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Assessing shift in breast cancer stage from the anatomical staging classification to the clinical prognostic staging system

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Background: Breast cancer is the most frequently diagnosed malignancy among women and a significant health burden in South Africa. The American Joint Committee on Cancer (AJCC) 8th Edition incorporates biological markers (oestrogen receptor, progesterone receptor, human epidermal growth factor receptor 2 [HER2] status and tumour grade) into conventional tumour, node, metastasis staging. Evidence from low-income and middle-income settings with high HIV prevalence remains limited.

Aim: We compared the anatomical staging (AJCC 7th Edition) with the clinical prognostic staging (AJCC 8th Edition) at a South African tertiary centre, and evaluated stage migration by tumour biology, HIV status and demographics.

Setting: Charlotte Maxeke Johannesburg Academic Hospital (CMJAH).

Methods: We conducted a retrospective review of 524 newly diagnosed patients with breast cancer at CMJAH. Clinical records, pathology, and imaging were used to assign anatomical and clinical prognostic stages. Associations among stage migration and molecular subtype, HIV status, and age were assessed.

Results: Overall, 33.8% of patients experienced stage migration. Downstaging was most frequent in Luminal A (28.1%) and Luminal B HER2+ (34.1%); upstaging predominated in triple-negative breast cancer (69.4%). Application of the clinical prognostic model reclassified an additional 8% as Stage I, with a 5% and 2% decline in Stage II and Stage III disease, respectively. Stage IV disease did not change. HIV prevalence was 15.65% and showed no association with migration ($p > 0.05$).

Conclusion: Incorporating biological markers substantially reclassifies patients, especially among hormone receptor-positive and triple-negative subtypes, with direct implications for treatment planning.

Contribution: These findings support routine adoption of biologically informed staging in South Africa.

Keywords: breast cancer; clinical prognostic staging; stage migration; tumour biology; molecular subtype.

Introduction

Breast cancer is the most common malignancy in females and a significant cause of cancer mortality, with about 2.3 million new cases annually.[1] The burden is increasingly concentrated in low-income and middle-income countries (LMICs), where late presentation and constrained access to services are frequent.[2,3] In South Africa, incidence continues to rise across all groups.[4] Accurate staging is crucial for prognosis, treatment selection and the comparability of outcomes. The traditional American Joint Committee on Cancer (AJCC) tumour node metastasis (TNM) system classifies disease by tumour size, nodal status and metastases. Still, it does not account for tumour biology, which strongly influences outcomes and treatment response.[5,6,7]

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Advances in molecular oncology have established the prognostic and predictive value of oestrogen receptor (ER), progesterone receptor (PR), human epidermal growth factor receptor 2 (HER2), tumour grade and the proliferation index.[6,7,8,9] Molecular subtyping into Luminal A, Luminal B, Luminal B HER2-enriched, HER2-enriched and triple-negative breast cancer (TNBC) enables more precise care. This is reflected in contemporary guidelines from the National Comprehensive Cancer Network (NCCN), the European Society of Medical Oncology (ESMO) and the St. Gallen International Consensus.[9,10,11]

Reflecting this evidence, the AJCC 8th Edition introduced clinical prognostic staging in 2018, integrating biology with anatomy to generate a stage that more accurately reflects real-world outcomes.[5,7] Two patients with identical anatomical stages may therefore receive different prognostic stages and distinct treatment plans. Extensive database studies report substantial stage migration with the AJCC 8th Edition, often towards lower stages in hormone receptor-positive and HER2-negative disease, with implications for de-escalation or escalation of therapy.[12,13]

South Africa presents additional considerations because of a high prevalence of HIV. While HIV may not independently worsen breast cancer-specific survival, it can affect diagnosis timing and systemic therapy delivery.[14] Real-world evidence from public sector settings is limited. The CMJAH Breast Unit participates in the South African Breast Cancer and HIV Outcomes (SABCHO) platform, which routinely captures presentation, pathology, treatment, outcomes and HIV status. This provides an appropriate setting to evaluate prognostic staging in a resource-constrained environment.[15]

This study evaluates the effect of applying the AJCC 8th Edition clinical prognostic staging compared with anatomical staging in newly diagnosed patients at CMJAH. We quantify the proportion of upstaged or downstaged, describe patterns by molecular subtype, examine the association with HIV status and outline potential implications for first-line management in the South African public sector.

