

Project Deliverable - Sprint 5b

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Report 4 Heading: Blood Test Quality Control Report

Benefits & Business Uses (Value):

This report helps identify blood tests with high failure rates, providing valuable data to QA teams to monitor processes. The common table expression (CTE) simplifies the main query by temporarily storing the results of blood tests. The main query provides a summary of the CTE, adding a filter for tests that have passed (or result is NOT NULL).

```
-- Step 1: CTE for Blood Test Details
WITH BloodTestCTE AS (
    SELECT TP.Test_Panel_ID,
           T.Test_ID,
           T.Test_Name,
           T.Result,
           T.Test_QC,
           TP.Status
    FROM TestPanel TP
    JOIN Test T ON TP.Test_ID = T.Test_ID
)
-- Step 2: Main Query
SELECT Test_Name,
       COUNT(*) AS Total_Tests,
       SUM(CASE WHEN Status = 'Failed' THEN 1 ELSE 0 END) AS Failed_Tests,
       ROUND((SUM(CASE WHEN Status = 'Failed' THEN 1 ELSE 0 END) * 100.0 /
COUNT(*)), 2) AS Failure_Rate,
       (SELECT COUNT(DISTINCT Test_ID) FROM BloodTestCTE) AS Distinct_Tests
FROM BloodTestCTE
WHERE Test_ID IN (
    SELECT DISTINCT Test_ID
    FROM Test
    WHERE Test_QC = 'Pass'
    UNION
    SELECT Test_ID
    FROM Test
    WHERE Result IS NOT NULL
)
GROUP BY Test_Name
ORDER BY Failure_Rate DESC;
```

Screenshot of output (two images as it was too wide):




































	ABC Test_Name ▼	123 Total_Tests ▼	123 Failed_Tests ▼	123 Failure_Rate ▼	123 Distinct_Tests ▼
1	Hepatitis C	1	1	100	30
2	Leptospirosis	1	1	100	30
3	Brucellosis	1	0	0	30
4	Dengue Fever	1	0	0	30
5	Epstein-Barr Virus	1	0	0	30
6	West Nile Virus	1	0	0	30
7	Toxoplasmosis	1	0	0	30
8	Rocky Mountain Spott	1	0	0	30
9	HIV	1	0	0	30
10	Rickettsial Infectio	1	0	0	30
11	Anaplasmosis	1	0	0	30
12	Schistosomiasis	1	0	0	30
13	Yellow Fever	1	0	0	30
14	Histoplasmosis	1	0	0	30
15	Ebola Virus	1	0	0	30
16	Q Fever	1	0	0	30
17	Chikungunya	1	0	0	30
18	Parvovirus B19	1	0	0	30
19	Zika Virus	1	0	0	30
20	Cytomegalovirus	1	0	0	30
21	Syphilis	1	0	0	30
22	Hantavirus	1	0	0	30
23	Hepatitis B	1	0	0	30
24	Tularemia	1	0	0	30
25	Lyme Disease	1	0	0	30
26	Trypanosomiasis	1	0	0	30
27	Babesiosis	1	0	0	30
28	Coccidioidomycosis	1	0	0	30
29	Lassa Fever	1	0	0	30
30	Malaria	1	0	0	30

