

P2.096 : Real-world utilization of tissue-free molecular residual disease (MRD) testing in lung cancer patients from Asia-Pacific and Middle East (AMEA)

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INTRODUCTION

- Imaging-based surveillance may miss molecular relapse in its earliest phase.
- ctDNA-based MRD testing offers a non-invasive approach to detect residual disease and may complement imaging in recurrent risk stratification.
- MRD tests are already available for routine use, but real-world usage patterns in Asia is infrequently described.

METHODS

- MRD analysis was performed using tissue-free Guardant Reveal epigenomic assay that interrogates more than 20,000 differentially methylated regions (DMRs), including those most strongly associated with lung cancer.
- A total of 159 NSCLC patients (257 samples) between July 2023 and July 2026 from the AMEA region, with test results based on the current commercially available version of Guardant Reveal were retrospectively queried.
- Each sample was classified as ctDNA detected (positive) or not detected (negative) based on a predefined statistical likelihood threshold that the patterns of methylation are tumor-derived.
- Based on the timing of the first MRD test order, we classified them into post-resection (≤ 12 weeks after surgery) or during surveillance (>12 weeks after surgery).
- Clinical factors (age, sex, stage at diagnosis, date of surgery, adjuvant therapy status, timing of MRD testing) were extracted from test requisition forms submitted when the test was ordered.

RESULTS

Demographics and ctDNA positivity

- 159 NSCLC patients (257 samples) had at least 1 MRD test result with cancer stage documented
- 40.9% (65/159) had serial testing with more than 1 MRD test ordered
- Median interval between first and second MRD test was 4.9 months
- Overall, 14.8% (38/257) of all samples were ctDNA-positive
- At the first MRD test, 15.7% (25/159) of patients across all disease stages had ctDNA positivity detected
- MRD positivity was higher in more advanced stages, from 8.8% in stage II, to 21.5% in stage III and 21.4% in oligometastatic stage IV, while all stage I samples were MRD-negative (Figure 1)

