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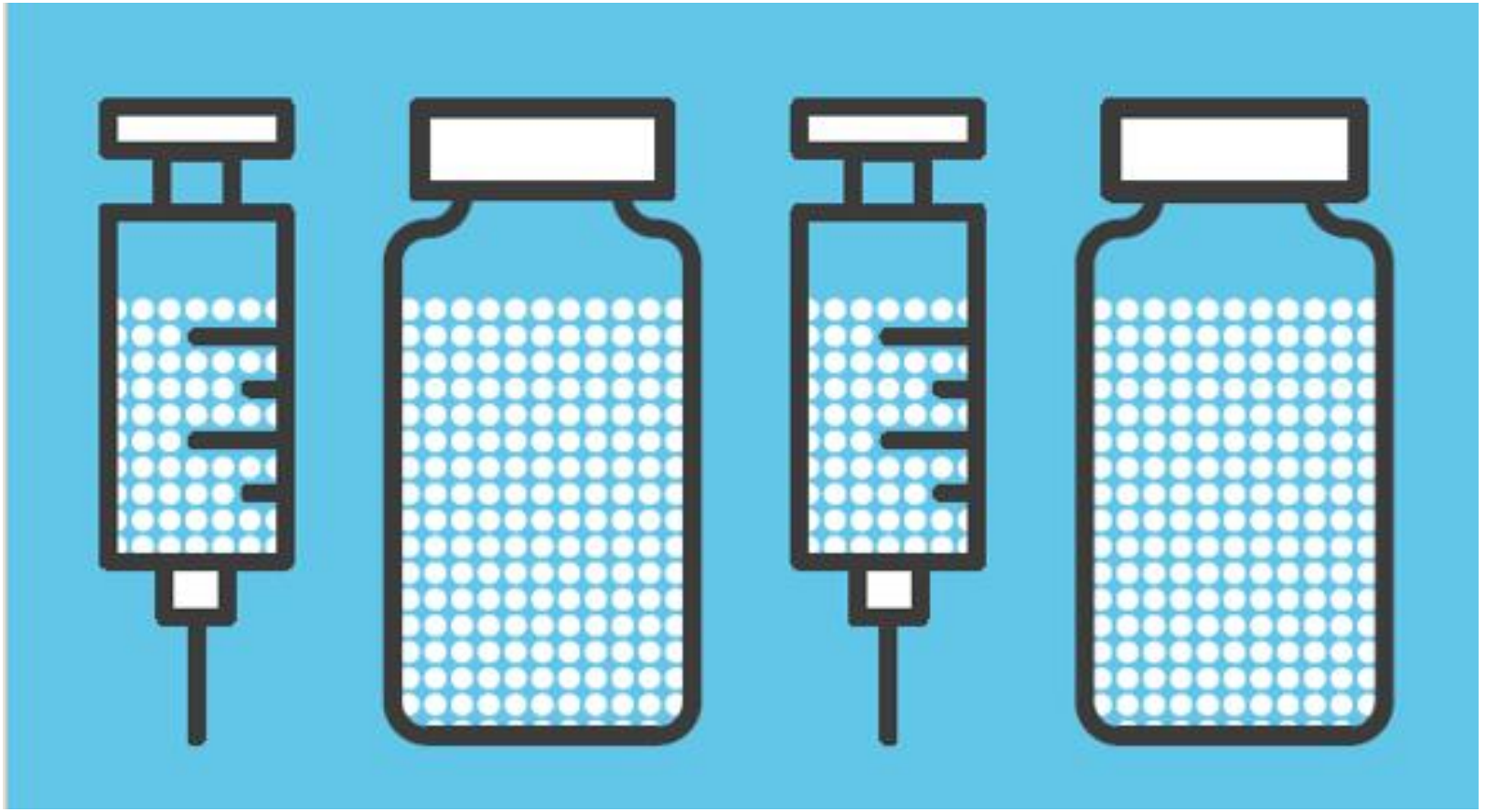
Blood Transfusion Laboratory Practice



ABO Titration and Transplant

Richard Haggas

Director UK NEQAS BTLP

UK NEQAS

International Quality Expertise

Summary

- ABO incompatible renal transplant and ABO titration relationship to transplant
- ABO titration programme history
- Scoring and performance

