

EVALUATION AND IMPROVEMENT OF A NHDS ALGORITHM TO DETECT PATIENTS WITH METASTATIC BREAST CANCER AND HER2+ STATUS USING A REAL WORLD EVIDENCE NLP-POWERED SOLUTION

Rejasse G¹, Roux C¹, Valette M¹,
Lebas B¹, Fogel F¹, Palliser JP²,
Vuiblet V³, Sanchez S⁴, Squara PA⁵,
Jouve M¹

RWD50

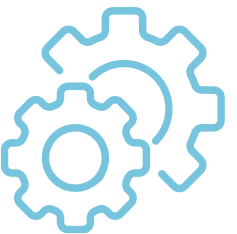
AUTHORS

¹ Sancare, Paris, France
² Groupement Hospitalier Nord-Essonne, Longjumeau, France
³ CHU de Reims, Reims, France
⁴ CH de Troyes, Troyes, France
⁵ Pfizer, Paris, France



OBJECTIVES

- > Evaluate the interest of using the NHDS (National Health Data System, with reimbursement data only: ICD-10 coding and UCD codes for *en-sus* medication) algorithm to detect patients with metastatic breast cancer and presenting the HER2 gene. Reliability of metastatic status is especially in question: its coding does not have any impact on the hospital's remuneration.
- > Assess the performance of a Natural Language Processing (NLP)-powered solution - *Realli* - and the possibility to improve NHDS using it.

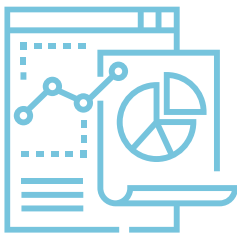
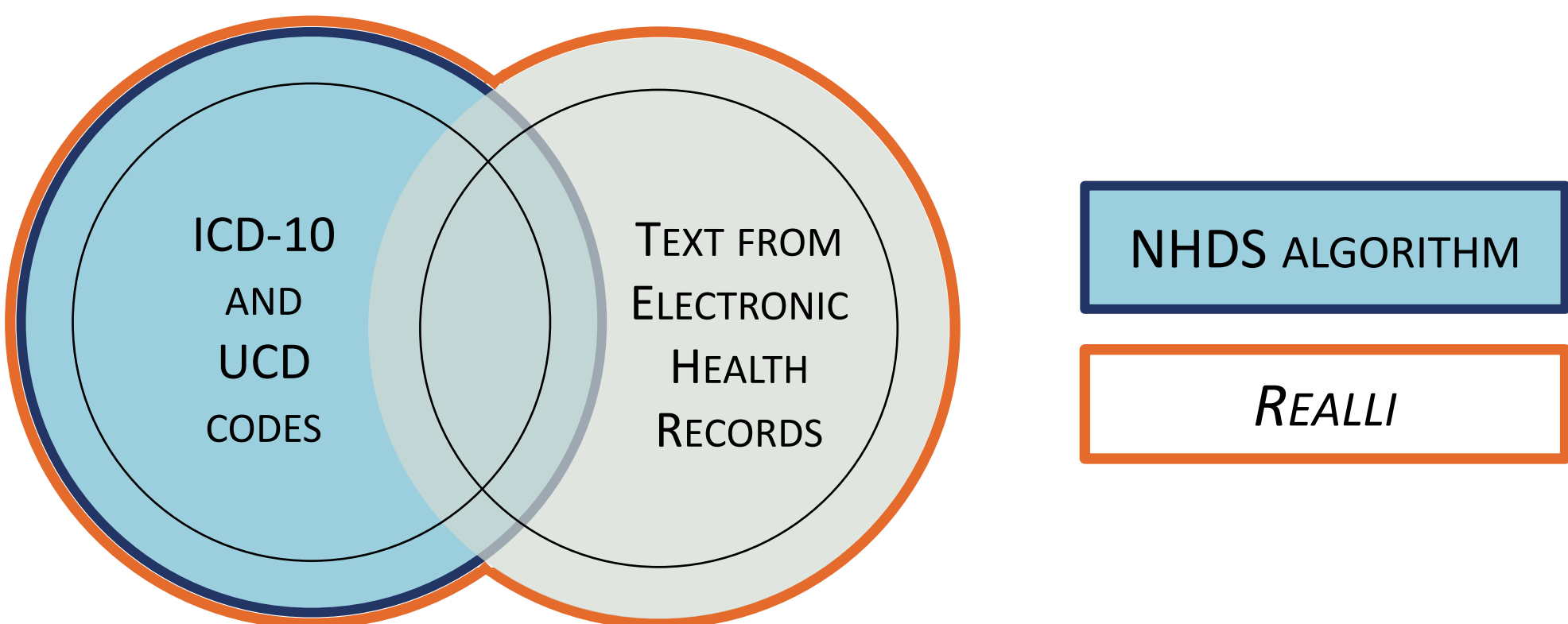


METHODOLOGY

Data are gathered from patient's EMR hospitalized in 3 participating centers (CHU Reims, CH Troyes, GHNE) between 2017 and 2021, with - or for - breast cancer.

