EDRA CORE REPORT
Evaluation of Ambulatory Clinic Core Module Designs

March 2020
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Executive Summary
Brief Study Overview

- The goal of this evaluation was to understand how recently-implemented ambulatory clinic module designs perform from the perspective of providers and staff. Many clinics included in this evaluation were based on a new core module concept with central team space to allow all providers and staff the ability to work in close proximity together on patient care.

- A major difference between clinic designs was use of a separate patient corridor so that patients would not come into the team space, versus a shared corridor with patients entering exam rooms from the central core area.

- 11 clinics were included in the study and data were collected from site visits, interviews, and surveys.
Executive Summary of Findings

What Is Working Well

**Both Designs**
- High satisfaction with exam room design
- Core module team work space a positive influence on collaboration about patient care
- When available, access to daylight in the core team work space highly valued

**Separate Patient Corridor Design**
- Less distraction for caregivers from patients entering the core work space either deliberately or inadvertently
- More protective of confidential data
- Possibly better patient wayfinding experience

What Needs Improvement

**Both Designs**
- Noise/distraction a substantial problem for those working in the core area (noise cancelling systems in some clinics perceived as helpful, especially for patient rooms, but did not fully resolve the issue in core work areas)
- Providers and staff need quiet, private space for confidential phone calls and charting
- Need adequate space to accommodate functions and all team members, including medical assistants

**Shared Corridor Design**
- Ability to see the exam rooms from the core work space and know where patients are to support patient safety
Purpose of the Evaluation

The purpose of this evaluation was to assess the two main clinic module types that were recently built by the newly merged AdvocateAurora Health system, and to identity pros and cons for each model. Findings from the study are informing future planning for the AdvocateAurora Health system’s ambulatory platform.

The main question that the evaluation was designed to answer was as follows:

○ What characteristics of the clinic core module design types work well and do not work well from the user perspective?
Typical Floor Plans

Shared Corridor Designs – Examples

Separate Patient Corridor Designs – Examples
Methods
Mixed-Methods Evaluation Approach

The evaluation included two primary data collection methods: a web-based provider and staff survey, and site tours and interviews with clinic leaders. Different aspects of the clinic design were captured by the various approaches, meant to complement each other. Specific factors for each type of data collection method are listed below. It is important to note that, due to limitations in data access at the time of this study, the evaluation did not include direct patient/consumer perspective of the clinic designs, but rather only provider and staff perceptions of the patient experience.

Site Tours and Interviews with Clinic Leaders
- Operations
- Design
- Metrics
- Patient Flow
- Technology
- Amenities
- Capacity
- Utilization

Web-based Provider/Staff Survey
- Privacy and Distraction
- Collaboration
- Safety and Security
- Layout and Wayfinding
- Job Satisfaction
- Technology
- Staff Amenities
- Space Availability
- Thermal Comfort
- Lighting
- Overall Clinic Design
- Design Comparison
Evaluation Sites

Eleven clinic sites were included in the evaluation. There were 6 Advocate Medical Group sites, all recently constructed clinics with a central team space, 3 with a separate patient corridor and 3 with a shared patient/staff corridor; and 5 Aurora Health sites, 3 with a separate patient corridor and a central team space and two with a shared corridor and at least some central team space. Sites differed somewhat on other spaces including private or shared offices, touchdown rooms, and conference/meeting rooms. The size of the central team space also varied among clinics as well as who was primarily located within that space. The table below categorizes each site by corridor type.

<table>
<thead>
<tr>
<th>Separate Corridor</th>
<th>Shared Corridor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advocate Health Care - Condell Clinic, Libertyville, IL</td>
<td>Advocate Medical Group, Crystal Lake, IL</td>
</tr>
<tr>
<td>Advocate Outpatient Center – West Sequoia, Aurora, IL</td>
<td>Advocate Outpatient Center, Des Plaines, IL</td>
</tr>
<tr>
<td>Advocate Outpatient Center – Sykes, Chicago, IL</td>
<td>Advocate Outpatient Center, Huntley, IL</td>
</tr>
<tr>
<td>Aurora BayCare - Kepler Pediatrics, Green Bay, WI</td>
<td>Aurora Health Center – Southern Lakes, Burlington, WI</td>
</tr>
<tr>
<td>Aurora Health Center, Manitowoc, WI</td>
<td>Aurora Health Center, Oak Creek, WI</td>
</tr>
<tr>
<td>Aurora Health Center – Jackson Street, Oshkosh, WI</td>
<td></td>
</tr>
</tbody>
</table>
Clinic Tours and Interviews