Methods

Study population and study design

This was a retrospective single-centre cohort of adults with newly diagnosed primary invasive breast carcinoma managed at the CMJAH Breast Unit. The study compared anatomical staging, as per the 7th Edition of the AJCC, with clinical prognostic staging, as per the 8th Edition of the AJCC, to quantify overall stage migration and explore subgroup patterns in a South African public tertiary healthcare context.

Consecutive eligible cases within the study window were included without patient contact or intervention. The primary outcome was the proportion of patients whose stage changed when clinical prognostic staging was applied. Secondary outcomes included the distribution of stage migration by molecular subtype and the association of stage migration with HIV status.

Eligibility criteria

Inclusion criteria were age 18 years or older, a new diagnosis of primary invasive breast carcinoma between 01 January 2022 and 31 May 2024, available TNM classification, receptor status (ER, PR and HER2), tumour grade, completion of a metastatic workup and a calculable AJCC 8th Edition clinical prognostic stage. Exclusion criteria were non-breast primary malignancy, recurrent or previously treated breast cancer and incomplete key variables such as missing receptor status, TNM classification or required imaging. Of the 627 cases identified during the period, 524 had complete data and were included in the analysis.

Study setting

Charlotte Maxeke Johannesburg Academic Hospital is a tertiary academic hospital in Johannesburg that serves a large and demographically diverse catchment within the public health system. The Breast Unit provides multidisciplinary care and contributes data to national and collaborative platforms, including the SABCHO initiative, which enables the comprehensive capture of clinical, pathological and imaging information required for staging.

Data collection

Data were extracted using a standardised sheet from CMJAH outpatient clinic records, the National Health Laboratory Service pathology database and files curated within the SABCHO platform. Each patient received a unique study identifier before abstraction. Variables captured included demographics (age, sex, body mass index and HIV status), family history, laterality, histology (receptors, grade and proliferative index), staging data (TNM components, anatomical stage and clinical prognostic stage) and molecular subtype (Luminal A, Luminal B, Luminal B HER2-enriched, HER2-enriched and TNBC). Staging assignments were cross-checked against the AJCC 8th Edition rules by the study team. Ki-67 (proliferative index) was used in surrogate molecular subtyping to differentiate Luminal A from Luminal B in HR-positive, HER2-negative tumours, using a 20% cut-off. Subtypes were otherwise assigned using ER, PR and HER2 status, and tumour grade, consistent with routine surrogate definitions.

Data analysis

Analyses were performed in Stata 17 (StataCorp, College Station, Texas) and PAST v5.3 (Hammer, Natural History Museum, University of Oslo). Categorical variables are reported as counts and percentages, and continuous variables are reported as the mean and standard deviation, or the median and interquartile range, depending on the distribution. Normality was assessed to guide the choice between parametric and non-parametric tests. Associations between categorical variables (e.g., HIV status, molecular subtype and stage migration) were assessed using Chi-square tests with bootstrapping, and residual inspection was performed when applicable. Independent samples *t*-tests or Mann-Whitney U tests were used for

continuous variables as appropriate. A two-sided alpha of 0.05 was used to define statistical significance. Results are presented overall and stratified by molecular subtype where informative.

Sample size estimation

This study used a census of consecutive eligible cases within the defined period. Based on routine case volumes and database completeness, an estimated sample of approximately 600 patients was anticipated. Screening identified 627 cases, of which 524 met the inclusion criteria with complete data and were analysed. The sample size was considered adequate to estimate the primary outcome with reasonable precision and to support prespecified subgroup analyses.