The cohorts of interest were created via the interconnected hospital-specific NLP-powered solution *Realli*, which allows to identify patients of interest with precision.

A cohort comparison was made between the results obtained using the NHDS algorithm (ICD-10 codes, UCD codes for *en-sus* medication), and the *Realli* solution (using semantic elements and AI). A manual quality control (verification of positives and negatives) was then carried out by medical doctors to legitimize and interpret the results.

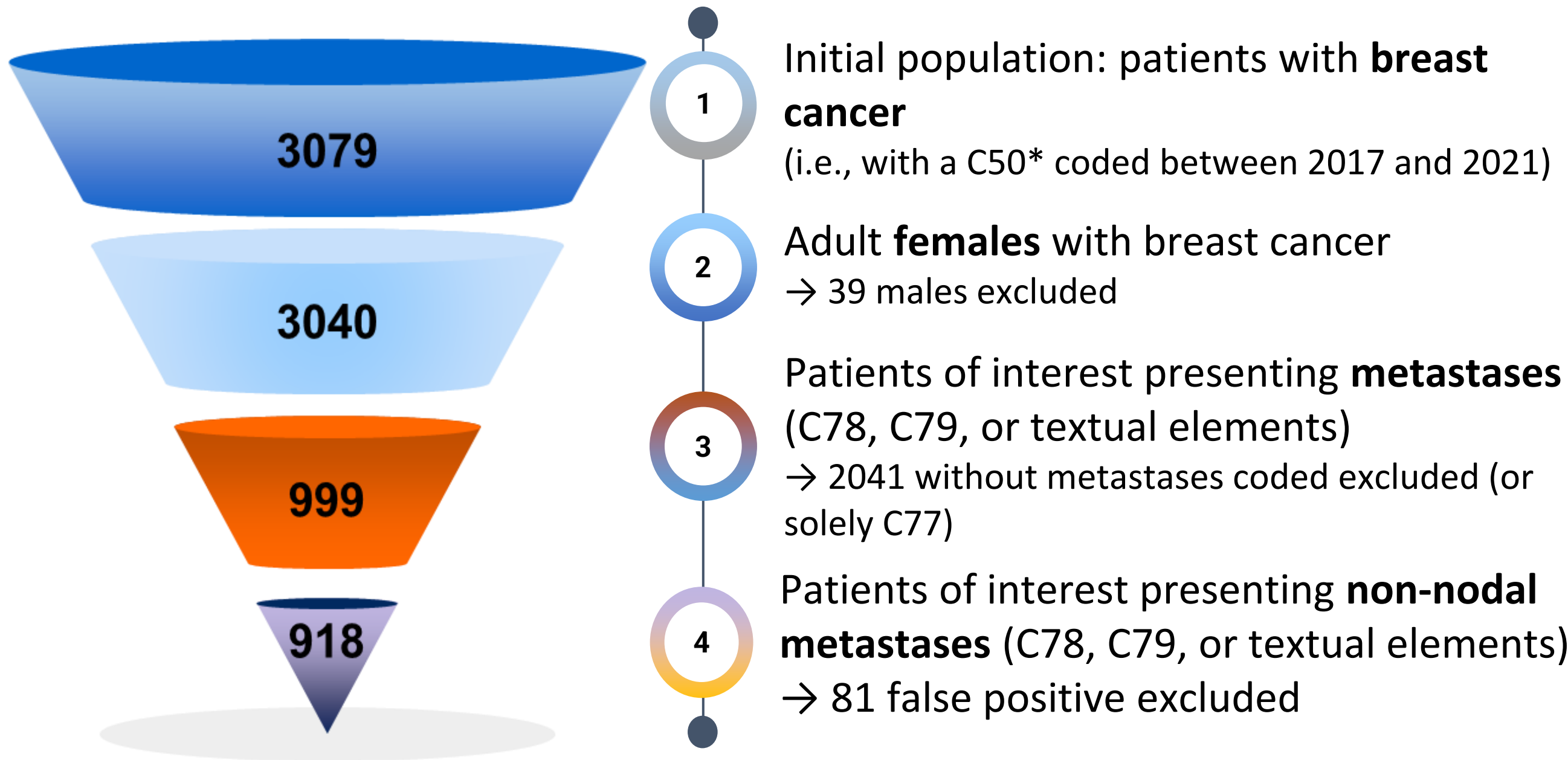


RESULTS

> DETECTION OF METASTATIC PATIENTS

With an initial population of 3079 patients within the participating sites, *Realli* acknowledged 999 patients with non-nodal metastases, while the NHDS-only algorithm allowed to identify only 878.

Manual analysis resulted in a sensibility/specificity ratio of 92%/98% (NHDS) and 100%/96% (*Realli*).



Moreover, the analysis demonstrated that non-nodal metastases are usually coded in a timely manner (when coded, 88% were coded within 2 months).