Question Development

Interview questions were developed by a multidisciplinary group of HDR professionals with expertise in research, clinical design, and operations. Questions were designed for clinic managers to obtain an overall understanding of clinic functioning.

Data Collection

Tours and interviews were scheduled with clinic managers. At least some team members were at each clinic in person for the tour, but some interviews were done primarily over teleconference. Interviews were audio recorded with permission.

Data Analysis

Interview data were grouped into common themes. Questions about metrics were assessed and presented in tabular format.
Provider and Staff Web-Based Survey

Scale Development

Each construct was measured by a series of survey items. Questions for privacy and distraction, collaboration, and job satisfaction were based on validated scales. Other questions were developed by HDR Research and were previously tested for content validity based on relevance, clarity, and completeness, and are used extensively in HDR evaluation surveys. New questions were designed for direct comparison of the two clinic types based on standard survey development methods.

All questions were standardized so that higher agreement indicates positive outcomes.

Data Collection

The survey was open to all eligible providers and staff. Researchers coordinated with each clinic to develop a list of providers and staff who worked in the core area. All were sent an email survey invitation and reminder. These emails included an introduction to the study and a link to the online survey. The survey was open for a minimum of two weeks after the initial e-mail was sent.

The survey was built and tested on the secured Qualtrics platform. After responses were complete, the survey data were downloaded to an HDR secured server for auditing and analysis.

The survey evaluation was reviewed and exempted by the Western Institutional Review Board.

Data Analysis

Descriptive statistics were calculated for all survey questions. Comparisons between the two main clinic types (separate vs. shared corridor) were performed using chi-squared and then appropriate regression analyses controlling for demographic factors as applicable. Free text fields were assessed qualitatively and grouped into common themes and generally corresponded to the constructs included in the survey. Representative comments are presented.
Findings
Key Findings

Similarities of Systems and Sites
We found many similarities in design across sites in the newly merged Advocate and Aurora systems. Recent designs included a core area within the clinics for staff to collaborate on patient care. The facilities were quite similar in use of materials and aesthetics. Patient exam rooms were also very similarly sized and laid out across clinics and sites.

Many emergent themes were consistent across sites and systems, including the need to consider differing space needs of specialty services. Difficulties were noted when specialties were unknown during planning or changed between design and occupancy. Some clinics were already at or over capacity leading to crowding in the team space. Future design should more carefully consider team size, growth and future expansion, and should allow space for providers’ confidential conversations and quiet, focused work when needed.

Operations
Variations in operations, metrics monitored, and measurement were observed between sites. Some of the differences were due to technology with different software used within the clinics, but there was also variation in patient flow and room utilization that were not necessarily related to technology. Differences in change management were also noted between sites and likely were tied to differences in acceptance and intended utilization of design changes incorporated into the clinics.

Providers and staff noted pros and cons of current core module designs, stressing the need to align operations with the physical environment.
Site Visit and Interview Themes

Several key themes emerged from the site visits and interviews as follows:

**Building Design and Aesthetic**

Overall, there was a degree of consistency in the look, feel, and materiality of the clinics, with some differences in new construction vs. fit-outs of existing buildings. New construction was more consistent. The inherent similarities are anticipated to support development of consistent branding, wayfinding and design standards for the new combined system’s facilities. Many clinics displayed art or visuals from the local community. Interiors departments were working on alignment of furnishing and finish choices, taking into account feedback from current sites.

**Patient Exam Rooms**

Exam rooms were similar across the clinics, and leaders said providers were generally satisfied with patient room sizing and design. Patient room size must be larger to accommodate necessary equipment for some specialties.

