

ABD Pad : The new Kid on the Block

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ABD Pad

What is it ?


What is it used for ?



WHAT ARE THEY ?

- * ABD PAD are **in vitro diagnostic medical devices (IVDMD)** used by blood bankers
- * ABD PAD allows the control of the **ABO/Rh blood group (confirmation or pre-donation control)**, by determining the presence of the A, B and D erythrocyte antigens on the surface of human red blood cells.



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- * principle of **M-TRAP technology** based on **immunoblotting test**, using spots.
 - * red blood cells, carrying antigen, interact with corresponding antibodies - **red color spot**.
 - * red blood cells not carrying antigen, do not interact with antibodies and cross the membrane - **light green** or white spot



- Devices prepared with reagents containing **monoclonal antibodies** - come from in vitro supernatants cultures of hybridoma lines of murine or human origin.
- Reagents **deposited and dried** in corresponding wells. These reagents contain **sodium azide (0.1%)**.

A, B and D specificities are indicated above the respective wells.





1. Activation of reactive zones

one drop (approximately 50 μ l) of PAD Buffer on reactive zone (colored spot), so it turns completely green.

2. Deposit of blood sample

drop (approximately 25 μ l for centrifuged whole blood or 50 μ l for non-centrifuged whole blood) on each reactive zone.

3 Revelation of the reaction

Wait for the complete penetration of the blood into each reactive zone before the revelation.

Fill the well of PAD Buffer (300 μ l).

Wait for the complete penetration of the liquid before reading the results.



LIMITATION OF THE METHOD

- **Qualified staff**
- **Reactions should be read immediately after the revelation.**
- **Re-reading of results is possible up to 24 hours**
- **Uninterpretable results (non-homogeneous reaction) can be observed if :**
 - **The sample tested has a significant cloudiness, fibrin traces or hemolysis**
 - **The sample tested is taken from another type of anticoagulant than those recommended**
 - **The subject has high-titer cold agglutinins**



Traditionally : Slide Method used
for Blood grouping



Why we need to move on from
slide technique to ABD PAD?

