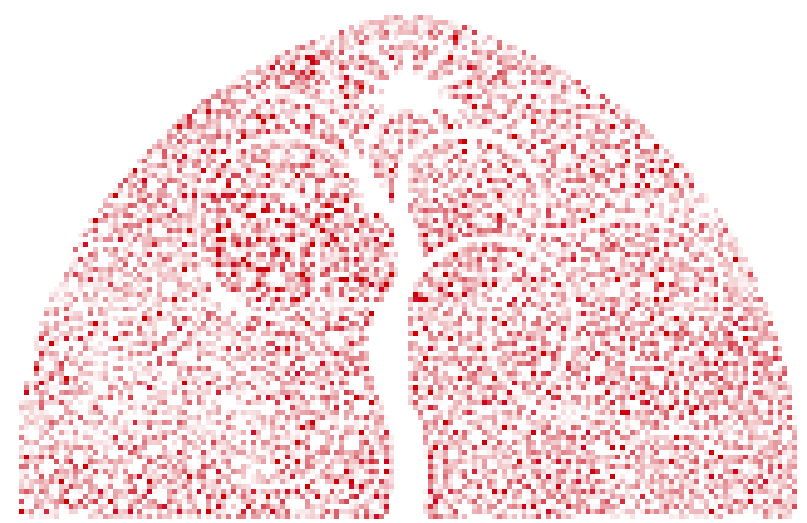




Analysis of factors affecting bacterial contamination in apheresis platelet concentrates (APCs) and Leucodepleted Packed cells (LD-PRBC)

eP163

Kalpesh Chawan, Dr.Shashank Ojha, Dr.Suryatappa Saha, Amol Tirlotkar, Arunkumar, Hemali kadu



