**Colorectal cancer**

**## Clinical description (if available already):**

Incident primary malignant neoplasm of colon and primary malignant neoplasm of rectum. Excluding all cancer subtypes melanoma’s, lymphoma, carcinoids, benign, insitu and secondary malignancies.

**### Overview**

Colorectal cancers include malignant tumours of the colon and rectum. Colorectal cancer is the second cause of cancer death globally. Symptoms of colorectal cancer include changes in bowel habits, rectal bleeding or blood in stools, abdominal discomfort, fatigue/weakness, anaemia, and unexplained weight loss. Incidence and mortality rates have decreased significantly in individuals 50 years of age or older due to enhanced screening practices resulting in early detection as well as improved treatments. Incidence and mortality rates in under 50’s with no genetic risk factors or family history is increasing each year. Presence of symptoms in this age group often are initially attributed to other causes, resulting in a more advanced disease stage at the time of diagnosis. Other than age, risk factors include having inflammatory bowel diseases, family history, having high-risk genes, and lifestyle factors such as smoking, poor diet, physical inactivity, and obesity. Treatments include surgery, chemotherapy and/or radiotherapy but depend on tumour location, tumour type, tumour stage and location of any metastasis.

**### Presentation**

Symptoms can vary with the anatomic location of the tumour. Common symptoms include change in bowel habits such as diarrhoea or constipation, abdominal cramping, rectal bleeding and/or blood in stools, tiredness, and fatigue.

**### Assessment**

Physical examination, colonoscopy, blood tests to assess liver function, plasma CEA levels, CT scan of chest, abdomen, and pelvis.

**### Plan**

Total resection of tumour is the optimal treatment when a malignant lesion is detected in the large bowel. Systemic therapy (chemotherapy) for patients with colorectal cancer includes 5-fluorouracil combined with other drugs such as irinotecan, oxaliplatin. Type and duration of chemotherapy will depend can depend on tumour staging and genetic mutations in the cancer. In rectal cancer, the delivery of preoperative or postoperative combined-modality therapy (5-FU or capecitabine plus radiation therapy to the pelvis) can be given. Monoclonal antibodies such as cetuximab, panitumumab and bevacizumab are also effective in patients with advanced colorectal cancer.

**### Prognosis**

Prognosis is related to the depth of tumour penetration into the bowel wall and the presence of both regional lymph node involvement and distant metastases. Higher tumour penetration, lymph node involvement and distant metastases have a poorer prognosis and lower survival. Most recurrences after a surgical resection of a large-bowel cancer occur within the first 4 years, making 5-year survival a reliable indicator of cure.

**### MedDRA PTs**

NA

**### Disqualifiers**

Benign tumours/polyps, secondary disease, unknown primary, in situ , melanoma’s, lymphoma, carcinoids

**### Strengtheners**

Colonoscopy procedure, chemotherapy (5-fluorouracil combined with other drugs such as irinotecan, oxaliplatin)

**### Suggested Logic Description**

* With 1 year of history before index date
* => 18 years old

**### References**

Loscalzo, Fauci, Kasper, Hauser, Longo, Jameson: “Harrison’s Principles of Internal Medicine” 21st Edition McGrawHill

Johnson, C. M., Wei, C., Ensor, J. E., Smolenski, D. J., Amos, C. I., Levin, B., & Berry, D. A. (2013). Meta-analyses of Colorectal Cancer Risk Factors. *Cancer Causes & Control : CCC*, *24*(6), 1207. <https://doi.org/10.1007/S10552-013-0201-5>

Xi, Y., & Xu, P. (2021). Global colorectal cancer burden in 2020 and projections to 2040. Translational Oncology, 14(10), 101174. https://doi.org/10.1016/J.TRANON.2021.101174

**Breast cancer**

**## Clinical description (if available already):**

Incident primary malignant neoplasm of breast. Excluding melanoma’s, sarcoma’s, lymphoma related to breast, benign, insitu and secondary malignancies.

