
3. Colon*.ti,ab
4. Rect*.ti,ab
5. Colorectal.ti,ab
6. OR/1-5
7. Dysplas*.ti,ab
8. Adenoma*.ti,ab
9. Polyp*.ti,ab
10. Adenomatous polyps/
11. Pseudopolyp*.ti,ab
12. Neoplas*.ti,ab
13. Lesion*.ti,ab
14. OR/7-13
15. 6 AND 14
16. exp Colonic Neoplasms/
17. exp Colonic Polyps/
18. exp Rectal Neoplasms/
19. OR/15-18
20. exp Colonoscopy/
21. Colonoscop*.ti,ab
22. Endoscop*.ti,ab
23. Sigmoidoscop*.ti,ab
24. OR/20-23
25. (Real adj time).ti,ab
26. (In adj vivo).ti,ab
27. Spectroscop*.ti,ab
28. Endomicroscop*.ti,ab
29. Chrom?endoscop*.ti,ab
30. Fl?orosc*.ti,ab
31. (Narrow adj band).ti,ab
32. Optical.ti,ab
33. (i adj scan).ti,ab
34. (colo?r AND enhancement).ti,ab
35. FICE.ti,ab
36. OR/25-35
37. Diagnos*.ti,ab
38. Detect*.ti,ab
39. Classif*.ti,ab
40. Histolog*.ti,ab
41. Assessment.ti,ab
42. Analysis.ti,ab
43. Characteri*.ti,ab
44. OR/37-43
45. 19 AND 24 AND 36 AND 44
46. limit 45 to human

Appendix 2 – Digital Chromoendoscopy QUADAS-2 Scores

	Risk of Bias				Applicability			
	Patient Selection	Index Test	Reference Standard	Flow and Timing	Patient Selection	Index Test	Reference Standard	Reason for *Unclear* or *High* Score
Ashktorab 2016	(+)	(?)	(+)	(+)	(+)	(+)	(+)	Unclear endoscopist experience with NBI technology prior to study
Ashktorab 2016	(+)	(?)	(+)	(+)	(+)	(+)	(+)	Unclear endoscopist experience with NBI technology prior to study
Basford 2014	(+)	(+)	(+)	(+)	(+)	(+)	(+)	-
Belderbos 2017	(?)	(+)	(+)	(+)	(+)	(+)	(+)	Unclear if consecutive patients were eligible, limited sampling of rectal hyperplastic polyps reduces adenoma prevalence
Buchner 2010	(?)	(-)	(+)	(+)	(+)	(+)	(+)	Unclear if consecutive patients were eligible, some lesions known to be adenomas prior to index test
Buchner 2010	(?)	(-)	(+)	(+)	(+)	(+)	(+)	Unclear if consecutive patients were eligible, some lesions known to be adenomas prior to index test
Canales-Sevilla 2010	(?)	(?)	(+)	(+)	(+)	(+)	(+)	Unclear if consecutive patients were eligible for study. Unclear endoscopist experience with NBI technology prior to study
Chan 2012	(+)	(+)	(+)	(+)	(+)	(+)	(+)	-
Chandran 2015	(+)	(+)	(+)	(+)	(+)	(+)	(+)	-
Dai 2013	(+)	(+)	(+)	(+)	(+)	(+)	(+)	-
dos Santos 2009	(?)	(+)	(+)	(+)	(+)	(+)	(+)	Unclear if consecutive patients were eligible
dos Santos 2010	(+)	(+)	(+)	(+)	(+)	(+)	(+)	-
dos Santos 2012	(+)	(+)	(+)	(+)	(+)	(+)	(+)	-
dos Santos 2017	(+)	(+)	(+)	(+)	(+)	(+)	(+)	-
dos Santos 2017	(+)	(+)	(+)	(+)	(+)	(+)	(+)	-
East 2008	(+)	(+)	(+)	(+)	(+)	(+)	(+)	-
Hewett 2012	(?)	(+)	(+)	(+)	(+)	(+)	(+)	Unclear if consecutive patients were eligible for study
Hewett 2012	(?)	(+)	(+)	(+)	(+)	(+)	(+)	Unclear if consecutive patients were eligible for study
Hoffman 2010	(+)	(+)	(+)	(+)	(+)	(+)	(+)	-
Hoffman 2010	(+)	(+)	(+)	(+)	(+)	(+)	(+)	-

