NSF Rapid Response Update
HelplineSOS Decentralized Telephonic Triage System
for Charitable Clinic COVID-19 Crisis Response

This report represents updates and outcomes from the HelplineSOS implementation period between July-October, 2020 in Good Samaritan, GA; Open Cities, MN; Mercy, TX charitable clinics.

Implement Decentralized COVID-19 Telephonic Response

Over the course of summer and fall 2020, three large charitable clinics in Georgia, Texas & Minnesota implemented a standardized decentralized telephonic program. This included standardized training on script, documentation, and protocol for interventions and escalations related to patient need during calls.

Factors impacting implementation feasibility	Clinic culture	Clinic leadership structure	Clinic access to volunteer pool
Successful setting characteristics	Engaged executive leaders	Hands-on middle-manager/coordinator	Sosento liaison relationship
Administrative factors impacting call success	Executive buy-in	Engaged staff with link to volunteers	High volume call need/testing contract
Sustainability plans	Volunteer pool growth; Standardized procedure	Adaptation to changing COVID/care needs	Understanding data translation

Maximize Telephonic Clinic Capacity

Through standardized implementation and documentation, clinics found that call volume capsized pre-COVID-19 rates. Without HelplineSOS, clinic stakeholders believed that they would not have been able to manage their own clinic patient call volume, much less the additional telephonic rates seen from non-clinic patients. Rates below reflect volume since research standardization, not HelplineSOS project total.

In their words:

> *"500 calls a day, the phone will not quit ringing, you know, it was, you know, the demand was astronomical, for us."*
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> *"They were calling on the weekends, after hours and, and a lot of frustration on the part of individuals who say they'd reached out to us on our Facebook page saying, hey, I'd be glad to call your number, and I can't get through. I mean, we literally couldn't, could not answer the phone. You could be on the phone, and the whole time you're on the phone with an individual, you can hear the call interrupt because someone else's calling…"*
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> *"It's going to make a big difference, because we're going to have a lot less dropped calls and we're going to be able to ensure that we're taking care of everyone's needs and I believe that this would not have been done if we'd never came across this system."*

Patient call volume	Average weekly count of patients utilizing HelplineSOS at 3 study clinics is 713, with a cumulative total of over 7,000 calls since research implementation and 40,000 across the entirety of the project since launch in Spring 2020.

Successful patient callbacks	With a contact rate, or the ability to reach a patient during a callback, of 85% and a rate of successful, completed HelplineSOS calls at an average of 75%, this intervention outperforms industry standards.
Unsuccessful patient callbacks	Only a quarter of patients represent unsuccessful calls, with 12.5% due to multiple callback attempts without response, 5% helped elsewhere, 5% refusal rate, and 2.5% due to an incorrect or missing phone number.
Non-clinic patient call volume	Approximately 75% of HelplineSOS callbacks are to patients who are not known clients of the clinics represented.

Streamline Clinic COVID-19 Response

With HelplineSOS software and protocols, volunteer networks were mobilized quickly. Once onboarded and trained, volunteers streamlined call time to maximize callback volumes. Following implementation, clinics saw an increase in their capacity to service and address community callers. For example, they were able to triple the call volume without hiring more staff and callers now receive same day call back as opposed to a large percentage of callers either not getting through or not receiving a call back previously. This also includes Spanish speaking callers who were less likely to receive a call back prior to Helpline SOS due to staff capacity.

> *"We had had over 300 calls in one day, and we were able to call them back!"*

> *"Patients calls are being consistently responded to in an organized manner"*

Clinics reported that, prior to Helpline SOS, clinics were dropping calls or not being able to pick up phones or return calls.

Patients reported, *"I call but I never get an answer."*

> *"My supervisor, like she spends hours and hours and hours of her day, going through voicemails, and not being able to provide, like always running around, like, I'm not being able to spend as much time with each patient that comes in."*

> *"Before so as we were using our regular phone, we were receiving about 200 calls a day, sometimes more. We were not able to answer all the calls. Obviously, there were too many to handle. Patients were getting frustrated, because they were leaving voicemails, we will have about 100 voicemails a day that we had to call the patients back. So that was now with helpline, SOS they can just leave their information. And we can promptly return a phone call instead of not answering the phone at all."*

Callback return time	Across the project, clinics make standardized callbacks within the same business day, within an average of 4 hours of receiving the call.
Callback phone time	Average length of callbacks is 11 minutes, with a downward trend after implementation; most experienced clinics average 6-7 minutes per callback.
Intervention types	The overwhelming majority of patients, over 90%, were given testing interventions. The remaining 8% request COVID-19 information and the remaining 2% request administrative assistance with rescheduling testing.

