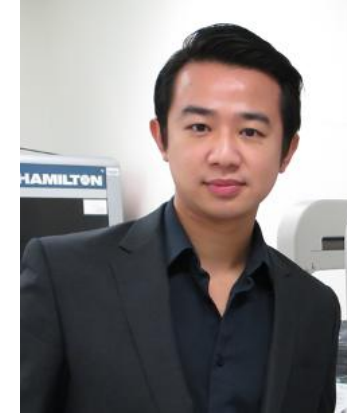


The ABO Adjusted cPRA Calculation



Presented by

NHLAAC Chair: Dr. Rob Liwski MD, PhD, FRCPC, A(ACHI)

NHLAAC Co-Chair: Dr. James Lan, MD, FRCPC, D(ABHI)

January 21, 2026



**Canadian
Blood
Services**

BLOOD
PLASMA
STEM CELLS
ORGANS
& TISSUES

Public

Meeting purpose

- The purpose of this meeting is to review and explain the rationale for the ABO-adjusted cPRA calculation in the Canadian cPRA calculator
- Provide a live demonstration of the ABO-adjusted cPRA calculation
- Discuss potential changes on workflows and/or processes
- Provide updates on the implementation timeline of the ABO adjusted cPRA calculation



THE UNIVERSITY OF BRITISH COLUMBIA

Implementation of ABO-adjusted cPRA calculator

James H Lan, MD, FRCP(C), F(ACHI)

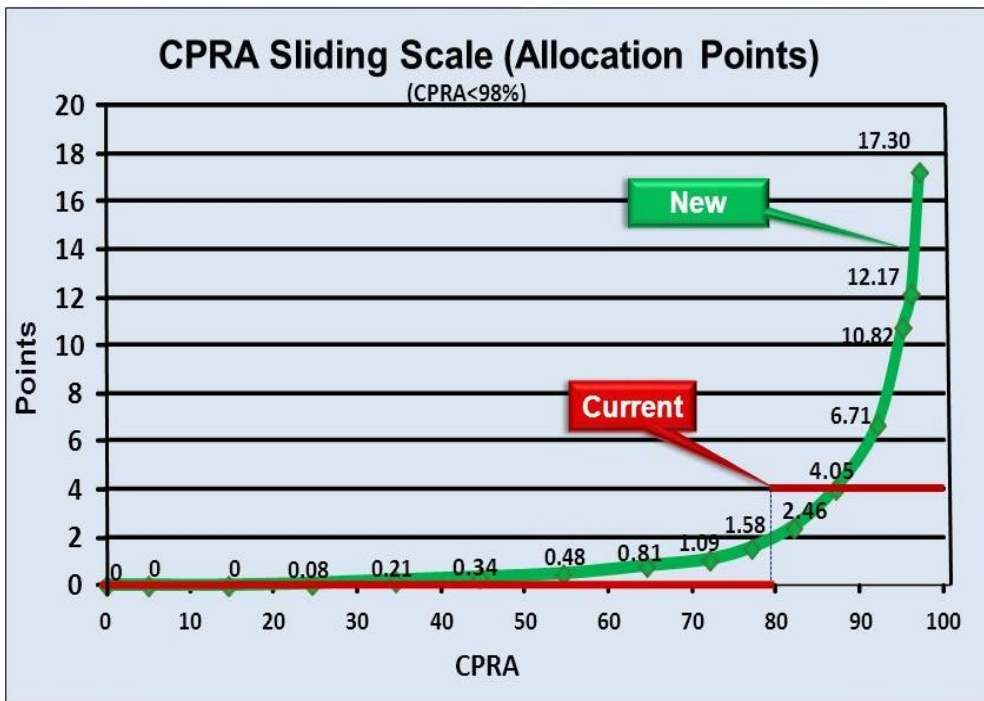
Assistant Professor, University of British Columbia

Medical Director, HLA Immunology Laboratory

Nephrology & Kidney Transplantation, Vancouver General Hospital

Interplay between cPRA and kidney allocation

- cPRA is used as a surrogate for patient's **access to transplant**
- Kidney allocation policies assign **priority** for candidates with increasing cPRA values

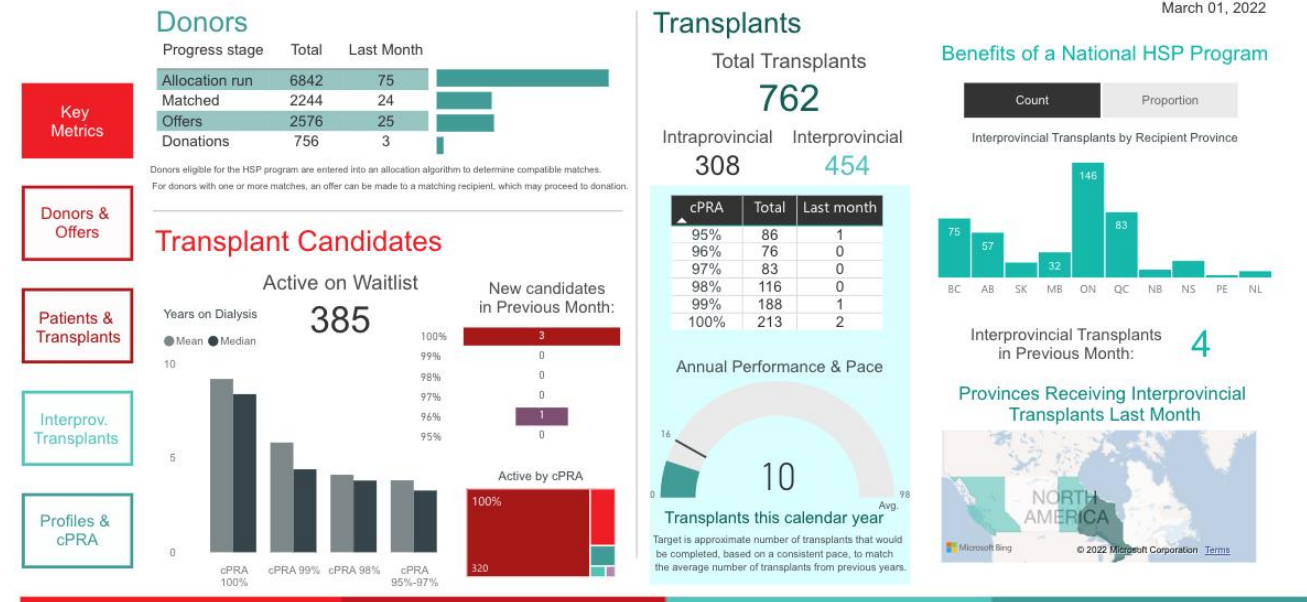


US Kidney Allocation System



Highly Sensitized Patients (HSP) Program

Overview of Key Metrics



Data as of March 01, 2022

Canadian HSP program (cPRA >=95%)

Evolution of cPRA: from a surrogate immune risk marker to an indicator of access to transplant

- **1960's: PRA** – a **laboratory-based** method of using a panel of local blood donors to represent the HLA composition of the local area
- **2009: cPRA** – calculation is based on HLA frequency data (**A, B, DR, DQB1**) in **different ethnic groups** and the proportion of their representation in the national deceased donor population
- **2011: HLA-C** added to cPRA algorithm
- **2015: inequity** of not including DQA, DPA, DPB (*Tinckam et al, AJT 2015*)
- **2022:** proposed unified **ABO-adjusted cPRA** (*Gragert/Lan, AJT 2022*)
- **2023:** added **HLA allele-specific** antibodies (*Liwski*)
- **2024:** Canadian approval of **ABO-allele adjusted cPRA** (*NHLAAC/KTAC*)
- **2026: Implementation of ABO-adjusted cPRA in Canada**

Background

ABO-adjusted calculated panel reactive antibody (cPRA): A unified metric for immunologic compatibility in kidney transplantation

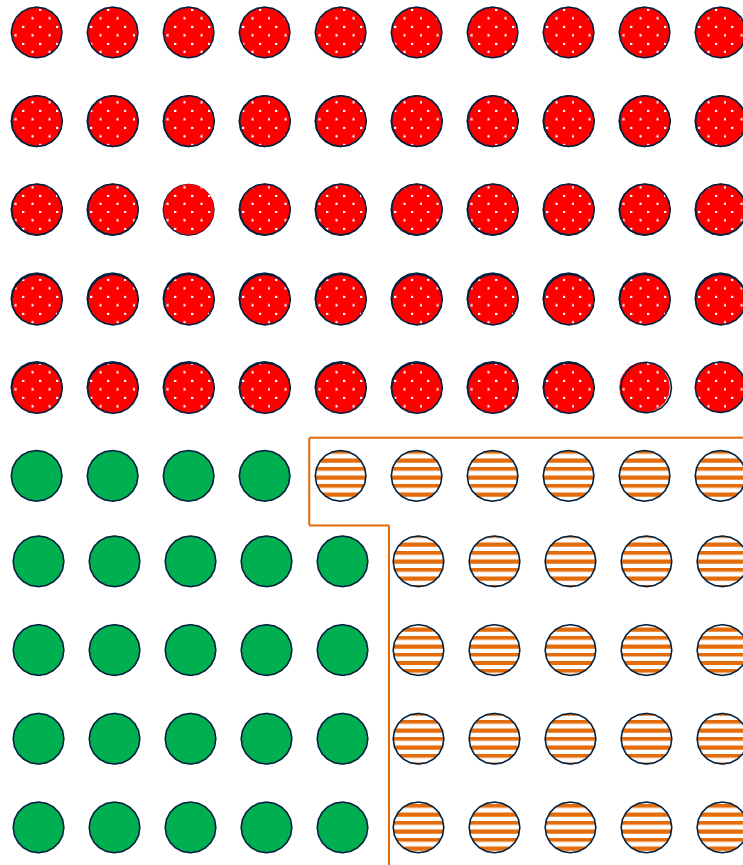
Loren Gragert¹ | Matthew Kadatz^{2,3} | James Alcorn⁴ | Darren Stewart⁴ |
Doris Chang⁵ | Jagbir Gill^{3,5,6} | Robert Liwski⁷ | Howard M. Gebel⁸ | John Gill^{3,5} |
James H. Lan^{2,3,9}



$$\text{ABO-adjusted cPRA} = \text{cPRA}_{\text{HLA+ABO}} = \text{cPRA}_{\text{HLA}} + \underbrace{[(100\% - \text{cPRA}_{\text{HLA}}) \times \text{PhenoFreq}_{\text{iABO}}]}_{\text{cPRA}_{\text{ABO-adj}} \text{ (ABO-adjustment)}}$$

Donor Pool Compatibility Schematic:

Blood group O candidate with HLA-DR53 antibody



cPRA_{HLA} = % of donor pool HLA-incompatible with candidate (conventional cPRA)

$\text{cPRA}_{\text{ABO-adj}}$ = % of donor pool HLA-compatible, but ABO-incompatible with candidate

$\text{PhenoFreq}_{\text{iABO}}$ = phenotype frequency of donor pool ABO-incompatible with candidate

