

**Supplementary file 5: Overview previous literature**

Comment: the highlighted gray fields correspond to our definition of "accuracy"

| Study title  | Author          | Year | Respondents   | Patients   | Question  | PE  | Definition of accuracy  | Accuracy/ outcome  | Inter-vention ? | Median survival | Journal                                |
|--|-----------------|------|---|--|---|-----|---|--|-----------------|-----------------|--|
| <b>Overall survival (OS)/ temporal approach</b>  |                 |      |   |  |   |     |   |  |                 |                 |  |
| <b>Clinical Prediction of Survival in Advanced Cancer Outpatients: Do Experienced Physicians and With Prior Patient Evaluation Make More Accurate Predictions?</b> | Preto et al.    | 2020 | 35 physicians (20 lead physicians/ 15 residents)  | 262 patients referred to palliative care with advanced non-haematological cancer | estimated survival in the intervals<br>1-2 weeks<br><br>3-4 weeks, 5-6 weeks, 7-8 weeks, 9-10 weeks, 11-12 weeks<br>12-24 weeks<br><br>24-48 weeks<br><br>> 48 weeks  | 262 | real survival equals estimated survival (interval)                                      | <b>total: 32% (34.6% / 30.4%)</b><br><b>&lt; 3 weeks: 27.0%</b><br><br><b>3-12 weeks: 42.4%</b><br><br><b>12-24 weeks: 29.5%</b><br><b>24-48 weeks: 30.9%</b><br><b>&gt; 48 weeks: 28.0%</b> | no              | 191.3 days      | Journal of Pain and Symptom Management |
| <b>Are we better a decade later in the accuracy of survival prediction by palliative radiation oncologists?</b>  | Razvi et al.    | 2019 | 4 radiation oncologists   | 172 oncological patients with palliative radiotherapy                            | estimated survival later categories<br>≤12 weeks<br>13–26 weeks<br>27–52 weeks<br>> 52 weeks  | 373 | estimated and real survival within same time frame                                      | <b>24.4%</b><br><b>35.5%</b><br><b>50.0%</b><br><b>54.8%</b>   | no              | 12.9 weeks      | Annals of Palliative Medicine          |
| <b>Palliative Care Clinician Overestimation of Survival in Advanced Cancer: Disparities and Association With End-of-Life Care</b>                                  | Gramling et al. | 2019 | Palliative care physicians  | 230 patients with advanced cancer referred to palliative care                    | estimated survival in the categories<br>< 24 h<br>24 h - < 2 weeks<br>2 weeks - < 3 months<br>3 months - < 6 months<br>> 6 months   | 230 | real survival consistent with the esteemed category of physician                        | <b>total: 41%</b><br><b>100%</b><br><b>54.6%</b><br><b>54.9%</b><br><b>18.5%</b><br><b>48.2%</b>   | no              | 37 days         | Journal of Pain and Symptom Management |
| <b>Prognostic evaluation in palliative care: final results from a prospective cohort study</b>   | Ermacora et al. | 2019 | 1) 1 nurse<br>2) 1 specialist with at least 3 years of experience in palliative care<br>3) 1 oncologist in training | 334 oncological patients in a palliative care unit                               | a) estimated survival in the categories<br>1–2 weeks<br>3–4 weeks<br>5–6 weeks<br>7–10 weeks<br>11–12 weeks<br>> 12 weeks<br><br>b) Palliative Prognostic score (PaP), Objective Prognostic Score (OPS) and Palliative Prognostic Index (PPI) | 334 | ROC curve analysis/ area under the curve (AUC, between 0.5 and 1.0) for 30 day survival | <b>a) 1) AUC 0.78</b><br><b>2) AUC 0.77</b><br><br><b>3) AUC 0.76</b><br><br><b>b) PaP: AUC 0.82</b><br><br><b>OPS: AUC 0.70</b><br><br><b>PPI: AUC 0.72</b>                                 | no              | 14 days         | Supportive Care in Cancer              |

