

Meeting Educational Needs and Enhancing Adherence of Patients Receiving Oral Cancer Agents Through Use of the MASCC Oral Agent Teaching Tool[®]

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Abstract

Just as new discoveries are changing the approach to 'personalise' cancer treatments, the medications to treat cancers have changed as well. Anticancer agents now include cytotoxics, thought of as traditional chemotherapy, and biologics, often referred to as targeted therapy, many of which are formulated as oral agents. This changing model has resulted in new challenges for oncology professionals to ensure that patients receive education in a comprehensive and consistent manner regarding oral agents. In response to published reports and studies citing the adherence and safety problems for people on these oral medications, along with the noted lack of systematic teaching strategies, the MASCC Oral Agent Teaching Tool[®] (MOATT), issued by the Multinational Association of Supportive Care in Cancer (MASCC), was designed by oncology nurses to meet the need for a complete and dependable approach to education.

Keywords

Oral chemotherapy agents, professional consistency, patient education, patient adherence, MASCC Oral Agent Teaching Tool[®]

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The challenge of patient education traditionally is a responsibility of nurses. The nursing process of assessing, planning, implementing and evaluating is never more appropriate than when teaching patients and families about cancer treatments. In the past, as patients prepared for traditional IV (intravenous) treatment, nurses had a 'captured audience' to teach and the opportunity to then reinforce repeated verbal instructions and written materials, slowly and thoroughly reviewing procedures and potential problems. Plus, nurses had ample opportunities to physically see and touch patients throughout the course of their treatments in order to assess for treatment side effects and disease symptoms. However, today, patients prescribed oral chemotherapy may never see a nurse. The physician may write a prescription, which is then filled by a pharmacist.¹ Thus, opportunities for nurses to give needed education are lost. The advent of increasing numbers of oral anticancer agents with new, different and challenging side effects has forced those working in patient education to reevaluate and redesign approaches to instruct cancer patients receiving oral therapy.

The development of oral cancer agents has changed the paradigm not only of cancer treatment but also of patient education. From less than 5 % a decade ago,² the number of oral cancer therapies in use had increased to approximately 17 % by 2007,³ and it is now estimated that at least 25 % of the 400 anticancer agents in the pipeline are planned as oral agents.^{4,5} Oral agents have been in use for years, but the numbers were limited and often they were used in combination with IV agents concomitantly. An example is the cyclophosphamide,

methotrexate and 5-fluorouracil (5-FU) (CMF) combination used for years for breast cancer treatment, with the cyclophosphamide taken orally for two weeks and the methotrexate and 5-FU given by vein on Days 1 and 8 of a four-week cycle. A regimen such as CMF, where patients were seen by nurses several times a month for their IV medications, gave nurses ample opportunities to teach and assess a patient's knowledge of his or her oral medications.

The movement towards the use of more oral agents, whether because of necessary formulation, ease of administration, promotion of patient autonomy and independence, saving of time and perhaps money, convenience, and/or avoidance of problems with IV administration, has in itself created other issues. Problems include: proper handling and disposal, prescribing errors, financial considerations, potential interactions with food and other medications, recognition and reporting of side effects and, certainly, ensuring patient adherence.

Development of the MASCC Oral Agent Teaching Tool[®] (MOATT)

Background – Assessing

At the 2005 Multinational Association of Supportive Care in Cancer (MASCC) symposium, Sultan Kav, from the Department of Nursing at the Faculty of Health Sciences of Başkent University in Turkey, received the Best Young Investigator Award for her study 'Nurses Attendance of Patient Education and Follow-up for Oral Chemotherapy Treatment in Turkey' (which was reported the following year by Kav and Bostanci in the journal *Supportive Care in Cancer*⁶). The goal of the

Table 1: The Six Nurse Experts who Originally Designed the MASCC Oral Agent Teaching Tool®

