

Where are the inequalities in colorectal cancer care in a country with universal healthcare? A systematic review and narrative synthesis

Appendix

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Appendix S1: PRISMA Statement Checklist¹

Section/topic	Item #	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review.	1
ABSTRACT			
Abstract	2	As per PRISMA 2020 for Abstracts checklist	2-3
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	4-5
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	5
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	5-6
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	6, Appendix S2
Search strategy	7	Present the full search strategies for all databases, registers, and websites, including any filters and limits used.	Appendix S3
Study selection	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	6
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	6
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	Appendix S5
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	Appendix S5

Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	7
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	Appendix S5
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	7
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	Appendix S5
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	Appendix S5
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	7
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	N/A
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	N/A
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	N/A
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	7
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	8, Figure 1
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	N/A
Study characteristics	17	Cite each included study and present its characteristics.	8, Figure 2, Appendix S7
Risk of bias within studies	18	Present assessments of risk of bias for each included study.	8, Figure 3, Appendix S6
Results of individual	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and	8-15, Appendix S8-

studies		(b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	S13
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	8, Figure 3, Appendix S6
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	8-15, Appendix S8-S13
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	N/A
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	N/A
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	N/A
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	8-15, Table 1
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	18-22
	23b	Discuss any limitations of the evidence included in the review.	18-22
	23c	Discuss any limitations of the review processes used.	18-22
	23d	Discuss implications of the results for practice, policy, and future research.	18-22
Other Information			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	2, 5
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	5
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	N/A
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	3,4
Competing interests	26	Declare any competing interests of review authors.	23
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	23

Appendix S2: List of Hand-Searched Online Sources and Details of Citation Searches

The following websites were hand-searched on 30/03/2023:

- The National Cancer Registration and Analysis Service (<http://www.ncin.org.uk/home>)
- Cancer Research UK (<https://www.cancerresearchuk.org/>)
- Macmillan Cancer Support (<https://www.macmillan.org.uk>)
- The King's Fund (<https://www.kingsfund.org.uk/>)
- Office for Health Improvement and Disparities (<https://www.gov.uk/government/organisations/office-for-health-improvement-and-disparities>)
- National Bowel Cancer Audit (<https://www.nboca.org.uk>)
- Bowel Cancer UK (<https://www.bowelcanceruk.org.uk>)
- National Health Service England (<https://www.england.nhs.uk/about/equality/equality-hub/>)
- The Association of Coloproctology of Great Britain & Ireland (<https://www.acpgbi.org.uk>)
- NHS Digital (<https://digital.nhs.uk>)
- Health Data Insight CIC (<https://healthdatainsight.org.uk>)
- National Disease Registration Service (<https://www.ndrs.nhs.uk>)

The automated tool 'citationchaser' conducted forward and backward citation searches on thirty-nine included studies where a digital object identifier was available.²⁻⁴⁰

These searches identified 838 unique records using backwards searching and 1,628 unique records using forwards searching.⁴¹ These records were then screened by BPS in EndNote X9.⁴²

The bibliographies of two systematic reviews were also examined for relevant articles.^{43,44}

Appendix S3.1: Search Strategies – MEDLINE (OVID)

Initial searches were conducted on 31st August 2021. Repeat searches were conducted across all databases on 26/01/2023, limited to date of database entry between 20/08/2021 to 26/01/2023.

Ovid MEDLINE(R) ALL <1946 to August 31, 2021>

```
1      exp Colorectal Neoplasms/
2      ((colon* or colorectal or rectal) adj3 (cancer* or neoplas* or tumor* or tumour* or
malignan* or carcinoma* or metasta* or oncolog*)).mp
3      or/1-2 [cancer population of interest]
4      exp Socioeconomic Factors/
5      (socio-economic or socioeconomic or socio-demographic or sociodemographic).mp
6      exp Education, Continuing/ or Education/
7      exp Income/
8      exp Health Status/
9      exp Poverty/
10     (socio-economic position or socioeconomic position).mp.
11     inequalities.mp.
12     exp Social Environment/
13     social factors.mp.
14     income.mp.
15     exp Residence Characteristics/
16     Social class.mp.
17     Education.mp.
18     exp Health Status Disparities/
19     depriv*.mp.
20     (equity or equitable).mp.
21     (inequity or inequitable).mp.
22     inequities.mp.
23     disparit*.mp.
24     or/4-23 [inequality concept]
25     surgery.mp.
26     Treatment.mp.
27     exp Health Services Accessibility/
28     exp Healthcare Disparities/
29     treatment disparities.mp.
30     exp "Delivery of Health Care"/
31     exp Primary Health Care/
32     exp Drug Therapy/
33     chemotherapy.mp.
34     Radiotherapy/ or Radiotherapy, Adjuvant/
35     radiotherapy.mp.
36     accessibility.mp.
```

37 access.mp.
38 pattern\$.mp.
39 palliative care/ or Patient care/ or Primary Health care/
40 care.mp.
41 investigation.mp.
42 exp "Quality of Health Care"/
43 exp Patient Selection/ or exp Eligibility Determination/
44 exp "Referral and Consultation"/
45 Receipt.mp. or exp "Patient Acceptance of Health Care"/
46 Provision.mp.
47 Attendance.mp.
48 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39
or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 [treatment concept]
49 exp "Early Detection of Cancer"/
50 exp Delayed Diagnosis/
51 ((patient* or present* or doctor* or physician* or practitioner* or hospital* or
system* or (primary adj care) or (secondary adj care) or total or (help adj3 seek) or pre-
treatment* or referr* or specialist* or consultant* or surg* or chemothera* or radiothera*
or treatment* or diagnos*) adj5 (delay* or interval* or time* or pathway* or route*)).ti,ab.
52 (stage* adj5 (diagnosis or diagnostic)).ti,ab.
53 49 or 50 or 51 or 52 [interval filter]
54 exp United Kingdom/
55 (national health service* or NHS*).ti,ab,in.
56 (english not ((published or publication* or translat* or written or language* or
speak* or literature or citation*) adj5 english)).ti,ab.
57 (gb or "g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united
kingdom* or (england* not "new england") or northern ireland* or northern irish* or
scotland* or scottish* or ((wales or "south wales") not "new south wales") or
welsh*).ti,ab,jw,in.
58 (bath or "bath's" or ((birmingham not alabama*) or ("birmingham's" not alabama*)
or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle* or
"carlisle's" or (cambridge not (massachusetts* or boston* or harvard*)) or ("cambridge's"
not (massachusetts* or boston* or harvard*)) or (canterbury not zealand*) or
("canterbury's" not zealand*) or chelmsford or "chelmsford's" or chester or "chester's" or
chichester or "chichester's" or coventry or "coventry's" or derby or "derby's" or (durham not
(carolina* or nc)) or ("durham's" not (carolina* or nc)) or ely or "ely's" or exeter or
"exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or "hull's" or
lancaster or "lancaster's" or leeds* or leicester or "leicester's" or (lincoln not nebraska*) or
("lincoln's" not nebraska*) or (liverpool not (new south wales* or nsw)) or ("liverpool's" not
(new south wales* or nsw)) or ((london not (ontario* or ont or toronto*)) or ("london's" not
(ontario* or ont or toronto*)) or manchester or "manchester's" or (newcastle not (new
south wales* or nsw)) or ("newcastle's" not (new south wales* or nsw)) or norwich or
"norwich's" or nottingham or "nottingham's" or oxford or "oxford's" or peterborough or
"peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston
or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or "salisbury's" or
sheffield or "sheffield's" or southampton or "southampton's" or st albans or stoke or
"stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or "wakefield's"

or wells or westminster or "westminster's" or winchester or "winchester's" or wolverhampton or "wolverhampton's" or (worchester not (massachusetts* or boston* or harvard*)) or ("worchester's" not (massachusetts* or boston* or harvard*)) or (york not ("new york*" or ny or ontario* or ont or toronto*)) or ("york's" not ("new york*" or ny or ontario* or ont or toronto*))))).ti,ab,in.

59 (bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's" or st asaph or "st asaph's" or st davids or swansea or "swansea's").ti,ab,in.

60 (aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*) or ("perth's" not australia*) or stirling or "stirling's").ti,ab,in.

61 (armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's").ti,ab,in.

62 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61

63 (exp africa/ or exp americas/ or exp Antarctic regions/ or exp arctic regions/ or exp asia/ or exp oceania/) not (exp great britain/ or europe/)

64 62 not 63 [NICE UK filter]

65 case reports.pt.

66 news.pt.

67 letter.pt.

68 comment.pt.

69 exp animals/ not humans.sh.

70 65 or 66 or 67 or 68 or 69 [excluding animals and unwanted publication types]

71 3 and 24 and 48

72 3 and 24 and 53

73 71 or 72

74 64 and 73

75 74 not 70

Appendix S3.2: Search Strategies – EMBASE (OVID)

OVID Embase <1974 to 2021 August 31>

- 1 exp colorectal tumor/
- 2 ((colon* or colorectal or rectal) adj3 (cancer* or neoplas* or tumor* or tumour* or malignan* or carcinoma* or metasta* or oncolog*)).mp.
- 3 1 or 2 [cancer population of interest]
- 4 exp socioeconomics/
- 5 (socio-economic or socioeconomic or socio-demographic or sociodemographic).mp.
- 6 exp education/
- 7 exp income/
- 8 exp health status/
- 9 exp poverty/
- 10 (socioeconomic position or socio-economic position).mp.
- 11 inequalities.mp.
- 12 exp social environment/
- 13 social factors.mp.
- 14 income.mp.
- 15 exp demography/
- 16 social class.mp.
- 17 education.mp.
- 18 exp health disparity/
- 19 depriv*.mp.
- 20 (equity or equitable).mp.
- 21 (inequity or inequitable).mp.
- 22 inequities.mp.
- 23 disparit*.mp.
- 24 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 23 [inequality concept]
- 25 surgery.mp.
- 26 treatment.mp.
- 27 exp health care access/
- 28 exp health care disparity/
- 29 treatment disparities.mp.
- 30 exp health care delivery/
- 31 exp primary health care/
- 32 exp drug therapy/
- 33 chemotherapy.mp.
- 34 adjuvant radiotherapy/ or radiotherapy/
- 35 radiotherapy.mp.
- 36 accessibility.mp.
- 37 access.mp.
- 38 pattern*.mp.
- 39 palliative therapy/ or patient care/ or primary health care/
- 40 care.mp.
- 41 investigation.mp.

42 exp health care quality/
43 exp patient selection/99092
44 exp patient referral/ or exp consultation/
45 receipt.mp. or exp "Patient attitude"/
46 provision.mp.
47 attendance.mp.
48 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39
or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 [treatment concept]
49 exp early cancer diagnosis/
50 exp delayed diagnosis/
51 ((patient* or present* or doctor* or physician* or practitioner* or hospital* or
system* or (primary adj care) or (secondary adj care) or total or (help adj3 seek) or pre-
treatment* or refer* or specialist* or consultant* or surg* or chemothera* or radiothera*
or treatment* or diagnos*) adj5 (delay* or interval* or time* or pathway* or route*)).ti,ab.
52 (stage* adj5 (diagnosis or diagnostic)).ti,ab.
53 49 or 50 or 51 or 52 [interval filter]
54 exp United Kingdom/
55 (national health service* or nhs*).ti,ab,in,ad.
56 (english not ((published or publication* or translat* or written or language* or
speak* or literature or citation*) adj5 english)).ti,ab.
57 (gb or "g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united
kingdom* or (england* not "new england") or northern ireland* or northern irish* or
scotland* or scottish* or ((wales or "south wales") not "new south wales") or
welsh*).ti,ab,jx,in,ad.
58 (bath or "bath's" or ((birmingham not alabama*) or ("birmingham's" not alabama*)
or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle* or
"carlisle's" or (cambridge not (massachusetts* or boston* or harvard*)) or ("cambridge's"
not (massachusetts* or boston* or harvard*)) or (canterbury not zealand*) or
("canterbury's" not zealand*) or chelmsford or "chelmsford's" or chester or "chester's" or
chichester or "chichester's" or coventry or "coventry's" or derby or "derby's" or (durham not
(carolina* or nc)) or ("durham's" not (carolina* or nc)) or ely or "ely's" or exeter or
"exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or "hull's" or
lancaster or "lancaster's" or leeds* or leicester or "leicester's" or (lincoln not nebraska*) or
("lincoln's" not nebraska*) or (liverpool not (new south wales* or nsw)) or ("liverpool's" not
(new south wales* or nsw)) or ((london not (ontario* or ont or toronto*)) or ("london's" not
(ontario* or ont or toronto*)) or manchester or "manchester's" or (newcastle not (new
south wales* or nsw)) or ("newcastle's" not (new south wales* or nsw)) or norwich or
"norwich's" or nottingham or "nottingham's" or oxford or "oxford's" or peterborough or
"peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston
or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or "salisbury's" or
sheffield or "sheffield's" or southampton or "southampton's" or st albans or stoke or
"stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or "wakefield's"
or wells or westminster or "westminster's" or winchester or "winchester's" or
wolverhampton or "wolverhampton's" or (worcester not (massachusetts* or boston* or
harvard*)) or ("worcester's" not (massachusetts* or boston* or harvard*)) or (york not
("new york*" or ny or ontario* or ont or toronto*)) or ("york's" not ("new york*" or ny or
ontario* or ont or toronto*))))).ti,ab,in,ad.