Ethical considerations

Ethics approval was obtained from the University of the Witwatersrand's Human Research Ethics Committee (M250463). Given the retrospective nature and minimal risk, informed consent was waived. All data were de-identified prior to analysis, stored in Microsoft Excel with restricted access and handled in accordance with institutional data governance policies. Required permissions for access to hospital records and National Health Laboratory Service data were secured through official channels.

Results

This retrospective series comprised 524 newly diagnosed breast cancer cases managed at the CMJAH Breast Unit between January 2022 and May 2024. We report anatomical staging according to the 7th Edition of the AJCC and clinical prognostic staging according to the 8th Edition of the AJCC. The patterns of reclassification were investigated by molecular subtype and HIV status.

Demographics and clinical characteristics

The cohort reflects a typical public sector case mix for an urban South African tertiary centre. The mean age at diagnosis was 53.4 years ± 11.8, with a range of 20 years – 94 years. More than half of the patients, 51.2%, were concentrated in the 40 years – 59 years age band; 15.6% were younger than 40, a group in whom aggressive phenotypes are more frequently encountered. HIV prevalence was 15.65% (82 of 524) with a median age of diagnosis of 48 years ±10, at least 5 years earlier than their HIV non-reactive counterparts. Most HIV-positive patients were receiving antiretroviral therapy at presentation, suggesting established linkage to care. This case mix positions CMJAH to demonstrate how biology-informed staging behaves in a real-world high-burden environment.

Anatomical versus clinical prognostic stage distribution

Anatomical stages were assigned by the AJCC 7th Edition TNM. Clinical prognostic stages utilised the AJCC 8th Edition rules, which incorporate receptor status and grade. Stage IA and Stage IB were combined as Stage I, where histological granularity was insufficient. Table 1 summarises the anatomical stage distribution. Table 2 presents the distribution of clinical prognostic stages.

Regarding anatomical staging, early-stage disease was uncommon, with 8% at Stage I and 23% at Stage II, while advanced presentations predominated, comprising 39% at Stage III and 30% at Stage IV. Under the clinical prognostic schema, the proportion of patients in Stage I rose to 16%, while those in Stage II fell to 17%. The proportion in Stage III contracted slightly to 37%, but with a distinct internal redistribution towards Stage IIIC, at 10%. The proportion with Stage IV remained 30% as expected.

This pattern suggests that biology-informed rules preferentially reclassify a subset of anatomically intermediate diseases towards lower risk, while also refining risk stratification within locally advanced disease by drawing more cases into the highest risk category. Table 3 presents the cross-tabulation of reclassification from anatomical to clinical prognostic stages.

Stage migration

Overall, one in three patients (33.8%) changed stage when biology was taken into account. Downstaging occurred in 16.8%, upstaging in 17.0%, and two-thirds (66.2%) remained unchanged. The shift in the overall stage distribution was statistically significant ($p < 0.001$). Post hoc comparisons indicated that the most prominent contributions arose in Stage I ($p < 0.001$) and Stage IIIA ($p < 0.001$). Practically, this means that the clinical prognostic rules identify a larger group of genuinely favourable cases at the earliest stage, while separating a subset of anatomically Stage IIIA tumours

TABLE 1: Anatomical stage distribution.

Stage	No. patients	Percentage
Stage I	44	8
Stage II	119	23
IIA	73	14
IIB	46	9
Stage III	204	39
IIIA	91	17
IIIB	108	21
IIIC	5	1
Stage IV	157	30

No., number.

TABLE 2: Clinical prognostic stage distribution.

Stage	No. patients	Percentage
Stage I	84	16
Stage II	90	17
IIA	59	11
IIB	31	6
Stage III	193	37
IIIA	48	9
IIIB	91	17
IIIC	54	10
Stage IV	157	30

No., number.

TABLE 3: Change in breast cancer stage from anatomical to clinical prognostic stage.

