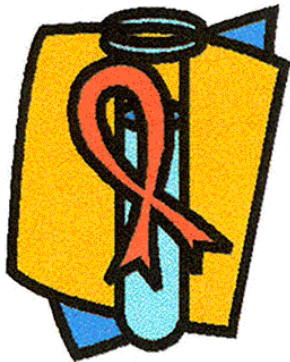


Stability of whole blood over time for CD4 & Viral load determination in HIV infected persons.

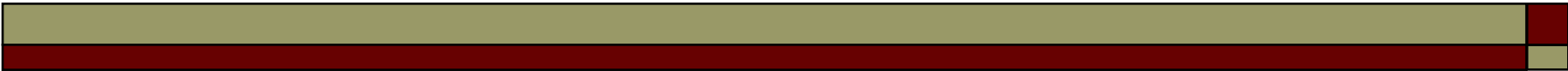


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CD4 & Viral load

- CD4 is a marker on lymphocytes that serves as the host for HIV entry and replication. The CD4⁺ cell count is a reflection of circulating CD4⁺ lymphocytes. As the disease progresses the CD4 cell count decreases.
- Viral load (VL) is the amount of virus copies that are present in blood.

- 
-
- These 2 laboratory parameters are essential to initiate antiretroviral therapy and monitor treatment response.
 - Determined from whole blood.
 - Ideally, samples should be analysed within 24 hours for CD4⁺ counts. Viral load samples if not analysed immediately can be stored at -70° C and prepared in batches for analysis.



Why conduct stability studies?

- Unprocessed samples for CD4 & VL testing deteriorate over prolonged storage times & varying temperatures.
- Therefore it is important for quality control that the time limits and optimum temperatures for storage are determined if samples are to be transported from remote facilities to processing laboratories.



Aim

To determine the optimum temperature and time limits for storage of whole blood for CD4& VL testing in samples.

Methodology

Viral load

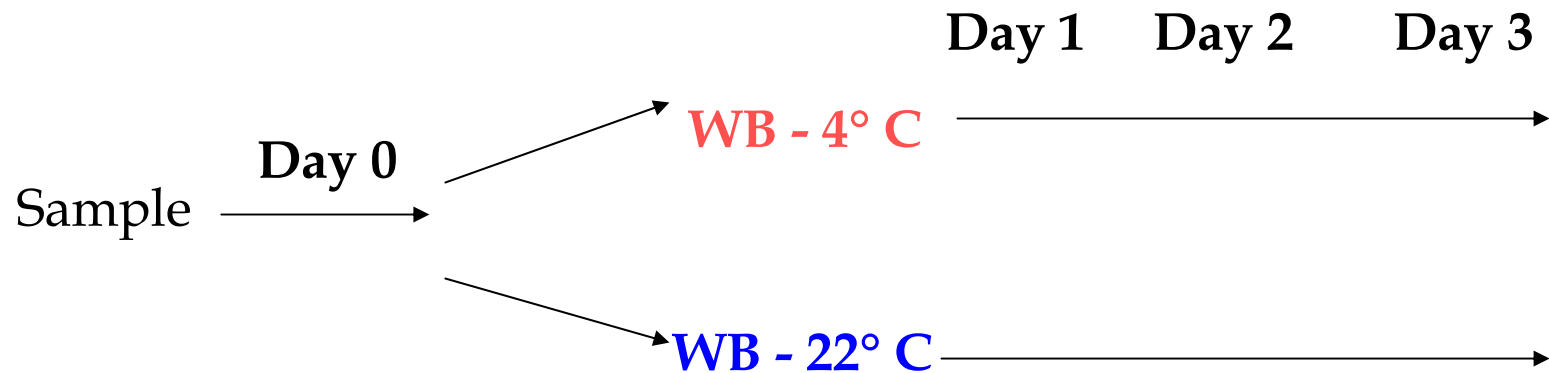
- 10 samples stored for up to 72 hours (3 days) as: whole blood at fridge temperature (4 ° C) and whole blood and room temperature (22 ° C controlled air-conditioned environment).
- Samples were tested at 0 hours, 48 hours and 72 hours.