- 59 (bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's" or st asaph or "st asaph's" or st davids or swansea or "swansea's").ti,ab,in,ad.
- 60 (aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*) or ("perth's" not australia*) or stirling or "stirling's").ti,ab,in,ad.
- 61 (armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's").ti,ab,in,ad.
- 62 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61
- 63 (exp "arctic and antarctic"/ or exp oceanic regions/ or exp western hemisphere/ or exp africa/ or exp asia/ or exp "australia and new zealand"/) not (exp united kingdom/ or europe/)
- 64 62 not 63 [NICE UK Filter]
- 65 letter.pt.
- 66 (animal* not human*).sh,hw.
- 67 65 or 66 [excluding animals and unwanted publication types]
- 68 3 and 24 and 48
- 69 3 and 24 and 53
- 70 68 or 69
- 71 64 and 70
- 72 71 not 67
- 73 limit 72 to conference abstract status
- 74 limit 73 to dd=20200831-20210831
- 75 72 not 73
- 76 74 or 75

Appendix S3.3: Search Strategies – PsycINFO (OVID)

OVID APA Psycinfo <1806 to August Week 4 2021>

1 ((colon* or colorectal or rectal) adj3 (cancer* or neoplas* or tumor* or tumour* or malignan* or carcinoma* or metasta* or oncolog*)).af. [cancer population of interest]
2 exp Socioeconomic Factors/
3 (socio-economic or socioeconomic or socio-demographic or sociodemographic).af.
4 exp Education/
5 exp Income Level/ or exp "Income (Economic)"/
6 exp Health Status/
7 exp Poverty/
8 (socio-economic position or socioeconomic position).af.
9 inequalities.af.
10 exp Social Environments/
11 social factors.af.
12 income.af.
13 exp Neighborhoods/ or exp Urban Environments/ or exp Housing/
14 social class.af.
15 education.af.
16 exp Health Disparities/
17 depriv*.af.
18 (equity or equitable).af.
19 (inequity or inequitable).af.
20 inequities.af.
21 disparit*.af.
22 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18
or 19 or 20 or 21 [inequality concept]
23 surgery.af.
24 Treatment.af.
25 exp Health Care Utilization/ or exp Health Care Delivery/ or exp Health Care Access/
or exp Treatment Barriers/
26 treatment disparities.af.
27 exp Health Care Services/
28 exp Primary Health Care/
29 exp Drug Therapy/
30 chemotherapy.af.
31 exp Radiation Therapy/
32 exp Chemotherapy/
33 radiotherapy.af.
34 accessibility.af.
35 access.af.
36 pattern\$.af.
37 exp Palliative Care/
38 care.af.
39 investigation.af.
40 exp "Quality of Care"/ or exp "Quality of Services"/

- 41 exp Patient Selection/
42 exp Decision Making/
43 receipt.af.
44 provision.af.
45 attendance.af.
46 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37
or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 [treatment concept]
47 ((patient* or present* or doctor* or physician* or practitioner* or hospital* or
system* or (primary adj care) or (secondary adj care) or total or (help adj3 seek) or pre-
treatment* or referr* or specialist* or consultant* or surg* or chemothera* or radiothera*
or treatment* or diagnos*) adj5 (delay* or interval* or time* or pathway* or route*)).ti,ab.
48 (stage* adj5 (diagnosis or diagnostic)).ti,ab.
49 47 or 48 [interval concept]
50 (national health service* or NHS*).ti,ab,in.
51 (english not ((published or publication* or translat* or written or language* or
speak* or literature or citation*) adj5 english)).ti,ab.
52 (gb or "g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united
kingdom* or (england* not "new england") or northern ireland* or northern irish* or
scotland* or scottish* or ((wales or "south wales") not "new south wales") or
welsh*).ti,ab,jx,in.
53 (bath or "bath's" or ((birmingham not alabama*) or ("birmingham's" not alabama*)
or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle* or
"carlisle's" or (cambridge not (massachusetts* or boston* or harvard*)) or ("cambridge's"
not (massachusetts* or boston* or harvard*)) or (canterbury not zealand*) or
("canterbury's" not zealand*) or chelmsford or "chelmsford's" or chester or "chester's" or
chichester or "chichester's" or coventry or "coventry's" or derby or "derby's" or (durham not
(carolina* or nc)) or ("durham's" not (carolina* or nc)) or ely or "ely's" or exeter or
"exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or "hull's" or
lancaster or "lancaster's" or leeds* or leicester or "leicester's" or (lincoln not nebraska*) or
("lincoln's" not nebraska*) or (liverpool not (new south wales* or nsw)) or ("liverpool's" not
(new south wales* or nsw)) or ((london not (ontario* or ont or toronto*)) or ("london's" not
(ontario* or ont or toronto*)) or manchester or "manchester's" or (newcastle not (new
south wales* or nsw)) or ("newcastle's" not (new south wales* or nsw)) or norwich or
"norwich's" or nottingham or "nottingham's" or oxford or "oxford's" or peterborough or
"peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston
or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or "salisbury's" or
sheffield or "sheffield's" or southampton or "southampton's" or st albans or stoke or
"stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or "wakefield's"
or wells or westminster or "westminster's" or winchester or "winchester's" or
wolverhampton or "wolverhampton's" or (worcester not (massachusetts* or boston* or
harvard*)) or ("worcester's" not (massachusetts* or boston* or harvard*)) or (york not
("new york*" or ny or ontario* or ont or toronto*)) or ("york's" not ("new york*" or ny or
ontario* or ont or toronto*))))).ti,ab,in.
54 (bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's" or st asaph
or "st asaph's" or st davids or swansea or "swansea's").ti,ab,in.

- 55 (aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*) or ("perth's" not australia*) or stirling or "stirling's").ti,ab,in.
- 56 (armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's").ti,ab,in.
- 57 50 or 51 or 52 or 53 or 54 or 55 or 56 [UK filter]
- 58 exp animals/ not humans.sh. [excluding animals]
- 59 1 and 22 and 46
- 60 1 and 22 and 49
- 61 59 or 60
- 62 57 and 61
- 63 62 not 58

Appendix S3.4: Search Strategies – AMED (OVID)

AMED (Allied and Complementary Medicine) <1985 to August 2021>

1 exp Colorectal neoplasms/
2 ((colon* or colorectal or rectal) adj3 (cancer* or neoplas* or tumor* or tumour* or malignan* or carcinoma* or metasta* or oncolog*)).mp.
3 1 or 2
4 exp Socioeconomic factors/
5 (socio-economic or socioeconomic or socio-demographic or sociodemographic).mp.
6 exp education/
7 exp Income/
8 exp Health status/
9 exp Poverty/
10 (socio-economic position or socioeconomic position).mp.
11 inequalities.mp.
12 exp Social environment/
13 social factors.mp.
14 income.mp.
15 exp Residence characteristics/
16 Social class.mp.
17 Education.mp.
18 depriv*.mp.
19 (equity or equitable).mp.
20 (inequity or inequitable).mp.
21 inequities.mp.
22 disparit*.mp.
23 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or
20 or 21 or 22
24 surgery.mp.
25 Treatment.mp.
26 exp Health services accessibility/
27 treatment disparities.mp.
28 exp "Delivery of health care"/
29 exp Primary health care/
30 exp Drug therapy/
31 chemotherapy.mp.
32 exp Radiotherapy/
33 radiotherapy.mp.
34 accessibility.mp.
35 access.mp.
36 pattern\$.mp.
37 exp palliative care/
38 exp Patient care/
39 care.mp.
40 investigation.mp.
41 exp "Quality of health care"/

42 exp Patient assessment/
43 exp "Referral and consultation"/
44 exp "Patient acceptance of health care"/
45 receipt.mp.
46 Provision.mp.
47 Attendance.mp.
48 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38
or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47
49 ((patient* or present* or doctor* or physician* or practitioner* or hospital* or
system* or (primary adj care) or (secondary adj care) or total or (help adj3 seek) or pre-
treatment* or referr* or specialist* or consultant* or surg* or chemothera* or radiothera*
or treatment* or diagnos*) adj5 (delay* or interval* or time* or pathway* or route*)).ti,ab.
50 (stage* adj5 (diagnosis or diagnostic)).ti,ab.
51 49 or 50
52 3 and 23 and 48
53 3 and 23 and 51
54 52 or 53

Appendix S3.5: Search Strategies – HMIC (OVID)

HMIC Health Management Information Consortium <1979 to August 2021>

1 exp Colorectal cancer/
2 ((colon* or colorectal or rectal) adj3 (cancer* or neoplas* or tumor* or tumour* or malignan* or carcinoma* or metasta* or oncolog*)).af..
3 1 or 2
4 exp Socioeconomic factors/
5 (socio-economic or socioeconomic or socio-demographic or sociodemographic).af.
6 exp education/
7 exp Income/
8 exp health status/
9 exp Poverty/
10 (socio-economic position or socioeconomic position).af.
11 inequalities.af.
12 exp Social conditions/
13 social factors.af.
14 income.af.
15 social class.af.
16 education.af.
17 exp Health inequalities/
18 depriv*.af.
19 (equity or equitable).af.
20 (inequity or inequitable).af.
21 inequities.af.
22 disparit*.af.
23 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or
20 or 21 or 22
24 surgery.af.
25 treatment.af.
26 exp Access to health services/
27 treatment disparities.af.
28 exp Service delivery/
29 exp primary care/
30 exp Drug therapy/
31 chemotherapy.af.
32 exp Radiotherapy/
33 radiotherapy.af.
34 accessibility.af.
35 access.af.
36 pattern*.af.
37 exp Palliative care/
38 exp patient care/
39 care.af.
40 investigation.af.
41 exp "Quality of patient care"/

42 exp Patient selection/
43 exp Patient eligibility/
44 exp Patient referral/
45 receipt.af.
46 provision.af.
47 attendance.af.
48 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38
or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47
49 exp Early diagnosis/
50 exp Patient waiting time/
51 ((patient* or present* or doctor* or physician* or practitioner* or hospital* or
system* or (primary adj care) or (secondary adj care) or total or (help adj3 seek) or pre-
treatment* or referr* or specialist* or consultant* or surg* or chemothera* or radiothera*
or treatment* or diagnos*) adj5 (delay* or interval* or time* or pathway* or route*)).mp.
52 (stage* adj5 (diagnosis or diagnostic)).ti,ab.
53 49 or 50 or 51 or 52
54 3 and 23 and 48
55 3 and 23 and 53
56 54 or 55

Appendix S3.6: Search Strategies – CENTRAL (The Cochrane Library)

Search Name: CENTRAL Search

Last Saved: 01/09/2021 17:45:46

ID Search

#1 MeSH descriptor: [Colorectal Neoplasms] explode all trees

#2 (((colon* or colorectal or rectal) NEAR/3 (cancer* or neoplas* or tumor* or tumour* or malignan* or carcinoma* or metasta* or oncolog*))) :ti,ab,kw

#3 #1 or #2

#4 MeSH descriptor: [Socioeconomic Factors] explode all trees

#5 ((socio-economic or socioeconomic or socio-demographic or sociodemographic)) :ti,ab,kw

#6 MeSH descriptor: [Education] explode all trees

#7 MeSH descriptor: [Income] explode all trees

#8 MeSH descriptor: [Health Status] explode all trees

#9 MeSH descriptor: [Poverty] explode all trees

#10 ((socio-economic position or socioeconomic position)) :ti,ab,kw

#11 (inequalities) :ti,ab,kw

#12 MeSH descriptor: [Social Environment] explode all trees

#13 (social factors) :ti,ab,kw

#14 (income) :ti,ab,kw

#15 MeSH descriptor: [Residence Characteristics] explode all trees

#16 (Social class) :ti,ab,kw

#17 (education) :ti,ab,kw

#18 MeSH descriptor: [Health Status Disparities] explode all trees

#19 (Depriv*) :ti,ab,kw

#20 ((equity or equitable)) :ti,ab,kw

#21 ((inequity or inequitable)) :ti,ab,kw

#22 (inequities) :ti,ab,kw

#23 (disparit*) :ti,ab,kw

#24 #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or #20 or #21 or #22 or #23

