



# Educating Clinicians and Patients about Cardiac Rehabilitation with Innovative Multi-Media Technology

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## Abstract

Outpatient supervised cardiac rehabilitation (CR) remains underutilized for those eligible. A major reason for non-participation is the absence of a physician referral after leaving the hospital. Therefore, creative strategies to increase physician awareness and provide patient education about CR are worthy of investigation. The purpose of this project was to describe how media technology can be used to explain and demonstrate (tell and show) the expectations of participation and the anticipated benefits. The creation of a program-specific intranet website enables referring physicians and allied healthcare professionals to access step by step instructions on the referral process along with content that describes the service provided in the outpatient setting. An internet website gives patients the opportunity to learn about the program and important contact information, the location and hours of operation. Still image photos of standardized patients using the facility give both intranet and internet viewers a taste of what to expect. Further insight into the supervised program can be gained by recording brief video demonstrations in CR with the same patients. In addition, the Matterport three-dimensional (3D) camera system uses innovative media technology to record a broad range of images within the facility, which enables the viewer to participate in an interactive exploration of the outpatient CR space (i.e. virtual tour). A learner can walk through the outpatient clinic by accessing a mobile device or a personal computer in the convenience of their home or office. For example, they may see the arrival area, check-in front desk or kiosk, telemetry preparation area, lockers and changing rooms, the exercise gym and related cardiovascular and weight resistance equipment, the telemetry monitoring station, clinician examination rooms, education classrooms and the functional movement or stretching studio if available. The creative application of this type of media technology can help bring CR to life and tell a story about a program that is hard to capture from a handout or brochure. Investigative research is needed to evaluate the influence of media support on enrollment, physician awareness and patient satisfaction.

## Learning Objectives

1. Identify ways in which intranet and internet web-based multi-media platforms can be applied to increase physician awareness and provide patient education about cardiac rehabilitation.
2. Describe how Mayo Clinic-Arizona is utilizing media support to promote cardiac rehabilitation.

## Introduction

### Benefits of Cardiac Rehabilitation

The benefits of CR are compelling, which supports the importance of participation in eligible patients. Enrollment in CR increases physical function, fitness and quality of life, in addition to lowering mortality and rehospitalization.<sup>1,2</sup> A study of >600,000 Medicare beneficiaries identified that mortality rates were 21-34% lower in cardiac patients that participated in outpatient supervised CR compared with non-users.<sup>3</sup> Evidence such as this helped convince the Centers for Medicare & Medicaid Services (CMS) to expand the list of eligible cardiac conditions for supervised CR in 2014 to now include stable chronic systolic HF.<sup>4</sup> More recently, CMS approved CR centers to provide Supervised Exercise Training for symptomatic peripheral artery disease patients.<sup>5</sup>

Studies show that hospitalizations for a recurrent cardiac event decreased with CR.<sup>6-7</sup> In a study of more than 30,000 Medicare beneficiaries that participated in supervised CR, a strong dose response relationship was noted between the number of CR sessions and long-term outcomes over a 4-year period. The more sessions a patient attended, the lower the morbidity and mortality rate. The best outcomes occurred with >24 sessions attended.<sup>8</sup>

Clinically, CR has shown to have favorable physiological effects on blood pressure, inflammatory markers and coronary endothelial function.<sup>9</sup> Consequently, CR is a disease management intervention that helps patients increase self-confidence and develop the skills needed to maintain a healthful lifestyle and manage associated cardiac risk factors.<sup>2,9-11</sup> Despite the many benefits of CR there are still low rates of participation.

### Barriers to Supervised Cardiac Rehabilitation

Outpatient supervised CR remains underutilized for those eligible. The largest and most comprehensive study to date reported that an average of 19% of cardiac patients in the United States received outpatient supervised CR.<sup>12</sup> A major reason for non-participation is the absence of a physician referral after leaving the hospital.<sup>13</sup> Therefore, creative strategies to increase physician awareness and provide patient education about CR are worthy of investigation.