| Study title  | Author           | Year | Respondents   | Patients  | Question   | PE   | Definition of accuracy   | Accuracy/outcome   | Intervention ? | Median survival                                      | Journal                                |
|--|------------------|------|---|---|--|------|--|--|----------------|--|--|
| <b>Accuracy and Prognostic Significance of Oncologists' Estimates and Scenarios for Survival Time in Advanced Gastric Cancer</b>   | Vasista et al.   | 2019 | 66 oncologists from four countries (Australia, New Zealand, Canada and South Korea)   | 152 patients with locally recurrent/metastatic gastric/esophagogastric carcinoma with progression after one/two lines of chemotherapy | estimated survival   | 152  | quotient estimated survival/real survival between 0.67 and 1.33  | <b>29%</b>   | no             | 5.0 months   | The Oncologist                         |
| <b>Comparison of the accuracy and characteristics of the prognostic prediction of survival of identical terminally ill cancer patients by oncologists and palliative care physicians</b> | Urahama et al.   | 2018 | 1) treating oncologists<br>2) Palliative care physicians on hospice admission, based on the palliative prognostic score (PaP) and palliative prognostic index (PPI) | 101 patients from different hospitals who were admitted to a hospice  | estimated survival   | 101  | quotient estimated survival/real survival between 0.67 and 1.33  | <b>1) 21.8%</b><br><b>2) 37.6%</b>   | no             | 28.4 days  | Japanese Journal of Clinical Oncology  |
| <b>Predicting prognosis in patients with advanced cancer: A prospective study</b>  | Tavares et al.   | 2018 | 1) junior doctors (first year of clinical practice)<br>2) experienced palliative care physicians  | 38 hospitalized palliative patients with advanced non-haematological cancer   | a) estimated survival (in weeks)<br>b) Palliative Prognostic score (PaP) and Palliative Prognostic Index (PPI) | 38   | a) estimated and real survival differ < 1 week<br><br>b) prognosis:<br>- "good" (PaP A/ PPI 1) and survival >3 / >5 weeks or<br>- "intermediate" (PaP B/ PPI 2) and survival of 3-5 / 4-5 weeks or<br>- "poor" (PaP C/ PPI 3) and survival <5 / <4 weeks | <b>a) 1) 10.5%</b><br><br><b>2) 23.7%</b><br><br><b>b) PaP: 47%</b><br><br><b>PPI: 55%</b> | no             | 24 days  | Palliative Medicine                    |
| <b>A Comparison of the Accuracy of Clinician Prediction of Survival versus the Palliative Prognostic Index</b>   | Farinholt et al. | 2018 | primary palliative care physicians  | 215 palliative oncological patients   | a) estimated survival<br>b) Palliative Prognostic Index (PPI)  | 215  | C-index, AUC after 30 days and 100 days  | <b>a) 0.58 b) 0.62</b><br><br><b>a) 0.58 b) 0.76</b><br><b>a) 0.62 b) 0.64</b>             | no             | 109 days   | Journal of Pain and Symptom Management |
| <b>Accuracy of Oncologists' Life-Expectancy Estimates Recalled by Their Advanced Cancer Patients: Correlates and Outcomes</b>  | Lambden et al.   | 2016 | 85 patients   | 85 patients with advanced cancer from 7 different outpatient clinics  | estimated survival (given by the attending physician)  | 85   | estimated survival correct within 3 months 9 months 12 months of real survival   | <b>25.9%</b><br><b>56.5%</b><br><b>74.1%</b>   | no             | 3.7 months   | Journal of Palliative Medicine         |
| <b>The Accuracy of Physicians' Clinical Predictions of Survival in Patients With Advanced Cancer</b>   | Amano et al.     | 2015 | Physicians in palliative care<br>1) palliative care teams in hospitals<br>2) palliative care units<br>3) palliative care at home                                    | 2036 palliative oncological patients  | estimated survival   | 2036 | quotient estimated survival/real survival between 0.67 and 1.33  | <b>35%</b><br><b>1) 36%</b><br><br><b>2) 32%</b><br><b>3) 34%</b><br><b>4) 39% (chemo)</b> | no             | 1) 29 days<br>2) 23 days<br>3) 31 days<br>4) 34 days | Journal of Pain and Symptom Management |