#25 (surgery) :ti,ab,kw

#26 (treatment) :ti,ab,kw

#27 MeSH descriptor: [Health Services Accessibility] explode all trees

#28 MeSH descriptor: [Healthcare Disparities] explode all trees

#29 (treatment disparities) :ti,ab,kw

#30 MeSH descriptor: [Delivery of Health Care] explode all trees

#31 MeSH descriptor: [Primary Health Care] explode all trees

#32 MeSH descriptor: [Drug Therapy] explode all trees

#33 (chemotherapy) :ti,ab,kw

#34 MeSH descriptor: [Radiotherapy] explode all trees

#35 (radiotherapy) :ti,ab,kw

#36 (accessibility) :ti,ab,kw

#37 (access) :ti,ab,kw

#38 (pattern*) :ti,ab,kw

- #49 MeSH descriptor: [Patient Care] explode all trees
- #40 MeSH descriptor: [Palliative Care] explode all trees
- #41 MeSH descriptor: [Primary Health Care] explode all trees
- #42 (care or investigation):ti,ab,kw
- #43 MeSH descriptor: [Quality of Health Care] explode all trees
- #44 MeSH descriptor: [Patient Selection] explode all trees
- #45 MeSH descriptor: [Eligibility Determination] explode all trees
- #46 MeSH descriptor: [Referral and Consultation] explode all trees
- #47 MeSH descriptor: [Patient Acceptance of Health Care] explode all trees
- #48 (receipt or provision or attendance):ti,ab,kw
- #49 #25 or #26 or #27 or #28 or #29 or #30 or #31 or #32 or #33 or #34 or #35 or #36 or #37 or #38 or #39 or #40 or #41 or #42 or #43 or #44 or #45 or #46 or #47 or #48
- #50 MeSH descriptor: [Early Detection of Cancer] explode all trees
- #51 MeSH descriptor: [Delayed Diagnosis] explode all trees
- #52 (((patient* or present* or doctor* or physician* or practitioner* or hospital* or system* or (primary NEAR/1 care) or (secondary NEAR/1 care) or total or (help NEAR/3 seek) or pre-treatment* or referr* or specialist* or consultant* or surg* or chemothera* or radiothera* or treatment* or diagnos*) NEAR/5 (delay* or interval* or time* or pathway* or route*)):ti,ab,kw
- #53 ((stage* NEAR/5 (diagnosis or diagnostic)):ti,ab,kw
- #54 #50 or #51 or #52 or #53
- #55 MeSH descriptor: [United Kingdom] explode all trees
- #56 ((national health service* or NHS*)):ti,ab,kw
- #57 ((english not ((published or publication* or translat* or written or language* or speak* or literature or citation*) NEAR/5 english)):ti,ab,kw
- #58 ((gb or "g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united kingdom* or (england* not "new england") or northern ireland* or northern irish* or scotland* or scottish* or ((wales or "south wales") not "new south wales") or welsh*)):ti,ab,kw
- #59 ((bath or "bath's" or ((birmingham not alabama*) or ("birmingham's" not alabama*) or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle* or "carlisle's" or (cambridge not (massachusetts* or boston* or harvard*)) or ("cambridge's" not (massachusetts* or boston* or harvard*)) or (canterbury not zealand*) or ("canterbury's" not zealand*) or chelmsford or "chelmsford's" or chester or "chester's" or chichester or "chichester's" or coventry or "coventry's" or derby or "derby's" or (durham not (carolina* or nc)) or ("durham's" not (carolina* or nc)) or ely or "ely's" or exeter or "exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or "hull's" or lancaster or "lancaster's" or leeds* or leicester or "leicester's" or (lincoln not nebraska*) or ("lincoln's" not nebraska*) or (liverpool not (new south wales* or nsw)) or ("liverpool's" not (new south wales* or nsw)) or ((london not (ontario* or ont or toronto*)) or ("london's" not (ontario* or ont or toronto*)) or manchester or "manchester's" or (newcastle not (new south wales* or nsw)) or ("newcastle's" not (new south wales* or nsw)) or norwich or "norwich's" or nottingham or "nottingham's" or oxford or "oxford's" or peterborough or "peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or "salisbury's" or sheffield or "sheffield's" or southampton or "southampton's" or st albans or stoke or "stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or "wakefield's"

or wells or westminster or "westminster's" or winchester or "winchester's" or wolverhampton or "wolverhampton's" or (worcester not (massachusetts* or boston* or harvard*)) or ("worcester's" not (massachusetts* or boston* or harvard*)) or (york not ("new york*" or ny or ontario* or ont or toronto*)) or ("york's" not ("new york*" or ny or ontario* or ont or toronto*))))):ti,ab,kw

#60 ((bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's" or st asaph or "st asaph's" or st davids or swansea or "swansea's")):ti,ab,kw

#61 ((aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*) or ("perth's" not australia*) or stirling or "stirling's")):ti,ab,kw

#62 ((armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's")):ti,ab,kw

#63 #55 or #56 or #57 or #58 or #59 or #60 or #61 or #62

#64 MeSH descriptor: [Africa] explode all trees

#65 MeSH descriptor: [Americas] explode all trees

#66 MeSH descriptor: [Antarctic Regions] explode all trees

#67 MeSH descriptor: [Arctic Regions] explode all trees

#68 MeSH descriptor: [Asia] explode all trees

#69 MeSH descriptor: [Oceania] explode all trees

#70 MeSH descriptor: [United Kingdom] explode all trees

#71 MeSH descriptor: [Europe] explode all trees

#72 #64 or #65 or #66 or #67 or #68 or #69

#73 #70 or #71

#74 #72 NOT #73

#75 #63 NOT #74

#76 #3 and #24 and #49

#77 #3 and #24 and #54

#78 #76 or #77

#79 #78 and #75

Appendix S3.7: Search Strategies – Science Citation Index Expanded

Science Citation Index Expanded via Web Of Science Core Collection 01/9/21.

18

#9 AND #17

17

#10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16

16

(TI=(armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's")) OR (AB=(armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's")) OR (AD=(armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's"))

15

(TI=(aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*) or ("perth's" not australia*) or stirling or "stirling's")) OR (AB=(aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*) or ("perth's" not australia*) or stirling or "stirling's")) OR (AD=(aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*) or ("perth's" not australia*) or stirling or "stirling's"))

14

(TI=(bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's" or st asaph or "st asaph's" or st davids or swansea or "swansea's")) OR (AB=(bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's" or st asaph or "st asaph's" or st davids or swansea or "swansea's")) OR (AD=(bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's" or st asaph or "st asaph's" or st davids or swansea or "swansea's"))

13

(TI=(bath or "bath's" or ((birmingham not alabama*) or ("birmingham's" not alabama*) or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle* or "carlisle's" or (cambridge not (massachusetts* or boston* or harvard*)) or ("cambridge's" not (massachusetts* or boston* or harvard*)) or (canterbury not zealand*) or ("canterbury's" not zealand*) or chelmsford or "chelmsford's" or chester or "chester's" or chichester or "chichester's" or coventry or "coventry's" or derby or "derby's" or (durham not (carolina* or nc)) or ("durham's" not (carolina* or nc)) or ely or "ely's" or exeter or "exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or "hull's" or lancaster or "lancaster's" or leeds* or leicester or "leicester's" or (lincoln not nebraska*) or ("lincoln's" not nebraska*) or (liverpool not (new south wales* or nsw)) or ("liverpool's" not (new south wales* or nsw)) or ((london not (ontario* or ont or toronto*)) or ("london's" not (ontario* or ont or toronto*)) or manchester or "manchester's" or (newcastle not (new south wales* or nsw)) or ("newcastle's" not (new south wales* or nsw)) or norwich or "norwich's" or nottingham or "nottingham's" or oxford or "oxford's" or peterborough or "peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or

"salisbury's" or sheffield or "sheffield's" or southampton or "southampton's" or st albans or stoke or "stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or "wakefield's" or wells or westminster or "westminster's" or winchester or "winchester's" or wolverhampton or "wolverhampton's" or (worchester not (massachusetts* or boston* or harvard*)) or ("worchester's" not (massachusetts* or boston* or harvard*)) or (york not ("new york*" or ny or ontario* or ont or toronto*)) or ("york's" not ("new york*" or ny or ontario* or ont or toronto*)))) OR (AB=(bath or "bath's" or ((birmingham not alabama*) or ("birmingham's" not alabama*) or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle* or "carlisle's" or (cambridge not (massachusetts* or boston* or harvard*)) or ("cambridge's" not (massachusetts* or boston* or harvard*)) or (canterbury not zealand*) or ("canterbury's" not zealand*) or chelmsford or "chelmsford's" or chester or "chester's" or chichester or "chichester's" or coventry or "coventry's" or derby or "derby's" or (durham not (carolina* or nc)) or ("durham's" not (carolina* or nc)) or ely or "ely's" or exeter or "exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or "hull's" or lancaster or "lancaster's" or leeds* or leicester or "leicester's" or (lincoln not nebraska*) or ("lincoln's" not nebraska*) or (liverpool not (new south wales* or nsw)) or ("liverpool's" not (new south wales* or nsw)) or ((london not (ontario* or ont or toronto*)) or ("london's" not (ontario* or ont or toronto*)) or manchester or "manchester's" or (newcastle not (new south wales* or nsw)) or ("newcastle's" not (new south wales* or nsw)) or norwich or "norwich's" or nottingham or "nottingham's" or oxford or "oxford's" or peterborough or "peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or "salisbury's" or sheffield or "sheffield's" or southampton or "southampton's" or st albans or stoke or "stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or "wakefield's" or wells or westminster or "westminster's" or winchester or "winchester's" or wolverhampton or "wolverhampton's" or (worchester not (massachusetts* or boston* or harvard*)) or ("worchester's" not (massachusetts* or boston* or harvard*)) or (york not ("new york*" or ny or ontario* or ont or toronto*)) or ("york's" not ("new york*" or ny or ontario* or ont or toronto*)))) OR (AD=(bath or "bath's" or ((birmingham not alabama*) or ("birmingham's" not alabama*) or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle* or "carlisle's" or (cambridge not (massachusetts* or boston* or harvard*)) or ("cambridge's" not (massachusetts* or boston* or harvard*)) or (canterbury not zealand*) or ("canterbury's" not zealand*) or chelmsford or "chelmsford's" or chester or "chester's" or chichester or "chichester's" or coventry or "coventry's" or derby or "derby's" or (durham not (carolina* or nc)) or ("durham's" not (carolina* or nc)) or ely or "ely's" or exeter or "exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or "hull's" or lancaster or "lancaster's" or leeds* or leicester or "leicester's" or (lincoln not nebraska*) or ("lincoln's" not nebraska*) or (liverpool not (new south wales* or nsw)) or ("liverpool's" not (new south wales* or nsw)) or ((london not (ontario* or ont or toronto*)) or ("london's" not (ontario* or ont or toronto*)) or manchester or "manchester's" or (newcastle not (new south wales* or nsw)) or ("newcastle's" not (new south wales* or nsw)) or norwich or "norwich's" or nottingham or "nottingham's" or oxford or "oxford's" or peterborough or "peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or "salisbury's" or sheffield or "sheffield's" or southampton or "southampton's" or st

albans or stoke or "stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or "wakefield's" or wells or westminster or "westminster's" or winchester or "winchester's" or wolverhampton or "wolverhampton's" or (worchester not (massachusetts* or boston* or harvard*)) or ("worchester's" not (massachusetts* or boston* or harvard*)) or (york not ("new york*" or ny or ontario* or ont or toronto*)) or ("york's" not ("new york*" or ny or ontario* or ont or toronto*))))))

12

(TI=(gb or "g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united kingdom* or (england* not "new england") or northern ireland* or northern irish* or scotland* or scottish* or ((wales or "south wales") not "new south wales") or welsh*)) OR (AB=(gb or "g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united kingdom* or (england* not "new england") or northern ireland* or northern irish* or scotland* or scottish* or ((wales or "south wales") not "new south wales") or welsh*)) OR (AD=(gb or "g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united kingdom* or (england* not "new england") or northern ireland* or northern irish* or scotland* or scottish* or ((wales or "south wales") not "new south wales") or welsh*))

