The Peter Brojde Lung Cancer Centre: a model of integrative practice

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1. BACKGROUND

The Peter Brojde Lung Cancer Centre is a referral centre for lung cancer patients in the province of Quebec. It is part of the Segal Cancer Centre of the Jewish General Hospital in Montreal. Approximately 400 patients are followed by the interdisciplinary team each year. Most are diagnosed with advanced disease (stages IIIB and IV), but benefit from the latest diagnostic testing and procedures, and all eligible patients can enroll in a number of ongoing phase II and III trials conducted in the clinical research unit of the Segal Cancer Centre.

The move to an integrative model of practice was mainly patient-driven. A survey of our patients over a period of 6 months revealed that 87% had turned to complementary therapies after a lung cancer diagnosis. The stated interest in and use of complementary therapies by these patients (including Chinese herbs and other biologics) provided impetus for the paradigm shift in 2009.

The team currently consists of 4 pulmonary oncologists and pulmonologists, 2 nurse navigators, and 1 clinical nurse specialist, a thoracic surgeon, a dietician, a practitioner of Traditional Chinese Medicine (TCM), a part-time massage therapist, and 2 part-time physiotherapists. It is lead by a nurse–physician partnership. In addition, the team is supported by a pathologist, a radiation oncologist, the hospital palliative care team, and the cancer nutrition and rehabilitation team for patients with cachexia. Nurses are encouraged to become certified in visualization, mindful relaxation techniques, acupressure, and therapeutic healing. The TCM practitioner is also a physiotherapist.

In March 2012, the team moved into their newly created centre, which was designed to support the integrative practice of this team of mainstream and complementary practitioners. The Peter Brojde Lung Cancer Centre includes offices and treatment rooms for the physicians, nurses, and healing therapists. It also has a family room, a conference room, and a

ABSTRACT

Background

The generally poor prognosis and poor quality of life for lung cancer patients have highlighted the need for a conceptual model of integrative practice. Although the philosophy of integrative oncology is well described, conceptual models that could guide the implementation and scientific evaluation of integrative practice are lacking.

Purpose

The present paper describes a conceptual model of integrative practice in which the philosophical underpinnings derive mainly from integrative oncology, with important contributions from Traditional Chinese Medicine (TCM) and the discipline of nursing. The conceptual model is described in terms of its purpose, values, concepts, dynamic components, scientific evidence, clinical approach, and theoretical underpinnings. The model argues that these components delineate the initial scope and orientation of integrative practice. They serve as the needed context for evaluating and interpreting the effectiveness of clinical interventions in enhancing patient outcomes in lung cancer at various phases of the illness. Furthermore, the development of relevant and effective integrative clinical interventions requires new research methods based on whole-systems research. An initial focus would be the identification of interrelationship patterns among variables that influence clinical interventions and their targeted patient outcomes.

KEY WORDS

Complementary and alternative medicine, integrative oncology, lung cancer, nursing, integrative model of practice, Traditional Chinese Medicine, whole-systems research, target patterns
larger Qi Gong room for physiotherapy sessions as well as for qi gong, yoga, patient and family support groups, and learning sessions on various topics such as nutrition, healthy lifestyles, Chinese herbs and supplements, meditation, music, and art. The intent is to offer patients supervised holistic activities provided by the integrative team that knows them best, within the secure setting of the hospital. The clinical environment enhances the likelihood that lung cancer patients with advanced disease can benefit from an integrative approach that might otherwise be declined if complementary therapy services were to be located elsewhere.

2. THE PETER BROJDE LUNG CANCER CENTRE

2.1 Imperative for the Model

Lung cancer is the leading cause of cancer death, with 5-year survival rates of 13% for men and 19% for women 1. Patients experience a poor quality of life that is associated with the progressive nature of the disease and the effects of medical treatment (mainly chemotherapy, surgery, and radiation therapy) 2,3. Up to 54% of lung cancer patients turn to herbs, dietary supplements, and other complementary therapies 4-7. About 40% choose not to inform their treating oncologist 8 of those choices despite medical concerns about the potential for interactions between botanicals and drugs, adverse reactions, and incident cancers 9.

Reasons for using biologically-based therapies as adjuvants during and after mainstream treatment vary, but may be associated with patients’ core beliefs about how to restore their wellness and effectively manage their symptoms 5,7. Grim medical statistics, disappointing treatment outcomes, poor quality of life, and a tendency to take biologically-based therapies during medical treatment underscore an imperative to find a new model of practice for treating lung cancer patients 5-7.

Although the philosophy of integrative oncology is well described 10-13, conceptual models in the literature tend to be lacking 12,14-16. A conceptual model describes the values, relevant concepts, scientific evidence, clinical approach, and theoretical underpinnings that direct clinical and research practice 17-20. It specifies not only the philosophical orientation, but also the set of variables that may guide the development of clinical interventions and their scientific evaluation. It also helps to identify contextual variables that may impinge either on the interventions or their intended outcomes 21. These contextual variables encompass an intervention and its outcomes and give it meaning. Thus, a model gives direction, purpose, and context to a program of clinical and research practice 20,22-24. Accordingly, the purpose of the present paper is to describe a conceptual model of integrative practice for lung cancer patients.