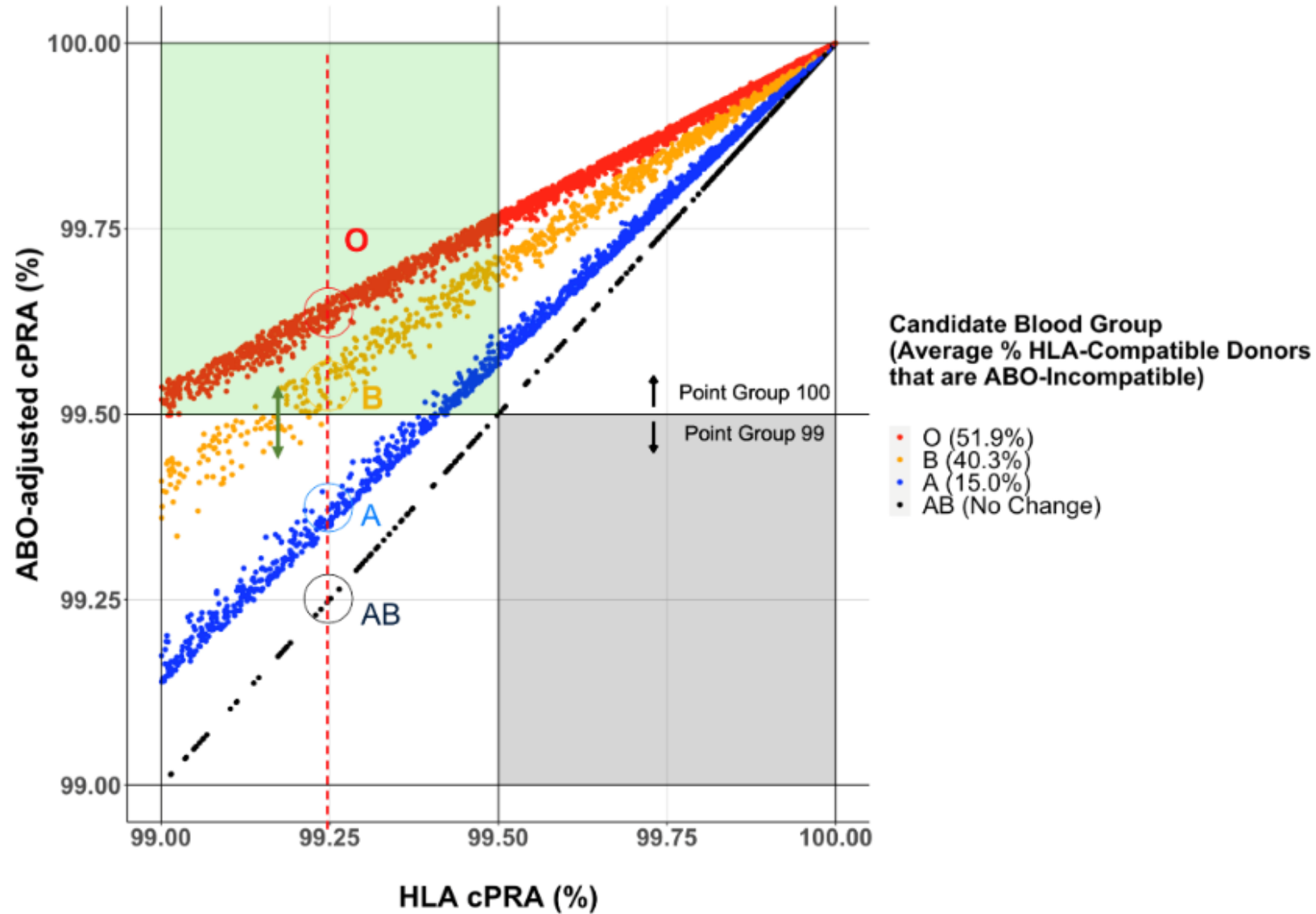
cPRA_{HLA} = Conventional cPRA by HLA
 → $\text{cPRA}_{\text{HLA}} = \text{cPRA}_{\text{HLA-DR53}} = 50\%$ HLA-incompatible

$\text{cPRA}_{\text{ABO-adj}}$ = magnitude of ABO-adjustment
 → $\text{cPRA}_{\text{ABO-adj}} = (100\% - \text{cPRA}_{\text{HLA}}) \times \text{PhenoFreq}_{\text{iABO}}$
 $= (100\% - \text{cPRA}_{\text{HLA-DR53}}) \times (\text{PhenoFreq}_{\text{A+B+AB}})$
 $= (100\% - 50\%) \times (52.6\%) = 50\% \times 52.6\%$
 $= 26.3\%$ HLA-compatible, but ABO-incompatible

$$\text{ABO-adjusted cPRA} = \text{cPRA}_{\text{HLA+ABO}} = 50\% + 26.3\% = 76.3\%$$

Donors HLA and ABO compatible with candidate

Results: **blood group O and B candidates** are under-recognized for their degree of immune incompatibility



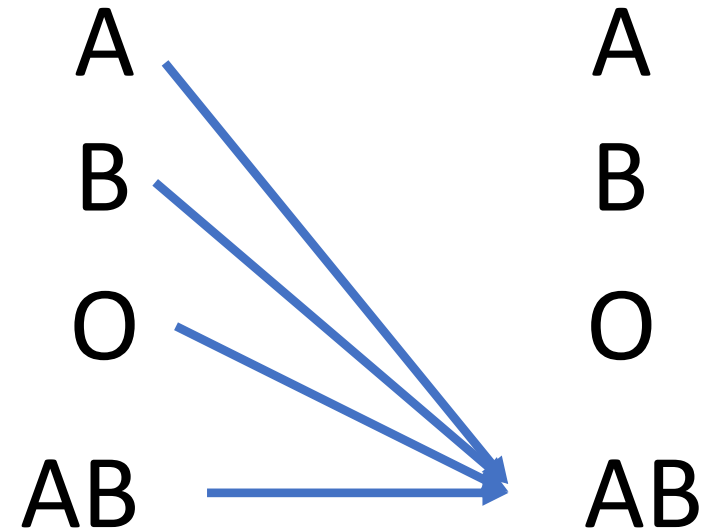
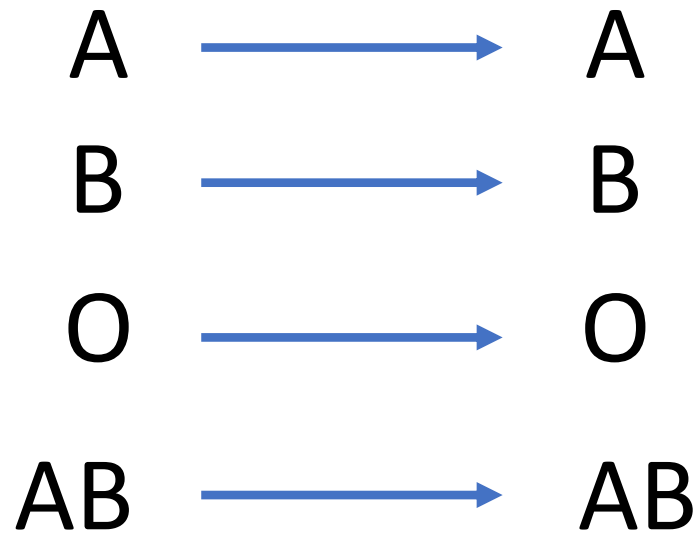
A tale of two countries: ABO-identical vs. ABO-compatible allocation



US Kidney Allocation:
Mostly ABO-**identical**



Canadian HSP Kidney Allocation:
ABO-**compatible**

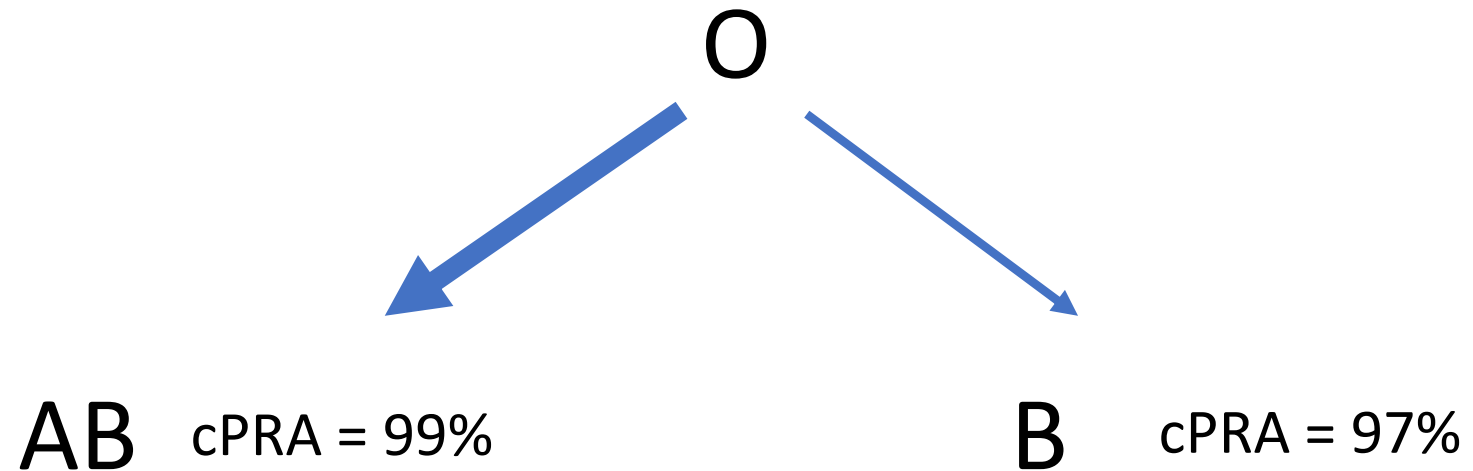


A tale of two countries: ABO-identical vs. ABO-compatible allocation



Canadian HSP Kidney Allocation:

ABO-compatible

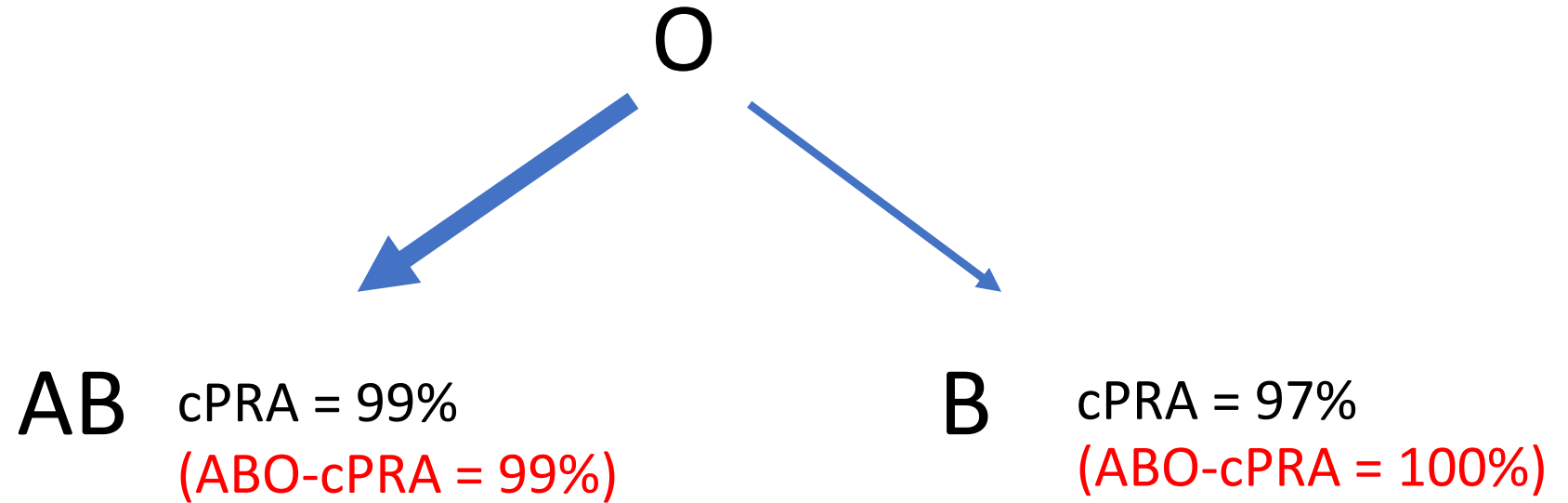


A tale of two countries: ABO-identical vs. ABO-compatible allocation



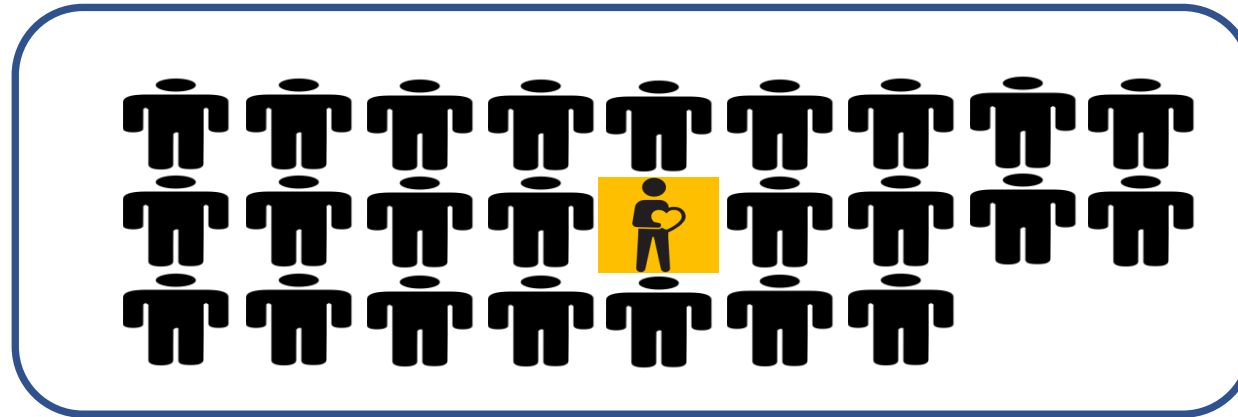
Canadian HSP Kidney Allocation:

ABO-compatible



Static Model: Probability of Compatible Matches

Canadian Deceased Donor Pool 2011 - 2022



Probability of matched offer

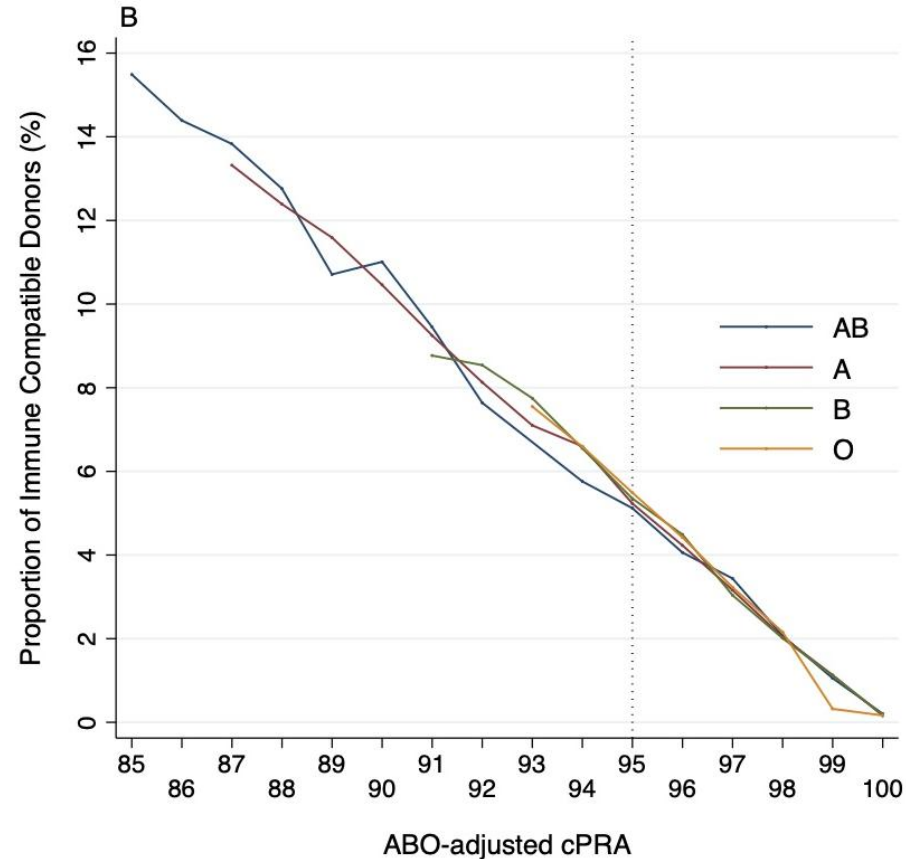
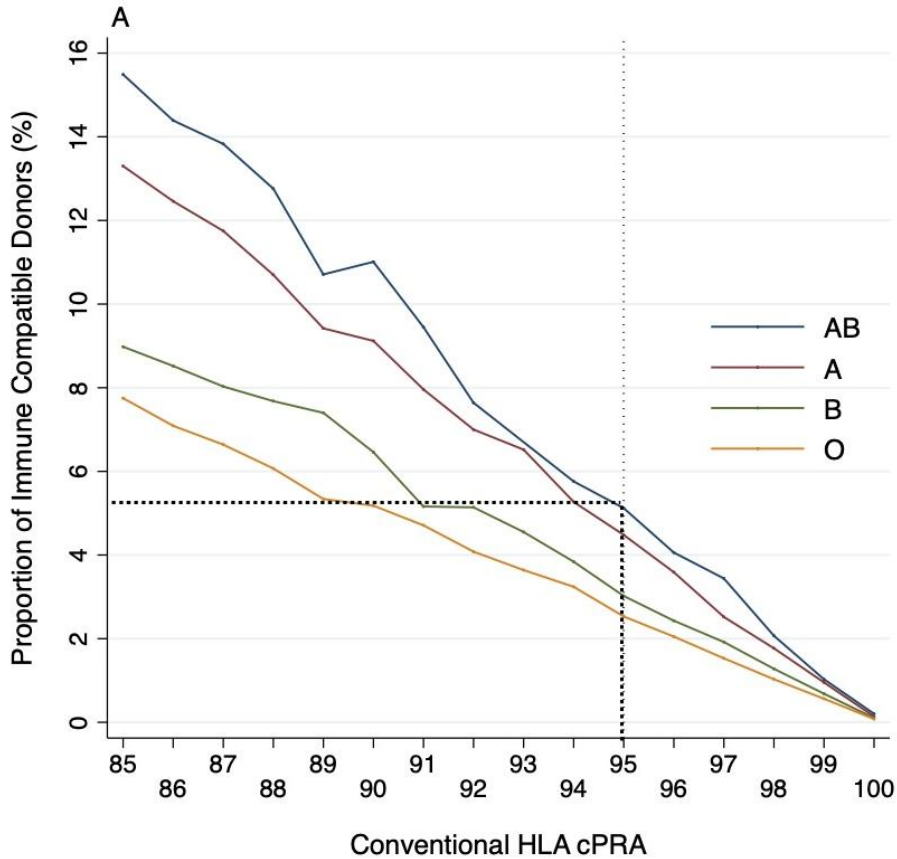
Candidates on HSP waitlist
(N=10,218)



HLA cPRA = 95%

Results: *conventional HLA cPRA underestimates the degree of immune incompatibility for B and O candidates*

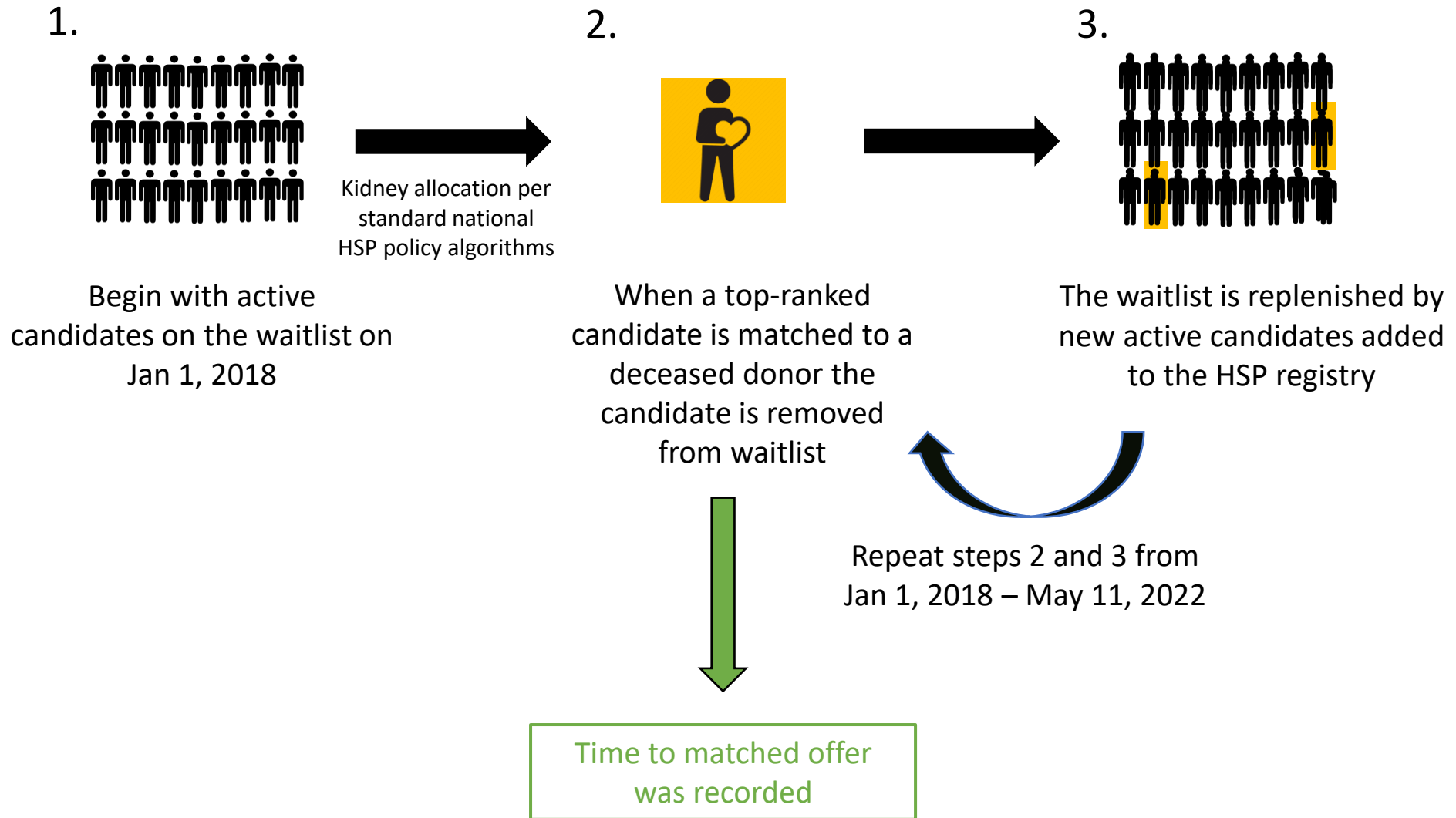
N=10,218



Poisson Model	Incidence Rate Ratio (95% CI)	P Value
Blood Group		
AB	Reference	Reference
A	0.83 (0.75-0.92)	0.002
B	0.60 (0.53-0.67)	<0.001
O	0.49 (0.45-0.55)	<0.001

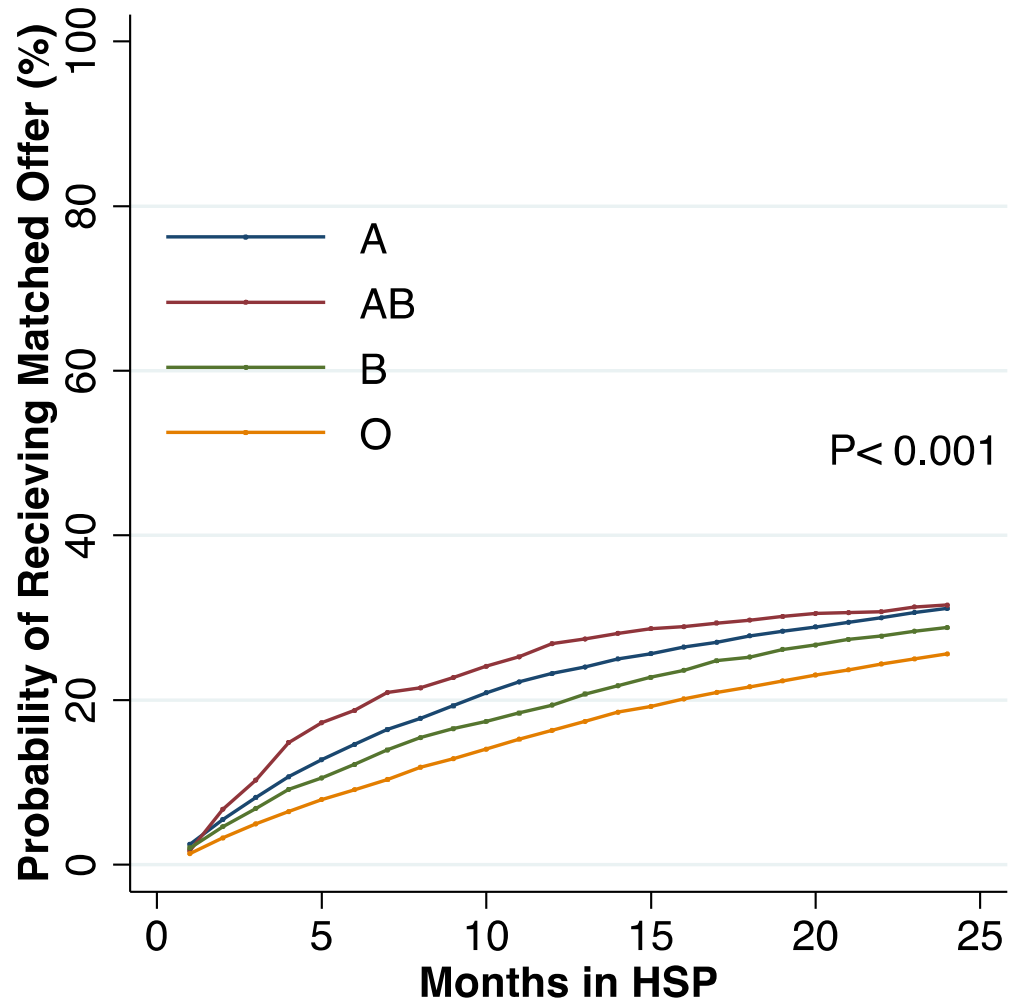
Poisson Model	Incidence Rate Ratio (95% CI)	P Value
Blood Group		
AB	Reference	Reference
A	1.00 (0.90-1.11)	0.9
B	1.02 (0.91-1.15)	0.8
O	1.04 (0.94-1.16)	0.5