**### Overview**

Breast cancer is a malignant proliferation of epithelial cells lining the ducts or lobules of the breast. Seventy-five percent of all breast cancers occur in women aged >50 years. The main risk factors are sex, age, and hormonal exposure however other risk features such as family history, obesity, metabolic syndromes, depression, and moderate alcohol consumption all potentially increase occurrence and reoccurrence. Earlier detection and improved treatments such as surgery, radiotherapy and chemotherapy have reduced mortality from breast cancer by more than one-third over the past three decades in high- and middle-income countries. All breast cancer is diagnosed by biopsy of an abnormality detected either on a mammogram or by palpation.

**### Presentation**

The first symptom of breast cancer that most notice is a lump or an area of thickened tissue in their breast. However, any changes in how breasts or nipples normally look, and feel and discharge from the nipples can also present as well as lumps or swelling in the armpits.

**### Assessment**

Breast cancer is diagnosed by biopsy of an abnormality detected either on a mammogram and in some cases ultrasound or by palpation. Abnormalities that are first detected by physical exam and/or screening mammography should be evaluated by diagnostic mammography.

**### Plan**

All treatments for breast cancer are based on prognostic and predictive factors. Prognostic factors provide an indication of how likely a cancer will recur either locally or in distant organs in the future if a patient is not treated with the respective treatments. Prognosis factors can include anatomical factors and biologic features, such as histologic tumour grade as well as ER, PgR, and HER2 status. Predictive factors are used to determine if a given treatment is likely to work or not, assuming the patient’s prognosis justifies treatment. Local control of the cancer occurs more often when the tumour is small and can be completely removed by surgery. In the most advanced stages, breast cancer treatment begins with excision of the tumour or destruction of the tumour by radiation therapy. Surgery is frequently accompanied by some type of adjuvant treatment—radiotherapy, chemotherapy, hormonal therapy, immunotherapy, and other therapies

**### Prognosis**

Prognosis is related to the staging of tumour, histology of tumour, and the presence of both regional lymph node involvement and distant metastases. Higher staging, lymph node involvement and distant metastases have a poorer prognosis and lower survival. For example, the 5-year survival rate for stage 2 breast cancer is 77% whereas for stage 3 and 4 breast cancer the 5-year survival rates are 51% and16% respectively.

**### MedDRA PTs**

NA

**### Disqualifiers**

Benign, insitu, secondary, unknown primary, melanoma’s, lymphoma, carcinoids

**### Strengtheners**

Procedure of biopsy, mammogram/ultrasound, abnormal finding of mammogram, cancer tumour markers tests

**### Suggested Logic Description**

* With 1 year of history before index date
* => 18 years old

**### Sources**

Loscalzo, Fauci, Kasper, Hauser, Longo, Jameson: “Harrison’s Principles of Internal Medicine” 21st Edition McGrawHill

<https://training.seer.cancer.gov/breast/> (accessed 21/7/22)

**Lung cancer**

**## Clinical description (if available already):**

Incident primary malignant neoplasm of lung and descendants. Excluding all cancer subtypes melanoma’s, lymphoma, carcinoids, benign, insitu and secondary malignancies.

**### Overview**

Lung cancer is the most common cause of cancer death globally and the second most common cancer, accounting for about one out of five malignancies in men and one out of nine in women. Lung cancer is uncommon below age 40, with rates increasing until age 80. The World Health Organization (WHO) defines lung cancer as tumours arising from the respiratory epithelium (bronchi, bronchioles, and alveoli). The WHO classification system divides epithelial lung cancers into four major cell types: small-cell lung cancer (SCLC), adenocarcinoma, squamous cell carcinoma, and large-cell carcinoma; the latter three types are collectively known as non-small-cell carcinomas (NSCLCs). Although cigarette smoking is the cause of many lung cancers, several other risk factors have been identified, including occupational exposure to asbestos and other chemicals, family history, radiation, genetics and prior history to prior lung diseases such as chronic bronchitis, emphysema, and tuberculosis. Treatment of lung cancer depends on type but can include surgery, radiation and/or chemotherapy.

**### Presentation**

In many cases, symptoms do not appear until the cancer is quite advanced. Symptoms can include difficulty breathing or shortness of breath, coughing, blood in sputum, recurring pneumonia or bronchitis; chest, shoulder, or arm pain; Loss of appetite; unexplained weight loss; Bone pain; Hoarseness; Headaches or seizures; Swelling of the face or neck; Fatigue.

**### Assessment**

Tissue sampling is required to confirm a diagnosis in all patients with suspected lung cancer.