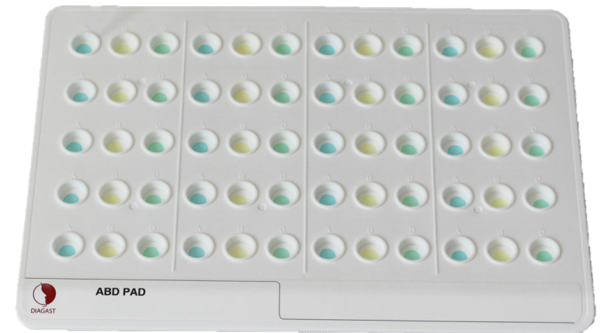
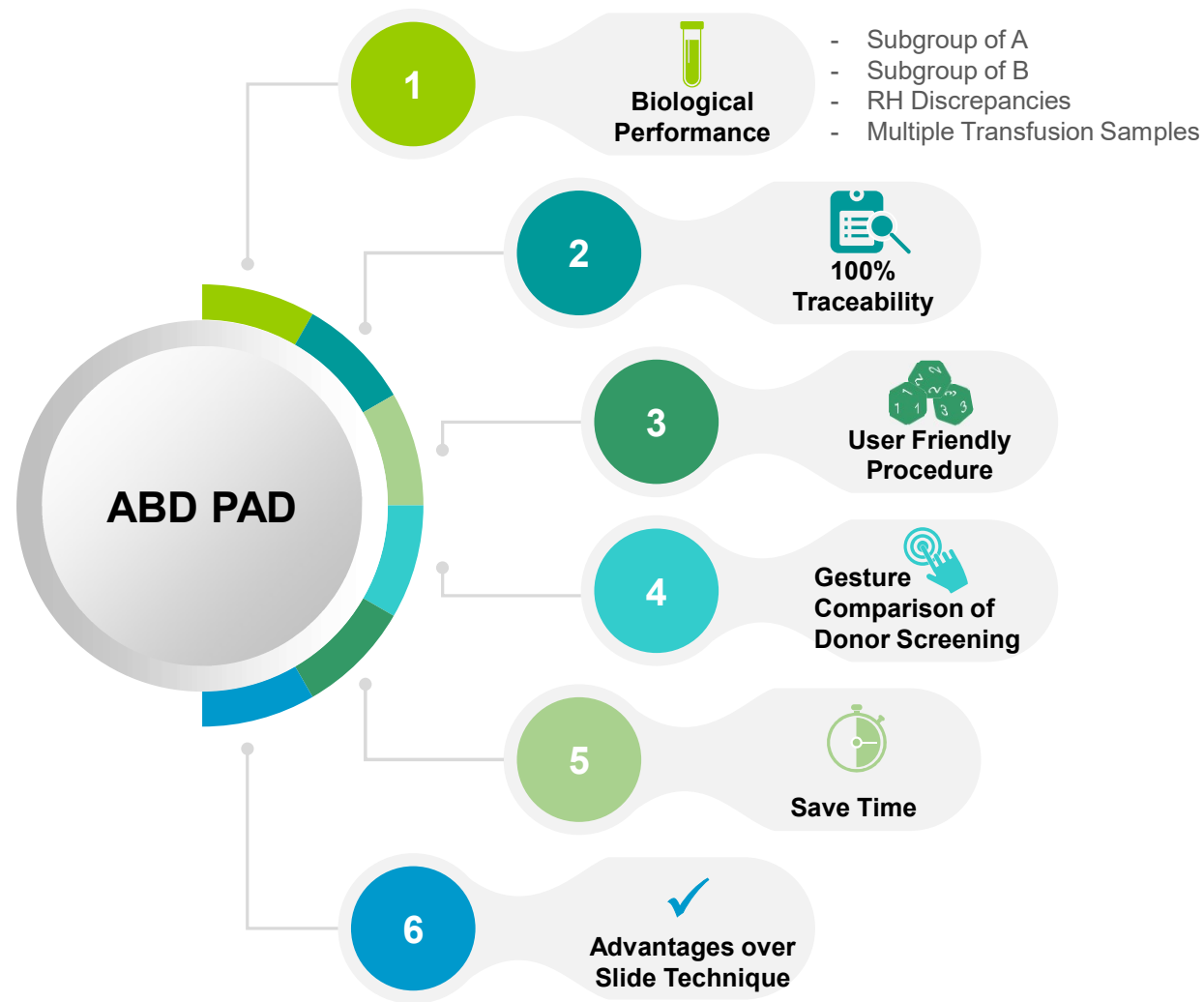


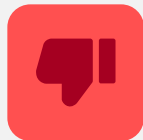
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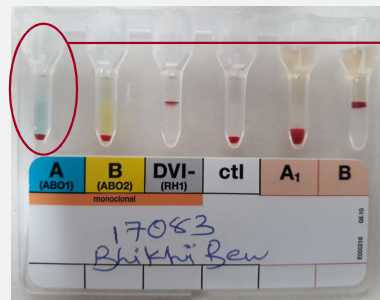
1. Biological Performance

Detection of ABO subgroups

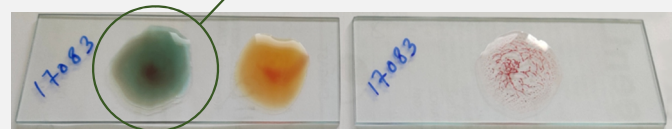
Case n°1 : subgroup of A



Subgroup of A **missed** on gel card



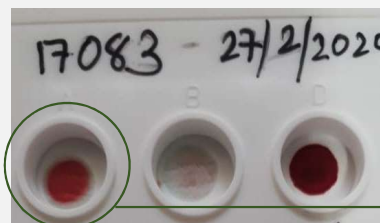
The gel card technique gave a negative result on a sample having a subgroup of A