Introduction

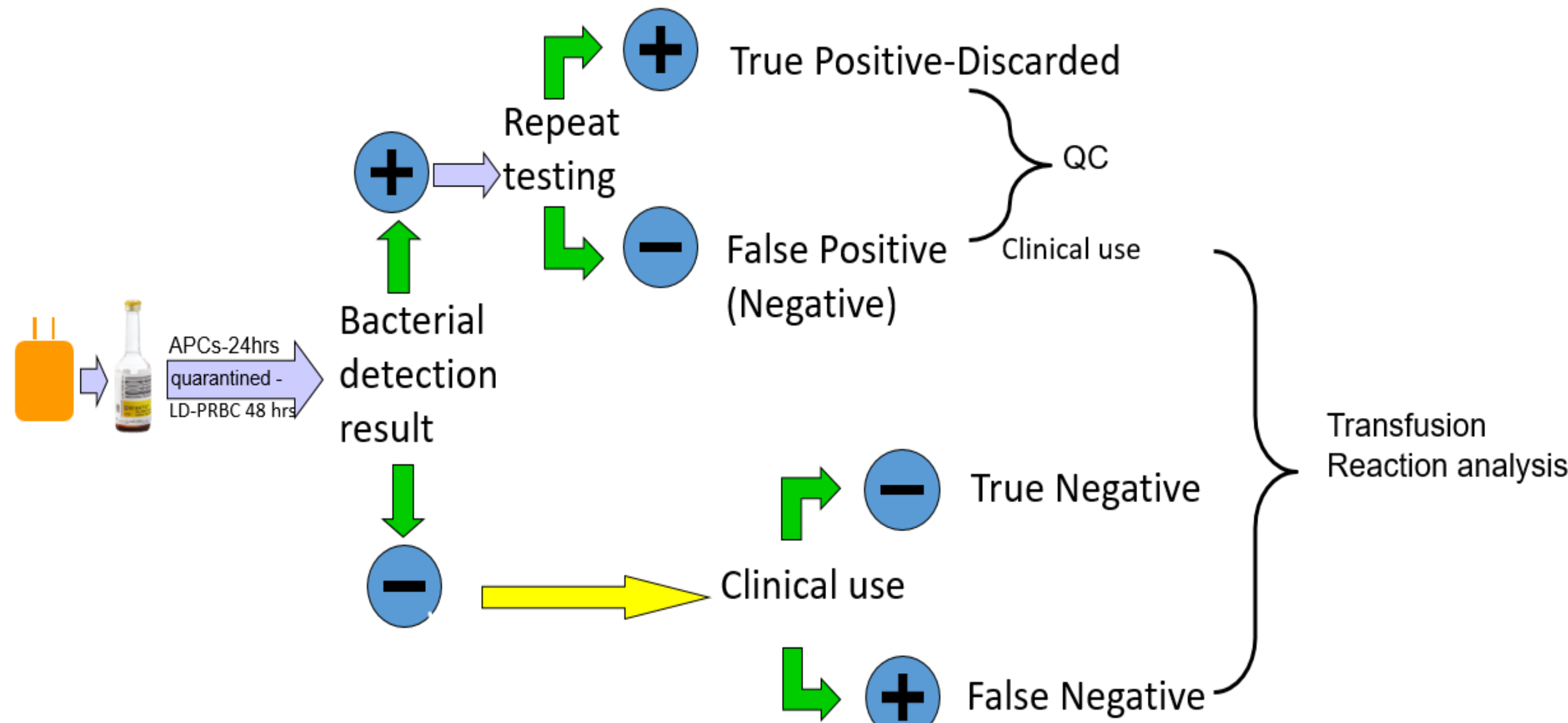
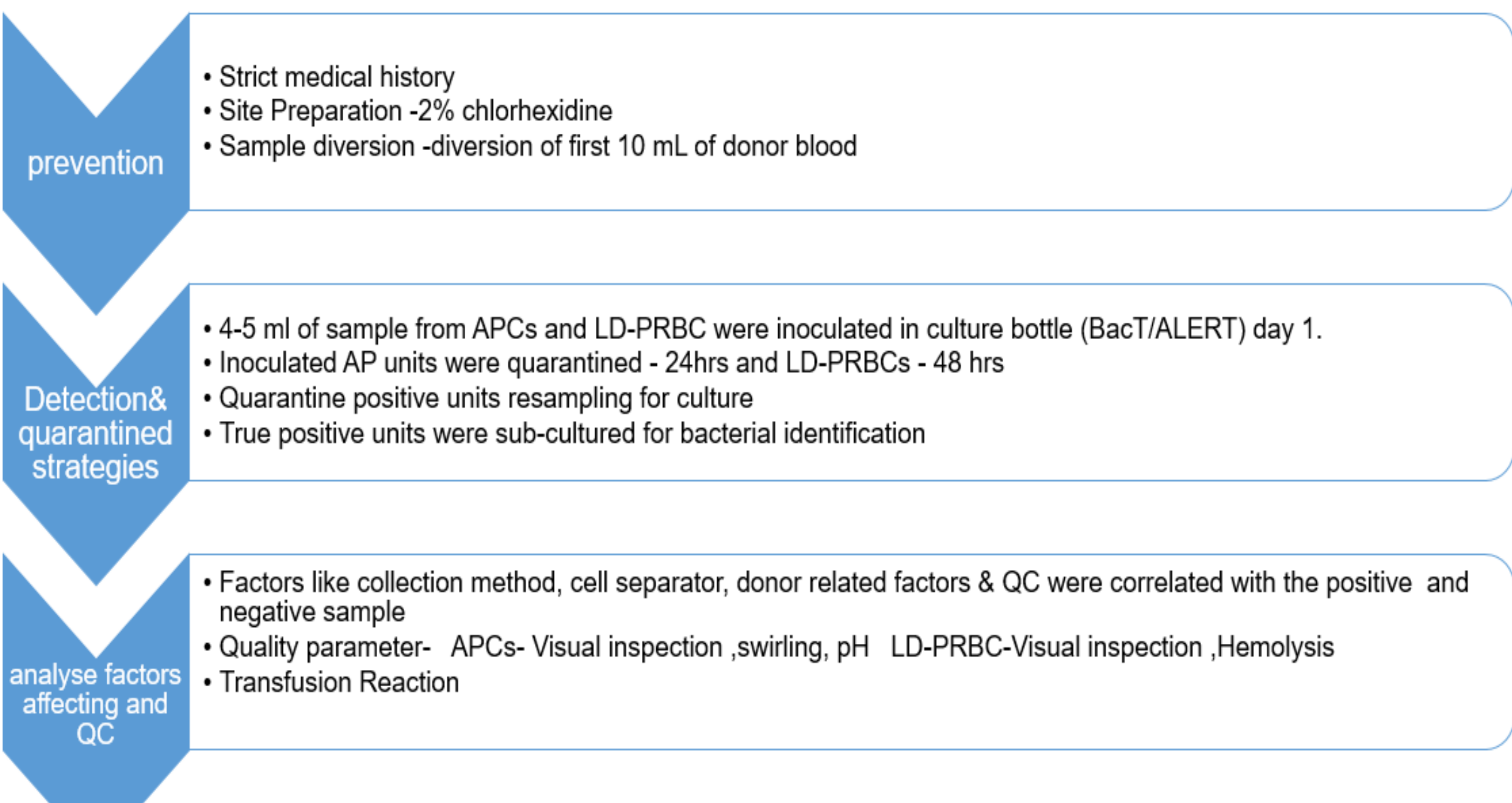
- Decreasing prevalence of Transfusion transmitted viral infection (T.T.V.I)
- The bacterial contamination of blood and blood component is regaining imp.
- Bacterial contamination of platelets has been a greater implication in safe transfusion practices compared to LD-PRBC. The primary source of contamination is skin bacterial microflora.