ABO incompatible renal transplant

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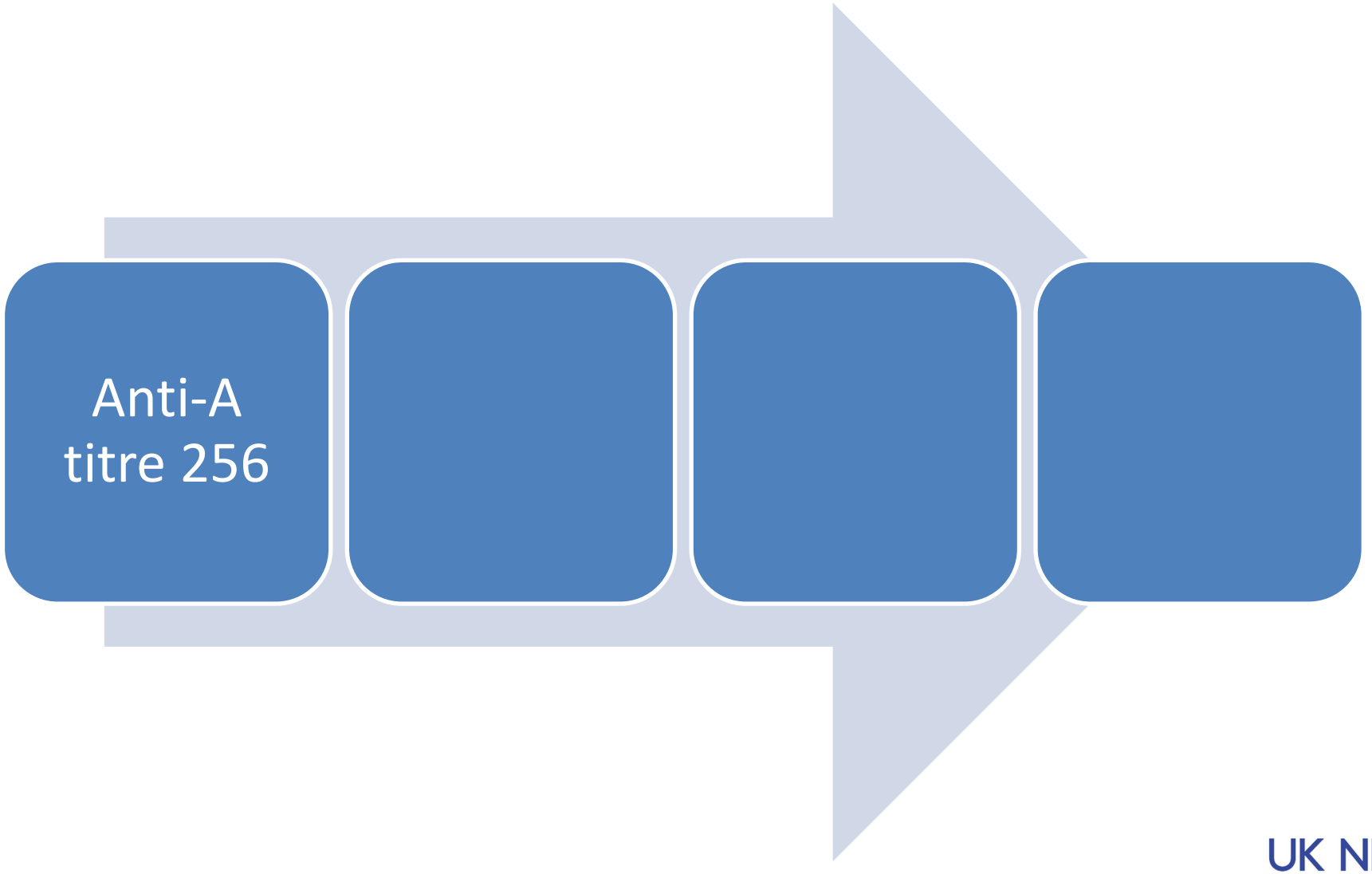
ABO titre is important



