Supplementary Table 1 – Checklist of core data elements required for life-cycle HTA in precision oncology

| Category/ Data Element                                                                 | Item No. | Recommended timeline for data collection | Included (Y/N) |
|----------------------------------------------------------------------------------------|----------|-----------------------------------------|----------------|
| **Demographic and socio-economic factors**                                            |          |                                         |                |
| Unique patient identifier                                                              | 1        |                                         |                |
| Date of birth or age                                                                    | 2        | Baseline                                |                |
| Sex                                                                                    | 3        |                                         |                |
| Location (e.g., region, postal code, local health authority)                           | 4        |                                         |                |
| **Clinical characteristics**                                                            |          |                                         |                |
| Tumour group                                                                           | 5        | Baseline                                |                |
| Tumour subgroup                                                                        | 6        |                                         |                |
| Histology (e.g., tumour grade)                                                         | 7        |                                         |                |
| Date(s) of all primary cancer diagnoses established through pathology and/or imaging   | 8        |                                         |                |
| Site specific staging criteria (e.g. TNM)                                              | 9        | At diagnosis, baseline, and ongoing at regular intervals |                |
| At least one performance status measure (e.g., Eastern Cooperative Oncology Group (ECOG) performance status) | 10       |                                         |                |
| Date(s) of cancer recurrence established through pathology and/or imaging              | 11       | At occurrence                           |                |
| Date(s) of cancer metastasis established through pathology and/or imaging              | 12       |                                         |                |
| **Genomic elements**                                                                   |          |                                         |                |
| Date(s) and type(s) of prior genetic testing received                                   | 13       | Baseline (historical)                   |                |
| All historical genetic test reports (including single gene and germline mutation tests) | 14       |                                         |                |
| Date(s) of patient’s tumor biopsy                                                      | 15       |                                         |                |
| Date(s) patient’s normal DNA comparator was collected (e.g. blood sample)              | 16       |                                         |                |
| Flag for whether biopsy site was metastatic                                            | 17       |                                         |                |
| Flag for whether biopsy site was radiated                                              | 18       |                                         |                |
| Pathology tumour content from biopsy                                                   | 19       |                                         |                |
| Genomic tumor content from biopsy sample                                               | 20       |                                         |                |
| Flag sufficiency to undergo sequencing                                                 | 21       |                                         |                |
| Date of bioinformatics report                                                          | 22       |                                         |                |
| Aggregated sequencing information from bioinformatics report (e.g. tumour mutation burden, immune signature) | 23       |                                         |                |
| Actionable findings (e.g. OncoKB, European Society for Medical Oncology (ESMO) scale, etc.) | 24       |                                         |                |
| Category/ Data Element                                                                 | Item No. | Recommended timeline for data collection | Included (Y/N) |
|---------------------------------------------------------------------------------------|---------|----------------------------------------|----------------|
| Informative findings (e.g. feature or mutation that may not have prognostic or therapeutic relevance at the time of analysis) | 25      |                                        |                |
| Relevant genes for which a germline variant was identified and corresponding pathogenicity | 26      |                                        |                |
| Sequencing type (e.g. genome, transcriptome, exome, multigene expression testing)     | 27      |                                        |                |
| Date(s) that a genetic diagnosis was established                                       | 28      |                                        |                |
| Cost of clinical consult                                                                | 29      |                                        |                |
| Cost of sample acquisition & preparation (e.g. anesthesia, sample collection, pathology reagents) | 30      |                                        |                |
| Cost of next generation sequencing                                                      | 31      |                                        |                |
| Cost of bioinformatics analysis (including computation, analyst time)                   | 32      |                                        |                |
| Cost of validation and confirmatory testing                                             | 33      |                                        |                |
| Cost of interpretation by committee                                                    | 34      |                                        |                |
| Number of pre- and post- NGS genetic counselling appointments                           | 35      | At first occurrence, ongoing           |                |
| Cost of genetic counselling appointments                                               | 36      |                                        |                |
| **Cancer treatment – Systemic therapy**                                                 |         |                                        |                |
| Number of lines of therapy received                                                    | 37      | Historical & ongoing                   |                |
