

# Cancer Prehabilitation for Patients Starting from Active Treatment to Surveillance

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## ABSTRACT

The purpose of this brief summary is to introduce the concept of cancer prehabilitation and the role of oncology nurses in prehabilitation care. Cancer prehabilitation has been defined by Sliver and Baima (2013) as “a process on the cancer continuum of care that occurs between the time of cancer diagnosis and the beginning of acute treatment.” The evidence supports the notion that prehabilitation programs can improve physical and psychological health outcomes and decrease overall health care costs. The care model for cancer prehabilitation should include timely and efficient assessment throughout the care continuum with a focus on improving outcomes in cancer at every stage. During the cancer journey, three types of assessment with different aims are included: (1) prehabilitation assessment pretreatment, (2) rehabilitation assessment at early post treatment, and (3) health promotion assessment at the end of treatment. Specific

prehabilitation assessment and interventions for treatment-related complications or major side-effects should be considered. Teaching, counseling, discharge planning, and coordination should also be part of an oncology nurse’s role in cancer prehabilitation. It is suggested that cancer care managers or navigators be trained in the assessment of their patients’ physical and psychological status once the cancer diagnosis has been identified and the patient has decided to receive active treatment, especially for those waiting for surgery at home. Oncology nurses could increase their competence with prehabilitation care by gaining knowledge about cancer-related treatments and their outcomes for specific cancers and by strengthening the ability to assess the functional status and psychological distress of their patients.

**Key words:** Cancer, care model, impairment, prehabilitation

## Introduction

Cancer has become a major health care burden in Asia. According to a report in the GLOBOCAN project, the incidence rate of cancer in Asian countries accounted

for 41% (male) and 37% (female) of the total of new cancer cases worldwide in 2012.<sup>[1]</sup> This will increase the health economic burden in Asia because of the increased population of cancer survivors. Recently, a growing body

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of scientific evidence related to preventing impairment from cancer-related treatment (cancer prehabilitation) supports the possibility for improved outcomes in oncology care and decreased treatment-related morbidity and health care cost, thus improving the physical and psychological health of patients.<sup>[2-4]</sup> Therefore, developing guidelines for cancer prehabilitation for specific types of cancer might be the solution for decreasing the health care burden in Asia.

## Definition of Cancer Prehabilitation

Cancer prehabilitation has been defined by Sliver and Baima (2013) as “a process on the cancer continuum of care that occurs between the time of cancer diagnosis and the beginning of acute treatment and includes physical and psychological assessments that establish a baseline functional level, identify impairments, and provide interventions that promote physical and psychological health to reduce the incidence and/or severity of future impairments.”<sup>[3]</sup> The goal of prehabilitation is to prevent or reduce the severity of anticipated treatment-related physical impairments and psychological distress that may cause significant disability.<sup>[3,5-7]</sup> Cancer prehabilitation is the first part of the process of rehabilitation. The evidence suggests that it should occur between the time of diagnosis and the start of acute oncology treatment,<sup>[3,8]</sup> and that the intervention of prehabilitation could help the patients maintain a better physical function status compared to those without prehabilitation intervention before surgery.<sup>[8]</sup> Furthermore, an important point is that the interventions for prehabilitation before active treatment are not only limited to use before cancer treatment begins, but may also continue throughout survivorship. Therefore, the prehabilitation program could be a benefit for cancer patients during the entire process of their cancer journey.

## Evidence for Cancer Prehabilitation

It has been reported that prehabilitation programs could improve physical and psychological health outcomes and reduce surgical complication, treatment-related morbidity, hospital lengths of stay, hospital readmissions, and overall health care costs.<sup>[2,3,5,9-12]</sup> Presurgery exercise training interventions in cancer patients have been the most often cited programs for prehabilitation. A detailed, systematic review of training interventions, including eighteen studies with a total of 966 participants, has been completed.<sup>[12]</sup> The length of intervention before surgery ranged from 7 to 52 days with a median of

21 days. Home-based exercise and supervised exercise programs were conducted with both of them improving the patients' physical function. Aerobic, resistance, or strengthening exercises were commonly used in the studies. The exercise programs in the prostate cancer studies generally incorporated pelvic floor exercises; while, those in the lung cancer studies involved breathing exercises. The duration of each exercise period ranged from approximately 15 min up to 3 h per session depending on the type of cancer.

As for the psychological interventions used for prehabilitation, interventions did not affect length of hospital stay, complications, analgesia use, or mortality but have had an impact on patients' psychological outcomes, quality of life, and somatic symptoms.<sup>[10]</sup> Stress management including relaxation techniques (breathing, progressive muscle relaxation, and meditation), guided imagery, and problem-solving and coping strategies were commonly used for psychological prehabilitation programs in the previous studies. One or two sessions were delivered 1 day to 2 weeks before surgery, with duration of between 45 and 90 min.

