

INNOVATIVE MEDICO FORUM

**Dr Lal PathLabs
launches newer comprehensive HLA panels
please view inner pages**

HISTOCOMPATIBILITY TESTING AND ANTIBODY DETECTION IN SOLID ORGAN TRANSPLANTATION

Histocompatibility Testing plays an important role in determining the degree of Human Leukocyte Antigen (HLA) matching between the solid organ recipients and their donors ^(1,2). It also includes the donor-recipient Cross-match Testing (XMT) and anti-HLA antibody screening that are crucial examinations in solid organ transplantation, aiming to avoid hyperacute graft rejection and also to predict the immunological outcome of the graft ^(3,5).

An individual can become sensitized to HLA allo-antigens as a result of blood transfusion, pregnancy or previous organ transplantation. Transplantation of poorly HLA-matched kidneys can result in allosensitization to the mis-matched donor HLA. Approximately 20% of pregnant women produce HLA-specific antibodies to paternally inherited fetal HLA antigens.

Pre transplant risk assessment in solid organ transplantation is important for the selection of the donor to initiate appropriate treatment strategies.



RISK : PRE-TRANSPLANTATION

• High immunological risk

- High titre circulating antibodies specific for mismatched donor antigens present at the time of transplantation
- High risk of rejection

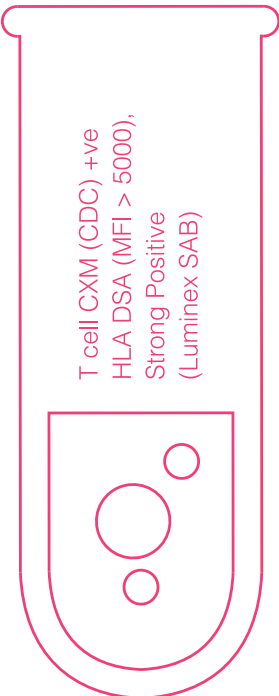
• Intermediate immunological risk

- Prior donor reactive sensitization
- Weak sensitization to certain mismatched HLA specificities only

• Low (or standard) immunological risk

- Non-sensitized patients
- Sensitized patients-minimally HLA mismatched organ in absence of known current or historical donor reactive antibodies