2.2 Model of Integrative Practice

The philosophical underpinnings of the model derive mainly from integrative oncology, with distinguishing contributions from tcm 18,20 and the discipline of nursing 11,12,16,25-29. The theoretical underpinnings come from systems theory: Von Bertalanffy’s theory of biologically-based energy systems and the biofield hypothesis, the body–mind information network, and development 25,28,30-34.

The philosophies of integrative oncology, tcm, and the nursing discipline share many values—in particular, the notion of the human being as an inseparable mind, body, and spirit. In addition, these three disciplines value quality of life, well-being, and the innate healing capabilities of the whole patient as much as they promote treatment efficacy. In healthcare, the quality of the patient–provider relationship lies at the core of therapeutic interventions.

Each discipline also brings something unique to the model. Nursing treats the patient within the context of the family and conceptualizes health in terms of developmental processes. Traditional Chinese Medicine views health as the balanced and open flow of energy throughout the human organism. Diagnostic patterns, which reflect dynamic disturbances in body–mind processes, serve as signatures of diverse potential illnesses, including cancer. If not restored, the normal structure and functions of the body–mind network become disoriented toward chaos, predisposing a patient to illness 18,20. Integrating disciplines such as tcm into oncology brings the key value of combining Eastern and Western evidenced-based conventional and healing practices to care for the whole person 13.

2.3 Systems Theory: Central to the Blended Model

The universe and all living organisms consist of interconnected nonlinear systems with multilevel structures, functions, and distinct properties that require energy to maintain an optimal organizational state 35. Dysfunction in one system has an effect on all other systems, internal and external to the human organism 31.

“Energy” is defined as the capacity to do work—that is, to carry and process information, induce change, and maintain order in the systems of the human organism’s endogenous and exogenous environments 36,37. Each organizational level of the human organism continuously exchanges energy and evidences a characteristic pattern of endogenous electromagnetic oscillations that originate from various electrophysiologic, biochemical, cellular, and molecular biomodulating processes. Those levels include the human organism’s natural oscillators,
such as heart rate, respiratory rate, and brain waves, and also the electrically charged single or clustered particles associated with all bodily components and their interactions.33,38

The biofield hypothesis argues that a living organism’s ability to maintain its coherence and integrity depends on the endogenous and ubiquitous presence of an extremely weak, low-intensity, low-frequency bioelectromagnetic field that also exchanges information with exogenous electromagnetic fields of varying intensities.33,36 The biofield is a holistic property of the human organism, regulating homeodynamic processes at all organizational levels from the cell to the whole person.

2.4 Purpose

The conceptual model of integrative practice proposes that relevant multimodal, multi-targeted, evidenced-based complementary and conventional practices interact synergistically to enhance efficacy of treatment, quality of life, health, and innate healing capabilities of the whole patient with lung cancer.10,11,39,40 Clinical interventions are converted to information-carrying neuropeptides, neurotransmitters, or electrophysiologic waves that convey the information to the intended biologic targets. The aim is to restore structure, function, processes, information flow, and homeodynamic coherence by inducing biomodulation at multiple physiologic, chemical, and molecular targets in the human organism.40,41

Synergistic effects are defined as overlapping bioelectrophysiologic waves that synchronize and strengthen the similar pattern of information being carried throughout the body–mind network to intended targets for the purpose of improving the patient’s well-being.41 Synergistic therapies have empirically distinct, but also shared treatment targets.40 Targets are the intended objects of modulation and may be of a biologic, physical, psychological, social, emotional, spiritual, or energetic nature. Because the human organism is an irreducible whole, the effects of a clinical intervention will be experienced throughout the multiple organizational levels of the patient.

“Integrative therapies” are defined as complementary or healing therapies that are purposefully selected for their evidenced-based synergistic contribution to the patient’s health, quality of life, innate healing capabilities, and treatment efficacy. In the future, evidenced-based combinations may include healing therapies such as Chinese herbs that are given as adjuvant therapy to prevent chemoresistance or depressed immune functioning. Those therapies, like medical treatments, are subject to change over time.13

Complementary therapies are defined as “a group of diverse medical and health care systems, practices and products that are not considered as conventional medicine” because of a paucity of scientific evidence,42 although scientific research into Chinese herbs and other complementary therapies has accelerated since the year 2000. Complementary therapies typically include biologically-based modalities (for example, Chinese herbs, mushrooms, supplements, vitamins, minerals), mind–body modalities (mindfulness, meditation, exercise, hatha yoga, mindful relaxation techniques, guided imagery, biofeedback, support groups, hypnosis, cognitive–behavioral therapy, and counseling, among others), manipulative body-based practices (tui na, healing massage therapy, massage therapy, massage and reflexology, for instance), and bioenergy therapies (for example, acupuncture, qi gong, Reiki).42,43

2.5 The Patient

The patient, within the family context, is the focus of interdisciplinary care and treatment.26 Here, the patient is described in terms of dynamic wholeness; innate processes of health, growth, and development; healing; and relationships with family, significant others, and the world beyond.

