

Identifying and describing the population of women living with metastatic breast cancer in England: supplementary information

This document sets out further details on the criteria for the algorithm used in the following research output:

- Simpson-Greene C, Dunn B, Gildea C *et al*. Identifying and describing the population of women living with metastatic breast cancer in England. Poster presented at: 2026 European Society of Medical Oncology Congress, 23-27 October 2026, in Madrid, Spain

Metastatic breast cancer criteria definitions and potential sources of misclassification

Criterion number	Criterion	Main dataset	Criterion definition used in this paper	Potential false-positive identification	Potential false-negative identification
1	Cancer and stage at diagnosis combination	National Cancer Registration Dataset	Diagnosed with stage 4 breast cancer.	Incorrect or miscoded stage; distant disease initially suspected but subsequently not confirmed.	Stage incorrectly recorded as non-metastatic; metastatic disease present at diagnosis but identified only after initial staging was recorded.
2	Hospital admission with a diagnosis of secondary cancer	HES Admitted Patient Care	At least one hospital admission with a diagnosis of secondary malignant neoplasm (ICD-10 C78 or C79), excluding patients with a recorded primary cancer other than breast cancer diagnosed between 2001 and 2022.	Secondary malignancy attributable to a non-breast primary cancer not captured by the exclusion of patients with a record of another primary tumour.	Metastatic disease managed entirely outside an inpatient setting; secondary malignancy not coded during an admission; patients with another primary tumour excluded despite the metastatic disease being attributable to breast cancer.
3	Treatment for metastatic disease	Cancer Waiting Times	Receipt of at least one treatment indicating metastatic disease, including "Treatment for distant recurrence of cancer (metastatic disease)", "First treatment for metastatic disease following an unknown primary cancer", "Second or subsequent treatment for metastatic	Treatment recorded for an unknown primary may not relate to breast cancer; "multiple recurrence" may occasionally represent exclusively local or regional recurrence rather than metastatic disease; treatment indication may be incorrectly recorded.	Metastatic disease not treated, treatment not captured in Cancer Waiting Times, or treatment recorded using a category not included in the criterion; patients with another primary tumour excluded despite the metastatic disease being attributable to breast cancer.

			disease following an unknown primary cancer", "First treatment for metastatic disease following a known primary cancer" or "Treatment for multiple recurrence of cancer (local and or regional and or distant)", excluding patients with a recorded primary cancer other than breast cancer diagnosed between 2001 and 2022.		
4	Radiotherapy for metastases	Radiotherapy Dataset	Receipt of at least one radiotherapy treatment where the recorded reason for treatment was metastases, excluding patients with a recorded primary cancer other than breast cancer diagnosed between 2001 and 2022.	Metastases attributable to a non-breast cancer not captured by the exclusion of patients with a record of another primary tumour; reason for treatment incorrectly recorded.	Patients with metastatic breast cancer who do not receive radiotherapy; missing or inaccurate recording of the reason for radiotherapy; patients with another primary tumour excluded despite the metastatic disease being attributable to breast cancer.
5	Selected SACT	SACT dataset	Receipt of a SACT regimen considered indicative of metastatic breast cancer, excluding patients with a recorded primary cancer other than breast cancer diagnosed between 2001 and 2022.	Included regimens may occasionally be used for early-stage or non-metastatic breast cancer, or another malignancy not captured by the exclusion of patients with a record of another primary tumour; changes in	Metastatic disease treated with regimens not included in the predefined list, including newly introduced treatments or clinical trials; hormone therapy alone; treatment within clinical trials or missing or incomplete SACT records; patients with