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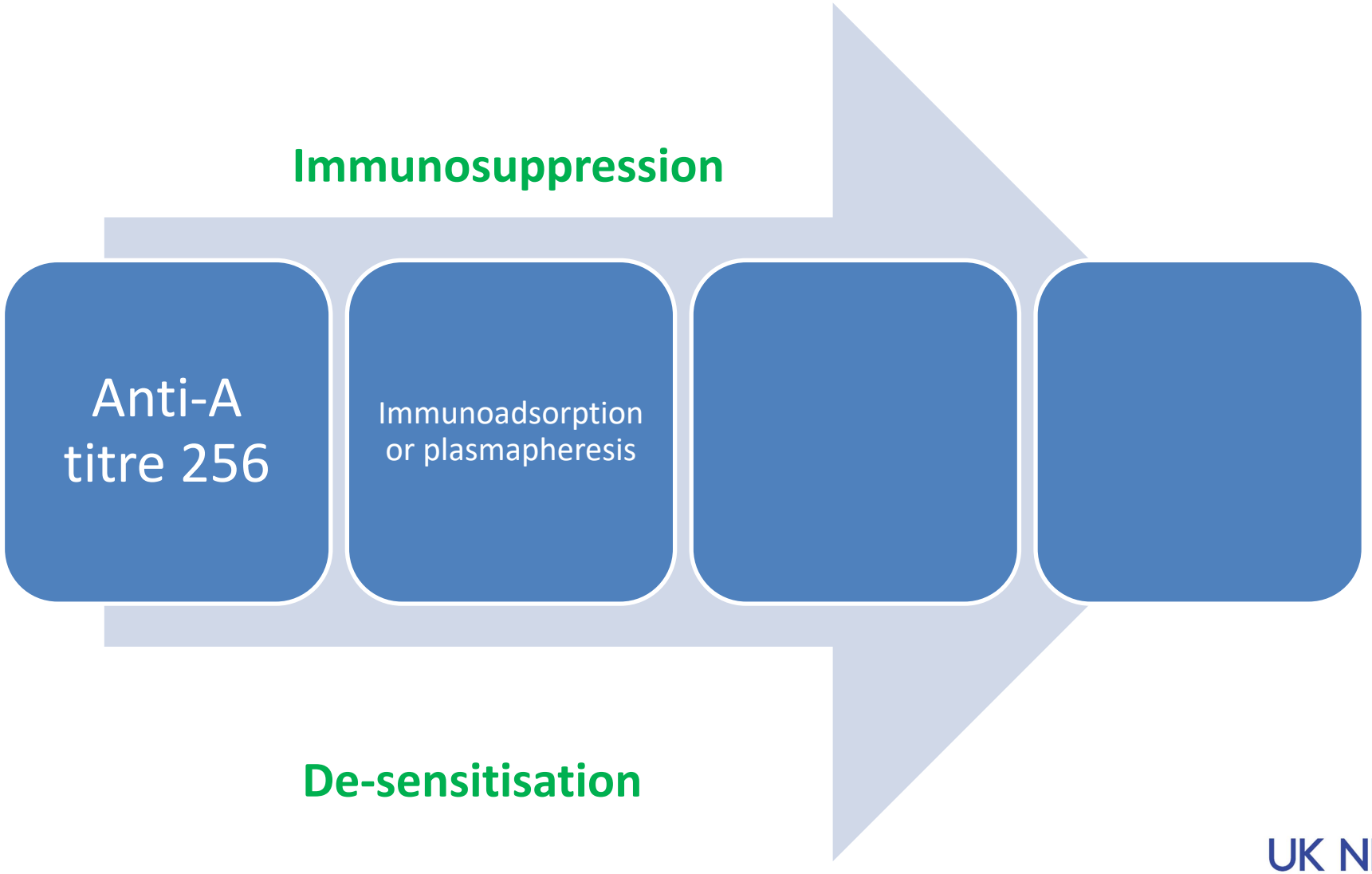
ABO titre is important