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|---|-------------------|------|--|---|--|--------------------------|--|--|----------------|-----------------|--|
| <b>Comparative multidisciplinary prediction of survival in patients with advanced cancer</b>  | Fairchild et al.  | 2014 | 8 disciplines (radiation oncologists, radiation therapist, pharmacist, registered nurse, nurse practitioner, clinical nutritionist, occupational therapist, respiratory therapist (+ students, resident trainees, fellows) | 126 oncological patients with metastases                                  | estimated survival   | 395                      | estimated life within 30 days of real survival                   | <b>27.6%</b>   | no             | 87 days         | Support Care Cancer                    |
| <b>Longitudinal Temporal and Probabilistic Prediction of Survival in a Cohort of Patients With Advanced Cancer</b>                                      | Perez-Cruz et al. | 2014 | 1) 40 doctors in palliative care<br>2) 29 nurses in palliative care  | 311 patients with advanced cancer admitted to acute palliative care units | estimated survival in days   | 2199<br>4519             | quotient estimated survival/real survival between 0.67 and 1.33  | <b>1) 23%</b><br><b>2) 24%</b>   | no             | 8 days          | Journal of Pain and Symptom Management |
| <b>Prognosticating in patients with advanced cancer – observational study comparing the accuracy of clinicians' and patients' estimates of survival</b> | Gwilliam et al.   | 2013 | 1) 136 physicians<br>2) 280 nurses<br>3) multidisciplinary team<br>4) 290 patients   | 829 palliative patients with advanced, incurable cancer                   | 1-3) estimated survival in the categories<br>"days" (<14 days),<br>"weeks" (2- <8)<br>"months" (2- <12)<br>"years" (≥ 12months)<br>4) categories<br>"days" (<14 days),<br>"weeks" (2-7)<br>"months" (2-11)<br>"years" (≥ 1 year) | 829<br>954<br>987<br>290 | estimated and real survival within same category                 | <b>1) 56.3%</b><br><b>2) 55.2%</b><br><b>3) 57.5%</b><br><b>4) 52.1%</b> | no             | 89 days         | Annals of Oncology                     |
| <b>The Median Informs the Message: Accuracy of Individualized Scenarios for Survival Time Based on Oncologists' Estimates</b>                           | Kiely et al.      | 2013 | 21 oncologists   | 114 patients with advanced cancer   | estimated survival   | 114                      | quotient estimated survival/real survival between 0.67 and 1.33  | <b>29%</b>   | no             | 11 months       | Journal of Clinical Oncology           |
| <b>The Accuracy of Probabilistic Versus Temporal Clinician Prediction of Survival for Patients with Advanced Cancer: A Preliminary Report</b>           | Hui et al.        | 2011 | 1) 8 physicians in palliative care<br>2) 20 nurses in palliative care  | 151 oncological patients in an acute palliative care unit                 | estimated survival (in days)   | 127                      | quotient estimated survival/real survival between 0.67 and 1.33  | <b>1) 32%</b><br><b>2) 18%</b>   | no             | 12 days         | The Oncologist                         |
| <b>Survival prediction in terminally ill cancer patients by clinical estimates, laboratory tests, and self-rated anxiety and depression</b>             | Gripp et al.      | 2007 | 1) single physicians (doctor in training/qualified radiation oncologist)<br>2) single experienced (>10 years) radiation oncologist<br>3) consensus vote (5-10 staff physicians)  | 214 terminally ill cancer patients  | estimated survival in the categories<br><1 month<br>1-6 months<br>>6 months  | 155<br>213<br>212        | real survival consistent with the esteemed category of physician | <b>1) 61.3 %</b><br><b>2) 54.9 %</b><br><b>3) 62.7 %</b>                 | no             | 169 days        | Journal of Clinical Oncology           |

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|---|-------------------|------|---|---|--|------------------|---|---|-----------------|-----------------|--|
| <b>Disarming the guarded prognosis: predicting survival in newly referred patients with incurable cancer</b>  | Stockler et al.   | 2006 | 11 oncologists of a hospital  | 102 patients with newly diagnosed incurable cancer                                  | estimated survival   | 102              | quotient estimated survival/real survival between 0.67 and 1.33   | <b>29%</b>  | no              | 12 months       | British Journal of Cancer              |
| <b>Accuracy of prognosis estimates by four palliative care teams: a prospective cohort study</b>  | Higginson et al.  | 2002 | 4 multi-professional palliative teams (home care/hospital): nurse, physicians, social workers | 275 oncological palliative care patients  | estimated limits for minimum and maximum survival                        | 275              | real survival within the limits of minimum and maximum survival   | <b>42%</b>  | no              | 42 days         | BMC Palliative Care                    |
| <b>Terminal cancer. Duration and prediction of survival time</b>  | Llobera et al.    | 2000 | 1) 8 oncologists<br>2) 10 oncology nurses<br>3) 185 family physicians                         | 200 palliative cancer patients  | estimated survival   | 187<br>124<br>46 | quotient estimated survival/real survival between 0.67 and 1.33   | <b>1) 25.7%</b><br><b>2) 21.5%</b><br><b>3) 21.7%</b>   | no              | 257 days        | European Journal of Cancer             |
| <b>Extent and determinants of error in doctors' prognoses in terminally ill patients: prospective cohort study</b>                                      | Christakis et al. | 2000 | 343 physicians  | 468 patients admitted to 5 outpatient hospice programs                              | estimated survival   | 486              | quotient estimated survival/real survival between 0.67 and 1.33   | <b>20%</b>  | no              | 24 days         | British Medical Journal                |
| <b>The relative accuracy of the clinical estimation of the duration of life for patients with end of life cancer.</b>                                   | Vigano et al.     | 1999 | treating oncologists  | 233 patients with terminal cancer (lung, breast, gastrointestinal system, prostate) | estimated survival in weeks or months                                    | 233              | Predicted survival within 1 month of error  | <b>25%</b>  | no              | 15.3 weeks      | Cancer                                 |
| <b>Clinical prediction of survival is more accurate than the Karnofsky performance status in estimating life span of terminally ill cancer patients</b> | Maltoni et al.    | 1994 | four home care oncologists  | 100 patients with advanced cancer   | a) estimated survival<br><br>b) Karnofsky performance status (KPS) score | 100              | relationships between real survival, predicted survival and KPS score assessed by the Pearson correlation coefficient (r) | a) total $r=0.51$ (range: 0.63-0.03)<br><br>b) $r=0.37$ | no              | 5 weeks         | European Journal of Cancer             |
| <b>Estimate of survival of patients admitted to a palliative care unit: a prospective study</b>   | Bruera et al.     | 1992 | 2 physicians with high experience in management of patients with advanced cancer              | 47 patients admitted to a palliative care unit                                      | estimated survival   | 47               | proportion of patients correctly predicted as surviving $\leq 4$ weeks or $> 4$ weeks                                     | <b>32% (calculated)</b>                                 | no              | 28 days         | Journal of Pain and Symptom Management |