Aims

- Aim of this study is to analyse factors affecting bacterial contamination in APCs and LD-PRBC

Methods and Materials

Bacterial screening of APCs and LD-PRBC collected from January 2021 to December 2023 were analysed by BacT/ALERT.



Total number of APCs , LD-PRBC tested & proportion of positive results.

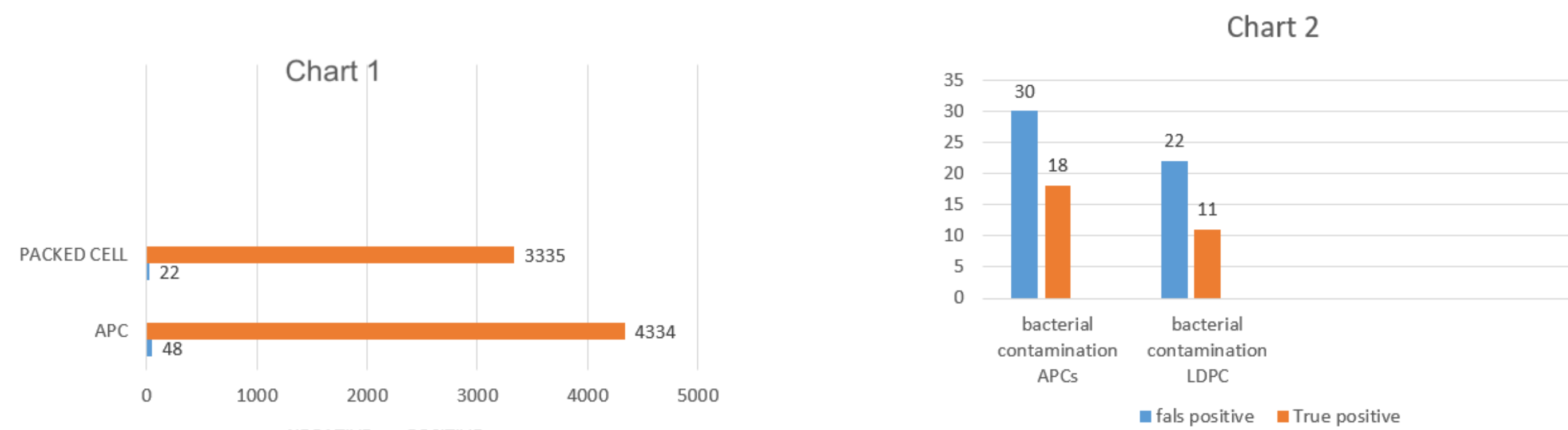
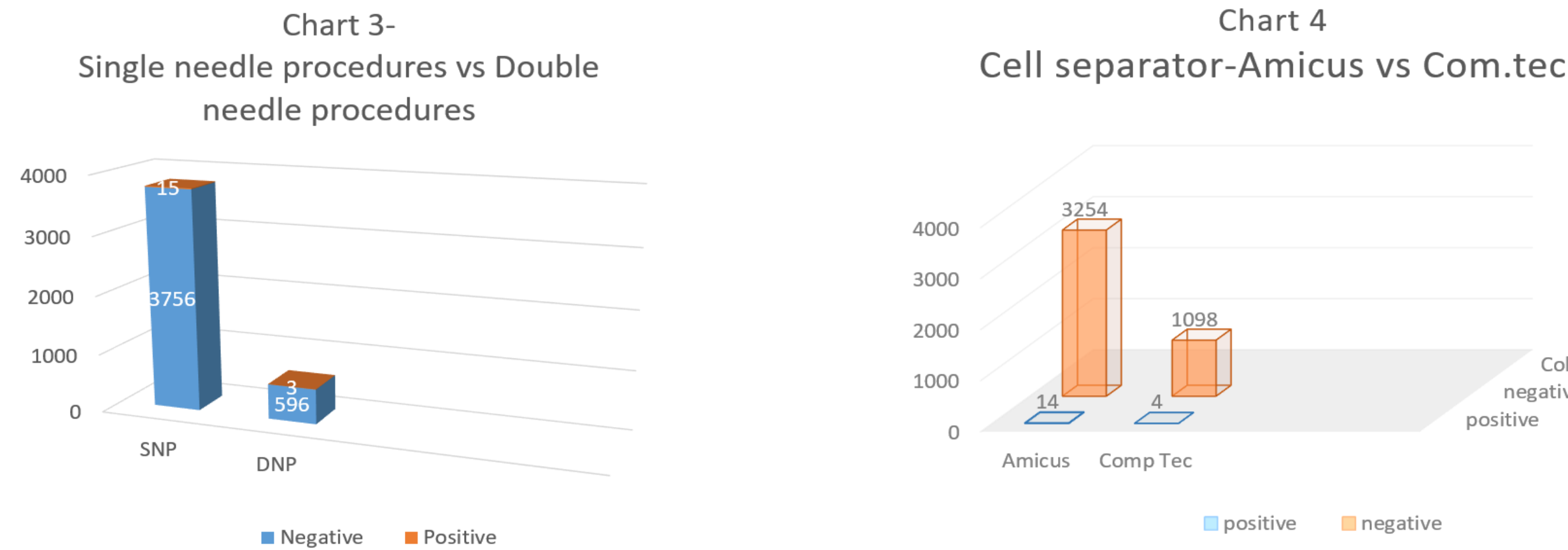


Table 1	BCTEC -VE	BACTEC +VE	TOTAL
PACKED CELL	3335	22(0.65%)	3357
SDP	4334	48 (1.1%)	4352
	7669	70(0.9%)	7709

Table 2	True Positive	False Positive
PACKED CELL	11(0.32%)	11(0.32%)
SDP	18(0.41%)	30(0.68%)
	29(0.37%)	41(0.53%)

Total 4352 APCs and 3357 LD-PRBC underwent bacterial screening. Among APCs, 48 (1.1%) tested positive, in which 18(0.41%) were confirmed as true positive.