## Intranet And Internet Web-Based Communication Platforms

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The creation of a program specific intranet website enables referring physicians and allied healthcare professionals to access step by step instructions on the referral process along with content that describes the service provided in the outpatient setting (Figure 1). An internet website gives patients the opportunity to learn about the program and important contact information, the location and hours of operation. Mayo Clinic-Arizona CR collaborated with colleagues within the institution to authorize the content included on a program specific intranet website and the enterprise-wide internet web-site, which required input from Public Affairs, Patient Education and Information Technology Support.

### Bringing Cardiac Rehabilitation to Life with Multi-Media Technology

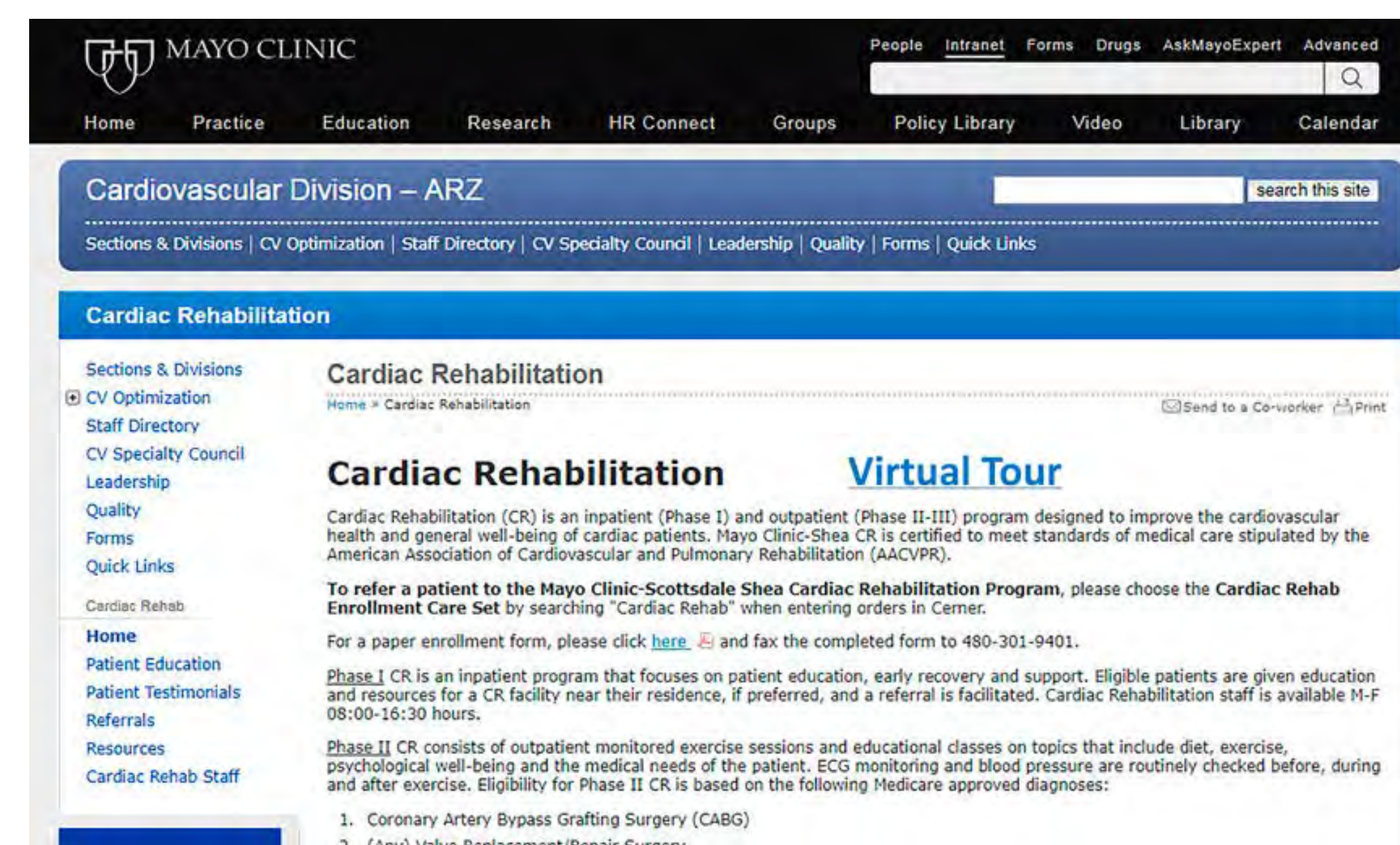
**Still Image Photography:** Still image photos of standardized patients using the facility give both intranet and internet viewers a taste of what to expect.