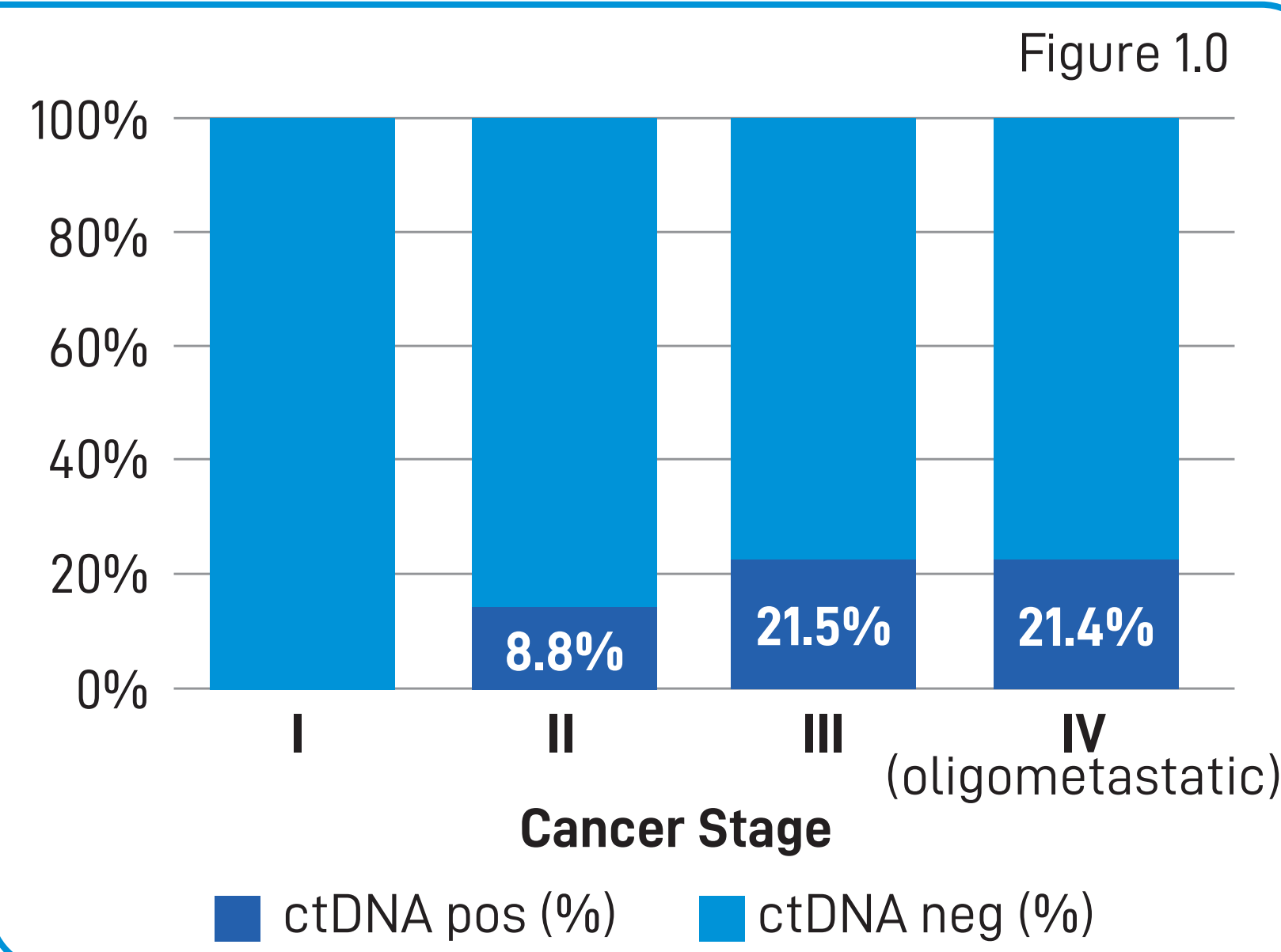


Table 1.0

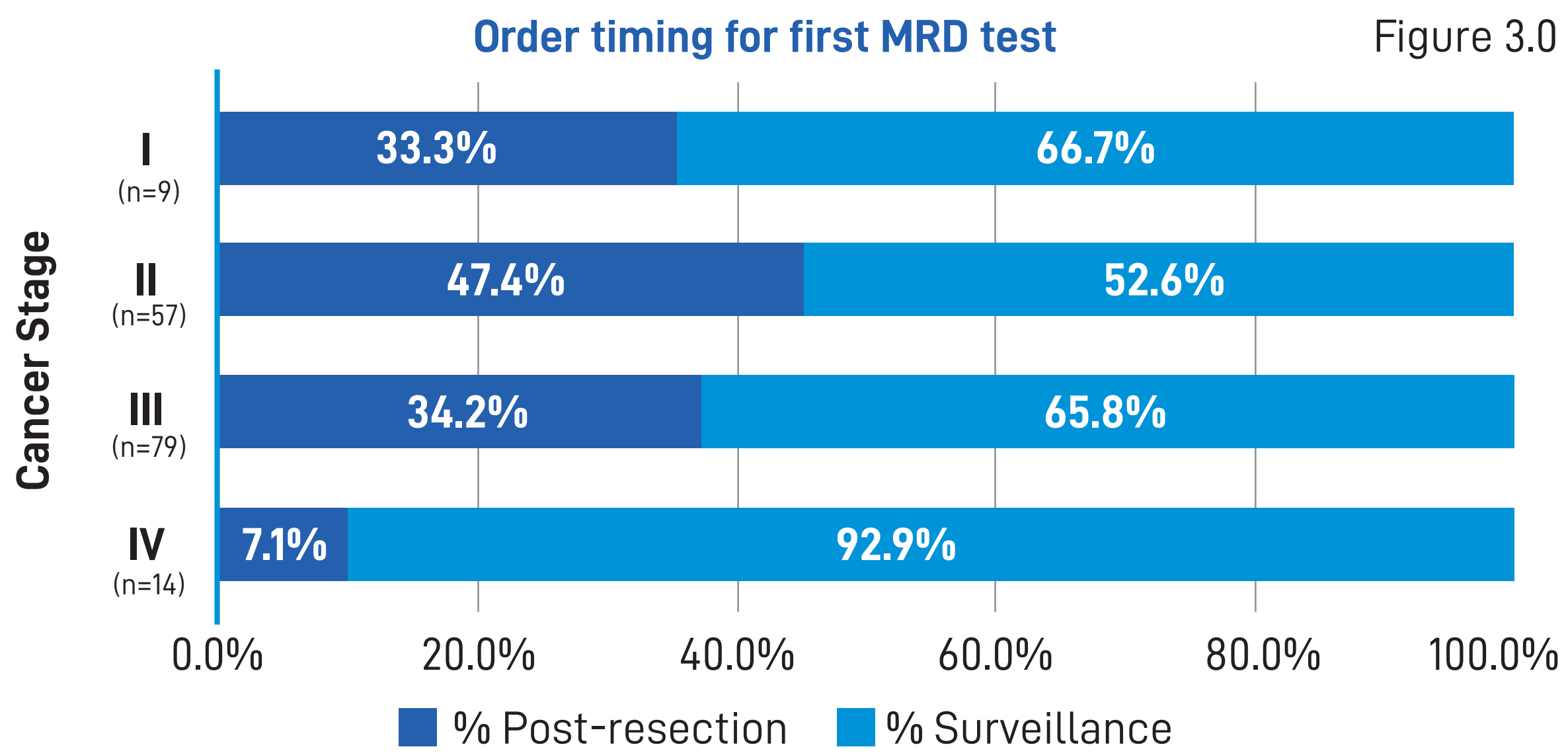
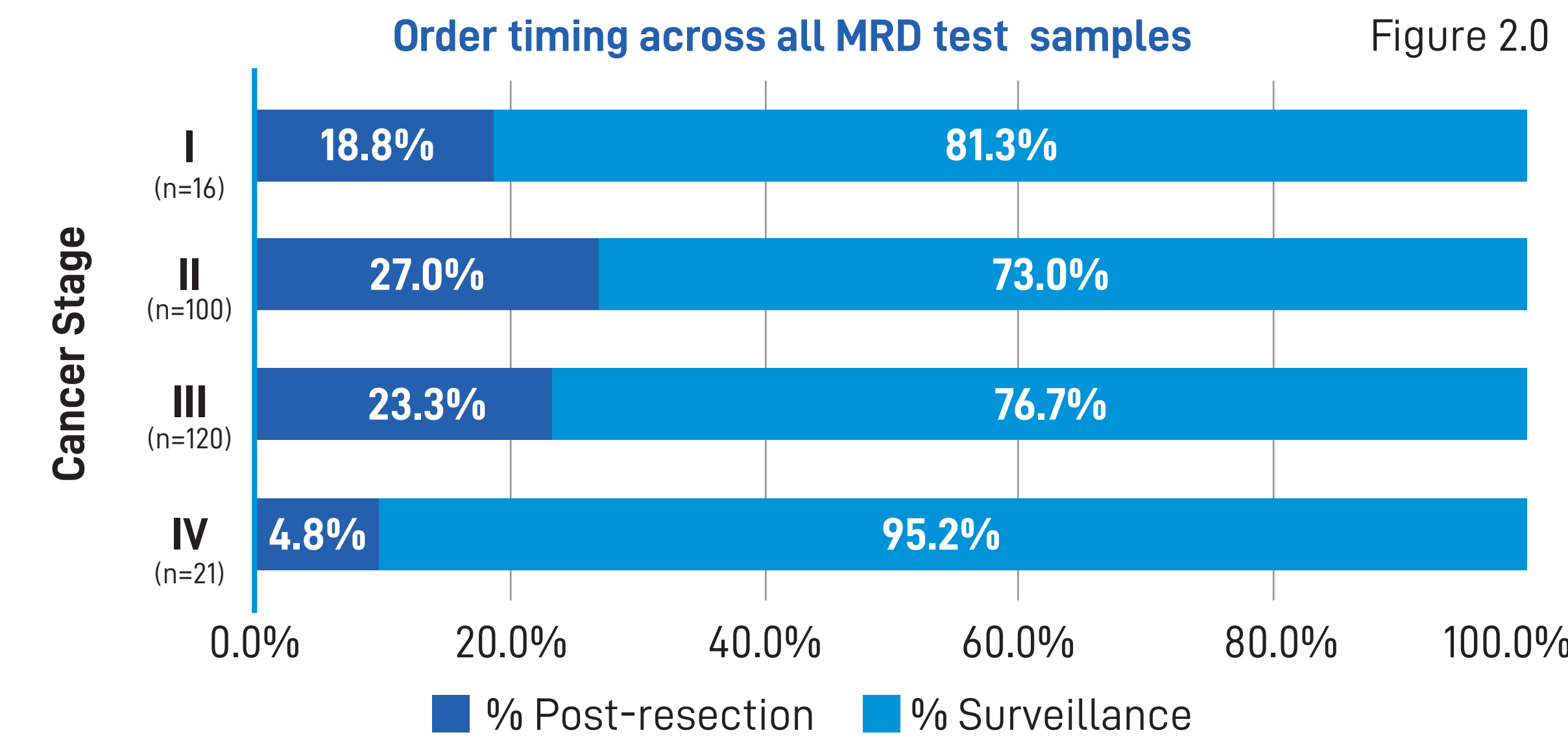
Patient Characteristic	n = 159, (%)
Gender (%)	
Male	80 (50.3%)
Female	79 (49.7%)
Median Age (range)	65 (28-84 years)
Cancer Stage at first MRD test	
I	9 (5.7%)
II	57 (35.8%)
III	79 (49.7%)
IV (oligometastatic)	14 (8.8%)