- Linda Barber, RN, MSN, Director, Project Management, PPD Inc., US
- Judi Johnson, RN, PhD, FAAN, HealthQuest, US
- Sultan Kav, RN, PhD, Associate Professor, Department of Nursing, Faculty of Health Sciences, Başkent University, Baglica, Ankara, Turkey
- Anita Nirenberg, DNSc, RN, PNP, BC, AOCNP, William Randolph Hearst Professor of Clinical Nursing, Hunter-Bellevue School of Nursing, Hunter College, The City University of New York, US
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MASCC = Multinational Association of Supportive Care in Cancer.

study was to identify the nursing role in providing education and follow-up for patients receiving oral chemotherapy treatment in oncology clinics in Turkey. Kav noted that oral cancer agents increasingly were part of treatment regimens and that administration occurred outside of the traditional controlled settings of clinic, practice or hospital. Therefore, it was urgent to assess the role of nurses involved. One hundred and two nurses from 16 cities in Turkey completed a questionnaire. The study indicated that 73 % of nurses polled had no guidelines and 97 % no teaching tools.⁶

The MASCC Education Study Group wondered if this dismal result was confined to Turkey, or if, in fact, the lack of specific education guidelines and tools for patients receiving oral agents was a worldwide phenomenon. The MASCC is an organisation with members from over 60 countries and the Education Study Group had been involved previously in other international projects. The group replicated the Kav and Bostanci study and, between 2005 and 2007, nurses and pharmacy co-ordinators from 15 countries collected data from 1,115 nurses worldwide.⁷ Results showed that, although 52 % of those surveyed had some type of guideline or protocol, 47 % reported not receiving any education at all regarding teaching patients about oral chemotherapy agents. Additionally, 64 % reported involvement in patient education, but 58 % had no teaching materials specific to oral agents. Only 27 % stated that they gave all the necessary information, such as when and how to take the medications, drug safety and storage, and potential side effects and their management. Poor education and follow-up were evident, and professional education for nurses as well as patient education materials were requested.⁷

The lack of any standard procedure to prescribe and manage oral agents was being noted by others as well during this period. In 2003, the *Clinical Journal of Oncology Nursing* published a supplement entitled 'Oral chemotherapy, considerations for practice'.⁸ The *American Journal of Health-System Pharmacy* devoted a supplement to 'Advancing the safe and appropriate use of oral chemotherapy agents' in May 2007.⁹ Also in May 2007, Weingart et al. published results of a questionnaire survey regarding oral chemotherapy safety practices in the *British Medical Journal*.¹⁰ Four articles in nursing journals used the novel agent capecitabine to illustrate how oral agents affect nursing practice and noted that the use of the novel oral drug required enhanced patient education skills, communication and management.¹¹⁻¹⁴

Tool Creation – Planning

Six nurse experts (see Table 1) met in August 2007 to create what would become the MASCC Oral Agent Teaching Tool® (MOATT). The process is described in detail in an article in *Supportive Care in Cancer*, 'Development of the MASCC Teaching Tool for patients receiving oral agents for cancer'.¹⁵ The group discussed content and design, opting for a concise, understandable tool that included key assessment questions, guidelines for providing drug-specific education and prompts to ensure consistency. Evaluation through feedback from patients and care-givers would allow educators to assess understanding and retention of material. The tool was reviewed by a pharmacist and some of the original nurse co-ordinators for comprehensiveness, accuracy and cultural sensitivity.

After minor edits provided by suggestions from this group, the next step took place in June 2008. Seventeen nurse co-ordinators and one oncology pharmacist representing 15 countries were invited to attend a 'Train the Trainer' workshop. Attendees worked in small groups to practice using the tool. The expert faculty was assigned to mentor attendees as they proceeded to complete their assignments: translate the tool if needed (using verified methods of translation), conduct workshops for at least 40 nurses in their respective countries and then evaluate those workshops. Additionally, the co-ordinators selected six nurses to use the MOATT in practice and complete score logs for ten weeks, and then used the logs and post-evaluation forms to provide outcome data for assessing the effectiveness of nurses' use of the MOATT.

Final Product – Implementing

The MOATT consists of four sections detailed below.