Report 5 Heading: Blood Donation Trends and Product Quality Insights

Benefits & Business Uses (Value): This report evaluates trends in blood donations and their associated test outcomes. Also, it identifies the volume of products donated and evaluates their quality through various metrics (e.g., protein levels, platelet counts), and summarizes test completion patterns across the dataset.

```
SELECT
    B.Blood_ID,
    COUNT(DISTINCT PRBC.PRBC_ID) AS Total_PRBC_Donations,
    COUNT(DISTINCT WRBC.WBC_ID) AS Total_WRBC_Donations,
    ROUND(AVG(PLTS.Plt), 2) AS Avg_Platelet_Count,
    PLSM.FFP AS FFP_Indicator,
    CASE
        WHEN PLSM.FFP = 1 THEN 'Frozen'
        ELSE 'Not Frozen'
    END AS FFP_Status,
    UPPER(B.Rh) AS Rh_Type,
    LENGTH(B.Rh) AS Rh_Length,
    ROUND(AVG(PLSM.Protien_Level), 2) AS Avg_Protein_Level,
    LOWER(TP.Status) AS Test_Status,
    DATEDIFF(CURDATE(), MAX(TP.Completed_Date)) AS Days_Since_Last_Test
FROM
    PRBC
JOIN
    WRBC ON PRBC.Blood_ID = WRBC.Blood_ID
JOIN
    PLTS ON PRBC.Blood_ID = PLTS.Blood_ID
JOIN
    PLSM ON PRBC.Blood_ID = PLSM.Blood_ID
LEFT JOIN
    TestPanel TP ON PRBC.Blood_ID = TP.Test_Panel_ID
JOIN
    (SELECT DISTINCT Blood_ID, Rh FROM PRBC) B ON B.Blood_ID = PRBC.Blood_ID
GROUP BY
    B.Blood_ID, B.Rh, PLSM.FFP
ORDER BY
    Total_PRBC_Donations DESC, Avg_Platelet_Count DESC;
```

Screenshots of output :

	 Blood_ID	 Total_PRBC_Donations	 Total_WRBC_Donations	 Avg_Platelet_Count	 FFP_Indicator
1	18 	1	1	40	1
2	22 	1	1	39	0
3	12 	1	1	38.6	0
4	10 	1	1	37	0
5	20 	1	1	36.5	1
6	5 	1	1	35.1	0
7	17 	1	1	34.7	0
8	25 	1	1	34	0
9	11 	1	1	33.5	1
10	15 	1	1	32	1
11	7 	1	1	31.8	1
12	27 	1	1	31	0
13	2 	1	1	30.5	0
14	23 	1	1	30.2	1
15	9 	1	1	29.9	1
16	29 	1	1	28.5	1
17	4 	1	1	28.2	1
18	14 	1	1	27.4	0
19	6 	1	1	26.3	1
20	28 	1	1	26.1	1
21	24 	1	1	25.4	1
22	1 	1	1	25	1
23	8 	1	1	24.4	0
24	19 	1	1	23.6	0
25	26 	1	1	22.3	1
26	13 	1	1	21.2	1
27	3 	1	1	21	1
28	21 	1	1	20.9	1
29	16 	1	1	19.8	1
30	30 	1	1	19.5	0

ABC FFP_Status ▼	ABC Rh_Type ▼	123 Rh_Length ▼	123 Avg_Protein_Level ▼	ABC Test_Status ▼	123 Days_Since_Last_Test ▼
Frozen	-	1	7.4	inprog	271
Not Frozen	-	1	8.3	pending	268
Not Frozen	-	1	6.9	pending	274
Not Frozen	-	1	7.3	comp	276
Frozen	-	1	7.2	comp	271
Not Frozen	+	1	6.7	comp	281
Not Frozen	+	1	8	comp	286
Not Frozen	+	1	6.9	comp	279
Frozen	+	1	7.8	inprog	275
Frozen	+	1	6.6	comp	290
Frozen	+	1	8	comp	300
Not Frozen	+	1	8	inprog	264
Not Frozen	-	1	6.9	pending	302
Frozen	+	1	7	comp	297
Frozen	+	1	7.1	pending	290
Frozen	+	1	7.5	pending	263
Frozen	-	1	8.1	inprog	297
Not Frozen	-	1	7	pending	273
Frozen	-	1	7.4	pending	279
Frozen	-	1	6.8	comp	273
Frozen	-	1	7.6	pending	266
Frozen	+	1	7.2	comp	307
Not Frozen	-	1	6.8	inprog	292
Not Frozen	+	1	6.5	pending	270
Frozen	-	1	7.1	failed	265
Frozen	+	1	8.2	comp	292
Frozen	+	1	7.5	failed	301
Frozen	+	1	6.8	inprog	269
Frozen	-	1	7.9	pending	286
Not Frozen	-	1	6.6	inprog	261