INTEGRATIVE ONCOLOGY
INM Residency Consortium Seminar
November 6, 2021

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Learning Objectives

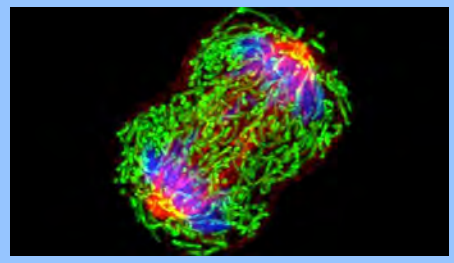
1. Cancer and its causes
2. Advances in Medicine and Science
    1) Genomic Oncology
    2) Evolving cancer treatments
    3) Epigenetics
3. Definition, importance and benefits of Integrative Oncology
4. Complementary modalities that improve quality of life in cancer patients. *Countless* scientific articles have been published
5. Empowering ways to look at cancer and its treatment
6. For integrative practitioners, health care professionals and all caregivers: "the importance of taking care of self"
7. Most importantly: "Supporting cancer patients in their Healing Journey"
8. Summary, Questions and Answers

Intention to bring into this gathering: our family members, loved ones, friends, coworkers, clients and patients who have or had cancer.
We can honor them, and hold them in our hearts.

What is cancer?

- Cancer is a disease in which some of the body's cells grow uncontrollably and spread to other parts of the body
- It can start anywhere in the body (trillions of cells)
- Cancer growth doesn't follow normal division/growth/apoptosis signals
- Tricks the immune system
- Each person's cancer has a unique combination of genetic changes
- Overtime, additional changes occur
- **Even within the same tumor, different cells may have different genetic changes**
- Not one disease! Multiple diseases!
- **Very heterogenous, diverse and complex: types, stages, grades, genomic, molecular, etc.**
- **Types: carcinoma, sarcoma, lymphoma, leukemia, melanoma, CNS, myeloma, germ cell, etc.**
- For example: NSCLC (non-small cell Lung cancer) comprised of >100 different molecular entities

What causes cancer?



- Multifactorial
- Hereditary factors. Genetic predisposition
- Oncogenes overexpressed
- Tumor suppressor genes down regulated (i.e. p53)
- DNA repair genes affected or mutated
- Environmental factors
- Lifestyle risk factors
- Epigenetic influences
- DNA replication errors. Random mutations

Science. March 2017

REPORT

CANCER ETIOLOGY

Stem cell divisions, somatic mutations, cancer etiology, and cancer prevention

Cristian Tomasetti,[1,2]* Lu Li,[2] Bert Vogelstein[3]*

Cancers are caused by mutations that may be inherited, induced by environmental factors, or result from DNA replication errors (R). We studied the relationship between the number of normal stem cell divisions and the risk of 17 cancer types in 69 countries throughout the world. The data revealed a strong correlation (median = 0.80) between cancer incidence and normal stem cell divisions in all countries, regardless of their environment. The major role of R mutations in cancer etiology was supported by an independent approach, based solely on cancer genome sequencing and epidemiological data, which suggested that R mutations are responsible for two-thirds of the mutations in human cancers. All of these results are consistent with epidemiological estimates of the fraction of cancers that can be prevented by changes in the environment. Moreover, they accentuate the importance of early detection and intervention to reduce deaths from the many cancers arising from unavoidable R mutations.

It is now widely accepted that cancer is the result of the gradual accumulation of driver gene mutations that successively increase cell proliferation (*1*–*3*). But what causes these mutations? The role of environmental factors (E) in cancer development has long been evident from epidemiological studies, and this has fundamental implications for primary prevention. The role of heredity (H) has been conclusively demonstrated from both twin studies (*4*) and the identification of the genes responsible for cancer predisposition syndromes (*3*, *5*). We recently hypothesized that a third source—mutations due to the random mistakes made during normal DNA replication (R)—can explain why cancers occur much more commonly in some tissues than others (*6*). This hypothesis was based on our observation that the risk of cancer in different tissues is related to the number of normal cell divisions dictates cancer risk in many organs (*10*).

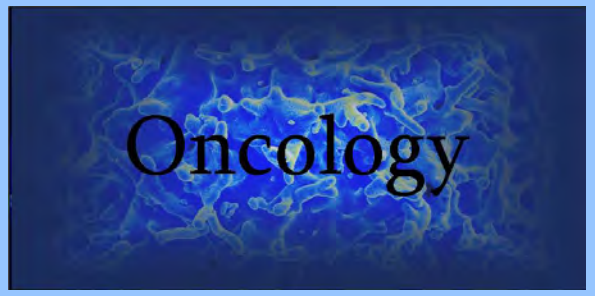
This hypothesis has generated much scientific and public debate and confusion, in part because our analysis was confined to explaining the relative risk of cancer among tissues rather than the contribution of each of the three potential sources of mutations (E, H, and R) to any single cancer type or cancer case. Determination of the contributions of E, H, and R to a cancer type or cancer case is challenging. In some patients, the contribution of H or R factors might be high enough to cause all the mutations required for that patient's cancer, whereas in others, some of the mutations could be due to H, some to R, and the remainder to E. Here we perform a critical evaluation of the hypothesis that R mutations play a major role in cancer. Our evaluation is predicated on the expectation that the number of endogenous mutations (R) resulting from stem cell divisions in a tissue, unlike those caused by environmental exposures, would be similarly distributed at a given age across human populations. Though the number of stem cell divisions may vary with genetic constitution (e.g., taller individuals may have more stem cells), these divisions are programmed into our species' developmental patterns. In contrast, deleterious environmental and inherited factors, either of which can directly increase the mutation rate or the number of stem cell divisions, vary widely among individuals and across populations.

Our previous analyses were confined to the U.S. population, which could be considered to be exposed to relatively uniform environmental conditions (*6*). In this study, we have evaluated cancer incidence in 69 countries, representing a variety of environments distributed throughout the world and representing 4.8 billion people (two-thirds of the world's population). Cancer incidences were determined from analysis of 423 cancer registries that were made available by the International Agency for Research on Cancer (IARC) (http://ci5.iarc.fr/CI5-X/Pages/download.aspx). All 17 different cancer types recorded in the IARC database for which stem cell data are available were used for this analysis (see supplementary materials). The Pearson's correlation coefficients of the lifetime risk of cancer in a given tissue with that tissue's lifetime number of stem cell divisions are shown in Fig. 1. Strong, statistically significant correlations were observed in all countries examined (median P value = 1.3×10^{-4}; full range: 2.2×10^{-5} to 6.7×10^{-3}). The median correlation was 0.80 (95% range: 0.67

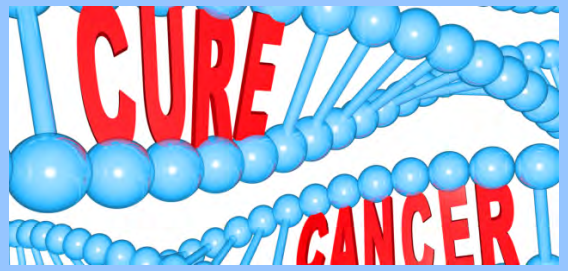
Fig. 1. Correlations between stem cell divisions and cancer

8

Cancer (cont)



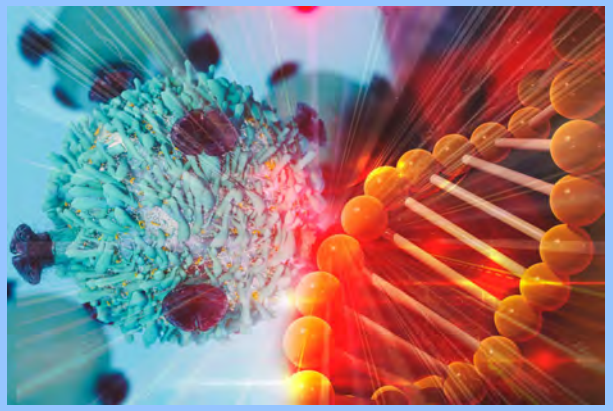
- Metastasis
- Cancer cells can remain **dormant** for years (even decades)
- Surgical, Medical & Radiation Oncology
- **Genomic Oncology**
- **Integrative Oncology**



Advances in Medicine and Science

Genomic Oncology

- Molecular Profiling
- Genomic Profiling
- Precision Therapeutics
- Precision Oncology
- Genome-driven Therapy
- Personalized Oncology
- Personalized Therapies
- NGS: next generation sequencing



Molecular Profiling and the Reclassification of Cancer: Divide and Conquer

Javier Munoz, MD, Charles Swanton, MD, PhD, and Razelle Kurzrock, MD

OVERVIEW

Cancer is one of the leading causes of mortality in the world. Choosing the best treatment is dependent on making the right diagnosis. The diagnostic process has been based on light microscopy and the identification of the organ of tumor origin. Yet we now know that cancer is driven by molecular processes, and that these do not necessarily segregate by organ of origin. Fortunately, revolutionary changes in technology have enabled rapid genomic profiling. It is now apparent that neoplasms classified uniformly (e.g., non-small cell lung cancer) are actually comprised of up to 100 different molecular entities. For instance, tumors bearing *ALK* alterations make up about 4% of non-small cell lung cancers, and tumors bearing epidermal growth factor receptor (EGFR) mutations, approximately 5% to 10%. Importantly, matching patients to therapies targeted against their driver molecular aberrations has resulted in remarkable response rates. There is now a wealth of evidence supporting a divide-and-conquer strategy. Herein, we provide a concise primer on the current state-of-the-art of molecular profiling in the cancer clinic.

