

The utility of “lollipop” oral swabs in the diagnosis of COVID-19

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Introduction

- Current standards for COVID-19 diagnosis include nasopharyngeal (NP) or saliva specimens to detect SARS-CoV-2 via polymerase chain reaction (PCR)
- NP swabs are cumbersome to perform, uncomfortable, require health providers in personal protective equipment, may scare young children, and are not practical for large groups or repeat surveillance testing
- An oral swab, sucked on like a lollipop is a less invasive, quicker, more comfortable, reproducible, and an easier sample to perform

Methods

- Recently diagnosed SARS-CoV-2 (+) participants sucked on a flocked swab for 20 seconds
- The sample was placed in a collection tube with phosphate-buffered saline and sent for PCR
- Clinical information was obtained from patient

Results

Table 1: Patients Characteristics

Total number of subjects (ages 18 – 91)	n = 42
Inpatients	27 (64.3%)
Outpatients	15 (35.7%)
Symptomatic (acute COVID)	34 (81%)
Asymptomatic	8 (19%)

Table 2: Lollipop PCR Results

Total lollipops	n = 42
Positive PCRs	37 (88%)
Negative PCRs	5 (12%)
Symptomatic patients	n = 34
Positive lollipop	32 (94%)
Negative lollipop	2 (6%)
<7 days of symptoms	n = 27
Positive lollipop	27 (100%)
Negative lollipop	0 (0%)
≥7 days of symptoms	n = 7
Positive lollipop	5 (71.4%)
Negative lollipop	2 (28.6%)

Table 3: Asymptomatic PCR results

Asymptomatic patients	n = 8
Positive lollipop	5 (62.5%)
Negative lollipop	3 (37.5%)
Asymptomatic patients w/ previous COVID dx ranging from 16 days – 4 months in past)	n = 3
Positive lollipop	0 (0%)
Negative lollipop	3 (100%)
Asymptomatic patients w/ first positive COVID test	
Positive lollipop	5 (100%)
Negative lollipop	0 (0%)

Conclusion

- We demonstrated a 100% SARS-CoV-2 detection for lollipop PCR assay in symptomatic COVID-19 patients presenting within 7 days of symptom onset.
- All patients with previous COVID-19 diagnosis had negative lollipop PCRs
- All asymptomatic patients with first positive COVID test were also identified via lollipop PCR
- Lollipops may better reflect acute infection and may be less likely to be persistently positive after acute COVID-19
- Lollipop swabs are simple, easy, and a reproducible method of COVID-19 diagnostics that may be particularly useful for children or mass screening programs