Methods: discrete event simulation

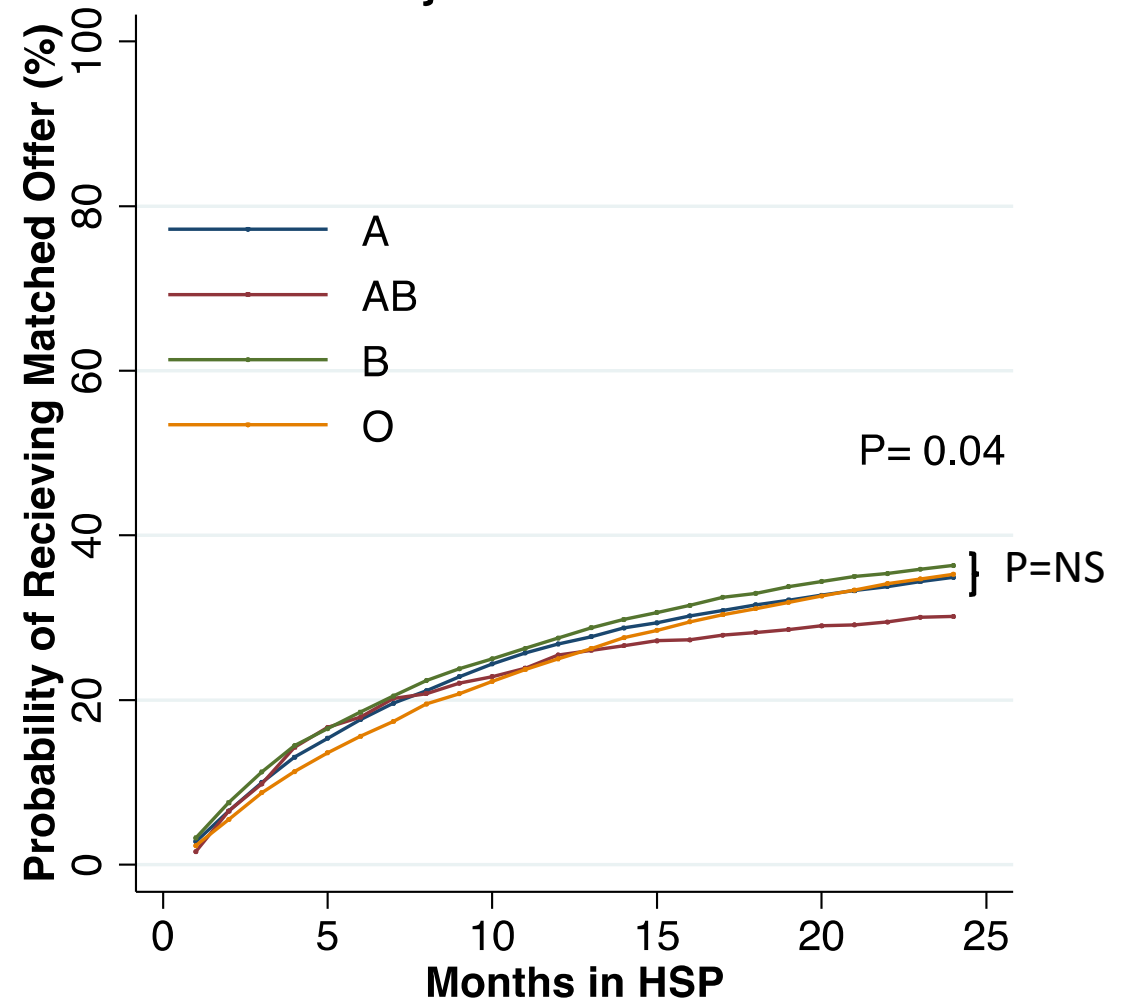


Results: discrete event simulation of candidates in cPRA 100% category

A. Conventional HLA cPRA

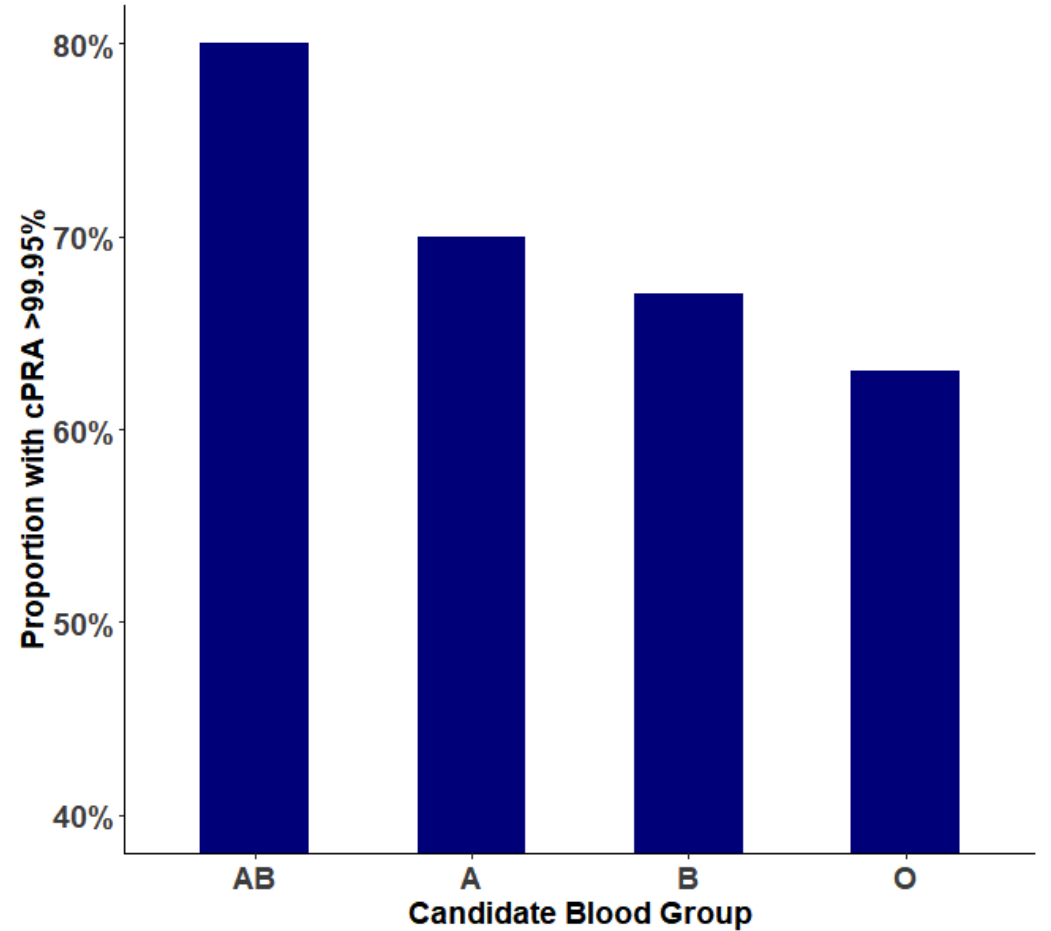
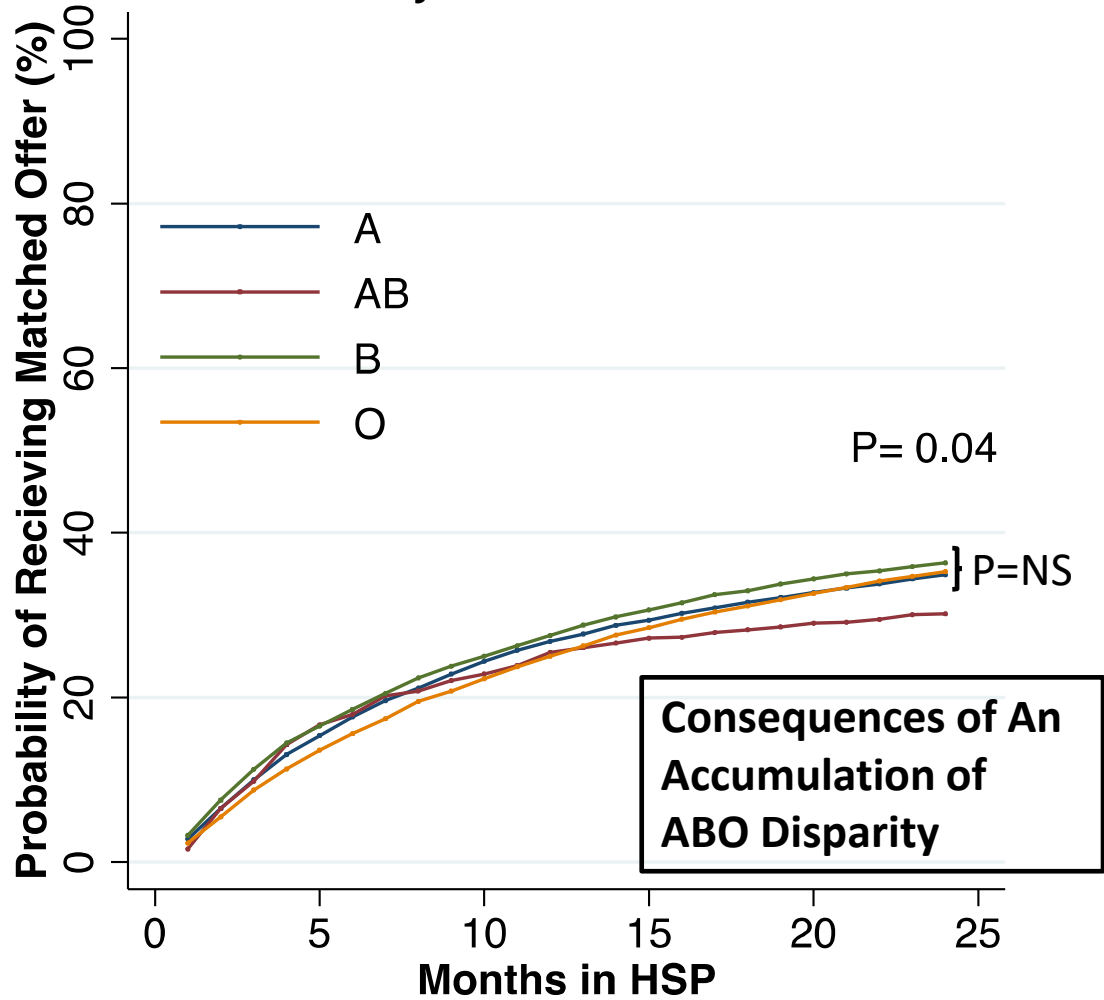