American Society of Clinical Oncology (**ASCO**). 2013 Educational Book

Clinical (i.e., age), laboratory (i.e., lactate dehydrogenase or LDH), and light microscopy (i.e., small compared with non–small cell lung adenocarcinoma) aided our morphologic understanding of malignancies, but have significant limitations in their ability to stratify tumors. Progress was made with the advent of cytogenetic analysis, as it was discovered that chromosomal gains and losses might further guide our diagnostic capabilities (i.e., some cytogenetic abnormalities are diagnostic of acute myeloid leukemia irrespective of the number of blasts) and therapeutic approaches (i.e., lenalidomide in patients with deletion 5q myelodysplas-

MOLECULAR TECHNOLOGY OVERVIEW

Morphologically, many tumors look alike, even though they may be vastly different at the molecular level. Cytogenetic studies do reveal a multitude of chromosomal abnormalities across malignancies; nevertheless, technicalities such as the amount of tissue required, need for dividing cells, and lack of sensitivity attenuate their contribution to diagnostics. Molecular studies are often both sensitive and specific, and can detect aberrations in samples with low numbers of malignant cells. They can also be used to discern minimal residual disease and improve molecular staging (e.g., more stringent

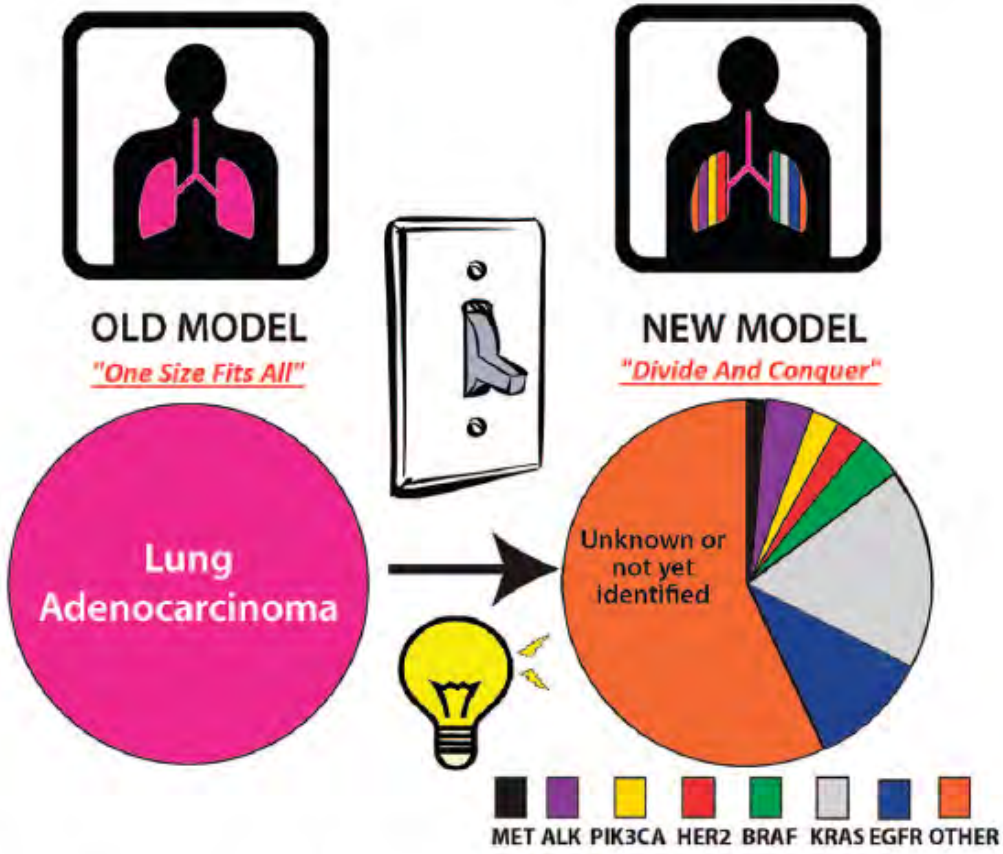


FIG 2. Molecular aberrations in lung cancer: divide and conquer.

Dr. Razelle Kurzrock et al. American Society of Clinical Oncology. 2013 Educational Book

Molecular profiling in Breast cancer

1. **Onco*type*** **DX Recurrence Score (RS)**:
    1. Most widely used test
    2. Provides a **genomic-based, individualized risk assessment** for early-stage invasive breast cancer in adjuvant and neoadjuvant settings
    3. Proven to **predict the likely benefit of chemotherapy** as well as the risk of distant recurrence for patients who are newly diagnosed with early-stage invasive breast cancer
2. Prediction Analysis of Microarray 50 (PAM50) Risk of Recurrence (ROR)
3. EndoPredict (EP)
4. Breast Cancer Index (BCI)
5. MammaPrint: Amsterdam 70-gene profile

original report

Personalized Medicine in the Oncology Clinic: Implementation and Outcomes of the Johns Hopkins Molecular Tumor Board

Journal of Clinical Oncology **JCO**. May 31, 2017

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abstract

Purpose Tumor genomic profiling for personalized oncology therapy is being widely applied in clinical practice even as it is being evaluated more formally in clinical trials. Given the complexities of genomic data and its application to clinical use, molecular tumor boards with diverse expertise can provide guidance to oncologists and patients seeking to implement personalized genetically targeted therapy in practice.

Methods A multidisciplinary molecular tumor board reviewed tumor molecular profiling reports from consecutive referrals at the Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins over a 3-year period. The tumor board weighed evidence for actionability of genomic alterations identified by molecular profiling and provided recommendations including US Food and Drug Administration–approved drug therapy, clinical trials of matched targeted therapy, off-label use of such therapy, and additional tumor or germline genetic testing.

Results One hundred fifty-five patients were reviewed. Actionable genomic alterations were identified in 132 patients (85%). Off-label therapies were recommended in 37 patients (24%). Eleven patients were treated off-label, and 13 patients were enrolled onto clinical trials of matched targeted therapies. Median progression-free survival of patients treated with matched therapies was 5 months (95% CI, 2.9 months to not reached), and the progression-free survival probability at 6 months was 43% (95% CI, 26% to 71%). Lack of locally available clinical trials was the major limitation on clinical actionability of tumor profiling reports.

Conclusion The molecular tumor board recommended off-label targeted therapies for a quarter of all patients reviewed. Outcomes were heterogeneous, although 43% of patients receiving genomically matched therapy derived clinical benefit lasting at least 6 months. Until more data become available from precision oncology trials, molecular tumor boards can help guide appropriate use of tumor molecular testing to direct therapy.

Precis Oncol 00.

editorials

Global Implementation of Precision Oncology

Clinton Yam, MD, MS[1,2]; Brigette B. Y. Ma, MBBS (Hon), MD (CUHK)[3]; and Timothy A. Yap, MBBS, PhD[4,5,6,7]

Journal of Clinical Oncology. May 2021

Advances in sequencing technologies have provided unprecedented insights into the molecular landscape of tumors. With next-generation sequencing (NGS), comprehensive molecular profiling of tumors can be generated expediently and at a fraction of the costs associated with traditional sequencing methods.[1] On the shoulders of these scientific advances in sequencing technology, genome-driven therapy has been pushed to the forefront of cancer medicine (precision oncology). Since cancer is a disease driven primarily by alterations in the genetic code,[2] it follows that identifying specific alterations driving the malignant process should fuel the development of novel therapeutic strategies. Therein lies the concept of precision oncology—an opportunity to personalize care, with the promise of greater efficacy with less toxicity for the individual patient. Indeed, for a number of patients, this dream has been fulfilled with the recent regulatory approvals of targeted and immuno-oncology agents in a histology agnostic setting, including the approval of the TRK inhibitor, larotrectinib, for patients with TRK fusion–positive solid tumors[3] and more recently the approval of pembrolizumab for patients with tumor mutational burden–high solid tumors.[4] Further, targeted therapies previously ap-

patients allocated to a clinical trial following the MTB. Among these 111 patients, 20 were eventually enrolled on a genomically matched clinical trial. Notably, an additional 33 patients were directly enrolled on genomically matched clinical trials without formal discussion at an MTB, for a total of 53 patients. As the authors acknowledge, key limitations of this study include the heterogeneity of NGS assays used and the single-center nature of this experience. The different NGS assays used in this study is an understandable consequence of the evolving molecular testing technologies taking place during the duration of the trial over which patients were enrolled. Although this study was conducted at a single center, the National Cancer Center Singapore is the largest cancer center in Singapore, an island city-state with a total population of 5.9 million.

Most of Singapore's health care is delivered through a government-run, publicly funded system where patients have a shared financial responsibility. Thus, a spike in healthcare costs will have a direct economic impact on patients and be closely scrutinized. Therefore, this study is timely and provides key data for relevant stakeholders to evaluate the feasibility of

Advances in Medicine and Science (cont.)

1. Improved medicines
2. Monoclonal antibodies:

   Rituximab, Trastuzumab, Pertuzumab, Cetuximab, Nivolumab, Pembrolizumab (anti-PD-L1), Ipilimumab, etc.

3. Targeted molecular therapies:

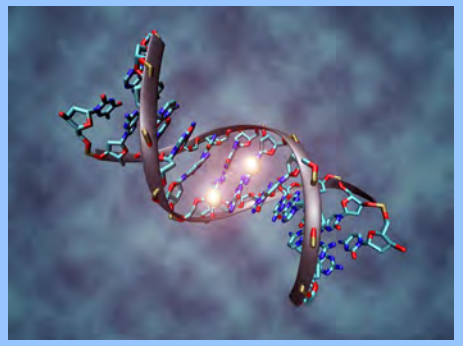
   Imatinib, Nilotinib, Lapatinib, Gefitinib, Erlotinib, Crizotinib, Sunitinib, Nivolumab, Olaparib, Pazopanib, and many more

4. Anti-angiogenic agents
   a) Bevacizumab (VEGF receptor inhibitor)
   b) Thalidomide, Lenalidomide for Multiple Myeloma
5. Immunotherapy

Chemotherapy side effects

- GI: N/V, anorexia, diarrhea
- Low energy. Body aches
- Neuropathy
- Potential organ damage: liver, kidney, lung, heart
- Hair and skin
- Bone Marrow Suppression
- Intimacy affected
- Others

New advances (cont.)



- **Symptom management**
- **PAIN MANAGEMENT**
- Apoptotic agents (natural cell death)
- Stem cells
- Chemosensitivity and chemoresistance Assays
- **Microbiome**
- **Metronomic chemotherapy: lower doses. Also timing**
- **Epigenetics** (Modulating genes: up and down regulation)

World Journal of Clinical Oncology

World J Clin Oncol. 2016 Apr 10; 7(2): 200–213.
Published online 2016 Apr 10. doi: 10.5306/wjco.v7.i2.200

PMCID: PMC4826965

Role of the microbiome in non-gastrointestinal cancers

Meirav Pevsner-Fischer, Timur Tuganbaev, Mariska Meijer, Sheng-Hong Zhang, Zhi-Rong Zeng, Min-Hu Chen, and Eran Elinav

Author information ▶ Article notes ▶ Copyright and License information ▶

Abstract

Go to:

"The forgotten organ", the human microbiome, comprises a community of microorganisms that colonizes various sites of the human body. Through coevolution of bacteria, archaea and fungi with the human host over thousands of years, a complex host-microbiome relationship emerged in which many functions, including metabolism and immune responses, became codependent. This coupling becomes evident when disruption in the microbiome composition, termed dysbiosis, is mirrored by the development of pathologies in the host. Among the most serious consequences of dysbiosis, is the development of cancer. As many as 20% of total cancers worldwide are caused by a microbial agent. To date, a vast majority of microbiome-cancer studies focus solely on the microbiome of the large intestine and the development of gastrointestinal cancers. Here, we will review the available evidence implicating microbiome involvement in the development and progression of non-gastrointestinal cancers, while distinguishing between viral and bacterial drivers of cancer, as well as "local" and "systemic", "cancer-stimulating" and "cancer-suppressing" effects of the microbiome. Developing a system-wide approach to cancer-microbiome studies will be crucial in understanding how microbiome influences carcinogenesis, and may enable to employ microbiome-targeting approaches as part of cancer treatment.

Keywords: Microbiome, Non-gastrointestinal cancers, Carcinogenesis, Dysbiosis, Microbial agent

CLINICAL TRIAL INVESTIGATES EFFICACY

of Low-Dose Chemotherapy for Breast Cancer Patients

RESEARCHERS AT USC NORRIS COMPREHENSIVE CANCER CENTER'S BREAST CANCER PROGRAM CONTINUE TO LAUNCH GROUNDBREAKING STUDIES INTO ONE OF THE COUNTRY'S MOST COMMON CANCERS.