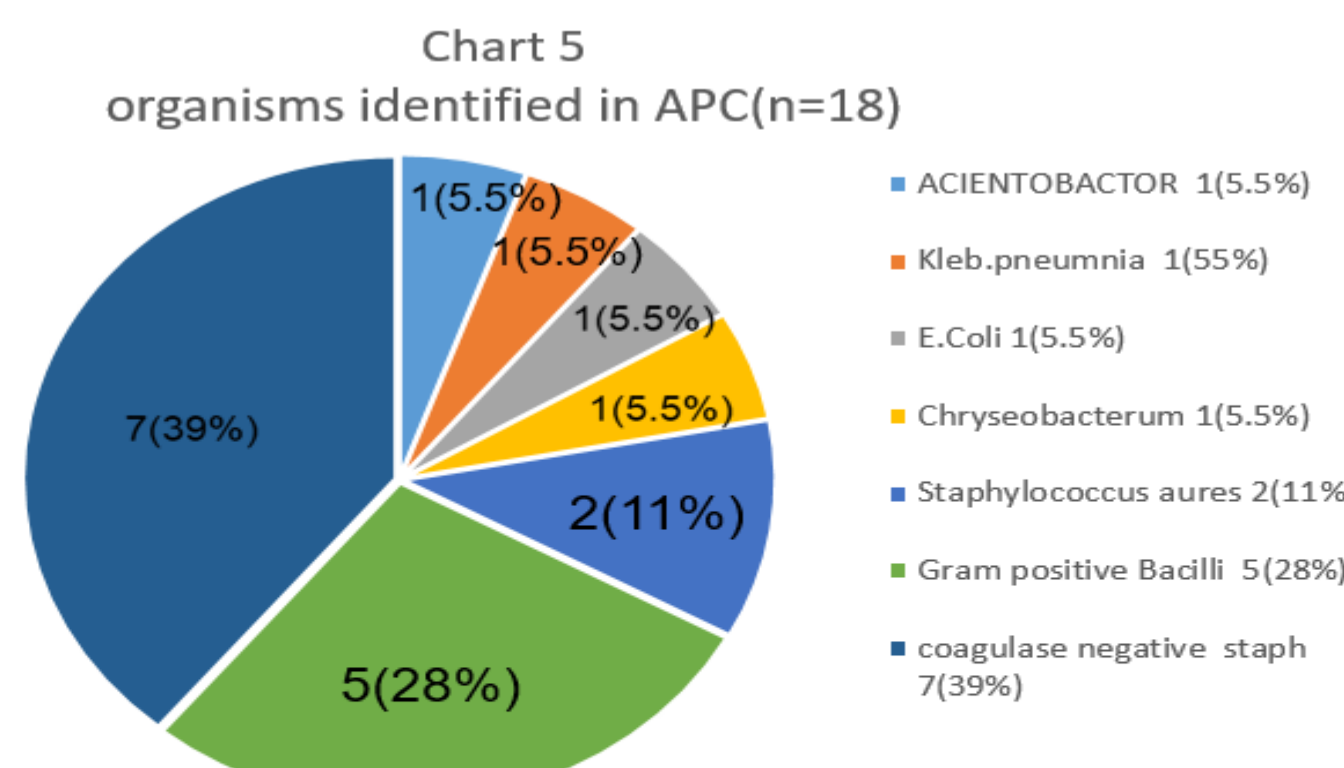
Collection technology



Chi- square test, p- value was not statistically significant (p>0.05) in both procedures.

- Among 3756 single needle procedures, 15(0.39%) tested positive and out of 596 double needle procedures, 03(0.50%) tested positive.
- 3254 procedures were performed on Amicus, in which 14(0.43%) came positive and 1098 procedures were performed on Com.tec, in which 4(0.36%) came positive. By using Chi- square test, p- value was not statistically significant (p>0.05) in both procedures.

Table 3	sr.no	organism	%
1	1	Coagulase negative staph (CONS)	7(39%)
2	2	Gram-positive bacilli (GPB)	5(28%)
3	3	Staphylococcus aureus	2(11%)
4	4	Kleb.pneumnia	1(5.5%)
5	5	E.Coli	1(5.5%)
6	6	Chryseobacterium	1(5.5%)
7	7	Acinetobacter	1(5.5%)