B. ABO-adjusted HLA cPRA



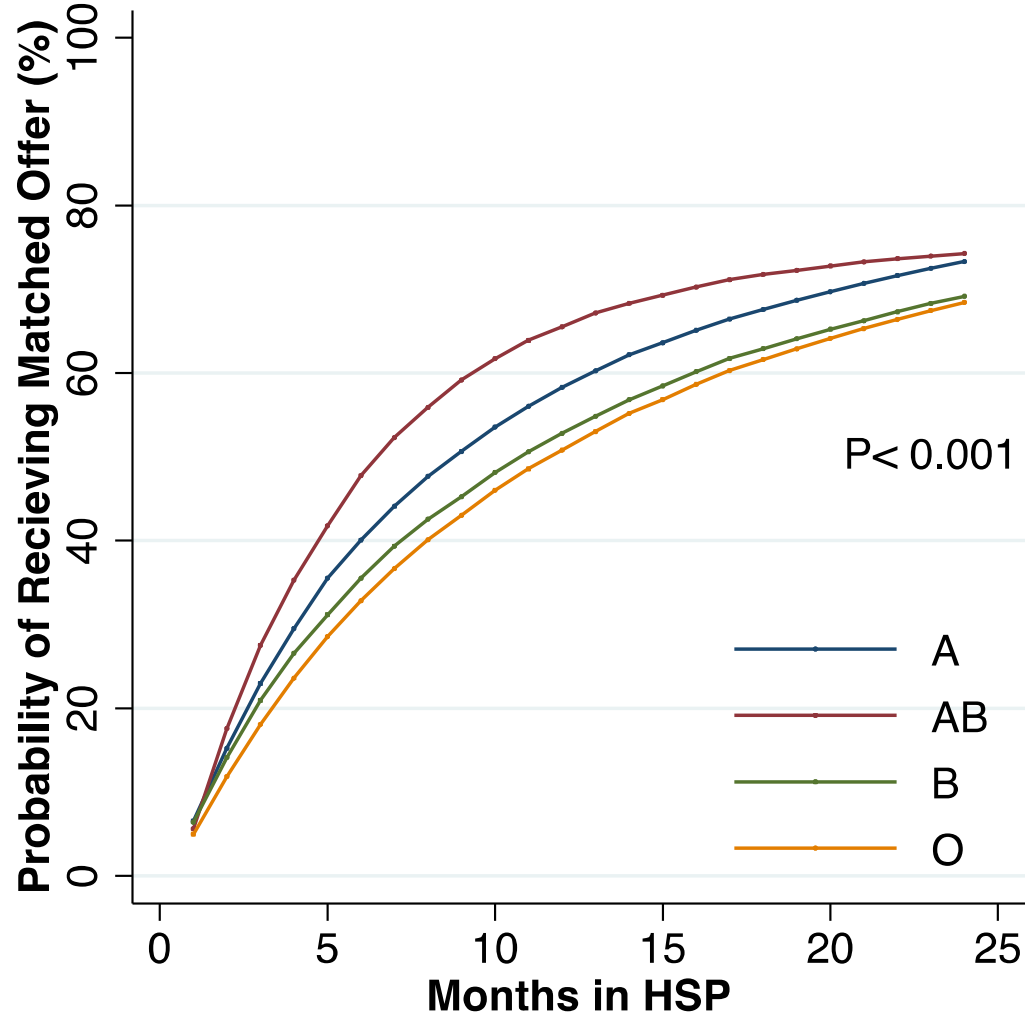
Results: discrete event simulation of candidates in cPRA 100% category

B. ABO-adjusted HLA cPRA

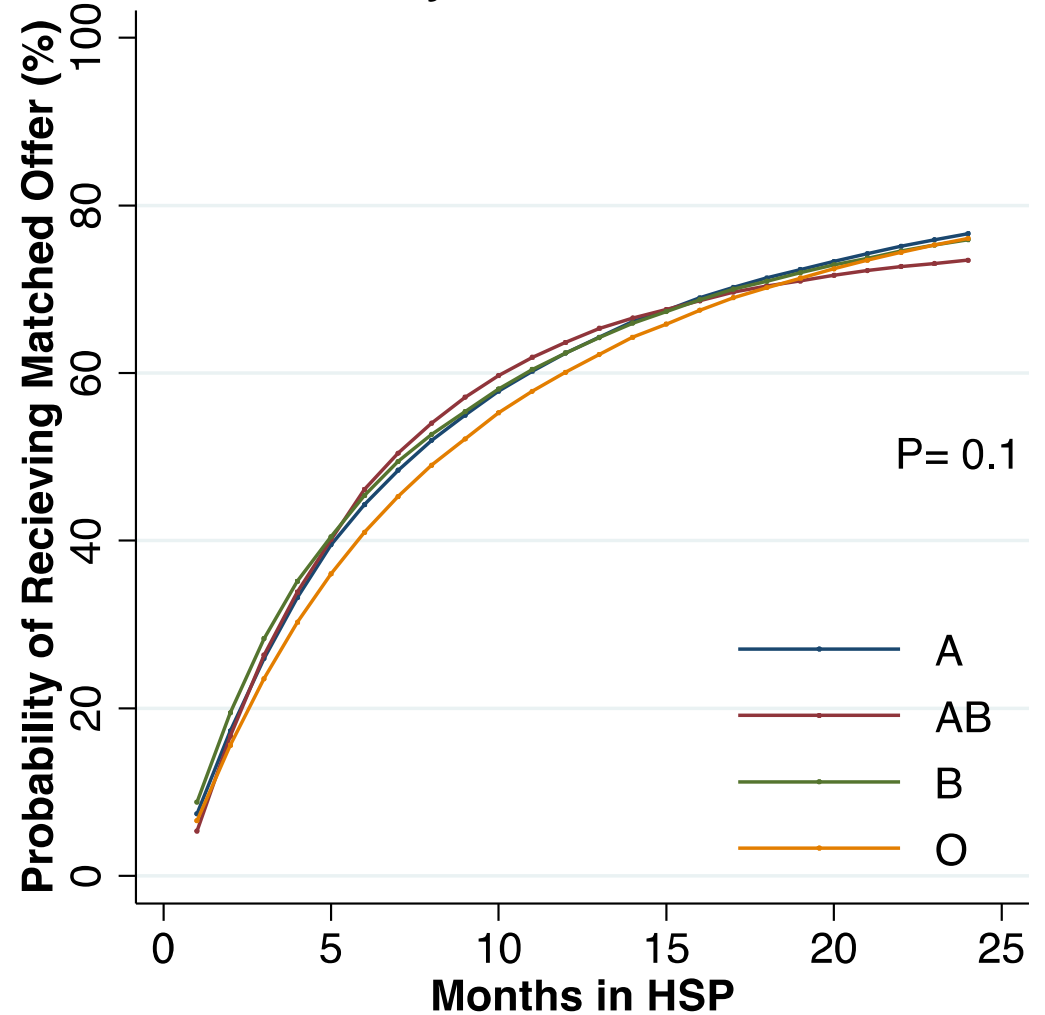


Results: discrete event simulation of candidates in cPRA 100% category excluding 99.95%+ candidates

A. Conventional HLA cPRA

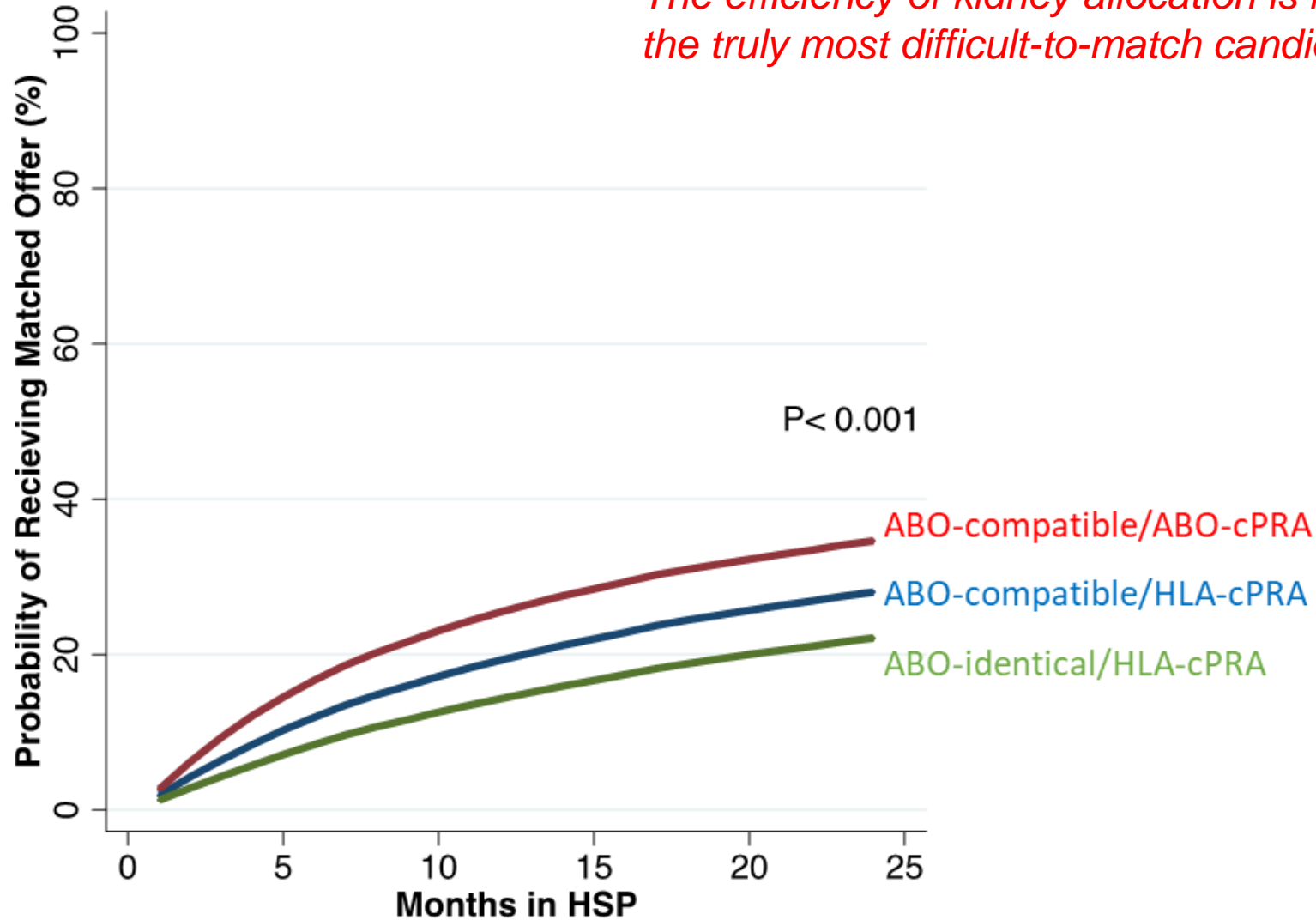


B. ABO-adjusted HLA cPRA



Results: *ABO-adjusted cPRA metric improves the **efficiency** of kidney allocation for 100% candidates*

The efficiency of kidney allocation is improved when the truly most difficult-to-match candidates are receiving offers first

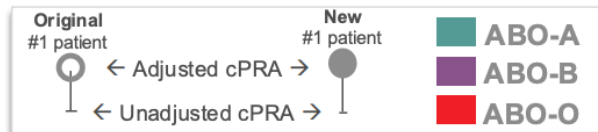
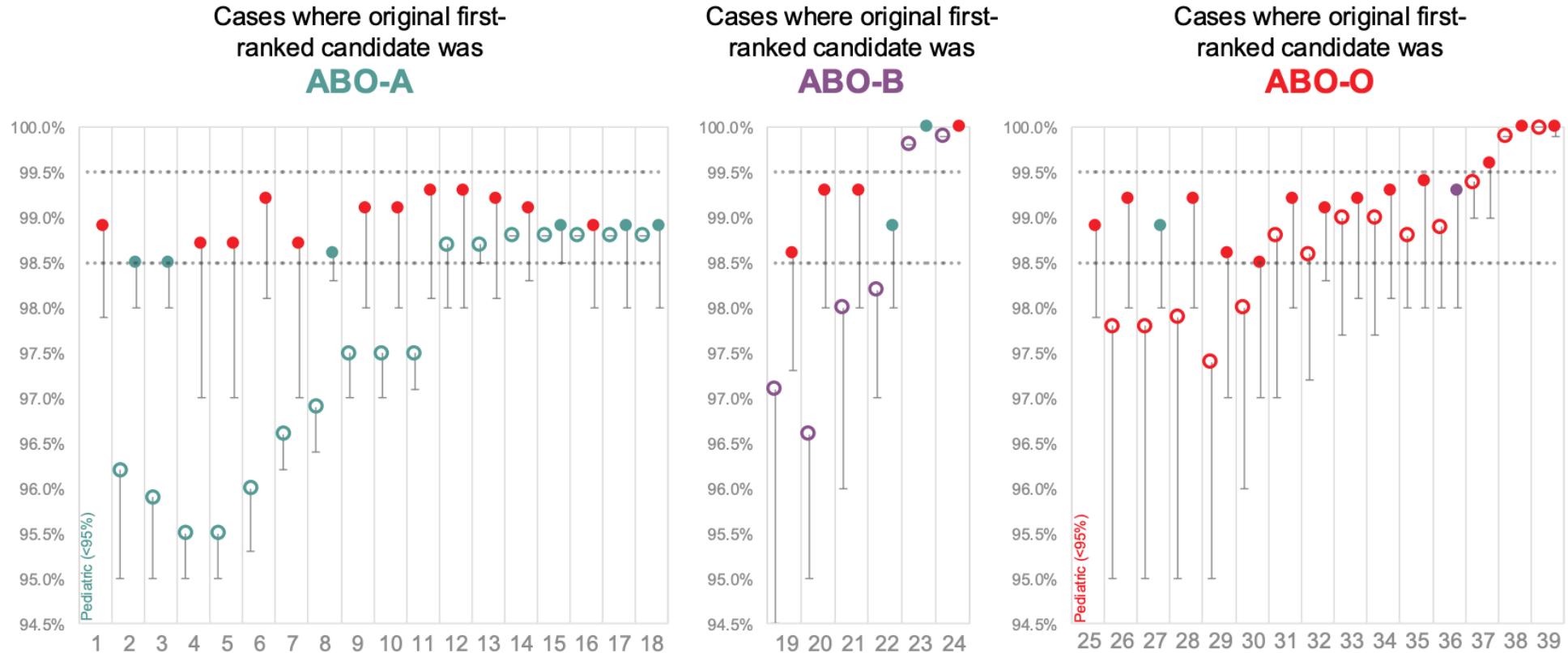