- I. Key assessment questions – Nine questions assess the patient's (and care-giver's) knowledge of the treatment plan, of current medications and of the ability to obtain and take an oral cancer agent. Examples include: 'Are you able to swallow pills or tablets? If no, explain' and 'Are you able to read the drug label/information?'.¹⁵
- II. Patient education – The nurse/healthcare provider discusses with the patient 14 items that include general instructions applicable to all oral cancer agents, such as storage, handling, disposal, financial problems and unusual circumstances such as travel. Examples include: 'Inform any other doctors, dentists, or healthcare providers that you are taking pills/tablets for your cancer' and 'Keep the pills/tablets away from children and pets and in a childproof container'.¹⁵
- III. Drug-specific information – On the form, the nurse or healthcare provider completes the drug names (generic and trade), dose and schedule, potential side effects and their management, potential laboratory evaluations that might be included, precautions of which to be aware, possible food or drug interactions, and whom to call if needed; for example: 'Drug name (generic and trade)', 'What the drug looks like' and 'Dose and schedule'.¹⁵
- IV. Evaluate – Here the nurse or healthcare provider has the patient and/or care-giver review questions to ensure there is understanding of the given information; for example: 'You have received a lot of information today. Let's review key points. What is/are the name(s) of your cancer pill(s)/tablet(s)?'.¹⁵

Additionally, there is a fifth page of drug-specific information that can be given to the patient with includes references as to where to find details of product information. Plus, there is an area where the nurse can write in any extra information needed.

To date, as well as being available in English, the MOATT has been translated and adapted into eleven other languages (see Table 2), all of which can be downloaded from the MASCC website (www.mascc.org).

The MOATT in Practice – Evaluation

Following the ‘Train the Trainer’ workshop, clinical implementation and evaluations of the MOATT involving education of 635 patients and care-givers by 114 nurses were completed in China, Denmark, Greece, Kenya, Spain, Turkey and the US. Table 3 shows the results of the evaluations from those countries.

The MOATT has been cited in numerous articles as a valuable tool.¹⁶⁻²² Additionally, it has been incorporated in research projects.^{23,24} MOATT group leaders communicate on a routine basis to evaluate and plan for future uses and dissemination. Based on critiques received, a MOATT User Guide has been developed and is available on the MASCC website.

Discussion

Problems remain for patients requiring oral chemotherapy agents, and journals are still publishing studies and commentaries about these issues. In the 2008 NCCN Task Force Report, the authors concluded that ‘adequate safety and support systems have not evolved as quickly as oral chemotherapy agents’.⁴ The *Clinical Journal of Oncology Nursing* recently reported on its top ten most accessed articles for 2010 and 2011. Two of the top six dealt with problems with oral chemotherapy: Moody and Jackowski’s June 2010 article, ‘Are patients on oral chemotherapy in your practice setting safe?’ (second from top) and Winklejohn’s August 2010 article, ‘Adherence to oral cancer therapies: nursing interventions’ (sixth from top).²⁵

Streeter et al. calculated the abandonment rate of oral oncolytics in a cross-sectional study using administrative claims data, finding cost a major factor.²⁶ Khandelwal’s group studied ways to minimise this waste, recommending dose-monitoring programmes that will reduce waste and serious adverse effects.³ Weingart et al. convened interdisciplinary teams to conduct proactive risk assessments in order to understand risks associated with oral chemotherapy. They studied five oral agents at the Dana Farber Cancer Institute in 2009 and found that processes were complex, varied significantly between the oral agents and were vulnerable to many failures.²⁷

However, adherence may well remain the most important issue with oral oncology agents. Adherence includes not only taking the medication, but also taking the dose prescribed at the times ordered, storing correctly and reporting emerging side effects immediately.