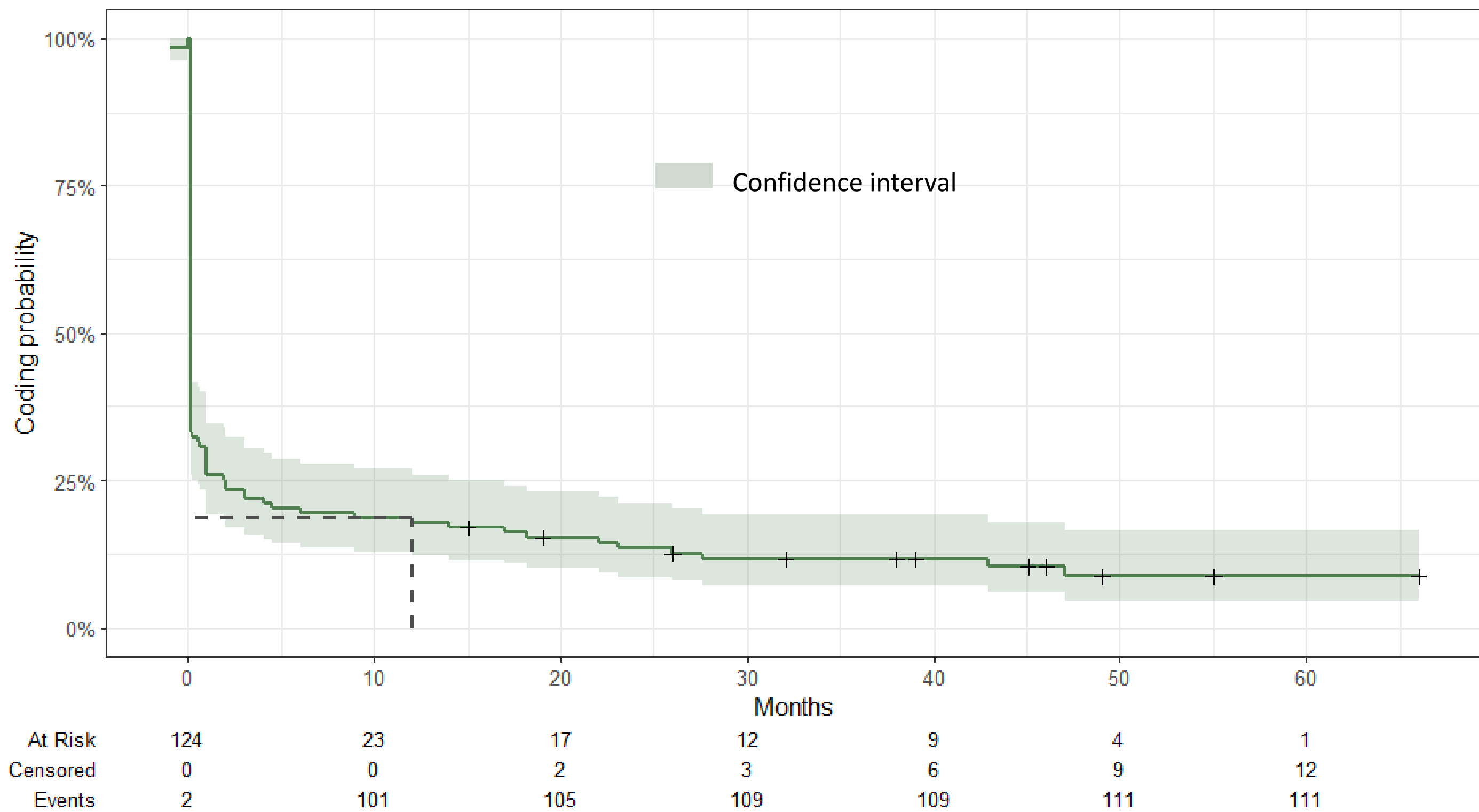


CONCLUSION

- > The ICD-10 coding of metastases is accurate, validating the usability of NHDS-algorithm for the identification of metastatic breast cancer. However, the use of an NLP-powered solution such as *Realli* allows to quickly improve the sensibility of the algorithm, with minimal reduction in specificity and much richer data.