Policy changes to allow ABO-compatible transplants should be linked to ABO-adjustment to CPRA

	ABO-Identical Allocation	ABO-Compatible Allocation
No ABO-adjustment	<p>US System (current)</p> <ul style="list-style-type: none"> - ABO disparity is somewhat limited by policy restrictions - Missed opportunities 	<p>Canadian System (current)</p> <ul style="list-style-type: none"> - Maximizes opportunities - Higher ABO disparities than US
ABO-adjustment	<p>[Not Recommended]</p> <ul style="list-style-type: none"> - Would reduce disparity a bit - Still limits opportunities 	<p>Proposed Ideal System</p> <ul style="list-style-type: none"> - Both reduces disparity AND maximizes opportunities

Anticipating Changes: a **different** first-ranked candidate in some allocation runs

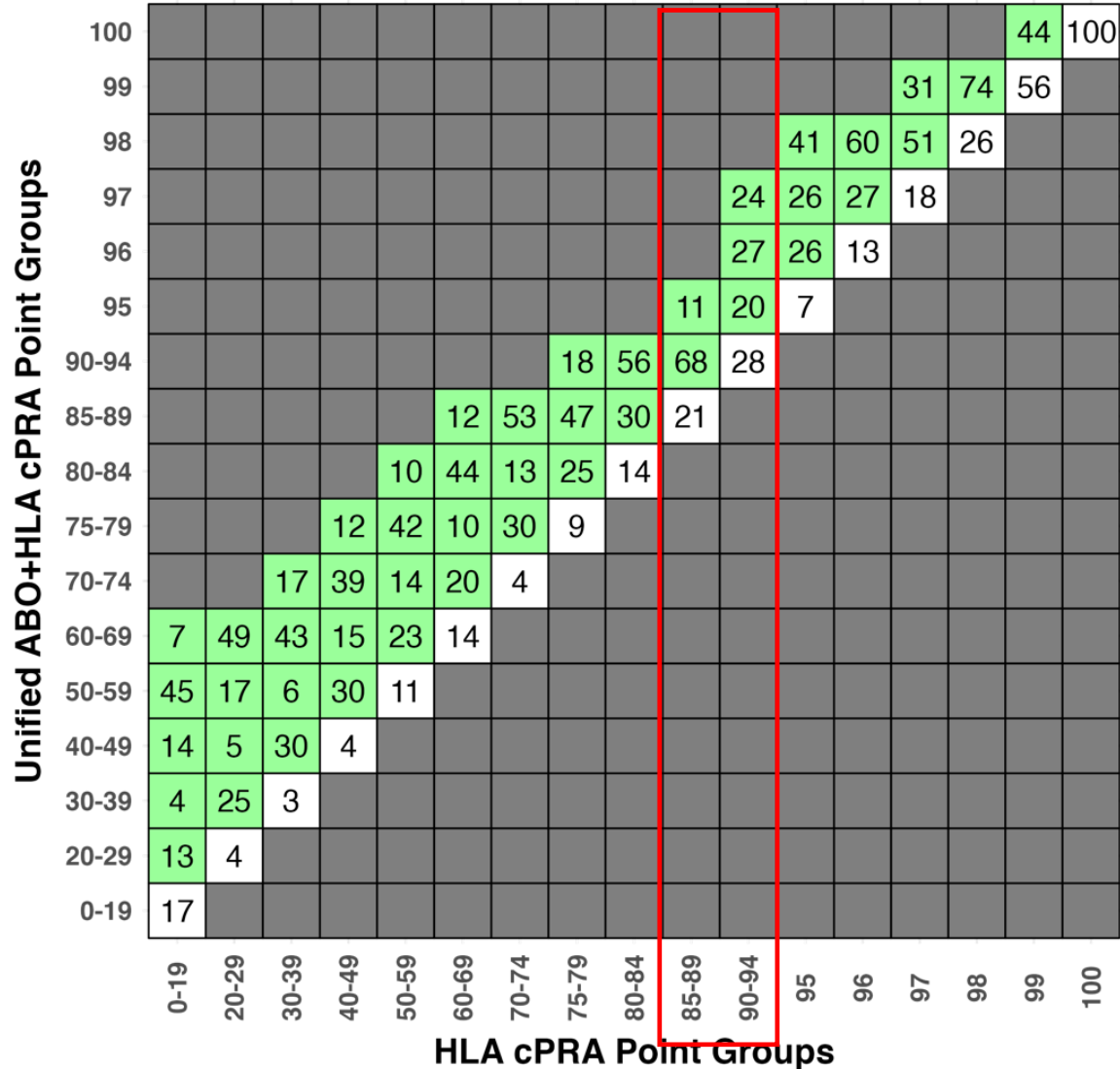
Summary of cases in which ABO-Adjustment would have resulted in a different first-ranked transplant candidate (n=39)



Case Example

Patient	ABO	Unadjusted cPRA	ABO-Adjusted cPRA	Days on Dialysis	Original Rank	New Rank	Notes
<i>I</i>	A	98.8%	98.8%	1,401	1	3	Original winner
<i>II</i>	A	98.5%	98.9%	2,187	2	2	
<i>III</i>	B	96.7%	98.0%	1,139	3	5	
<i>IV</i>	O	97.2%	98.6%	12,330	4	4	
V	O	98.3%	99.1%	402	5	1	New winner: ABO-Adjusted cPRA moves to PRA99 tier

Anticipating Changes: higher HSP activity (**bolus effect**)



Vancouver Program

- 74/339 (22%) are HSP in current system
- 84/339 (25%) are HSP after ABO-allelic adjusted cPRA
- **10** more patients added to HSP, **2.9%** overall)

Expected number of non-HSP candidates entering HSP program after ABO-adjustment

Center	Total number of candidates on current waitlist	Total number of candidates currently in HSP	% HSP	Number of candidates <u>added</u> to HSP after ABO-allele adjustment (use the updated donor pool n=8752)	The lowest unadjusted cPRA of candidates that move into HSP after ABO-allele adjustment (use the updated donor pool n=8752)
Vancouver	339	74	22	10	86.70%
McGill	348	66	19	4	91%
Calgary				2	94%
Ontario (as of October 21, 2024)	1014	218	21	14	83.80%
Quebec City	50	7	14	2	89.12%
Winnipeg	118	25	21	7	89.70%
Atlantic	109	23	21	3	87%
Edmonton	157	30	19	8	83.10%
Saskatoon	54	10	18.5	1	88.39%
Total	2189	453	21	51	83.10%

Workflow of local ABO-cPRA re-calculation

Identify local list of waitlisted kidney candidates

- Local LIS Histotrac

Export unacceptable antigens and blood type of waitlisted candidates to Excel format

- Histotrac search

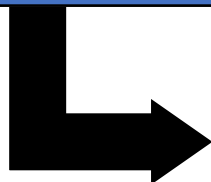
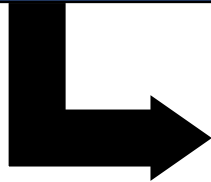
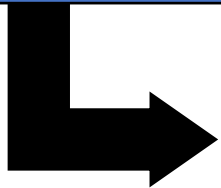
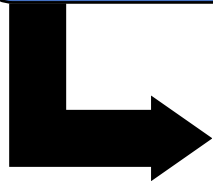
Send Excel file to CBS

- Marc Mousseau performs batch ABO-cPRA calculation

CBS sends recalculated ABO-cPRA values back to local lab

Local lab identifies new HSP candidates

- Informs clinical team



Histotrac query to extra waitlisted candidates' ABO, standard cPRA, and unacceptable antigens

SQLQuery1.sql - spdbshist002.HistoTrac2-Live (VCH\fffenninger (89))* - Microsoft SQL Server Management Studio

```
SELECT SSNbr, PatientId, lastnm, firstnm, ABOCd, cPRA, TestDt, CL1AntibodyTxt, CL2AntibodyTxt
FROM (
    SELECT SSNbr, pat.PatientId, lastnm, firstnm, ABOCd, PctPosCnt as cPRA, TestDt, CL1AntibodyTxt, CL2AntibodyTxt,
           ROW_NUMBER() OVER (
               PARTITION BY SSNbr
               ORDER BY test.TestDt DESC
           ) AS rn
    FROM dbo.Patient pat
    INNER JOIN dbo.Sample smp ON smp.PatientId = pat.PatientId
    INNER JOIN dbo.Test test ON smp.SampleID = test.SampleID
    WHERE TestTypeCd IN ('Cdn_cPRA') and categoryCd = 'KIDNEY' AND UNOSActivatedInd = 1 AND BatchMethodCd = 'KT'
) x
WHERE rn = 1
```

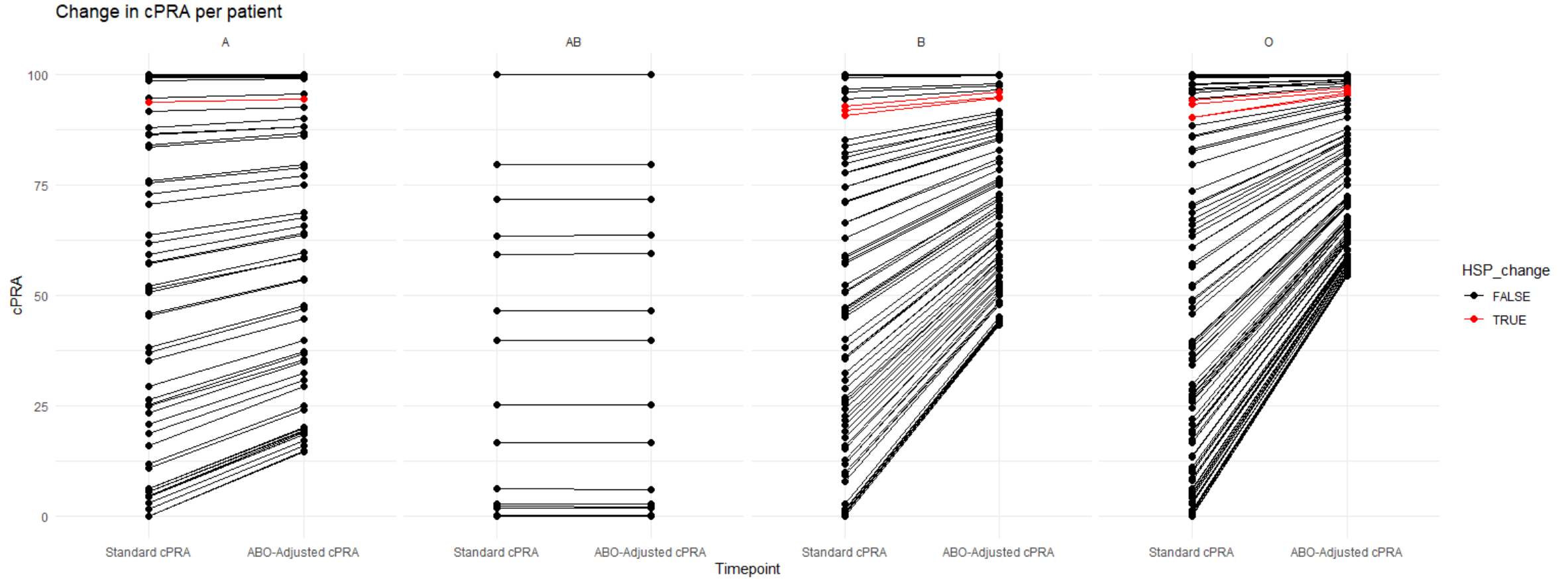
	SSNbr	PatientId	lastnm	firstnm	ABOCd	cPRA	TestDt	CL1AntibodyTxt	CL2Ant
1					B	11.98		B:37 57 58	
2					B	85.27		A:66 B:7 13 27 41 42 47 48 54 55 56 57 58 60 61 ...	DR:11
3					AB	0.26		Cw:18	
4					O	99.89		A:43 B:7 8 13 18 35 37 38 39 41 42 44 45 47 48 4...	DR:4 6
5					O	83.2		A:23 24 25 32 B:37 38 49 51 52 53 57 58 59 63 77	DQ:5 6
6					O	28.49		A:1 B:75 82	
7					A	25.04		A:23 24 B:37	
8					A	99.3		A:2 11 23 25 26 29 30 31 32 33 34 36 43 66 68 69...	DR:4 7
9					O	85.94			DR:8 9
10					B	1.67		A:34 66	

