

Impact of the new European Union *In Vitro* Diagnostics Regulation on the practice of hospital diagnostic laboratories

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hospitals

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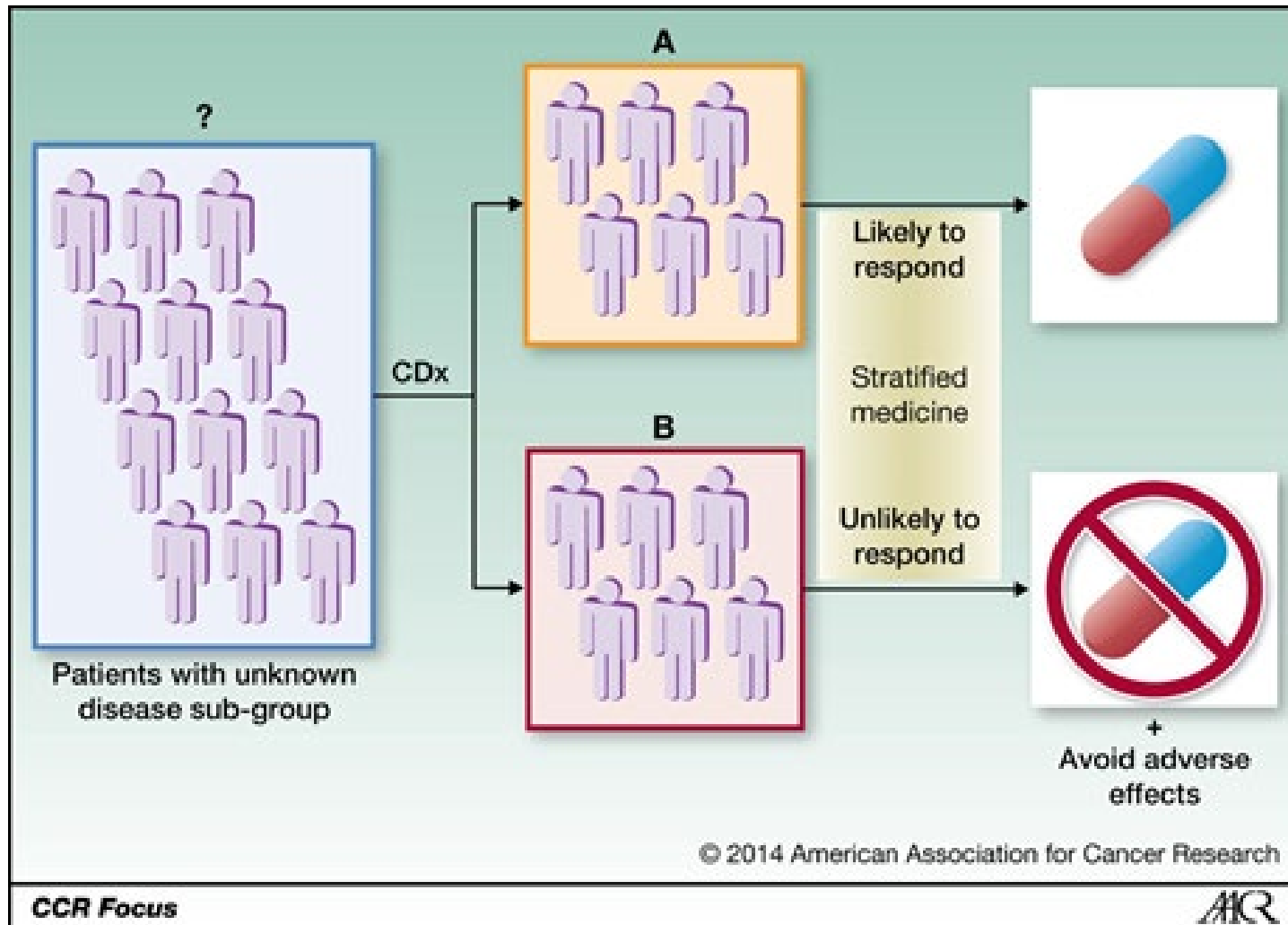
Finalisation

Conclusion

Recommendations

Companion diagnostics (CDx)

$\frac{C \ B \ G}{M \ E \ B}$



- Home-brewed CDx

- Commercial CDx

- Qualitative research
 - 8 MTBs in NL (interviewed 7)
 - General hospitals (interviewed 8)
 - Spread across NL



Rogers' Diffusion of Innovations

$$\frac{C \ B \ G}{M \ E \ B}$$

- **Rogers' Diffusion of innovations**
 - **Relative advantage**
 - **Complexity**
 - **Compatibility**
 - **Observability**
 - **Trialability**
 - **Is it better?**
 - **Is it complex to use?**
 - **Does it easily fit into my life?**
 - **Have I seen it?**
 - **Can I test it?**

Current application of CDx

Used CDx

C B G
M E B

- **Definition of CDx**

“a device which is

- identify, b
correspon
- identify, b
adverse re

Table 1. Overview of markers mentioned by participants.