Schneider et al. noted multiple factors affecting adherence to treatment: patient- and condition-related factors such as cognitive impairment, co-morbidities, psychopathology and other medications; therapy-related factors such as adverse events, length of treatment, patterns of dosing, polypharmacy, complex regimens, safety and handling, problems with refills and side effects; socioeconomic factors such as attitude to treatment, travel distances to obtain

Table 2: The MOATT[®] has been Translated into 11 Languages to Date

Language	Translator(s) (Year of Translation)
Arabic	Hanan Sac-Hazboun, Rula Giacaman (2009)
Chinese	Jing Chen (2009)
Danish	Linette Poulsen, Pia Olsen (2009)
French	Manon Lemonde (2009)
Greek	Elizabeth Patiraki, Anna Papadouri (2009)
Hindi	Vijay Roy (2009)
Russian	Anton Snegovoy, Dheepak Kanagavel (2010)
Serbian	Dusanka Tadic (2009)
Spanish	Paz Fernandez Ortega (2009)
Thai	Ponpak Pittayapan (2009)
Turkish	Sultan Kav (2009)

MASCC = Multinational Association of Supportive Care in Cancer; MOATT = MASCC Oral Agent Teaching Tool.

Table 3: Results of the Evaluation of the MOATT[®] by 114 Nurses in China, Denmark, Greece, Kenya, Spain, Turkey and the US (% of Respondents)

	Agree	Slightly Agree	Undecided	Disagree	Strongly Disagree
The tool was easy to use	75.4	19.3	0.9	4.4	0.0
The tool was feasible for regular use in my clinical setting	71.9	24.5	0.9	1.8	0.9
The tool was easy for me to understand	82.5	17.5	0.0	0.0	0.0
The tool guided me in assessing the patients’ knowledge and understanding of their treatment	71.9	22.8	2.6	2.6	0.0
The tool assisted me to educate patients and care-givers	70.2	24.5	3.5	1.8	0.0
The tool was very helpful to teach when and how to take (dose and schedule) the pills/tablets as prescribed	67.5	23.7	8.8	0.0	0.0
The tool was helpful to explain the side effects and management of the treatment	63.1	23.7	5.2	7.9	0.0
The tool assisted me to inform patient and care-giver about the safety issues	73.7	19.3	4.4	2.6	0.0
The tool assisted me to improve my role in patient education	72.8	20.2	4.4	2.6	0.0

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treatment, financial cost and social support. Clinician-related factors include relationship with healthcare providers, provision of information, proper follow-up and surveillance.¹⁹ Given and colleagues elucidated almost the same issues, adding outcome expectations, health literacy, disease type and stage, and out-of-pocket costs.²⁸

Moore and Winklejohn discussed factors such as patient history, motivation and relationship with the healthcare provider as important in promoting adherence. When stressing the importance of

individualised patient education, these authors recommended the MOATT as a resource.²⁰

Conclusion

In the best of circumstances, educating patients and families about chemotherapy, IV or oral, is a challenge. The healthcare community has risen to challenges in the past and continues to make adjustments

and improvements. Using evidence-based tenets in patient education along with adapting teaching to each patient's situation, nurses are recognising and dealing with challenges of the new paradigm of oral chemotherapeutic agents. The MOATT is an easy-to-use, well researched, refined and internationally available tool. As professionals implement teaching with the MOATT, outcomes should benefit many, but most importantly cancer patients themselves. ■