Among the research currently underway at USC Norris is a clinical trial led by Darcy Spicer, MD, associate professor of clinical medicine at the Keck School of Medicine of USC, and chief of the division of medical oncology at USC Norris, testing the efficacy of a new targeted treatment that aims to achieve the same results of traditional chemotherapy while resulting in lower side effects for patients.

Researchers are seeking patients to participate who have metastatic breast cancer and have had no more than two chemotherapy treatments.

The study provides patients with metronomic chemotherapy, an emerging new treatment option in cancer therapy, in which low doses of chemotherapeutic agents are given to patients at frequent intervals over longer periods of time. This targeted therapy can potentially improve the patients' quality of life and allow for the prolonged administration of chemotherapy drugs.

Chemotherapy has traditionally been administered at the maximum tolerated dose — the highest possible dose that does not cause serious toxicity for the patient.

"One of the benefits of metronomic chemotherapy may be a lower toxicity and lower the incidence of side effects," Spicer said.

The clinical trial, in Phase II, uses metronomic chemotherapy in combination with breast cancer drugs lapatinib and trastuzumab in patients with metastatic breast cancer who have been previously treated with trastuzumab. Patients will be given a four-drug treatment on a 21-day cycle.

About 256,000 new cases of invasive breast cancer will be diagnosed in women in 2017, according to the American Cancer Society.

Although breast cancer is the second leading cause of cancer death in women — behind lung cancer — death rates have been dropping since 1989. The drop is attributed to early cancer detection through screening, increased awareness and better treatments, according to the American Cancer Society. There are more than 2.8 million living breast cancer survivors in the U.S.

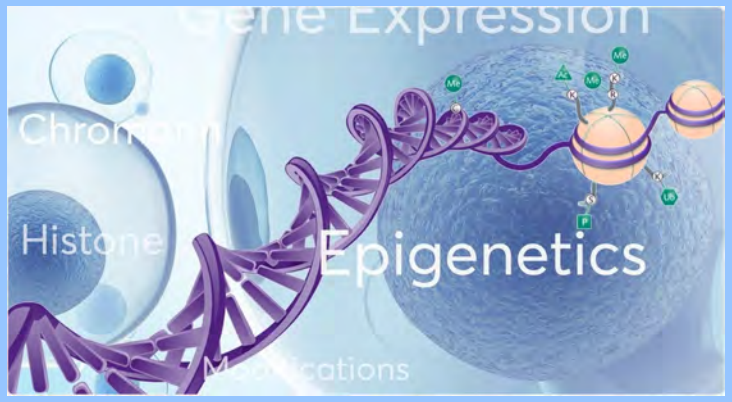
Yet despite recent advances in therapy, metastatic breast cancer — in which cancer spreads to vital organs — remains an incurable disease, with five-year survival of rate 23 percent.

To learn more about this clinical trial, visit: clinicaltrials.keckmedicine.org/clinicaltrials/287

Epigenetics

Gene expression is influenced by many factors:

1. Hormones, metabolites, foods, microbiome, chemicals, drugs, etc.
2. Environment: light, temperature, radiation, etc.
3. Lifestyle
4. Social Interactions
5. Relationships
6. Thoughts. Emotions
7. Traumatic events from the past
8. Other factors



The Epigenetic Landscape in the Treatment of Gynecologic Malignancies

Ramez N. Eskander, MD

American Society of Clinical Oncology. 2018 Educational Book

OVERVIEW

The care of patients with advanced-stage or recurrent endometrial, ovarian, and cervical cancer remains clinically challenging. Despite the identification of novel therapeutics and advancements in supportive care, survival outcomes have been relatively unchanged over the past decade. In addition to established genomic alterations and the contributions of the tumor microenvironment to cancer progression, epigenetic mechanisms have emerged as important contributors to gynecologic cancer progression. DNA methylation, histone modification, and noncoding RNA expression may be important contributors to disease initiation and progression and may represent novel therapeutic targets. This article reviews the epigenetic landscape of endometrial, ovarian, and cervical cancer, describing the state of the science and discussing potential clinical applications. To date, the role of epigenetic drugs in the treatment of gynecologic cancers remains unclear, although continued progress may inform future treatment modalities.

With an improved understanding of the molecular landscapes of ovarian, uterine, and cervical cancer, an interest in targeted therapies has emerged.[1-4] This molecular granularity has translated into U.S. Food and Drug Administration (FDA) approvals of the antiangiogenic agent bevacizumab and of the PARP inhibitors (niraparib, rucaparib, olaparib), after a nearly 10-year interval which saw limited progress in patients suffering from recurrent cervical and ovarian cancer.

In an effort to expand on the above, investigators have turned their attention beyond traditional genomic mu-

(CpGs), which, when methylated, result in transcriptional repression. This process, catalyzed by DNA methyltransferases (DNMTs), may occur in the promotor regions of tumor-suppressor genes, resulting in oncogenic transformation. This paradigm has been well described for the retinoblastoma (*Rb*), *p16*, *hMLH1*, and *BRCA1* tumor-suppressor genes.[8-12] In humans, the three known DNMTs include DNMTA1, DNMT3A, and DNAMT3B. DNMT1 is responsible for maintaining hemimethylation of DNA during replication, whereas DNMT3A and DNMT3B can catalyze de novo DNA methylation.[13]

Definitions

- CAM: Complementary and "Alternative" Medicine
- Holistic Medicine
- **Integrative Medicine**
- **Integrative Oncology**
- Cure
- True Healing


Healing
doesn't mean
the damage
never existed.
It means
the damage
no longer
controls our
lives.

Placebo

- Number of publications increased ten fold
- Placebo effect increasing
- Nocebo (negative effect)
- Expectation effect
- Meaning and Context: MAC

Case presentation

- 57 year old internationally known holistic nutritionist with a rapidly growing right breast tumor
- Deep fear of allopathic/conventional medical treatment and environment
- She tried all types of natural approaches without success
- Referred to me for integrative oncology consultation
- Finally accepted chemotherapy, followed by surgery and radiation therapy
- Outstanding response for several years
- **True Integration: embracing all approaches and therapies available**

Integrative Medicine

Emerging medical specialty that incorporates

- Art and Science of caring for the whole person - body, mind, spirit - to prevent and treat disease
- Empowering patients to create a condition of optimal Health, Wellness and Healing
- Incorporating evidenced based natural therapies, complementary healing disciplines and modalities in the care of patients and caregivers
- Safety and Efficacy of these therapies
- **Academy of Integrative Health & Medicine (AIHM)**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Become a Member

Integrative Oncology

- Evolving specialty in Oncology
- Patient centered. Focuses on Health, Wellness and supporting the Healing journey of cancer patients
- Very much desired and requested by patients, family members, cancer centers staff and society at large
- Caring for the caregivers (nurses, doctors, all staff)
- Maintaining an *optimal healing environment* for patients, their loved ones, caretakers, nurses, doctors and all staff
- **Established Society for Integrative Oncology (SIO)**

OUR MISSION:

TO ADVANCE EVIDENCE BASED, COMPREHENSIVE, INTEGRATIVE HEALTHCARE TO IMPROVE THE LIVES OF PEOPLE AFFECTED BY CANCER.

Navajo Nation's Regional Healthcare Facility Needs Our Help

The current COVID-19 pandemic has acutely affected the Navajo Nation, which lives in a region spanning parts of Arizona, Utah and New Mexico. Historically, the Navajo People have suffered high rates of diabetes, cardiovascular disease and cancer, all of which contribute to increased risk for poorer COVID-19 outcomes.

For decades, tribal land has been left without basic infrastructure such as running water, electricity and paved roads.

The Indian Health Service has been chronically underfunded, and the Tuba City Regional Healthcare Corporation is the only cancer treatment location on any Native American soil. The SIO is honored to present this support

Please read the press release about the joint SIO/ASCO work on guidelines for integrative approaches for cancer care on our news page.

Read the latest blog from Eugene and Linda Carlson, PhD, C.Psych

"What Now? Navigating cancer treatment during a possible COVID-19 'second wave'"

"The Use of Traditional Chinese Herbal Medicine in COVID-19 - Where's the Evidence?"

Webinar presentation by Weidong Lu, MB, MPH, PhD

Events Calendar

Jan 15 Deadline for TREC applications

Sep 24 SIO 2021 18th International Conference

Integrative Therapies During and After Breast Cancer Treatment: ASCO Endorsement of the SIO Clinical Practice Guideline Summary

Gary H. Lyman, Kari Bohlke, and Lorenzo Cohen

Fred Hutchinson Cancer Research Center and University of Washington, Seattle, WA; American Society of Clinical Oncology, Alexandria, VA; The University of Texas MD Anderson Cancer Center, Houston, TX

American Society of Clinical Oncology
Journal of Oncology Practice
August 2018

Integrative oncology coordinates the delivery of evidence-based complementary therapies with conventional cancer care.[1] Complementary therapies encompass a broad range of mind and body practices, natural products, and lifestyle modifications, and are commonly used by patients with and survivors of breast cancer.[2-4] Although evidence remains limited for many of these therapies, results from a growing number of well-conducted randomized controlled trials suggest that selected therapies may improve the management of symptoms and adverse effects due to breast cancer and its treatment. Importantly, trials have also highlighted therapies that either provide no benefit or pose a risk to patients. To summarize the available evidence for clinicians and to provide evidence-based

ASCO has decided to endorse the SIO guideline on the use of integrative therapies during and after breast cancer treatment. The endorsement reinforces the recommendations provided in the SIO guideline and acknowledges the effort put forth by SIO to inform practitioners who care for patients with breast cancer. The SIO recommendations are listed in the Bottom Line Box, with additional discussion points from the ASCO Expert Panel. The full SIO guideline is available at http://onlinelibrary.wiley.com/doi/10.3322/caac.21397/epdf. Additional information is available at www.asco.org/supportive-care-guidelines. Patient information is available at www.cancer.net. JOP

Acknowledgment

Integrative Therapies During and After Breast Cancer Treatment: ASCO Endorsement of the SIO

Definition of Integrative Oncology

From the Journal of Clinical Oncology (JCO) Oncology Practice Journal:

Integrative oncology is a patient-centered, evidence-informed field of comprehensive cancer care that uses lifestyle modifications, mind-body practices, and natural approaches from different traditions alongside conventional cancer treatments. Integrative oncology seeks to engage patients and families as active participants in their own care from prevention throughout treatment and survivorship. This principle optimizes health promotion and proactively addresses symptoms and adverse effects that arise from cancer or its treatment.

