

Developing School-based Telehealth Programs as an Equity Strategy for Education and Health Care

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School-based telehealth programs have shown potential to address both educational and health needs of elementary students in North Carolina. A Cone Health prototype in areas of endemic poverty and low health literacy allowed for the creation of on-demand care that kept children in school, decreased early dismissals, and reduced the burden and cost of urgent health care on families.

Introduction

Delivering care when and where it is needed in a way that creates value for our communities defines health equity initiatives. In 2019, a virtual care innovation team at Cone Health began a design thinking process to explore solutions to health in equity in Title I elementary schools in Guilford County through telehealth. What we learned opened our eyes to a wider and more integrated vision of equity.

We started with a traditional system focus. Analysis of Cone Health's emergency department visits for children aged 4-12 revealed two clear trends that directed our wider mission. Hot-spotting maps tracked the intensity of preventable low-acuity visits (Figure 1). These were defined as having low Emergency Severity Index (ESI) scores of 4 or 5. The hotspots clustered around the attendance zones of our Title I schools, which are known to be in areas of high poverty and low health literacy in Guilford County [1]. The Centers for Disease Control and Prevention (CDC) defines health literacy to be "the degree in which individuals have the ability to find, understand, and use information and services to inform health-related decisions and actions for themselves and others" [2]. Analysis of visit times revealed a mean emergency department arrival time of 8PM (Unpublished analysis of ESI levels and time of arrivals at Moses H. Cone ED, Cone Health Data Analytics, updated April 13, 2022) [3]. This points to an economic choice to use the emergency department after work and family hours, and the low ESI scores support the supposition that populations in our poorest areas are using the emergency department for routine care. This choice of care was often shaped by social determinants of transportation, work obligations, family burdens, and immediate out-of-pocket costs. Emergency room utilization for non-urgent pediatric conditions continues to increase. Studies indicate

that low-acuity pediatric emergency department visits could be prevented by a primary care intervention, such as telehealth [4].

Keeping our focus on children, we examined the effect of this health equity gap on our schools. Guilford County Schools continues to list reducing absenteeism as one of its top goals [5]. Over 20% of the children in our Title I schools are chronically absent from instruction, missing 10% of their instructional time. This is multifactorial, but it translates into a significant negative impact on educational achievement [5].

Our design thinking process focused on evidence-based solutions by which a health care system could best address these two issues—access to care and absenteeism—and proposed a facilitated school-based telehealth prototype in collaboration with Guilford County Schools [5]. Similar solutions were in place in small pockets across the state with Atrium Health and the Center for Rural Health Innovation, and both organizations became key learning partners. We carefully studied the school-based telehealth programs in Dallas, Texas, and South Carolina's statewide program to learn best clinical practices and operational successes [6, 7].