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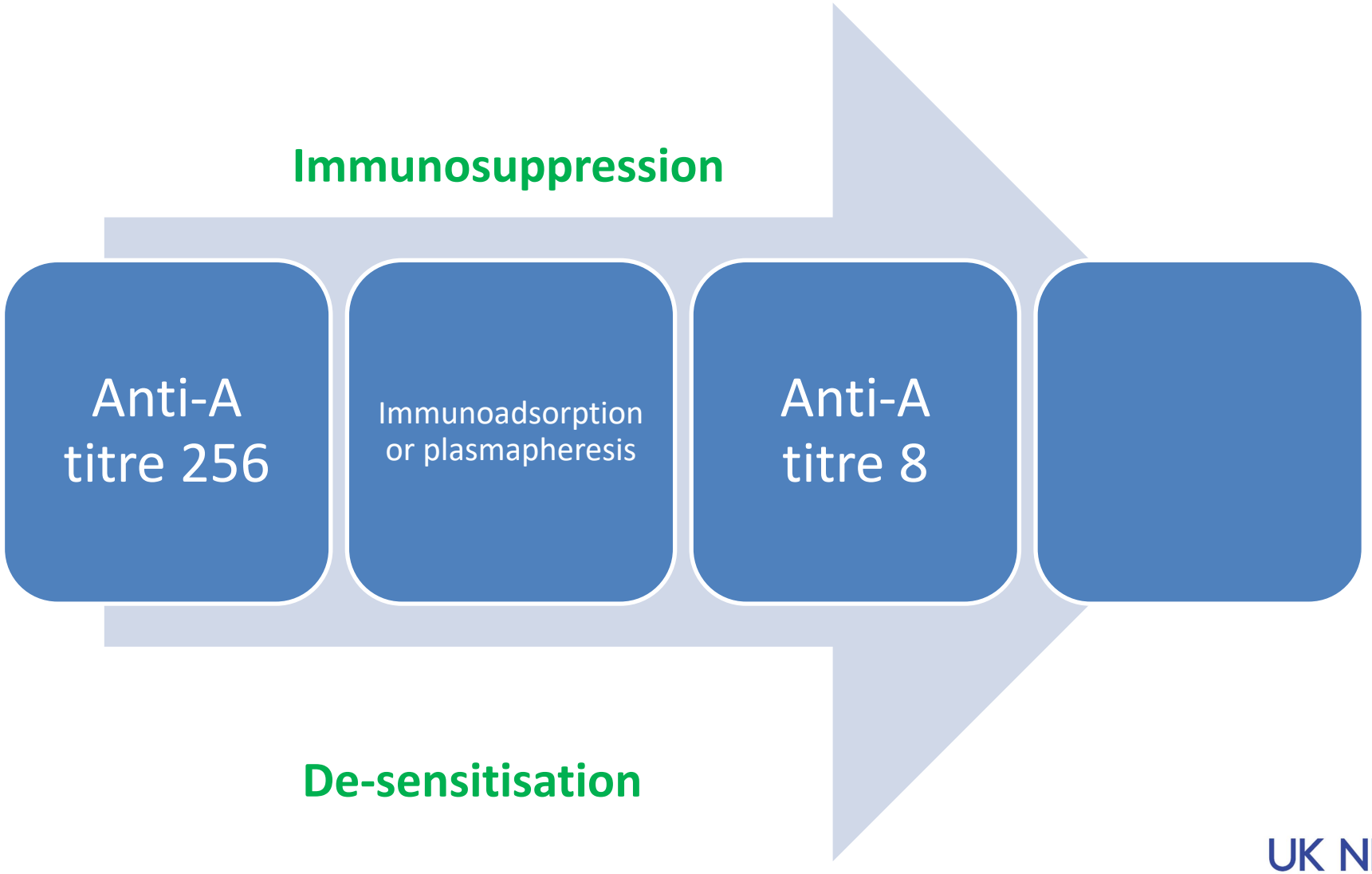
ABO titre is important