Benefits of Integrative Oncology

- Less symptoms from cancer and its treatments
- Fewer visits to the doctor
- **Improving the QOL of patients and their caregivers**
- **Decrease in hospitalizations**
- **Supports the medical environment**
- **Reduction of health care costs**
- Education
- Research
- **Collaboration**

DOI:10.1093/jncimonographs/lgu030

Journal National Cancer Institute. November 2014

Effects of Integrative Medicine on Pain and Anxiety Among Oncology Inpatients

Jill R. Johnson, Daniel J. Crespin, Kristen H. Griffin, Michael D. Finch, Jeffery A. Dusek

Correspondence to: Jill R. Johnson, PhD, MPH, Penny George Institute for Health and Healing, 800 East 28th Street, MR 33540, Minneapolis, MN 55407-3799 (e-mail: Jill.Johnson3@allina.com)

Background Few studies have investigated the effectiveness of integrative medicine (IM) therapies on pain and anxiety among oncology inpatients.

Methods Retrospective data obtained from electronic medical records identified patients with an oncology International Classification of Diseases-9 code who were admitted to a large Midwestern hospital between July 1, 2009 and December 31, 2012. Outcomes were change in patient-reported pain and anxiety, rated before and after individual IM treatment sessions, using a numeric scale (0–10).

Results Of 10948 hospital admissions over the study period, 1833 (17%) included IM therapy. Older patients had reduced odds of receiving any IM therapy (odds ratio [OR]: 0.97, 95% confidence interval [95% CI] = 0.96 to 0.98) and females had 63% (OR: 1.63, 95% CI = 1.38 to 1.92) higher odds of receiving any IM therapy compared with males. Moderate (OR: 1.97, 95% CI = 1.61 to 2.41), major (OR: 3.54, 95% CI = 2.88 to 4.35), and extreme (OR: 5.96, 95% CI = 4.71 to 7.56) illness severity were significantly associated with higher odds of receiving IM therapy compared with admissions of minor illness severity. After receiving IM therapy, patients averaged a 46.9% (95% CI = 45.1% to 48.6%, P <.001) reduction in pain and a 56.1% (95% CI = 54.3% to 58.0%, P <.001) reduction in anxiety. Bodywork and traditional Chinese Medicine therapies were most effective for reducing pain, while no significant differences among therapies for reducing anxiety were observed.

Conclusions IM services to oncology inpatients resulted in substantial decreases in pain and anxiety. Observational studies using electronic medical records provide unique information about real-world utilization of IM. Future studies are warranted and should explore potential synergy of opioid analgesics and IM therapy for pain control.

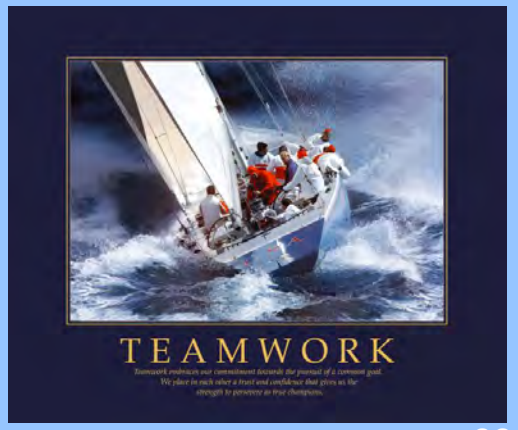
J Natl Cancer Inst Monogr 2014;50:330–337

Pain is a common, often debilitating symptom of cancer and a

The evidence base for integrative oncology among inpatients

Role of an Integrative Oncologist

- Create integrative treatment plans during and after conventional cancer treatment
- Recommend specific integrative modalities (and practitioners) for each patient
- Help patients and caregivers sort out so much data and info (confusing for all)
- Advising patients about benefits and possible risks of **all** options and treatment modalities
- Help patients embrace chemotherapy and conventional medical recommendations
- Empowering patients. Hope. Balance. Peace of mind
- Support oncologists, nurses and cancer center staff.
- Education: students, residents, fellows, colleagues
- Integrative Research
- **Collaborating with Practitioners of all the Healing Arts**



Integrative Oncology Collaborations in CA

San Diego Cancer Research Institute

CHI Consciousness and Healing Initiative

UC San Diego Health System

Bastyr University
Leading Innovation in Natural Health Education

AIHM
Academy of Integrative Health & Medicine

Pacific College of Oriental Medicine

Scripps

UCLA Health

MIRAGLO foundation

The Chopra Foundation
Dedicated. Conscious. Caring.

UCSF
University of California
San Francisco

IONS Institute of Noetic Sciences

Integrative Oncology Programs in the US

- University of California, San Diego
- University of California, Irvine
- University of California, Los Angeles
- University of California, San Francisco
- University of Texas MD Anderson Cancer Center, Houston
- Dana Farber Cancer Institute, Boston
- Memorial Sloan-Kettering, New York
- Johns Hopkins Cancer Center, Baltimore, Maryland
- Cleveland Clinic Cancer Center
- More cancer centers of excellence are incorporating Integrative Oncology

INTEGRATIVE ONCOLOGY

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AND ANDREW WEIL

WEIL INTEGRATIVE MEDICINE LIBRARY

OXFORD

JNCI J Natl Cancer Inst (2018) 110(1): djx145

doi: 10.1093/jnci/djx145
First published online August 10, 2017
Brief Communication

BRIEF COMMUNICATION

Use of Alternative Medicine for Cancer and Its Impact on Survival

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Abstract

There is limited available information on patterns of utilization and efficacy of alternative medicine (AM) for patients with cancer. We identified 281 patients with nonmetastatic breast, prostate, lung, or colorectal cancer who chose AM, administered as sole anticancer treatment among patients who did not receive conventional cancer treatment (CCT), defined as chemotherapy, radiotherapy, surgery, and/or hormone therapy. Independent covariates on multivariable logistic regression associated with increased likelihood of AM use included breast or lung cancer, higher socioeconomic status, Intermountain West or Pacific location, stage II or III disease, and low comorbidity score. Following 2:1 matching (CCT = 560 patients and AM = 280 patients) on Cox proportional hazards regression, AM use was independently associated with greater risk of death compared with CCT overall (hazard ratio [HR] = 2.50, 95% confidence interval [CI] = 1.88 to 3.27) and in subgroups with breast (HR = 5.68, 95% CI = 3.22 to 10.04), lung (HR = 2.17, 95% CI = 1.42 to 3.32), and colorectal cancer (HR = 4.57, 95% CI = 1.66 to 12.61). Although rare, AM utilization for curable cancer without any CCT is associated with greater risk of death.

Delay or refusal of conventional cancer treatment (CCT), when done in favor of alternative medicine (AM), may have serious survival implications for cancer patients (1–7). However, there is limited research evaluating the use and effectiveness of AM, partly due to data scarcity or patient hesitance to disclose nonmedical therapy to their providers (8,9). To address this knowledge gap, we used the four most prevalent cancers (breast, prostate, lung, and colorectal) in the United States (10) from the

Demographic and clinical factors were evaluated using the chi-square test and the t test for categorical and continuous variables, respectively. Independent associations with AM use (vs CCT alone) were identified using multivariable logistic regression. Two-to-one nearest-neighbor propensity score matching without replacement was performed to compare overall survival (OS). Univariate survival analyses were completed using the Kaplan-Meier estimator, log-rank test, and Cox proportional

Integrative Healing Traditions

- Hippocrates: Father of Medicine (400 BC)
- Osteopathic Medicine
- Naturopathic Medicine
- Ayurvedic Medicine
- Traditional Chinese Medicine (TCM)
- Native American Medicine
- Tibetan Medicine
- Other ancient Healing Traditions

Prevention of cancer or its recurrence

- Life style changes
- Nutrition (Tree of Life)
- Exercise. Movement. Good breathing
- Stress management (with all techniques available)
- Good rest and sleep
- Detoxification (in all aspects)
- Feeling in control. Empowered. Inner Peace
- Homeostasis. Self Regulation
- **Early detection**
- **Consider any or several of the disciplines that we will review next**

Integrative/Complementary Modalities

- Gentle and aerobic exercise
- Nutrition
- **Yoga**: Whole (Holistic) discipline. Yoga teachers: "it's a lifestyle"
- Acupuncture. TCM
- Massage
- Support Groups
- Meditation
- Biofield Therapies (Energy Medicine)
- Long list will continue

- “Let food be thy medicine; thy medicine shall be thy food”
- Hippocrates, 460-370 BC

Nutrition during cancer treatment

- **Extensive scientific data**
- Whole Food, Plant-Based
- Organic. Freshly prepared
- **Nutrition programs: Individualized, Customized**

- Special situations:
  - Carb restriction
  - Ketogenic diet
  - Intermittent Fasting, etc.
- Creating a peaceful and relaxed environment
- No extremes. It's all about balance
- **Blessing** of the food, the source, those who prepared it, and the company we are in

Changes in prostate gene expression in men undergoing an intensive nutrition and lifestyle intervention

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Communicated by J. Craig Venter, The J. Craig Venter Institute, Rockville, MD, April 2, 2008 (received for review February 13, 2008)

Epidemiological and prospective studies indicate that comprehensive lifestyle changes may modify the progression of prostate cancer. However, the molecular mechanisms by which improvements in diet and lifestyle might affect the prostate microenvironment are poorly understood. We conducted a pilot study to examine changes in prostate gene expression in a unique population of men with low-risk prostate cancer who declined immediate surgery, hormonal therapy, or radiation and participated in an intensive nutrition and lifestyle intervention while undergoing careful surveillance for tumor progression. Consistent with previous studies, significant improvements in weight, abdominal obesity, blood pressure, and lipid profile were observed (all $P < 0.05$), and surveillance of low-risk patients was safe. Gene expression profiles were obtained from 30 participants, pairing RNA samples from control prostate needle biopsy taken before intervention to RNA from the same patient's 3-month postintervention biopsy. Quantitative real-time PCR was used to validate array observations for selected transcripts. Two-class paired analysis of global gene expression using significance analysis of microarrays detected 48 up-regulated and 453 down-regulated transcripts after the intervention. Pathway analysis identified significant modulation of biological processes that have critical roles in tumorigenesis, including protein metabolism and modification, intracellular protein traffic, and protein phosphorylation (all $P < 0.05$). Intensive nutrition and lifestyle changes may modulate gene expression in the prostate. Understanding the prostate molecular response to comprehensive lifestyle changes may strengthen efforts to develop effective prevention and treatment. Larger clinical trials are warranted to confirm the results of this pilot study.

exercise | lifestyle changes | prostate cancer | SHOC2 | stress management

Epidemiological evidence (1, 2) and migrant studies (3) indicate that the incidence of clinically significant prostate cancer is much lower in parts of the world where people eat a predominantly low-fat, plant-based diet. We (4–5) and others (6) have shown indolent low-risk prostate cancers, defined by strict clinical and pathologic criteria designed to minimize the risk for metastatic disease as a result of study participation (9). The 30 men who enrolled did not undergo surgery or radiation therapy to treat their low-risk tumors; rather, they underwent comprehensive lifestyle changes (low-fat, whole-foods, plant-based nutrition; stress management techniques; moderate exercise; and participation in a psychosocial group support). Participants donated serial prostate needle biopsies at baseline and after 3 months of the lifestyle intervention, from which nanogram quantities of mRNA were purified. At the time this clinical trial began, commercial expression array platforms were not sensitive to nanogram RNA quantities. Therefore, a reproducible linear RNA amplification and printed cDNA array platform was used, as in our previous studies of melanoma (10), where subsequent studies have confirmed the validity of the gene expression findings (11, 12). Furthermore, quantitative real-time PCR (QRT-PCR) was used to provide initial confirmation of the study results, comparing in pairwise fashion each man's postintervention to his own preintervention sample. This article examines the relationship of comprehensive diet and lifestyle changes to gene expression in the prostate.