Query executed successfully. | spdbshist002 (16.0 RTM) | VCH\fffenninger (89) | HistoTrac2-Live | 00:00:00 | 412 rows

Excel file of all waitlisted kidney candidates with their blood type, cPRA and unacceptable antigens

A	B	C	D
ABO Cd	Unadjusted_cPRA	CL1AntibodyTxt	CL2AntibodyTxt
O	100.00	A:1 2 3 11 25 26 29 30 31 32 34 36 43 66 69 74 80 B:7 13 27 35 39 47 48 56 57 58 60 61	DR:4 7 9 10 DRw:53 DQ:8 9 DQA:2 3 5 DP:0201 0202 0401 0402 8 10 14
B	100.00	B:13 60 61 Cw:5	DR:1 0103 7 8 9 10 11 15 16 17 18 DRw:51 53 DQ:2 7 8 9 DP:1 3 0401 5 6
O	100.00	A:1 3 11 23 24 25 26 29 30 31 32 33 34 36 43 66 68 74 80 B:8 18 51 57 58 64 65 73 78 C	DR:1 0103 4 7 8 9 10 11 12 13 15 16 18 DRw:51 53 DQ:4 6 7 8 9 DQA:2 3
B	100.00	A:1 2 3 25 26 29 30 31 32 33 34 36 43 66 68 69 74 80 B:7 8 13 18 27 35 37 39 41 42 44 4	DR:1 0103 4 7 9 10 12 14 15 16 DRw:51 53 DQ:5 DP:0201 0202 3 0401 0
A	100.00	A:1 3 11 23 24 25 26 30 31 32 33 34 36 43 66 68 69 74 80 B:7 8 13 18 27 35 37 38 39 41	DR:4 8 12 15 16 DQ:4 5 6 8 9 DQA:3 DP:1 0201 3 0402 5 6 8 9 10 11 13 14
B	100.00	A:1 3 11 23 24 25 26 29 30 31 33 34 36 43 66 68 69 74 80 B:7 8 13 18 27 35 37 38 39 41	DR:1 0103 9 10 14 15 16 17 DRw:51 DQ:2 4 5 6 8 9
AB	100.00	A:1 2 3 29 30 31 32 33 34 36 43 68 69 74 80 B:8 13 18 27 35 37 38 39 41 42 44 45 46 47	DR:4 7 9 10 11 DRw:53 DQ:2 4 6 7 8 9 DP:0201 0202 3 0401 0402 6 8 9 11
O	100.00	A:43 B:7 8 13 18 35 37 38 39 41 42 44 45 47 48 49 50 51 52 53 54 55 56 59 60 61 62 63	DR:4 8 10 11 16 DRw:53 DP:0201 3 0402 6 8 9 10 14 16 17 18 20 25 28
A	100.00	A:1 2 11 23 24 25 26 29 31 33 36 43 68 69 74 80 B:8 13 27 35 37 38 41 44 45 46 47 48 4	DR:1 0103 4 7 8 9 10 11 12 14 15 16 DRw:51 53 DQA:6 DP:3 6 9 14 17 20
O	100.00	A:2 3 11 23 24 25 26 29 30 31 32 33 34 36 43 66 68 69 74 80 B:7 13 27 41 42 44 45 47 4	DR:7 8 9 11 12 13 14 17 18 DRw:52 DQ:7 8 9
AB	100.00	A:1 2 11 23 25 26 29 31 33 34 36 43 66 68 69 80 B:7 8 13 18 27 35 37 38 39 41 42 46 47	DR:1 0103 4 7 8 9 10 11 12 13 15 16 18 DRw:51 53 DQ:4 5 6 7 8 9 DP:020
A	100.00	A:1 23 24 25 26 29 30 31 32 33 34 36 43 66 68 69 74 80 B:7 8 13 18 27 35 37 38 39 41 4	DR:1 0103 4 7 9 10 11 15 16 DRw:51 53 DQ:2 5 DP:1 0201 3 0402 5 6 8 9
A	100.00	A:1 2 3 23 24 25 26 29 31 32 33 34 36 66 68 69 74 80 B:7 8 13 18 35 37 38 39 41 42 44 4	DR:1 0103 4 7 8 9 10 11 13 14 15 16 17 18 DRw:51 53 DQ:2 4 5 6 8 9 DQA
O	100.00	A:23 B:7 13 18 35 37 38 39 41 42 44 45 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 6	DR:1 4 7 9 10 15 16 DRw:53 DQ:2 4 5 8 9 DQA:2 3 6 DP:1 0201 3 0402 5
B	100.00	A:1 23 24 25 26 29 32 33 34 36 43 66 68 69 80 B:7 8 13 18 27 35 37 42 44 45 46 47 49 5	DR:1 4 7 9 10 11 13 14 15 17 18 DRw:53 DQ:5 8 9 DQA:2 3 DP:0201 3 04
O	100.00	A:1 2 3 23 25 26 29 30 31 32 33 34 36 43 66 68 69 74 80 B:7 8 13 18 27 35 37 38 39 41 4	DR:8 10 11 12 14 18 DRw:52 DQ:2 7 8 9 DP:1 0201 0202 3 0401 0402 6 9
O	100.00	A:3 23 24 25 29 30 31 32 33 36 74 80 B:7 8 13 18 27 41 42 44 45 47 48 49 50 55 60 61 7	DR:1 7 8 9 11 12 13 14 17 18 DRw:52 DQ:2 5 7 DQA:4 5 6
A	100.00	A:23 24 25 29 32 80 B:7 8 13 18 27 35 38 39 41 42 44 45 46 49 50 51 52 53 54 55 56 57	DR:0103 8 9 11 12 13 14 16 17 18 DRw:52 DQ:7 9 DQA:4 5 6 DP:0201 3
AB	100.00	A:3 23 25 26 29 31 32 33 34 66 68 69 74 80 B:7 8 13 18 27 35 37 38 39 41 42 44 45 48 5	DR:1 0103 4 7 8 9 10 11 13 14 15 16 17 18 DRw:51 53 DQ:4 5 6 8 9 DQA:2
O	100.00	A:1 3 11 23 24 29 30 31 32 33 34 36 66 68 69 74 80 B:7 8 13 18 27 42 47 48 49 50 54 55	DR:1 4 8 11 12 15 16 DQ:4 5 7 8 9 DQA:3 4 5

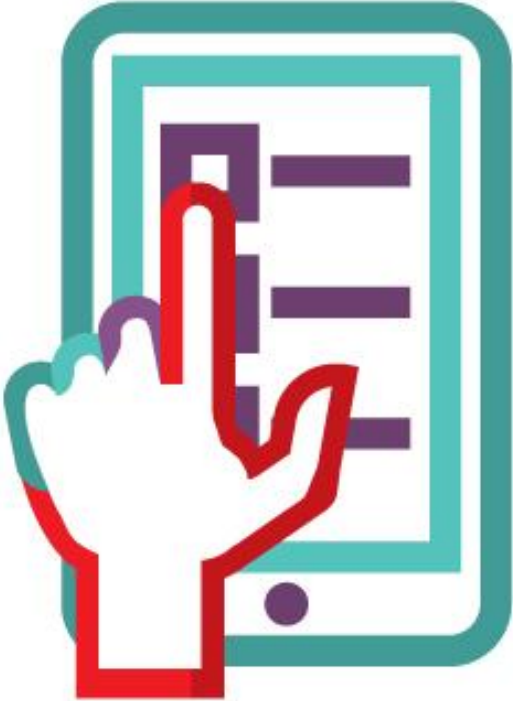
Excel file returned from CBS with batch re-calculation of ABO-cPRA



Conclusions

- Current cPRA calculator **does not consider candidate's ABO (and allelic antibodies)**, which can lead to inequity in organ allocation
- Simulations show that allocation based on ABO-adjusted cPRA has the **potential** to improve transplant access and equity
- Preliminary analyses show **an additional ~2-3% of candidates** would move into the HSP category if ABO-allele adjustment to cPRA is implemented
- Anticipated impact:
 - Preliminary work needed at each center to identify candidates that move into HSP after cPRA adjustment: **primarily B and O candidates > 80%**
 - Initial **bolus** of **increased** transplant activity in the HSP program

DEMONSTRATION



Demonstration of ABO adjusted cPRA calculation

Demonstration of Canadian cPRA calculator performing the ABO adjusted cPRA calculation and regular calculation, and integration with the CTR

Canadian Blood Services Canadian cPRA Calculator Canadian Transplant Registry Support Français

The Canadian cPRA calculator is a component of the Canadian Transplant Registry (CTR), a web-based application used by the transplant community, to estimate the percentage of Canadian deceased organ donors with whom a transplant candidate may be incompatible.

This calculator uses the same formula and data as the CTR. It produces a value by comparing the unacceptable antigens entered below. If you are a transplant candidate, and have questions regarding the value generated by this calculator, please contact your transplant physician or coordinator.

Attention: The actual cPRA value assigned to a transplant candidate is calculated by the CTR based on the unacceptable antigens that are entered by the laboratory at the transplant candidate's transplant centre. The value produced by the cPRA calculator on this web-site is for your informational use only.

Region(s)

Alberta Ontario Atlantic-Canada Quebec British-Columbia Saskatchewan Manitoba

Blood Group(s)

A AB B O

A

1 2 3 11 23 24 25 26 29 30
 31 32 33 34 36 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74

DQA

1 2 3 4 5 6

DQB

2 4 5 6 7 8 9

Calculate an ABO-Adjusted cPRA

Patient's Blood Group:

Decimals:

Canadian cPRA Calculator Version 5.6.12.13
Copyright Canadian Blood Services - All Rights Reserved

PRA-CALCULATOR.CA

Canadian cPRA Calculator Assistant

Enter Data Here

Class I or II values

Multiple text fields are only provided for convenience, you may enter values in either field

Enter values

Enter values

Select patient's blood group:

Decimal places for calculation results:

Calculation Results

Please enter values, then click Process to calculate the results

About the cPRAAssistant

The cPRA Assistant is a tool to assist with the use of the Canadian cPRA Calculator, which was built by Canadian Blood Services for the Canadian Transplant Registry. It is available, at this time, as a tool for the use of Canadian HLA laboratories, for their internal purposes.

Copy and paste your results into one or both of the text fields, then click on Process. Once the results are processed, you will be presented with a hyperlink, which will take you to the selected cPRA Calculator.

