

Supplementary Table S1: Characteristics of swabs and acceptance criteria

Characteristic	Type 1	Type 2	Type 3	Acceptable criteria	References
Swab sterility	Sterile	Sterile- no DNA/RNA enzymes	Sterile	Sterile	-4
Total swab length	150mm	152mm	152mm	150-160mm	-21
Swab tip length	16mm	21mm	27mm	15-35mm	-21
Swab tip diameter	3mm	2mm	3mm	1-4mm	-21
Texture of swab tip	Velvet brush-like	Velvet	Soft	Sufficient smoothness	-21
Lint production from swab tip	None	None	None	Lint-free	-24
Swab tip pH	Undisclosed	Undisclosed	7.2-7.8	Not specified	-35
Robustness: Ability to withstand vortexing or centrifugation	Good- no shearing or disintegration	Good- no shearing or disintegration	Good- no shearing or disintegration	Ability to tolerate torsion	-21
Shaft-material	Acrylonitrile butadiene styrene (ABS)	Acrylonitrile butadiene styrene (ABS)	Plastic	No wood or calcium alginate-interference with PCR	-4
Shaft-flexibility	Very flexible	Flexible	Flexible	Flexible for insertion into the posterior nasopharynx	-4
Breakpoint	80mm	80mm	70mm	70-100mm	-21
Breakpoint properties	No debris generation during breaking	No debris generation during breaking	No debris generation during breaking	Must be easy break without scissors	-21

Appearance of swab tip and shaft after freezing -80°C	No cracking/deformation	No cracking/deformation	No cracking/deformation	Must maintain original shape after freezing	4
Laboratory ease of use	Easy to use	Easy to use	Easy to use	Swabs must be easy to use	-33