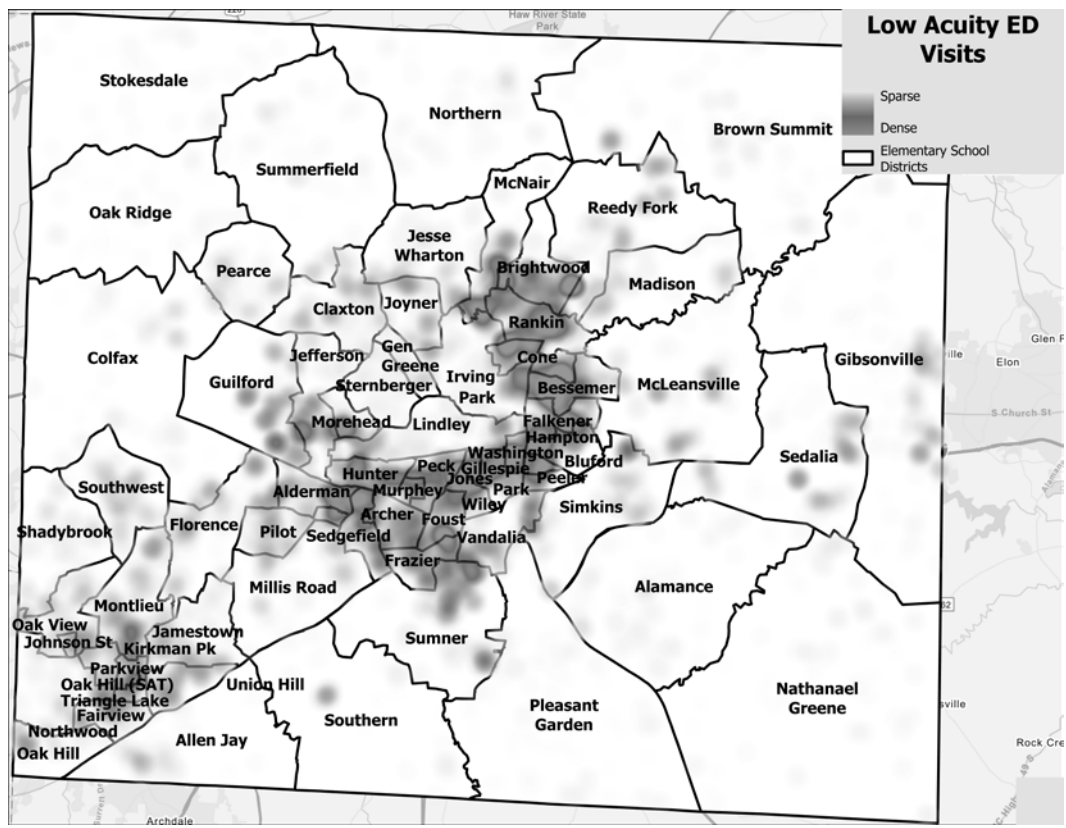
In April 2021, we launched a prototype learning program at Bessemer Elementary School. The program involved care delivery redesign that created value using emerging telehealth technologies including peripherals and multiple connection channels. These technologies allow the encounter to be a "meta" experience: very close to the exam that occurs in the provider's office, with the virtual presence of the parent and the uses of digital tools to emulate an in-person examination. The design became known as facilitated telehealth. We leveraged a platform that connected parents, interpretive services, and a remote provider to the child while they remained at school. The platform uses a high-definition camera with attachments and a digital stethoscope to closely emulate office-based examinations.

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FIGURE 1.
Hotspotting Map Overlaying School Districts of Low ESI ED Visits for Children Aged 4-12



Source: Cone Health Department of Data Analytics. Updated April 13, 2022.

Facilitated telehealth enables the program to create on-demand, high-value visits for both pediatric patients and providers. The program also leverages a full-time telepresenter (a clinically certified clinical medical assistant [CMA] or licensed practical nurse [LPN] with additional training) stationed in the school in a HIPAA/FERPA-compliant space. The telepresenter sets up the virtual room and uses digital technologies to facilitate the encounter. We developed competencies, training manuals, and standard workflows (Figure 2), and tested available virtual technologies.

Value in health care is defined both by improving health outcomes and improving the ways in which patients experience their health. School-based telehealth is designed to help students remain in school by promoting health and creates value for families for whom seeking care often disrupts their lives [8].

A key learning from our prototype was the necessity of a close partnership with the host school. The consent and referral process continues to be refined toward best practices. When developing this program, the team worried that caregiver participation, a critical component of pediatric care, would be limited. Connecting the parent or caregiver to the visit through their smart phones has been an unexpected success in over 95% of the encounters in our school-based program (internal data). Reducing the impact on families by