Anatomical stage (AS)	CPS							Total pts in AS
	1*	2A	2B	3A	3B	3C	4	
1†	44 (100%)‡			-	-	-	-	**44**
2A	34 (47%)	25 (34%)‡	14 (19%)	-	-	-	-	**73**
2B	6 (13%)	15 (33%)	14 (30%)‡	-	11 (24%)	-	-	**46**
3A	-	19 (21%)	3(3%)	42 (46%)‡	10 (11%)	17 (19%)	-	**91**
3B	-	-	-	6 (5%)	67 (62%)‡	35 (33%)	-	**108**
3C	-	-	-	-	3 (60%)	2 (40%)‡	-	**5**
4	-	-	-	-	-	-	157 (100%)‡	**157**
Total pts in CPS	**84**	**59**	**31**	**48**	**91**	**54**	**157**	**524**

AS, anatomical stage; CPS, clinical prognostic stage.

†, indicates not enough histopathological information to separate stage 1A and 1B; ‡, the number and percentage of patients that remain unchanged from the AS to the CPS. %, demonstrates the percentage of patients that changed stage from the AS to CPS.

into categories that better reflect their underlying risk. This redistribution is clinically relevant for counselling, follow-up intensity, and the balance of surgery versus systemic therapy in multidisciplinary planning, even when first-line choices remain within guideline-acceptable ranges.

Tumour biology and molecular subtype distribution

Oestrogen receptor, PR and HER2 immunohistochemistry results were available for all patients. Oestrogen receptor positivity predominated 68.5%, while PR positivity was 45.6% and HER2 positivity was 27.2%. Subtype classification used ER, PR and HER2 status, tumour grade and Ki-67 to distinguish Luminal A from Luminal B in HR-positive, HER2-negative tumours, using a 20% cut-off. Molecular subtyping distributed as Luminal A 31.43%, Luminal B HER2-negative 19.25%, Luminal B HER2-positive 16.11%, HER2-enriched 11.98%, and TNBC 21.22%. Together, Luminal tumours accounted for more than two-thirds of the caseload, underscoring the importance of accurate receptor and grade assessment for informed decision-making. Nearly half of TNBC cases (48.1%) arose in patients younger than 50 compared with two in five (39%) of Luminal cancers in the same age group. This reinforces the age-linked shift towards more aggressive biology that clinics must anticipate in premenopausal pathways. The HER2-enriched group, although smaller, showed a high baseline stage burden, with about one-third (36%) presenting with Stage IV disease, underlining the need for streamlined systemic pathways.

Stage migration by molecular subtype

Migration was strongly biology-dependent. Luminal A showed a significant net movement ($p = 0.002$), with predominantly favourable reassignment, often from Stage II or Stage IIIA to Stage I. Luminal B HER2-negative tumours showed little overall movement, which is consistent with an intermediate biology that is variably weighted by grade and receptors in the clinical guidelines. When Luminal B was pooled irrespective of HER2 status, downstaging reached significance ($p = 0.033$), but the effect attenuated once the HER2-positive and HER2-negative subsets were analysed separately, likely reflecting reduced power after stratification. Luminal B HER2-positive had the highest downstaging proportion (34.1%) with no upstaging.

This pattern underscores how hormone receptor positivity, combined with HER2 positivity, is recognised as prognostically favourable within the staging framework. Human epidermal growth factor receptor 2-enriched tumours showed no net reallocation in this series, implying that for this phenotype, the balance of grade and receptors neither rescues nor worsens stage relative to anatomy. Triple-negative breast cancer was reclassified unfavourably, with nearly 7 in 10 (69.4%) moving to higher clinical stages. This asymmetric migration by subtype clarifies why the overall migration rate obscures very different directions of travel once biology is taken into account. Migration patterns by molecular subtype are detailed in Table 4.