Methodology

CD4⁺ Lymphocyte counts:

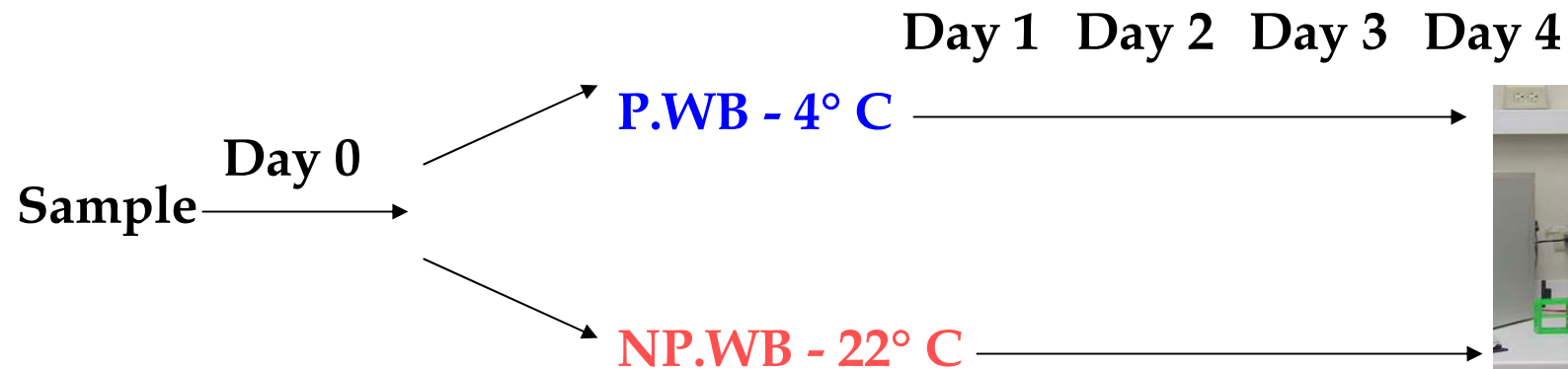
- 8 samples stored at room temperature (22 ° C controlled air-conditioned environment). Each sample was also mixed on Day 0 with a preservative solution & stored at fridge temperature (4 ° C).
- Samples were tested at 24 hour intervals for up to 96 hours.
- Comparison was made between CD4⁺ counts determined from non-preserved and preserved blood.

Study Design (VL)



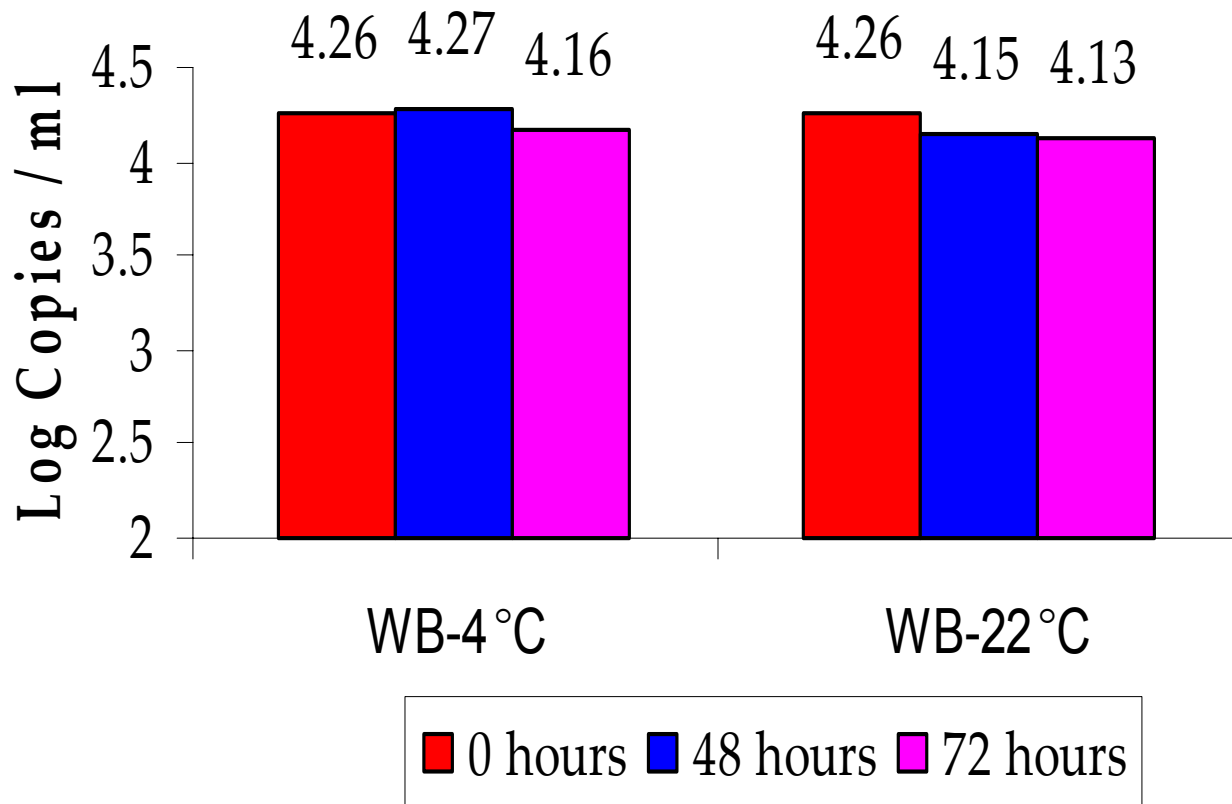
WB- Whole blood

Study Design (CD4)