Results

In the GEMINAI. study, 273 men were screened, 96 declined to participate, 146 did not meet inclusion criteria, and 31 were enrolled. The participants' demographics included a mean age of 62.3 years (range 49–80) and a mean PSA level of 4.8 ng/ml (range 0.5–21.4) on the day of the initial biopsy. As expected from the trial eligibility criteria, all patients had a Gleason score of 6. Eighty-four percent of the men identified their ethnicity as Caucasian, 9% Hispanic, 3% Asian, and 4% African-American. Two-thirds of the men were married, and 72% were currently employed.

Trial eligibility required PSA ≤10 [or PSA ≤15 if the patient had a history of benign prostatic hyperplasia (BPH)] at the time of screening. One outlier patient with a history of BPH and a prostate

Dean Ornish study. Proceedings of the National Academy of Sciences. 2008

Table 2. Up-regulated and down-regulated transcripts in paired pre- and post- diet/lifestyle intervention in normal prostate biopsy samples

Transcripts	SAM ranking	Unigene or genome database name
Down-regulated		
RAN	1	RAN, member RAS oncogene family
SHOC2	2	Soc-2 suppressor of clear homolog (*C. elegans*)
EST chromosome 18	3	Transcribed sequence chromosome 18
ITGA10	4	Integrin, α 10
SLC35D1	5	Solute carrier family 35 member D1
MMP9	6	Matrix metallopeptidase 9
DENND1B	7	DENN/MADD domain containing 1B
RNF150	8	Ring finger protein 150
HIPK1	9	Homeodomain interacting protein kinase 1
NUS1	12	Nuclear undecaprenyl pyrophosphate synthase 1
SBNO	13	Strawberry notch homolog 1 (*Drosophila*)
IMAGE:4610527	14	Transcribed sequence chromosome 18, 4610527
GPD1L	15	Glycerol-3-phosphate dehydrogenase 1-like
ZE03F06	16	Transcribed sequence chromosome 1, ZE03F06
KIAA0141	18	KIAA0141
ACLY	19	ATP citrate lyase
SUB1	20	SUB1 homolog (*S. cerevisiae*)
KLF6	21	Kruppel-like factor 6
CRKRS	22	Cdc2-related kinase, arginine/serine-rich
FLT1	23	Fms-related tyrosine kinase 1
Up-regulated		
NR2F1	1	Nuclear receptor subfamily 2, group F, member 1
BC029658	2	Transcribed sequence BC029658
ZNF250	3	Zinc finger protein 250
EST chromosome 8	12	Transcribed sequence chromosome 8
C21orf131	13	Chromosome 21 open reading frame 131
C11orf71	15	Chromosome 11 open reading frame 71
ZNF160	20	Zinc finger protein 160
KIAA1843	21	KIAA1843
CR627148	22	Transcribed sequence CR627148
C6orf217	29	Chromosome 6 open reading frame 217

statistical significance. Total PSA did not change significantly (from 4.8 ± 3.9 to 4.6 ± 3.4 ng/ml; $P = 0.48$), although percent free PSA was improved, from 17.5 ± 7.4 to 18.9 ± 8.3 ($P = 0.05$).

Patients reported significant reductions in psychological distress associated with prostate cancer, as indicated by lower scores on the intrusive and avoidant thoughts subscales of the Impact of Event scale. Mental health-related quality of life also improved, with increases in the Mental Component Summary score of the SF-36, although physical health-related quality of life was stable.

Each man underwent control prostate needle biopsy at baseline and an experimental biopsy after 3 months of intervention. Of the 31 patients enrolled, 30 were evaluable for gene expression, and one patient sample was excluded because the biopsy tissue did not contain sufficient prostate epithelium. The paired-specimen design, where each

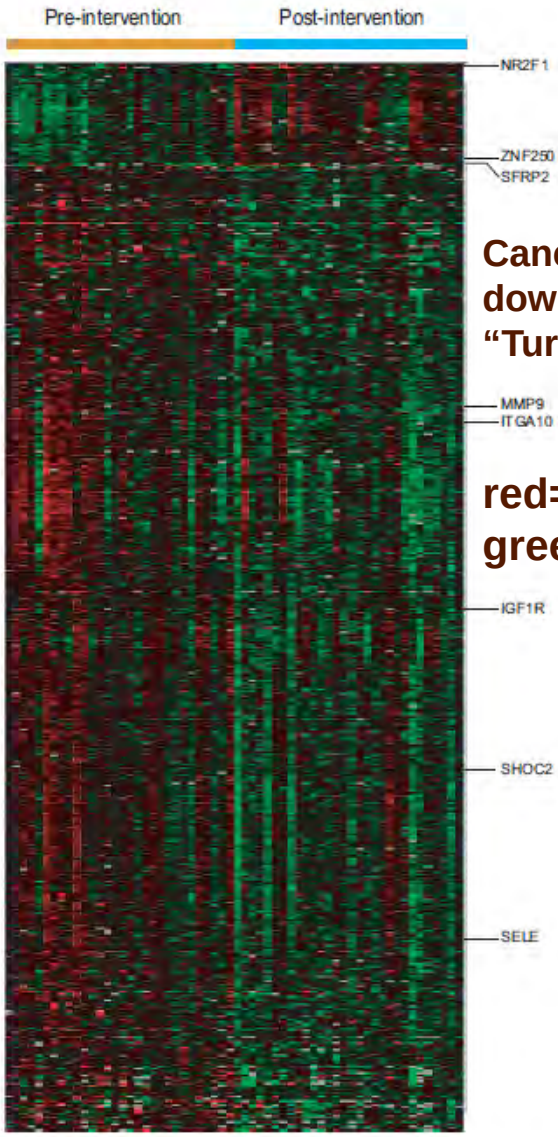


Fig. 2. Heat map of the pre- and postintervention samples demonstrating 48 up-regulated transcripts (red in the postintervention samples) and 453 down-regulated transcripts (green in the postintervention samples) in morphologically normal prostate after a comprehensive diet and lifestyle intervention.

We noted that several of the cDNA array clones in the SAM dataset remain poorly annotated in the Unigene database. Thus, we used the University of California (Santa Cruz, CA) (UCSC) genome database and software tools (23) to investigate whether

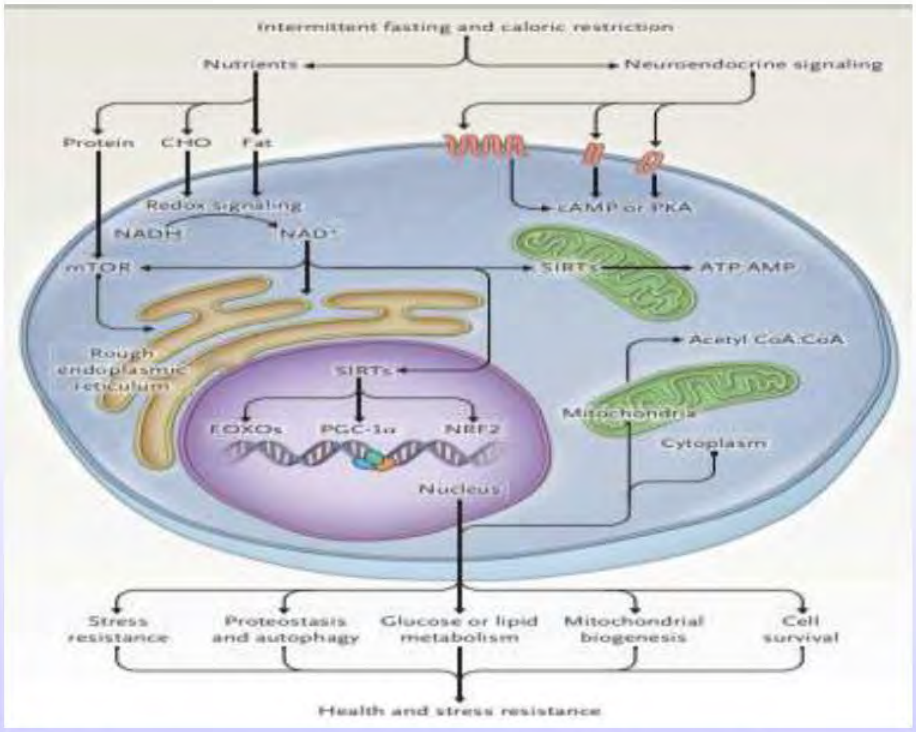
MEDICAL SCIENCES

Cancer causing genes downregulated "Turned off"

red= turned on; green=turned off

Effects of Intermittent Fasting on Health, Aging, and Disease

Rafael de Cabo, Ph.D., and Mark P. Mattson, Ph.D.



N ENGL J MED 381;26 NEJM.ORG DECEMBER 26, 2019

Four Types of Fasting

1. Water Fast
2. Alternating Days
3. Time Restricted
4. Fasting Mimicking

Botanicals and dietary supplements

- TNTC (too numerous to count)
- Potential risks and side effects
- Several herbs have powerful
  - antioxidant
  - anti-inflammatory
  - antineoplastic properties
- Some may counteract with medicines
- Herbal Medicine is a specialty
- Practitioners with experience
- **Naturopathic Medicine**

Botanicals and dietary supplements (cont)

- **Curcumin (turmeric)**
- **Probiotics**
- **Ayurvedic herbs**
- **Traditional Chinese Medicine**
- **Treatment of mouth sores (mucositis)**
  - Lysine
  - Glutamine
- **Alpha Lipoic Acid**
  - Prevention and treatment of Neuropathy
- **Aloe vera (skin and GI)**

Ginger root – Ginger Root Tea
For nausea, vomiting, gastroparesis

Botanicals and dietary supplements (cont)

- For altered taste: ginger, honey, lemon, black salt
- Vitamin C
- Vitamin D
- Melatonin
- Aromatherapy
- Homeopathy
- Medicinal mushrooms (long list)
- Medical cannabis. CBD
- Mistletoe (Viscum Album)
- **Many, many others. This is a brief summary**

Care After Chemotherapy: Peripheral Neuropathy, Cannabis for Symptom Control, and Mindfulness

Deanna Teoh, MD, Thomas J. Smith, MD, Mihae Song, MD, and Nick M. Spirtos, MD

ASCO Educational Book. 2018. University of Minnesota, Johns Hopkins University

OVERVIEW

As cancer therapies improve, patients are living longer. With these improvements in therapy comes a responsibility to optimize patients' quality of life during cancer therapy and beyond. This report reviews three timely and important topics. The first section reviews the mechanism underlying chemotherapy-induced peripheral neuropathy and evaluates the evidence for interventions to prevent and treat peripheral neuropathy. It also provides a framework for approaching the diagnosis and management of this common and bothersome side effect. The second section addresses the controversial but effective use of cannabinoids for cancer and chemotherapy symptoms. Although clinical trials are difficult to conduct because of the political and social stigma of this class of drugs, this review provides evidence of the efficacy of cannabinoids for treatment of pain and nausea. The last section addresses the mind-body connection, with a focus on the negative emotions patients with cancer often experience. This section assesses the literature regarding mindfulness-based programs to improve cancer-related stress. These three topics may appear unrelated, but all address one common goal: treating the body and the mind to optimize quality of life during and after cancer therapy.