11

(TI=(english not ((published or publication* or translat* or written or language* or speak* or literature or citation*) near/5 english))) OR (AB=(english not ((published or publication* or translat* or written or language* or speak* or literature or citation*) near/5 english)))

10

((TI=((national health service* or NHS*))) OR AB=((national health service* or NHS*))) OR AD=((national health service* or NHS*))

9

#7 OR #8

8

#1 AND #2 AND #6

7

#1 AND #2 AND #3

6

#4 or #5

5

TS=(stage* near/5 (diagnosis or diagnostic))

4

TS=((patient* or present* or doctor* or physician* or practitioner* or hospital* or system* or (primary near/1 care) or (secondary near/1 care) or total or (help near/3 seek) or pre-treatment* or referr* or specialist* or consultant* or surg* or chemothera* or radiothera* or treatment* or diagnos*) near/5 (delay* or interval* or time* or pathway* or route*))

3

TS=(surgery or treatment or "treatment disparities" or chemotherapy or radiotherapy or accessibility or access or pattern* or care or investigation or receipt or provision or attendance)

2

TS=(socio-economic or socioeconomic or socio-demographic or sociodemographic or "socio-economic position" or "socioeconomic position" or inequalities or "social factors"

or income or "social class" or education or depriv* or equity or equitable or inequity or inequitable or inequities or disparit*)

1

(TS=(((colon* or colorectal or rectal) near/3 (cancer* or neoplas* or tumor* or tumour* or malignan* or carcinoma* or metasta* or oncolog*))))

Appendix S3.8: Search Strategies – CINAHL

CINAHL Searched via EBSCO 31/8/21

#	Query
S1	(MH "Colorectal Neoplasms+") TI ((colon* or colorectal or rectal) n3 (cancer* or neoplas* or tumor* or tumour* or malignan* or carcinoma* or metasta* or oncolog*)) or AB ((colon* or colorectal or rectal) n3 (cancer* or neoplas* or tumor* or tumour* or malignan* or carcinoma* or metasta* or oncolog*))
S2	
S3	S1 OR S2
S4	(MH "Socioeconomic Factors+") TI (socio-economic or socioeconomic or socio-demographic or sociodemographic) or AB (socio-economic or socioeconomic or socio-demographic or sociodemographic)
S5	
S6	(MH "Education+")
S7	(MH "Income+")
S8	(MH "Health Status+")
S9	(MH "Poverty+") TI (socio-economic position or socioeconomic position) or AB (socio-economic position or socioeconomic position)
S10	
S11	TI inequalities or AB inequalities
S12	(MH "Social Environment+")
S13	TI (social factors) or AB (social factors)
S14	TI income or AB income
S15	(MH "Residence Characteristics+")
S16	TI (social class) or AB (social class)
S17	TI education or AB education
S18	(MH "Health Status Disparities")
S19	TI (depriv*) or AB (depriv*)
S20	TI (equity or equitable) or AB (equity or equitable)
S21	TI (inequity or inequitable) or AB (inequity or inequitable)
S22	TI inequities or AB inequities
S23	TI disparit* or AB disparit* (S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22 OR S23)
S24	
S25	TI (surgery) or AB (surgery)
S26	TI (treatment) or AB (treatment)

- S27 (MH "Health Services Accessibility+")
- S28 (MH "Healthcare Disparities")
- S29 TI (treatment disparities) or AB (treatment disparities)
- S30 (MH "Health Care Delivery+")
- S31 (MH "Primary Health Care")
- S32 (MH "Drug Therapy+")
- S33 TI (chemotherapy) or AB (chemotherapy)
- S34 (MH "Radiotherapy, Adjuvant+") OR (MH "Radiotherapy+")
- S35 TI (radiotherapy) or AB (radiotherapy)
- S36 TI (accessibility) or AB (accessibility)
- S37 TI (access) AB (access)
- S38 TI (pattern*) or AB (pattern*)
- S39 (MH "Patient Care+") or (MH "Palliative Care")
- S40 TI (care) or AB (care)
- S41 TI (investigation) or AB (investigation)
- S42 (MH "Quality of Health Care+")
- S43 (MH "Eligibility Determination") or (MH "Patient Selection")
- S44 (MH "Referral and Consultation+")
- S45 TI (("receipt") or ("patient acceptance of health care")) or AB (("receipt") or ("patient acceptance of health care"))
- S46 TI (provision) or AB (provision)
- S47 TI (attendance) or AB (attendance)
- S48 S25 OR S26 OR S27 OR S28 OR S29 OR S30 OR S31 OR S32 OR S33 OR S34 OR S35 OR S36 OR S37 OR S38 OR S39 OR S40 OR S41 OR S42 OR S43 OR S44 OR S45 OR S46 OR S47
- S49 (MH "Early Detection of Cancer")
- S50 (MH "Early Diagnosis+")
- S51 TI (((patient* or present* or doctor* or physician* or practitioner* or hospital* or system* or (primary n1 care) or (secondary n1 care) or total or (help n1 seek) or pre-treatment* or refer* or specialist* or consultant* or surg* or chemothera* or radiothera* or treatment* or diagnos*) n5 (delay* or interval* or time* or pathway* or route*))) OR AB (((patient* or present* or doctor* or physician* or practitioner* or hospital* or system* or (primary n1 care) or (secondary n1 care) or total or (help n1 seek) or pre-treatment* or refer* or specialist* or consultant* or surg* or chemothera* or radiothera* or treatment* or diagnos*) n5 (delay* or interval* or time* or pathway* or route*)))
- S52 TI ((stage* n5 (diagnosis or diagnostic))) OR AB ((stage* n5 (diagnosis or diagnostic)))
- S53 S49 OR S50 OR S51 OR S52

- S54 (MH "Great Britain") OR (MH "United Kingdom+")
- S55 TI ((national health service* or NHS*)) OR AB ((national health service* or NHS*))
OR AF ((national health service* or NHS*))
- S56 TI ((english not ((published or publication* or translat* or written or language* or speak* or literature or citation*) n5 english))) OR AB ((english not ((published or publication* or translat* or written or language* or speak* or literature or citation*) n5 english)))
- S57 TI ((gb or "g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united kingdom* or (england* not "new england") or northern ireland* or northern irish* or scotland* or scottish* or ((wales or "south wales") not "new south wales") or welsh*) OR AB ((gb or "g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united kingdom* or (england* not "new england") or northern ireland* or northern irish* or scotland* or scottish* or ((wales or "south wales") not "new south wales") or welsh*) OR AF ((gb or "g.b." or britain* or (british* not "british columbia") or uk or "u.k." or united kingdom* or (england* not "new england") or northern ireland* or northern irish* or scotland* or scottish* or ((wales or "south wales") not "new south wales") or welsh*)
- S58 TI ((bath or "bath's" or ((birmingham not alabama*) or ("birmingham's" not alabama*) or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle* or "carlisle's" or (cambridge not (massachusetts* or boston* or harvard*)) or ("cambridge's" not (massachusetts* or boston* or harvard*)) or (canterbury not zealand*) or ("canterbury's" not zealand*) or chelmsford or "chelmsford's" or chester or "chester's" or chichester or "chichester's" or coventry or "coventry's" or derby or "derby's" or "derby's" or (durham not (carolina* or nc)) or ("durham's" not (carolina* or nc)) or ely or "ely's" or exeter or "exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or "hull's" or lancaster or "lancaster's" or leeds* or leicester or "leicester's" or (lincoln not nebraska*) or ("lincoln's" not nebraska*) or (liverpool not (new south wales* or nsw)) or ("liverpool's" not (new south wales* or nsw)) or ((london not (ontario* or ont or toronto*)) or ("london's" not (ontario* or ont or toronto*)) or manchester or "manchester's" or (newcastle not (new south wales* or nsw)) or ("newcastle's" not (new south wales* or nsw)) or norwich or "norwich's" or nottingham or "nottingham's" or oxford or "oxford's" or peterborough or "peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or "salisbury's" or sheffield or "sheffield's" or southampton or "southampton's" or st albans or stoke or "stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or "wakefield's" or wells or westminster or "westminster's" or winchester or "winchester's" or wolverhampton or "wolverhampton's" or (worchester not (massachusetts* or boston* or harvard*)) or ("worchester's" not (massachusetts* or boston* or harvard*)) or (york not ("new york*" or ny or ontario* or ont or toronto*)) or ("york's" not ("new york*" or ny or ontario* or ont or toronto*))))) OR AB ((bath or "bath's" or ((birmingham not alabama*) or ("birmingham's" not alabama*) or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle* or "carlisle's" or (cambridge not (massachusetts* or boston* or harvard*)) or ("cambridge's" not (massachusetts* or boston* or harvard*)) or (canterbury not zealand*) or ("canterbury's" not zealand*) or chelmsford or "chelmsford's" or chester or "chester's" or chichester or "chichester's" or coventry or "coventry's" or derby or "derby's" or (durham not (carolina* or nc)) or ("durham's" not (carolina* or nc)) or ely or "ely's" or exeter or "exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or "hull's" or lancaster or "lancaster's" or leeds* or leicester or "leicester's" or (lincoln not nebraska*) or ("lincoln's" not nebraska*) or (liverpool not (new south wales* or nsw)) or ("liverpool's" not (new south wales* or nsw)) or ((london not (ontario* or ont or toronto*)) or ("london's" not (ontario* or ont or toronto*)) or manchester or "manchester's" or (newcastle not (new south wales* or nsw)) or ("newcastle's" not (new south wales* or nsw)) or norwich or "norwich's" or nottingham or "nottingham's" or oxford or "oxford's" or peterborough or "peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or "salisbury's" or sheffield or "sheffield's" or southampton or

- "southampton's" or st albans or stoke or "stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or "wakefield's" or wells or westminster or "westminster's" or winchester or "winchester's" or wolverhampton or "wolverhampton's" or (worchester not (massachusetts* or boston* or harvard*)) or ("worchester's" not (massachusetts* or boston* or harvard*)) or (york not ("new york*" or ny or ontario* or ont or toronto*)) or ("york's" not ("new york*" or ny or ontario* or ont or toronto*))))) OR AF ((bath or "bath's" or ((birmingham not alabama*) or ("birmingham's" not alabama*)) or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle* or "carlisle's" or (cambridge not (massachusetts* or boston* or harvard*)) or ("cambridge's" not (massachusetts* or boston* or harvard*)) or (canterbury not zealand*) or ("canterbury's" not zealand*) or chelmsford or "chelmsford's" or chester or "chester's" or chichester or "chichester's" or coventry or "coventry's" or derby or "derby's" or (durham not (carolina* or nc)) or ("durham's" not (carolina* or nc)) or ely or "ely's" or exeter or "exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or "hull's" or lancaster or "lancaster's" or leeds* or leicester or "leicester's" or (lincoln not nebraska*) or ("lincoln's" not nebraska*) or (liverpool not (new south wales* or nsw)) or ("liverpool's" not (new south wales* or nsw)) or ((london not (ontario* or ont or toronto*)) or ("london's" not (ontario* or ont or toronto*)) or manchester or "manchester's" or (newcastle not (new south wales* or nsw)) or ("newcastle's" not (new south wales* or nsw)) or norwich or "norwich's" or nottingham or "nottingham's" or oxford or "oxford's" or peterborough or "peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or "salisbury's" or sheffield or "sheffield's" or southampton or "southampton's" or st albans or stoke or "stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or "wakefield's" or wells or westminster or "westminster's" or winchester or "winchester's" or wolverhampton or "wolverhampton's" or (worchester not (massachusetts* or boston* or harvard*)) or ("worchester's" not (massachusetts* or boston* or harvard*)) or (york not ("new york*" or ny or ontario* or ont or toronto*)) or ("york's" not ("new york*" or ny or ontario* or ont or toronto*)))))
- Tl ((bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's" or st asaph or "st asaph's" or st davids or swansea or "swansea's")) OR AB ((bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's" or st asaph or "st asaph's" or st davids or swansea or "swansea's")) OR AF ((bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's" or st asaph or "st asaph's" or st davids or swansea or "swansea's"))
- S59
- Tl ((aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*)) or ("perth's" not australia*)) or stirling or "stirling's")) OR AB ((aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*)) or ("perth's" not australia*)) or stirling or "stirling's")) OR AF ((aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*)) or ("perth's" not australia*)) or stirling or "stirling's"))
- S60
- Tl ((armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's")) OR AB ((armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's")) OR AF ((armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's"))
- S61
- S62 S54 OR S55 OR S56 OR S57 OR S58 OR S59 OR S60 OR S61
- ((MH "Africa+") OR (MH "America+") OR (MH "North America+") OR (MH "Latin America") OR (MH "Central America+") OR (MH "Antarctic Regions") OR (MH "Arctic Regions") OR (MH "Asia+") OR (MH "Asia, Western+") OR (MH "Asia, Central+") OR (MH "Australia+") OR (MH "New Zealand")) NOT ((MH "Europe+") OR (MH "Great Britain") OR (MH "United Kingdom+"))
- S63

S64 S62 NOT S63

S65 PT case report or case study

S66 PT letter

S67 (((MH "Animals+") OR (MH "Animal Studies") OR (TI "animal model*")) NOT (MH "human"))

S68 S65 OR S66 OR S67

S69 S3 AND S24 AND S48

S70 S3 AND S24 AND S53

S71 S69 OR S70

S72 S64 AND S71

S73 S72 NOT S68

Appendix S3.9: Search Strategies – Others

NICE Evidence Search (<https://www.evidence.nhs.uk>) –

Colorectal cancer and inequal*

Colorectal cancer and depriv*

NB. The repeat searches did not utilise NICE Evidence Search due to the website's closure.