Study								Notes
Hong 2012	+	+	+	+	+	+	+	-
Hong 2012	+	+	+	+	+	+	+	-
Ikematsu 2015	+	+	+	+	+	+	+	-
Iwatate 2015	+	?	+	+	+	+	+	Unclear if all endoscopists had sufficient experience with NBI prior to study
Iwatate 2015	+	?	+	+	+	+	+	Unclear if all endoscopists had sufficient experience with NBI prior to study
Kaltenbach 2015	+	+	+	+	+	+	+	-
Kaltenbach 2015	+	+	+	+	+	+	+	-
Kang 2015	+	+	+	+	+	+	+	-
Kang 2015	+	+	+	+	+	+	+	-
Kim 2011	+	+	+	+	+	+	+	-
Klare 2016	+	+	+	+	+	+	+	-
Kuiper 2011	+	⊖	+	+	+	+	+	Lesions also assessed with AFI, likely biasing interpretation of the NBI
Kuiper 2012	+	+	+	+	+	+	+	-
Kuruvilla 2015	+	+	+	+	?	+	+	High incidence of SSAs (17%) unrepresentative of routine clinical practice
Ladabaum 2013	?	+	+	+	+	+	+	Unclear if consecutive patients were eligible for study
Lee 2011	+	+	+	+	+	+	+	-
Lee 2011	+	+	+	+	+	+	+	-
Liu 2008	?	+	+	+	+	+	+	Unclear how patients were selected and if consecutive patients were eligible for study
Longcroft-Wheaton 2011	+	+	+	+	+	+	+	-
Longcroft-Wheaton 2012	+	+	+	+	+	+	+	-
Longcroft-Wheaton 2012	+	+	+	+	+	+	+	-
Machida 2004	?	+	+	+	+	+	+	Unclear how patients were selected and if consecutive patients were eligible for study
Okamoto 2011	?	+	+	+	⊖	+	+	Unclear how patients were selected and if consecutive patients were eligible for study. High incidence of adenomas (95%) not representative of practice
Paggi 2012	+	+	+	+	+	+	+	-
Paggi 2015	+	+	+	+	+	+	+	-
Pigo 2013	+	?	+	+	+	+	+	Unclear if all endoscopists had sufficient experience with iSCAN prior to study

Study	1	2	3	4	5	6	7	Notes
Pohl 2009	+	?	+	+	+	+	+	Endoscopists were often inexperienced with FICE prior to the study starting
Pohl 2016	+	+	+	+	+	+	+	-
Pohl 2016	+	+	+	+	+	+	+	-
Rastogi 2011	+	+	+	+	+	+	+	-
Rath 2015	+	?	+	+	+	+	+	Unclear if endoscopists had sufficient experience with iSCAN prior to study
Rees 2017	+	+	+	+	+	+	+	-
Ren 2012	+	?	+	+	+	+	+	Unclear if endoscopists had sufficient experience with NBI prior to study
Repici 2013	+	+	+	+	+	+	+	-
Rex 2009	+	+	+	+	+	+	+	-
Rogart 2008	+	+	+	+	+	+	+	-
Rogart 2011	+	+	+	+	+	+	+	-
Rogart 2011	+	+	+	+	+	+	+	-
Rotondano 2012	+	+	+	+	?	+	+	High incidence of adenomas (90%) not representative of clinical practice
Sakamoto 2012	+	−	+	+	?	+	+	Half of the lesions had just been assessed by dye chromoendoscopy, likely biasing the interpretation of NBI. High incidence of adenomas (89%) not representative of practice
Salazar Muente 2012	?	+	+	+	+	+	+	Unclear if consecutive patients were eligible for study
Sano 2009	+	+	+	+	+	+	+	-
Sano 2015	?	−	+	+	+	+	+	Unclear if consecutive patients were eligible for study. IC dye was used for detection and may have biased NBI
Schachschal 2014	+	+	+	+	+	+	+	-
Seref Koksal 2014	+	?	+	+	+	+	+	Endoscopists had no experience using NBI prior to the study starting
Shahid 2012	?	+	+	+	+	+	+	Unclear how patients selected and if consecutive patients were eligible for the study
Singh 2011	?	?	+	+	+	+	+	Unclear how patients were selected, likely not consecutive. Unlikely sufficient endoscopist experience with NBI
Singh 2013	+	?	+	+	+	+	+	Unlikely sufficient endoscopist experience with NBI
Sola-Vera 2015	+	+	+	+	+	+	+	-
Szura 2016	?	?	+	+	+	+	+	Unclear how patients were selected, likely not consecutive. Unlikely sufficient endoscopist experience with NBI
Takeuchi 2014	+	+	+	+	+	+	+	-
Takeuchi 2015	+	+	+	+	+	+	+	-