Patients are defined as dynamic, irreducible, fully integrated, multidimensional beings who are more than the sum of their cells, organs, and systems.28,29,44 Each individual patient is distinguished by a unique wholeness, regulated by a complex, non-linear, ubiquitous, body–mind information network that dynamically links every system, subsystem, cell, and DNA molecule throughout the human organism.41,45 For example, information from the external environment is processed by the human organism and carried to intended targets such as the immune and neuroendocrine systems by neuropeptides, neurotransmitters, and electrophysiologic waves along the body–mind network. Alternatively, information from the immune system may be conveyed to cognitive and emotional structures in the brain by the same communication network.

Continuous vibration characterizes the whole being and gives rise to a bioelectromagnetic field that also regulates biologic activity. This biofield is responsive to electromagnetic and other energy forces from the external environment.33,36 Together the body–mind information network and the biofield ensure a fully integrated, coherent human organism of multiple, increasingly complex organizational levels from the molecular to the whole being. Properties such as consciousness, spirituality, hope, and meaning emerge at higher, more complex levels that are irreducible to molecular interactions and biochemical processes.31,35,36,46

2.5.1 Health

Health is conceptualized as developing and growing toward self actualization or personal potential, while maintaining homeodynamic coherence over the lifespan.25,27 Specifically, health is defined, in part, as interconnected physical, psycho-emotional,
social, cognitive, biologic, and spiritual processes of growing and developing that may be reflected by the quality of development at a given moment in time.

At any point, quality may be discerned by the patient’s coping processes and strategies used to overcome adversity. It is also mirrored by the patient’s personal resources (such as cognitive processes) and strengths (such as resilience, self-esteem, hope, self-efficacy, personal control, and self-regulation). Quality is seen in a person’s social skills, sense of connectedness with others, and capacity for intimacy. It is manifested by a sense of purpose, meaning-in-life, and beliefs about the self, the self in relation to others, and the universe.

Keeping pace with development is the process of maintaining the homeodynamic coherence of the human organism. Homeodynamics are the electrophysiologic and biochemical processes of the patient’s body–mind network that, together with the biofield, maintain the internal biologic systems in dynamic equilibrium.

That understanding is akin to the view of health as the balance between yin and yang, in which energy flows unimpeded throughout the human organism. The open flow of bioelectromagnetic information drives the human organism to respond and act as a coherent whole, modulating structures and functions as needed to maintain optimal integrity. Thus, health refers to the human organism’s innate need to grow and develop over the lifespan, while maintaining homeodynamic integrity and balance among all the systems and processes of the human organism.

2.5.2 Healing

All patients have innate healing capabilities. Whereas health is about self actualization within the context of an intact, cohesive informational network, healing is defined as the process of restoring wholeness in the physical, biologic, emotional, energetic, and spiritual levels of the person.

Healing is normally precipitated by a profound loss or a traumatic event that results in some form of emotional distress. That emotional distress translates, according to TCM, as a disturbance. If persistent, it alters the normal pattern of information flow required to maintain homeodynamic coherence, ultimately leading to degradation of intact structures and functions. That degradation depletes energy and ultimately leads to illness.

Healing is transformative, in that a heightened awareness of the self, associated with innate processes of growing and learning, results in a shift in the way the patient thinks, feels, and relates to the world. In effect, previously held attitudes give way to new beliefs about the self, the world, and one’s place in it. It is the process of becoming liberated from the past and from previously held beliefs about the self and the self in relation to the world that no longer correspond to new realities.

This altered world view opens the self to new meanings and possibilities of being that move the person toward wholeness.

Psychological healing can be enhanced by spiritual awareness, defined as the self being in harmony with nature or connecting with a greater purpose or Higher Being. Spirituality is recognized as an innate, inseparable part of human nature, akin to the human soul, with transformative properties that can serve as an important resource in healing.

Other healing processes emanate from the patient’s belief system. Beliefs are defined as subjective truths that influence how events are perceived and interpreted at cognitive and emotional levels that can affect bioregulation of the immune system. Patients’ beliefs about their potential for wellness are determined, in part, by positive or negative expectations about getting well, which can be shaped by previous experiences. Positively held expectations are thought to enhance immunity, which brain describes as the placebo effect. Although research on placebo effects is in its very early stages, tentative evidence suggests that conscious expectations about being well actually induce the flow of neurotransmitters and hormones with modulating effects at intended targets. The placebo effect may in fact be capturing the body–mind dynamic, in which emotional substrates carried by neuropeptides modulate immune responses.