Markers
Epidermal Growth Factor Receptor (EGFR)
Kirsten RAT Sarcoma (KRAS)
BRAF
BRCA
Rearranged during Transfection (RET)
Hepatocyte growth factor receptor (MET)
Programmed Death-Ligand 1 (PDL1)
Methylguanine-DNA Methyltransferase (MGMT)
Epidermal growth factor receptor 2 (EGFR2)
Human Epidermal growth factor Receptor 2 (HER2)
Estrogen Receptor (ER)
Progesterone Receptor (PR)
Anti-Muller Hormone (AMH)

“I consider companion diagnostics as finding targets for possible therapies” [5]

- **Home-brewed CDx**
- **Commercial CDx**
- **Tweaked CDx**

Table 2. Overview of brands of tests mentioned by participants.

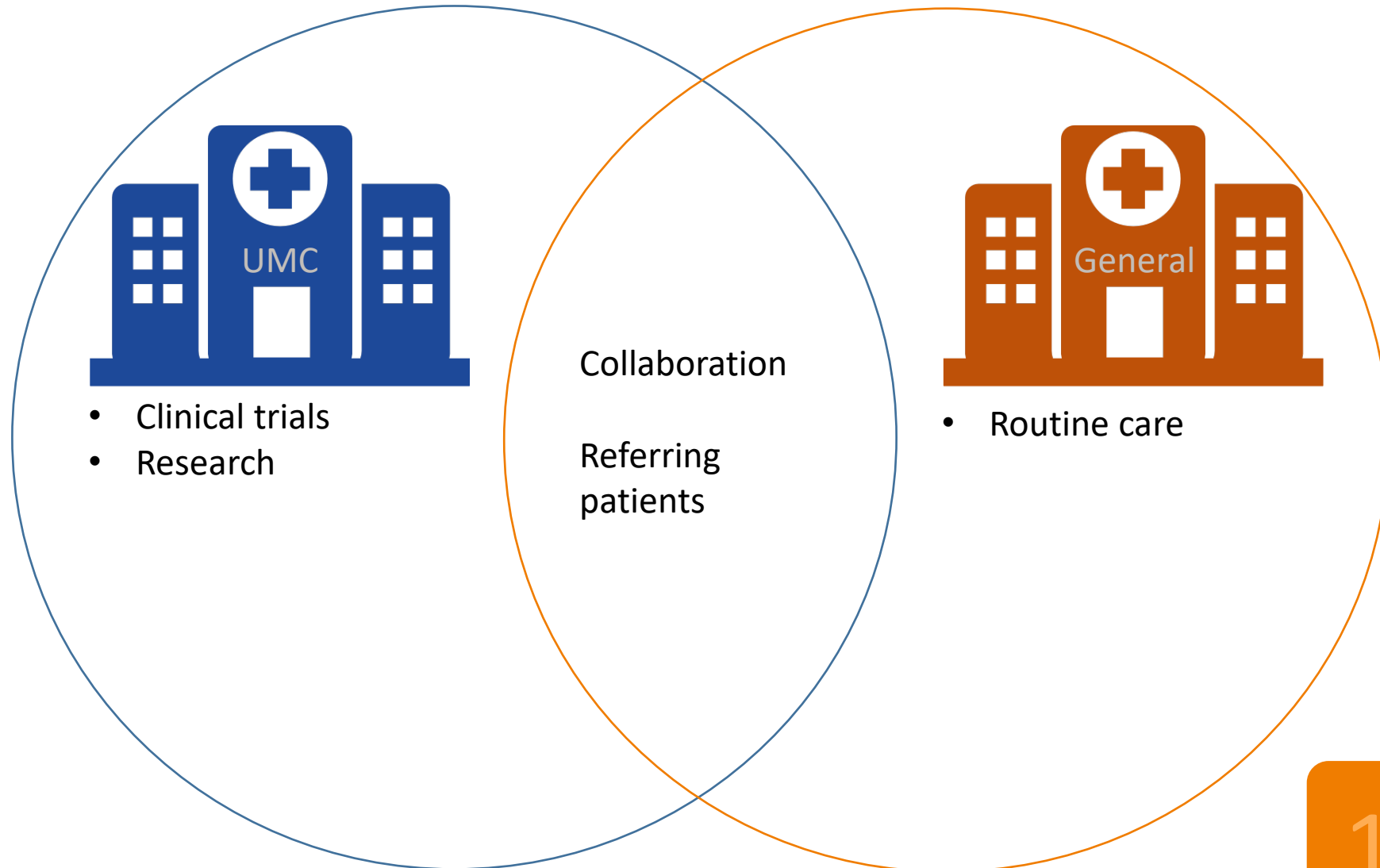
Brand of test
TSO-500
ARCHER
ARCHER-CTL
ARCHER Sarcoma
ARCHER Solid Tumour
Ion Torrent
COBAS
Ampliseq
Cancer Hotspot Analysis