- Hartigan K, Patient education: the cornerstone of successful oral chemotherapy treatment, *Clin J Oncol Nurs*, 2003; 7(6 Suppl.): 21-4.
- Bedell CH, A changing paradigm for cancer treatment: the advent of new oral chemotherapy agents, *Clin J Oncol Nurs*, 2003;7(6 Suppl.):5-9.
- Khandelwal N, Duncan I, Ahmed T, et al., Impact of clinical oral chemotherapy program on wastage and hospitalization, *Am J Manag Care*, 2011;17(5 Spec No):e169-73.
- Weingart SN, Brown E, Bach PB, et al., NCCN Task Force Report: Oral chemotherapy, *J Natl Compr Canc Netw*, 2008; 6(Suppl. 3):S1-S14.
- Schwartz RN, Eng KJ, Frieze DA, et al., NCCN Task Force Report: Specialty Pharmacy, *J Natl Compr Canc Netw*, 2010; 8(Suppl. 4):S1-S12.
- Kav S, Bostanci H, Role of the nurse in patient education and follow-up of people receiving oral chemotherapy treatment in Turkey, *Support Care Cancer*, 2006;14:1252-7.
- Kav S, Johnson J, Rittenberg C, et al., Role of the nurse in patient education and follow-up of people receiving oral chemotherapy treatment: an international survey, *Support Care Cancer*, 2008;16:1075-83.
- 'Oral Chemotherapy, Considerations for Practice', *Clin J Oncol Nurs*, 2003;7(Suppl. 6).
- 'Advancing the Safe and Appropriate Use of Oral Chemotherapy Agents', *Amer J Health Syst Pharm*, 2007; 64(9 Suppl. 5).
- Weingart SN, Flug J, Brouillard D, et al., Oral chemotherapy safety practices at US cancer centres: questionnaire survey, *BMJ*, 2007;334:407.
- Chau I, Legge S, Fumoleau P, The vital role of education and information in patients receiving capecitabine (Xeloda), *Eur J Oncol Nurs*, 2004;8:S41-S53.
- Gerbrecht BM, Kangas T, Implications of capecitabine (Xeloda) for cancer nursing practice, *Eur J Oncol Nurs*, 2004;8(Suppl. 1):S63-71.
- Szetela AB, Gibson DE, How the new oral antineoplastics affect nursing practice: capecitabine serves to illustrate, *Am J Nurs*, 2007;107:40-8.
- Moore S, Facilitating oral chemotherapy treatment and compliance through patient/family-focused education, *Canc Nurs*, 2007;30:112-21.
- Kav S, Schulmeister L, Nirenberg A, et al., Development of the MASCC Teaching Tool for patient receiving oral agents for cancer, *Support Care Cancer*, 2010;18:583-90.
- Hede K, Increase in oral cancer drugs raises thorny issues for oncology practices, *J Natl Cancer Inst*, 2009;101:1534-6.
- American Association for Cancer Education, educational resources. Available at: www.aaceonline.com/EducationalResources.html (accessed 3 May 2012).
- UK Oncology Nursing Society, MASCC teaching tool for patients receiving oral agents for cancer, UKONS e-newsletter issue 10, 2009. Available at: www.ukons.org (accessed January 30, 2012).
- Schneider S, Hess K, Gosselin T, Interventions to promote adherence with oral agents, *Semin Oncol Nurs*, 2011;27:133-41.
- Moore S, Winkeljohn D, Promoting adherence to oral chemotherapy: an expert interview, *Medscape News from the Oncology Nursing Society (ONS) 36th Annual Congress*, Boston, US, 28 April-1 May 2011. Available at: www.medscape.com/viewarticle/744303 (accessed January 30, 2012).
- Barton D, Oral agents in cancer treatment: the context for adherence, *Semin Oncol Nurs*, 2011;27:104-15.
- London F, No Time To Teach blog, Adherence challenge: When a patient with cancer self-administers oral chemotherapy, 10 July 2011. Available at: <http://notimetoteach.com/2011/adherence-challenge/> (accessed 3 May 2012).
- Hooper CL, Lucca J, Pedulla LV, Boucher J, Use of the MOATT® for adherence and knowledge of erlotinib in lung cancer patients, *Support Care Cancer*, 2011; 19(Suppl. 2):S307, Abstract 699.
- Tokdemir G, Kav S, The Effect of Education to Patient Receiving Oral Agents for Cancer Treatment on Medication Adherence and Self-Efficacy, unpublished master thesis, Başkent University Institute of Health Sciences, Ankara, Turkey, 2011.
- Mayer DK, Top 10 articles: what do they tell us? *Clin J Oncol Nurs*, 2012;16:13-4.
- Streeter SB, Schwartzberg L, Husain N, Johnsrud M, Patient and plan characteristics affecting abandonment of oral oncolytic prescriptions, *J Oncol Pract*, 2011; 7(3 Suppl.):46s-51s.
- Weingart SN, Spencer J, Buia S, et al., Medication safety of five oral chemotherapies: a proactive risk assessment, *J Oncol Pract*, 2011;7:2-6.
- Given BA, Spoelstra SL, Grant M, The challenges of oral agents as antineoplastic treatments, *Semin Oncol Nurs*, 2011;27:93-103.