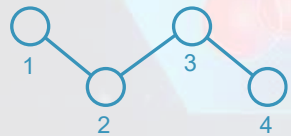


Precision oncology – What's holding us back?

Peter Keeling, Diaceutics CEO

Navigating the complex diagnostic and treatment pathway can lead to inefficiencies and hinder unlocking the full potential of Precision Medicine

Although precision oncology is promising, currently, patient access to better treatments is still significantly impeded because of ill-prepared diagnostic and clinical ecosystems



4.5 years

is the average delay of a diagnostic assay to be available and adopted¹



>20%

of cancer patients have inferior response due to failure of receiving a treatment matched to their genomic profile^{3,4}



Complexity

in clinical care pathways involving multiple steps and requiring optimal interaction and awareness among different stakeholders



High variability

in the levels of biomarker testing and appropriate treatment decisions across different practice settings, tumor types and biomarkers

Sources

1. Diaceutics PM readiness report 2019
2. Diaceutics analysis
3. <https://pubmed.ncbi.nlm.nih.gov/33009371/>
4. <https://pubmed.ncbi.nlm.nih.gov/31888672/>

"The Impact of Clinical Practice Gaps on the Implementation of Personalized Medicine in Advanced Non-Small Cell Lung Cancer"

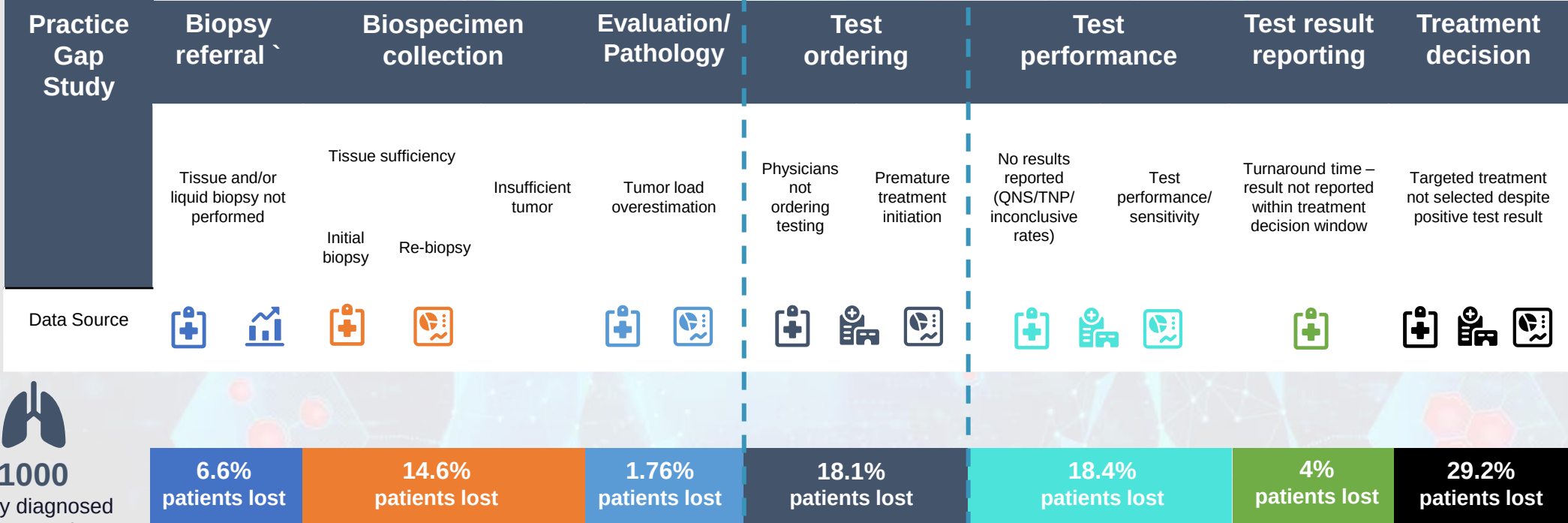
Published in the journal of Journal of Clinical Oncology



Diaceutics
Better Testing, Better Treatment



Only 36.1% newly diagnosed advanced NSCLC patients were found to be properly tested and treated