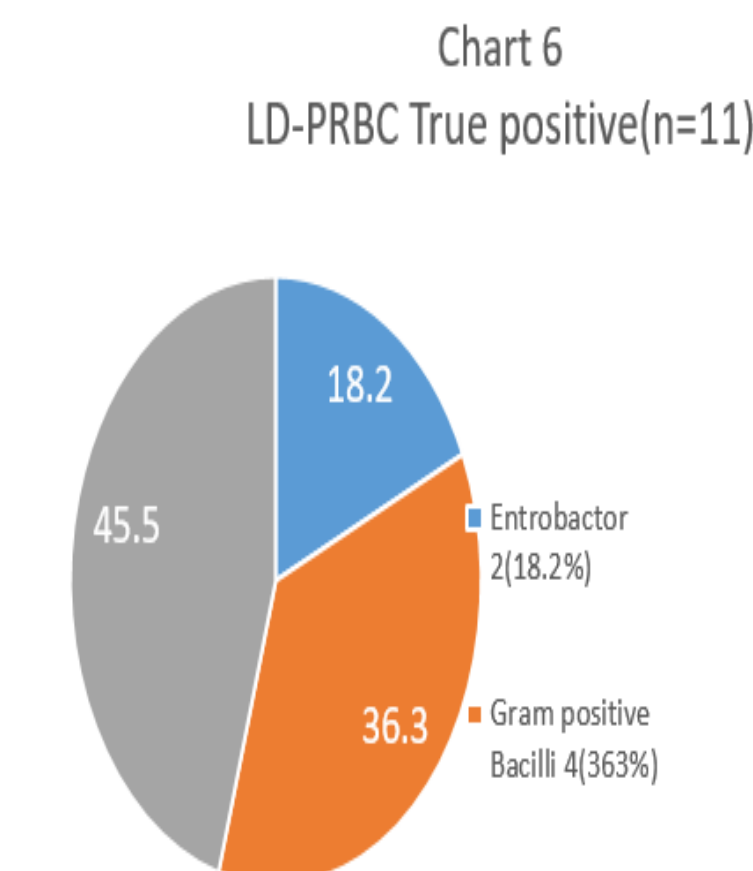
The organisms identified were 7 Coagulase negative staph (CONS), 2 Staphylococcus aureus, 5 gram-positive bacilli (GPB), 4 gram-negative bacilli (1Acinetobacter, 1 Kleb.Pneumonia, 1 E. coli, 1 Chryseobacterium).

Results

organisms identified in LDPRBC(n=11)