Stratification of MRD test order timing and median test order time

- Across all samples, majority of MRD tests were ordered during surveillance: 81.3% (13/16) in stage I, 73.0% (73/100) in stage II, 76.7% (92/120) in stage III and 95.2% (20/21) in oligometastatic stage IV (Figure 2).
- This is reflected similarly for the timing of the first MRD test ordered: 66.7% (6/9) in stage I, 52.6% (30/57) in stage II, 65.8% (52/79) in stage III and 92.9% (13/14) in oligometastatic stage IV (Figure 3).
- Across all disease stages, the median time for ordering the first MRD test post-resection was 6 weeks (range 3-12), while the median time for ordering the first surveillance MRD test was 104 weeks (range 13-534) after surgery (Table 2.0)
- Overall, the median turnaround time (TAT) from sample receipt to report release was 5 days (range 3-27 days)

Table 2.0

Cancer Stage	Median time for ordering post-resection MRD test (weeks)	Median time for ordering first surveillance MRD test (weeks)
I	7 (range 5-8)	146.5 (range 55-419)
II	7 (range 3-11)	62 (range 13-356)
III	5 (range 3-12)	118.5 (range 16-337)
IV (oligometastatic)	3 weeks (no range as n=1)	119.0 (range 13-534)



DISCUSSION & CONCLUSION

- Early real-world utilization data illustrates how tissue-free ctDNA MRD testing is being integrated into NSCLC care in AMEA
- MRD tests were predominantly ordered during the surveillance phase rather than only in the immediate postoperative window.
- Stage-associated MRD positivity (higher positivity in stage III-IV vs stage I-II) is consistent with biological expectations regarding residual burden and ctDNA shedding.
- A faster TAT of 5 days can support quicker clinical decision making.
- Limitations include real-world datasets presented to date are retrospective and may have incomplete clinical annotation, selection bias in who is tested, and limited linkage to outcomes.

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