

Supporting Information

1. Design specifications for the prototype G swab

2. Supplementary tables and figures

This appendix was part of the submitted manuscript and has been peer reviewed.
It is posted as supplied by the authors.

Appendix to: Williams E, Bond K, Isles N, et al. Pandemic printing: a novel 3D-printed swab for detecting SARS-CoV-2. *Med J Aust* 2020; doi: 10.5694/mja2.50726.

1. Design specifications for the prototype G swab

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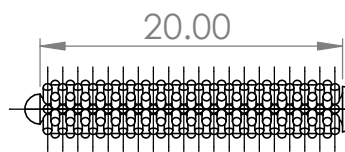
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DETAIL A

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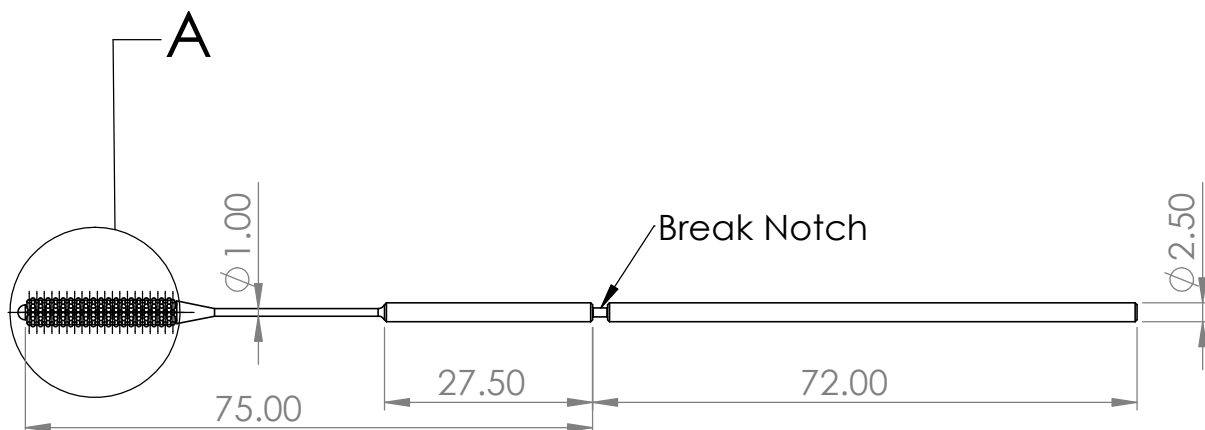
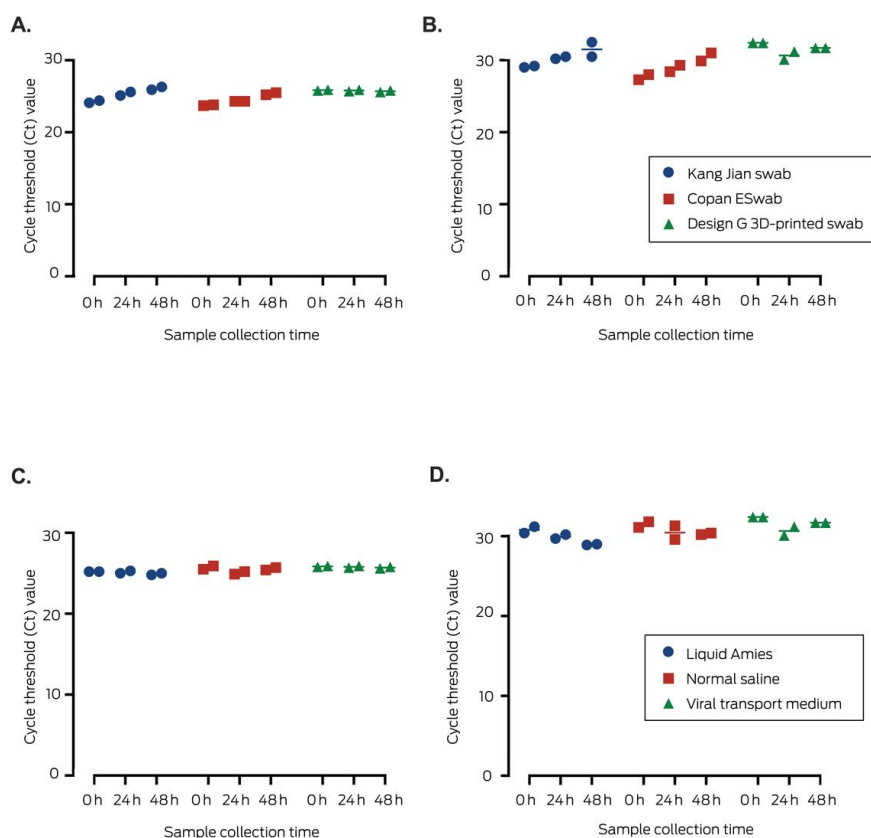