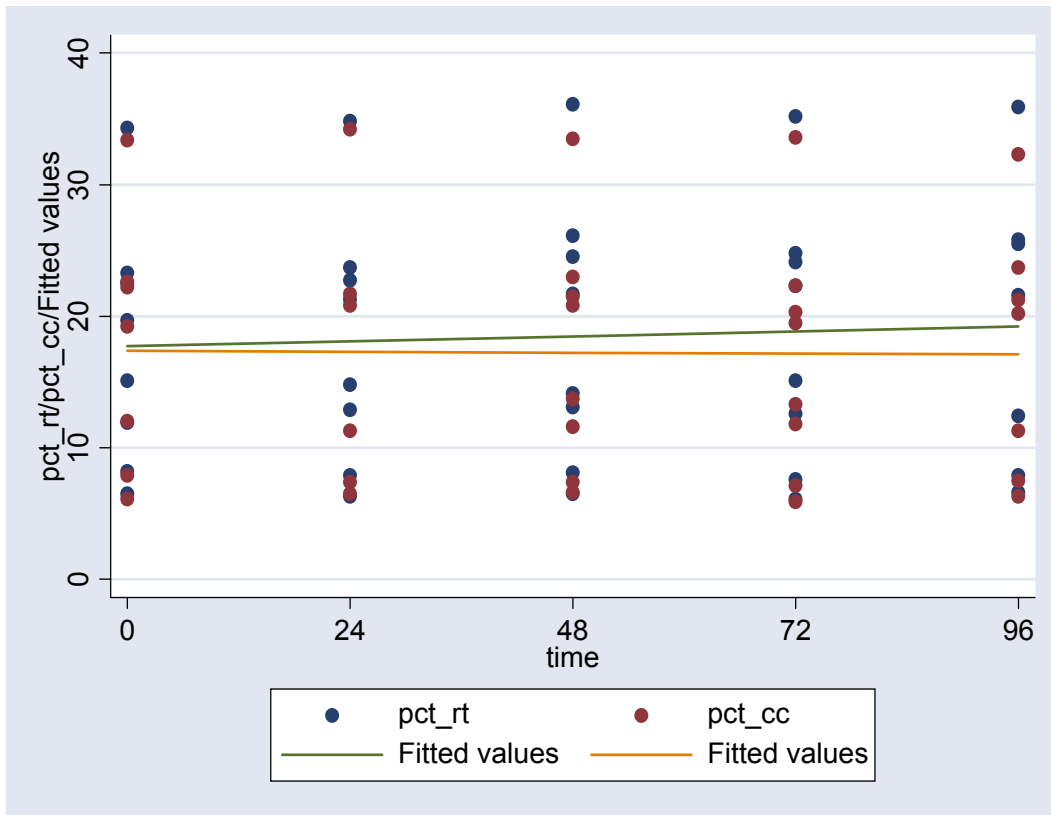
P.WB- preserved whole blood; NP. WB-non-preserved whole blood

Results



Not more than
0.5 log (three-
fold) variation in
VL from the 0
hour value

Results



Red line: P.WB; Green line: NP. WB

- No significant difference in CD4⁺ counts in preserved and non-preserved samples up to 96 hours from Day 0.
- Less variability in CD4⁺ counts in preserved blood over time.

Conclusions

- LRU can receive samples from peripheral clinics in Barbados for VL and CD4⁺ count determinations once samples are held at room temperature ($\sim 22^{\circ}$ C) for up to 24 hours.
- Regional nations can send whole blood at fridge temperature for VL & whole blood mixed with preservative reagent at fridge temperature for CD4⁺ counts up to 4 days after collection.



Study benefits

- Tremendous implications for regional management of HIV/AIDS in terms of access to accurate and reliable CD4 & VL results.
- Provides incentive for further work:
 - Evaluating longer time limits for storage
 - Evaluating dry blood/plasma spots for VL analysis



We thank all members of Staff at the LRU laboratory
and Clinic and staff at the QEH laboratory.
Sincere Thanks to Miss Heddy Broome (CDRC) for
statistical analysis.

*Enjoy the rest of
your Day!*