- > The NHDS algorithm has a good sensibility for patients who received anti-HER2 therapies and HER2+ patients' detection. Nevertheless, using Real-World Data allows a larger and more precise selection.

Survival curve on metastatic ICD-10 coding

Kaplan-Meyer algorithm (computed on R) on patients with manual verification only – n=124



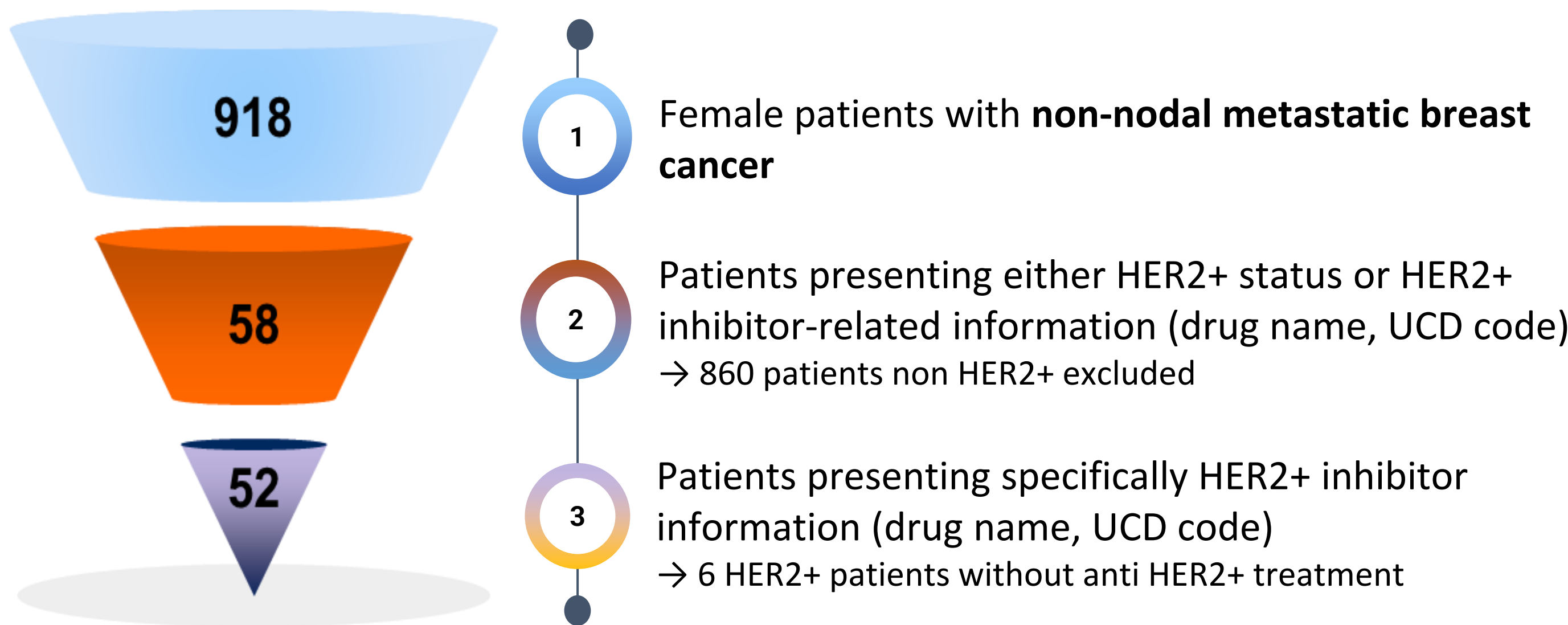
Summary at 12 months

At risk	Events	Survival	Std err	Lower 95% CI	Upper 95% CI
23	101	18,9%	0,0349	0,128	0,268