Table 3. Overview of types of tests mentioned by participants.

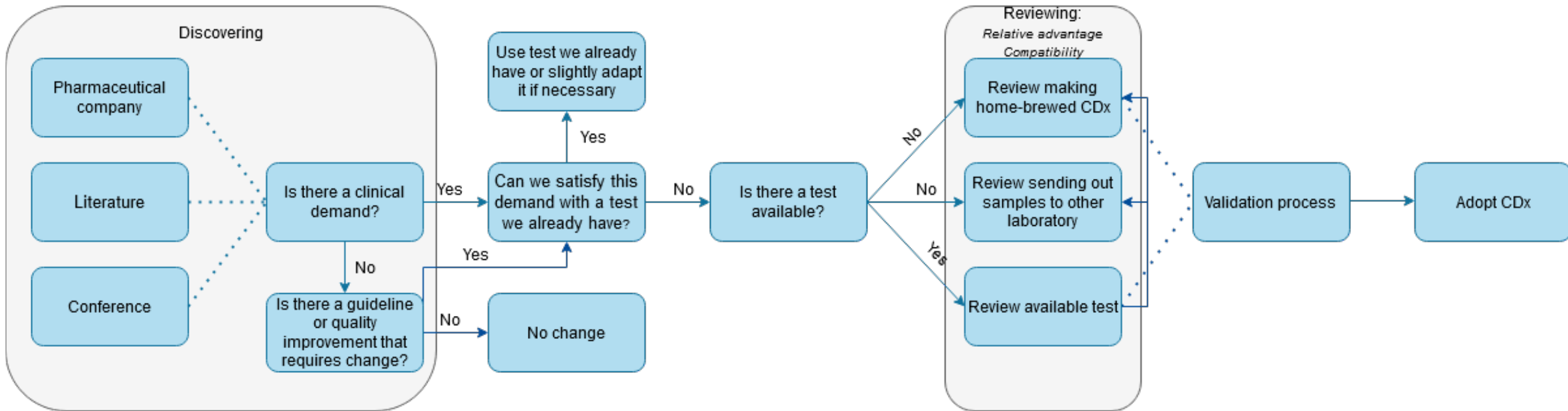
Type of test
Immunohistochemical
NGS
DNA-NGS
RNA-NGS
WGS
Multiplex ligation-dependent probe amplification (MLPA)
Microsatellite Instability (MSI)
Antibody test

