BRIEF COMMUNICATION

Implementing the basic principles of biomarker use in oncology nursing: Enhancing knowledge and practice through an elearning module

by Leslie Marvell

ABSTRACT

This article focuses on expanding the clinical knowledge base on the role of biomarkers in oncology nursing in the infusion clinic and home care environment. It describes a pilot project to develop a clinical practice guideline.

Through focus groups and surveys conducted by a large national home health care provider, knowledge and practice gaps in the area of molecular oncology were identified amongst infusion clinic and home care nurses. Gaps included the lack of exposure to and understanding of the impact of the advances in molecular-level research and technology and how analysis can facilitate personalized treatments for our patients. Funding was provided by the RNAO through the Advanced Clinical Practice Fellowship (ACPF) program to develop a Clinical Practice Guideline (CPG) for Biomarker Use in Oncology Nursing. As a pilot project, an interactive elearning module was developed; content was established based on thorough review and critical analysis of the literature on biomarkers, molecular profiling, and personalized medicine. The purpose of the module was to provide education and information intended to support a practitioner's best nursing judgment based on the clinical circumstances of a particular patient or patient population. The goal of the elearning module was to have a positive impact on patient care and infusion clinic nurses practice by bridging the gap between their practice and currently available evidence on biomarker use and
application. The module, with a high-level overview of the subject matter, offers an opportunity for enhancing knowledge of participants in this rapidly changing field.

INTRODUCTION

Advancements in understanding the role of molecular biology and biomarkers in oncology have resulted in a shift to a gene-focused approach in both cancer research and the development of cancer treatments. Within many clinical settings including infusion—clinics and home care, a significant gap in knowledge about molecular oncology has been observed (Floria-Santos et al., 2013; Quinn, 2008; Richmond & Dunn, 2012). Oncology nurses must be up to date in their knowledge about personalized treatment and care practices in order to approach cancer care with the highest levels of expertise, compassion, and sensitivity, as well as address patients' questions and concerns about the most current oncology treatments and therapies available. The role of the oncology nurse has expanded significantly and nurses must have sound knowledge, skill and judgment in this nursing specialty if they are to provide care with competence, empathy, and focus. Oncology nurses need to understand the basic principles of molecular profiling and the role of biomarkers in cancer care in order to support care planning and identify individualized interventions in response to the mechanisms of the symptoms patients may

experience. Educational models are required to inform community nursing staff on ongoing developments in cancer care.

PURPOSE

Personalized medicine is not a new idea; medical care is centred on treating patients as individuals. However, different patients respond differently to traditional oncology treatments and interventions. Current developments in science and technology offer new promise for developing targeted therapies and tools for predicting who will respond to a medical therapy and/or who will suffer ill effects.

Our clinical elearning module was developed to enable a knowledge transfer pathway, for nurses performing infusions for oncology patients in the home and community setting, about the advances in molecular oncology and how they impact and affect the diagnosis and treatment of cancer patients. The elearning module provides an overview of the basic principles of biomarker use, molecular profiling, and personalized medicine in clinical oncology practice. It provides an overview of the basic principles of biomarker use in nursing oncology practice to date, including the range of biomarker formats (genomes, phenotypes, proteomes), biomarker functions from disease and treatment response, modalities (protein expression patterns to patient history), the criteria for biomarker validation, clinical utility, and the role of bioinformatics.

The anticipated outcome from using the module is a positive impact on patient care and oncology nursing practice by bridging the gap between nurses' practice and currently available evidence. The module was designed to reduce inappropriate variations in the

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community environment practice and to promote the delivery of high quality evidence-based care, to provide a focus for continuing education, and to facilitate remote learning any time and anywhere at the pace of the individual learner.

METHODS

An environmental scan was performed within our organization using a survey and focus groups to determine the understanding and level of confidence home care (n = 10) and infusion clinic nurses (n = 30) had about biomarkers and how they relate to the treatment of oncology patients. The scan indicated 40% of nurses infusing patients with specialty biotherapies in the community environment had no understanding of the role of molecular oncology in the diagnosis, treatments or prognosis in a patient's cancer journey. In October 2015, funding was provided by the RNAO through the Advanced Clinical Practice Fellowship (ACPF) program to initiate the development of a CPG for Biomarker Use in Oncology Nursing. Content was developed based on thorough review and critical analysis of the literature on biomarkers, molecular profiling, and personalized medicine. A knowledge transfer plan was structured through development of an elearning module.

RESULTS

The oncology biomarker elearning module was initially implemented as a pilot in September 2016 with 90 nurses working across the Bayshore HealthCare Organization. The interactive elearning module took an average of 45 minutes to complete and included topic level knowledge reviews and queries.

A post-implementation evaluation survey was conducted and resulted in a 94% participant satisfaction with ease of navigation through the module, and 100% confirming the value in the modules for expanding their clinical knowledge base in the role of molecular genetics in oncology. Two-thirds of the participants would support continuing education in the specialty field of oncology nursing through elearning, acknowledging that it is "important to know when discussing patient care, plan of care, you can speak the same language about these factors being measured in their oncology clinic/patient settings."

SUMMARY

This pilot was intended to positively impact patient care and oncology nursing practice by bridging the gap between oncology nursing practices and currently available evidence on biomarker use and application. Through this educational overview of the basics

of biomarker use in clinical oncology, nurses will begin to understand the role of molecular profiling and personalized care in clinical oncology practice and apply that understanding of implications to a patient's diagnosis and their individualized treatment plan, resulting in better health outcomes.

In order to maintain competency in rapidly changing cancer care and maintain pace with research, advanced technological changes and innovations in cancer care, continuing education is mandatory to keep our nurses informed and knowledgeable. Going forward we recommend our oncology nurses complete this elearning module upon hire and it is a continuing oncology nursing onboarding training component for us, as a large national home health care provider. We also expect that our nurse managers provide instruction on the elearning module(s) and ensure the completion of elearning module requirement by all infusion clinic nurses. We support making opportunities for continuing education, as necessitated by research and advancements available.

Note: Implementing the Basic Principles of Biomarker Use in Oncology Nursing: Enhancing Knowledge and Practice through an Elearning Module can be viewed on Bayshore HealthCare's website, www.bayshore.ca/biomarkers

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