Stage migration by HIV status

Comparisons by HIV status showed broadly similar proportions downstaging and upstaging, and no statistically significant differences ($p > 0.05$). Among HIV-negative patients, 18.6% downstaged and 14.3% upstaged; among HIV-positive patients, 11.8% downstaged and 14.0% upstaged. These findings suggest that once biology is accounted for, HIV status *per se* [in itself] does not drive reassignment within the AJCC 8th Edition schema. From a service perspective, this implies that pathway design for HIV-positive patients should focus on timely diagnostics and the safe delivery of systemic therapy, rather than expecting systematic differences in prognostic stage. Comparative migration by HIV status is shown in Table 5.

Change in primary management

Despite a reclassification in one-third of patients, the anticipated shift in first-line treatment choices was minimal. Nine downstaged patients, all Stage IIA T2N1M0, six Luminal A and three Luminal B, would plausibly move from systemic therapy first to surgery first. Four upstaged patients, all reclassified to Stage IIB, two Luminal A and two Luminal B, would plausibly move from surgery first to systemic therapy first. In each case, both options remain acceptable under contemporary guidance that already integrates biology. The limited change in first decisions, therefore, reflects not a lack

TABLE 4: Stage migration by molecular subtype.

Molecular subtype	Downstaged (%)	No change (%)	Upstaged (%)
Luminal A	28.1	68.1	3.8
Luminal B (HER2-)	12.2	81.7	6.1
Luminal B (HER2+)	34.1	65.9	0.0
HER2-enriched	0.0	100.0	0.0
Triple-negative (TNBC)	0.0	30.6	69.4

HER2, human epidermal growth factor receptor 2; TNBC, triple-negative breast cancer.

TABLE 5: HIV stage migration.

HIV status	Downstaged (%)	No change (%)	Upstaged (%)
HIV-negative	18.6	67.1	14.3
HIV-positive	11.8	74.2	14.0

of prognostic utility, but rather the extent to which clinical practice in this setting has already internalised biology-informed management. The staging information adds precision to counselling and follow-up. It can influence downstream choices, such as radiotherapy fields or the intensity of systemic regimens, even when the initial pathway remains unchanged.

A summary of key findings

Incorporating biology into staging produced a substantial and statistically significant reshaping of the stage landscape at CMJAH. Many hormone receptor-positive tumours were reassigned to lower risk categories, while TNBC was concentrated into higher risk categories. Risk sharpening within Stage III was evident, particularly the pull towards Stage IIIC under the clinical rules. HIV status did not materially influence reassignment, indicating that tumour biology, rather than immune status, is the dominant driver of prognostic staging in this cohort. Although first-line management plans rarely changed, the refined staging supports clearer prognostic communication and helps prioritise resources for patients at genuinely higher risk.

Discussion

This study interprets findings from 524 breast cancer patients at CMJAH, comparing anatomical staging according to the AJCC 7th Edition with clinical prognostic staging according to the AJCC 8th Edition. We examine the extent and direction of stage migration, its biological drivers and implications for initial management in a South African public sector context, situating the results alongside global burden data, local epidemiology, staging manuals and contemporary guideline frameworks.[1,2,3,4,5,6,7,8,9,10,11,15,16]

Stage migration and clinical relevance

One-third of patients changed stage when biology was incorporated, with downstaging concentrated in 16.8% of patients with favourable phenotypes and upstaging concentrated in 17% of patients with aggressive phenotypes. This is consistent with multicentre cohorts validating the AJCC 8th Edition, which demonstrate substantial reclassification and frequent movement towards lower stages among hormone receptor-positive and HER2-negative disease.[12,13,17] Anatomy alone cannot capture heterogeneity; small, high-grade, receptor-negative tumours can carry a worse prognosis than larger tumours with favourable markers, a principle long recognised in pathology syntheses and updated classification work.[6,8,15] Integrating biology within the AJCC 8th Edition was intended to address precisely this gap and to improve risk discrimination over the traditional TNM framework.[5,7,17]