**### Plan**

Non-small cell lung cancers (squamous, adenocarcinoma and large cell carcinoma) are treated with surgery, but largely unresponsive to chemotherapy. Those with involvement of lymph nodes can also be treated with chemoradiation followed by durvalumab. Patients with distant metastases from non-small cell lung cancer can be treated palliatively with radiation. Chemotherapy can be tailored depending on the genetic mutation of the tumour. Conversely small cell lung cancers do respond to chemotherapy and radiation but are usually too far advanced at diagnosis for a surgical cure.

**### Prognosis**

For non-small cell lung cancer survival is dependant on staging which in turn is dependant on size and location of tumour and involvement of lymph nodes and any metastasis. Two-year survival can vary from over 70% for stage 2 reducing to 23% and below for stage 4. Small cell lung cancer has a low two-year survival for stage 3-4 of around 2%.

**### MedDRA PTs**

NA

**### Disqualifiers**

Benign, insitu, secondary, unknown primary, melanoma’s, lymphoma, carcinoids

**### Strengtheners**

Biopsy, CT-PET scan, CT scan, sputum sample, PD-L1 for non-small lung cancer

**### Suggested Logic Description**

* With 1 year of history before index date
* => 18 years old

**### Sources**

Loscalzo, Fauci, Kasper, Hauser, Longo, Jameson: “Harrison’s Principles of Internal Medicine” 21st Edition McGrawHill

<https://training.seer.cancer.gov/lung/>

**Liver cancer**

**## Clinical description (if available already):**

Incident primary malignant neoplasm of liver and descendants. Excluding neoplasms related to bile duct. Excluding all cancer subtypes melanoma’s, lymphoma, carcinoids, benign, insitu and secondary malignancies.

**### Overview**

Liver cancer accounts for 7% of all cancers (~850,000 new cases each year) and the most common is hepatocellular carcinoma (HCC) which accounts for 85-90% of primary liver cancer cases. Liver cancer is the sixth most common cancer worldwide, the fourth leading cause of cancer-related deaths. The main risk factor for HCC is cirrhosis and chronic liver damage of any etiology such as hepatitis C virus (HCV) infection, alcohol abuse, metabolic syndrome, and hemochromatosis. Other factors include smoking, obesity and diabetes and age.

**### Presentation**

* Weight loss.
* Weakness.
* Unexplained fever and nausea.
* Hepatitis: inflammation of liver.
* Discomfort on right side of upper abdomen.
* A lump below the ribs on the right side.
* Pain around the right shoulder blade.
* Lack of appetite.
* Abdominal swelling.
* Generalized abdominal pain.
* Bloated feeling.
* Jaundice: yellowing of the skin and eyes due to biliary obstruction.
* Ascites, accumulation of fluid in the abdomen.

**### Assessment**

Diagnosis can be made by noninvasive (radiologic) or invasive (biopsy) approaches as well as to determine cancer staging.

**### Plan**

For HCC, tumour status, cancer-related symptoms, and liver dysfunction defining treatment strategy. Patients with asymptomatic early tumours are candidates for resection, transplantation, or local ablation). Asymptomatic patients with multinodular HCC are suitable for transcatheter arterial chemoembolization, whereas patients with advanced symptomatic tumours and/or an invasive tumoral pattern are candidates to receive systemic therapies such as atezolizumab + bevacizumab. End-stage disease includes patients with poor prognosis who should be treated by best supportive care.

**### Prognosis**

For very early stage median survival is greater than 3 years whereas from early to advanced stage can range from 16-8 months with end stage liver HCC having a median survival of around 3 months. However, survival does depend on if HCC is localised and resectable with no metastases.

**### MedDRA PTs**

NA

**### Disqualifiers**

Benign, insitu, secondary, unknown primary, melanoma’s, lymphoma, carcinoids

**### Strengtheners**

Liver function tests, CT scan of liver

**### Suggested Logic Description**

* With 1 year of history before index date
* => 18 years old

**### Sources**

Loscalzo, Fauci, Kasper, Hauser, Longo, Jameson: “Harrison’s Principles of Internal Medicine” 21st Edition McGrawHill

<https://training.seer.cancer.gov/biliary/>

**Stomach cancer**

**## Clinical description (if available already):**

Incident primary malignant neoplasm of stomach. Excluding all cancer subtypes melanoma’s, lymphoma, carcinoids, benign, insitu and secondary malignancies.