You may paste your results in many formats, for example, the following are all acceptable:
A1 2 a11/a34 b35; a1 b7 56
(the example above will result in: A1 A2 A11 A34 B7 B35 B56; duplicates are ignored)

General Information

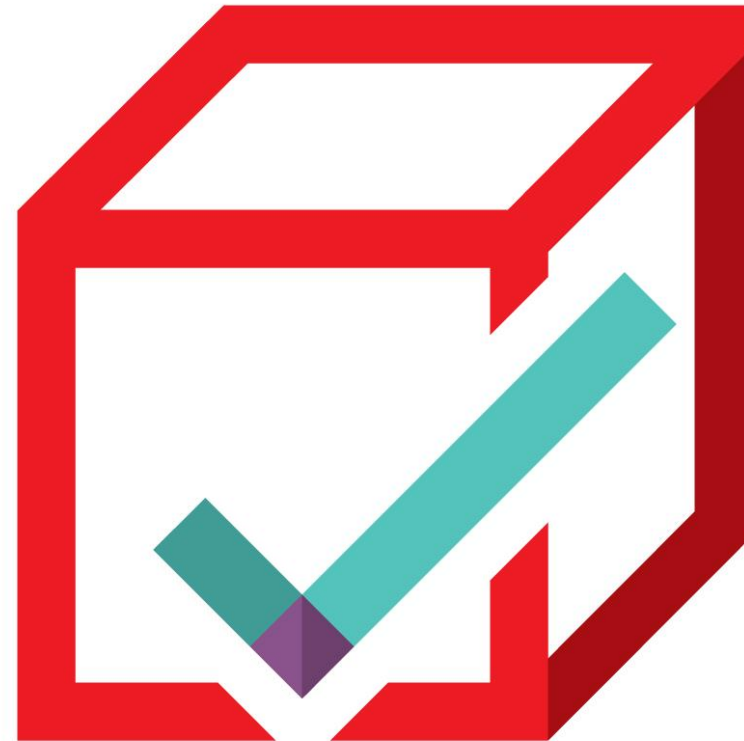
This application makes use of the Canadian cPRA Calculator located at: www.cpra-calculator.ca

PRAASSIST.OTDTCALCULATORS.CA

cPRA calculation within CTR

Organ	IPOS Program	ABO	A	B	Bw	Cw	DR	DR51/52/53	DQA	DQB	DPA	DPB
Kidney	KPD	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Kidney	HSP	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Heart	HSH	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Liver	-	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Lung	-	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Pancreas	-	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Small Bowel	-	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Stomach	-	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

KEY TAKEAWAYS



Key Takeaways - ODO

- For web service provinces (BC, ON, QC, NS) a transplant candidate may have a different cPRA in the local allocation system compared to CTR because the ABO adjusted cPRA calculation produced by the Canadian cPRA calculator will be used by CTR (this applies for kidney interprovincial sharing programs only)
- Until the KPD program uses the ABO adjusted cPRA calculation (expected June 2026 match cycle), HSP patients could have two different cPRAs in the HSP program versus KPD program

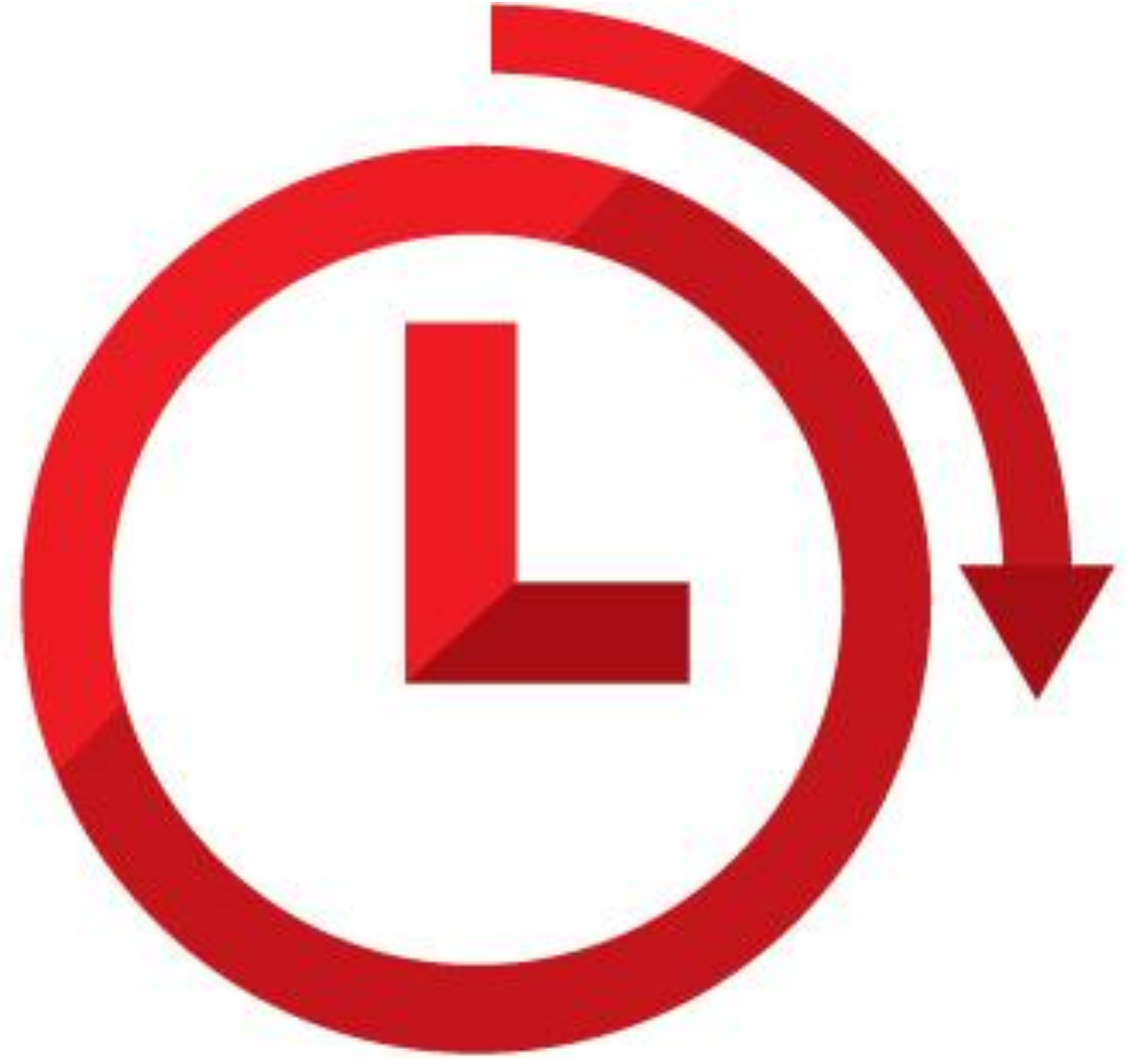
Key Takeaways – Transplant Centres

- Transplant Centres should have received a list of current non-HSP patients that have become HSP eligible and are not currently in the CTR from their local HLA laboratories to consent for participation in the program.
- If there is no ABO included in the patient record, a conventional cPRA value will be calculated
- If the blood group of a patient changes, it is important to update the ABO in the CTR which will re-trigger the cPRA calculation and could impact transplant opportunities

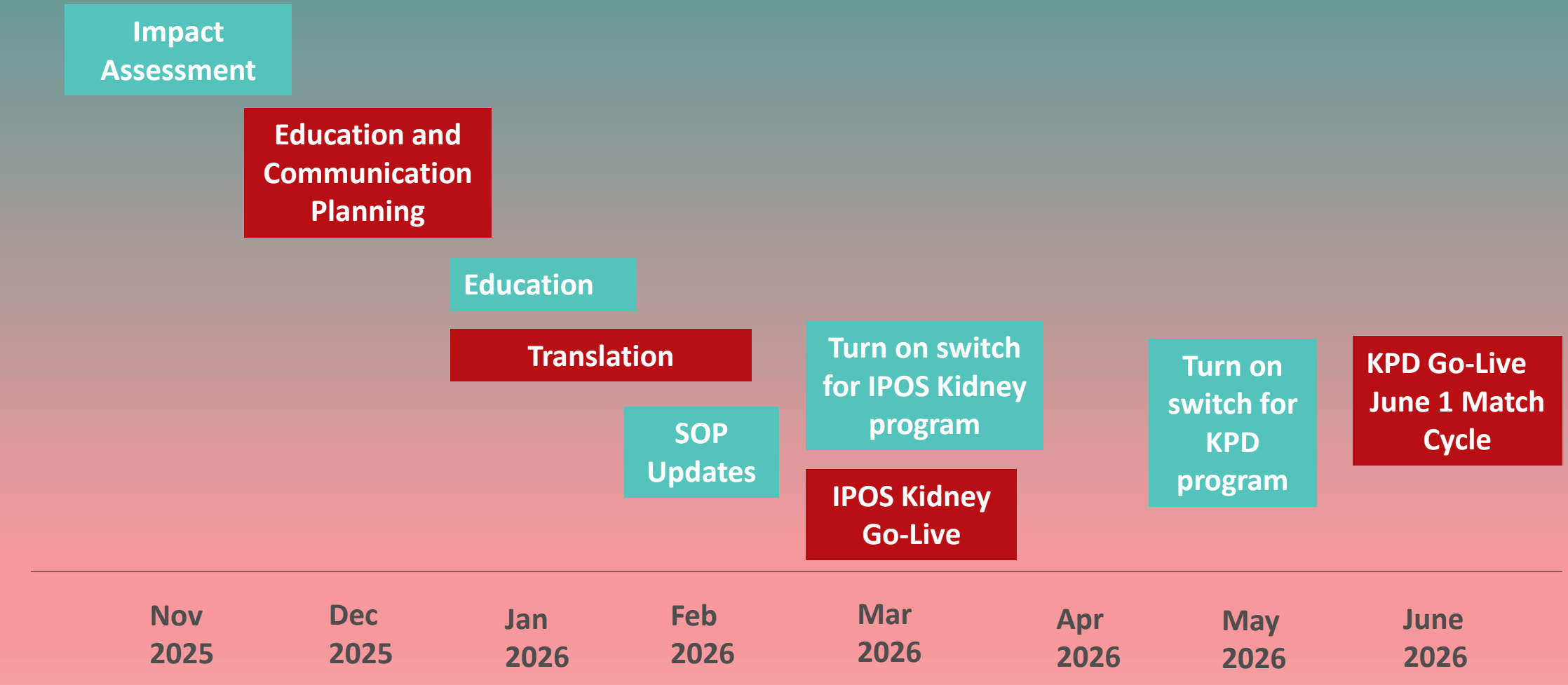
Key Takeaways – HLA Laboratories

- If HLA laboratories require support in calculating ABO adjustment of multiple patients, they can reach out to Marc Mousseau by emailing ctr.ipos@blood.ca with “Attention Marc Mousseau” in the subject line. Laboratories will need to provide:
 - The **cumulative unacceptable antigens** for each patient. The acceptable format is practically anything – similar to the copy-and-paste functionality supported in the **PRA Assistant**
 - A column with the patient’s **ABO** value
 - Each patient would need to be in its own row of data
 - The turnaround time for completing the recalculation should be less than 24 hours

Implementation Update



Draft Education Plan



Final Feedback

*Please provide any **final feedback** on concerns/challenges to this current timeline by January 30, 2026.*

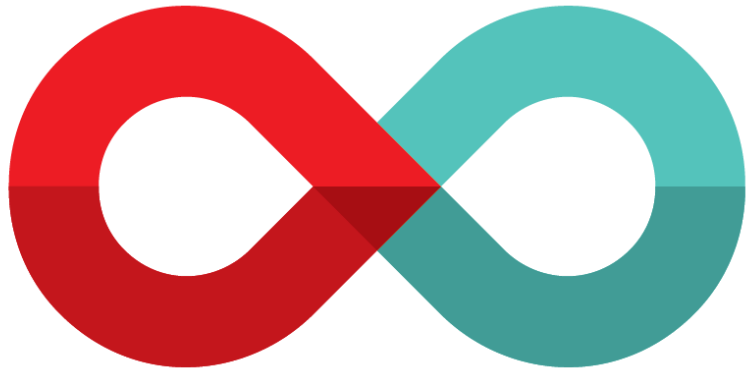


Group Discussion

Contact Canadian Blood Services

Items	Descriptions
Central Communication Email Address	<ul style="list-style-type: none"><li data-bbox="912 354 2420 525">• Purpose: Q&A or other inquiry related to the enhancement of the Canadian cPRA calculator to include ABO adjusted calculation<li data-bbox="912 545 1411 591">• ctr.ipos@blood.ca

Thank you!



**Canadian
Blood
Services**

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ORGANS
& TISSUES