

Appendix 1

The strategy used for search of PubMed, EMBASE and Cochrane Library

PUBMED database

1. Query –radiation OR radiotherapy OR treatment

Result:

11,867,474

"radiate"[All Fields] OR "radiated"[All Fields] OR "radiates"[All Fields] OR "radiating"[All Fields] OR "radiation"[MeSH Terms] OR "radiation"[All Fields] OR "electromagnetic radiation"[MeSH Terms] OR ("electromagnetic"[All Fields] AND "radiation"[All Fields]) OR "electromagnetic radiation"[All Fields] OR "radiations"[All Fields] OR "radiation s"[All Fields] OR "radiator"[All Fields] OR "radiators"[All Fields] OR ("radiotherapy"[MeSH Terms] OR "radiotherapy"[All Fields] OR "radiotherapies"[All Fields] OR "radiotherapy"[MeSH Subheading] OR "radiotherapy s"[All Fields]) OR ("therapeutics"[MeSH Terms] OR "therapeutics"[All Fields] OR "treatments"[All Fields] OR "therapy"[MeSH Subheading] OR "therapy"[All Fields] OR "treatment"[All Fields] OR "treatment s"[All Fields])

Translations

radiation: "radiate"[All Fields] OR "radiated"[All Fields] OR "radiates"[All Fields] OR "radiating"[All Fields] OR "radiation"[MeSH Terms] OR "radiation"[All Fields] OR "electromagnetic radiation"[MeSH Terms] OR ("electromagnetic"[All Fields] AND "radiation"[All Fields]) OR "electromagnetic radiation"[All Fields] OR "radiations"[All Fields] OR "radiation's"[All Fields] OR "radiator"[All Fields] OR "radiators"[All Fields]

radiotherapy: "radiotherapy"[MeSH Terms] OR "radiotherapy"[All Fields] OR "radiotherapies"[All Fields] OR "radiotherapy"[Subheading] OR "radiotherapy's"[All Fields]

treatment: "therapeutics"[MeSH Terms] OR "therapeutics"[All Fields] OR "treatments"[All Fields] OR "therapy"[Subheading] OR "therapy"[All Fields] OR "treatment"[All Fields] OR "treatment's"[All Fields]

2. Query-tumor OR tumour OR cancer OR neoplasms

Result:

4,702,635

"cysts"[MeSH Terms] OR "cysts"[All Fields] OR "cyst"[All Fields] OR "neurofibroma"[MeSH Terms] OR "neurofibroma"[All Fields] OR "neurofibromas"[All Fields] OR "tumor s"[All Fields] OR "tumoral"[All Fields] OR "tumorous"[All Fields] OR "tumour"[All Fields] OR "neoplasms"[MeSH Terms] OR "neoplasms"[All Fields] OR "tumor"[All Fields] OR "tumour s"[All Fields] OR "tumoural"[All Fields] OR "tumourous"[All Fields] OR "tumours"[All Fields] OR "tumors"[All Fields] OR "cysts"[MeSH Terms] OR "cysts"[All Fields] OR "cyst"[All Fields] OR "neurofibroma"[MeSH Terms] OR "neurofibroma"[All Fields] OR "neurofibromas"[All Fields] OR "tumor s"[All Fields] OR "tumoral"[All Fields] OR "tumorous"[All Fields] OR "tumour"[All Fields] OR "neoplasms"[MeSH Terms] OR "neoplasms"[All Fields] OR "tumor"[All Fields] OR "tumour s"[All Fields] OR "tumoural"[All Fields] OR "tumourous"[All Fields] OR "tumours"[All Fields] OR "tumors"[All Fields] OR "cancer s"[All Fields] OR "cancerated"[All Fields] OR "canceration"[All Fields] OR "cancerization"[All Fields] OR "cancerized"[All Fields] OR "cancerous"[All Fields] OR "neoplasms"[MeSH Terms] OR "neoplasms"[All Fields] OR "cancer"[All Fields] OR "cancers"[All Fields] OR "neoplasm s"[All Fields] OR "neoplasms"[MeSH Terms] OR "neoplasms"[All Fields] OR "neoplasm"[All Fields]

Translations

tumor: "cysts"[MeSH Terms] OR "cysts"[All Fields] OR "cyst"[All Fields] OR "neurofibroma"[MeSH Terms] OR "neurofibroma"[All Fields] OR "neurofibromas"[All Fields] OR "tumor's"[All Fields] OR "tumoral"[All Fields] OR "tumorous"[All Fields] OR "tumour"[All Fields] OR "neoplasms"[MeSH Terms] OR "neoplasms"[All Fields] OR "tumor"[All Fields] OR "tumour's"[All Fields] OR "tumoural"[All Fields] OR "tumourous"[All Fields] OR "tumours"[All Fields] OR "tumors"[All Fields]

tumour: "cysts"[MeSH Terms] OR "cysts"[All Fields] OR "cyst"[All Fields] OR "neurofibroma"[MeSH Terms] OR

"neurofibroma"[All Fields] OR "neurofibromas"[All Fields] OR "tumor's"[All Fields] OR "tumoral"[All Fields] OR "tumorous"[All Fields] OR "tumour"[All Fields] OR "neoplasms"[MeSH Terms] OR "neoplasms"[All Fields] OR "tumor"[All Fields] OR "tumour's"[All Fields] OR "tumoural"[All Fields] OR "tumourous"[All Fields] OR "tumours"[All Fields] OR "tumors"[All Fields]

cancer: "cancer's"[All Fields] OR "cancerated"[All Fields] OR "canceration"[All Fields] OR "cancerization"[All Fields] OR "cancerized"[All Fields] OR "cancerous"[All Fields] OR "neoplasms"[MeSH Terms] OR "neoplasms"[All Fields] OR "cancer"[All Fields] OR "cancers"[All Fields]

neoplasms: "neoplasm's"[All Fields] OR "neoplasms"[MeSH Terms] OR "neoplasms"[All Fields] OR "neoplasm"[All Fields]