1000

Newly diagnosed aNSCLC patients potentially eligible for targeted therapy



356

Newly diagnosed aNSCLC patients eligible for targeted therapy tested and properly treated



CMS claim data



Real-time lab data



Published journals

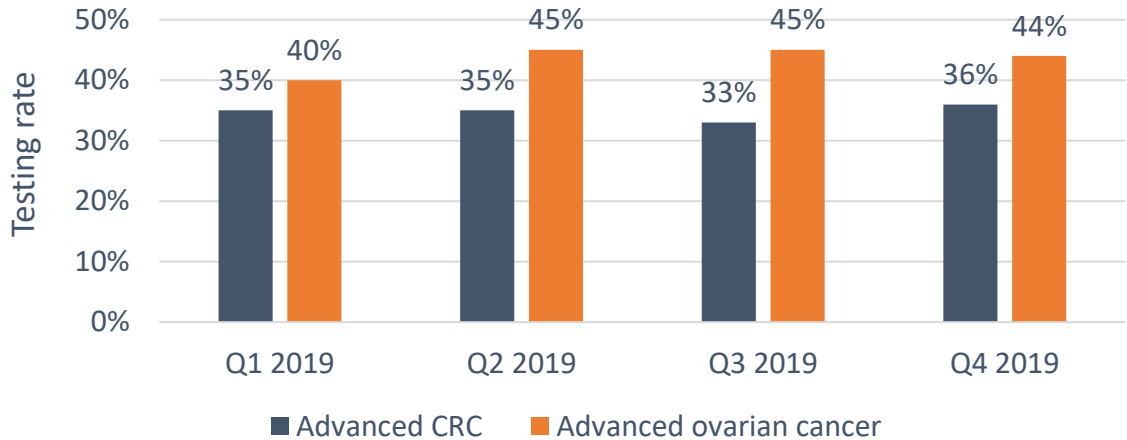


SEER data

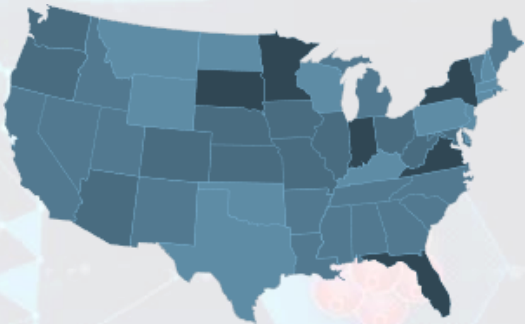
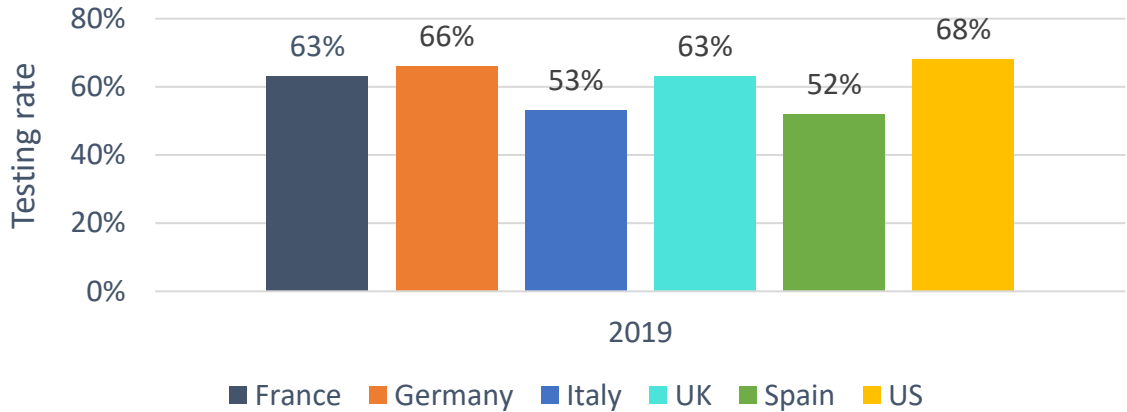
QNS: Quality/Quantity not sufficient, TNP: Test not performed

Are the findings unique to aNSCLC and US practice?

NGS testing rates in US outside of aNSCLC



Testing rate for established molecular biomarkers* in aNSCLC across countries



How should we think about this?