**Core Team Work Space and Collaboration**

For many, the concept of collaborative patient care was strongly correlated with close multi-disciplinary team working relationships in conjunction with close proximity of work spaces in the core team area. There was general consensus that work space proximity for teams supported collaboration that is important to high quality patient care.
Site Visit and Interview Themes (continued)

Provider and Staff Accommodations

Various types of work areas are in use across the clinics, including both assigned and unassigned workstations, private offices, shared offices, and some touch down spaces. All clinics included a centrally located core staff work area, but with variations in size, layout and assignment of workstations.

- Staff seating assignments in the core workspace varied somewhat across clinics, including one with a nurse cluster, medical assistant (MA) cluster and provider cluster; some with providers maintaining a separate office outside of the core (typically at the building perimeter); and most with providers sitting with their nurse and support staff. While many providers had one MA, there were more in some specialties, as well as with primary care providers who achieve 75% of Medicare Relative Value Units. Seating in the core did not generally accommodate these additional staff members. Scribes also were not anticipated in current seating layouts.

- Some providers with desks in the core area expressed a strong need for quiet space to think and to have confidential conversations.

Patient Experience

Although the evaluation did not directly engage patients, clinic leaders explained patient flow and their perceptions of the patient experience related to the clinic design.

- Patient flow varied across clinics from parking to check-in, from check-in to waiting room or exam room, from exam room to check-out. Short distances for patients to travel were generally recommended. Check-out was in the exam room at some clinics, and at the check-in/check-out desk at others. Location for scheduling follow-up appointments was either at the front desk or in the exam room.

- Some Aurora clinics used patient self-rooming with reported success. Some clinic leaders reported that patients and parents appreciated immediate room access to avoid potential exposure to infectious people in the waiting room.
Site Visit and Interview Themes (continued)

Technology

The degree of technology implementation varied across the clinics. It is important to leverage technology consistently to support desired operational, experience, and care outcomes. Technologies available by clinic included the following:

- Online or kiosk registration prior to in-person check-in
- Varying levels of EPIC use, to be resolved with further implementation
- One clinic using RFID tracking with supporting software, facilitating real-time staff awareness of patients and clinic activities, as well as ease of access to key operational metrics. Another clinic was adapting processes toward such future implementation

Clinic Level Leadership

Some clinic leaders displayed future-oriented vision and focus, and some appeared to operate with more of a “work-around” perspective. A clinic manager described success with a smooth transition to a new clinic design with team workspace in the core this way:

“The answer to providers [who wanted a private office] was, ‘You cannot collaborate on care if you are housed in an office and they [other caregivers, nurses, MAs] are out here. This is a collaborative care model where [providers] are working side by side interacting with every patient as part of the team... We respect each other’s degrees. It’s collaborative top to bottom, meetings together, breaks down the barriers of how we used to do healthcare... We are on the cutting edge... We worked them through the change management process.... A unified message was the key... Most of them are really enjoying it.’”
Provider and Staff Survey Response Demographics

Across all respondents, 84.5% were female, which was similar across clinic types and systems. There were some differences in race/ethnicity with the Aurora system tending to have more individuals identifying as non-Hispanic white. Overall, a higher proportion of physicians or advanced care providers responded from Advocate clinics and more nurses responded from Aurora clinics. The table below provides the breakdown of job roles overall.

<table>
<thead>
<tr>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>796 Invitation emails sent including all individuals working in a core module</td>
</tr>
<tr>
<td>282 Responses</td>
</tr>
<tr>
<td>• Response rate 35.4%</td>
</tr>
<tr>
<td>• Clinic response rate range 12.5% to 100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Job Roles</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physicians or Advanced Care Providers</td>
<td>22%</td>
</tr>
<tr>
<td>Nurses</td>
<td>15%</td>
</tr>
<tr>
<td>MAs</td>
<td>20%</td>
</tr>
<tr>
<td>Patient Services</td>
<td>12%</td>
</tr>
<tr>
<td>Clinic Administration</td>
<td>7%</td>
</tr>
<tr>
<td>Other</td>
<td>22%</td>
</tr>
</tbody>
</table>
Privacy and Distraction