Influence on patient decision-making	Of the 90% of patients intervened for COVID-19 testing, 55% have been successfully deemed eligible and scheduled for testing. Of those ineligible, alternate resources for local testing options were successfully provided.

Divert Care to Telehealth & Ensure Telephonic Safety

In addition to successfully reaching a high number of patient callers with rapid turnaround, HelplineSOS allowed clinics to quickly divert routine care needs to telehealth. Through rigorous and standardized escalation protocols, testing capacity, and tracking of patient needs, HelplineSOS increased safety during COVID-19 by maximizing digital health resources. In interviews with clinics, senior leadership recognized they were part of the core response; pioneers amidst a time of lack of tests, confusion, and fragmented services

The robust protocol and trainings for HelplineSOS stakeholders and volunteers ensured that care was efficiently and consistently escalated when patients required diversion to telehealth or emergency services. Although the percentage of callers requiring emergency intervention was low, the HelplineSOS rigor ensured that all symptomatic patients were offered a telehealth visit. Clinics also reported linking callers to testing at the clinic and through other local testing sites helping to relieve the burden on local urgent care clinics and emergencies rooms given most of their callers are underinsured or uninsured.

Patient call reason	The large majority of patients utilized HelplineSOS to obtain an appointment for COVID-19 testing, with approximately 60% of all patients reporting COVID-19 symptoms.
Patient call reason by demographic (age)	The overwhelming patient call reason remained testing, regardless of age.
Implement care diversion protocol	Of 60% of symptomatic patient callers, approximately 58% were escalated to the care diversion protocol; 25% to medical provider callback by clinic and the remainder by telehealth.
Healthcare utilization	Only 2% of the symptomatic population refusing care diversion by callback or telehealth, inferring an overwhelming majority of this population was rerouted from entering clinic or ED premises while symptomatic.
Care diversion referral type	Through standardized scripting, HelplineSOS volunteers are trained in a way that does not require them to have clinical licensure or triage skills. By asking every patient if they have severe difficulty breathing, approximately 3% of callers were assisted to 911 by volunteers.

Optimize Volunteer Network

Clinics utilizing volunteers for HelplineSOS management found an increased ability to quickly make callbacks. They relied on structure of routine meetings for implementation of standardized workflows, and maximized the feedback of volunteers willing to serve in a range of roles. Volunteers emphasized the ease and simplicity of managing the calls facilitated with improved technology. Volunteers, motivated by the pandemic and the value of their work, served as key implementers of the protocols that maximized patient care through the telephonic intervention.

Prior to HelplineSOS, staff worked overtime, volunteers were hard-pressed for time, patient calls could not be returned.

> *"It was kind of hard for (volunteers) to even take a break before, because of all the calls, and if the patient didn't leave a voicemail, we were not able to call them back."*

Once implemented, clinics noted improved efficiency in utilization of volunteers. Additionally, through focus groups, volunteers and staff reported feeling like their work was meaningful in that they were able to offer human connection, empathy, and clear, up-to-date information to stressed out and anxious callers.

> *"In a phone call with a patient, they don't have to rush to hang up that phone call because somebody else is already calling them. They can take their time to get the information, because they know they can always just go through the list and call them back. They're not being pressure by another phone call coming in."*

Volunteer utilization rate	Weekly, approximately 57 volunteers made callbacks across 3 clinics. Of these, each made approximately 12 callbacks to patients. At the highest average of 11 minutes per call, each volunteer spent about 2 hours weekly.
Volunteer ROI	At the highest average of 11 minutes per call, each volunteer spent about 2 hours weekly. Considering the value against the input, and that clinics may have variable call volumes, the implementation ROI is potentially high.
Administrative factors impacting volunteer success	Senior coordination/management role with buy-in and support; Implementing block scheduling for volunteer shifts and avoiding callback burnout (an average of four-hour shifts)

Disseminate High Quality COVID-19 Information

With regulations and guidelines changing rapidly, HelplineSOS and the Coronavirus Response Network gave consistent, evidence-based information to patients via the telephonic intervention. Wanting to appeal to a broad base of clients, but knowing that for many, phone-based information was the most equitable, HelplineSOS' information protocols were designed specifically for telephonic implementation, and content geared for easy sharing by phone. Ultimately, clinic leaders needed a functioning phone line and their patient base needed to get their questions answered and to help dispel misinformation in the community, especially for uninsured callers.