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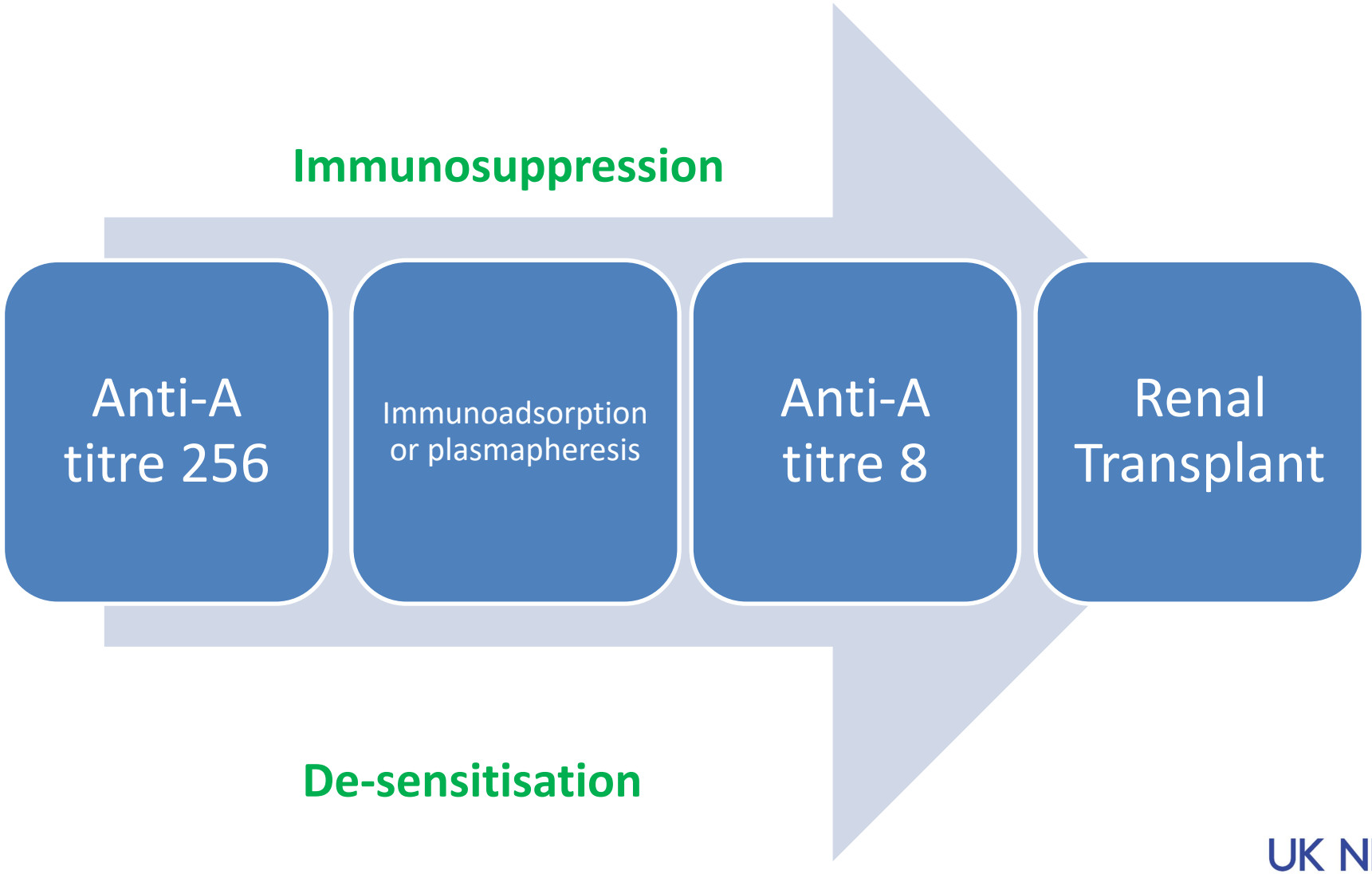
ABO titre is important