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|--|-------------------|------|---|--|--|-------------------|---|---|-----------------|---|--|
| <b>Surprise Question (SQ)</b>  |                   |      |   |  |  |                   |   |   |                 |   |  |
| Surprise Questions for Survival Prediction in Patients With Advanced Cancer: A Multicenter Prospective Cohort Study                    | Hamano et al.     | 2015 | physicians in palliative care                                       | 2361 palliative oncologic patients (hospital-based, hospital units, at home) | surprise question for<br>a) 7 days<br>b) 30 days   | 2361              | answer "yes" and patient alive or answer "no" and patient dead  | a) 70.4%<br>b) 64.7%  | no              | 33.0 days                                     | The Oncologist                         |
| The 'surprise' question in advanced cancer patients: A prospective study among general practitioners                                   | Moroni et al.     | 2014 | 42 general practitioners  | 231 patients with stage IV non-haematological cancer                         | surprise question for 1 year   | 231               | answer "yes" and patient alive or answer "no" and patient dead  | 76% (calculated)  | no              | 104 patients (45.0%) had died after 12 months | Palliative Medicine                    |
| Prognostic Significance of the "Surprise" Question in Cancer Patients  | Moss et al.       | 2010 | 4 oncologists   | 826 patients with breast, bronchial or colon cancer                          | surprise question for 1 year   | 826               | answer "yes" and patient alive or answer "no" and patient dead  | 88% (calculated)  | no              | 71 patients (8.3%) had died after 12 months   | Journal of palliative medicine         |
| <b>Probabilistic approach</b>  |                   |      |   |  |  |                   |   |   |                 |   |  |
| Prognostic Accuracy of Patients, Caregivers, and Oncologists in Advanced Cancer  | Malhotra et al.   | 2019 | 1) 38 oncologists<br>2) 265 patients<br>3) 194 caregivers           | 263 patients with advanced non-haematological cancer                         | probability of survival at 2 years (0%, 10%, 25%, 50%/50%, 75%, 90% or 100%)                                       | 265<br>263<br>193 | difference of > -0.5 to <0.5 points when subtracting the predicted 2-year prognosis from vital status after 2 years (yes = 1; no = 0) on a scale 0, 0.10, 0.25, 0.50, 0.75, 0.90, 1.0 | 1) 62%<br>2) 38%<br>3) 42%  | no              | 18 months                                     | Cancer                                 |
| Longitudinal Temporal and Probabilistic Prediction of Survival in a Cohort of Patients With Advanced Cancer                            | Perez-Cruz et al. | 2014 | 1) 40 doctors in palliative care<br>2) 29 nurses in palliative care | 311 patients with advanced cancer admitted to acute palliative care units    | probability of survival in 0% to 100% at 24 hours and 48 hours   | 2186<br>4435      | death of the patient and a value ≤ 30% has been given or survival of the patient and a value ≥ 70% has been given   | 1) 73% 2) 90%<br>1) 67% 2) 83%  | no              | 8 days  | Journal of Pain and Symptom Management |
| The Accuracy of Probabilistic Versus Temporal Clinician Prediction of Survival for Patients with Advanced Cancer: A Preliminary Report | Hui et al.        | 2011 | 1) 8 doctors in palliative care<br>2) 20 nurses in palliative care  | 151 oncological patients in an acute palliative care unit                    | probability of survival (0%-100%):<br>24 hours<br>48 hours<br>1 week<br>2 weeks<br>1 month<br>3 months<br>6 months | 127               | death of the patient and a value ≤ 30% has been given or survival of the patient and a value ≥ 70% has been given   | 1) 71% 2) 91%<br>1) 66% 2) 86%<br>1) 58% 2) 61%<br>1) 56% 2) 53%<br>1) 67% 2) 60%<br>1) 86% 2) 79%<br>1) 96% 2) 88% | no              | 12 days                                       | The Oncologist                         |