Base search (<https://www.base-search.net>)

Limits placed - Content providers as United Kingdom and Document Type set to: Text (all) and Dataset and Unknown. This meant excluding: Musical Notation, Map, Audio, Software and Image/Video.

Colorectal cancer and inequal*

Colorectal cancer and depriv*

Google Advanced Search (https://www.google.com/advanced_search)

Colorectal cancer and inequal*

Colorectal cancer and depriv*

Limited to the first 5 pages of results unless the search still appeared relevant, in which case the search would have continued.

Appendix S4: Development and Validation of the Search Strategy and Record Management

The search was developed in MEDLINE using free-text words and subject indexing terms and subsequently adapted for the other databases. Briefly, the search strategies combined different concepts:

- Colorectal cancer *and* socioeconomic inequalities *and* system interval *and* the UK
- Or, colorectal cancer *and* socioeconomic inequalities *and* treatment *and* the UK

Search filters were used to focus on UK-based studies and exclude non-human studies to improve specificity.^{45,46} The search strategy was reviewed by SG using the Peer Review of Electronic Search Strategies for systematic reviews guideline.⁴⁷

Two systematic reviews provided the initial search strategy for the treatment, interval and socioeconomic inequality concepts.^{48,49} Further search terms were identified from search filters.⁵⁰⁻⁵² Thirty-five potentially relevant studies were subsequently used to identify further search terms using MeSH Analyzer, a word frequency analysis tool.⁵³

The search strategy was tested against a set of the 35 known, potentially relevant records. The results of the draft MEDLINE search strategy found 31 of 35 potentially relevant articles. The search was subsequently refined and was able to capture one further article. However, no other changes to the strategy were possible due to a lack of possible candidate search terms in the title/abstract or subject indexing terms of the remaining three uncaptured articles.

The authors of the current systematic review also conducted an almost identical systematic review about ovarian cancer. For this reason, some of the studies used in the development process were about ovarian cancer. However, this development process enhanced the search strategy for both systematic reviews. The potentially relevant studies are referenced here. Not all were necessarily deemed eligible for inclusion in either of the final two systematic reviews. ^{4,6-10,12-15,17-20,23-26,28,29,34-39,54-62}

Search results were imported into EndNote X9,⁴² and duplicates were removed using adapted EndNote de-duplication methods published by Bramer et al., 2016.⁶³ The remaining search results were transferred to Covidence systematic review software.⁶⁴

Appendix S5: Data items and effect measures

The following data were extracted: first author, year of publication, data source, region/country, years of diagnosis, site (colon vs rectal), stage, size of the analytical cohort, measure of socioeconomic status, and the number of socioeconomic groups. Assumptions about missing or unclear information were clearly stated.

For all included studies, data for the following outcomes were extracted:

- Measures of the system interval length, including precise definitions of the time intervals.
 - Effects of socioeconomic factors on the system interval were assessed using coefficients from regression analyses.
 - Or else rates of patients meeting targets were extracted. The odds of meeting targets amongst patients from the most deprived group compared to the least deprived group were calculated. 95% confidence intervals were calculated using RevMan 5.4.⁶⁵
- Cancer-directed therapy received, including the timescale and definitions of treatment. The extracted effect measures were:
 - Adjusted estimates for the likelihood of a particular treatment for the most deprived socioeconomic groups, with 95% confidence intervals. Details of confounding variables were also extracted.
 - If unavailable, unadjusted rates were extracted. The odds of treatment amongst patients from the most deprived group compared to the least deprived group were calculated. 95% confidence intervals were calculated using RevMan 5.4.⁶⁵ Statistical tests of association were reported when available.

Appendix S6: Study Risk of Bias Assessment

	Selection bias				Prognostic factor measurement	Outcome measurement	Study confounding	Statistical reporting	Strength of Evidence
First author (Date published)	Inclusion criteria	Exclusion criteria	Baseline characteristics adequately described	Source and time period adequate and described	Clear and valid definition of socioeconomic status, measurement and categorisation	Clear definition and methods for the outcome	Important potential confounding factors appropriately accounted for	Appropriate analysis and all outcomes reported	
Bailey (2002)	High	High	Moderate	High	High	High	High	High	Weak
Bharathan (2011)	Moderate	Moderate	Low	Moderate	Moderate	High	High	High	Weak
Benitez Majano (2022) [1]	Low	Low	Low	Moderate	Low	Low	Low	Low	Strong
Benitez Majano (2022) [2]	Low	Low	Low	Moderate	Low	Low	Low	Low	Strong
Boyle (2020)	Low	Low	Low	Low	Low	Low	Low	Low	Strong
Campbell (2002)	High	High	Low	High	Low	Moderate	Moderate	High	Weak
Crawford (2012)	Moderate	Moderate	High	Moderate	Moderate	High	Moderate	High	Weak
Di Girolamo (2018)	Low	Low	Low	Low	Low	Low	Moderate	Low	Strong
Fenton (2019)	Low	Low	Low	Low	Low	Low	Low	Low	Strong
Fenton (2020)	Low	Low	Low	Low	Low	Low	Low	Low	Strong
Harris (2009)	Moderate	High	Low	High	Low	High	High	High	Weak
Hassan (2023)	Low	Low	Low	Low	Low	Low	Moderate	Low	Strong
Hayes (2019)	Low	Moderate	Low	Moderate	Low	Moderate	Low	Low	Strong
Hayes (2021)	Low	Low	Low	Moderate	Low	Moderate	Low	Low	Strong
Hole (2002)	Moderate	High	Low	Moderate	Moderate	High	High	High	Weak
Jones (2008)	Moderate	Moderate	High	Moderate	Moderate	High	Moderate	Moderate	Weak

Appendix S6: Study Risk of Bias Assessment - CONTINUED

	Selection bias				Prognostic factor measurement	Outcome measurement	Study confounding	Statistical reporting	Strength of Evidence
First author (Date published)	Inclusion criteria	Exclusion criteria	Baseline characteristics adequately described	Source and time period adequate and described	Clear and valid definition of socioeconomic status, measurement and categorisation	Clear definition and methods for the outcome	Important potential confounding factors appropriately accounted for	Appropriate analysis and all outcomes reported	
Lejeune (2010)	Low	Low	Low	Low	Low	High	Moderate	Moderate	Moderate
McLeod (1999)	Moderate	Moderate	High	Moderate	Low	Low	High	High	Weak
Morris (2008)	Low	Low	Low	Low	Low	Low	Moderate	Low	Strong
Morris (2010)	Low	Moderate	Low	Low	Low	Low	Low	Low	Strong
Morris (2016)	Moderate	High	Low	Low	Low	Low	High	High	Weak
National Cancer Intelligence Network (2011)	Low	Low	High	Low	High	Low	High	High	Weak
NCRAS (2018)	Low	Low	Low	Low	Low	Low	High	Moderate	Moderate
Neal (2005)	High	High	High	Moderate	Low	High	High	Moderate	Weak
Nicholson (2012)	Moderate	Moderate	Low	High	High	Moderate	Moderate	High	Weak
Paterson (2014)	Moderate	Moderate	Low	Moderate	Low	High	Moderate	High	Weak
Pearson (2019)	Low	Low	Low	Low	Low	Low	Low	Low	Strong
Pitchforth (2002)	Low	Low	Low	Moderate	Moderate	Moderate	High	Moderate	Moderate
Pollock and Vickers (1998)	Moderate	Moderate	High	High	Low	Moderate	High	High	Weak
Price (2020)	Low	Low	Moderate	Low	Low	Low	Moderate	Low	Strong

Appendix S6: Study Risk of Bias Assessment - CONTINUED

	Selection bias				Prognostic factor measurement	Outcome measurement	Study confounding	Statistical reporting	Strength of Evidence
First author (Date published)	Inclusion criteria	Exclusion criteria	Baseline characteristics adequately described	Source and time period adequate and described	Clear and valid definition of socioeconomic status, measurement and categorisation	Clear definition and methods for the outcome	Important potential confounding factors appropriately accounted for	Appropriate analysis and all outcomes reported	
Radwan (2016)	Moderate	Moderate	Moderate	Moderate	Moderate	High	High	High	Weak
Raine (2010)	Low	Low	Low	Moderate	Low	Moderate	High	High	Weak
Redanial (2014)	Low	Low	Low	Low	Low	Low	Moderate	Moderate	Strong
Saito (2019) [1]	Low	Low	Low	Low	Low	Low	Low	Low	Strong
Saito (2021) [2]	Low	Low	Low	Low	Low	Low	Low	Low	Strong
Shack (2009)	Low	Low	Low	Moderate	Low	Moderate	Low	Moderate	Strong
Smith (2006)	Moderate	Moderate	Low	High	Low	High	High	High	Weak
Taylor (2021)	Low	Low	Low	Low	Low	Low	Low	Low	Strong
Tilney (2008)	Moderate	High	Low	Moderate	Low	Low	High	Moderate	Weak
Tilney (2009)	Moderate	Moderate	Low	High	Low	Low	High	High	Weak
Vallance (2018)	Low	Low	Low	Low	Low	Low	Low	Low	Strong

Appendix S7: Characteristics of Included Studies

First Author (Year)	Data Source	Region/Country	Site	Stage	Years Studied	Measure of SES (No. Groups)	Broad Outcome
Bailey (2002)	Patients enrolled from six study centres.	England (Not Specified)	Colorectal	Dukes' C	Not recorded	Economic Resources Domain - OARS OMFAQ (2)	Chemotherapy
Benitez Majano [1] (2022)	Cancer Registration Data, CPRD, HES.	England	Colon	All stages	Diagnosed 2011-2015	IMD 2015 (5)	System Interval
Benitez Majano [2] (2022)	Cancer Registration Data, CPRD, HES.	England	Colorectal	All stages	Diagnosed 2011-2015	IMD 2015 (5)	System Interval
Bharathan (2011)	Colorectal Cancer Audit Group Database.	Northern England	Colorectal	All stages	Admitted/Referred to Surgical Unit 1998-2002	IMD 2004 – without health (5)	Surgery
Boyle (2020)	NBOCA, HES, SACT.	England	Colon	Stage III	Diagnosed 2014-2017	IMD (5)	Chemotherapy
Campbell (2002)	Case notes. Scottish Cancer Registry.	North/Northeast Scotland	Colorectal	All stages	Diagnosed 1995-1996	Carstairs Index 1991 (5)	Chemotherapy Radiotherapy Surgery System Interval
Crawford (2012)	Northern and Yorkshire Cancer Registry.	Northern England	Colorectal	All stages	Diagnosed 1994-2002	IMD - without access to services (4)	Any Treatment Chemotherapy
Di Girolamo (2018)	Cancer Registration Data, NBOCA, CWT.	England	Colorectal	All stages	Diagnosed 2009-2013	IMD Assumed 2007 - Income Domain (5)	System Interval
Fenton (2019)	CORECT-R, Cancer Registration Data, HES.	England	Colorectal	All stages	Major resection for CRC in 2005-2012	IMD 2010 – Income Domain (5)	Liver Resection