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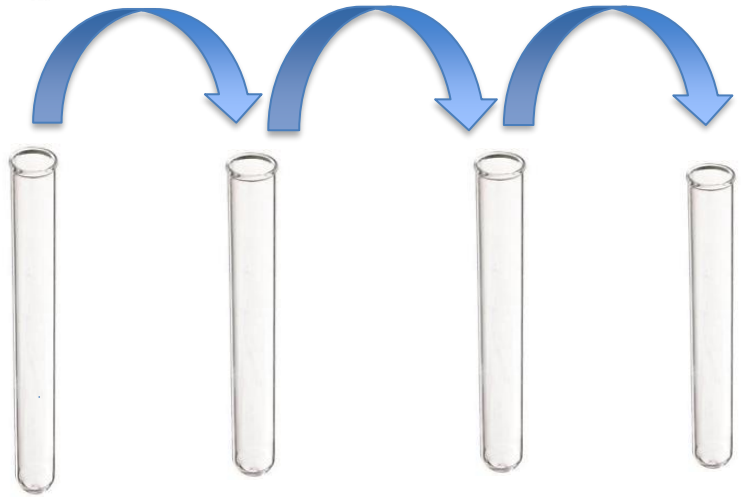
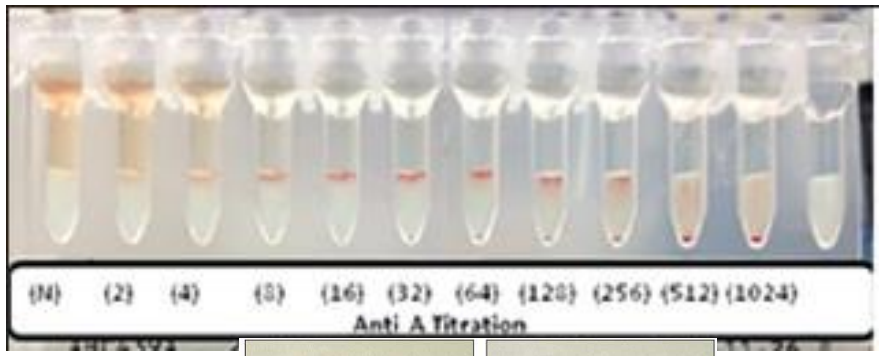
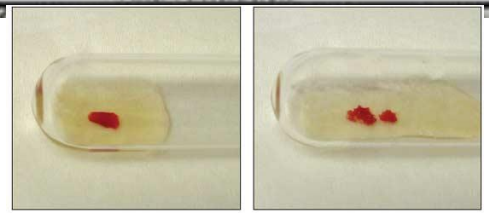
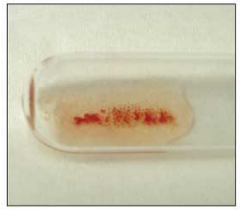
What's the titre?





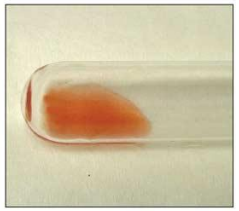

4+ Reaction

3+ Reaction


2+ Reaction


1+ Reaction


Hemolysis


Negative reaction

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UK NEQAS ABO titration programme

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- Pilot programme 2010 – 2017
- Aim to support ABOi renal transplant
- Provide EQA and investigate sources of variation
  - Development of standard technique
    - IAT and DRT, prescribed volumes, end point etc.
    - facilitate EQA
    - transferrable results across centres
  - Develop ABO ‘reference material’ with NIBSC
- Highlight variability in titres to clinicians

‘Standard’ Techniques

Bio-Rad selected as most universally accessible technology amongst participants

Tube? – EQA data and previous studies show that tube titres less reproducible than CAT

DRT

- NaCl cards
- 50µl of cells suspended in cell stab or ID-Dil 2
- 50µl of plasma dilution
- Incubate at RT for 15 minutes
- Centrifuge for 10 minutes
- Endpoint = last weak reaction

IAT

- IgG or polyspecific cards
- 50µl of cells suspended in cell stab or ID-Dil 2
- 25µl of plasma dilution
- Incubate at 37ºC for 15 minutes
- Centrifuge for 10 minutes
- Endpoint = last weak reaction

Evolution of ABO titration Scheme

	2010	2017	2024
No. Participants	38	99	117
% UK	55%	38%	29%
In – house (IH) techniques used	DiaMed Tube BioVue	DiaMed Tube BioVue Immucor Grifols	Bio-Rad Tube BioVue Immucor Grifols
Supporting renal transplant	Not known	46 (21 UK)	57 (18 UK)
Status of scheme	UK NEQAS Pilot	Full UK NEQAS Programme ISO 17043 accredited	Full UK NEQAS Programme ISO 17043 accredited