Privacy and distraction had several subscales including task privacy and communication privacy. Perceptions of patient information confidentiality were higher in the Separate Corridor design.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Separate Patient Corridor</th>
<th>Shared Corridor</th>
</tr>
</thead>
<tbody>
<tr>
<td>The clinic design helps to keep patient information confidential</td>
<td>Very accurate</td>
<td>Very accurate</td>
</tr>
<tr>
<td>The clinic design helps to protect patient privacy</td>
<td>Very accurate</td>
<td>Very accurate</td>
</tr>
<tr>
<td>There is appropriate space available to have private conversations with</td>
<td>Somewhat accurate</td>
<td>Neither</td>
</tr>
<tr>
<td>other providers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>There is appropriate space available to have private conversations with</td>
<td>Very accurate</td>
<td>Very accurate</td>
</tr>
<tr>
<td>patients and families</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am able to have a personal or private discussion while at work</td>
<td>Very accurate</td>
<td>Very accurate</td>
</tr>
<tr>
<td>I do not have to worry about disturbing others in the team work area</td>
<td>Somewhat accurate</td>
<td>Neither</td>
</tr>
<tr>
<td>I can talk with my coworkers in confidence</td>
<td>Very accurate</td>
<td>Very accurate</td>
</tr>
<tr>
<td>while in the team work area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interruptions at work rarely prevent me from giving my full attention to</td>
<td>Very accurate</td>
<td>Very accurate</td>
</tr>
<tr>
<td>my job</td>
<td></td>
<td></td>
</tr>
<tr>
<td>While in the team work area, I can work with few distractions or</td>
<td>Very accurate</td>
<td>Very accurate</td>
</tr>
<tr>
<td>interruptions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am able to concentrate fully on my job while at work</td>
<td>Very accurate</td>
<td>Very accurate</td>
</tr>
<tr>
<td>Noise in the team work area does not interfere with my ability to get</td>
<td>Very accurate</td>
<td>Very accurate</td>
</tr>
<tr>
<td>my work done</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend:
- Very inaccurate
- Somewhat inaccurate
- Neither
- Somewhat accurate
- Very accurate
Privacy and Distraction Comments: Separate Corridor

Separation from patients in the core area was seen as a positive in terms of confidentiality. Respondents also expressed difficulty with focused work in the team space.

“Both [designs] have pros and cons but protection of PHI is better accomplished with [separate corridors].”

“I like that the patients do not have access to the providers or staff while we are working on our tasks and when we are on the phones.”

“We do not have to worry that patients might hear staff working or other patient conversations.”

“I do like the set up... and I think patients overall like it. At times other people’s conversations are distracting/interfere with work due to several people with several different jobs sharing the same commons area/office’ space.”

“The level of noise in the pod took some getting used to. It is very noisy and hard to concentrate.”

“I think the [separate corridor] layout is necessary. In our pod, there is charting room in the front, that is a procedure room in the other pods, I feel this area is necessary for private conversations and charting.”

“Shared work space with no avenue for privacy and FYI I don’t want to have to travel to get privacy, I want the ability to chart in a private space.”
Privacy and Distraction Comments: Shared Corridor

In the Shared Corridor design, respondents expressed concern about patients coming into the employee work area and overhearing confidential conversations. Comments about difficulty concentrating on focused work in the core area were similar for the Shared and Separate Corridor design.

“The patients seem comfortable coming into the employee work area to ask a question or to look for their nurse. If a person is discussing patient information on the phone then the patient can possibly hear that conversation, or if two providers are discussing sensitive patient material.”

“Sometimes there are loud conversations in the hall that I find distracting.”

“Noisy. Hard to concentrate sometimes. I use the touch-down room when it gets too bad and I think we have one of the more quieter modules.”

“Conversations (noise) can easily be heard in the patient rooms nearest the nursing station and in certain areas near this area.”

“Small working space, no quiet areas to do work, uncomfortable working areas.”
Team Collaboration

Collaboration was measured using a 5-point scale that measures team integration and dimensions of leadership. In general, team collaboration was high in both types of clinic design.
Collaboration Comments

Comments about collaboration were similar for both clinic types. Most comments indicated that shared space made collaboration more effective. However, there were some comments about too much isolation within a clinic pod and little communication with other specialties or providers not working in the same area.