Appendix S7: Characteristics of Included Studies - CONTINUED

First Author (Year)	Data Source	Region/Country	Site	Stage	Years Studied	Measure of SES (No. Groups)	Broad Outcome
Fenton (2021)	CORECT-R, Cancer Registration Data, HES.	England	Colorectal	All stages	Major resection for CRC in 2005-2013	IMD 2010 – Income Domain (5)	Pulmonary Resection
Harris (2009)	Database of patients at an MDT	Birmingham, England	Rectal	Assumed all stages	Diagnosed 2000-2007	IMD 2004 - Assumed Income Domain (5)	Surgery
Hassan (2023)	Cancer Registration Data, ONS, SACT.	England	Colon	Stage III	Diagnosed 2012-2017	IMD 2015 & 2019 (5)	Combination Chemotherapy
Hayes (2019)	Northern and Yorkshire Cancer Registry, HES.	Northern England	Colon	All stages	Diagnosed 1999-2010	IMD - Income Domain (5)	Chemotherapy Surgery
Hayes (2021)	Northern and Yorkshire Cancer Registry, HES.	Northern England	Colorectal	All stages	Diagnosed 2001-2010	IMD 2007 & 2010 - Income Domain (5)	System Interval
Hole (2002)	Audit in eight hospitals.	Central Scotland	Colorectal	All stages	Resection in 1991-1994	Carstairs Index 1991 (3)	Chemotherapy
Jones (2008)	Yorkshire Registry and Northern and Yorkshire Cancer Registry.	Northern England	Colorectal	All stages	Diagnosed 1994-2002	IMD 2004 – without access domain (scored 0-80)	Chemotherapy Radiotherapy Surgery
Lejeune (2010)	Northern and Yorkshire Cancer Registry, TCR, ECRIC.	England	Colorectal	All stages	Diagnosed 1997-2000	Townsend Index 2001 (5)	Any Treatment System Interval
McLeod (1999)	Hospital Discharge Data (SMR1).	Scotland	Colorectal	All stages (assumed)	First Inpatient Treatment For CRC 1990-1994	Carstairs Index 1999 (4)	Chemotherapy

Appendix S7: Characteristics of Included Studies - CONTINUED

First Author (Year)	Data Source	Region/Country	Site	Stage	Years Studied	Measure of SES (No. Groups)	Broad Outcome
Morris (2008)	Cancer Registration Data, HES.	England	Rectal	All stages who had APER or AR	Diagnosed 1998-2004	IMD 2004 – Income Domain (5)	APER vs AR
Morris (2010)	Cancer Registration Data, HES.	England	Colorectal	All stages	Major resection for CRC in 1998-2004	IMD 2004 – Income Domain (5)	Liver Resection
Morris (2016)	Cancer Registration Data, HES, RTDS.	England	Rectal	All stages post major resection	Diagnosed 2009-2010	IMD – Income Domain (5)	Radiotherapy
Neal (2005)	National Survey of NHS Patients: Cancer	England (Not Specified)	Colorectal	Not recorded	Not recorded	Occupation (8)	System Interval
NCIN (2011)	Cancer Registration Data, HES.	England	Colorectal	All stages	Diagnosed 2004-2006	IMD – assumed (5)	Surgery
NCRAS (2018)	Cancer Registration Data, HES, SACT.	England	Colorectal	All stages	Diagnosed 2013-2015	IMD 2015 – Income Domain (5)	Chemotherapy Radiotherapy Surgery
Nicholson (2012)	Clinical Audit Database.	West of Scotland	Rectal	All stages	Surgery in 2001-2005	Not recorded	APER vs AR
Paterson (2014)	Southeast Scotland Cancer Network Database.	Southeast Scotland	Colorectal	All stages	Diagnosed 2003-2009	Scottish Index of Multiple Deprivation (5)	Chemotherapy Radiotherapy Surgery System Interval

Appendix S7: Characteristics of Included Studies - CONTINUED

First Author (Year)	Data Source	Region/Country	Site	Stage	Years Studied	Measure of SES (No. Groups)	Broad Outcome
Pearson (2019)	Cancer Registration Data, CWT, DID, HES, RtD.	England	Colorectal	All stages	Diagnosed 2014-2015	IMD 2015 – Income Domain (5)	System Interval
Pitchforth (2002)	Scottish Cancer Registration, SMR1.	Scotland	Colorectal	All stages (Assumed)	Diagnosed 1992-1996	Carstairs Index (4)	Chemotherapy
Pollock (1998)	HES, ONS.	Thames Region, England	Colorectal	Not recorded	Inpatient FCE with a CRC diagnosis in the financial years 1992-1995	Townsend Score (10)	Surgery
Price (2020)	CPRD, Cancer Registration Data, ONS.	England	Colorectal	All stages (Assumed)	Diagnosed 2006-2017	Townsend Score 2001 (5)	System Interval
Radwan (2016)	Swansea Pelvic Oncology Group Database.	Swansea, Wales	Rectal	All stages	Pelvic exenteration in 2006-2014	Welsh Index of Multiple Deprivation (4)	Chemo – radiotherapy TPE vs PPE
Raine (2010)	HES	England	Rectal	All stages (Assumed)	Admission for rectal cancer surgery 1999-2006	IMD 2004 (5)	AR vs APER
Redanial (2014)	Northern and Yorkshire and South West Offices.	England	Colorectal	Dukes' Stages A/B	Diagnosed 1996-2009	IMD 2007 – Income Domain (5)	System Interval
Saito [1] (2019)	Cancer Registration Data, HES, NBOCA.	England	Colorectal	All stages	Diagnosed 2010-2013	IMD 2010 – Income Domain (5)	Surgery
Saito [2] (2021)	Cancer Registration Data, HES, NBOCA.	England	Colon	All stages	Diagnosed 2010-2013	IMD 2010 – Income Domain (5)	System Interval

Appendix S7: Characteristics of Included Studies - CONTINUED

First Author (Year)	Data Source	Region/Country	Site	Stage	Years Studied	Measure of SES (No. Groups)	Broad Outcome
Shack (2009)	Northwest and Merseyside and Cheshire Cancer Registries, HES.	Northwest England	Colorectal	All stages	Diagnosed 1997-2004	IMD 2001 – Income Domain (5)	Chemotherapy Surgery Radiotherapy
Smith (2006)	ACPGBI Bowel Cancer Database	England	Colorectal	All stages	Diagnosed 2001-2002	Townsend Score 2001 (4)	APER vs AR
Taylor (2021)	CORECT-R, HES, SACT.	England	Colorectal	Stage II-III	Diagnosed 2014-2015	IMD 2010 – Income Domain (5)	Chemotherapy
Tilney (2008)	HES.	England	Colorectal	Not recorded	APER or AR surgery in 1996-2004	IMD 2004 (5)	APER vs AR
Tilney (2009)	ACPGBI Bowel Cancer Database	England	Rectal	Dukes' A-C	Diagnosed in 2000-2005	IMD 2004 (5)	APER vs AR
Vallance (2018)	HES, NBOCA.	England	Colorectal	Stage IV	Diagnosed 2011-2015 with synchronous liver-limited metastases	IMD (5)	Liver resection

Abbreviations: ACPGBI Association of Coloproctology of Great Britain and Ireland, APER Abdominoperineal Resection, AR Anterior Resection, CORECT-R Colorectal Cancer Data Repository, CRC Colorectal Cancer, CPRD Clinical Practice Research Datalink, CWT National Cancer Waiting Times Dataset, DID Diagnostic Imaging Dataset, ECRIC Eastern Cancer Registration and Information Centre, FCE Finished Consultant Episode, HES hospital episode statistics, IMD index of multiple deprivation, NBOCA National Bowel Cancer Audit, NCIN National Cancer Intelligence Network, NCRAS National Cancer Registration and Analysis Service, OARS The Duke Older Americans Resources and Services Instrument, OMFAQ The OARS Multidimensional Functional Assessment Questionnaire, ONS Office for National Statistics, PPE Partial

Pelvic Exenteration, RtD Routes to Diagnosis, RTDS Radiotherapy Dataset, SACT systematic anti-cancer therapy dataset, SES socioeconomic status, SMR1 Scottish Morbidity Record-1, TCR Thames Cancer Registry, TPE Total Pelvic Exenteration.

Appendix S8: Results of studies reporting variations in the system interval

First Author (Year)	Number	Adjusted for	Outcome of Interest	Odds ratio (95% CI) or other measure	Effect of deprivation on interval length [Longer↑ Shorter↓]	Strength of Evidence
Benitez Majano (2022) [1]	2,115	Age Comorbidities GP Visits Sex Symptoms	First presentation to diagnosis interval	Quantile Regression - 50 th centile* Ref adj interval 126.0 (94.5,157.5) † MD adj interval 204.1 days (151.0,257.3) p=0.04	↑	Strong
Benitez Majano (2022) [2]	C: 3,215	Age Comorbidities Sex Symptoms Test Type	Test to diagnosis interval	Quantile Regression - 50 th centile* LD ref group MD adj coef 0.7 (-2.7,4.1) p=0.729	=	Strong
		Age Comorbidities Sex Symptoms	First presentation to diagnosis interval	Quantile Regression - 50 th centile* LD ref group MD adj coef 91.0 (21.0,161.0) p=0.028	↑	
	R: 1,621	Age Comorbidities Sex Symptoms Test Type	Test to diagnosis Interval	Quantile Regression - 50 th centile* LD ref group MD adj coef 0.0 (-4,0.4) p=1.00	=	
		Age Comorbidities Sex Symptoms	First presentation to diagnosis interval	Quantile Regression - 50 th centile* LD ref group MD adj coef 78.8 (14.8,142.7) p=0.258	=	

Appendix S8: Results of studies reporting variations in the system interval – CONTINUED

First Author (Year)	Number	Adjusted for	Outcome of Interest	Odds ratio (95% CI) or other measure	Effect of deprivation on interval length [Longer↑ Shorter↓]	Strength of Evidence
Campbell (2002)	653	Distance Presentation Stage	Referral to treatment interval	Cox Regression LD HR 1.0 MD adjusted HR 1.24 (0.93,1.67)	=	Weak
Di Girolamo (2018)	50,955	No adjustment	Referral to first seen interval [Within 2 weeks Y/N]	(Derived) LD OR 1.0 MD OR 0.80 (0.70-0.91)	↑	Strong
	46,702		Referral to treatment interval [Within 62 days Y/N]	(Derived) LD OR 1.0 MD OR 1.02 (0.95-1.10)	=	
	116,177		Diagnosis to treatment interval [Within 31 days Y/N]	(Derived) LD OR 1.0 MD OR 1.28 (1.14-1.44)	↓	
Hayes (2021)	19,798	Age Site Stage	Referral to first seen interval [Within 2 weeks Y/N]	LD OR 1.0 MD adjusted OR 0.95 (0.87,1.03)	=	Strong
	29,445	Age First Treatment Sex Stage	Diagnosis to treatment interval [Within 31 days Y/N]	LD OR 1.0 MD adjusted OR 0.91 (0.84,0.98)	↑	
	17,622	Age First Treatment Stage Others	Referral to treatment interval [Within 62 days Y/N]	LD OR 1.0 MD adjusted OR 0.82 (0.74,0.91)	↑	
Lejeune (2010)	71,917	Age Stage	Diagnosis to treatment interval [Within 1 week Y/N]	LD OR 1.0 MD adjusted OR 0.78 (0.72,0.84)	↑	Moderate
			Diagnosis to treatment interval [Within 1 month Y/N]	LD OR 1.0 MD adjusted OR 0.84 (0.78,0.90)	↑	
			Diagnosis to treatment interval [Within 2-3 months Y/N]	LD OR 1.0 MD adjusted OR 0.91 (0.85,0.98)	↑	
			Diagnosis to treatment interval [Within 4-6 months Y/N]	LD OR 1.0 MD adjusted OR 1.07 (0.96,1.18)	=	

Appendix S8: Results of studies reporting variations in the system interval - CONTINUED

First Author (Year)	Number	Adjusted for	Outcome of Interest	Odds ratio (95% CI) or other measure	Effect of deprivation on interval length [Longer↑ Shorter↓]	Strength of Evidence
Neal (2005)	15,891	Age Ethnicity Marital Status Sex	Symptom to diagnosis interval	Generalised linear modelling Nonsignificant result	=	Weak
			Referral to first seen interval	Generalised linear modelling Nonsignificant result	=	
			First seen to diagnosis interval	Generalised linear modelling F(7) = 2.247, p=0.028	o	
Paterson (2014)	4,915	Unadjusted	Referral to treatment interval [Within 62 days Y/N]	(Derived) LD OR 1.0 MD OR 1.14 (0.93-1.39)	=	Weak
Pearson (2019)	63,958	Age Comorbidities Ethnicity Investigations Presentation Sex Stage	Secondary care diagnostic interval [Interval longer than the median Y/N]	LD OR 1.0 MD adjusted OR 1.07 (1.00,1.13)	=	Strong
Price (2020)	Unknown	Age Sex Time Period	First presentation to diagnosis interval	Pre-post difference-in-differences MD coef 0.1 (-0.03,0.2, p=0.147)	=	Strong
				Event-study difference-in-differences MD coef 0.069 (0.002,0.136, p=0.043)	↑	
				Semiparametric varying-coefficient analyses Significant association	↑	
Redanial (2014)	46,511	Age Ethnicity Grade Morphology Region Sex Site Stage Time Period	Diagnosis to Treatment Interval [Amongst patients who had a resection within 62 days of diagnosis]	Linear Regression LD coef 0.00 MD adj coef 0.21 (-0.55,0.98)	=	Strong

Appendix S8: Results of studies reporting variations in the system interval - CONTINUED

First Author (Year)	Number	Adjusted for	Outcome of Interest	Odds ratio (95% CI) or other measure	Effect of deprivation on interval length [Longer↑ Shorter↓]	Strength of Evidence
Saito (2021) [2]	28,452	Age Comorbidities Grade Morphology Presentation Sex Site Stage Year of Diagnosis	Diagnosis to Treatment Interval [Time from diagnosis to major resection amongst patients who had elective surgery]	Linear Regression LD adjusted coefficient 1.00 MD adjusted coefficient 0.99 (0.97,1.02)	=	Strong

Abbreviations: Adj adjusted, C colon, Coef coefficient, GP general practitioner, LD least deprived, MD most deprived, R rectal, Ref reference group.