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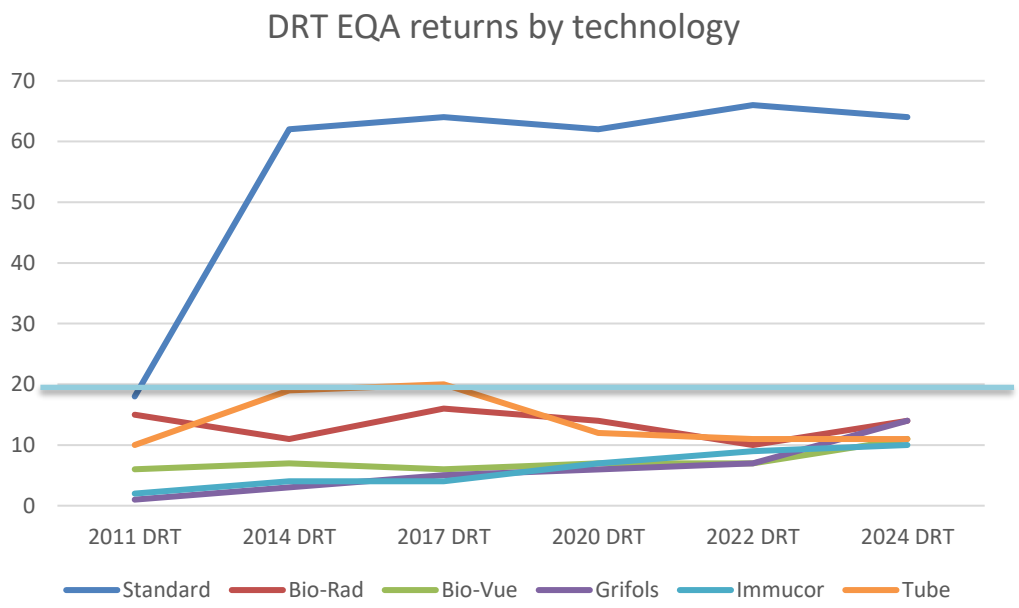
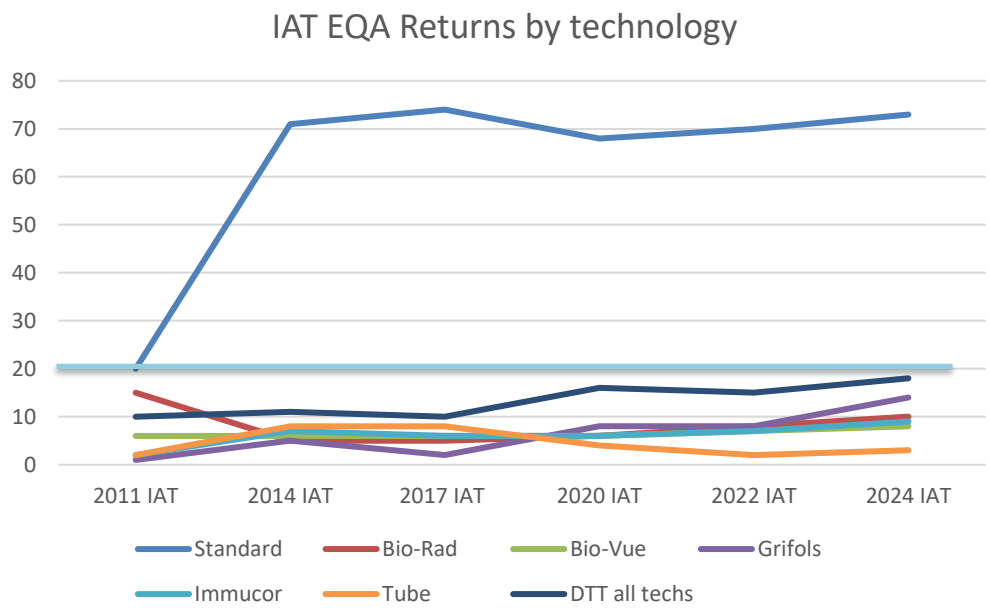
Transplants supported