> DETECTION OF HER2+ METASTATIC PATIENTS

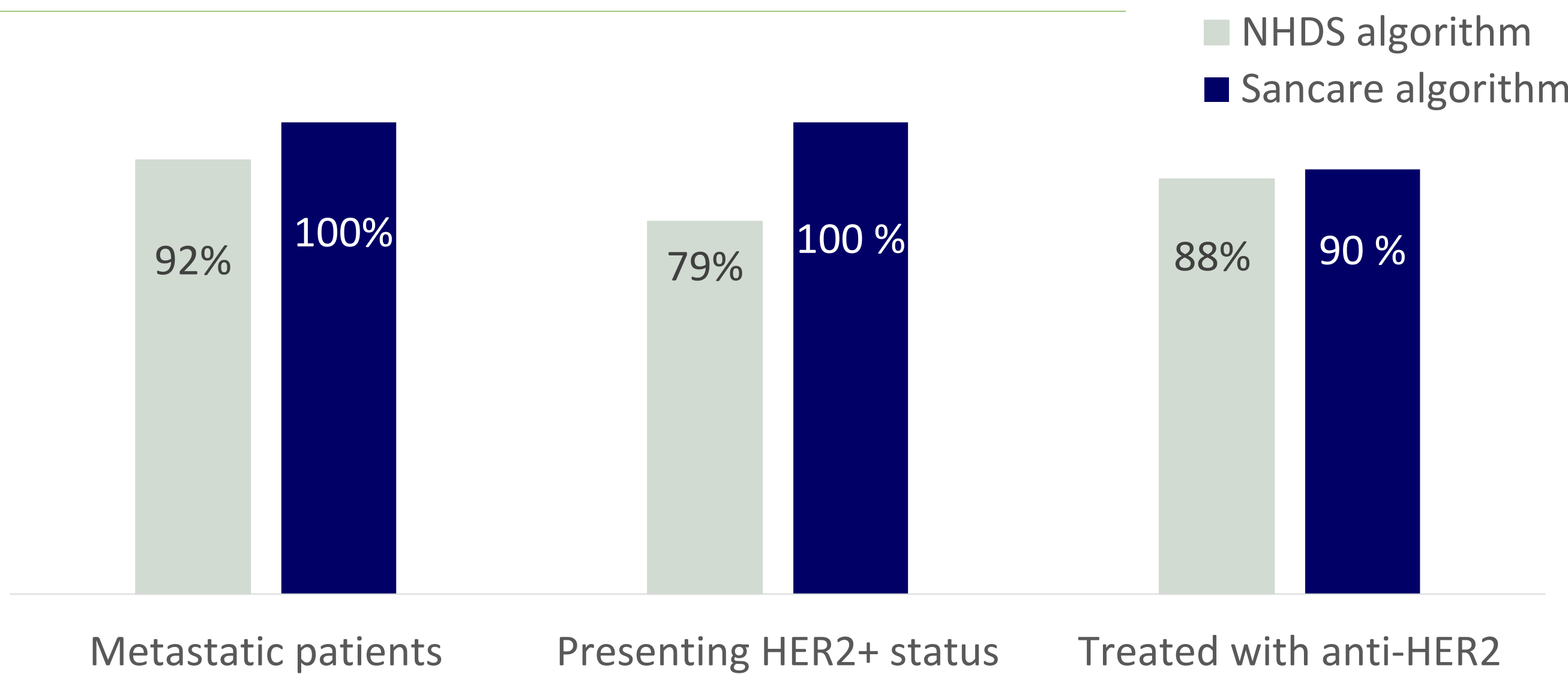
With an initial population of 918 metastatic adult female patients in the participating sites, *Realli* allowed the identification of 58 HER2+ patients with non nodal metastases, while the NHDS-only algorithms acknowledged only 46.

Among the 58 patients, 52 are treated by HER2 inhibitors.



Manual analysis resulted in a sensibility/specificity ratio of 79%/98% (NHDS) - 100%/99,5% (*Realli*) for the detection of the HER2+ status, and 88%/99% (NHDS) - 90%/99,5% (*Realli*) for the detection of HER2+ drugs. The Sancare algorithm - *Realli* - allows to detect, with reliability, patients with anti-HER2 treatment, which appears to be an acceptable proxy of the HER2+ status.

Comparison of NHDS and Sancare algorithms' sensibilities



DOWNLOAD THE DIGITAL VERSION

Scan this QR code to download a copy of the poster. Please note that reproducing copies of this poster and additional content via the Quick Response (QR) code is prohibited without permission from both ISPOR and the authors.

www.sancare.fr