2.5.3 Quality of Life and Wellness

The World Health Organization defines “quality of life” as the effects of illness, medical treatment, and complementary therapies on patient perceptions of their functional, physical, psycho-emotional, and social well-being. Wellness is related to well-being and is defined as the “positive developments” in the patient’s physical, psycho-emotional, social, and spiritual well-being. More specifically, wellness relates to the patient’s optimal level of overall well-being in the presence of a chronic and progressively debilitating illness that influences and is influenced by all interrelated dimensions, processes, and systems of the dynamic human organism. Promoting quality of life has to do with treatment efficacy, reductions in symptom severity, and enhancement of all the multidimensional aspects of the patient’s optimal level of wellness.

2.5.4 Social Connectedness

The family (or significant others) shape and are shaped by their family member’s cancer. In keeping with bio-ecologic systems theory, the patient is an integral part of multiple social, cultural, economic, and universal systems that include family, friends, co-workers, health care providers, spiritual persons, and nature. The systemic notion of interrelatedness or interconnectivity underscores the patient’s need for understanding and connectedness.
2.6 Clinical Environment

At least 5 elements of the clinical environment modulate the patient and family’s experience with cancer:

- The quality of the health care provider’s relationships with the patient and family
- The nurse’s continuity-of-care approach with the patient
- A collaborative integrative team
- Clinical approaches
- The evidenced-based scope of practice

2.6.1 The Health Care Provider Relationship with the Patient and Family

The main focus of medical care and treatment is the patient, recognizing that the family represents a broader lens through which clinical decisions involving the patient tend to be filtered and interpreted. The health care provider is defined as any member of the treating team, but most essentially, the oncologist and the nurse navigator, who are seen by the patients as the two principals responsible for all aspects of their health and well-being.

Accordingly, the quality of the relationship with the patient and the family is defined in terms of the health care provider’s ability to communicate openly, listen actively, and respond genuinely, without judgment. These are all well known attributes for developing an effective therapeutic relationship in which the patient feels validated as a human being and not just as a sick person. A qualitative study by Thorne et al. highlighted the profound need of patients to establish a genuine connection with their physician or nurse, one in which the patient ostensibly can share their beliefs about health and illness, life and death, and even their hopes and plans for getting better.

As more patients with advanced cancer continue to seek greater involvement in the clinical decisions concerning their treatment, conversations about therapeutic options are likely to turn to the use of complementary therapies. How the health care provider responds will undoubtedly affect the patient’s feelings and how that patient subsequently experiences the illness.

Preliminary research findings on the placebo effect and the patient’s need to be treated with respect underscore the importance of a nonjudgmental attitude, a collaborative approach, and a sensitive and genuine responsiveness to the thoughts, feelings, behaviours, beliefs, and attitudes of the patient and the family.

2.6.2 Continuity-of-Care Approach

“Continuity of care” is defined as ongoing, relevant, holistic care or treatment that is regularly assessed and modulated according to the clinical status and personalized needs of the patient, starting at diagnosis and continuing throughout the illness. Continuity of care is ensured in practice by the patient’s assignment to a pivot nurse navigator. This nurse serves as the patient’s main counselor, advocate, and coordinator of needed integrated medical and community services throughout the patient’s illness. This continuity-of-care approach is further complemented by the interdisciplinary team of conventional and healing practitioners who regularly evaluate, select, intervene, and adjust their coordinated and integrated care or treatments as a function of the patient’s holistic needs.

2.6.3 A Collaborative Integrative Team

“Interdisciplinary practice” is defined as care that reflects the team’s unique and complementary knowledge and skills. It is characterized by a collaborative and shared vision of integrative practice, with mutual respect and regard for each other, the patient, and the family. It is hypothesized that collaborative and respectful team relations will result in personalized and timely treatment plans producing better outcomes for patients.

2.7 Scientific Evidence

To delineate the initial scope of practice for the Centre, an exhaustive literature review was conducted; it is available on request. As extensively reported elsewhere, the scientific evidence indicates that a patient’s quality of life and well-being can be improved with an integrative approach that targets several health-promoting facets of the patient’s life. That approach includes providing effective symptom relief and helping the patient to master emotional distress. It includes strengthening the quality of the patient’s support and promoting effective coping strategies. It involves encouraging appropriate physical activity and diet, nutrition, and supplement use as part of a more general discussion on ways to enhance a healthier lifestyle.

Some research, albeit controversial, also suggests that facilitating spiritual growth can improve the patient’s overall feelings of well-being. The literature review also provided scientific evidence of the multiple therapeutic benefits associated with diverse mind–body, bioenergetic, body-manipulative, and biologically based healing practices. Although the research studies are of varying methodologic rigour, and future work to establish dose, frequency, and duration of treatment effects is needed, consensus concerning the relevance of those techniques in mainstream practice is converging.

