DRIED PLASMA SPOTS AS A SIMPLE SAMPLING STRATEGY TO MEASURE RIFAMPICIN CONCENTRATION

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INTRODUCTION

- Rifampicin (RIF) is the cornerstone of drug sensitive Tuberculosis regimens.
- Sub-optimal concentrations of RIF could lead to treatment failure and drug resistance (Normal Range is 8 - 24 ug/mL).
- RIF exhibits wide interpatient variability in kinetics, therefore Therapeutic Drug Monitoring(TDM) is important.
- TDM is limited by cost, manpower & technology requirement & is available in very few centres in India.
- Cost effective options to facilitate a wider coverage of TDM in India is the need of the hour.
- To develop and validate a Dried Plasma Spot (DPS) assay.

AIM & OBJECTIVES

- To compare the concentrations between DPS & Plasma RIF by High Performance Liquid Chromatography (HPLC).
- To derive & validate a regression equation to predict Plasma RIF from the DPS RIF concentration.

METHODOLOGY

61 PATIENTS ON STANDARD 'RIF' BASED ATT

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2 mL BLOOD COLLECTED 2 HOURS POST DRUG INTAKE

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300 ul PLASMA TO MEASURE RIF CONCENTRATION USING HPLC

40 ul PLASMA SPOTS MADE ON WHATMAN FILTER PAPER AND RIF CONCENTRATION MEASURED USING HPLC

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A REGRESSION EQUATION WAS CREATED TO PREDICT THE PLASMA RIF CONCENTRATIONS FROM DPS (n =41)

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VALIDATION WAS DONE ON ANOTHER SET OF 20 PATIENTS

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AGREEMENT BETWEEN THE TWO METHODS WAS DETERMINED

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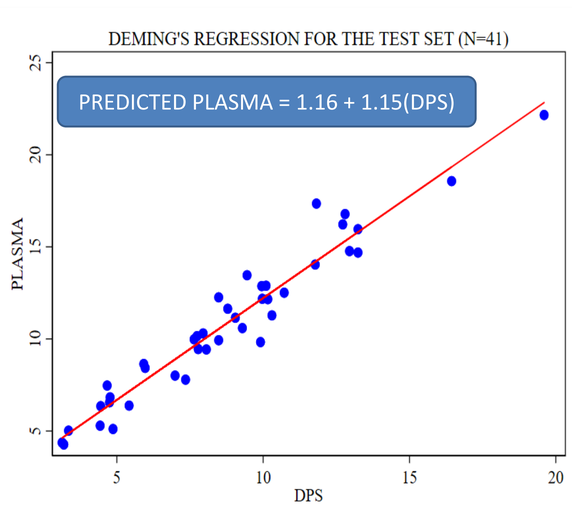
BIAS, IMPRECISION BETWEEN THE TWO METHODS CALCULATED

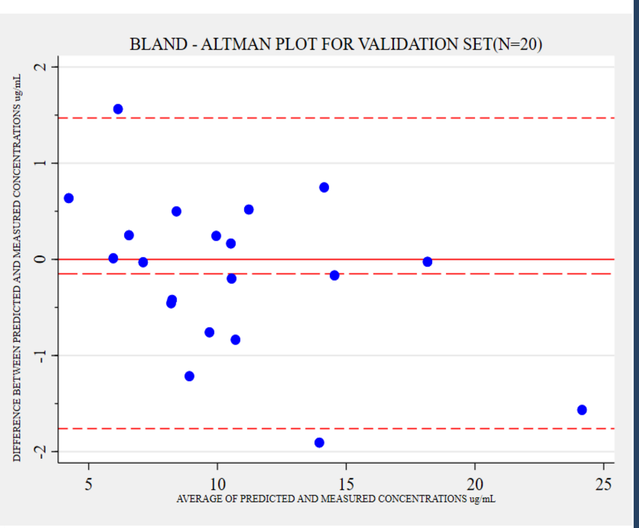
BASELINE DATA

	TEST GROUP (n = 41)	VALIDATION GROUP (n= 20)
MEAN AGE(YRS)	38.7	39.9
MALES	24	11
FEMALES	17	9
PTB	36	17
EPTB	5	3

RESULTS

	MEAN (SD) MEASURED PLASMA RIF CONCENTRATION (SD)	MEAN (SD) PREDICTED PLASMA RIF CONCENTRATION(SD)
TEST GROUP (n = 41)	10.3 (4.6) ug/mL	10.6 (4.8) ug/mL
VALIDATION GROUP(n = 20)	10.2 (3.9) ug/mL	10.5 (4.2) ug/mL

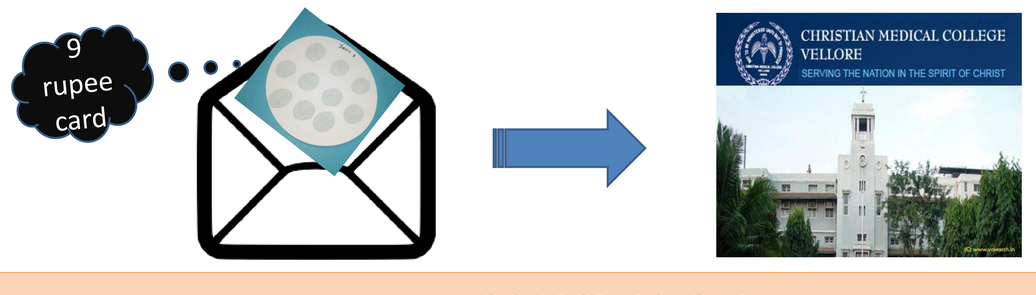




ICC CONSISTENCY = 0.97, 95% CI(0.93 -0.98)

ICC AGREEMENT= 0.96, 95% CI (0.89 - 0.98)

MEAN BIAS 3.9 %, 95%CI (1.5-6.5)
MEAN IMPRECISION 9.4% , 95% CI (7.6-11.1)



CONCLUSION

- The plasma Rifampicin concentration can be accurately predicted using DPS.
- DPS is a test, with minimum biohazard, lesser transport costs to resource limited settings.

REFERENCES

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