Current application of CDx

UMCs and general hospitals



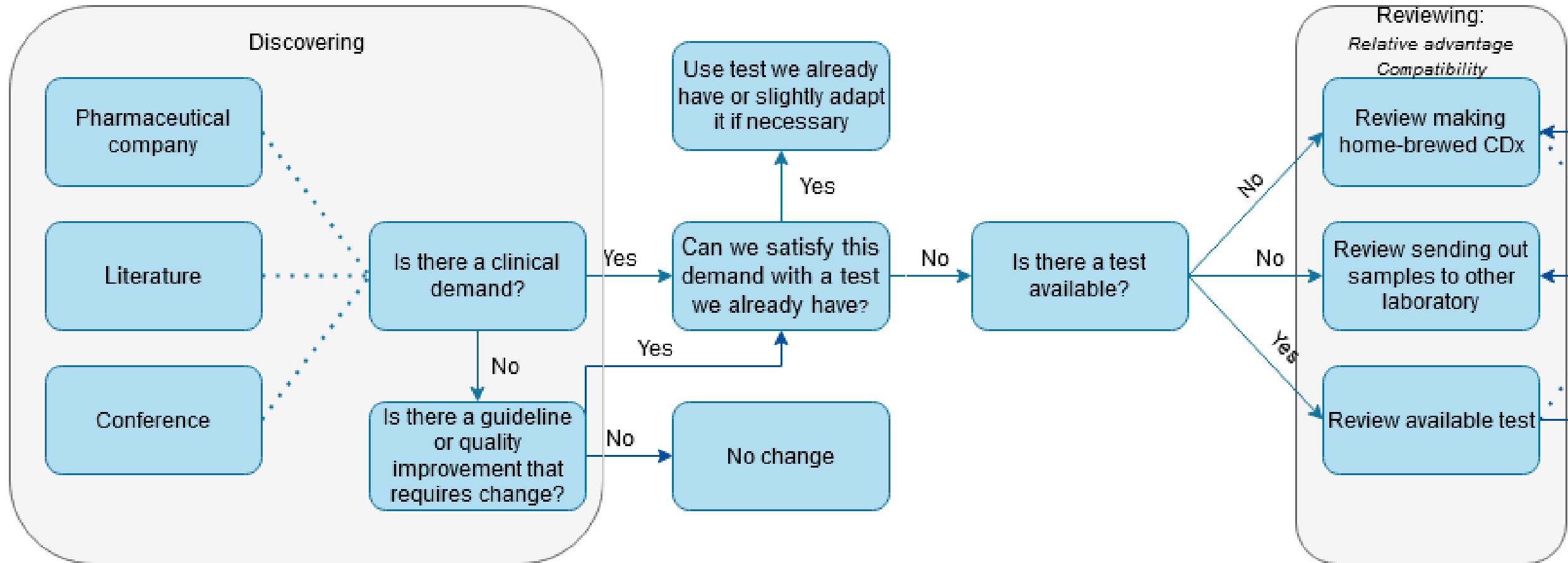
From discovering to adopting



From discovering to adopting

Discovering to considering

$\frac{C \ B \ G}{M \ E \ B}$



From discovering to adopting

Criteria to consider

$$\frac{C \ B \ G}{M \ E \ B}$$



“quality actually comes first. So that must be really good. That’s the most important.” [9]



“so is it affordable, is it a good product for what you’re paying?” [8]



“such a new system, that must be integrated into the laboratory” [2]



From discovering to adopting

Validation

$$\frac{C \ B \ G}{M \ E \ B}$$

Home-brewed CDx  Validation by laboratory

Commercial CDx  Validation by producer
Verification by laboratory

“then you just have to verify that it also works in your own laboratory” [8]



Impact of the IVDR

Concerns and uncertainties

$$\frac{C \ B \ G}{M \ E \ B}$$

- **Certification goes beyond the tests**



“if you bake a cake then it does matter that you have a good mix of ingredients, but whether you put it in an oven from Siemens or from Bosch, or whatever. As long as they keep the correct temperature. And because one has a stamp saying ‘I’m the best from the consumer’s guide’, doesn’t mean that the others aren’t good.”
[10]

- **Enforcement**



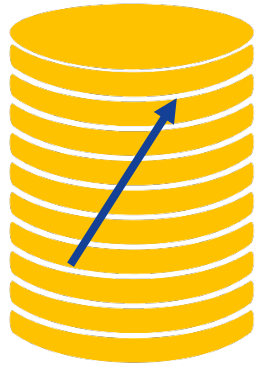
- **Preparation?**
 - **Inventorize**
 - **Wait**

Impact of the IVDR

Impact on daily practice

$$\frac{C \ B \ G}{M \ E \ B}$$

Costs



Administration



Quality







Innovativeness



Conclusion

Why do Dutch hospitals choose to use either commercial or home-brewed assays for biomarkers (CDx)?

	Home-brewed CDx	Commercial CDx
Relative advantage	Quality  Costs 	Quality  Costs 
Compatibility	Developed by lab	Tweaked by lab
Complexity	Implementation = less complex Development = complex	Implementation = complex
Observability	Contact and collaboration Literature and conferences	
Trialability	Development + validation = trial	Validation = trial Test kits from producers

Recommendations for the future

- **Commissie ter Beoordeling Oncologische Diagnostiek (CBOD)**
- **Guidelines from EMA**
 - Tweaked tests?
 - Clarity about requirements
- **Research:**
 - Bring together stakeholder groups
 - Test results
 - Other EU countries

Thank you!



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