*Results also presented for the 75th centile

†The reference group was men aged 55 to 64 years old in the least deprived group with no recorded comorbidities or mental health morbidities and who had rectal bleeding or a change in bowel habit.

Legend

↑ Increased likelihood	↓ Decreased likelihood	= No significant difference between groups	° Significant association observed
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Appendix S9: Results – Likelihood of receipt of surgery

First Author (Year)	Treatment Given Within	Number	Adjusted for	Outcome of Interest	Odds Ratio /Likelihood	95% CI (p-value)	Effect of Deprivation on Odds of Surgery	Strength of Evidence
Bharathan (2011)	Not recorded	8,159	Unadjusted	Receipt of surgery [NS] (assumed part of primary treatment)	(Derived) LD OR 1.0 MD OR 0.71	(Derived) 0.51-0.97	↓	Weak
Campbell (2002)	1 year of diagnosis	653	Age Distance Stage	Receipt of surgery [NS] (assumed part of primary treatment)	LD OR 1.0 MD OR 0.52	0.14-1.87	=	Weak
Fenton (2019)	3 years of primary colorectal resection	157,383	Age Comorbidities Sex Site Liver Centre Stage Year of Resection	Receipt of Liver Resection	LD OR 1.0 MD OR 0.76	0.70-0.83	↓	Strong
Fenton (2021)	3 years of primary colorectal resection	80,869	Age Comorbidities Sex Site Thoracic Centre Stage Year of Resection	Receipt of Pulmonary Resection	LD OR 1.0 MD OR 1.04	0.89-1.22	=	Strong
Harris (2009)	Received during the study period (assumed)	477	Unadjusted	Receipt of surgery [NS] (assumed part of primary treatment)	(Derived) LD OR 1.0 MD OR 0.32	(Derived) 0.13-0.72	↓	Weak
Hayes (2019)	12 months of diagnosis (assumed)	31,910	Age Comorbidities Sex Stage Year of Diagnosis	Receipt of surgery [NS] (assumed part of primary treatment)	LD OR 1.0 MD OR 0.62	0.55-0.70	↓	Strong

Appendix S9: Results – Likelihood of receipt of surgery - CONTINUED

First Author (Year)	Treatment Given Within	Number	Adjusted for	Outcome of Interest	Odds Ratio /Likelihood	95% CI (p-value)	Effect of Deprivation on Odds of Surgery	Strength of Evidence
Jones (2008)	Received during the study period (assumed)	C: 16,850	Age Sex Stage Time to Hospital	Receipt of surgery [NS] (assumed part of primary treatment)	C: OR 0.99 (for a 1 unit increase in IMD)	C: 0.99-1.0	↓	Weak
		R: 11,406			R: OR 0.99 (for a 1 unit increase in IMD)	R: 0.98-0.99	↓	
Morris (2010)	3 years of primary colorectal resection	114,155	Age Comorbidities Sex Site Stage Year of Resection	Receipt of Liver Resection	LD OR 1.0 MD OR 0.70	0.61-0.80	↓	Strong
NCIN (2011)	30 days before diagnosis to 6 months after	80,690	Unadjusted	Receipt of major resection	(Derived) LD OR 1.0 MD OR 0.84	(Derived) 0.80-0.88	↓	Weak
NCRAS (2018)	C: 30 days before diagnosis to 6 months after	75,552	Unadjusted	Receipt of major resection	C: (Derived) LD OR 1.0 MD OR 0.76	C: (Derived) 0.72-0.80	↓	Moderate
	R: 30 days before diagnosis to 12 months after	28,136			R: (Derived) LD OR 1.0 MD OR 0.66	R: (Derived) 0.61-0.72	↓	
Paterson (2014)	Not recorded	4,915	Age Region Sex Site Stage	Receipt of surgery [NS] (assumed part of primary treatment)	LD OR 1.23 MD OR 1.0	0.96-1.58	=	Weak

Appendix S9: Results – Likelihood of receipt of surgery - CONTINUED

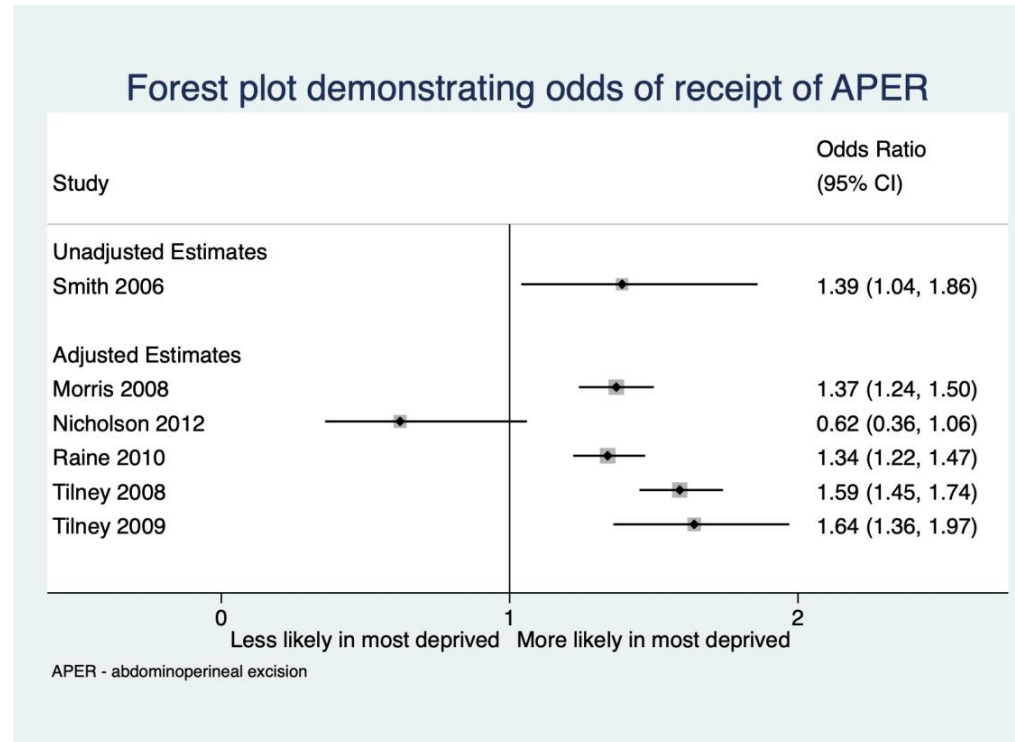
First Author (Year)	Treatment Given Within	Number	Adjusted for	Outcome of Interest	Odds Ratio /Likelihood	95% CI (p-value)	Effect of Deprivation on Odds of Surgery	Strength of Evidence
Pollock and Vickers (1998)	Received during the study period	25,304 (assumed)	Age Sex	Finished consultant episode that included therapeutic or palliative surgery (assumed part of primary treatment)	LD OR 1.0 MD OR 0.88	0.78-1.00	=	Weak
Saito (2019) [1]	30 days before diagnosis to 180 days after	C: 38,624	Age Comorbidities Grade Histology Presentation Sex Site Stage Year of Diagnosis	Receipt of major resection [Odds of <i>not</i> receiving major surgery]	C: LD OR 1.0 MD OR 0.96	C: 0.87-1.07	=	Strong
		R: 22,630			R: LD OR 1.0 MD OR 1.35	R: 1.22-1.49	↓	
Shack (2009)	6 months of diagnosis	29,563	Age Comorbidities Sex Site Stage	Receipt of major resection	LD OR 1.0 MD OR 1.63	1.17-2.26	↑	Strong
Vallance (2018)	1 year of CRC diagnosis	13,656	Age Comorbidities Presentation Sex Site Liver Centre Stage	Receipt of Liver Resection	LD OR 1.42 MD OR 1.0	1.18-1.70	↓	Strong

Abbreviations: C colon cancer, CI confidence interval, CRC colorectal cancer, LD least deprived, MD most deprived, NS not specified, OR odds ratio, R rectal cancer.

Legend

↑ Increased likelihood	↓ Decreased likelihood	= No significant difference between groups
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Appendix S10: Likelihood of surgical variation - forest plot



Forest plot demonstrating the odds of receipt of abdominoperineal excision of the rectum versus anterior resection in the most deprived versus the least deprived patient group.

Appendix S11: Results – Likelihood of surgical variation

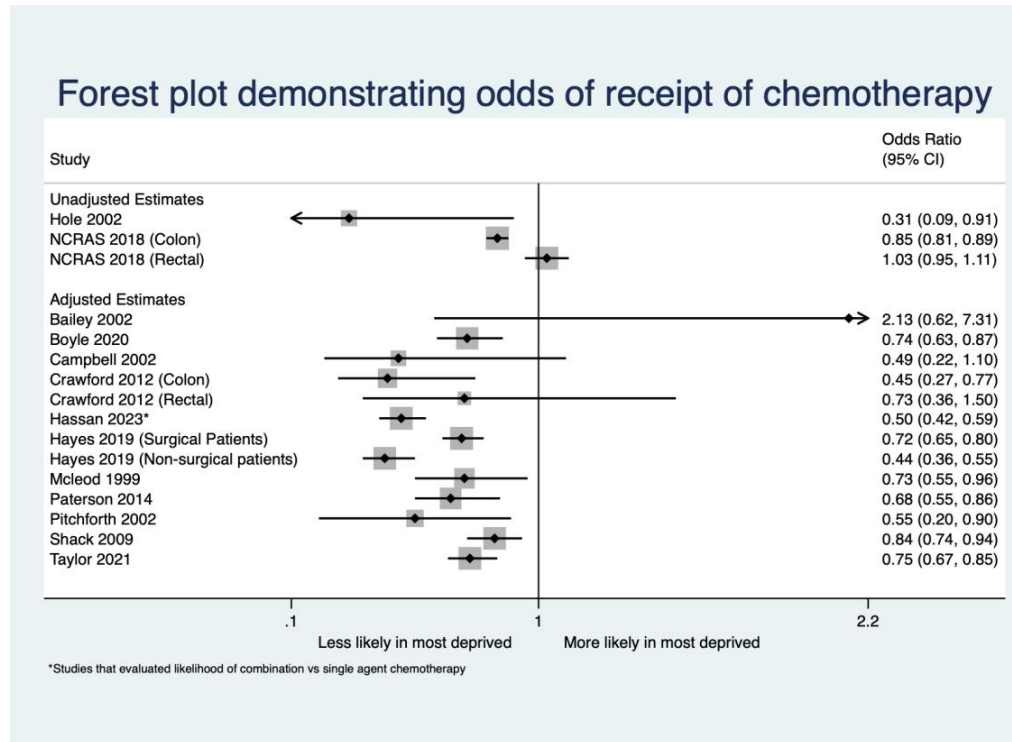
First Author (Year)	Number	Adjusted for	Outcome of Interest	Odds Ratio /Likelihood	95% CI (p-value)	Effect of Deprivation on Odds of APER vs AR unless otherwise stated	Strength of Evidence
Morris (2008)	26,097	Age Sex Year of Diagnosis Stage Surgeon Workload Presentation	Abdominoperineal Excision vs Anterior Resection	LD OR 1.0 MD OR 1.37	1.24-1.50	↑	Strong
Nicholson (2012)	1,574	Age Stage Sex Surgeon Workload Presentation Year of Diagnosis Others	Abdominoperineal Excision vs Anterior Resection	LD OR 1.0 MD OR 0.62	0.36-1.06	=	Weak
Radwan (2016)	120	Unadjusted	Total Pelvic Exenteration vs Partial Pelvic Exenteration	(Derived) LD OR 1.0 MD OR 1.75	(Derived) 0.55-5.68	= [odds of TPE]	Weak
Raine (2010)	29,214	Age Presentation Sex Year of Resection	Anterior Resection vs Abdominoperineal Excision	LD OR 1.34 MD OR 1.0	1.22-1.47	↑	Weak
Smith (2006)	2,389	Unadjusted	Abdominoperineal Excision vs Anterior Resection	(Derived) LD OR 1.0 MD OR 1.39	(Derived) 1.04-1.86	↑	Weak
Tilney (2008)	52,643	Age Presentation Sex Year of Resection	Abdominoperineal Excision vs Anterior Resection	LD OR 1.0 MD OR 1.59	1.45-1.74	↑	Weak
Tilney (2009)	12,128	Neoadjuvant Therapy Sex Year	Abdominoperineal Excision vs Anterior Resection	LD OR 1.0 MD OR 1.64	1.36-1.97	↑	Weak

Abbreviations: APER Abdominoperineal Excision, AR Anterior Resection, CI confidence interval, LD least deprived, MD most deprived, OR odds ratio, TPE Total Pelvic Exenteration.