The main challenge of the scientific evidence to date is the paucity of research findings based on whole-systems research, which has been identified as the appropriate methodology for evidenced-based integrative practice. Although a few studies have begun to investigate patterns of interrelationships among preselected symptoms experienced by cancer
patients\textsuperscript{58,96}, the findings are at a very preliminary stage—as indeed is the whole field of cluster analysis.

Some research has been based on the combined effects of two or more complementary therapies, but in most instances, a rationale for combining selected practices was not offered. Moreover, the lack both of a theoretical framework and of a pattern of interrelated targets to provide a needed context within which to develop and evaluate the effectiveness of clinical interventions\textsuperscript{97} illustrates the basic state of practice of whole-systems research as the move toward an evidenced-based integrative approach takes place.

### 2.8 Clinical Approach

Given that cancer is a systemic disease, the goal of clinical practice is to treat the whole patient (Figure 1). Typically, that treatment involves standard chemotherapies, surgical and radiation oncology procedures, biomarker-driven treatment, and healing therapies. Healing therapies are selected from mind–body, manipulative, and body-, energy-, and biologically-based practices\textsuperscript{41,62,70,86,94,95}. An integrative approach applies evidenced-based, multimodal, multi-targeted therapies with synergistic effects to intended targets. One or more relevant healing therapies with multiple targets can produce intersecting electrophysiologic waves that reinforce information flow, resulting in synergistic, biomodulating effects on multiple targets\textsuperscript{41}. The effect can be improvement of the intended target (such as a symptom), but might just as likely be a more holistic benefit, which may be experienced as a sense of overall well-being, as the information flow realigns and strengthens the patient’s information network and biofield\textsuperscript{33,103}.

Thus, clinical practice uses an integrative, synergistic approach that strives to reduce, eliminate, contain, or excise the tumour, while optimizing patient well-being and quality of life by promoting physical fitness, a nutritious diet, stress-reducing strategies and symptom management, effective coping and support, healthy lifestyle choices, and spiritual growth.
The challenge is to select the appropriate combination of integrative medical treatments and healing therapies with distinct and shared targets. In the future, the optimal clinical approach will be guided by scientific knowledge of target patterns with empirically known direct, indirect, and interactional effects on patient outcomes. Scientific evidence of clinical interventions that improve patient outcomes by modulating various targets of a specific pattern of interrelationships will be selected. One clinically-related question that will need to be investigated is whether an integrative intervention with both distinct and shared targets is more effective than an integrative approach that combines therapies with distinct targets.

2.9 Patterns of Interrelated Targets

Conceiving the whole patient from a systems perspective expands the health care focus from a single pathogenic entity to clinical patterns with interrelated processes and multiple targets aimed at restoring the patient’s overall wellness\(^{40,41}\). Targets can potentially include medical, biologic, physical, psychological, emotional, or social factors that have been scientifically shown to modulate treatment efficacy, well-being, innate healing processes, and quality of life. One example is the pattern of symptoms that can emerge at various phases of illness.

Complex patterns of interrelated targets deepen our empirical understanding of the factors that shape and influence the illness experience in patients and the potential of those patients for wellness\(^{58,96}\). An interrelated pattern can highlight the factors that either co-occur or interact in the process of modulating the patient’s overall well-being\(^{96}\). Co-occurring symptoms may signal the presence of a mediating factor that has yet to be elicited. Nonetheless, the “unrevealed” mediator can influence the patient’s response to the illness. Preliminary study by Redeker and colleagues\(^{96}\) of symptom patterns in cancer patients, based on only 4 targets, showed that patients with fatigue or insomnia were more likely to be suffering from depression. Given the complex interrelated factors associated with the causes of fatigue in cancer patients, a cluster analysis involving all the suspected targets might provide a revealing “snapshot” of their direct, indirect, and interactional (synergistic) effects on fatigue as the outcome variable.

In the future, it is hoped that a comprehensive patient assessment will produce a patient’s “signature” pattern, which could then be compared with the benchmark pattern associated with an evidenced-based clinical intervention. As a function of the patient’s clinical status and stated preferences, the integrative clinical intervention would then be adjusted to meet the personalized needs of that particular patient.

3. SUMMARY

An integrative clinical approach would be expected to vary over time according to the patient’s needs, preferences, and clinical status. The family is very much a part of that approach, and depending on the context, should be invited to benefit from healing interventions that could help to relieve the strain associated with caring for a loved one, or that could, by their participation, lend emotional support to the patient.

In the absence of evidenced-based integrative clinical approaches, the patient and the health care providers can become true partners in the selection and clinical evaluation of a multimodal, multi-targeted treatment plan. The n-of-1 research design becomes a clinical tool in striving to evaluate personalized care when the needed research findings are at a preliminary level\(^{106}\).