“The physicians and staff work more closely with each other than if the physicians had individual offices. Easy to collaborate with coworkers about patient questions since we are all in the same working area.”

“It is nice having the provider and the staff working in a common area. I feel it promotes teamwork and discussions.”

“Clinic has collaboration in all areas. We look at the clinic as a whole even though we have two floors and many departments we work as one!”

[Clinic with provider offices outside of the core work area] “It is incredibly isolating and lonely in the module. It is hard to talk to other doctors as we are physically very separated.”
Clinic Safety and Security

Safety and security was assessed using 7 items which measure patient and staff safety and security in specific areas of the clinic.

<table>
<thead>
<tr>
<th>Item</th>
<th>Separate Patient Corridor</th>
<th>Shared Corridor</th>
</tr>
</thead>
<tbody>
<tr>
<td>The clinic module design promotes patient safety</td>
<td><img src="chart1" alt="Bar chart" /></td>
<td><img src="chart2" alt="Bar chart" /></td>
</tr>
<tr>
<td>I am able to quickly access patients who need assistance</td>
<td><img src="chart3" alt="Bar chart" /></td>
<td><img src="chart4" alt="Bar chart" /></td>
</tr>
<tr>
<td>Patient exam rooms are visible from the team work area</td>
<td><img src="chart5" alt="Bar chart" /></td>
<td><img src="chart6" alt="Bar chart" /></td>
</tr>
<tr>
<td>Patient safety is improved by the design of the clinic</td>
<td><img src="chart7" alt="Bar chart" /></td>
<td><img src="chart8" alt="Bar chart" /></td>
</tr>
<tr>
<td>Access to staff areas is adequately secure</td>
<td><img src="chart9" alt="Bar chart" /></td>
<td><img src="chart10" alt="Bar chart" /></td>
</tr>
<tr>
<td>Access to patients areas is adequately secure</td>
<td><img src="chart11" alt="Bar chart" /></td>
<td><img src="chart12" alt="Bar chart" /></td>
</tr>
<tr>
<td>Overall, I feel safe and secure working in the clinic</td>
<td><img src="chart13" alt="Bar chart" /></td>
<td><img src="chart14" alt="Bar chart" /></td>
</tr>
</tbody>
</table>

Legend:
- **Strongly disagree**
- **Disagree**
- **Neither**
- **Agree**
- **Strongly agree**
Safety and Security Comments

Concerns about safety were raised in both types of clinic module design. Those from separate corridor clinics with patient-tracking technology did not express such concerns, however.

Separate Corridor Design

“There is no way to know when a patient or anyone has entered a [patient] room."

“I do not like that we cannot easily visualize patients and that they could be in a room potentially unstable before the nursing staff is able to get into room."

“The nursing stations in some areas do not allow direct vision of the exam rooms.”

Shared Corridor Design

“Security was well thought out before we moved to the new clinic location; safety was the team members number one concern at the old site and we no longer have that issue.”

“Patients/family from different departments are able to walk around and get lost or enter different patient rooms or staff pods.”

“The patient exam rooms are ‘sound-proof’ and there is a large glass wall separating the clinical staff from the exam rooms so if anything were to happen inside the exam room would we be able to hear it?”
Clinic Wayfinding

Wayfinding was measured using 4 items. Overall, the separate corridor design was preferred for ease of wayfinding.
Wayfinding Comments

Negative comments tended to focus on the Shared Corridor design.

“The patients... seem to be confused about how to exit the clinic once their visit is done.”

“SIGNAGE within the building is a MUST.”
Job Satisfaction

Job satisfaction was assessed using 10 items. The items are combined to create a mean overall score for job satisfaction. Overall, job satisfaction was high, and there was not a significant difference in job satisfaction between the two clinic design types.
Direct Comparison of Clinic Module Types

Overall, providers and staff who had worked in both types of clinics preferred the Separate Patient Corridor design.