Legend

↑ Increased likelihood	↓ Decreased likelihood	= No significant difference between groups
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Appendix S12: Likelihood of receipt of chemotherapy – forest plot



Forest plot demonstrating the odds of receipt of chemotherapy in the most deprived versus the least deprived patient group.

Appendix S13: Results – Likelihood of receipt of chemotherapy

First Author (Year)	Treatment Given Within	Number	Adjusted for	Outcome of Interest	Odds Ratio /Likelihood	95% CI (p-value)	Effect of Deprivation on Odds of Chemotherapy	Strength of Evidence
Bailey (2002)	Not recorded	119	Age Social Resources Rating	Receipt of adjuvant chemotherapy	Excellent/good economic resources OR 1.0 Mild/total impairment OR 2.13	0.62-7.31	=	Weak
Boyle (2020)	4 months of surgery	11,932	Access Age ASA Comorbidities Fitness Readmission Sex Stage Others	Receipt of adjuvant chemotherapy	LD OR 1.36 MD OR 1.0	1.15-1.60	↓	Strong
Campbell (2002)	1 year of diagnosis	653	Age Distance Presentation Region Stage	Receipt of chemotherapy	LD OR 1.0 MD OR 0.49	0.22-1.10	=	Weak
Crawford (2012)	6 months of diagnosis	Unknown	Age Sex Stage	Receipt of chemotherapy in stage IV disease	C: LD OR 1.0 MD OR 0.45	C: 0.27-0.77	↓	Weak
					R: LD OR 1.0 MD OR 0.73	R: 0.36-1.50	=	
Hassan (2023)	4 months of surgery	8,750	Age Ethnicity No. nodes Sex Size Year of Diagnosis	Receipt of combination vs single agent chemotherapy	LD OR 1.0 MD OR 0.50	0.42-0.59	↓	Strong
Hayes (2019)	12 months of diagnosis (assumed)	24,263	Age Comorbidities Sex Stage Year of Diagnosis	Chemotherapy in surgical patients	LD OR 1.0 MD OR 0.72	0.65-0.80	↓	Strong
		7,647		Chemotherapy in non-surgical patients	LD OR 1.0 MD OR 0.44	0.36-0.55	↓	

Appendix S13: Results – Likelihood of receipt of chemotherapy - CONTINUED

First Author (Year)	Treatment Given Within	Number	Adjusted for	Outcome of Interest	Odds Ratio /Likelihood	95% CI (p-value)	Effect of Deprivation on Odds of Chemotherapy	Strength of Evidence
Hole (2002)	Received during the study period (assumed)	2,269	Unadjusted	Receipt of adjuvant therapy (presumed chemotherapy)	(Derived) LD OR 1.0 MD OR 0.31	(Derived) 0.09-0.91	↓	Weak
Jones (2008)	Received during the study period (assumed)	C: 16,850	Age Sex Stage Time to Hospital	Receipt of chemotherapy	C: OR 0.99 (for a 1 unit increase in IMD)	C: 0.98-0.99	↓	Weak
		R: 11,406			R: OR 0.99 (for a 1 unit increase in IMD)	R: 0.99-1.0	↓	
McLeod (1999)	6 months from the first admission	7,852	Age Comorbidities Death Marital Status Presentation Rural Sex Others	Receipt of chemotherapy	LD OR 1.0 MD OR 0.73	0.55-0.96	↓	Weak
NCRAS (2018)	31 days before diagnosis to 12 months after	C: 75,552	Unadjusted	Receipt of chemotherapy	C: (Derived) LD OR 1.0 MD OR 0.85	0.81-0.89	↓	Moderate
		R: 28,136			R: (Derived) LD OR 1.0 MD OR 1.03	0.95-1.11	=	
Paterson (2014)	Not recorded	4,915	Age Metastatic Disease Region Sex Site	Receipt of chemotherapy	LD OR 1.46 MD OR 1.0	1.16-1.83	↓	Weak

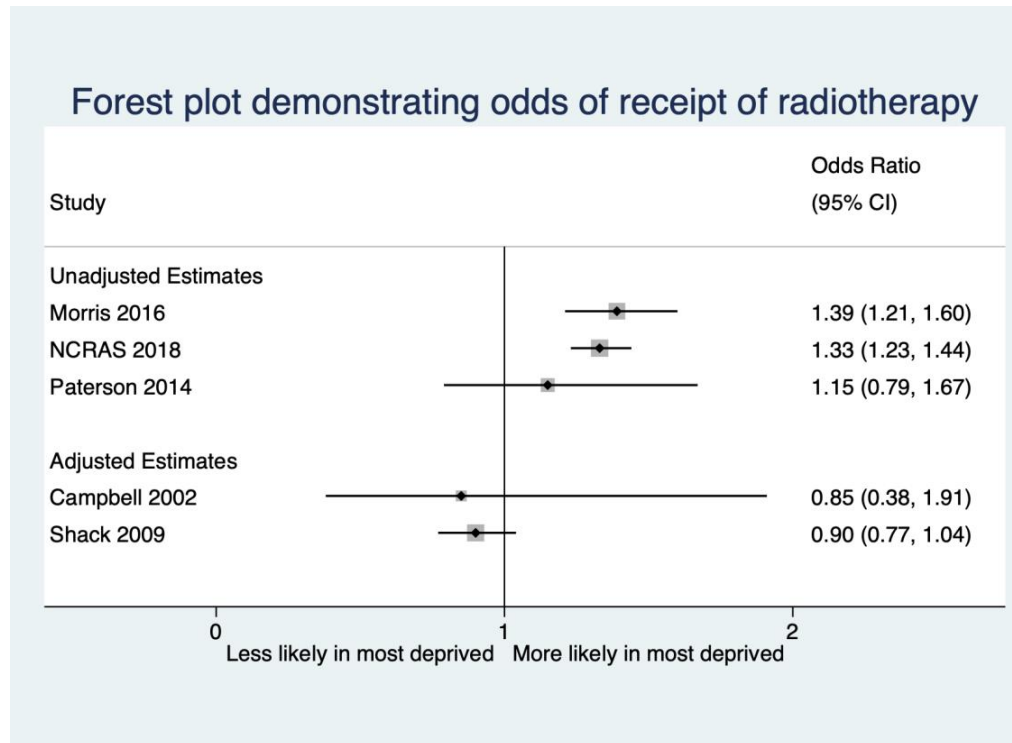
Appendix S13: Results – Likelihood of receipt of chemotherapy - CONTINUED

First Author (Year)	Treatment Given Within	Number	Adjusted for	Outcome of Interest	Odds Ratio /Likelihood	95% CI (p-value)	Effect of Deprivation on Odds of Chemotherapy	Strength of Evidence
Pitchforth (2002)	6 months from the first admission	7,303	Age Comorbidities Death Presentation Rural Sex Cancer Centre	Receipt of chemotherapy	LD OR 1.0 MD OR 0.55	0.20-0.90	↓	Weak
Shack (2009)	6 months of diagnosis	29,563	Age Comorbidities Sex Site Stage	Receipt of chemotherapy	LD OR 1.0 MD OR 0.84	0.74-0.94	↓	Strong
Taylor (2021)	6 months of surgery	23,402	Age Comorbidities Sex Stage	Receipt of adjuvant chemotherapy	LD OR 1.0 MD OR 0.75	0.67-0.85	↓	Strong

Abbreviations: ASA American Society of Anaesthesiologists grade, CI confidence interval, C colon, LD least deprived, MD most deprived, OR odds ratio, R rectum.

Legend

↑ Increased likelihood	↓ Decreased likelihood	= No significant difference between groups
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Appendix S14: Likelihood of receipt of radiotherapy – forest plot

Forest plot demonstrating the odds of receipt of radiotherapy in the most deprived versus the least deprived patient group.

Appendix S15: Results – Likelihood of receipt of radiotherapy

First Author (Year)	Treatment Given Within	Number	Adjusted for	Outcome of Interest	Odds Ratio /Likelihood	95% CI (p-value)	Effect of Deprivation on Odds of Radiotherapy	Strength of Evidence
Campbell (2002)	1 year of diagnosis	653	Age Distance Site Stage	Receipt of radiotherapy	LD OR 1.0 MD OR 0.85	0.38-1.91	=	Weak
Jones (2008)	Received during the study period (assumed)	11,406	Age Sex Stage Time to Hospital	Receipt of radiotherapy (rectal cancer cohort)	OR 0.99 (for a 1 unit increase in IMD)	0.99-1.0	=	Weak
Morris (2016)	1 year of surgery	9,201	Unadjusted	Receipt of radiotherapy	(Derived) LD OR 1.0 MD OR 1.39	(Derived) 1.21-1.60	↑	Weak
NCRAS (2018)	31 days before diagnosis to 12 months after	28,136	Unadjusted	Receipt of radiotherapy	(Derived) LD OR 1.0 MD OR 1.33	(Derived) 1.23-1.44	↑	Moderate
Paterson (2014)	Not recorded	1,345	Unadjusted	Receipt of neoadjuvant radiotherapy	(Derived) LD OR 1.0 MD OR 1.15	(Derived) 0.79-1.67	=	Weak
Radwan (2016)	Received during the study period (assumed)	120	Unadjusted	Receipt of neoadjuvant chemoradiotherapy	(Derived) LD OR 1.0 MD OR 1.0	N/A	=	Weak
Shack (2009)	6 months of diagnosis	29,563	Age Comorbidities Sex Stage	Receipt of radiotherapy	LD OR 1.0 MD OR 0.90	0.77-1.04	=	Strong

Abbreviations: CI confidence interval, LD least deprived, MD most deprived, OR odds ratio.

Legend

↑ Increased likelihood	↓ Decreased likelihood	= No significant difference between groups
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Appendix S16: Results – Likelihood of receipt of any treatment

First Author (Year)	Treatment Given Within	Number	Adjusted for	Outcome of Interest	Odds Ratio /Likelihood	95% CI (p-value)	Effect of Deprivation on Odds of Any Treatment	Strength of Evidence
Crawford (2012)	6 months of diagnosis	C: 11,163	Age Sex Stage	Receipt of any treatment (chemotherapy, radiotherapy, surgery NS)	C: LD OR 1.0 MD OR 0.54	C: 0.39-0.76	↓	Weak
		R: 7,058			R: LD OR 1.0 MD OR 0.54	R: 0.34-0.84	↓	
Lejeune (2010)	6 months of first contact with NHS	71,917	Age Stage	Receipt of any treatment (presumed surgery, chemotherapy, radiotherapy NS)	LD OR 1.0 MD OR 0.87	0.82-0.92	↓	Moderate

Abbreviations: C colon, CI confidence interval, LD least deprived, MD most deprived, NHS National Health Service, NS not specified, OR odds ratio, R rectal.

Legend

↑ Increased likelihood	↓ Decreased likelihood	= No significant difference between groups
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