Some knowledge gaps still remain. The best timing, dosage, and response of intervention (number of sessions and duration) have not yet been determined. Furthermore, less evidence about the long-term effect of prehabilitation has been reported. A prospective surveillance model for rehabilitation has been developed and tested in the USA for use specifically with breast cancer patients which focuses on functional status only, excluding the psychological perspective. For holistic care for cancer patients, multimodal prehabilitation interventions including physical and psychological domains are suggested.

## Developing a Prehabilitation Care Model for Specific Types of Cancer

The care model for cancer prehabilitation should include timely and efficient assessment throughout the care continuum with a focus on improving outcomes in cancer at every stage.<sup>[13]</sup> During the cancer journey, three types of assessment with different aims are included:

1. prehabilitation assessment pretreatment which aims to identify the goal of interventions based on the selected cancer-related treatment in the domains of functional, physical, psychological, and nutritional status,
2. rehabilitation assessment at early-post treatment which aims to identify the goal of interventions after cancer-

- related treatment in functional, physical, psychological, and nutritional status/occupational adjustment,
3. health promotion assessment at the end of treatment which aims to identify the goal of interventions for survivors in health behavior and occupational adjustment assessments.<sup>[13,14]</sup>

Specific prehabilitation assessment and interventions for treatment-related complications or major side-effects should be considered. For example, swallowing and cervical range of motion assessments are suggested before treatment for those patients with head and neck cancer. Shoulder and cervical range of motion should be assessed for those with breast cancer. Nutritional status should be considered for patients with pancreatic cancer. These preventive interventions are designed for general functional assessment and specific assessment for specific types of cancer. Currently, specific types of intervention have been recommended in the Silver's article.<sup>[13]</sup> However, the outcomes based on her suggestions have not yet been proven, so a standardized care model for specific types of cancer has not yet been developed.

## The Role of Oncology Nurses for Prehabilitation Care

Oncology nurses play an important role in cancer rehabilitation because oncology nurses are the first line in providing daily care of cancer patients making them better able to assess their patients' functional status in a timely manner. The nurse's role in cancer rehabilitation has been addressed including assessment, teaching, counseling, discharge planning, and coordination.<sup>[15]</sup> For the purpose of prehabilitation, proactively assessing the functional status and psychological distress of a patient before they receive active treatment is more important than identifying the impairment after treatment. Furthermore, in the role of teaching and counseling, oncology nurses could help their patients learn exercise behaviors and stress management techniques to prevent a psychological crisis. In the role of coordinator, they can help their patients during the transition process from hospital to home care, identifying their patients' needs from others in multiple disciplines (such as physical, occupational or speech therapists) for advanced assessment and intervention.

To improve the care quality in cancer prehabilitation, it is suggested to increase the oncology nurses' knowledge of the short-term and long-term effects of cancer-related

treatment (i.e., chemotherapy, radiotherapy, target therapy, and immune therapy) for specific types of cancer. Since functional status assessment and exercise play a more significant role in prehabilitation care, functional assessment and the basic education skills for enhancement of physical activity (i.e., motivational interviews) are also suggested for educating cancer patients to perform exercise before treatment. In addition, psychological assessment is also recommended to identify those patients who are in need of help before treatment.

More importantly, oncology nurses generally educate cancer patients only 1 day before treatment about the self-care after surgery or symptom management after chemotherapy in clinical settings; however, those education outcomes have not been measured and the timing might be too late for patients to improve their physical and psychological function and prevent expected impairment. To reach the goal of prehabilitation care, it is suggested to train the cancer care manager or navigator to assess the patients' physical and psychological status once the cancer diagnosis has been identified and the patient has decided to receive the active treatment, especially for those are waiting for surgery at home. They could assess the baseline function and offer a standardized specific education program for the patients to decrease their stress and anxiety while waiting as well as improve the physical function of the patients through exercise.

## Conclusion

Based on the above evidence, it is clear that prehabilitation programs have positive effects on improving health outcomes for cancer patients after surgery. Specific individualized intervention should be considered for specific types of cancer. Oncology nurses play a key role in developing the care model of prehabilitation for specific types of cancer in clinical settings to decrease the health care burden and care cost as well as to improve care quality. Multimodal prehabilitation interventions including physical and psychological domains are suggested. Oncology nurses could have more competence with prehabilitation care by gaining knowledge about cancer-related treatments and their outcomes for specific cancers and by strengthening the ability to assess the functional status and psychological distress of their patients.

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## Conflicts of interest

There are no conflicts of interest.

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