**### Overview**

Stomach cancer (also called gastric cancer) can develop in any part of the stomach and may spread throughout the stomach and to other organs. Globally, stomach cancer is still very common, with an overall global incidence of 1.03 million new cases per year and 780,000 deaths, making gastric cancer the third most common cause of cancer mortality. Risk factors for stomach cancer include age, race, pernicious anemia, gastric polyps, ingestion of high concentrations of nitrates, chronic inflammation due to reflux, *H. pylori* infection, inherited cancer susceptibility genes.

**### Presentation**

Presenting symptoms include vague upper abdominal discomfort, hematemesis or melena, anorexia and early satiety, and unexplained weight loss. For patients with esophagogastric junction cancers, dysphagia or odynophagia may be the presenting symptom. Anaemia may be found due to occult bleeding.

**### Assessment**

Endoscopy and biopsy and diagnostic CT scan of the chest, abdomen, and pelvis should be performed. If metastatic disease is suspected on imaging, a biopsy of a metastatic site should be strongly considered to confirm stage IV disease.

**### Plan**

Laparoscopy is commonly performed at high-volume centers before a final decision regarding the role of surgery

* Stage 1: Surgical removal of the primary tumour with negative microscopic margins (an R0 resection) and with resection of regional lymph nodes
* Stages 2-3: Surgery with both neoadjuvant (preoperative) and postoperative systemic therapy are accepted approaches. If surgery is performed first and a locally advanced cancer is found, postoperative chemotherapy or chemotherapy plus chemoradiation is recommended
* Stage 4: offer systemic drug therapies

**### Prognosis**

Below is 5-year survival based on staging.

Stage 0: 90%

Stage I: 44-59%

Stage II: 29%

Stage III: 9-15%

Stage IV: 3%

**### MedDRA PTs**

NA

**### Disqualifiers**

Benign, insitu, secondary, unknown primary, prevalent, melanoma’s, lymphoma, carcinoids

**### Strengtheners**

Laparoscopy

**### Suggested Logic Description**

* With 1 year of history before index date
* => 18 years old

**### Sources**

Loscalzo, Fauci, Kasper, Hauser, Longo, Jameson: “Harrison’s Principles of Internal Medicine” 21st Edition McGrawHill

<https://training.seer.cancer.gov/ugi/>

**Prostate cancer**

**## Clinical description (if available already):**

Incident primary malignant neoplasm of prostate. Excluding all cancer subtypes melanoma’s, lymphoma, carcinoids, benign, insitu and secondary malignancies.

**### Overview**

The prostate is a part of the male reproductive system located just below the bladder and in front of the rectum. The absolute number of prostate cancer deaths has decreased in the past 10 years, due to the widespread use of PSA-based detection strategies. However, the disease remains the second leading cause of cancer deaths in men. Risk factors are age over 65, family history, high fat diet, race, potentially exposure to cadmium. Treatment includes active surveillance, surgery, brachytherapy, hormone therapies, and radiation therapy.

**### Presentation**

* Weak urinary stream.
* Frequent and/or urgent urination, especially at night.
* Difficulty starting or stopping the urinary stream.
* Incomplete emptying of the bladder.
* Painful burning urination.
* Blood in the urine or semen.
* Painful ejaculation.
* Pain or stiffness in the lower back, hips, or upper thighs

**### Assessment**

* Physical Exam
* Imaging (ultrasound, xray, CT, MRI)
* Tumor Markers (e.g. Prostate Specific Antigen -PSA) – blood tests
* Endoscopies
* Pathology - Transrectal/transperineal Needle Biopsy

**### Plan**

Based on American Urologic Association (AUA) Staging System treatment options can occur in isolation or in combination.

