Using a Distance-Based Partnership to Start a Hospital Medicine Program and a Quality Improvement Education Program

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Distance-based partnerships are being increasingly used in health care and have previously been described to facilitate the training of nurses, researchers, and occupational therapists.1–6 In 2013, the Society of Hospital Medicine’s newly published guidelines for pediatric hospital medicine (PHM) programs indicated that strong leadership is critically important to a program’s success. Many smaller children’s hospitals have very few dedicated pediatric hospitalists, and these hospitalists might not have formal leadership or quality improvement (QI) training, resources, or dedicated time for QI work because of their clinical responsibilities. Similarly, pediatric residency programs at smaller institutions might lack robust inpatient QI experiences for their trainees.

Leaders at Cincinnati Children’s Hospital Medical Center (Cincinnati) were approached by leaders at Niswonger Children’s Hospital (Niswonger) to complete a needs assessment of Niswonger’s inpatient program. Niswonger is a 69-bed children’s hospital colocated with Johnson City Medical Center, an adult hospital. These hospitals are located in a suburban area with a large rural catchment area. Both the adult and children’s hospitals are part of a larger health system, Mountain States Health Alliance. Niswonger is affiliated with East Tennessee State University (ETSU) Department of Pediatrics, which provided the majority of physician staffing.

The needs assessment, completed in 2012, consisted of several site visits, observation of inpatient rounds, interviews with Niswonger faculty and staff, evaluation of available historical data, and collection of new data. Two main gaps in clinical care and training at Niswonger were identified. The first was the need for a dedicated hospitalist program with providers who did not have competing clinical responsibilities. The general pediatric inpatient unit was historically staffed by several ETSU faculty members, all of whom had primary responsibilities in other areas such as intensive care, outpatient primary care, and infectious disease and none of whom were dedicated pediatric hospitalists. These physicians would typically conduct inpatient teaching rounds in the morning and then resume other clinical responsibilities. The second was the need for QI training for the 19 residents in the ETSU pediatric residency program, an Accreditation Council for Graduate Medical Education requirement.7

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Once the needs assessment was complete, leaders from both institutions met to discuss the feasibility of a distance-based partnership to address the identified gaps. Niswonger believed that leveraging Cincinnati’s expertise would lead to more effective and efficient patient care and improved resident QI education while facilitating longer-term capacity building once the partnership was complete. While contract negotiations were in progress, to provide proof of concept for the distance-based partnership and obtain early QI method buy-in, Cincinnati supported Niswonger staff in the implementation of an evidence-based asthma care pathway based on that developed and used by Cincinnati. A formal distance-based partnership was established in 2013 with 2 specific goals: to implement a dedicated hospitalist program and to create a QI training program for Niswonger residents and faculty. The partnership contract included the cost for travel between the 2 institutions, protected time for 1 hospitalist (20%) and the project manager (30%) to help facilitate the program, and some administrative costs. These costs were paid for by Niswonger/ETSU as part of the partnership contract. Two distance-based communication strategies were used to meet this goal: teleconferences and monthly in-person visits at Niswonger. Both strategies were used for hospital medicine operations and QI activities.

First, Cincinnati worked with the existing physicians at Niswonger/ETSU to develop and implement a dedicated hospitalist program, including recruiting a full-time hospitalist leader. The new hospitalist program provided dedicated hospitalist availability for patients, families, and nurses with both day and evening shifts and developed infrastructure to improve standardization and outcomes. A hospitalist leader with QI experience was recruited and hired in 2013 and given protected time for operational and QI activities. Three other providers, who previously provided outpatient and inpatient care, transitioned to practice solely as hospitalists during their dedicated hospitalist time.

Second, Cincinnati designed and implemented a distance-based QI training program. Cincinnati staff supported Niswonger staff in the implementation of an evidence-based asthma care pathway based on that developed and used by Cincinnati.