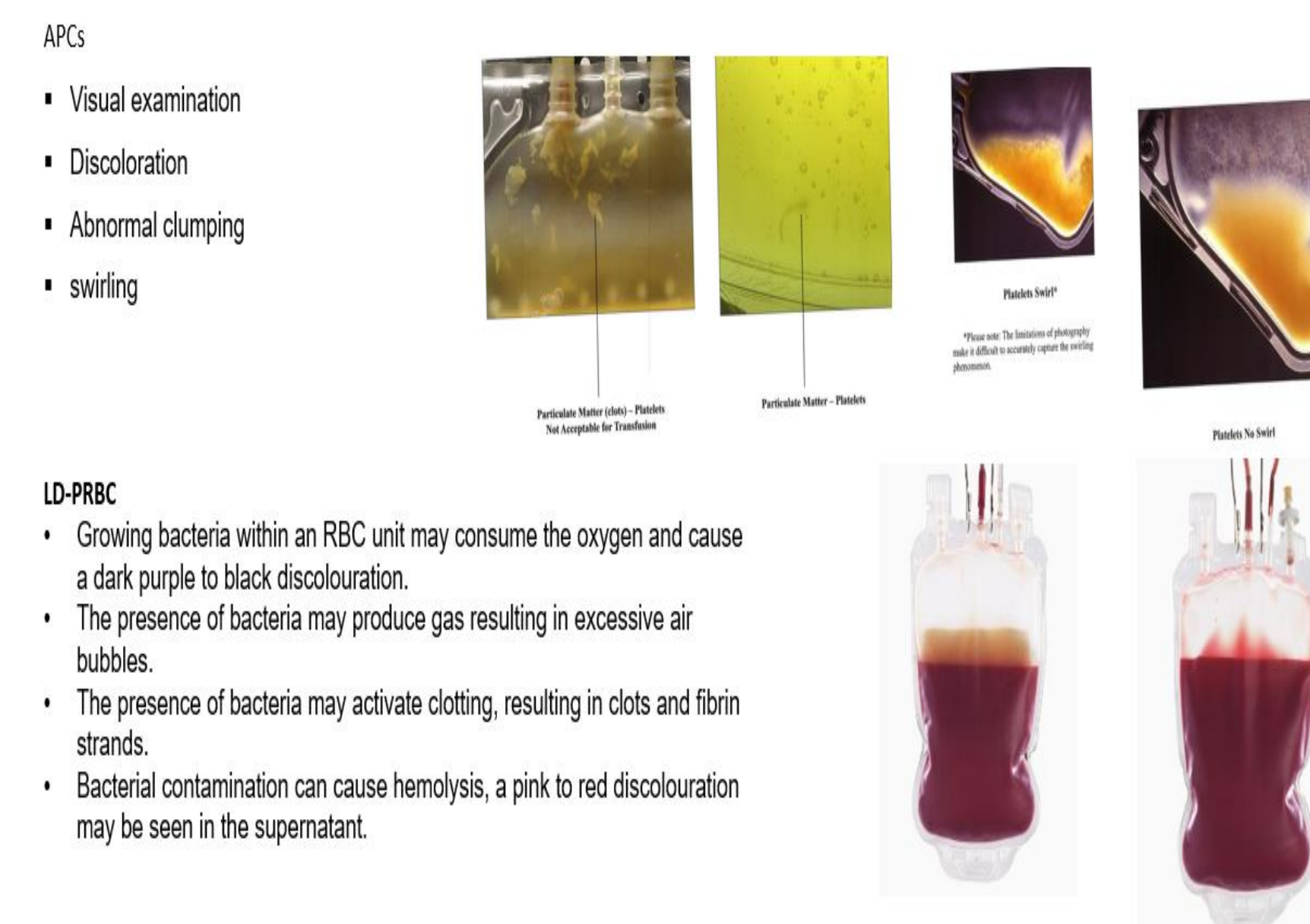
Table 4

sr.no	organism	%
1	Coagulase negative staph (CONS)	5(45%)
2	Gram-positive bacilli (GPB)	4(36.3%)
3	Enterobacter	2(18.2%)



Among 3357 LD-PRBC, 22 tested positive, out of which 11(0.32%) were confirmed as true positive. The organisms identified were 2, Enterobacter, 5 CONS and 4GPB. No transfusion reaction were reported due to bacterial contamination.

Bacterial Detection - Visual inspection



. In positive APCs after day 3, the pH was less than 6 and swirling was absent.

Discussion

- Adopted with a final implementation date of March 1, 2004, the AABB Standard reads “The blood bank or transfusion service shall have methods to limit and detect bacterial contamination in all platelet components. We follow 100% APC bacterial contamination testing, which has helped in reducing bacterial transfusion transmitted infection (TTI). (Refs. 2)
- The incidence of bacterial contamination in allogeneic platelets based on culture positivity was estimated at 1 in 1000 to 3000 units and For RBCs it is 2.6 per 100,000 units. In our study we found 18(0.41%) in 4352 APCs & 11(0.32%) in 3357LDPRBC. which is very high incident rate.
- In our study, bacterial contamination on Com.tec cell separator found more as compared to Amicus but were not clinically significant. Hence, Apheresis technology is not a factor in the risk of bacterial contamination of apheresis PLTs. On comparing, we found our study to be in contrast with the other study(Refs. 1)
- Larger sample volumes increase culture sensitivity, but are associated with higher rates of false positive cultures and, additionally, consume a larger proportion of the platelet productt (Refs. 3,4) .We also observed same
- A higher rate of confirmed-positive bacterial cultures was seen with products collected utilizing two-arm collection procedures compared to one-arm procedures but not clinical significant. Other study found significantly high (Refs. 5)
- Vigilant visual examination ,pH screening and other surrogate marker help to prevented transfusion of bacterially contaminated APCs and RBCs at time of issue(Refs.6)

Conclusions

- By adopting prevention and detection strategies, risks of bacterial contamination of platelets and packed cell can be significantly minimized.
- This in turn will help in reducing transfusion reaction.

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