

Research Assessment Exercise 2020

Impact Case Study

University: The Hong Kong Polytechnic University

Unit of Assessment (UoA): 05 Nursing, Optometry, Rehabilitation Sciences and Other Health Care Professions

Title of case study: Improving cancer patient outcomes through practice improvements and symptom management

(1) Summary of the impact

Our research has produced precise radiotherapy protocols to deliver effective dosages to patients while minimising the side-effects. It has also put in place early detection protocols and a home-based care model for cancer survivors for improved patient support and enhanced quality of life, addressing key issues in cancer symptom management. Our findings have been incorporated into international clinical guidelines (Multinational Association of Supportive Care in Cancer, 2016; American College of Chest Physicians, 2017), thereby reaching thousands of oncology specialists and influencing patient care. Based on this, a service model has been developed in several hospitals in Hong Kong and China.

(2) Underpinning research

Key researchers:

Prof. Alex Molassiotis (Chair Professor & Head, School of Nursing)

Prof. Frances Wong (Professor, School of Nursing)

Dr Shirley Ching (Associate Professor, School of Nursing)

Dr Wu VWC (Associate Professor, Dept. of Health Technology and Informatics)

Dr Michael Ying (Associate Professor, Dept. of Health Technology and Informatics)

Cancer is a major cause of death worldwide and Hong Kong is no exception. There are about 32,000 new cases of cancer each year in Hong Kong, and it is estimated that in 2019, so far, more than 150,000 people have been living with cancer. Our integrated research platform for cancer hosts various studies related to improved non-invasive diagnostic and monitoring methods, more effective radiotherapy, reduced side-effects of radiotherapy and chemotherapy, and strategies for support to cancer patients through novel methods (such as the systematic ultrasound scanning protocol). The aim is to alleviate patients' mental and physical distress, thereby improving the quality of life (QoL) of cancer patients and lowering treatment costs associated with hospital readmission.

For cancer, early diagnosis is crucial, and effective monitoring is needed for appropriate clinical decision making. Our research in 2009-2011 (led by Dr. Ying) led to the formulation of a systematic ultrasound scanning protocol for the accurate detection and diagnosis of malignant neck lymph nodes [R1]. The novel computer-aided algorithm developed in that study has improved diagnostic accuracy and reliability compared to the conventional operator-dependent assessment method. Results of our randomized controlled trial (led by Dr. Ching in 2015-17) showed that a structured, nurse-led symptom management programme effectively reduced side-effects and enhanced QoL of patients undergoing chemotherapy [R2]. Several studies (led by Prof. Molassiotis from 2005 onwards) focused on specific cancer symptoms and identified key factors that could cause patients to experience chemotherapy-related nausea and vomiting, calling for a more personalized approach to antiemetic management [R3]. The study also contributed to collating new data which was then

incorporated into international clinical standards of care in most parts of the world (2015). Our work with malignant melanoma patients, the first international large study on their supportive care needs, conducted in 2011-2013, identified key informational and psychological unmet needs of these patients [R4]. Extensive work (by Prof. Molassiotis) was done in relation to cough in lung cancer—a very distressing and under-reported symptom—starting with a Cochrane systematic review in 2010 [R5] that was extended to other observational or trial based research over the past decade. Unfortunately, treatments can fail, causing cancer to recur. Also, based on prior research in transitional care modelling (led by Wong), a cancer survivor model was introduced for further study. The model is a palliative model for end-stage heart failure patients, who share similar symptom complaints and psychosocial needs during the final stages of their life. The model was tested using an RCT (led by Prof. Wong, 2013-2015) and was shown to significantly improve clinical outcomes related to symptom distress and QoL of patients at the end stage of life. The model also lowered costs because its use led to reduced readmissions to hospitals [R6].

(3) References to the research

[R1] **Wu VWC, Ying MTC, Kwong DLW.** Evaluation of radiation-induced changes to parotid glands following conventional radiotherapy in patients with nasopharyngeal carcinoma. *Br J Radiology.* 2011. Vol 84: 943-849.