The slide technique gave a negative reaction



Subgroup of A **detected** on ABD PAD



The ABD PAD gave a positive reaction on the same sample having a subgroup of A



1. Biological Performance

Detection of ABO subgroups

Case n°2 : subgroup of A



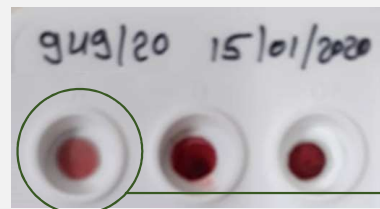
Subgroup of A **missed** on gel card



The gel card technique gave a negative result on a sample having a subgroup of A



Subgroup of A **detected** on ABD PAD



The ABD PAD gave a positive reaction on the same sample having a subgroup of A



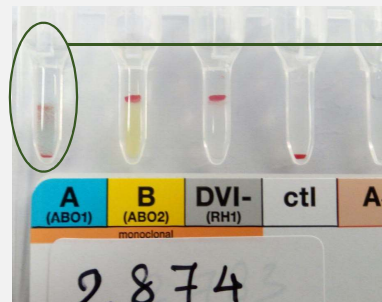
1. Biological Performance

Detection of ABO subgroups

Case n°3 : subgroup of A



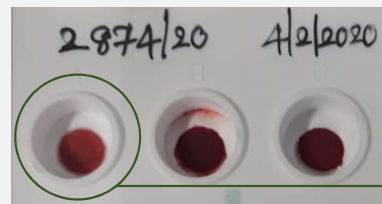
Subgroup of A **detected** on gel card



The gel card technique gave a very weak positive reaction on a sample having a subgroup of A



Subgroup of A **detected** on ABD PAD



The ABD PAD gave a positive reaction on the same sample having a subgroup of A



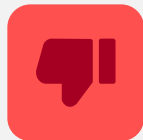
1. Biological Performance

Detection of ABO subgroups

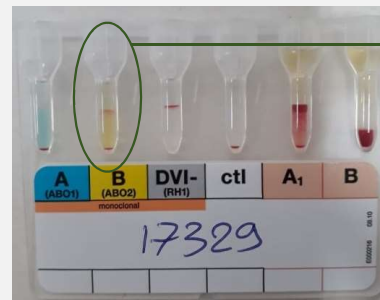
Case n°4 : subgroup of B



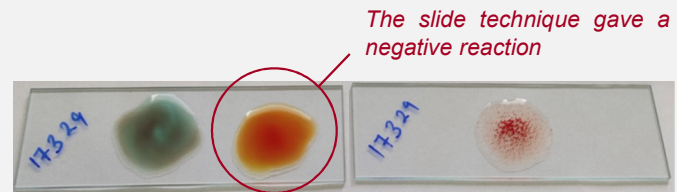
Subgroup of B **detected** on gel card



Subgroup of B **missed** on slide technique



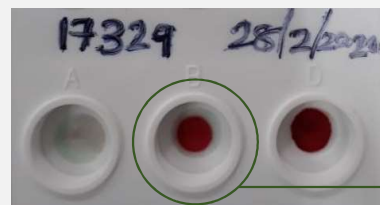
The gel card technique gave a very weak positive reaction on a sample having a subgroup of B



The slide technique gave a negative reaction



Subgroup of B **detected** on ABD PAD



The ABD PAD gave a positive reaction on the same sample having a subgroup of B



1. Biological Performance

Detection of ABO subgroups

Case n°5 : subgroup of B



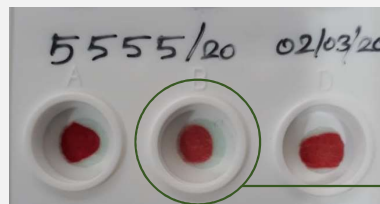
Subgroup of B **detected** on gel card



The gel card technique gave a weak positive reaction on a sample having a subgroup of B