**Brief Video Demonstrations:** Further insight into the supervised program can be gained by recording brief video demonstrations in CR with the same patients. Modelling the application of behaviors by others with a similar patient profile and hearing about the positive effects (show and tell) from experts (e.g. CR Medical Director) or experienced patients (testimonials) increases self-confidence to perform the anticipated behaviors, sending the message "you can do and it will make a difference to your health".<sup>10</sup>

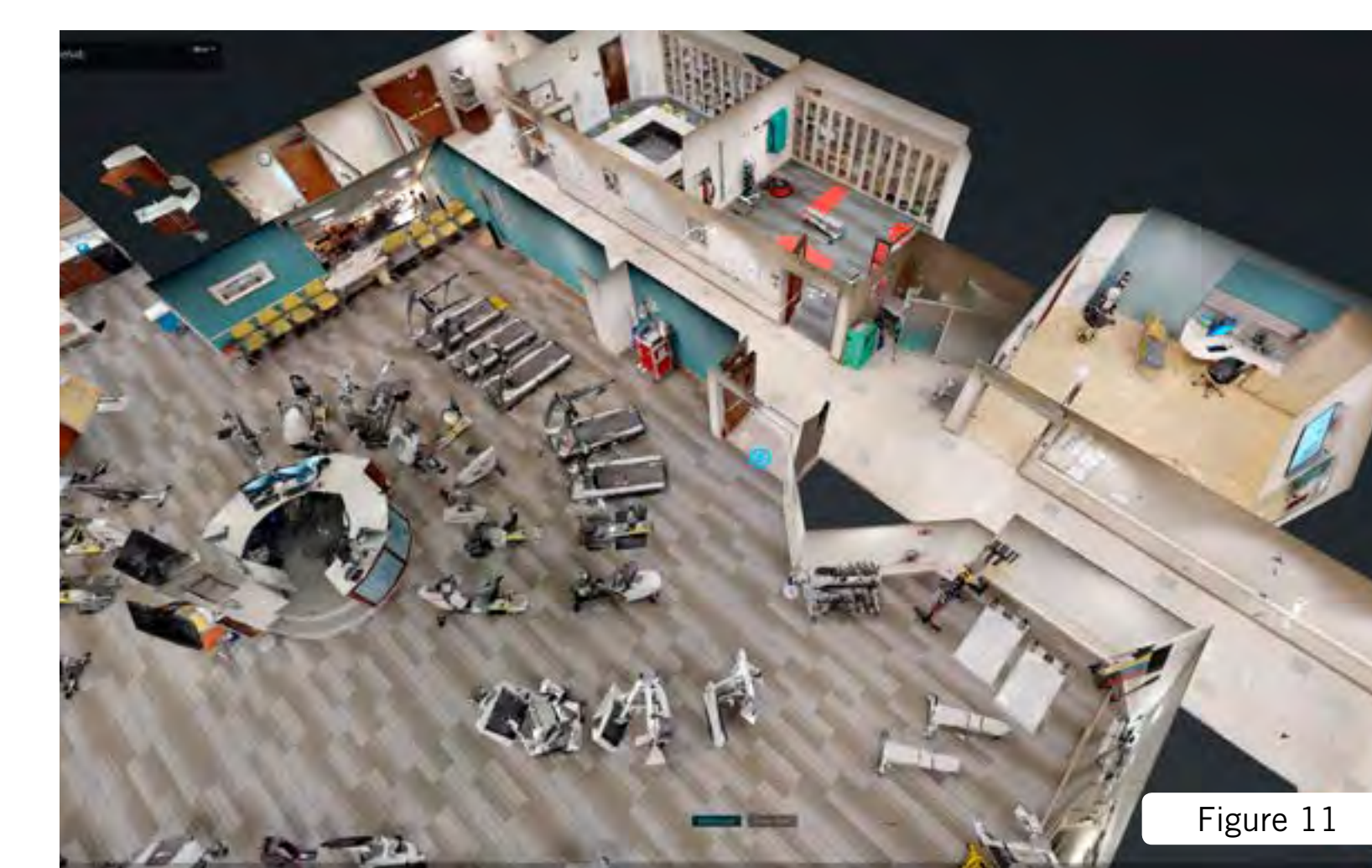
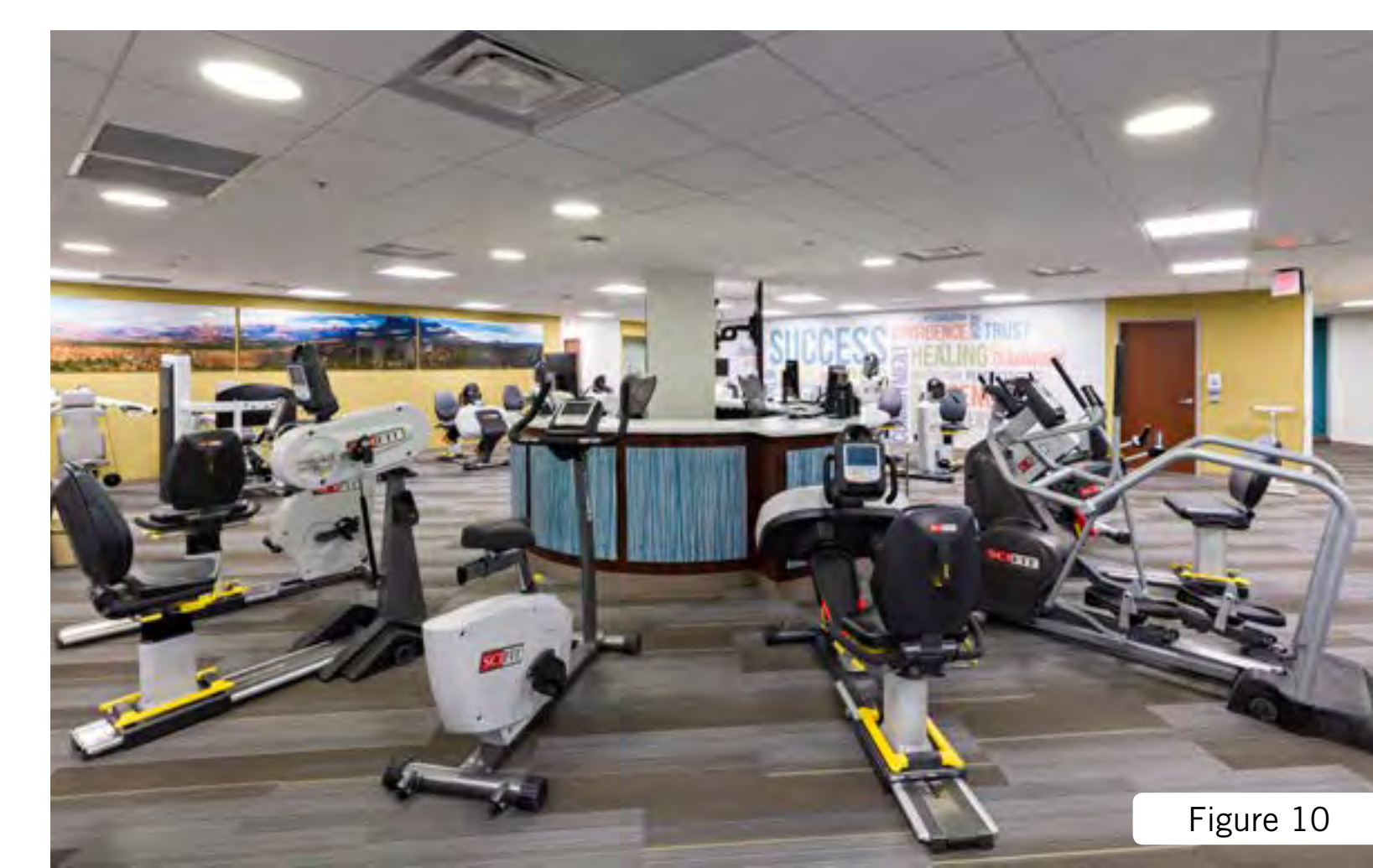
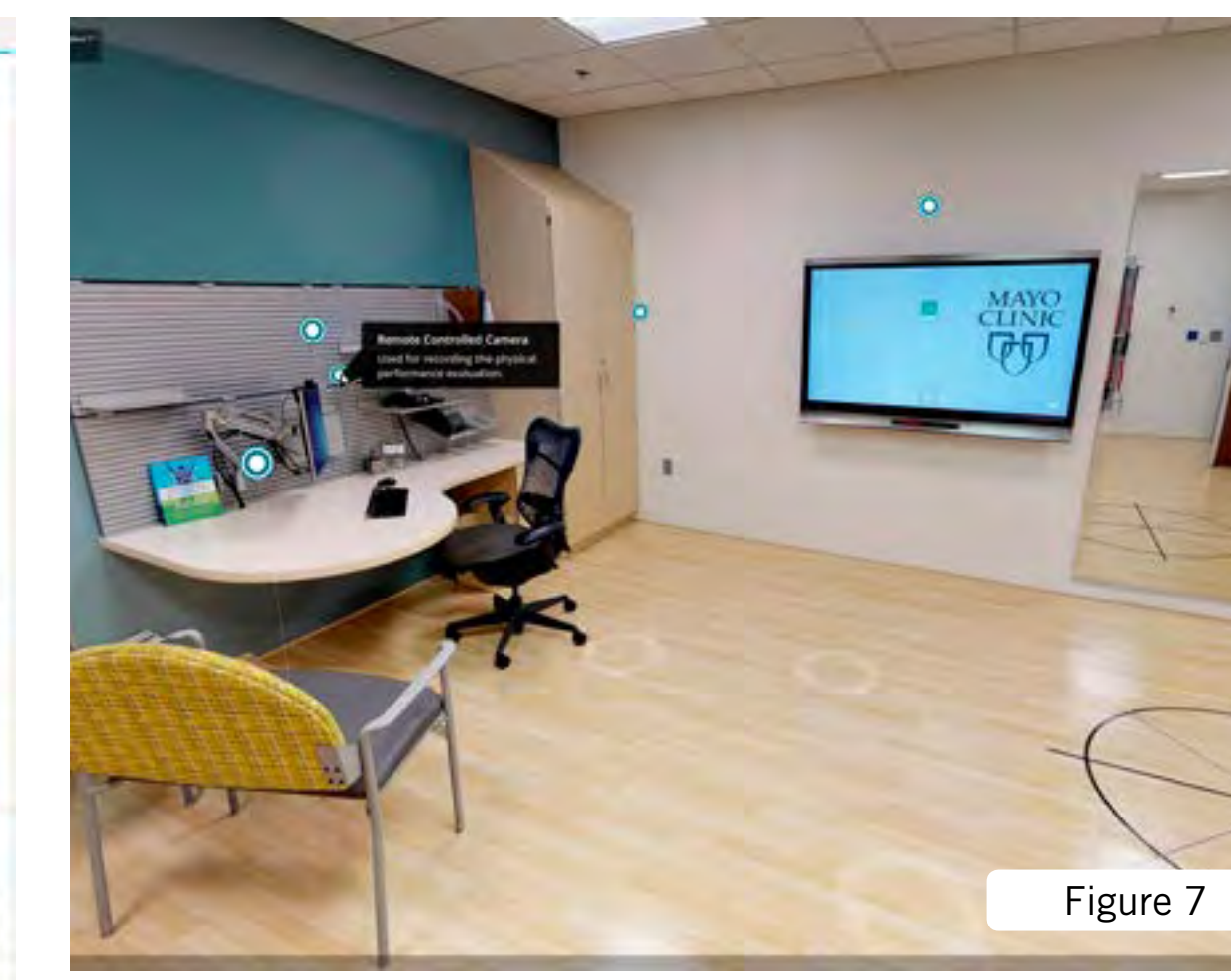
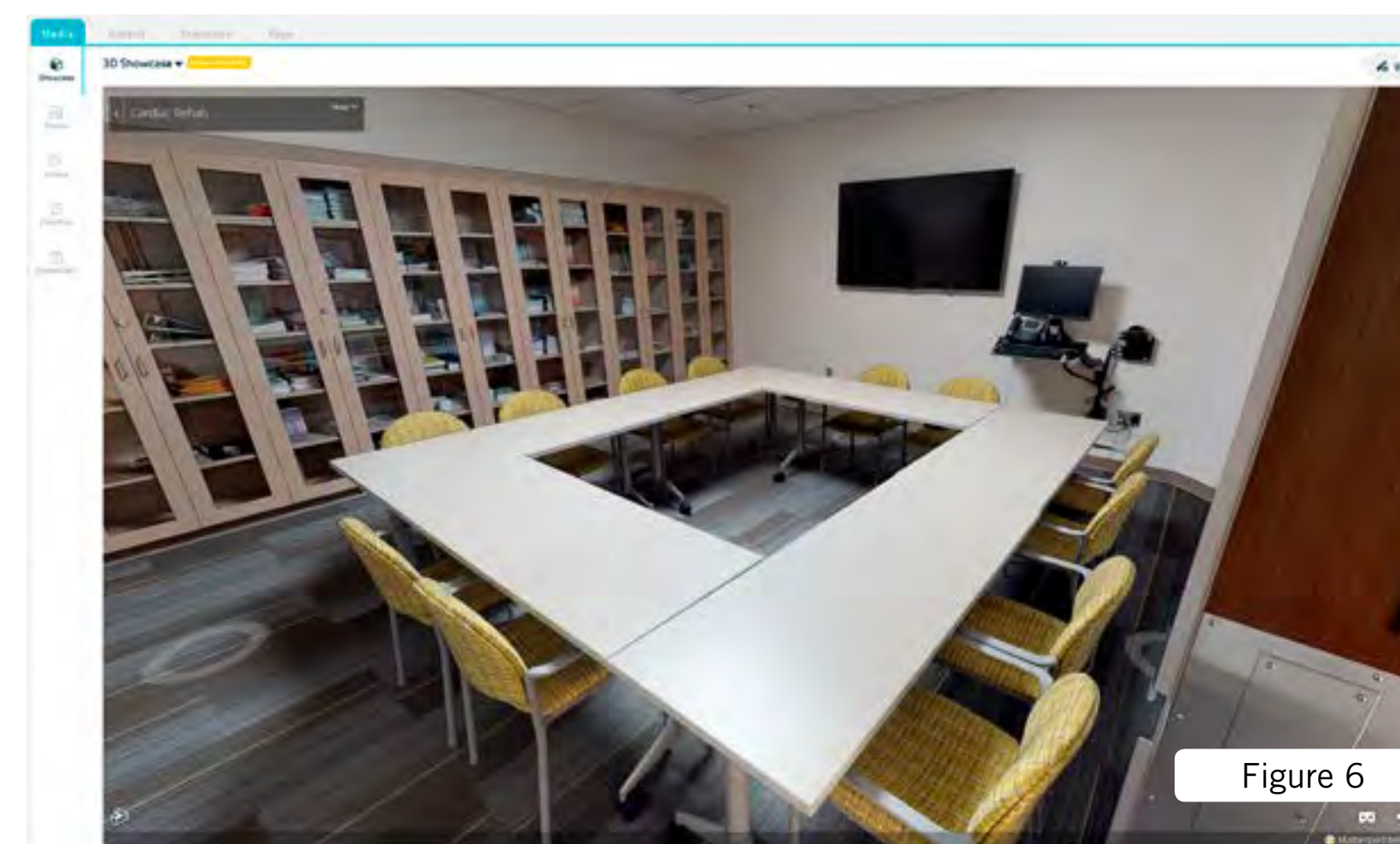
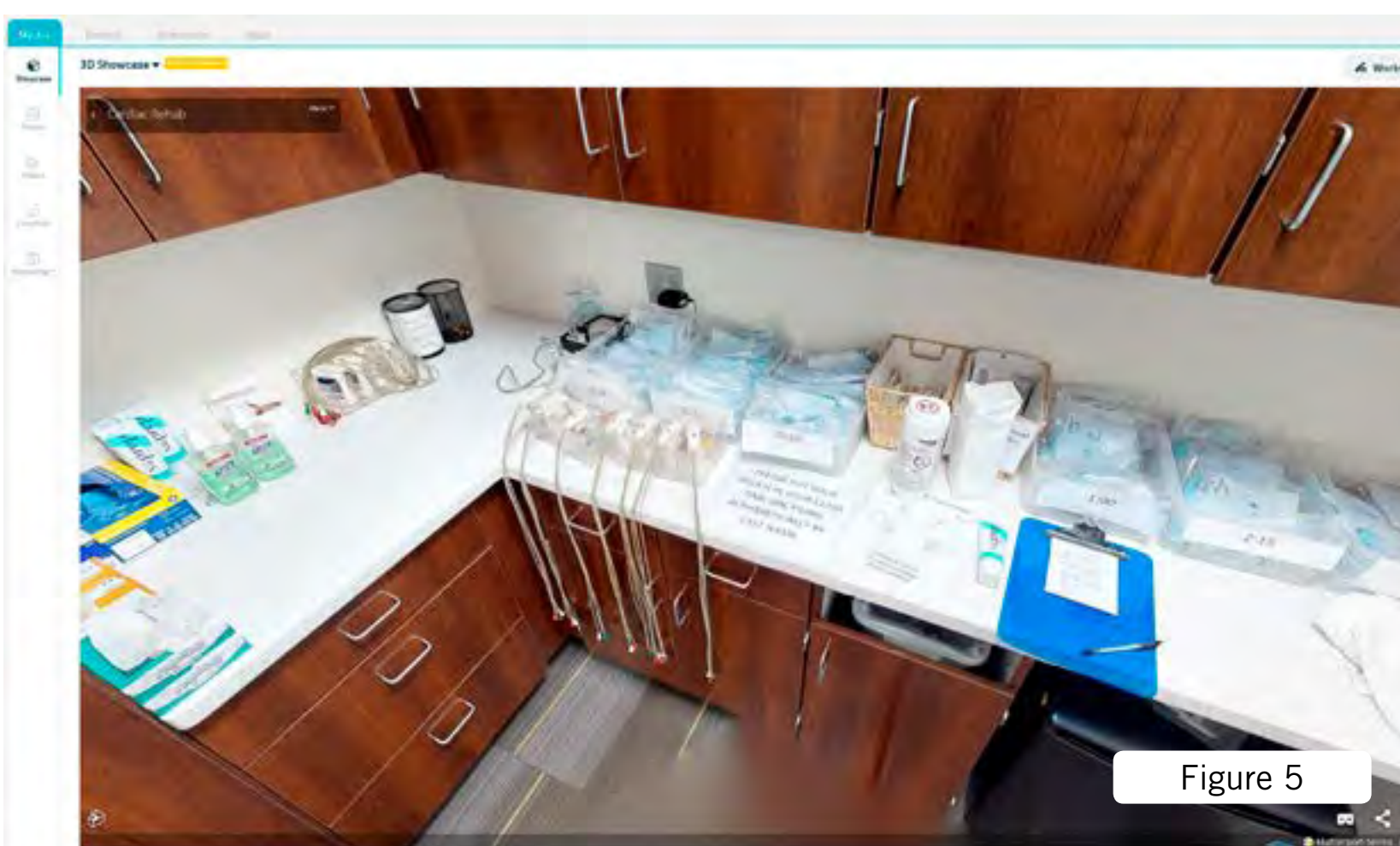