3.1 Clinical Implementation Strategy

The natural inclination is to be protective of very ill patients, particularly when the prevailing perception is that complementary therapies are not generally subject to the scrutiny of medical science\(^{12}\). Thus, at the Brojde Centre, two overlapping strategies facilitated the acceptance of complementary therapies as adjuncts of clinical practice (Figure 2).

3.1.1 First: Opportunities for Team Learning

The main challenges in moving to integrative oncology are the widely-held professional beliefs that most complementary therapies are not scientifically grounded and that they provide false hope and can potentially be harmful—the biologically-based
therapies in particular. Because scientific findings are the accepted standard for implementing change in an academic health centre, the obvious strategy was to implement a program of evidenced-based learning elucidated by the conceptual model. In our model, the nurse–physician directors of the centre spearheaded the initiative.

The Nurse–Physician Partnership: The transition to an integrative model was facilitated by a planned course of action led by the directors of the Brojde Centre. They articulated the vision and set the tone, clarified the goals and the pace of the introduction of integrative practice to the team, to patients, and to the various affected departments in the health care setting. As a nurse and a physician, they shared a biopsychosocial scientific understanding of the needs of lung cancer patients and their families, and as administrators, they understood hospital structures, functions, and processes within which the shift to integrative oncology was taking place. That shared perspective helped this leadership to “see the whole picture” and to find novel solutions to inevitable challenges associated with the paradigm shift.

A Conceptual Model of Practice: The development of a conceptual model was the outcome of an intensive scientific review, with consultations at local, national, and international levels and with ongoing discussions at all levels of the hospital administration and practice. In addition, several interviews were carried out with patients to learn about their views on health and being diagnosed with cancer, and their use of complementary therapies. Although a collaborative undertaking, the actual review of the literature was done by the nurse-director with feedback, discussions, and presentations involving the medical director, the administration, and the team.

Learning: The conceptual model was used to direct learning. Several key learning structures were put in place to promote team knowledge and skills. An Integrative Oncology Journal Club was established for the clinic nurses and other healing practitioners on the team. Regular workshops were held with experts on diverse topics such as acupressure, deep relaxation techniques, visualization, and healing touch. Relevant courses and seminars in mindful meditation, reflexology, acupressure, and Chinese herbs were taken. An internship in China was created to learn about treating lung cancer with Chinese herbs. International speakers were invited to share their work on specific topics. As team members were increasingly exposed to the scientific evidence on diverse complementary therapies and as the field of integrative oncology became familiar, physicians and nurses began to refer patients to the nurse-director for counselling sessions on biologically-based therapies.

3.1.2 Second: Clinical Implementation
The main strategy was to introduce complementary therapies with documented evidence of their therapeutic benefits to cancer patients. Evidenced-based clinical practice guidelines on complementary therapies for patients with lung cancer identified acupuncture, massage, and mind–body therapies as safe and effective. The Quebec Order of Nurses had previously recognized the relevant use of healing therapies in nursing practice. With those recommendations, the Centre began by offering acupuncture, massage, mindful relaxation techniques, and visualization. A TCM-physiotherapist practitioner, a massage therapist, a dietician, and a nurse with mind–body modality skills were hired, and all the nurses were encouraged to gain expertise in several healing therapies.

Initially, only patients whose symptoms were uncontrolled by conventional analgesics were eligible to receive complementary therapies. They were either on palliative or active medical treatment (Table 1). Gradually, that constraint was lifted to include early-stage surgical lung cancer patients and selected patients with advanced cancer who were seeking a personalized integrative program to optimize their well-being and innate healing capabilities. Our challenge now has been how to accommodate the growing number of lung cancer patients seeking integrative care or treatment.

3.2 Research: Strategy for Implementation
Currently, the Centre has established two research arms, involving clinical studies that evaluate

- non-biologically-based healing therapies used to reduce symptoms and improve quality of life and wellness for cancer patients. These therapies include imagery, massage, music, qi gong, and acupuncture applied at all phases of the illness.
- biologically-based healing therapies used to optimize wellness and effective symptom control. These therapies include diet, vitamins, micronutrients, and Chinese herbs.

The current objective is to develop programs that identify target patterns across various phases of non-small-cell lung cancer in the affected patients, and that develop and evaluate integrative clinical interventions based on the corresponding target pattern to synergistically enhance well-being, quality of life, the innate healing capabilities of the patient, and treatment efficacy.

3.2.1 Non-Biologically Based Healing Therapies
In principle, the strategy for developing effective integrative clinical interventions that can be personalized to the needs of patients with non-small-cell lung cancer is based on an approach that can vary with the clinical demands and financial resources of the Centre (Figure 3).
First, a concept of the model is selected that is related to one or more patient outcomes, such as hope in relation to well-being and length of survival in palliative patients. The initial context is the palliative stage, plus the variables of interest. The rationale is that many health care professionals express concern about how to maintain the patient’s need for hope without giving false hope. Next, qualitative studies attempt to elicit the themes, processes, and factors that emerge from the concept of hope.