Subgroup of B **detected** on ABD PAD



The ABD PAD gave a positive reaction on the same sample having a subgroup of B



1. Biological Performance

Case n°6 : Weak-D



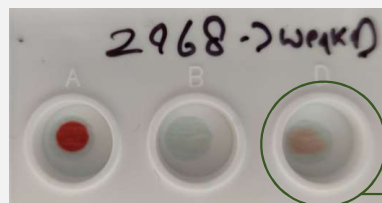
Weak D **missed** on slide technique



The slide technique gave a negative result on a sample having a weak D phenotype



Weak D **detected** on ABD PAD



The ABD PAD gave a positive reaction on the same sample having a weak D phenotype



1. Biological Performance

Case n°7 : Weak-D



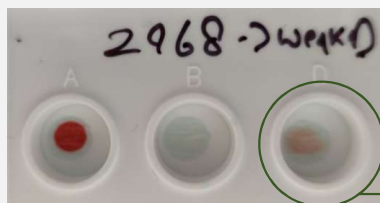
Weak D **detected** on gel card



The gel card technique gave a positive result on a sample having a weak D phenotype



Weak D **detected** on ABD PAD



The ABD PAD gave a positive reaction on the same sample having a weak D phenotype

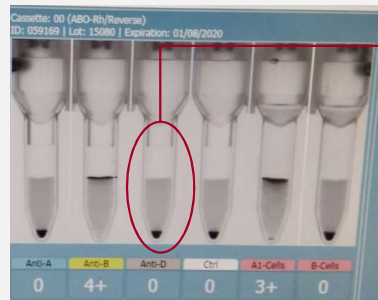


1. Biological Performance

Case n°8 : Multiple Transfused D Antigen



D antigen **missed** on gel card



The gel card technique incorrectly typed D antigen as negative whereas the patient is D positive

Clear agglutination on tube technique



D antigen **detected** on ABD PAD and confirmed on tube technique



The ABD PAD gave a positive reaction on the same sample



2.100% Traceability

- ✓ With batch number, expiry & with sample Identifiers



- ✓ **Comparison in Biological Discrepancies**

- ✓ **Clerical Discrepancy**

Example:

During evaluation, one donor with ID: V-663 written as AB Positive on Donor Form.

Next day on confirmation with automated techniques, its clear AB Negative.

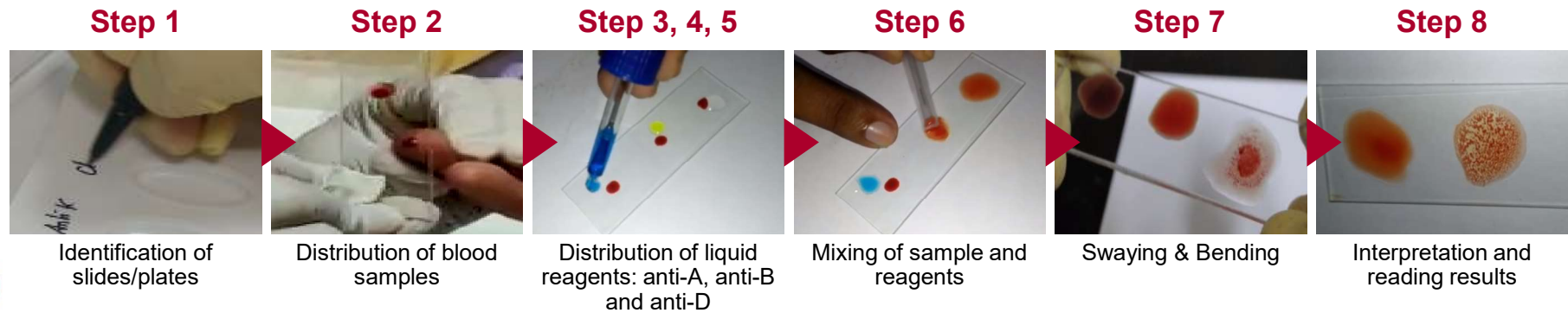
*Reactions checked on ABD PAD confirmed the result was AB negative and helped to find out **clerical discrepancy by Technical Staff**.*