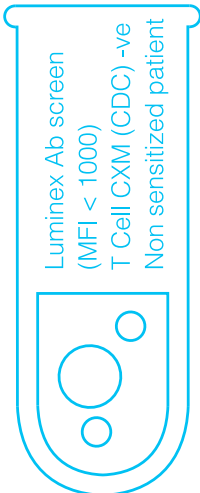
PRE-TRANSPLANTATION RISK ASSESSMENT



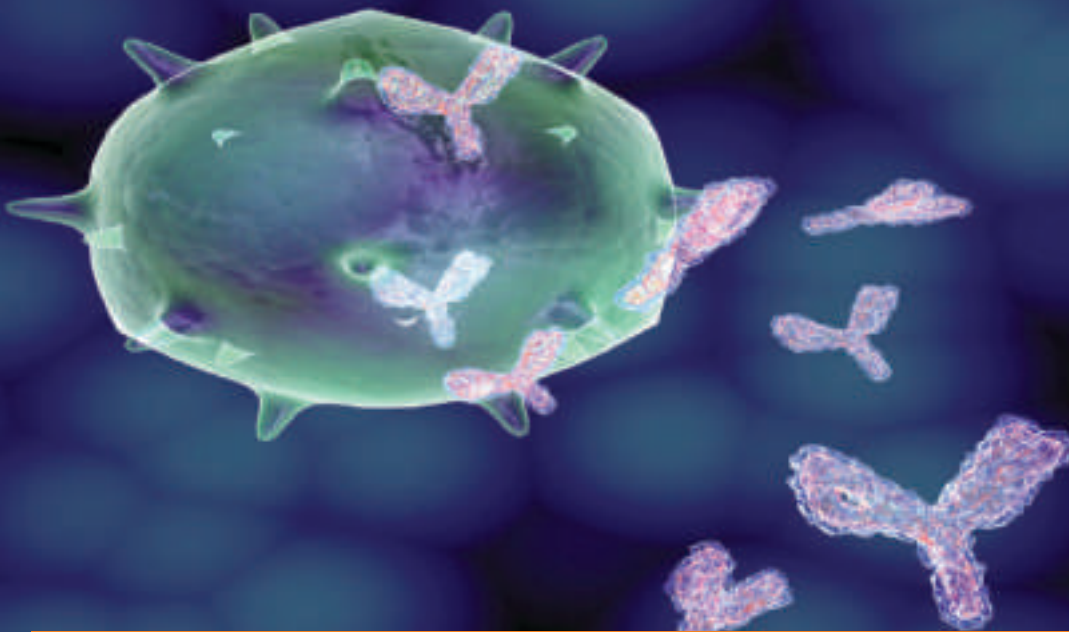
High Risk



Intermediate Risk

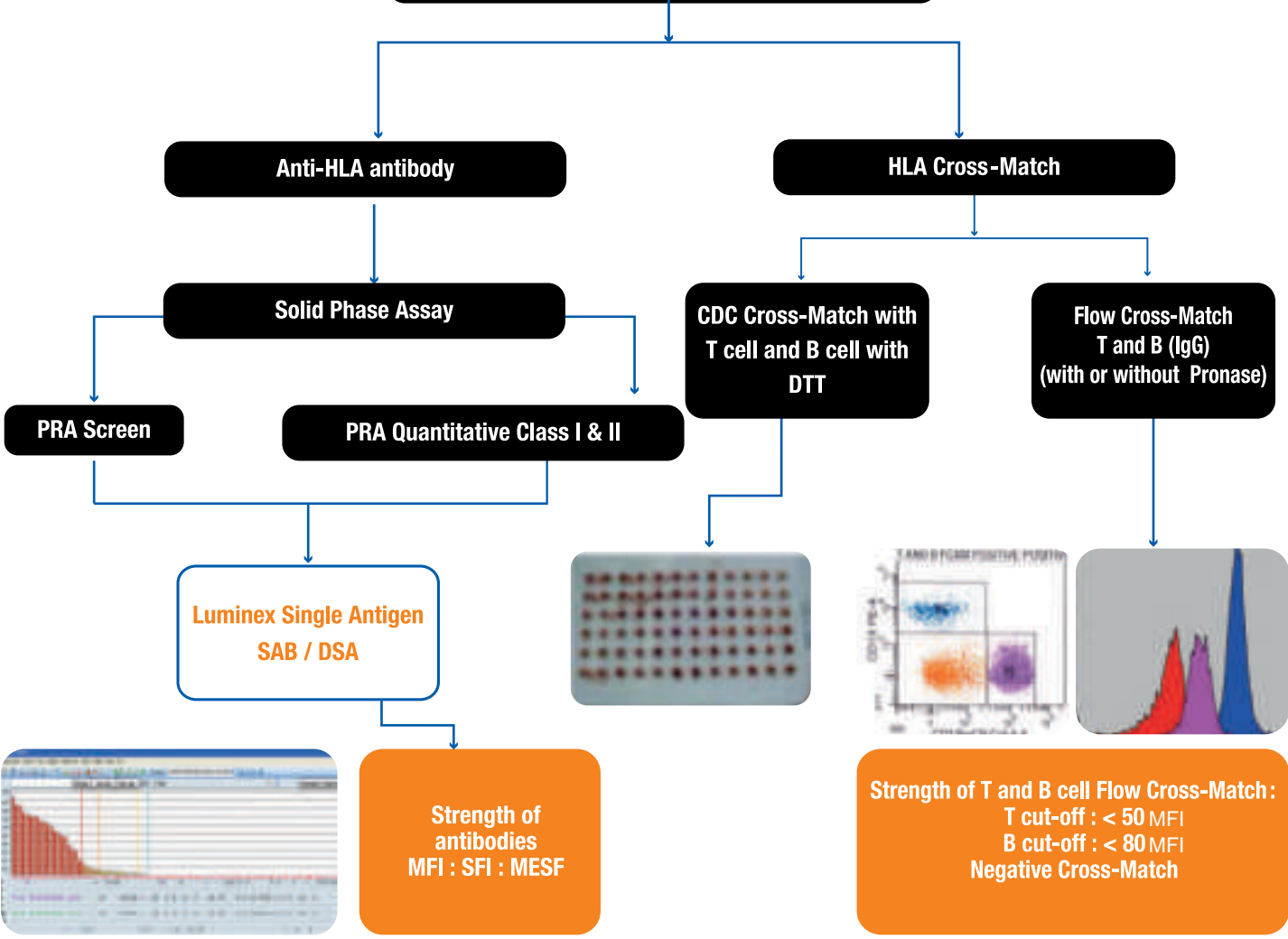


Low Risk

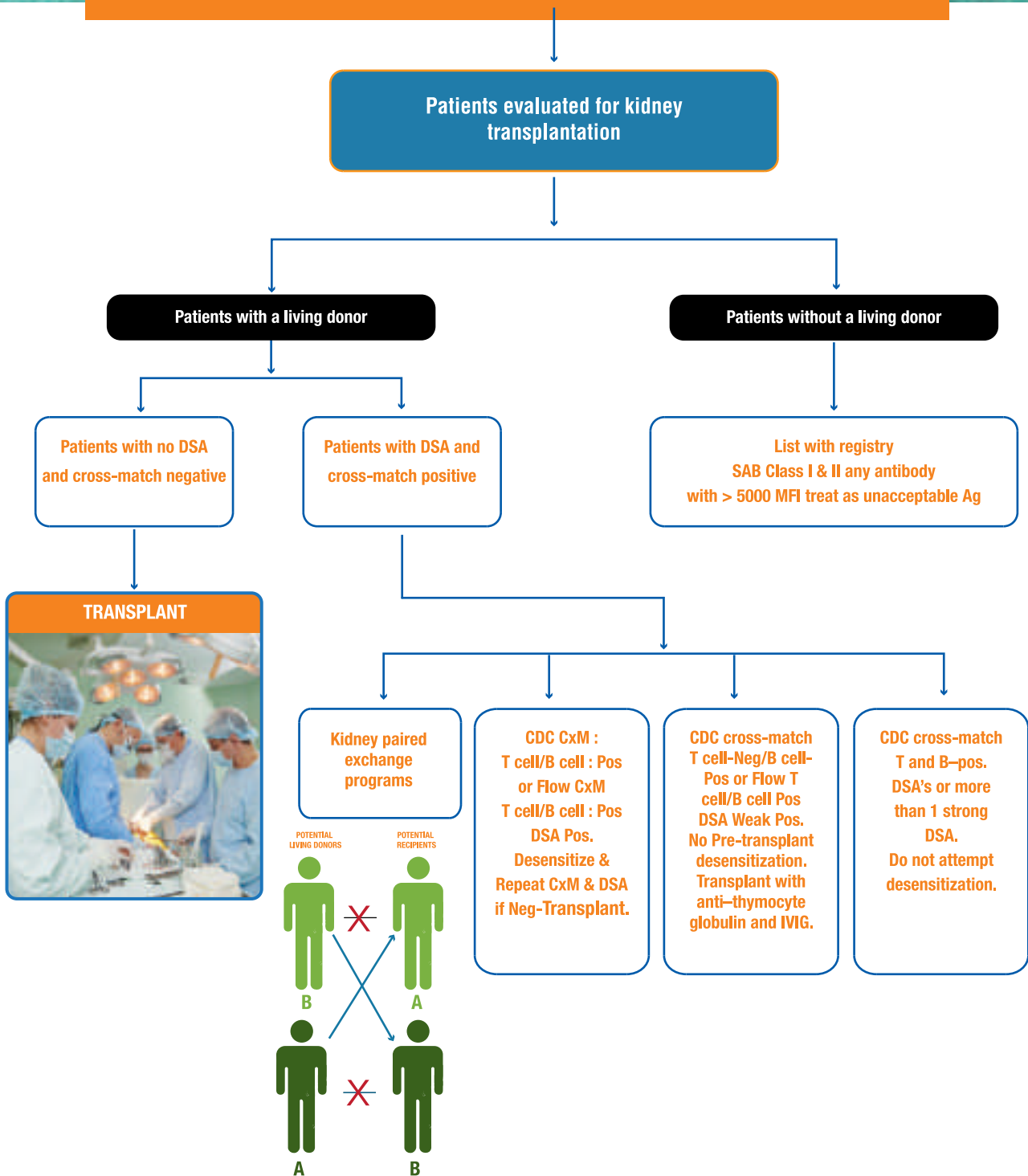


ANTIBODY-SCREENING STRATEGIES

Anti-HLA antibody detection techniques in Solid Organ Transplantation



APPROACH TO SENSITIZED PATIENTS



Post Tx Monitoring: monthly DSA, BKV upto 6 months ; and 9th and 12th month; biopsy if creatinine level or DSA MFI increases.