Study								Notes
Takeuchi 2015	+	+	+	+	+	+	+	-
Togashi 2009	?	+	+	+	+	+	+	Unclear how patients were selected, likely not consecutive
Van den Broek 2009	+	−	+	+	+	+	+	Unlikely sufficient endoscopist experience with NBI prior to study start. Some lesions previously assessed with AFI, likely biasing interpretation
Wallace 2014	+	+	+	+	+	+	+	-
Wallace 2014	+	+	+	+	+	+	+	-
Yoo 2011	?	+	+	+	?	+	+	Unclear how patients were selected. High incidence of adenomas (93%) not representative of clinical practice
Zhou 2011	?	?	+	+	+	+	+	Unclear how patients were selected, likely not consecutive. Unlikely sufficient endoscopist experience with NBI

Appendix 3 – Dye Chromoendoscopy QUADAS-2 Scores

	Risk of Bias				Applicability			Reason for *Unclear* or *High* Score
	Patient Selection	Index Test	Reference Standard	Flow and Timing	Patient Selection	Index Test	Reference Standard	
Apel 2006	+	?	–	+	+	+	+	Unclear endoscopist experience with chromoendoscopy. Pathologists were not blinded to intra-operative prediction
Averbach 2003	?	?	+	+	+	+	+	Unclear how patients were selected. Unclear endoscopist experience with chromoendoscopy prior to study start
Axelrad 1996	+	+	+	+	+	+	+	-
Bianco 2006	+	?	+	+	+	+	+	Unclear endoscopist experience with chromoendoscopy prior to study start
de Palma 2006	?	+	+	+	+	+	+	Unclear how patients were selected, likely not consecutive
dos Santos 2009	?	–	+	+	+	+	+	Unclear how patients were selected. Lesion chromoendoscopy interpretation was biased by just having performed FICE
dos Santos 2010	+	+	+	+	+	+	+	-
dos Santos 2012	+	+	+	+	+	+	+	-
Eisen 2002	–	?	+	+	+	+	+	Some patients only had sigmoidoscopy, changing the prevalence of lesion histological subtypes. Unclear endoscopist experience with chromoendoscopy
Fu 2004	+	+	+	+	+	+	+	-
Hurlstone 2004	?	?	+	+	+	+	+	Unclear if consecutive patients eligible. Unclear if sufficient endoscopist experience with chromoendoscopy
Ince 2007	?	+	+	+	+	+	+	Unclear how patients were selected, likely not consecutive
Kato 2006	?	+	+	+	?	+	+	Unclear how patients were selected. High incidence of adenomas (88%) not representative of clinical practice
Kiesslich 2001	+	?	+	+	+	+	+	Unclear endoscopist experience with chromoendoscopy prior to study start
Kohut 2009	+	+	+	+	+	+	+	-
Konishi 2003	+	+	+	+	+	+	+	-
Konishi 2003	+	+	+	+	+	+	+	-
Liu 2003	?	?	+	+	+	+	+	Unclear indications for colonoscopy. Unclear endoscopist experience with chromoendoscopy prior to study start
Liu 2008	?	–	+	+	+	+	+	Unclear how patients were selected, likely not consecutive. Lesion chromoendoscopy interpretation was biased by just having performed FICE. Unclear endoscopist experience
Ljubicic 2001	?	?	+	+	+	+	+	Unclear if consecutive patients eligible. Unclear if sufficient endoscopist experience with chromoendoscopy