> *"I feel more confident in being able to take my time and like get the right information. whereas previously, I did feel pressure to have to like answer this call with the information quick and then pick up another like call right away."*

> *"For us, it takes less pressure from us to be answering the calls, we can take our time with our patients, we can provide as much information as they need without us having to move faster on the calls. We can just take our time and then get to the next call (as) needed."*

Patient information need type	Of callbacks offering information protocols, almost 90% requested clinic-specific information such as testing windows, location and other administrative issues that would normally overwhelm clinic phone lines.
Patient information content	HelplineSOS standardized scripts included direct links to universal information protocols based on CDC Guidelines, designed to be administered in a conversational manner by phone.

Evaluate Implementation Success

The implementation process for HelplineSOS in the three research clinics is comprehensive both in didactic training and reference materials, but in quality assurance and structure that allows for consistent stakeholder feedback. The creation of an outcomes dashboard, available to stakeholders, serves both as a check of rigor and a QAPI tool so that continuous improvement is not only possible, but standard of practice.

When surveyed, 90% of clinic leadership and volunteers reported being very satisfied with the current Helpline implementation. In lieu of the Helpline, clinic leadership noted that callers would be more likely to visit urgent care centers, emergency rooms, or hospitals and they might be mor prone to search for answers/information on the internet.

Stakeholder satisfaction	Able to triple call response without hiring additional staff; patients are less frustrated lessening burnout for clinic staff; Free to use and easy to understand.
Volunteer experience	Meeting the community need for testing and information; easy to follow the script; safely and efficiently address calls.
Caller satisfaction	All HelplineSOS calls ended with volunteers giving patients an opportunity to voice their satisfaction with the service through an optional two-question survey based on similar queries found in research. For those who chose to respond, an overwhelming majority rated HelplineSOS as satisfactory on a five-point scale. In addition, the qualitative data received in response to the survey question, "*If this service had not existed, what would you have done?"* is rich for additional analysis on both the service, as well as potential research on patient decision making.
Clinic efficiency	Clinic able to manage the call load; Making an impact on the community by connecting with testing and services and reducing spread.
Data transparency	A large facet of the implementation has been the rollout of a stakeholder quality process outcomes dashboard. With comprehensive and clinic-specific metrics, this display allows for quick troubleshooting of errors or delays. Teams utilizing the dashboard can set benchmarks and track improvement in process metrics.

"We provided the response to COVID that our community needed within our capacity to do it well and do it safely for our staff."

"Helpline SOS is easy to use and implement. It does not require extensive training and technical assistance to train staff and volunteers."

"About all we can afford is: free."

"And honestly, moving forward after COVID is over, I don't see. I don't see [clinic name] without a helpline."

"Helpline SOS has allowed a small organization to manage over 10,000 phone calls since late July 2020. This would not have been at all possible without the call center. as a result, thousands of individuals have received life-saving testing, community spread has been mitigated, and the burden on local emergency rooms has been impacted."

Future Research

NSF Computer and Information Science and Engineering (CISE): Core Programs SMALL Project Statement of Intent – Human Centered Computing (HCC)

Building on the overwhelming success of the HelplineSOS pilot both in volume and standardization, we propose a subsequent study that attempts to lay the groundwork for digital translation of our work into local health department data infrastructure. We propose the following aims for a small-sized CISE Human Centered Computing project:

- **Aim 1:** Complete a network map of HelplineSOS reach geographically and as correlated with area FQHC & Health Systems to ascertain the overlap in COVID-19 response, testing and potential for information exchange

- **Aim 2:** Using network map and active HelplineSOS patient caller data regarding symptomatic status and zip code, create a longitudinal tracking mechanism for predictive analysis of emerging testing and positivity surges by area

- **Aim 3**: Begin proposal for digital infrastructure collaboration with area health information exchanges to connect HelplineSOS zip codes with greatest positivity rate and area FQHC & Health Systems for the purpose of decreasing in-person utilization and testing duplication