PANELS FOR PRE & POST TRANSPLANT HISTOCOMPATIBILITY TESTING AND ANTIBODY DETECTION IN SOLID ORGAN TRANSPLANTATION

Z855	HLA PRE TRANSPLANT WORK UP NON SENSITIZED RECIPIENT PANEL 1
	Evaluation testing
RECIPIENT	HLA Typing : HLA DNA typing for Kidney / Liver Transplant, PCR {(Low resolution (HLA –A, –B & –DR) molecular technique (Luminex))}
	HLA T & B Cell Lymphocyte Cross-match : (T cells with & without DTT and B cells with & without DTT) vs potential donor
	Antibody screening : HLA - PANEL REACTIVE IgG ANTIBODIES (PRA) Screen Luminex
DONOR	HLA Typing : HLA DNA typing for Kidney / Liver Transplant, PCR {(Low resolution (HLA –A, –B & –DR) molecular technique (Luminex))}
Z857	HLA PRE TRANSPLANT WORK UP PANEL 2
RECIPIENT	HLA Typing : HLA DNA typing for Kidney / Liver Transplant, PCR {(Low resolution (HLA –A, –B & –DR) molecular technique (Luminex))}
	HLA T & B Cell Lymphocyte Cross-match : (T cells with & without DTT and B cells with & without DTT) vs potential donor
	HLA T & B Cell Flow Cytometry : Cross-match vs potential donor
	Antibody screening : HLA - PANEL REACTIVE IgG ANTIBODIES (PRA) Screen Luminex : Donor specific IgG Antibodies Class I & II (lysate) Luminex
DONOR	HLA Typing : HLA DNA typing for Kidney / Liver Transplant, PCR {(Low resolution (HLA –A, –B & –DR) molecular technique (Luminex))}
Z873	HLA PRE TRANSPLANT WORK UP SENSITIZED RECIPIENT PANEL 3
RECIPIENT	HLA Typing : HLA DNA typing for Kidney / Liver Transplant, PCR {(Low resolution (HLA –A, –B & –DR) molecular technique (Luminex))}
	HLA T & B Cell Lymphocyte Cross-match : (T cells with & without DTT and B cells with & without DTT) vs potential donor
	Antibody screening : HLA-PANEL REACTIVE IgG ANTIBODIES (PRA) Class I quantitative Class II quantitative : Donor specific IgG Antibodies Class I & II (lysate) Luminex
DONOR	HLA Typing : HLA DNA typing for Kidney / Liver Transplant, PCR {(Low resolution (HLA –A, –B & –DR) molecular technique (Luminex))}
Z858	HLA PRE TRANSPLANT WORK UP SENSITIZED RECIPIENT PANEL 4
RECIPIENT	HLA Typing : HLA DNA typing for Kidney / Liver Transplant, PCR {(Low resolution (HLA –A, –B & –DR) molecular technique (Luminex))}
	HLA T & B Cell Flow Cytometry : Cross-match vs potential donor
	HLA T & B Cell Lymphocyte Cross-match : (T cells with & without DTT and B cells with & without DTT) vs potential donor
	Antibody screening : HLA-PANEL REACTIVE IgG ANTIBODIES (PRA) Screen Luminex
	Antibody Identification : IgG Single Antigen Bead (SAB) for Class I : IgG Single Antigen Bead (SAB) for Class II
DONOR	HLA Typing : HLA DNA typing. High resolution {(HLA –A, –B, –C, –DR & –DQ (SBT))}
Z860	HLA PRE TRANSPLANT WORK UP SENSITIZED RECIPIENT PANEL 5
RECIPIENT	HLA Typing : HLA DNA typing for Kidney / Liver Transplant, PCR {(Low resolution (HLA –A, –B & –DR) molecular technique (Luminex))}
	HLA T & B Cell Flow Cytometry : Cross-match vs potential donor
	Antibody Identification : IgG Single Antigen Bead (SAB) for Class I : IgG Single Antigen Bead (SAB) for Class II
DONOR	HLA Typing : HLA DNA typing, 10 Antigens, PCR {(Luminex) (HLA –A, –B, –C, –DQ & –DR)}

References

1. Claas FHJ, Dankers MK, Oudshoorn M, van Rood JJ, Mulder A, Roelen DL, et al. Differential immunogenicity of HLA mismatches in clinical transplantation. *Transpl Immun.*
2. Cecka JM. HLA matching for organ transplantation...Why not? *Int J Immunogenet.*
3. Patel R, Terasaki PI. Significance of the positive crossmatch in kidney transplantation. *N Engl J Med.*
4. Billen EV, Christiaans MH, van den Berg-Loonen EM. Clinical relevance of Luminex donor-specific crossmatches: data from 165 renal transplants. *Tissue Antigens.*
5. Batal I, Zeevi A, Lunz JG, III, Aggarwal N, Shapiro R, Randhawa P, et al. Antihuman leukocyte antigen-specific antibody strength determined by complement-dependent or solid-phase assays can predict positive donor-specific crossmatches. *Arch Pathol Lab Med.* 2010;34:1534–40.



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