[R2] **Lai XB, Ching SSY, Wong FKY, Leung CWY, Lee LH, Wong JSY, Lo YF.** A nurse-led care program for breast cancer patients in a chemotherapy day center: a randomized controlled trial. *Cancer Nurs.* 2019.

[R3] **Molassiotis A, Aapro M, Dicato M, Gascon P, Novoa SA, Isambert N, Burke TA, Gu A, Roila F.** Evaluation of risk factors predicting chemotherapy-related nausea and vomiting: results from a European prospective observational study. *J Pain Symptom Manage.* 2014. Vol 47(5): 839-848.

[R4] **Molassiotis A, Brunton L, Hodgetts J, Green AC, Beesley VL, Mulatero C, Newton-Bishop JA, Lorigan P.** Prevalence and correlates of unmet supportive care needs in patients with resected invasive cutaneous melanoma. *Ann Oncol.* 2014. Vol 25(10): 2052-2058.

[R5] **Molassiotis A, Bailey C, Caress A, Tan JY.** Interventions for cough in cancer. *Cochrane Database Syst Rev.* 2015. Vol 5: CD007881.

[R6] **Wong FKY, Ng AY, Lee PH, Lam PT, Ng JS, Ng NH, Sham MM.** Effects of a transitional palliative care model on patients with end-stage heart failure: a randomised controlled trial. *Heart* 2016. Vol 102(14): 1100-1108.

(4) Details of the impact

Our cancer-related research is shaping diagnostic services, guiding clinical practice in cancer treatment, improving early detection of recurrence, enhancing patient safety and well-being during treatment, and improving QoL of those living with cancer. The main beneficiaries are health care regulators, health care providers and cancer patients.

In 2013, the systematic ultrasound scanning protocol and algorithm for accurate detection and diagnosis of malignant neck lymph nodes were incorporated into the public health guidelines published by the American Institute of Ultrasound in Medicine and the American College of Radiologists for diagnostic examinations of the head and neck [S1].

The risk prediction model for chemotherapy-induced nausea and vomiting (CINV) led to the development of a website and application for clinicians to calculate patient CINV risk before chemotherapy begins (www.riskcinv.org) [S2]. These are hosted by an industry partner, Helsinn Pharma (released in late 2018). The usage data of this new online tool show that, on average, 137 clinicians (new users) in 10 countries use this each month (data from February-March 2019). An (unsolicited) letter shows the use of the tool in a hospital in China and indicates wider promotion [S3]. Our team also developed several symptom management tools such as the antiemesis scale (MAT), which is now an application on the Apple store and Google Play. It is available to clinicians free-of-charge and is meant to aid clinical decision-making and improve communication with patients. The MAT has been a primary outcome measurement scale in a large number of international antiemetic trials and observational studies, such as several in USA, France, and Italy. It was translated into 16 languages (<https://www.mascc.org/mat>). The research on anticipatory nausea in chemotherapy patients has also been integrated into the Antiemetic Guidelines of the Multinational Association of Supportive Care in Cancer (MASCC) and the European Society of Medical Oncology (ESMO) in 2016 (societies with a combined membership of > 5,000 clinicians) [S4]. A literature review has shown that the use of the antiemetic guidelines is around 30% (data from 2016), suggesting that at least a third of the chemotherapy patients in western countries have improved antiemetic control as a result of these guidelines.

Further, our work has been incorporated into the UK's NICE guidelines for 'Melanoma: assessment and treatment' (2015) [S5]. In addition, our research outcomes on lung cancer-related cough has been taken into consideration while formulating the American College of Chest Physicians (ACCP) 2017 guidelines on lung cancer, which is highly cited [S6]. Cough is noted in 85%, and is a distressing symptom in 65%, of the 2 million people globally diagnosed with lung cancer each year (ref R5). These CHEST guidelines have wide reach: it is readily available to the 50,000 chest physicians receiving the *Chest* Journal, it is on the CHEST guidelines open-access website, it is endorsed (as stated in the journal website) by the American College of Allergy, Asthma and Immunology; the American Thoracic Society; the Asian Pacific Society of Respiriology; the Canadian Thoracic Society; and the Irish Thoracic Society.

