The Promotion of Exercise Oncology as a Standard Part of Clinical Practice

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INTRODUCTION
Exercise is safe and effective during cancer treatment and a valid option for healthcare providers to address the short and long-term effects of current cancer therapy and minimize toxicities. However, nationally, less than 5% of cancer patients exercise during treatment. Therefore, the purpose of this investigation was to promote the standardization of exercise oncology as part of clinical practice by examining its effect on symptom severity, program outcome, and cost savings. METHODS: This controlled clinical trial evaluated the effects of individualized exercise therapy in 1,191 patients undergoing chemotherapy treatment. Each participant enrolled in a 12-week individualized exercise program through Maple Tree Cancer Alliance, and completed a comprehensive fitness assessment and a subjective symptom checklist at the start and conclusion of their treatment regimen. ER visits, length of hospital stay, and 30-day readmissions were retrospectively analyzed following cessation of treatment. RESULTS: Individualized exercise had a positive impact on fitness parameters and symptom severity, and produced cost savings of approximately $3,000 in the first 6 months of exercise. Specifically, cardio-endurance, muscular endurance, strength, quality of life, depression, fear, fatigue, and pain all improved following the exercise intervention. CONCLUSION: Exercise is an effective means to manage treatment-related symptoms in cancer and should be a part of the standard of care.

METHODS
Subjects: This retrospective analysis involved patients who participated in an exercise oncology program at Maple Tree Cancer Alliance. All patients began participation upon referral by their oncologist. They completed 12 weeks of the prescribed, individualized exercise that included cardiovascular, strength training, and flexibility components. The intensity level for the cardiovascular exercise ranged from 30-45% of the individual’s predicted VO2max. Strength training focused on a total body approach with progressive resistance using free weights, resistance tubing, and bodyweight exercises. Participants completed 3 sets of 10 repetitions for each exercise. Flexibility training involved static stretching of all muscle groups for 15-20 seconds at the completion of each workout. Patients met with a trainer once a week and were given instructions on how to remain active at home. Finally, each participant completed the Edmonton Symptom Assessment System (ESAS-R) questionnaire, and a subjective symptom checklist to gauge the severity of treatment-related side effects related to chemotherapy at the start and conclusion of their treatment regimen.

Data Collection: This study leveraged data from GDHA’s 360° HealthCare Database, which provides over 14 million comprehensive patient encounter observations across 21 regional hospital organizations for the time period of January 2012 to September 2017. Using first name, last name, and birthday, we matched 147 patients to corresponding GDHA health records. Record search criteria aggregated encounters occurring six months prior and six months after the supportive care enrollment date for each patient. Therefore, one year of data was collected for each patient with enrollment occurring at the median. The latest enrollment date for patients to be included in the study was March 31, 2017. The earliest enrollment date matched was November 1, 2014.

Data Analysis: The three primary hospital measures leveraged for statistical comparison before and after supportive care enrollment were number of encounters, number of readmissions, and average total charges. A t-test was used to compare the before-and-after observations of repeated subjects. All assumptions for the t-tests were validated prior to generalization of results. To ensure quality results, all ratios met the sample size, dependent sample, and independent sample assumptions. However, ratios that are significantly impacted by a small number of outliers (such as m, n, s, t, p, and t) may have a significant incidence rate, so only the changes in ratios are reported. A significance level of α = 0.05 was used.

REFERENCES
1. GDHA (2018). GDHA’s 360° HealthCare Database. Available at: https://www.gdha.org/