

Community Versus Crisis: How Cone Health Leveraged its Local Relationships to Meet the Demand for Masks

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Faced with shortages of personal protective equipment during the COVID-19 pandemic, Cone Health leveraged its relationships with local businesses and community organizations to find innovative solutions. Its partnership with Custom Converting Solutions, Inc., led to the creation of a new kind of medical-grade mask, which will now be part of Cone Health's permanent supply chain.

Introduction

A network of long-term friendships proved crucial in the fight against COVID-19 in Greensboro, North Carolina. As demand for personal protective equipment (PPE) soared in late March 2020, Cone Health received offers from all over the Triad community with help—but none were exactly what Cone needed to meet the standards of the Centers for Disease Control and Prevention (CDC). The health system wasn't used to having to ask for help; they were the helpers.

On a typical day before the pandemic, Cone Health went through 1000 masks. Just a few weeks into COVID-19, the need was closer to 7000 a day. Dr. Dalton McLean, a cardiologist with Cone Health Medical Group, told his friend Seth Coker, a partner at construction firm Comet Development, about the explosive demand in need and lapse in supply. Coker mentioned Cone Health's issue to Matt O'Connell, owner of manufacturing firm Custom Converting Solutions Inc (CCS). Coker wondered if the materials used by CCS—which makes interior trim for the auto industry, parts for appliances, and a variety of other industrial products—could be used in mask production. O'Connell said he thought they could. Comet Development would pay a portion of CCS's labor costs. The project was mutually beneficial; providing Cone Health with crucial PPE kept CCS employees busy as their customer companies shut down due to the pandemic.

"In kind of a dark, stressful time, working on these kinds of projects, giving people the opportunity to help and feel like they're part of something important, I know our employees had a great sense of pride that they were part of the effort," O'Connell said during an interview for a Greensboro Chamber of Commerce documentary about the crisis called "Meeting the Moment" [1].

The Design Process

Due to the pandemic, there was a shortage of the primary filtration component in traditional medical masks, a polypropylene melt-blown material. Medical masks are commonly made from three layers of nonwoven materials. The face and outer layers are made of nonwoven polypropylene. The polypropylene melt-blown material makes up the crucial middle layer. O'Connell and his team realized they stocked a material with the same basic ingredients.

To meet the immediate need for masks, CCS put together a "crisis version" that wasn't aesthetically pleasing, but got the job done. Staff lovingly referred to it as "the coffee filter mask," as the White paper mask resembled the cone-shaped filters used in coffee machines. The CCS material was thinner than what would typically be used in medical masks. To compensate for this, CCS laminated another polyester layer to the face of its composite material, which increased filtration.

With the crisis masks completed, CCS and Cone Health set to work on a more permanent design, sharing research and sending prototypes back and forth. Michelle Schneider, Cone's vice president and chief philanthropy officer, also had a connection to CCS, as she and Product Development and Program Manager Ronnie Smith have been neighborhood friends for years. They reviewed prototypes in the Cone Health parking lot over the course of several afternoons to perfect the new design.

CCS invested in machinery, supplies, and technology to build a better mask. O'Connell and his team learned how to mass produce masks, eliminating the need for hand work used in the original design. The team added additional nonwoven polypropylene layers and removed the dense outer layer. They also began to electrostatically charge the middle filtration layer, which greatly enhances the filtration efficiency. Materials standards developing organization ASTM

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International measures a mask's particulate filtration efficiency, bacterial filtration efficiency, flammability, pressure drop (breathability), and fluid penetration, and rates it Level 1, Level 2, or Level 3. Level 3 provides the maximum level of protection, with increased requirements for fluid penetration and particulate filtration [2]. New equipment allowed CCS to pleat the mask bodies and add a nose bridge. CCS continues to supply this mask, which passes all the Level 3 standards set by ASTM International. O'Connell and Smith met with Cone's supply chain leaders to help them better understand how to store, pack, and label the masks, and to help reassure the team that this product was equal to those they were accustomed to using. The designs were also approved by leaders from the Health at Work, Safety, and Infection Prevention Departments at Cone Health.

After eight prototypes and lots of long hours during which vendors collaborated with Cone Health and received feedback, CCS was able to produce and donate 250,000 masks to Cone Health. The partnership won't be ending any time soon. CCS will be a permanent vendor for Cone Health once it attains approval from the Food and Drug Administration approval of the production site and the Level 1 and Level 3 masks.

Community Connections

As the pandemic begins to slow and vaccines become readily available, McLean, Coker, and O'Connell are beginning to see some silver linings in what has been a tumultuous time for everyone. Cone Health's partnership with CCS is one of several forged between health care and manufacturing as a result of the pandemic, and the mask was only one of the items in production. Cone Health also created a pop-up research and development department in a board room at the administrative services building across the street from its Green Valley Campus, which was serving as a COVID-19 hospital. Kontoor Brands, the parent company of Wrangler and Lee, stepped up to meet the demand for hospital gowns [3]. This partnership was forged by Scott Baxter, CEO of Kontoor, and Terry Akin, then-CEO of Cone Health. The Kontoor team's design and manufacturing expertise were critical to bringing the project to fruition.

Mary Jo Cagle, Cone Health's CEO, said these collaborations are the result of years of the organization living up to its core values: caring for patients, caring for each other, and caring for its communities [1]. While teaming up with CCS to meet the demand for masks has helped ensure the physical

safety of medical providers in the Cone system, addressing the mental health toll of the pandemic has required a different approach.

Providers have witnessed hundreds of COVID-19 patients die, most without any family present to share their final moments. Cagle said community support, from free dinners delivered by local restaurants to handwritten thank-you cards from individuals, has helped. Volunteers from all over the community have also reached out to see how they could help. Utilizing community donations to its COVID-19 Support Fund, Cone Health has provided access to an app called weCare, which provides peer-to-peer support, daily wellness checks, and crisis intervention for employees and their personal networks.

In March 2021, exactly a year after the pandemic began, Kontoor CEO Baxter and Cone's Cagle sat down with Zach Matheny of Downtown Greensboro, Inc. and University of North Carolina at Greensboro Chancellor Frank Gilliam to discuss how the city's collaborative culture can continue to be leveraged throughout the pandemic and into the future. "We've been through so much together in such a short period of time, I think there's a real pent-up demand within companies, within community leaders, within people wanting to get involved," Baxter said during a panel discussion with Downtown Greensboro, Inc. on March 4. "I think we're going to see a tremendous acceleration of community involvement and people supporting the community and supporting each other when we come out of this." NCMJ

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