Quantity of life for many cancer patients is improving steadily; now we need to do the same for quality of life. — Peter Cardy, Chief Executive, Macmillan Cancer Support

Most patients with cancer cannot wait to complete their treatment. But healing is not complete when treatment stops. Many patients have lingering physical side effects from their cancer or their treatment, including but not limited to pain, neuropathy, fatigue, physical weakness, sexual dysfunction, and altered body image. Most patients also have strong emotions associated with their cancer diagnosis and treatment, and this can further augment the physical side effects. This review provides an introduction to treatment of some of these long-term effects, including prevention and management of chemotherapy-induced peripheral neuropathy, the medicinal effects of cannabis and

we have learned from medical oncology, palliative medicine, and neuromodulation about chemotherapy-induced peripheral neuropathy (CIPN). The only thing good thing to say about CIPN is that it indicates maximal tolerance of the organism and *might* be good for outcomes; median overall survival of patients with pancreatic cancer in a nab-paclitaxel trial who developed grade III versus grade 0 CIPN was 15 months compared 6 months (HR 0.33; $p < .0001$).[1] First, take CIPN seriously. It occurs in 30% to 40% of people receiving platinums, taxanes, proteosome inhibitors, and an ever-increasing number of drugs.[2] Sensory neuropathy may be worse in black or African-American women.[3] Only recently have we recognized the phenomena of "coasting," wherein the damage may continue for months after the treatment ends, especially after treatment with oxaliplatin or cisplatin.[4] CIPN has long-standing consequences, with 47% of people reporting significant bothersome symptoms 6 years

GASTROINTESTINAL (NONCOLORECTAL) CANCER

Intravenous vitamin C in combination with gemcitabine and erlotinib in subjects with metastatic pancreatic cancer.

D. Monti , A. Newberg , S. J. Littman , M. Mathews , N. Lewis , E. P. Mitchell

Show Less

Myrna Brind Center for Integrative Medicine, Philadelphia, PA; Kimmel Cancer Center of Thomas Jefferson University, Philadelphia, PA; Kimmel Cancer Center at Thomas Jefferson University, Philadelphia, PA

Journal of Clinical Oncology. 2011

Abstract

e14547

Background: This open label single institution phase I trial was performed to determine the safety of high dose intravenous vitamin C in combination with gemcitabine and erlotinib therapy in advanced pancreatic cancer. **Methods:** 9 subjects (3 male, 6 female) with pancreatic cancer metastatic to the liver and other organs were recruited to receive an 8 week cycle of intravenous vitamin C (escalating doses from 50g/day to 75 mg/day to 100g/day) given three times per week with gemcitabine 1,000mg/m^2/wk and erlotinib 100 mg daily. One subject enrolled but dropped out prior to treatment. A second did not complete the 8-week protocol. Laboratory values and adverse events were monitored throughout. Subjects received either a CT of chest, abdomen, pelvis or a whole-body PET CT to evaluate for response. **Results:** There were 9 adverse events in the treated subjects. Five subjects had a platelet count less than 100K, often observed with gemcitabine. Two subjects developed thromboembolic disease. Two subjects expired prior to the follow up evaluation at 8 weeks. One subject died following cerebrovascular accident. The other subject developed a bowel perforation and died. 7 of 8 subjects underwent pre and post treatment CT or PET scans. Of these, two had a PR showing improvement in size and metabolic activity in both the primary and at sites of metastases. Three subjects had stable disease and two subjects had progression of disease at 8 weeks. **Conclusions:** The safety data do not reveal adverse events other than what might be expected with pancreatic cancer and/or treatment with chemotherapy. Five of the subjects had either improvement or stable disease. It should be noted that the target maximal dose for intravenous vitamin C was 100g/day which only one subject has received and that subject did demonstrate improvement. This study supports the use of high dose intravenous vitamin C in patients with metastatic pancreatic cancer. Future randomized, controlled trials with a larger number of patients will be needed to better evaluate whether intravenous vitamin C is valuable in the treatment of pancreatic cancer. A phase II trial is planned at the RP2D.

COMPANION ARTICLES

No companion articles

ARTICLE CITATION

DOI: 10.1200/jco.2011.29.15_suppl.e14547
Journal of Clinical Oncology 29, no. 15_suppl

Published online May 20, 2011.

WE RECOMMEND

VOLUME 32 · NUMBER 10 · APRIL 1 2014

JOURNAL OF CLINICAL ONCOLOGY

ORIGINAL REPORT

Randomized, Controlled Trial of Yoga in Women With Breast Cancer Undergoing Radiotherapy

Kavita D. Chandwani, George Perkins, Hongasandra Ramarao Nagendra, Nelamangala V. Raghuram, Amy Spelman, Raghuram Nagarathna, Kayla Johnson, Adoneca Fortier, Banu Arun, Qi Wei, Clemens Kirschbaum, Robin Haddad, G. Stephen Morris, Janet Scheetz, Alejandro Chaoul, and Lorenzo Cohen

Kavita D. Chandwani, University of Rochester Medical Center, Rochester, NY; Kavita D. Chandwani, George Perkins, Amy Spelman, Kayla Johnson, Adoneca Fortier, Banu Arun, Qi Wei, Robin Haddad, Janet Scheetz, Alejandro Chaoul, and Lorenzo Cohen, The University of Texas MD Anderson Cancer Center, Houston, TX; G. Stephen Morris, St. Jude Children's Research Hospital, Memphis, TN; Hongasandra Ramarao Nagendra, Nelamangala V. Raghuram, Raghuram Nagarathna, Swami Vivekananda Yoga Anusandhana Samsthana, Bengaluru, India; and Clemens Kirschbaum, Technical University of Dresden, Dresden, Germany.

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Presented in part at the American Psychosomatic Society Annual Meeting, San Antonio, TX, March 2011; the American Society of Clinical Oncology Annual Meeting, Chicago, IL, June 2011; and the International Congress of North American Consortium of Comple-

See accompanying article on page 1040

ABSTRACT

Purpose
Previous research incorporating yoga (YG) into radiotherapy (XRT) for women with breast cancer finds improved quality of life (QOL). However, shortcomings in this research limit the findings.

Patients and Methods
Patients with stages 0 to III breast cancer were recruited before starting XRT and were randomly assigned to YG (n = 53) or stretching (ST; n = 56) three times a week for 6 weeks during XRT or waitlist (WL; n = 54) control. Self-report measures of QOL (Medical Outcomes Study 36-item short-form survey; primary outcomes), fatigue, depression, and sleep quality, and five saliva samples per day for 3 consecutive days were collected at baseline, end of treatment, and 1, 3, and 6 months later.

Results
The YG group had significantly greater increases in physical component scale scores compared with the WL group at 1 and 3 months after XRT ($P = .01$ and $P = .01$). At 1, 3, and 6 months, the YG group had greater increases in physical functioning compared with both ST and WL groups ($P < .05$), with ST and WL differences at only 3 months ($P < .02$). The group differences were similar for general health reports. By the end of XRT, the YG and ST groups also had a reduction in fatigue ($P < .05$). There were no group differences for mental health and sleep quality. Cortisol slope was steepest for the YG group compared with the ST and WL groups at the end ($P = .023$ and $P = .008$) and 1 month after XRT ($P = .05$ and $P = .04$).

Conclusion
YG improved QOL and physiological changes associated with XRT beyond the benefits of simple ST exercises, and these benefits appear to have long-term durability.

J Clin Oncol 32:1058-1065. © 2014 by American Society of Clinical Oncology

VOLUME 32 · NUMBER 10 · APRIL 1 2014

JOURNAL OF CLINICAL ONCOLOGY

ORIGINAL REPORT

Yoga's Impact on Inflammation, Mood, and Fatigue in Breast Cancer Survivors: A Randomized Controlled Trial

Janice K. Kiecolt-Glaser, Jeanette M. Bennett, Rebecca Andridge, Juan Peng, Charles L. Shapiro, William B. Malarkey, Charles F. Emery, Rachel Layman, Ewa E. Mrozek, and Ronald Glaser

See accompanying article on page 1058

All authors: The Ohio State University, Columbus, OH.

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Terms in blue are defined in the glossary, found at the end of this article and online at www.jco.org.

Authors' disclosures of potential conflicts of interest and author contributions are found at the end of this article.

Clinical trial information: NCT00486525.

Corresponding author: Janice K. Kiecolt-Glaser, PhD, Institute for Behavioral Medicine Research, The Ohio State University College of Medicine, 460 Medical Center Dr, Room 130C, Columbus, OH 43210; e-mail: Janice.Kiecolt-Glaser@osumc.edu.