The continuing care and support to cancer survivors returning home to lead a life with quality is important. Wong and team presented empirical evidence of the benefits of a well-structured nurse-led transitional home-based palliative care model. The General Manager (Nursing) of one of the studied hospitals (over 2,000 beds and serving a population of 900,000, encompassing one-third of all cancer patients in Hong Kong) confirmed the significance of the work in terms of enhancing clinical and patient outcomes and controlling costs; the hospital consequently received a rating of 'Excellent' from the Australian Hospital Accreditation Team [S6]. This work is now incorporated in the NICE guideline 94 on Community Palliative Care, highlighting the effect of home-based transitional care in reducing hospital readmissions and enhancing patient QoL [S7].

Moreover, the Hospital Authority adopted Prof. Wong's work for nurse clinic accreditation [S8] for follow-ups on discharged patients in the community. Our work in transitional care, recommending the use of community-based nursing clinics to support health maintenance and individual well-being attracted widespread media coverage. The discussion highlighted the need for government support with resources and policy planning [S9].

Finally, the American Society of Clinical Oncology (ASCO) created a set of online materials in 2015-2018 incorporating the work by our team—Prof. Molassiotis leads on some of the online clips—which is accessible to over 50,000 oncology health professionals [S10].

(5) Sources to corroborate the impact

[S1] Guidelines published by the American Institute of Ultrasound in Medicine and the American College of Radiologists for diagnostic examinations of the head and neck <https://www.aium.org/resources/guidelines/headNeck.pdf> (citations 18, 20, 21, 31 from our research).

[S2] The risk prediction tool available online and developed by a pharmaceutical company to be used by clinicians in aiding their antiemetic prescription decision-making; www.riskcinv.org

[S3] Unsolicited letter from a clinician at a hospital in Beijing, informing us of the risk tool's use and its wider promotion by them.

[S4] MASCC/ESMO international clinical guidelines where our research is incorporated, reaching >5,000 clinician members and a large (but unknown) number of other people, because of its free availability/access.

<https://www.esmo.org/Guidelines/Supportive-and-Palliative-Care/MASCC-and-ESMO-Consensus-Guidelines-for-the-Prevention-of-Chemotherapy-and-Radiotherapy-Induced-Nausea-and-Vomiting>

[S5] NICE guidelines on *Melanoma: assessment and treatment (2015)*. Citations in p54 and p.56 of our report; influencing the relevant standards of care. <https://www.nice.org.uk/guidance/ng14/evidence/full-guideline-pdf-250314589>

[S6] American College of Chest Physicians (ACCP), CHEST clinical guidelines on cough related to lung cancer: used as standard of care. [https://journal.chestnet.org/article/S0012-3692\(17\)30022-3/fulltext](https://journal.chestnet.org/article/S0012-3692(17)30022-3/fulltext)

[S7] NICE guideline 94 on Community Palliative Care - <https://www.nice.org.uk/guidance/ng94/evidence/14.community-palliative-care-pdf-172397464601>

[S8] Kowloon Central Cluster (KCC) Appreciation Letter on the impact of the UoA's transitional care model research and extract [S8b] from the (confidential) report by the Australian Hospital Accreditation Team, accrediting the KCC hospital, stating that this model's use has 'significant' impact and its use 'if possible it should be generalised'. Letter issued February 2019.

[S9] Guidelines on Accreditation of HA Nurse Clinics (2016): Hong Kong Hospital Authority.

[S10] American Society of Clinical Oncology (ASCO) webcasts disseminating information on our studies and sharing the key results of our work, with findings reaching >50,000 ASCO members

<http://www.ascopost.com/issues/august-10-2016/more-focus-needed-on-chemotherapy-induced-nausea-as-a-cluster-of-symptoms/> |