To enhance the external validity of the qualitative findings, a survey might be developed to validate the qualitative findings with a larger cohort of patients undergoing similar experiences. It is possible that additional qualitative studies or focus groups might be required until the concept of interest attains saturation. The goal is to ensure that all potentially relevant variables within a specific theme or context have been identified.

Having identified all the variables, cross-sectional and prospective studies within the specified context are used to obtain measurable data on the patient’s outcome or outcomes and the selected set of target variables that have emerged from the qualitative data and survey. Those variables, including outcome variables, are then analyzed in terms of the patterns of their interrelationships.

Typical analyses include correlation matrices, hierarchical regression, and path analysis. A correlation matrix identifies target variables that are related to the outcome measures. Hierarchical regression elucidates the magnitude of the direct, indirect, and interactional effects of the targets on the explained variance of each desired outcome.

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### Table 1: Clinical eligibility

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<th>Status</th>
<th>Inclusion criteria</th>
<th>Clinical approach: conventional care plus ...</th>
<th>Evaluation method</th>
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<tr>
<td><strong>On active medical treatment</strong></td>
<td>Symptoms score 3 or higher on the Edmonton Symptom Assessment System (ESAS)</td>
<td>Holistic assessments, plus 1 or more of: acupuncture, massage, relaxation techniques</td>
<td>Pre/post change in: ESAS (at 6 weeks), Profile of Mood States (POMS) short form</td>
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<td><strong>Palliative, not on active treatment</strong></td>
<td>Symptoms score 3 or higher on the ESAS, or seeking strategies to optimize wellness, or both</td>
<td>Holistic assessments plus 1 or more of: acupuncture, massage, relaxation techniques</td>
<td>Pre/post change in: Functional Assessment of Cancer Therapy–Lung (FACT–L), POMS short form, McGill Quality of Life Questionnaire (QLQ), Part C (meaning subscale), ESAS, Picker Patient Experience Questionnaire (15 questions), Brojde Qualitative Questionnaire (4 open-ended questions), Goal Attainment Scaling</td>
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<td><strong>Early stage, thoracotomy, may or may not be on active treatment</strong></td>
<td>Presurgical patients seeking to optimize wellness, before, during, and after treatment</td>
<td>Integrated clinical approach with personalized program of care</td>
<td>Pre/post change in: FACT–L, POMS short form, McGill QLQ, Part C (meaning subscale), ESAS, Picker Patient Experience Questionnaire, Brojde Qualitative Questionnaire, Goal Attainment Scaling</td>
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output variable ($R^2$). A large component of unexplained variance in the outcome variables suggests that other targets still need to be identified to be able to produce the optimal fit between the target pattern and the patient’s outcome variable. Path analysis, in particular, can clearly illustrate the full pattern of interrelationships, highlighting targets that may need further investigation depending on their performance as direct, mediating, or interactional variables. Finally, integrative clinical interventions with the desired targets to improve patient outcomes are developed and evaluated.

The foregoing strategy serves as a guideline. It can also be adapted according to the professional and financial resources available, and to administrative expectations of a newly developed paradigm of practice. Thus, the first objective of the Centre was, in fact, to validate the safety and effectiveness of each healing therapy that was introduced in the clinic, notwithstanding favourable research findings from previously controlled studies.

Acupuncture and massage were started within the context of separate single-arm prospective studies (Table 1). For example, the findings from the acupuncture study provided needed feasibility data for the subsequent development of a pragmatic “randomized” controlled trial, with mixed methods, to evaluate the effectiveness of a 6-week acupuncture intervention to be given during chemotherapy. Background data from the intervention study will be analyzed for target patterns before, during, and after treatment in the experimental and control groups alike.

3.2.2 Chinese Herbs and Natural Supplements
The second strategy is based on research findings suggesting that Chinese herbs decrease the severity of disease- and treatment-induced symptoms in lung cancer patients. Basic biologic and animal research indicates that several Chinese herbs demonstrate immune biomodulating effects, antitumour activity, anti-inflammatory biomodulating effects, anti-angiogenesis, and mechanisms to overcome chemoresistance in non-small-cell lung cancer cells with minimal toxicity to normal epithelial lung cells. The herbs are frequently part of Chinese prescriptions with multi-targeted effects on the whole person.

We identified the main diagnostic syndromes associated with lung cancer patients in the palliative phase and developed corresponding treatment algorithms to guide tailored interventions by the TCM practitioner. The diagnostic syndromes and treatment algorithms will now be validated by up to 4 other TCM practitioners. The herbs will be prepackaged according to our algorithm by a distributing firm with government-approved quality control.

In keeping with the holistic perspective of both TCM and model, a pragmatic clinical trial has been proposed to evaluate the potential effectiveness of Chinese herbs to reduce the severity of symptoms associated with lung cancer while promoting overall well-being. Pragmatic designs are considered more appropriate for studies calling for a tailored, individualized intervention. In a pragmatic trial, the question of overall effectiveness is evaluated, not the contributions of the individual components.