| Date(s) lines were received                                                            | 38      | Historical & ongoing                   |                |
| Treatment protocol(s)                                                                  | 39      | Historical & ongoing                   |                |
| Drug name(s)                                                                           | 40      | Historical & ongoing                   |                |
| Treatment intent (e.g. curative or palliative)                                         | 41      | Historical & ongoing                   |                |
| Access indicator, if applicable (e.g. off-label, clinical trial, out of pocket)        | 42      | Historical & ongoing                   |                |
| **Cancer treatment – Surgical**                                                        |         |                                        |                |
| Date(s) of surgical treatment                                                          | 43      | Historical & ongoing                   |                |
| Body site of surgical resection                                                        | 44      | Historical & ongoing                   |                |
| Treatment intent of surgery (e.g. curative or palliative)                              | 45      | Historical & ongoing                   |                |
| **Cancer treatment – Radiotherapy**                                                     |         |                                        |                |
| Date(s) of radiotherapy treatment                                                      | 46      | Historical & ongoing                   |                |
| Radiotherapy body site, dose, and fractionation                                         | 47      | Historical & ongoing                   |                |
| Modality of radiotherapy (e.g. SABR, IMRT, VMAT, 3DCRT, Brachytherapy)                 | 48      | Historical & ongoing                   |                |
| Treatment intent of radiotherapy (e.g. curative or palliative)                         | 49      | Historical & ongoing                   |                |
| **Cancer Treatment - All types**                                                       |         |                                        |                |
| Category/ Data Element                                                                 | Item No. | Recommended timeline for data collection                                                                 |
|---------------------------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------------------------|
| Indicator if treatment was provided pre- or post-sequencing                           | 40       | At first occurrence, ongoing                                                                         |
| Indicator if treatment was genomics informed                                          | 51       |                                                                                                       |
| Reason why genomics-informed treatment was not given, if applicable                    | 52       |                                                                                                       |
| **Patient outcomes**                                                                  |          |                                                                                                       |
| At least one preference-based measure (e.g. EQ5D, Health Utility Index (HUI), EORTC QLQ C3015) | 53       | Baseline & ongoing at routine intervals                                                               |
| Death date                                                                            | 54       | At occurrence                                                                                         |
| Disease-specific clinically relevant secondary endpoints, as applicable               | 55       |                                                                                                       |
| Date(s) of disease progression, established through [e.g. Response evaluation criteria in solid tumours (RECIST and iRECIST) criteria, clinician assessment] | 56       | At first occurrence & ongoing                                                                        |
| Clinician assessed best response on genomics-informed and usual care cancer treatment, (e.g.: Stable disease, Complete response, Partial response, or progression, Not evaluable) | 57       |                                                                                                       |
| Costs of cascade genetic testing and intervention(s)                                  | 58       |                                                                                                       |
| **Resource utilization**                                                               |          |                                                                                                       |
| Type and dates of hospitalizations pre- and post-NGS (admissions and discharges, including ER and ICU) | 59       |                                                                                                       |
| Costs of hospitalizations pre- and post-NGS                                           | 60       |                                                                                                       |
| Type and dates of physician visits pre- and post-NGS (e.g. General practitioner, Oncologist, Other specialist) | 61       | Historical & ongoing                                                                                  |
| Costs of physician visits pre- and post-NGS                                           | 62       |                                                                                                       |
| Type and dates of imaging (e.g. CT, MRI, PET, Ultrasound, X-ray)                       | 63       |                                                                                                       |
| Costs of imaging pre- and post-NGS                                                    | 64       |                                                                                                       |
| Type and dates of non-genomic lab tests                                               | 65       |                                                                                                       |
| Costs of non-genomic lab tests                                                        | 66       |                                                                                                       |
| Type and date of non-cancer prescription drugs                                         | 67       |                                                                                                       |
| Costs of non-cancer prescription drugs                                                | 68       |                                                                                                       |

The above table reports a checklist for all data elements required to support cost-effectiveness evaluations in precision oncology. This table was modified based on the following article with author permission: Pollard S, Weymann D, et al. Defining a core data set for the economic evaluation of precision oncology. Value in Health. 2022. PMID: 35216902 DOI: 10.1016/j.jval.2022.01.005