Not available in slide technique

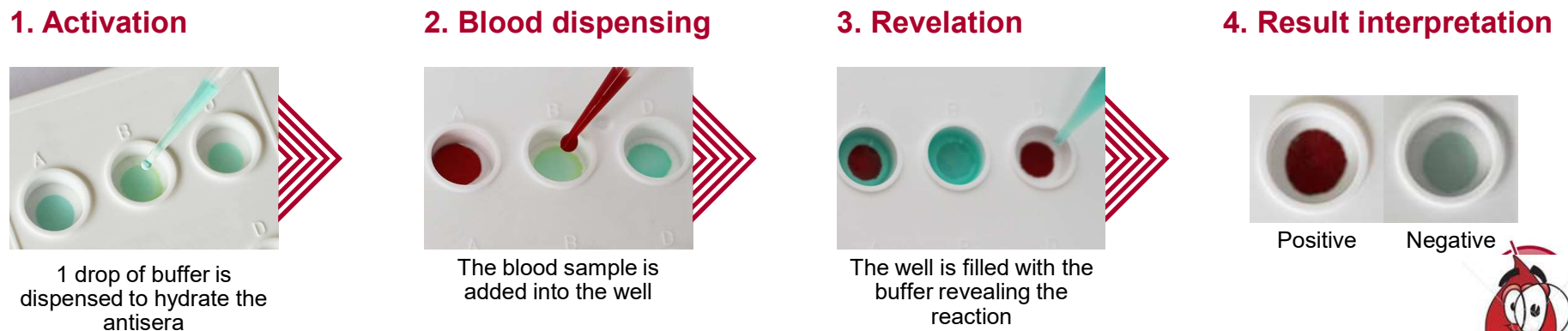
A donor form with various fields for personal and medical information. The form includes checkboxes for 'Yes' and 'No' for several questions. Handwritten information includes '49' in a red circle, 'AB Negative', '120/80', '78', and 'Clear'. A red line is drawn across the form, and a red circle is drawn around the signature area.