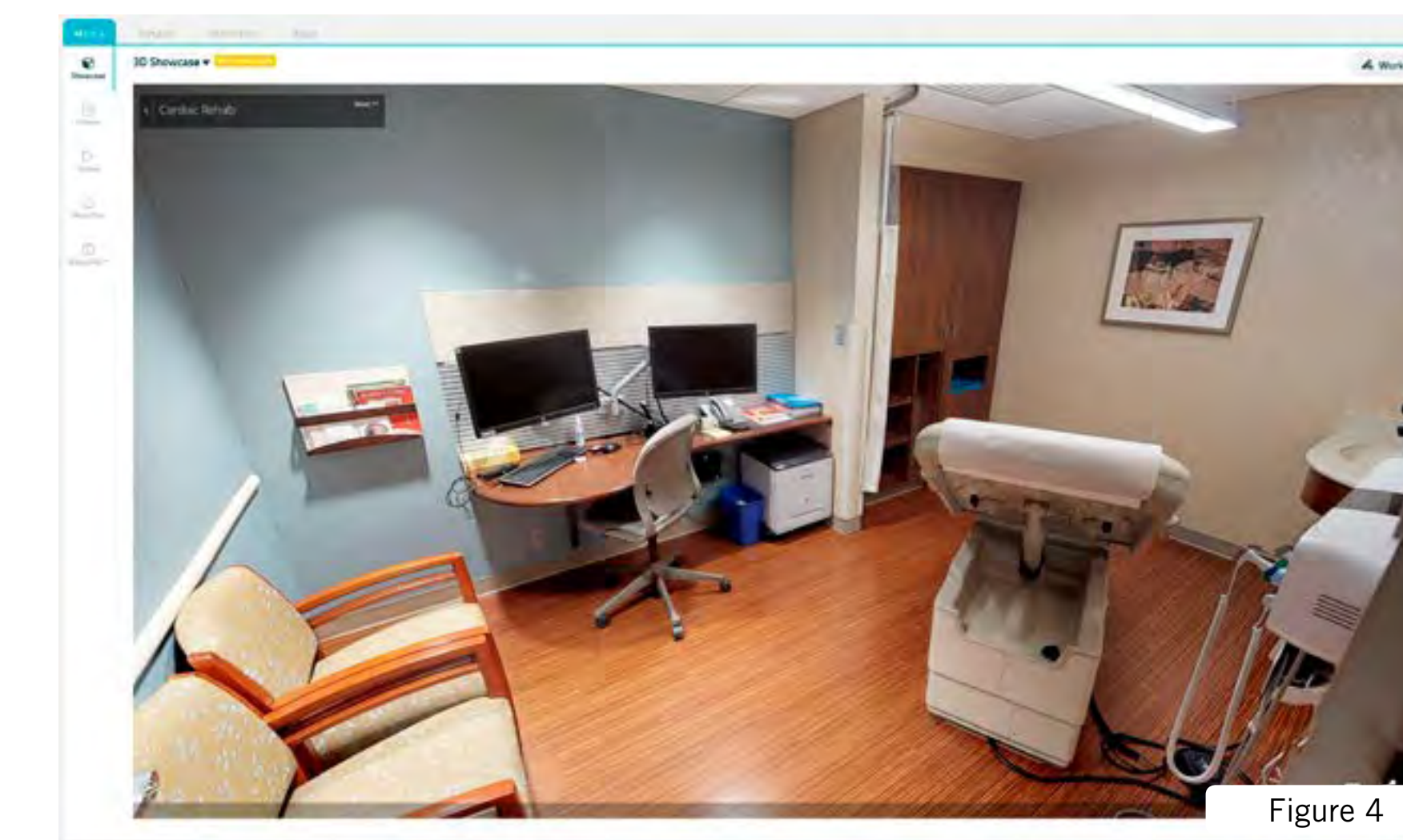
**Three-Dimensional Imaging (3D):** In addition, the Matterport 3D camera system uses innovative media technology to record a broad range of images within the facility, which enables the viewer to participate in an interactive exploration of the outpatient CR space (i.e. virtual tour).<sup>14</sup>

- A learner can walk through the outpatient clinic by accessing a mobile device or a personal computer in the convenience of their home or office.
- For example, they may see the tagged CR arrival area, check-in front desk or kiosk, telemetry preparation area, lockers and changing rooms, the exercise gym and related cardiovascular and weight resistance equipment, the telemetry monitoring station, clinician examination rooms, education classrooms and the functional movement or stretching studio if available (Figure 2-10).
- The entire facility can also be viewed from above as the "dollhouse" vantage point. Here the learner can select a specific location and continue the virtual tour from there (Figure 11).

## Figure 1



## Figures 2-11



## Conclusion

The creative application of this type of media technology can help bring CR to life and tell a story about a program that is hard to capture from a handout or brochure. Investigative research is needed to evaluate the influence of media support on enrollment, physician awareness and patient satisfaction.

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