Study								Notes
Longcroft-Wheaton 2011	+	−	+	+	+	+	+	Chromoendoscopy interpretation was biased by just performing FICE
Longcroft-Wheaton 2013	+	+	+	+	+	+	+	-
Longcroft-Wheaton 2013	+	+	+	+	+	+	+	-
Machida 2004	?	−	+	+	+	+	+	Unclear if consecutive patients eligible. Chromoendoscopy interpretation was biased by just performing NBI
Pohl 2009	+	?	+	+	+	+	+	Unclear endoscopist experience with chromoendoscopy prior to study start
Sakamoto 2012	+	−	+	+	?	+	+	Chromoendoscopy interpretation was biased by just having been analysed by NBI. High incidence of adenomas (89%) not representative of practice
Togashi 1999	+	?	+	+	+	+	+	Unclear endoscopist experience with chromoendoscopy prior to study start
Togashi 2006	+	?	+	+	+	+	+	Unclear endoscopist experience with chromoendoscopy prior to study start
Togashi 2009	?	−	+	+	+	+	+	Unclear if consecutive patients were eligible. Lesion chromoendoscopy interpretation was biased by just having performed FICE
Tung 2001	+	+	+	+	+	+	+	-
Urban 2005	?	?	+	+	+	+	+	Unclear if consecutive patients eligible. Unclear if sufficient endoscopist experience with chromoendoscopy

Appendix 4 – Fluorescence Analysis QUADAS-2 Scores

	Risk of Bias				Applicability			Reason for *Unclear* or *High* Score
	Patient Selection	Index Test	Reference Standard	Flow and Timing	Patient Selection	Index Test	Reference Standard	
Aihara 2013	➕	➕	➕	➕	➕	➕	➕	-
Kuiper 2011	➕	➖	➕	➕	➕	➕	➕	Lesions also assessed with NBI, likely biasing interpretation of the AFI
van den Broek 2009	➕	➖	➕	➕	➕	➕	➕	Lesions also assessed with NBI, likely biasing interpretation of the AFI

Appendix 5 – Microscopic Imaging QUADAS-2 Scores

	Risk of Bias				Applicability			Reason for *Unclear* or *High* Score
	Patient Selection	Index Test	Reference Standard	Flow and Timing	Patient Selection	Index Test	Reference Standard	
Kiesslich 2004	?	?	+	+	+	+	+	Unclear how patients were selected, likely not consecutive. Unlikely sufficient endoscopist experience with technology
Sanduleanu 2010	+	+	+	+	+	+	+	-
Shahid 2012	?	?	+	+	+	+	+	Unclear how patients were selected, likely not consecutive. Unlikely sufficient endoscopist experience with technology
Xie 2011	+	+	+	+	+	+	+	-

Appendix 6 – Computer-Aided Recognition QUADAS-2 Scores

	Risk of Bias				Applicability			Reason for *Unclear* or *High* Score
	Patient Selection	Index Test	Reference Standard	Flow and Timing	Patient Selection	Index Test	Reference Standard	
Kominami 2016	?	+	+	+	+	+	+	Unclear if consecutive patients were eligible for inclusion
Kuiper 2015	+	?	+	+	+	+	+	Unclear endoscopist experience with the technology prior to the study start
Rath 2016	+	+	+	+	+	+	+	-