0732-183X/14/3210w-1040w/$20.00

DOI: 10.1200/JCO.2013.51.8860

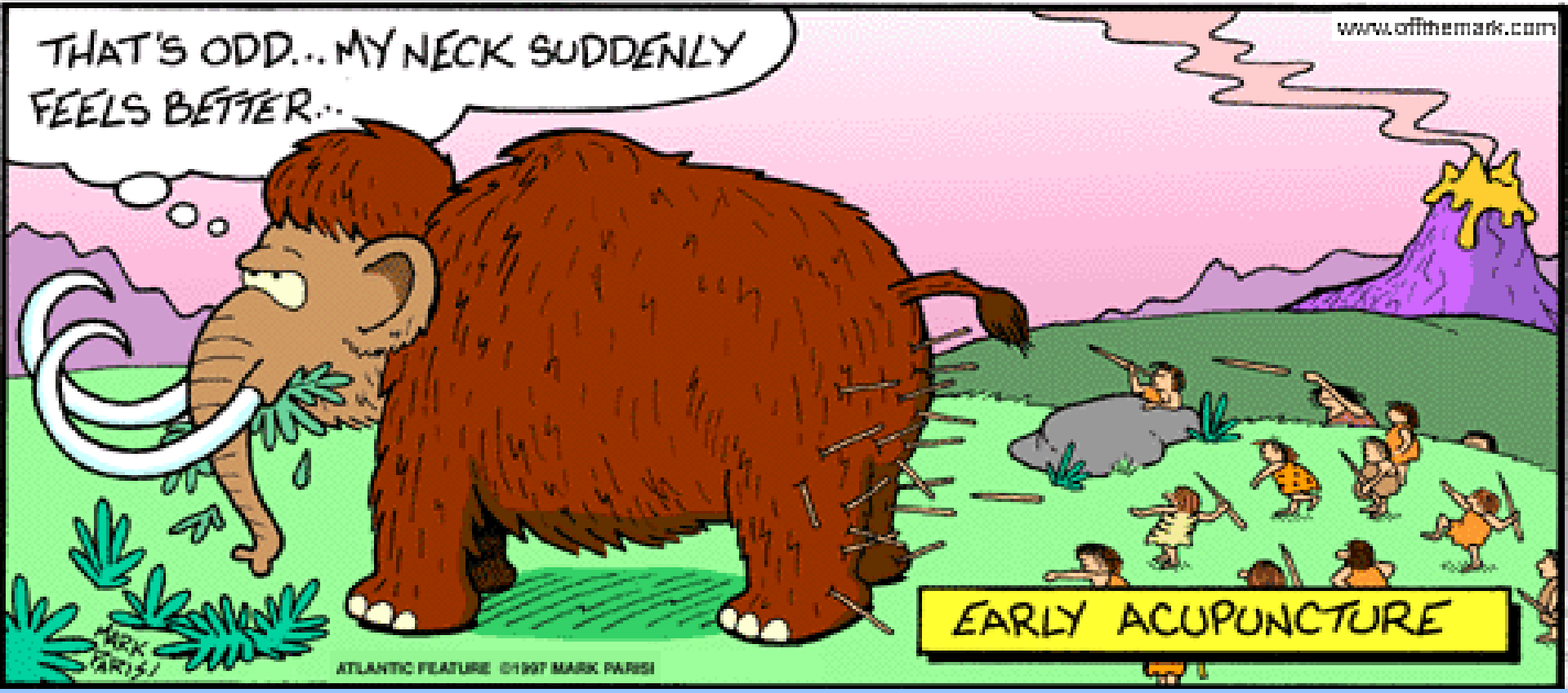
A B S T R A C T

Purpose
To evaluate yoga's impact on inflammation, mood, and fatigue.

Patients and Methods
A randomized controlled 3-month trial was conducted with two post-treatment assessments of 200 breast cancer survivors assigned to either 12 weeks of 90-minute twice per week hatha yoga classes or a wait-list control. The main outcome measures were lipopolysaccharide-stimulated production of proinflammatory cytokines interleukin-6 (IL-6), tumor necrosis factor alpha (TNF-α), and interleukin-1β (IL-1β), and scores on the Multidimensional Fatigue Symptom Inventory-Short Form (MFSI-SF), the vitality scale from the Medical Outcomes Study 36-item Short Form (SF-36), and the Center for Epidemiological Studies-Depression (CES-D) scale.

Results
Immediately post-treatment, fatigue was not lower ($P > .05$) but vitality was higher ($P = .01$) in the yoga group compared with the control group. At 3 months post-treatment, fatigue was lower in the yoga group ($P = .002$), vitality was higher ($P = .01$), and IL-6 ($P = .027$), TNF-α ($P = .027$), and IL-1β ($P = .037$) were lower for yoga participants compared with the control group. Groups did not differ on depression at either time ($P > .2$). Planned secondary analyses showed that the frequency of yoga practice had stronger associations with fatigue at both post-treatment visits ($P = .019$; $P < .001$), as well as vitality ($P = .016$; $P = .0045$), but not depression ($P > .05$) than simple group assignment; more frequent practice produced larger changes. At 3 months post-treatment, increasing yoga practice also led to a decrease in IL-6 ($P = .01$) and IL-1β ($P = .03$) production but not in TNF-α production ($P > .05$).

Conclusion
Chronic inflammation may fuel declines in physical function leading to frailty and disability. If yoga dampens or limits both fatigue and inflammation, then regular practice could have substantial health benefits.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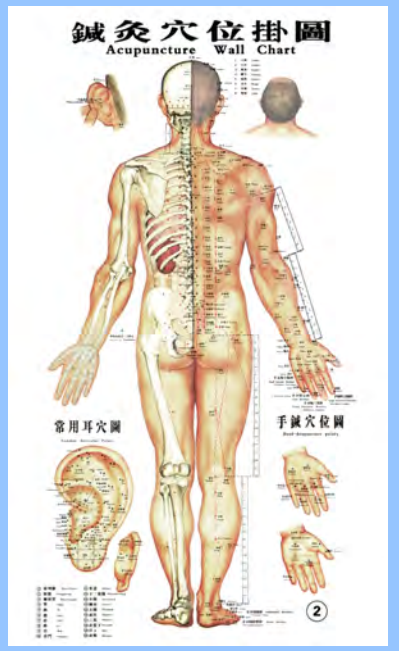
TCM and Acupuncture

- **Whole systems approach**
- Acupuncture points. Meridians
- Chi (Qi: vital energy)
- **Extensive Scientific Literature**
- ***Improve symptoms caused by cancer***
- ***Mitigate side effects, attenuate toxicity***
- ***Enhance therapeutic effect of medical treatments***
- Restores health, immunity and well being



Acupuncture in Oncology

- Pain management
- Xerostomia after Head and Neck Radiation Rx
- Nausea, vomiting
- Anorexia. Weight Loss
- Vasomotor symptoms (hot flashes)
- Neuropathy
- Fatigue
- Stress, fear, anxiety, depression
- Regulate body functions
- Promotes sense of well-being and improves QOL

VOLUME 34 · NUMBER 15 · MAY 20, 2016

JOURNAL OF CLINICAL ONCOLOGY

ORIGINAL REPORT

Acupuncture As an Integrative Approach for the Treatment of Hot Flashes in Women With Breast Cancer: A Prospective Multicenter Randomized Controlled Trial (AcCliMaT)

Grazia Lesi, Giorgia Razzini, Muriel Assunta Musti, Elisa Stivanello, Chiara Petrucci, Benedetta Benedetti, Ermanno Rondini, Maria Bernadette Ligabue, Laura Scaltriti, Alberto Botti, Fabrizio Artioli, Pamela Mancuso, Francesco Cardini, and Paolo Pandolfi

Grazia Lesi, Muriel Assunta Musti, Elisa Stivanello, Chiara Petrucci, Pamela Mancuso, and Paolo Pandolfi, Bologna Local Health Authority; Francesco Cardini, Health and Social Agency of Emilia-Romagna Region, Bologna; Giorgia Razzini, Benedetta Benedetti, and Fabrizio Artioli, Civil Hospital, Carpi; Ermanno Rondini, Istituti di Ricovero e Cura a Carattere Scientifico–Arcispedale S. Maria Nuova di Reggio Emilia, Reggio Emilia; Maria Bernadette Ligabue, Civil Hospital, Coreggio; Laura Scaltriti, Civil Hospital, Guastalla; and Alberto Botti, Hospital of Piacenza, Piacenza, Italy.

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Written on behalf of the AcCliMaT collaborators.

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G.L. and G.R. contributed equally to this work.

Presented at the Fifth European Congress of Integrative Medicine, Florence, Italy, September 21-22, 2012.

Authors' disclosures of potential conflicts of interest are found in the article online at www.jco.org. Author contributions are found at the end of this article.

Clinical trial information: NCT01275807.

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ABSTRACT

Purpose

To determine the effectiveness of acupuncture for the management of hot flashes in women with breast cancer.

Patients and Methods

We conducted a pragmatic, randomized controlled trial comparing acupuncture plus enhanced self-care versus enhanced self-care alone. A total of 190 women with breast cancer were randomly assigned. Random assignment was performed with stratification for hormonal therapy; the allocation ratio was 1:1. Both groups received a booklet with information about climacteric syndrome and its management to be followed for at least 12 weeks. In addition, the acupuncture group received 10 traditional acupuncture treatment sessions involving needling of predefined acupoints. The primary outcome was hot flash score at the end of treatment (week 12), calculated as the frequency multiplied by the average severity of hot flashes. The secondary outcomes were climacteric symptoms and quality of life, measured by the Greene Climacteric and Menopause Quality of Life scales. Health outcomes were measured for up to 6 months after treatment. Expectation and satisfaction of treatment effect and safety were also evaluated. We used intention-to-treat analyses.

Results

Of the participants, 105 were randomly assigned to enhanced self-care and 85 to acupuncture plus enhanced self-care. Acupuncture plus enhanced self-care was associated with a significantly lower hot flash score than enhanced self-care at the end of treatment ($P < .001$) and at 3- and 6-month post-treatment follow-up visits ($P = .0028$ and .001, respectively). Acupuncture was also associated with fewer climacteric symptoms and higher quality of life in the vasomotor, physical, and psychosocial dimensions ($P < .05$).

Conclusion

Acupuncture in association with enhanced self-care is an effective integrative intervention for managing hot flashes and improving quality of life in women with breast cancer.

J Clin Oncol 34:1795-1802. © 2016 by American Society of Clinical Oncology

VOLUME 28 · NUMBER 15 · MAY 20 2010

JOURNAL OF CLINICAL ONCOLOGY

ORIGINAL REPORT

Acupuncture for Pain and Dysfunction After Neck Dissection: Results of a Randomized Controlled Trial

David G. Pfister, Barrie R. Cassileth, Gary E. Deng, K. Simon Yeung, Jennifer S. Lee, Donald Garrity, Angel Cronin, Nancy Lee, Dennis Kraus, Ashok R. Shaha, Jatin Shah, and Andrew J. Vickers

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Submitted November 11, 2009; accepted February 16, 2010; published online ahead of print at www.jco.org on April 20, 2010.

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Presented in part at the 44th Annual Meeting of the American Society of Clinical Oncology, May 30-June 3, 2008, Chicago, IL.

Authors' disclosures of potential conflicts of interest and author contributions are found at the end of this article.

Clinical Trials repository link available on JCO.org.

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ABSTRACT

Purpose

To determine whether acupuncture reduces pain and dysfunction in patients with cancer with a history of neck dissection. The secondary objective is to determine whether acupuncture relieves dry mouth in this population.

Patients and Methods

Patients at a tertiary cancer center with chronic pain or dysfunction attributed to neck dissection were randomly assigned to weekly acupuncture versus usual care (eg, physical therapy, analgesia, and/or anti-inflammatory drugs, per patient preference or physician recommendation) for 4 weeks. The Constant-Murley score, a composite measure of pain, function, and activities of daily living, was the primary outcome measure. Xerostomia, a secondary end point, was assessed using the Xerostomia Inventory.

Results

Fifty-eight evaluable patients were accrued and randomly assigned from 2004 to 2007 (28 and 30 patients on acupuncture and control arms, respectively). Constant-Murley scores improved more in the acupuncture group (adjusted difference between groups = 11.2; 95% CI, 3.0 to 19.3; $P = .008$). Acupuncture produced greater improvement in reported xerostomia (adjusted difference in Xerostomia Inventory = –5.8; 95% CI, –0.9 to –10.7; $P = .02$).

Conclusion

Significant reductions in pain, dysfunction, and xerostomia were observed in patients receiving acupuncture versus usual care. Although further study is needed, these data support the potential role of acupuncture in addressing post–neck dissection pain and dysfunction, as well as xerostomia.