Tumour biology and subtype-specific migration

Our subtype analyses clarify why overall migration was bidirectional. Luminal A and Luminal B HER2-positive tumours showed the highest downstaging proportions, consistent with well-differentiated profiles and the favourable weighting of hormone receptor positivity, combined with a potential for HER2-targeted therapy in prognostic assignments.[6,8,9,10,11,15] By contrast, TNBC was predominantly upstaged 69.4%, reflecting high proliferation, poor differentiation and a lack of targeted options, and aligning with consensus statements that treat triple-negative and HER2 driven disease as biologically and therapeutically distinct entities.[9,10,11,15] Kim and colleagues' comparison of prognostic versus anatomical systems further supports the directionality of migration by subtype, complementing large database work by Plichta et al. and validation by Weiss et al.[12,13,18]

Notably, the HER2-enriched subgroup showed no stage migration in this series. This likely reflects the high baseline anatomical stage burden in this phenotype, including a substantial proportion with metastatic disease, which is fixed at Stage IV under both systems, and the limited opportunity for downstaging in ER and PR negative tumours within the AJCC 8th Edition framework. We cannot exclude contributions from modest subgroup size or local variability in HER2 testing and reporting, which reinforces the need for standardised immunohistochemistry panels and ongoing quality assurance.[5,19]

Anatomical versus clinical prognostic staging

The distributional shifts we observed mirror the international experience since the introduction of the AJCC 8th Edition: Stage I increased from 8% to 16%, Stage II decreased from 23% to 17% and Stage III decreased from 39% to 37%, while Stage IV remained at 30%. These movements indicate that biology-informed rules reassign a subset of anatomically intermediate tumours to lower risk while sharpening risk within locally advanced disease. The intent and mechanics are described in the AJCC manual and clinician-oriented summaries, with the 7th Edition history providing context for the evolution from an anatomy-only construct to an integrated model.[5,17,20] Reinert and colleagues' perspective on systemic staging highlights how modern care is increasingly aligning staging information with the likelihood of systemic spread and treatment response, rather than relying solely on anatomy.[21] Although first-line decisions did not change for most

patients in our cohort, a more accurate prognostic label informs counselling, follow-up intensity and choices among acceptable options within major guidelines.[9,10,11,21]

HIV status and stage migration

HIV prevalence was 15.65% and HIV status was not associated with the likelihood or direction of migration ($p > 0.05$). National registry analyses and local service profiles suggest that while HIV can shape delivery of care, it does not inherently redefine tumour biology at a population level, consistent with our findings.[4,14,15] The practical focus for patients with HIV should therefore be on timely diagnostics, adherence support and safe delivery of systemic therapy rather than expectations of systematic differences in prognostic reassignment once biology is accounted for. Continued attention to younger age at presentation in some patients with HIV is warranted to explore tumour initiation pathways and delays to diagnosis in the South African context.[4,14,16]

Local versus international context

Global reports emphasise the shifting burden of breast cancer towards low-income and middle-income settings and the challenges of late presentation and constrained access, all of which shape case mix at diagnosis.[1,2,3,22] South African overviews document rising incidence, persistent late-stage presentation and the added complexity of comorbidity, patterns reflected in our cohort.[4,16] The SABCHO platform demonstrates that routine capture of receptors and grade is feasible in public tertiary care and provides the infrastructure required to operationalise prognostic staging at scale.[15] Baseline imaging choices vary by risk and resources; evidence on systemic staging imaging indicates a need for selective, guideline-informed use, especially where advanced imaging is constrained.[21,23] Against this backdrop, our data show that the AJCC 8th Edition confers discriminative value even in resource-limited environments, provided access to immunohistochemistry and timely reporting is assured.[6,8,9,10,11,15] This may allow us to better allocate our resources for systemic staging, as the use of the clinical prognostic staging system better risk-stratifies and prognosticates our patients.