Should the findings from the clinical trial demonstrate effective improvement in comparison with a control group, the hope is then to evaluate the use of Chinese herbs during other phases of the patient’s illness.

4. CONCLUSIONS
The key concepts of the model of integrative practice constitute an essential base of practice from which other related concepts, variables, and proposed relationships will follow as research findings continue to elucidate the complex interrelationships among the endogenous and exogenous variables (“factors” or “targets”) that influence the lived experience of patients with lung cancer. Although the field of integrative oncology is based mainly on a philosophy of practice anchored by values and substantive analyses of various facets of the holistic philosophy, the conceptual model contributes to the field of integrative oncology by drawing together key theoretical concepts, clinical approaches, and research strategies that can offer a needed context for the evaluation and interpretation of target patterns and integrative clinical interventions.

The model is unique in that it elucidates the complementary contributions of three main disciplines of holistic care: integrative oncology, nursing, and TCM. Central to the successful implementation
### Research strategy

<table>
<thead>
<tr>
<th>Research objective</th>
<th>Design</th>
<th>Measures</th>
<th>Phase of study</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Describe key concepts and relationships in the model</strong></td>
<td>Survey ((n=85))</td>
<td>McCune’s Modified Self-Administered Questionnaire (^{109})</td>
<td>Completed data collection: Finished July 2011 (JGH IRB approved, August 2010)</td>
</tr>
<tr>
<td></td>
<td>Interpretative qualitative study ((n=12) lung cancer patients)</td>
<td>Semi-structured interview</td>
<td>Completed April 2011 (JGH IRB approved, May 2010; McGill University ethics approval, 2010) Presentation at The Multinational Association of Supportive Care in Cancer conference, June 2011 Published in the <em>European Journal of Oncology Nursing</em> (online, February 11, 2012; DOI: 10.1016/j.ejon.2012.01.004)</td>
</tr>
<tr>
<td></td>
<td>Interpretative qualitative study</td>
<td>Semi-structured interview</td>
<td>Submitted May 2012 for IRB review</td>
</tr>
<tr>
<td></td>
<td>Title: Lung cancer patients’ beliefs about complementary and alternative medicine in the promotion of their wellness</td>
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<tr>
<td></td>
<td>Title: Exploring the relationship between hope and the healing process in patients with advanced lung cancer</td>
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<tr>
<td>2. <strong>Studies to evaluate complementary therapy use and integrative oncology programs</strong></td>
<td>Open prospective study: Effectiveness of acupuncture for symptom management and overall well being in lung cancer patients; acupuncture sessions 1–2 times per week for 6 weeks; 45 minutes per session</td>
<td>Pre/post change scores at 6 weeks, based on the Edmonton Symptom Assessment System (ESAS) (^{98}), a 10-point measure of overall well being; waterfall analysis; patient interview</td>
<td>Completed Presentation at The Multinational Association of Supportive Care in Cancer conference, June 2011 Data collection</td>
</tr>
<tr>
<td></td>
<td>Open prospective study: Effectiveness of massage for symptom management and overall well being in lung cancer patients; massage sessions 1–2 times per week for 6 weeks; 45 minutes per session</td>
<td>Pre- and post-change scores at 6 weeks, based on the ESAS, a 10-point measure of overall well being; Profile of Mood States short form (^{99}); patient interview</td>
<td>Data collection 2011–2013</td>
</tr>
<tr>
<td></td>
<td>Open prospective study to evaluate an integrative oncology program for early-stage lung cancer patients</td>
<td>See Figure 1 (conceptual model) for a list of measures. Pre- and post-change scores, multivariate analysis of variance Baseline, 2 weeks post-surgery; then every 6 weeks to 6 months; and then 8, 10, 12, 15, 18, 21, and 24 months</td>
<td>Data collection 2011–2013</td>
</tr>
<tr>
<td></td>
<td>Pragmatic randomized controlled trial to evaluate effectiveness of Chinese herbs on quality of life in patients no longer on curative treatment</td>
<td>Main measure: Functional Assessment Cancer Therapy–Lung (^{100})</td>
<td>In development</td>
</tr>
<tr>
<td>3. <strong>Patterns of interrelationships among the targets of interest</strong></td>
<td>Secondary analysis from the randomized controlled trial of Chinese herbs</td>
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</tbody>
</table>

\(^{109}\) JGH = Jewish General Hospital; IRB = institutional review board.
of the model are the clinic nurse and the nurse–physician partnership. Together, those roles ensure a progressive, seamless, and safe pathway toward an integrative model of practice.

5. CONFLICT OF INTEREST DISCLOSURES

None of the authors of this article has a financial conflict of interest.

6. REFERENCES


BROJDE CENTRE MODEL OF INTEGRATIVE PRACTICE


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