3. User-friendly procedure

► SLIDE TECHNIQUE : 8 steps



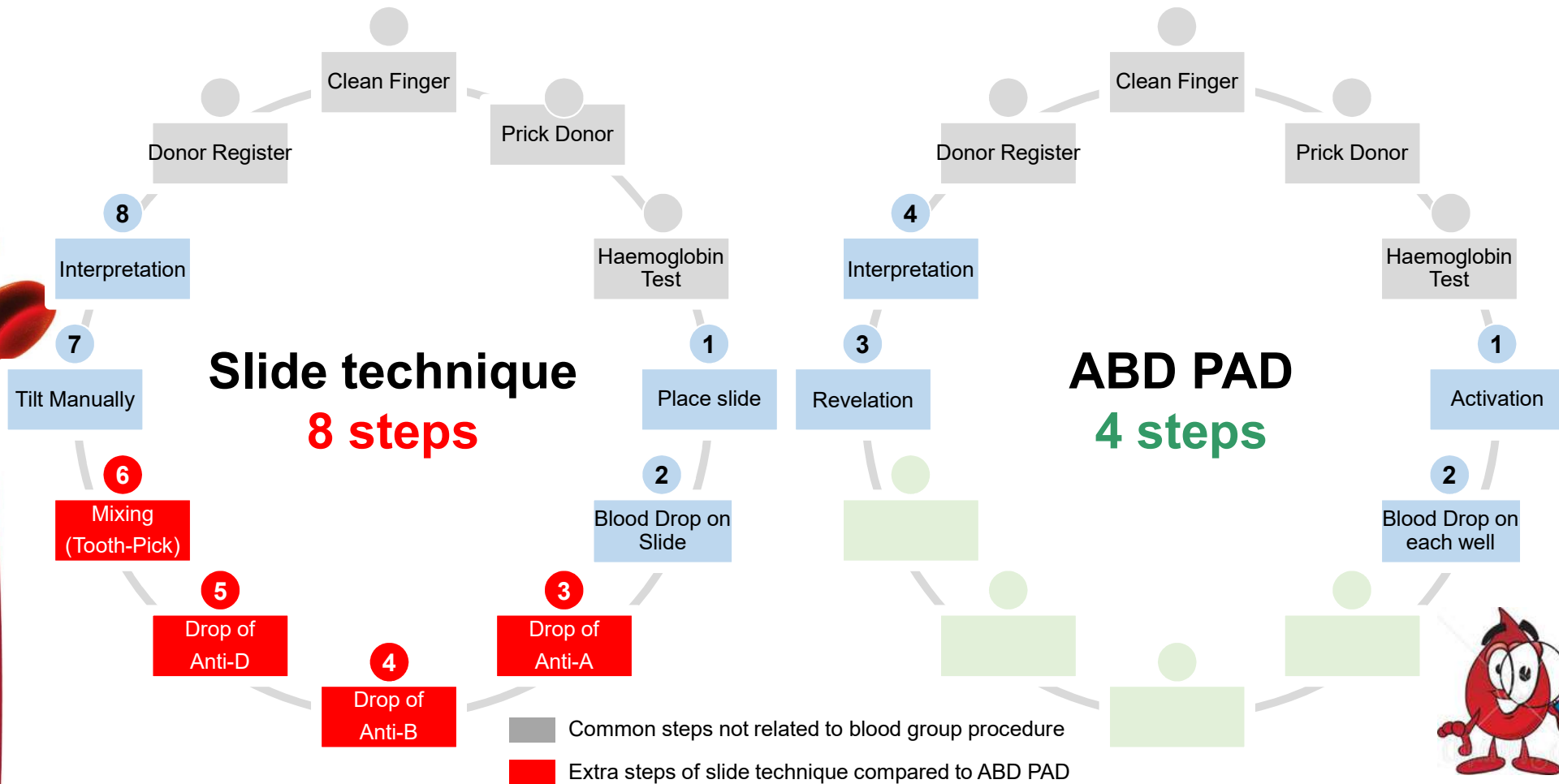
► ABD PAD : 4 steps



4. Gesture Comparison of Donor Screening

Slide technique 8 steps

ABD PAD 4 steps



5. Save Time

Comparison between ABD PAD & Slide Technique

Save up to **40% time** of Technical Staff



6. Advantages

Usage of all type of blood

- Blood bag segment
- Blood tube
- From finger
- No washing

Storage and Usage

- Usage up to 40°C
- Storage up to 25°C
- 90% Humidity
- Results stable up to 24H

Standardization

- No contamination
- Traceability
- Recording, photo
- Writing of results
- Less consumables



Implementation of ABDPAD at Transfusion Medicine, KGMU- Lucknow (U.P.)



In the Blood Bank:-

- * Replaced slides with ABDPAD.
- * 90,000 blood grouping using ABDPAD till now.
- * implemented in Donor Screening, Blood Donation area and serology lab.

Donor Screening Area:-

Technicians are easily doing blood grouping specially rush hours. They are marking the patient ID on the ABDPAD which was not possible in the slides.

Blood Donation Area:-

- * manage blood grouping register for record purpose. Using the ABDPAD , they can crosscheck the results anytime to reduce the clerical error.

Serology Lab:-

blood grouping is recorded for 24 hours for verification anytime.

Donor ID and Patient ID is mentioned on each blood group to avoid any mistake.



Blood Donation Camps:-

- * use this up to 40°C and 90% humidity. So it is very beneficial for donation camps.
- * don't require to carry slides, Antisera, View box, discard tub etc. We carry only ABDPAD and PAD buffer.



**“Innovation is the
unrelenting drive to
break the status quo
and develop anew
where few have dared
to go.” – Steven Jeffes**