Table 1. *In vitro* validation study: SARS-CoV-2 E gene cycle threshold values for mock nasopharyngeal samples, by swab types and transport medium (two samples for each combination)

SARS-CoV-2 level	Swab	Medium	Storage temperature	E gene cycle threshold value		
				Day 0	Day 1	Day 2
16 PFU equivalents/mL	Kang Jian	Viral transport medium	4°C	29.0	30.5	32.5
				29.2	30.2	30.5
16 PFU equivalents/mL	Copan ESwab	Liquid Amies	4°C	28.0	29.3	31.0
				27.3	28.4	29.9
16 PFU equivalents/mL	Design G 3D-printed swab	Liquid Amies	4°C	30.4	30.2	28.9
				31.2	29.7	29.0
16 PFU equivalents/mL	Design G 3D-printed swab	Viral transport medium	4°C	32.4	31.2	31.7
				32.4	30.1	32.0
16 PFU equivalents/mL	Design G 3D-printed swab	Normal saline	4°C	31.8	29.6	30.2
				31.1	31.3	30.4
160 PFU equivalents/mL	Kang Jian	Viral transport medium	4°C	24.4	25.6	26.3
				24.1	25.1	25.9
160 PFU equivalents/mL	Copan ESwab	Liquid Amies	4°C	23.7	24.3	25.2
				23.8	24.3	25.5
160 PFU equivalents/mL	Design G 3D-printed swab	Liquid Amies	4°C	25.2	25.0	25.0
				25.2	25.3	24.8
160 PFU equivalents/mL	Design G 3D-printed swab	Viral transport medium	4°C	25.8	25.7	25.6
				25.9	25.9	25.8
160 PFU equivalents/mL	Design G 3D-printed swab	Normal saline	4°C	25.5	24.9	25.4
				25.9	25.2	25.7

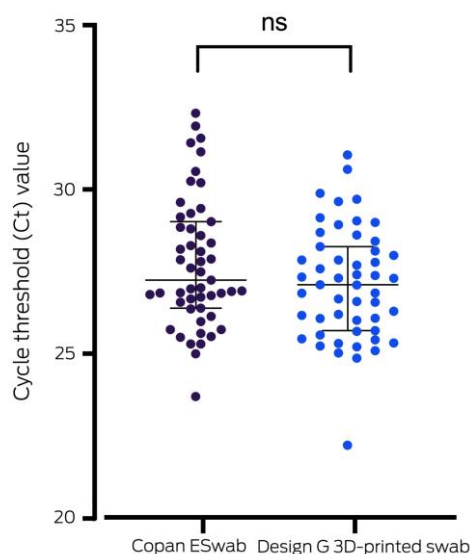
PFU = plaque-forming units.

Figure 1. Cycle threshold (Ct) values for detecting the SARS-CoV-2 E gene. By swab type: A. Viral concentration, 160 plaque-forming unit (PFU) equivalents/mL; B. Viral concentration, 16 PFU equivalents/mL. Design G 3D-printed swab, by transport medium: C. Viral concentration, 160 PFU equivalents/mL; D. Viral concentration, 16 PFU equivalents/mL



Lines mark mean Ct values.

Figure 2. Clinical evaluation study: Cycle threshold (Ct) values for RNase P detection in nasal samples collected from fifty hospital staff members with Copan ESwabs or design G 3D-printed swabs



Lines represent the median and interquartile range Ct values. ns = not significant.

Table 2. SARS-CoV-2 results for samples collected from two patients with laboratory-confirmed COVID-19 infections

Paired sample: swab type	Cycle threshold (Ct) value			
	RNase P	SARS-CoV-2 E gene	Xpert Xpress SARS-CoV-2	
			E gene	N2 gene
Sample 1				
3D-printed swab	26.8	33.1	30.8	34.5
Copan ESwab	26.7	45.0	35.1	37.0
Sample 2*				
3D-printed swab	22.1	20.4	20.2	22.9
Copan ESwab	22.7	19.1	18.6	21.2
Sample 3*				
3D-printed swab	24.3	32.0	31.0	34.2
Copan ESwab	24.2	27.3	27.4	30.1

* Two samples collected from same patient more than 24 hours apart.