### Supplementary material

| Essential Technology (Equipments) | Standard reference technology | Non optimized alternative technology | SMARThivPack$^a$ |
|----------------------------------|-------------------------------|-------------------------------------|-----------------|
| CD4                              | Standard Flow                 | Dynabeads (fluorescent microscope) | Capcellia (elisa plate reader) |
| VL                               | Cobas Amplicor HIV-1 Monitor Test v1.5 (Cobas system) | Exavir (gel filtration system, elisa plate reader, elisa plate washer$^b$) | P24 (elisa plate reader$^c$) |
| DR                               | ViroSeq (Automatic Sequencer, Thermal Cycler, gel electrophoresis system) | OLA$^d$ (pcr set up, elisa plate reader, elisa plate washer) | ELMA$^d$ (pcr set up, elisa plate reader) |
| **Equipment**                    | **Cost**                      | **Implementation Cost (cost/test)** |                  |
| CD4                              | $\$ 60.000$                   | $\$ 60.000$ | $\$ 30.000$ |
| VL                               | $\$ 0.000$                    | $\$ 700$ | $\$ 0$ |
| DR                               | $\$ 100.000$                  | $\$ 500$ | $\$ 500$ |
| **Total**                         | $\$ 250.000$                 | $\$ 18.000$ | $\$ 8000$ |
| CD4                              | $\$ 26/test$^1$              | $\$ 4.5/test | $\$ 17/test$^b$ |
| VL                               | $\$ 26/test$^1$              | $\$ 15/test | $\$ 12.5/test$^m$ |
| DR                               | $\$ 350$                     | $\$ 12.5/test$^m$ | $\$ 12.5/test$^m$ |
| **Total**                         | $\$ 402/3 tests$^l$         | $\$ 32/3 tests | $\$ 42/3 tests |

**Table 1:** Comparison of essential equipments choice in a standard HIV patient monitoring laboratory with SMARThivPack model HIV patient monitoring laboratory in developing countries is given. (a) The SMARThivPack model presented in this table is an illustration of the SMARThivPack concept and should not be construed as a universal developing countries HIV patients monitoring laboratory model. The SMARThivPack model should be adjusted to specific laboratory setting, particularly in light of existing equipments and cost of consumables. (b) A plate washer is a recommended not essential equipment in performing an elisa test. Most elisa kits come with a manual washing protocol. (c) The elisa plate can be used for CD4, VL, and DR assays. (d) Details on OLA and ELMA technologies are available at, [13] and [14] respectively. (e) Unless otherwise specified all costs are averaged from http://www.hivforum.org/publications/QAQC.pdf appendixes B and C. Cost is averaged from http://mednet2.who.int/sourcesprices/sp_1b.pdf. (f) From web survey of 5 manufacturer catalogues, cost of elisa plate reader/washer is averaged to $\$ 3000 each, and cost of the gel filtration system is averaged to $\$ 1000. (g) See e. (h) Cost is estimated based on specific requirements of DNA sequencing facility and cost of genetic analyzers. (i) From web survey of 5 manufacturer catalogues, cost of the pcr set up is average to $\$ 5000. (j) Cost as applied in South Africa. http://www.aidsinfonyc.org/fiar/croi11-app3.html. (k) Cost is averaged from same reference as in f); (l) Cost is estimated from same reference as in f) based on similarity of essential steps (pcr amplification and elisa detection). (m) Cost range is $\$ 200-500 from [15].