				treatment indications may reduce specificity over time.	another primary tumour excluded despite the metastatic disease being attributable to breast cancer.
6	SACT starting more than 18 months post-diagnosis	SACT dataset	Receipt of a SACT regimen that commenced more than 18 months after the initial cancer diagnosis, excluding regimens containing trastuzumab (including trastuzumab in combination with pertuzumab) or hormonal therapies, and excluding patients with multiple primary tumours.	Delayed or prolonged treatment for non-metastatic disease; treatment for local or regional recurrence with potentially curative intent; treatment not attributable to the original breast cancer.	Metastatic recurrence occurring within 18 months of diagnosis; metastatic disease treated with excluded therapies such as hormone therapy; patients receiving no SACT; patients with multiple primary tumours excluded despite the metastatic disease being attributable to breast cancer.
7	Radiotherapy at a specific site	Radiotherapy Dataset	Receipt of radiotherapy where the treatment site is recorded as "skin of trunk", "other respiratory tract", or sites involving the brain or bone, excluding patients with a recorded primary cancer other than breast cancer diagnosed between 2001 and 2022.	Treatment site may not represent metastatic disease; for example, "skin of trunk" may occasionally capture treatment to the breast or chest wall; treatment may relate to another malignancy not captured by the exclusion of patients with a record of another primary tumour.	Metastatic disease at sites not included in the criterion; metastases managed without radiotherapy; incomplete or inaccurate recording of treatment site; patients with another primary tumour excluded despite the metastatic disease being attributable to breast cancer.
8	SACT with palliative or disease-modifying intent	SACT dataset	Receipt of at least one SACT regimen recorded as having palliative or disease-modifying intent, excluding patients with a recorded primary cancer other than	SACT with palliative or disease-modifying intent may be given for locally advanced but non-metastatic disease; treatment intent may be incorrectly recorded;	Missing or inaccurate recording of treatment intent; metastatic treatment recorded under another intent category; patients with metastatic breast

			breast cancer diagnosed between 2001 and 2022.	treatment may relate to another malignancy not captured by the exclusion of patients with a record of another primary tumour.	cancer who do not receive SACT; patients with another primary tumour excluded despite the metastatic disease being attributable to breast cancer.
9	Radiotherapy with palliative intent	Radiotherapy Dataset	Receipt of at least one radiotherapy treatment recorded as having palliative intent, excluding patients with a recorded primary cancer other than breast cancer diagnosed between 2001 and 2022.	Palliative radiotherapy may be delivered for symptomatic locally advanced disease without distant metastases; treatment intent may be incorrectly recorded; treatment may relate to another malignancy not captured by the exclusion of patients with a record of another primary tumour.	Missing or inaccurate recording of treatment intent; radiotherapy for metastatic disease recorded under another intent category; patients with metastatic breast cancer who do not receive radiotherapy; patients with another primary tumour excluded despite the metastatic disease being attributable to breast cancer.
10	Palliative care	Cancer Waiting Times	Receipt of at least one treatment delivered by a "specialist palliative care" or "non-specialist palliative care (excluding Active Monitoring)" consultant, excluding patients with a recorded primary cancer other than breast cancer diagnosed between 2001 and 2022.	Palliative care may be provided to patients with non-metastatic breast cancer based on symptom burden or supportive care needs, including those with locally advanced disease or where no curative treatment is planned.	Patients with metastatic breast cancer may not receive palliative care recorded within Cancer Waiting Times, particularly earlier in their disease course; palliative care may be delivered outside services captured by Cancer Waiting Times; patients with another primary tumour excluded despite the palliative care

					relating to metastatic breast cancer.
11	Outpatient care by a palliative consultant	HES Outpatients	Receipt of outpatient care by a consultant working in a palliative care specialised service occurring within 30 days of an inpatient admission with a diagnosis denoting breast cancer, excluding patients with a recorded primary cancer other than breast cancer diagnosed between 2001 and 2022.	The palliative care consultation may relate to another condition, while the breast cancer diagnosis recorded during the preceding admission may be incidental or historical; temporal proximity does not establish that the consultation relates to metastatic breast cancer.	Patients receiving palliative care for metastatic breast cancer without a qualifying inpatient admission; palliative care delivered more than 30 days after admission or in other settings; incomplete or inaccurate specialty coding; patients with another primary tumour excluded despite the palliative care relating to breast cancer.

HES: Hospital Episode Statistics; ICD: International Classification of Diseases; SACT: Systemic Anti-Cancer Therapy

Note: For criteria 2-5 and 7-11, patients with a recorded primary cancer other than breast cancer diagnosed between 2001 and 2022 were excluded irrespective of the timing of that cancer relative to the metastatic indicator. This may reduce false-positive identification where an indicator relates to another primary cancer but will also exclude patients with metastatic breast cancer whose other primary cancer is unrelated or diagnosed subsequently. For criterion 6, patients with multiple primary tumours were excluded because the timing of SACT could not be reliably attributed to a specific primary tumour