

Chronic Myeloid Leukaemia

12.3% of Leukaemia[1]

Philadelphia chromosome positive 85-90%[2] [midpoint of 87.5%]

Acute Lymphoblastic Leukemia

11.5% of Leukaemia[1]

Philadelphia chromosome positive 25%[3]

Chronic Lymphocytic Leukaemia

26.9% of Leukaemia[1]

Renal cell carcinoma

85% of kidney cancers[4]

Advanced/metastatic – 71.5%[5] [NICE guidance states 26% and 17% have stage III and IV disease, and about half of those with curative resection for earlier stages of the disease also go on to develop advanced and/or metastatic disease. Calculation $26+17+(0.5 \times 57) = 71.5\%$]

Breast Cancer

Metastatic breast cancer at presentation: 5%. Of remaining 95% who present with local breast cancer, 30% will develop metastatic cancer[6]

Total: 33.5%

20-30% with metastatic breast cancer are HER2+ [midpoint 25%], of which 50% will also be hormone receptor positive[6]

Average 12.5%

Non-Small Cell Lung Cancer

85% of lung cancers[7]

Advanced/metastatic at presentation – 70% of all lung cancer[7]. Assumed equal proportion in NSCLC.

Of those not advanced/metastatic at presentation (30% of all lung cancer), 30-60% have early disease progress[8] [midpoint 45%]

Total estimate for proportion incident cases that are advanced/metastatic at presentation, or shortly after:

$70\% + 45\% \text{ of the remaining } 30\% = 83.5\%$

Proportion of patients expected to have EGFR-TK mutation status results that may be evaluated – 60% [9]

EGFR+ – 10-12% (midpoint 11%) in non-Asian, 30-40% (midpoint 35%) in Asian patients[10]. Globocan data estimates a lung cancer incidence of 1,045,695 (56.3% of total) in Asia, and 779,006 (42.7%) in non-Asian countries. The global prevalence of EGFR mutation is 24.4% ($[0.563 \times 0.35] + [0.427 \times 0.11] = 0.244$).

Proportion of patients that EGFR status can be evaluated and will be EGFR positive – 14.6% [$0.6 \times 0.244 = 0.146$]

Hepatocellular carcinoma

85-90% of liver cancers [midpoint 87.5%][11]

Eligible patients in UK – 25-35% [midpoint 30%] [12] [based on UK expert advisory group convened by Bayer]

Thyroid carcinoma

Differentiated thyroid carcinoma 95% of thyroid cancers [13]

1-4% present with distant metastases [midpoint 2.5%] and 7-23% [midpoint 15%] develop distant metastases [14] - overall 17.5%

Of metastatic disease 66.6% become refractory to iodine [13]

Pancreatic cancer

Metastatic 50% and advanced 25% at presentation[15]

References

- 1 American Cancer Society. Cancer Facts & Figures 2015. <http://www.cancer.org/acs/groups/content/@editorial/documents/document/acspc-044552.pdf> (accessed 3 Jun 2015).
- 2 Demiroglu A, Joanna Steer E, Heath C, *et al.* The t(8;22) in chronic myeloid leukemia fuses BCR to FGFR1: Transforming activity and specific inhibition of FGFR1 fusion proteins. *Blood* 2001;**98**:3778–83. doi:10.1182/blood.V98.13.3778
- 3 Moorman A V, Harrison CJ, Buck GAN, *et al.* Karyotype is an independent prognostic factor in adult acute lymphoblastic leukemia (ALL): analysis of cytogenetic data from patients treated on the Medical Research Council (MRC) UKALLXII/Eastern Cooperative Oncology Group (ECOG) 2993 trial. *Blood* 2007;**109**:3189–97. doi:10.1182/blood-2006-10-051912
- 4 Weikert S, Ljungberg B. Contemporary epidemiology of renal cell carcinoma: perspectives of primary prevention. *World J Urol* 2010;**28**:247–52. doi:http://dx.doi.org/10.1007/s00345-010-0555-1
- 5 National Institute for Health and Care Excellence. Sunitinib for the first-line treatment of advanced and/or metastatic renal cell carcinoma (NICE). 2009. <https://www.nice.org.uk/guidance/ta169> (accessed 9 May 2015).
- 6 National Institute for Health and Care Excellence. Early and metastatic HER2-positive breast cancer: subcutaneous trastuzumab. 2013. <https://www.nice.org.uk/advice/esnm13/chapter/introduction> (accessed 3 Jun 2015).
- 7 Molina JR, Yang P, Cassivi SD, *et al.* Non-small cell lung cancer: epidemiology, risk factors, treatment, and survivorship. *Mayo Clin Proc* 2008;**83**:584–94. doi:10.4065/83.5.584
- 8 Da Cunha Santos G, Shepherd FA, Tsao MS. EGFR mutations and lung cancer. *Annu Rev Pathol* 2011;**6**:49–69. doi:10.1146/annurev-pathol-011110-130206
- 9 National Institute for Health and Care Excellence. Erlotinib for the first-line treatment of locally advanced or metastatic EGFR-TK mutation-positive non-small-cell lung cancer: Costing statement. 2012. <https://www.nice.org.uk/guidance/ta258/resources/ta258-lung-cancer-non-small-cell-egfrtk-mutation-positive-erlotinib-1st-line-costing-statement-2> (accessed 22 Sep 2015).
- 10 Ellison G, Zhu G, Moulis A, *et al.* EGFR mutation testing in lung cancer: a review of available methods and their use for analysis of tumour tissue and cytology samples. *J Clin Pathol* 2013;**66**:79–89. doi:10.1136/jclinpath-2012-201194
- 11 El-Serag HB, Rudolph KL. Hepatocellular carcinoma: epidemiology and molecular carcinogenesis. *Gastroenterology* 2007;**132**:2557–76. doi:10.1053/j.gastro.2007.04.061

- 12 Connock M, Round J, Bayliss S, *et al.* Evidence Review Group Report commissioned by the NHS R&D HTA Programme on behalf of NICE. Sorafenib for advanced hepatocellular carcinoma. 2009.
- 13 Brose MS, Nutting CM, Jarzab B, *et al.* Sorafenib in radioactive iodine-refractory, locally advanced or metastatic differentiated thyroid cancer: a randomised, double-blind, phase 3 trial. *Lancet* 2014;**384**:319–28. doi:[http://dx.doi.org/10.1016/S0140-6736\(14\)60421-9](http://dx.doi.org/10.1016/S0140-6736(14)60421-9)
- 14 Shoup M, Stojadinovic A, Nissan A, *et al.* Prognostic indicators of outcomes in patients with distant metastases from differentiated thyroid carcinoma. *J Am Coll Surg* 2003;**197**:191–7. doi:10.1016/S1072-7515(03)00332-6
- 15 Kelley RK, Ko AH. Erlotinib in the treatment of advanced pancreatic cancer. *Biologics* 2008;**2**:83–95.