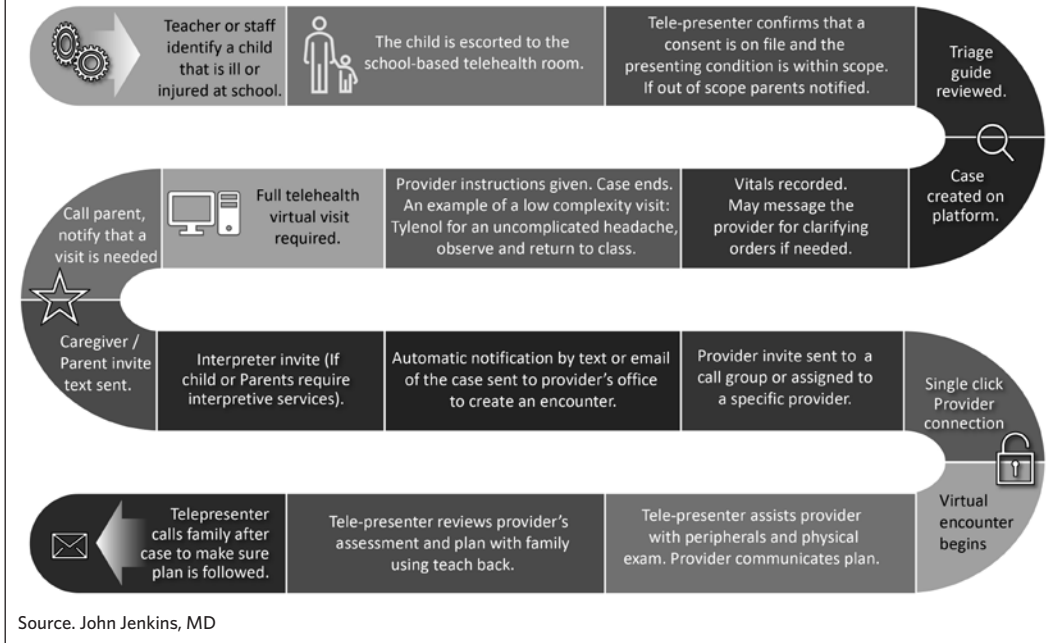
decreasing the number of early dismissals for simple common pediatric complaints has been a major boon.

Our key operational metrics (leading indicators) are percent of enrolled children whose parents/guardians have provided consent, cycle time to create the encounter, successful connections, and time in the encounter for the provider. At Bessemer we reached a goal of 85% of students with consent, a cycle time of less than 15 minutes to create the encounter, and an average encounter time of 11 minutes for our pediatricians (Unpublished data report from Amwell school telehealth platform, June 30, 2022).

Outcomes (lagging indicators) are still in process. Same-day return to classroom after an encounter has occurred in 90% of our cases. This was an early recognition of synergy with the school system's goal of increasing instructional time. Eliminating the need for subsequent in-person care, and especially emergency department utilization, has been documented in 95% of our parent surveys. We are developing analytic tools to measure the longer-term impact on school performance metrics such as third grade reading and math scores. Educational research suggests this is possible with the increase in instructional time [9].

Early success led to the spread of the program to three additional schools and the deployment of a common strategy with the Guilford County Board of Education to provide ser-

FIGURE 2.
Clinical Flow Model for School-based Telehealth



vice to all 51 Title I schools in the county [10]. This ambitious program would be cutting edge and allow for confirmation of our posited argument that the program can affect both health and educational equity in the elementary schools of our state. The program will require investments from a wide group of stakeholders and health systems. Philanthropic organizations and local, state, and federal agencies will need proof of return on investment to validate continued funding.

The investment for 51 schools would be \$6.5 million over four years. Long-term costs for our county would approach \$2 million per year. The investment is required to set up the care delivery infrastructure in schools while the long-term costs include supporting school-based clinical staff, replenishing consumable supplies, and providing clinical program administration. Looking at it another way, providing care for more than 20,000 students in Guilford County's 51 Title I schools would be an investment of \$100 per student per year. Early data from this program and others in North and South Carolina point to the conclusion that providing equitable, on-demand access to health care and behavioral health in our schools can result in healthier, better-prepared students and create value for North Carolina families, health care providers, and the state as a whole. *NCMJ*

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