### TABLE 1: Niswonger QI Projects

<table>
<thead>
<tr>
<th>Project Focus</th>
<th>Team Members</th>
<th>Aims</th>
<th>Successes</th>
<th>Learnings</th>
</tr>
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<tbody>
<tr>
<td>Asthma improvement</td>
<td>Niswonger asthma coordinator, 4 residents, hospitalist</td>
<td>Increase percentage of patients treated on evidence-based care pathway</td>
<td>The percentage of patients with the asthma pathway ordered on admission increased from 0% to 100%.</td>
<td>Creating an asthma order set was key to improving this process.</td>
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<td></td>
<td>Standardize the number of Q4 albuterol treatments given before discharge.</td>
<td>The median number of Q4 treatments decreased from a median of 2.7 to 2.0.</td>
<td>Because it was not defined in the order set, the number of Q4 treatments varied by provider.</td>
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<td></td>
<td>Niswonger vice president of nursing, 3 residents, hospitalist</td>
<td>Start rounds at 9 AM. Rounds start time was moved to 9 AM (was previously inconsistent).</td>
<td>Rounds start time moved back to 9:30 AM to accommodate attending providers</td>
<td>Unable to sustain nurse presence on rounds.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Round on anticipated discharges first. Anticipated discharges were typically rounded on first.</td>
<td>Inconsistent process.</td>
<td></td>
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<td></td>
<td>Increase percentage of patients with pneumonia admitted on guideline-appropriate antibiotics at admission.</td>
<td>The percentage of patients with pneumonia receiving guideline-appropriate antibiotics at admission increased from 0% to 0.8%.</td>
<td>Creating a pneumonia order set was key to improving this process.</td>
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<tr>
<td></td>
<td>Evidence-based improvement</td>
<td>Increase percentage of patients with pneumonia discharged on guideline-appropriate antibiotics.</td>
<td>The percentage of patients with pneumonia discharged on guideline-appropriate antibiotics increased from 0% to 100%.</td>
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<tr>
<td></td>
<td>Niswonger chief executive officer, 4 residents, hospitalist</td>
<td>Discharge calls to primary care providers.</td>
<td>Team was able to build calls into their workflow.</td>
<td>Primary care providers did not want discharge calls, so aim was quickly abandoned.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Improve discharge summary communication sheet.</td>
<td>A new discharge summary sheet was created and vetted by residents, attending physicians, and primary care providers.</td>
<td>Transition to electronic medical record in the middle of this project caused team to abandon work.</td>
</tr>
</tbody>
</table>
program for ETSU’s pediatric residents. This program included in-person didactic training, participation in teleconferences focused on QI education topics led by Cincinnati, Web-based trainings on QI principles, and hands-on project. All training opportunities were led by the hospitalist director from Niswonger, who received formal QI training at Cincinnati, or the hospitalist and project manager from Cincinnati. The trainings covered a wide range of QI topics and methods, such as defining a Specific, Measurable, Actionable, Relevant, and Time-Bound Aim, running Plan-Do-Study-Act cycles, tracking data on run and control charts, and sustaining improvement.

The residents were separated into QI project teams, each paired with a Niswonger/ETSU leader. Improvement methods deployed by the teams included implementation of evidence-based clinical care pathways, standardization of prioritized process measures, and continuous measurement via biweekly run charts used to display data to help detect special causes of variation. See Table 1 for more information about each project, including team members, aims, successes, and challenges. Residents at Niswonger continue to receive formal QI training and project implementation experience through leaders at Niswonger, by using educational templates and processes started during the partnership.

The partnership between Cincinnati and Niswonger continued through December 2015, at which time both institutions determined that the goals from the needs assessment had been accomplished. Using partnerships to improve training programs has been done in other disciplines previously, and it is likely that new partnership paradigms are necessary in reduced-resource environments. Previous studies have found that institutions lacking QI infrastructure, leadership, and experience may face barriers when implementing an effective QI curriculum. Leveraging existing online modules and in-person and telephone education sessions for the residents and faculty members enabled the Niswonger residents to be involved in QI projects that addressed their institution’s needs. By tailoring the projects to identified needs, we were able to involve Niswonger/ETSU leaders, increasing the teams’ abilities to implement QI infrastructure and demonstrate success in improving care processes. This result is consistent with findings from previous work, when pediatric residents reported that faculty support and hands-on projects were key strengths of QI educational programs and pediatric program directors reported that hands-on experience and faculty with QI experience were critical factors for a successful QI program.

Hospitals, especially pediatric hospitalists, are often trained in urban, academic centers, but many spend their careers in community hospitals. A 2009 study indicated that only 36% of pediatric hospitalists practice in freestanding children’s hospitals, and the remaining 64% practice in children’s hospitals within larger adult hospitals or in community hospitals. Although Niswonger is a freestanding children’s hospital, it is collocated with an adult medical center and operates in a primarily rural area. It also still functions as a community hospital in many ways, with attending physicians and residents seeing patients in the general hospital ward as well as the newborn nursery and ICU. We believe that a distance-based partnership such as ours allows expertise from a large academic medical center to be shared with a lower-resource institution and could be duplicated. This work is not without limitations. Niswonger/ETSU was well poised for a partnership such as this, because they had early buy-in from senior leaders and were motivated to lead institutional change. This factor may limit generalizability to other programs. Programs such as this will probably be effective only when there are engaged stakeholders on both sides. Although there is significant upfront cost in establishing a PHM program, which may vary by size and location of the institution, there may be long-term savings and other benefits, such as improved patient care, to these programs. In addition, although we demonstrated positive change during a short period, it was limited to process changes rather than improved outcomes. We believe that sustained success, focused on improved patient outcomes, is possible given our findings, but this belief is still unproven.

More work in the use of distance-based partnerships is needed, and as telemedicine and other technologies continue to evolve, more opportunities to leverage these partnerships to improve patient care will emerge. Although the model presented here covered areas previously unpublished in the literature, greater dissemination of existing programs is needed to improve care globally. We hope that this project is one of many ongoing projects that could be shared, and key learnings from this and other projects can inform future distance-based partnerships.

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