3. Query –lymphocytopenia OR lymphopenia

Result:

11,841

"lymphopenia"[MeSH Terms] OR "lymphopenia"[All Fields] OR "lymphocytopenia"[All Fields] OR "lymphocytopenias"[All Fields] OR "lymphopenia"[MeSH Terms] OR "lymphopenia"[All Fields] OR "lymphopenias"[All Fields]

Translations

lymphocytopenia: "lymphopenia"[MeSH Terms] OR "lymphopenia"[All Fields] OR "lymphocytopenia"[All Fields] OR "lymphocytopenias"[All Fields]

lymphopenia: "lymphopenia"[MeSH Terms] OR "lymphopenia"[All Fields] OR "lymphopenias"[All Fields]

4. Query – esophagus OR liver OR hepatocellular OR cholangiocarcinoma OR gall bladder OR stomach OR gastric OR pancreas or rectum OR anal canal

Results 1,861,079

"oesophagus"[All Fields] OR "esophagus"[MeSH Terms] OR "esophagus"[All Fields] OR ("liver"[MeSH Terms] OR "liver"[All Fields] OR "livers"[All Fields] OR "liver s"[All Fields]) OR "hepatocellular"[All Fields] OR ("cholangiocarcinoma"[MeSH Terms] OR "cholangiocarcinoma"[All Fields] OR "cholangiocarcinomas"[All Fields]) OR ("gallbladder"[MeSH Terms] OR "gallbladder"[All Fields] OR ("gall"[All Fields] AND "bladder"[All Fields]) OR "gall bladder"[All Fields]) OR ("stomach"[MeSH Terms] OR "stomach"[All Fields] OR "stomachs"[All Fields] OR "stomach s"[All Fields] OR "stomachal"[All Fields] OR "stomaches"[All Fields]) OR ("gastrics"[All Fields] OR "stomach"[MeSH Terms] OR "stomach"[All Fields] OR "gastric"[All Fields]) OR ("pancrea"[All Fields] OR "pancreas"[MeSH Terms] OR "pancreas"[All Fields]) OR ("rectum"[MeSH Terms] OR "rectum"[All Fields] OR "rectums"[All Fields]) OR ("anal canal"[MeSH Terms] OR "anal"[All Fields] AND "canal"[All Fields]) OR "anal canal"[All Fields]

Translations

esophagus: "oesophagus"[All Fields] OR "esophagus"[MeSH Terms] OR "esophagus"[All Fields]

liver: "liver"[MeSH Terms] OR "liver"[All Fields] OR "livers"[All Fields] OR "liver's"[All Fields]

cholangiocarcinoma: "cholangiocarcinoma"[MeSH Terms] OR "cholangiocarcinoma"[All Fields] OR "cholangiocarcinomas"[All Fields]

gall bladder: "gallbladder"[MeSH Terms] OR "gallbladder"[All Fields] OR ("gall"[All Fields] AND "bladder"[All Fields]) OR "gall bladder"[All Fields]

stomach: "stomach"[MeSH Terms] OR "stomach"[All Fields] OR "stomachs"[All Fields] OR "stomach's"[All Fields] OR "stomachal"[All Fields] OR "stomaches"[All Fields]

gastric: "gastrics"[All Fields] OR "stomach"[MeSH Terms] OR "stomach"[All Fields] OR "gastric"[All Fields]

pancreas: "pancrea"[All Fields] OR "pancreas"[MeSH Terms] OR "pancreas"[All Fields]

rectum: "rectum"[MeSH Terms] OR "rectum"[All Fields] OR "rectums"[All Fields]

anal canal: "anal canal"[MeSH Terms] OR ("anal"[All Fields] AND "canal"[All Fields]) OR "anal canal"[All Fields]

#1 AND #2 AND #3 AND #4=254 articles

Results:254

EMBASE database

#	Searches	Results
1	(Radiation or radiotherapy or treatment).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading]	8129974
2	(cancer or tumour or tumor or neoplasm).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading]	5301497
3	(Lymphopenia or lymphocytopenia).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading]	27039
4	(esophagus OR liver OR hepatocellular OR cholangiocarcinoma OR gall bladder OR stomach OR gastric OR pancreas OR rectum OR anal canal).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]	2943722
5	1 and 2 and 3 and 4	2518

Cochrane central

Date Run: 07/09/2020 14:04:54

ID	Search	Hits
#1	radiation OR radiotherapy OR treatment	771183
#2	tumor OR tumour OR cancer OR neoplasms	207089
#3	lymphocytopenia OR lymphopenia	1310
#4	esophagus OR liver OR hepatocellular OR cholangiocarcinoma OR gall bladder OR stomach OR gastric OR pancreas or rectum OR anal canal	109009
#5	#1 AND #2 AND #3 AND #4	197

Appendix 2

The Newcastle Ottawa scale assessment of the quality of the studies included in the meta-analysis

Study	Selection (4)	Comparability (1)	Outcome (3)	Total score
van Rossum <i>et al.</i> 2020	+++	+	+++	7/8
Wang <i>et al.</i> 2020	++	+	+++	6/8
Song <i>et al.</i> 2019	++	+	+++	6/8
Zhang <i>et al.</i> 2019	++	+	++	5/8
Zhou <i>et al.</i> 2019	+++	+	+++	7/8