Revisiting the economics of Precision Medicine

Financial comparison of the R&D costs and Revenue of 133 oncology therapies launched since 1990 to 2020 (30 years of data). Splitting out those labelled with a CDx and those without .Detailed side by side analysis of approx. 71 drugs (42 with CDx -29 without CDx)

Previously published papers on Pharma's ROI have NOT broken out precision oncology vs non precision oncology. There is currently NO external ROI reference around precision medicine – its absence means that everyone is approaching this from their own therapy/portfolio lens

All economic papers have limitations of data access and the researchers tried to work within those limitations in making their observations –

Supported by three academic institutions involved here

- QUB
- Kings College London
- University of Erlangen



Latest research:
Published by Journal of
Clinical Oncology, Delivering
the Precision Oncology
Paradigm

Combining these insights with the Practice Gaps Study



OSFA Cancer Rx

PM Cancer Rx

PM Cancer Rx
(opportunity)

\$8.2bn
Average
lifecycle
revenue of a
OSFA cancer
drug

\$5.1bn
Average lifecycle
revenue of a
OSFA cancer
drug

\$5.1bn
Average lifecycle
revenue of a
OSFA cancer
drug

\$5.1bn
Value of 50% of
patients missed
due to the
practice gaps

\$4.6bn
Average cost of
development of a
OSFA cancer
drug

\$3.5bn
Average cost of
development of a
PM cancer drug

\$3.5bn
Average cost of
development of a
PM cancer drug

Study Conclusion: More work needs to be done to unlock the commercial potential of precision medicine



Two key messages:

1. More work needs to be done to fully unlock the commercial potential of precision medicine
2. Investing in better testing to close the clinical practice gaps could result in more revenue from PM drugs for pharma

- Precision medicine drugs cost **\$1bn less to develop** than traditional drugs due to smaller clinical trials and their accelerated path to the market.
- However, non-precision medicine drugs have historically generated \$3bn more revenue than precision medicine drugs, likely due to the clinical practice gaps in testing.
- Moving towards a precision oncology CDx-guided approach can deliver health benefits at a potentially affordable cost, including in the development phase, lowering expensive clinical trial attrition rates, and sparing unselected patients those treatments that are ineffective and may have significant side effects.

What does this mean for PM in the future?

- Current PM sales **average \$5.2bn** over the lifetime of the drug, even though they are likely **treating less than 50% of the eligible patients**. If pharma were able to get access to many of the remaining patients the revenue of PM drugs could **potentially double**.
- R&D savings together with the additional revenues would **deliver a significantly greater ROI** to the pharma industry and open the opportunity for lower treatment pricing.

Diaceutics Precision Medicine Economic Forum



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**The views and opinions expressed by Ms. Cardeiro are hers and do not necessarily reflect those of Point32Health.*

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Forum timeline of actions



4 Virtual Meeting Sessions Sept-Jan

Virtual/ Face to Face Industry Event

1

Key Topic: Framing the mission

2

Key Topic: Initial trends

3

Key Topic: Aligning on the themes

4

Key Topic: Key areas for discussion at the expert forum

Panel discussion
lead by form members,
open to the whole PM
industry

End Goal

Resulting in publication of a SIMPLE guide to key stakeholders on current key economic messages and gaps for future research

Articulate what's needed ?

Economic Forum discussion to date



Multisided strategies are needed to fully deliver the promise of Precision Medicine

- **Prioritized investment** in diagnostic pathway
- **Finding patients earlier** and refer them faster
- Meaningfully **involve patients** into treatment choices available
- **Appropriate reimbursement** levels to be proportionate with the clinical value delivered
- **Data** to increasingly automate treatment decision support
- **Labs increasingly partnering with physicians** to inform their testing and treatment choices
- **Platform business** models accelerate the pace of change as networks combine forces
- **Automation, simplification and communication** will be critical to ensuring these new technology arrivals find their rightful place and do not instead make the diagnostic pathway more complex than it already is

Conclusions

- Recognize the role the **diagnostic pathway** makes to precision medicine outcomes
- **Right size investment** in that pathway to unlock positive economics for all
- Gain commitment **from all stakeholders** to play their part



Thank you