Table 1: Systematic reviews of selenium for cancer prevention and supportive care
Source: Karen Pilkington, CAM-Cancer Consortium. Selenium [online document]. http://cam-cancer.org/en/selenium. August 18, 2020

First author, year, ref	Main outcomes	Number of studies Type of studies Number of patients	Main results/ Conclusions (as stated by the authors)	Comments
Cancer prevention				
Vinceti 2018 (Cochrane review on prevention of any cancer)	Incidence of any cancer or site specific cancer Mortality from any cancer and from site-specific cancer Incidence of selected adverse effects (RCTs only).	11 RCTs and 70 observational studies (46 nested case-control studies; 23 subcohort-controlled or cohort studies; 1 cohort plus nested case-control design) 27,232 participants in RCTS; 2,360,000 participants in observational studies	Based on the high-quality randomised trials, selenium had no effect on reducing overall risk of cancer or risk of particular cancers (most commonly investigated - prostate cancer). Some trials reported that selenium may increase risks of high grade prostate cancer, type 2 diabetes, and dermatological abnormalities.	Searches of 3 databases including Cochrane CENTRAL and trials databases up to Feb 2017 Intervention and longitudinal observational studies selected (including ongoing trials and conference abstracts). RCT assessed using Cochrane Risk of Bias; observational using Newcastle-Ottawa Scale. Certainty of evidence reported for each outcome.
Cortes-Jofre 2012 (Cochrane review on prevention of lung cancer)	*Incidence and mortality from lung cancer in healthy people*	*9 studies (1 RCT of selenium in 35 533 men)*	*No evidence of an effect*	*The one relevant RCT is included in Cochrane review above (SELECT trial)*

Kuria 2020	Incidence of any type of cancer	37 studies No. of each type not reported 579,878 participants	Selenium at recommended daily allowance levels of at least 55 micrograms/day decreased the risk of cancer (RR 0.94, 95% CI 0.90–0.98)*. Selenium intake from supplements was protective at levels of at least 55 micrograms/day (RR 0.89, 95% CI: 0.82–0.97). Effects may vary with different cancers. *Note: figures in abstract do not match figures in table	Searches of 6 English and Chinese databases to March 2018; databases but not search strategy reported. Intervention and observational studies included (excl. retrospective case control; incl. nested case control). Newcastle-Ottawa scale (NOS) used to assess studies. Scores only reported in supplemental table; no mention in Results.
de Oliveira Maia 2019	Risk of thyroid cancer	5 cross-sectional studies 885 participants	The evidence was reported to be inconclusive	Searches of 3 databases for studies in English, Spanish, and Portuguese to June 2018. Strategy reported. Studies assessed using the Newcastle-Ottawa Scale. One study graded moderate and 4 graded good quality.
Talebi 2018	Risk of lung cancer	15 studies (13 case-control and 2 cohort) 84,199 participants	The authors concluded that increased selenium levels offered a protective role reducing the incidence of lung cancer.	Searches of 7 databases plus google to May 2017 for studies in English. Search strategy reported. Studies assessed using the STROBE checklist. Low quality studies excluded but unclear how many were excluded for this reason.
Cancer supportive treatment				

Lawrie 2018 (Cochrane review on reducing adverse effects of radiotherapy)	Incidence, severity or both of adverse gastrointestinal effects	1 RCT (81 participants) on selenium (Muecke 2010)	Acute diarrhoea (grade 2+) during RT: Low-certainty evidence suggests that oral selenium may have little or no effect on this outcome (RR 0.40, 95% CI 0.12 to 1.41; participants = 81). No evidence on other review outcomes was found.	Searches of CENTRAL, MEDLINE, and Embase to November 2017. Used Cochrane methods including risk of bias and GRADE. Single trial was assessed as unclear risk of bias.
Fritz 2011	**Potential interactions with conventional therapies** including effect on nephrotoxicity and leukopenia; response to chemotherapy, immune function; effect on irinotecan pharmacokinetics; Various adverse effects including lymphedema and radiation-induced diarrhoea, mucositis, xerostomia and selenium deficiency	130 studies of mixed designs including 5 RCTs (3 on primary prevention; 1 on secondary prevention; conference abstract only - Karp 2010; 1 on adverse effects of cisplatin - Hu 1997 (15 human studies, 1 case report, and 36 preclinical studies for assessment of interactions) Total participants not reported	The authors concluded selenium may reduce cisplatin-induced nephrotoxicity and resolve side effects associated with radiation therapy (radiotherapy-induced deficiency, diarrhoea and mucositis) in the treatment of lung cancers. They also reported that 3 studies investigated varying outcomes but none reported deleterious interactions between selenium and chemotherapy. Several studies have found positive outcomes in reducing lymphedema.	Searches of 6 databases to March 2009; PubMed/EMBASE to October 2009 Studies assessed using various scoring systems; RCTs also assessed using Jadad Karp 2010 scored 2; Hu 1997 scored 1 Scores for other studies not reported.
Lee 2015	Oral mucositis during cancer therapy	16 RCTs (n = 1120); 2 RCTs (116 patients) on selenium (Jahangard 2013; Buntzel 2010b)	'Several mineral derivatives were assessed with selenium favoured in the decision analysis'	Searches of 5 databases. Used Cochrane risk of bias. Both studies assessed as high risk of bias.
Tabassum 2010	*Potential for reducing dose-limiting toxicities of supplementation during chemotherapy*	*Not reported*	*The authors concluded that antioxidant supplements may have the potential to reduce dose-limiting toxicities.*	*No methods reported (although described as a systematic review, it appears to be a narrative review of a wide range of studies)*

Dennert 2006 (updated in 2009)	Effects on adverse effects of radiotherapy, chemotherapy, or surgery and on quality of life or performance status during and after treatment	3 small RCTs (162 patients) Two completed (Kasseroller 1998; Zimmermann 2005); one ongoing (Mücke 2007)	There is insufficient evidence at present that selenium supplementation alleviates the side effects of tumour specific chemotherapy or radiotherapy treatments. Or, that it improves the after effects of surgery, or improves quality of life in cancer patients or reduces secondary lymphoedema.	Searches of 10 databases and trials registers to July 2007 Search strategy reported. Studies assessed using a critical appraisal checklist (Juni 2001), Jadad and a Delphi list. All studies had considerable drawbacks related to quality and reporting.