* Stage A1: Observation or if aged 50-60 treatment may be considered
* Stage A2/B: radiation therapy, surgery, radical prostatectomy with pelvic lymphadenectomy, interstitial radioisotopes (under clinical evaluation for stage B)
* Stage C: radiation therapy, surgery, radical prostatectomy with pelvic lymphadenectomy, Orchiectomy, hormone therapy, interstitial radioisotopes (under clinical evaluation)
* Stage D1 (regional lymph node involvement, distant metastases): orchiectomy, hormone therapy, systemic chemotherapy (under clinical evaluation)

**### Prognosis**

Prognosis is strongly affected by the grade of tumour. Five year survival based on American Urologic Association (AUA) Staging System:

A1: occult cancer—usually not treated

A2: > 90%

B1: 85%

B2: 85%

C: 48%

D: 21% (all metastatic cases)

**### MedDRA PTs**

NA

**### Disqualifiers**

Female, benign (benign prostatic hypertrophy), insitu, secondary, unknown primary, melanoma’s, lymphoma, carcinoids

**### Strengtheners**

Male, PSA test, prostatic acid phosphatase test, biopsy

**### Suggested Logic Description**

* With 1 year of history before index date
* => 18 years old

**### Sources**

Loscalzo, Fauci, Kasper, Hauser, Longo, Jameson: “Harrison’s Principles of Internal Medicine” 21st Edition McGrawHill

<https://training.seer.cancer.gov/prostate/>

**Head and neck cancer**

**## Clinical description (if available already):**

* Incident primary malignant neoplasms of the head and neck excluding cancers of the eye, brain, and thyroid gland.
* Excluding all cancer subtypes melanoma’s, lymphoma, carcinoids, benign, insitu and secondary malignancies.

**### Overview**

Most head and neck cancers begin in the squamous epithelium that line the structures found in the head and neck. Cancers of the head and neck are further identified by the area in which they begin such as the oral cavity, salivary glands, paranasal sinuses and nasal cavity. Cancers of the brain, eye, and thyroid usually are not included in the category of head and neck cancers. Cancers of the scalp, skin, muscles, and bones of the head and neck are also usually not considered cancers of the head and neck. Compared to other cancers such as breast and prostate, head and neck cancers have lower incidence with worldwide incidence exceeds half a million cases annually.

Risk factors include gender, race, age, diet, smoking/tobacco use, alcohol, poor oral hygiene and exposure to toxic chemicals.

**### Presentation**

Many are "silent" tumors—no pain or other symptoms until tumors reach advanced stages. General symptoms include a mass, ulcer, referred or localized pain, neurologic defects, hoarseness. Specific symptoms may depend on tumour location.

**### Assessment**

Physical examination, CT or MRI of the head and neck, endoscopic examination, biopsy

**### Plan**

Treatments is given based on grouping based on patients with localized disease, those with locally or regionally advanced disease (lymph node positive), and those with recurrent and/or metastatic disease below the neck.

* Localised disease: surgery or radiation therapy
* Locally or regionally advanced disease: surgery and/or radiation therapy and chemotherapy
* Recurrent/metastatic disease: chemotherapy, immunotherapy, radiation therapy can be given for pain control

**### Prognosis**

Depends on staging and location of tumour but 5-year survival can range from 80-90% for an oral cavity stage 1 tumour down to 25-60% for stage 4 whereas cancers of the salivary glands survival is 90% for stage 1 down to 10% for stage 4.

**### MedDRA PTs**

NA

**### Disqualifiers**

Benign, insitu, secondary, unknown primary, primary eye cancer, primary brain cancer, primary thyroid cancer, prevalent disease, melanoma’s, lymphoma, carcinoids

**### Strengtheners**

CT or MRI of the head and neck, biopsy in head/neck region, procedure of head/neck surgery

**### Suggested Logic Description**

* With 1 year of history before index date
* => 18 years old

**### Sources**

Loscalzo, Fauci, Kasper, Hauser, Longo, Jameson: “Harrison’s Principles of Internal Medicine” 21st Edition McGrawHill

<https://training.seer.cancer.gov/head-neck/>

**Example**

**## Clinical description (if available already):**

**### Overview**

Overview of disease  
**### Presentation**

Symptoms **### Assessment**

Diagnostic procedures **### Plan**

Treatments – surgery, drugs etc  
**### Prognosis**

Survival etc **### MedDRA PTs**

NA – drug related **### Disqualifiers**

e.g. if you have T1D you can’t have T2D **### Strengtheners**

e.g.Having insulin therapy but no other oral ant diabetes medications **### Suggested Logic Description**

=>18 years old, 1 year of observation etc include preliminary codelists