- 24ABOT4 data (October 2024)
- 89/107 labs support transplant programmes

Transplant supported	Number of labs
HSCT	59
Renal	57
Liver	9
Heart	7
Lung	2

Use of technologies in EQA





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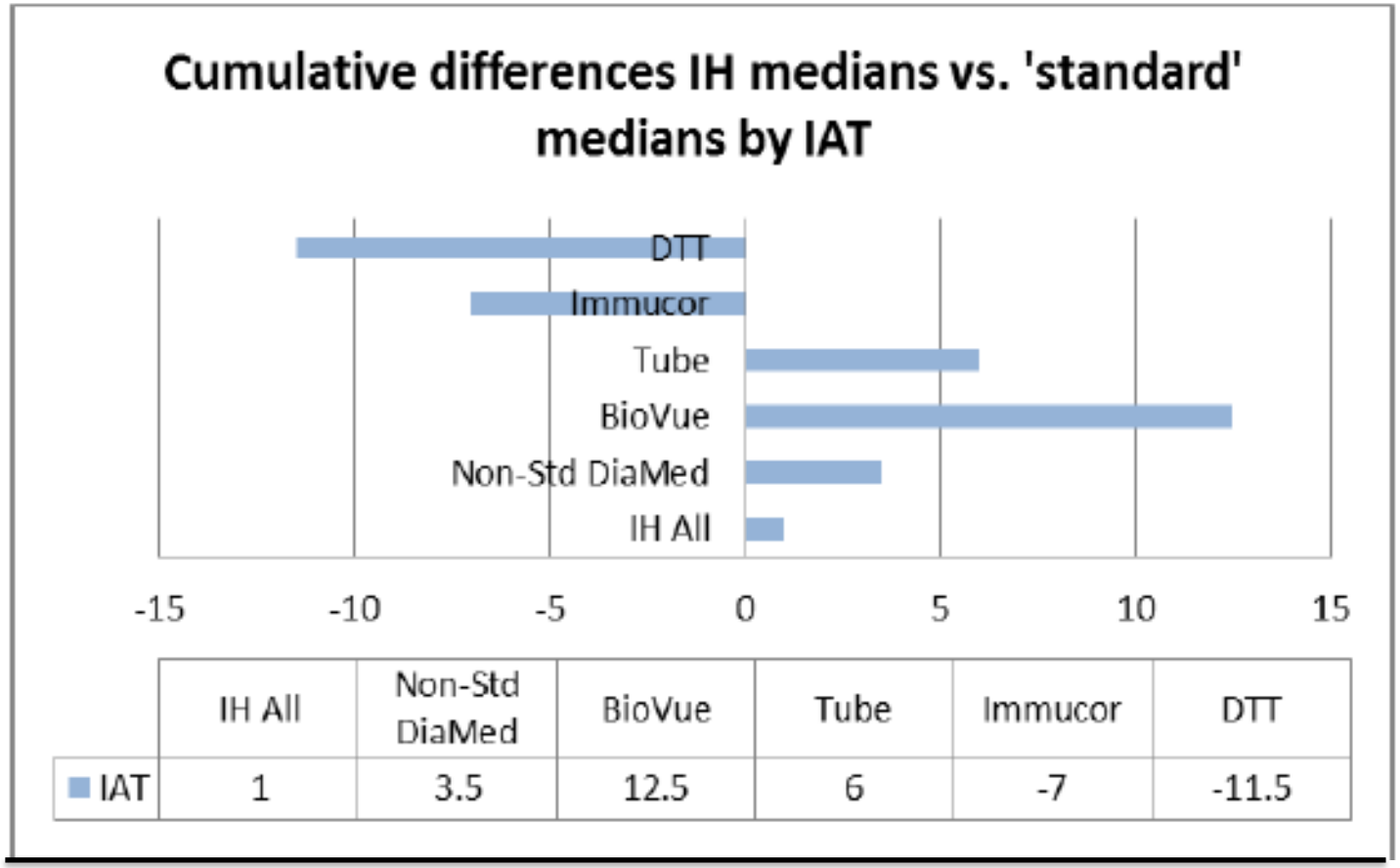
Inherent differences in technology



	IH All	Non-Std DiaMed	BioVue	Tube	Immucor	DTT
IAT	1	3.5	12.5	6	-7	-11.5

Caveat: small numbers using some technologies

Trends:
BioVue & Tube higher

Immucor & DTT lower (IgG only)

No judgement on which is correct!

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Performance monitoring (scoring)

Scoring based on median

e.g. median =32

Result						
4	8	16	32	64	128	256
2	1	0	0	0	1	2
			Score			

- Score 1 point for each dilution greater than 1 away from median
- Cumulative over 3 exercises
- 3 points = Unsatisfactory Performance (UP)
- Persistent Unsatisfactory Performance (PUP) = more than 1 episode of UP in rolling 12 months

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Performance monitoring (UK labs)

Year	No. of labs with UP	No. of labs with PUP
2017	5	0
2018	5	0
2019	4	0
2020	1	0
2021	1	0
2022	1	0
2023	1	0
2024	2	0

- Score 1 point for each dilution greater than 1 away from median
- Cumulative over 3 exercises
- 3 points = Unsatisfactory Performance (UP)
- Persistent Unsatisfactory Performance (PUP) = more than 1 episode of UP in rolling 12 months

- 20 episodes of unsatisfactory performance (UP)

- No episodes of persistent unsatisfactory performance (PUP)

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Thank you

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