Clinical implications

These results support the routine use of the AJCC 8th Edition in South African public tertiary care. Although initial management changed for only a small subset, this reflects how current pathways already integrate tumour biology with stage.[9,10,11,21] Implementation beyond tertiary centres requires reliable access to a minimum biomarker panel (ER, PR and HER2) and tumour grade, with standardised immunohistochemistry testing and reporting, and clinician training in interpreting biomarker reports and applying prognostic staging, particularly in smaller centres where treatment decisions are often made without on-site oncology support.[19,24] In the public sector, multigene expression assays used in some high-income settings to refine adjuvant therapy decisions are not routinely available, so clinicopathological factors remain central and validated online prognostic tools such as PREDICT, and historically Adjuvant! Online, can be used as an additional decision support tool when counselling patients about systemic therapy.[25,26] Service priorities therefore remain consistent: timely pathology reporting, streamlined pathways for HER2 targeted therapy and neoadjuvant chemotherapy, and multidisciplinary decision-making for complex cases.[2,6,8,9,10,11,15,22,23] This also reinforces the concept that tumour biology may outweigh anatomy in prognostication.[27]

Limitations

Retrospective design introduces a dependence on the completeness of records. Single-centre data may limit generalisability to rural and lower-tier facilities. Survival was not available, so we could not test whether prognostic reclassification translated into outcome differences in this cohort. These limitations motivate a prospective follow-up study to link prognostic stage to disease-free and overall survival, and to quantify the resource and workflow implications of universal biomarker integration in the public sector.[2,3,4,9,10,11,15,16,22,23]

Summary

Incorporating biology into staging reclassified one in three patients at CMJAH, de-escalating many hormone receptor-positive tumours and concentrating TNBC into higher risk categories. HIV status did not significantly influence migration when biological factors were taken into account. The AJCC 8th Edition thus provides a more precise framework for risk stratification and clinical communication in South African public sector practice, complementing pathways that already emphasise biology-informed care and guideline-directed decision-making.[2,5,6,7,8,9,10,11,12,13,14,15,16,18,20,21,22,23,27]

Conclusion

This retrospective series of 524 breast cancer patients at CMJAH, from January 2022 to May 2024, evaluated the adoption of the AJCC 8th Edition clinical prognostic staging, which integrates oestrogen and PRs, HER2 status, and tumour grade. Reclassification occurred in 33.8% of patients, with 16.8% downstaged and 17.0% upstaged. Downstaging was most frequent in Luminal A and Luminal B HER2-positive disease, while upstaging predominated in TNBC, and no stage migration was observed in the HER2-enriched subgroup. HIV prevalence was 15.65% and showed no significant association with stage migration, indicating that tumour biology rather than immune status primarily drives reclassification in this cohort. Overall, the AJCC 8th Edition provides more precise risk stratification and clear clinical implications, supporting de-escalation in cases with favourable biology and escalation where the risk is higher. Routine use is feasible in South Africa and can strengthen personalised, evidence-based care in resource-constrained public sector settings.

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Competing interests

The authors, Rahmiz R. Thomas; Tahlia Naidoo; Uchechukwu A. Izegbu; Neo H. Mabe; Tanya Augustine and Jenny Edge, declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

CRediT authorship contribution

Rahmiz R. Thomas: Conceptualisation, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Software, Validation, Visualisation, Writing – original draft, Writing – review & editing. Tahlia Naidoo: Data curation, Writing – review & editing. Uchechukwu A. Izegbu: Data curation, Writing – review & editing. Neo H. Mabe: Conceptualisation, Methodology, Supervision. Tanya Augustine: Formal analysis, Investigation, Methodology, Project administration, Software, Supervision, Validation, Visualisation, Writing – original draft, Writing – review & editing. Jenny Edge: Conceptualisation, Formal analysis, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualisation, Writing – original draft, Writing – review & editing. All authors reviewed the article, contributed to the discussion of results, approved the final version for submission and publication, and take responsibility for the integrity of its findings.

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Data availability

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