J Clin Oncol 28:2565-2570. © 2010 by American Society of Clinical Oncology

Randomized, Blinded, Sham-Controlled Trial of Acupuncture for the Management of Aromatase Inhibitor–Associated Joint Symptoms in Women With Early-Stage Breast Cancer

Katherine D. Crew, Jillian L. Capodice, Heather Greenlee, Lois Brafman, Deborah Fuentes, Danielle Awad, Wei Yann Tsai, and Dawn L. Hershman

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Authors' disclosures of potential conflicts of interest and author contributions are found at the end of this article.

Clinical Trials repository link available on JCO.org.

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ABSTRACT

Purpose
Women with breast cancer (BC) treated with aromatase inhibitors (AIs) may experience joint symptoms that can lead to discontinuation of effective therapy. We examined whether acupuncture improves AI-induced arthralgias in women with early-stage BC.

Methods
We conducted a randomized, controlled, blinded study comparing true acupuncture (TA) versus sham acupuncture (SA) twice weekly for 6 weeks in postmenopuasal women with BC who had self-reported musculoskeletal pain related to AIs. TA included full body/auricular acupuncture and joint-specific point prescriptions, whereas SA involved superficial needle insertion at nonacupoint locations. Outcome measures included the Brief Pain Inventory–Short Form (BPI-SF), Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), and Modified Score for the Assessment of Chronic Rheumatoid Affections of the Hands (M-SACRAH) obtained at baseline and at 3 and 6 weeks.

Results
Of 51 women enrolled, 43 women were randomly assigned and 38 were evaluable. Baseline characteristics were comparable between the two groups. Our primary end point was the difference in mean BPI-SF worst pain scores at 6 weeks, which was lower for TA compared with SA (3.0 *v* 5.5; $P < .001$). We also found differences between TA and SA in pain severity (2.6 *v* 4.5; $P = .003$) and pain-related interference (2.5 *v* 4.5; $P = .002$) at 6 weeks. Similar findings were seen for the WOMAC and M-SACRAH scores. The acupuncture intervention was well-tolerated.

Conclusion
Women with AI-induced arthralgias treated with TA had significant improvement of joint pain and stiffness, which was not seen with SA. Acupuncture is an effective and well-tolerated strategy for managing this common treatment-related side effect.

J Clin Oncol 28:1154-1160. © 2010 by American Society of Clinical Oncology

VOLUME 30 · NUMBER 36 · DECEMBER 20 2012

JOURNAL OF CLINICAL ONCOLOGY

ORIGINAL REPORT

Acupuncture for Cancer-Related Fatigue in Patients With Breast Cancer: A Pragmatic Randomized Controlled Trial

Alexander Molassiotis, Joy Bardy, Jennifer Finnegan-John, Peter Mackereth, David W. Ryder, Jacqueline Filshie, Emma Ream, and Alison Richardson

See accompanying editorial on page 4449

Alex Molassiotis and Joy Bardy, School of Nursing, Midwifery, and Social Work, University of Manchester; Peter Mackereth and David W. Ryder, Christie National Health Service (NHS) Foundation Trust, Manchester; Jennifer Finnegan-John and Emma Ream, Florence Nightingale School of Nursing and Midwifery, King's College London; Jacqueline Filshie, The Royal Marsden Hospital NHS Foundation Trust, London; and Alison Richardson, University of Southampton, Southampton, United Kingdom.

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0732-183X/12/3036-4470/$20.00

DOI: 10.1200/JCO.2012.41.6222

ABSTRACT

Purpose
We aimed to assess the effectiveness of acupuncture for cancer-related fatigue (CRF) in patients with breast cancer.

Patients and Methods
We conducted a pragmatic, randomized controlled trial comparing acupuncture with enhanced usual care. Three hundred two outpatients with breast cancer participated. We randomly assigned 75 patients to usual care and 227 patients to acupuncture plus usual care (random assignment of 1:3 respectively) with minimization controlling for baseline general fatigue and maintenance treatment. Treatment was delivered by acupuncturists once a week for 6 weeks through needling three pairs of acupoints. The usual care group received a booklet with information about fatigue and its management. Primary outcome was general fatigue at 6 weeks, measured with the Multidimensional Fatigue Inventory (MFI). Other measurements included the Hospital Anxiety and Depression Scale, Functional Assessment of Cancer Therapy–General quality-of-life scale, and expectation of acupuncture effect. Analyses were by intention to treat.

Results
Two hundred forty-six of 302 patients randomly assigned provided complete data at 6 weeks. The difference in the mean General Fatigue score, between those who received the intervention and those who did not, was −3.11 (95% CI, −3.97 to −2.25; $P < .001$). The intervention also improved all other fatigue aspects measured by MFI, including Physical Fatigue and Mental Fatigue (acupuncture effect, −2.36 and −1.94, respectively; both at $P < .001$), anxiety and depression (acupuncture effect, −1.83 and −2.13, respectively; both at $P < .001$), and quality of life (Physical Well-Being effect, 3.30; Functional Well-Being effect, 3.57; both at $P < .001$; Emotional Well-Being effect, 1.93; $P = .001$; and Social Functioning Well-Being effect, 1.05; $P < .05$).

Conclusion
Acupuncture is an effective intervention for managing the symptom of CRF and improving patients' quality of life.

J Clin Oncol 30:4470-4476. © 2012 by American Society of Clinical Oncology

Massage therapy in cancer

- Efficacy
- Is it safe in cancer? YES (in the right hands)
- Indications: multiple reasons!
- Therapists have specific awareness:
  - Risk of infections
  - Risk of DVT (clots)
  - Risk of fractures (bone metastasis)
  - Skin sensitivity (from radiation and/or chemo)
- Lymphedema therapy
- **Requires Special Training**

ASCO Journal of Oncology Practice. January 2017

ReCAPs (Research Contributions Abbreviated for Print) provide a structured, one-page summary of each paper highlighting the main findings and significance of the work. The full version of the article is available online at jop.ascopubs.org.

Integrating Oncology Massage Into Chemoinfusion Suites: A Program Evaluation

Jun J. Mao, Karen E. Wagner, Christina M. Seluzicki, Audra Hugo, Laura K. Galindez, Heather Sheaffer, and Kevin R. Fox

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Disclosures provided by the authors are available with this article at jop.ascopubs.org.

DOI: 10.1200/JOP.2016.015081; published online ahead of print at jop.ascopubs.org on January 3, 2017.

QUESTION ASKED: Can a clinical oncology massage program be safely and effectively integrated into chemoinfusion units to provide symptom control for patients with breast cancer receiving chemotherapy?

SUMMARY ANSWER: A clinical oncology massage program can be safely and effectively implemented into chemoinfusion suites by addressing common patient-level barriers to access of cost, time, and travel, and the institutional-level barrier of space.

WHAT WE DID: We developed an integrative oncology massage program for patients with breast cancer in private chemoinfusion suites at an academic hospital and evaluated its outcomes using tablet-based technology.

WHAT WE FOUND: The program was well received with no adverse events noted. Patients reported significant decreases in anxiety, nausea, pain, and fatigue.

BIAS, CONFOUNDING FACTORS, REAL-LIFE IMPLICATIONS: We evaluated the immediate effect of oncology massage on symptom control. This approach, along with the potential for bias due to social desirability and the lack of a control group, may overestimate the benefit of massage. Despite the limitations, our study provides initial evidence that an oncology massage program can be safely and effectively integrated into chemoinfusion suites to provide symptom relief to patients with breast cancer. JOP

Support Groups

- Patients
- Caregivers. Caretakers
- Children
- Team approach:
  - Social Services
  - Psychologists and Counselors
  - Bereavement
- Survivorship. Thrivers. “Metathrivers”
- Dr. Carl Simonton: pioneer in “Psycho-neuro-immunology”
- **APOS**: American Psychosocial Oncology Society

Home About Us Resources for People Affected by Cancer Join TODAY!

APOS
american psychosocial oncology society
Advancing the science and practice of psychosocial oncology.

About Professionals Conferences Awards Membership Early Career

2022 Annual Conference

Save the Date!

Call for Symposia, Poster and Podium Abstracts is OPEN!

Call for Proposals HERE

Empowerment Techniques (MBM)

- Visualization
- Contemplation
- Guided Imagery
- Biofeedback
- **Virtual Reality**
- **Mindfulness** (MBSR)
  - Jon Kabat-Zinn: Emeritus Professor of Medicine
- **Meditation** (Many disciplines and traditions)

original reports

Targeting Depressive Symptoms in Younger Breast Cancer Survivors: The Pathways to Wellness Randomized Controlled Trial of Mindfulness Meditation and Survivorship Education

Julienne E. Bower, PhD[1,2,3,4]; Ann H. Partridge, MD[5,6,7]; Antonio C. Wolff, MD[8]; Elissa D. Thomer, MHS[8]; Michael R. Irwin, MD[1,2,3,4]; Hadine Joffe, MD[9,10,11]; Laura Petersen, MS[4]; Catherine M. Crespi, PhD[4,12]; and Patricia A. Ganz, MD[4,13,14]

Journal of Clinical Oncology. August 2021. UCLA, Harvard, Johns Hopkins

abstract

PURPOSE Younger women are at risk for depression and related symptoms following breast cancer. The Pathways to Wellness study, a randomized, multi-institution, three-arm trial, tested the efficacy of two behavioral interventions for younger breast cancer survivors with elevated depressive symptoms: mindful awareness practices (MAPs) and survivorship education (SE) (Clincaltrials.gov identifier: NCT03025139).

METHODS Women diagnosed with breast cancer at or before 50 years of age who had completed treatment and had elevated depressive symptoms were randomly assigned to 6 weeks of MAPs, SE, or wait-list control (WLC). Assessments were conducted preintervention and postintervention and at 3-month and 6-month post-intervention follow-ups. Analyses compared each intervention to WLC using linear mixed models. The primary outcome was change in depressive symptoms from preintervention to postintervention on the Center for Epidemiologic Studies-Depression Scale; secondary outcomes included change in fatigue, insomnia, and vasomotor symptoms.

RESULTS Two hundred forty-seven women (median age = 46 years) were randomly assigned to MAPs (n = 85), SE (n = 81), or WLC (n = 81). MAPs and SE led to significant decreases in depressive symptoms from preintervention to postintervention relative to WLC (mean change relative to WLC [95% CI]: MAPs, –4.7 [–7.5 to –1.9]; SE, –4.0 [–6.9 to –1.1]), which persisted at 6-month follow-up for MAPs (mean change relative to WLC [95% CI]: MAPs, –3.7 [–6.6 to –0.8]; SE, –2.8 [–5.9 to 0.2]). MAPs, but not SE, also had beneficial effects on fatigue, insomnia, and vasomotor symptoms that persisted at 6-month follow-up ($P < .05$).

CONCLUSION Mindfulness meditation and SE reduced depressive symptoms in younger breast cancer survivors. These interventions can be widely disseminated over virtual platforms and have significant potential benefit for quality of life and overall survivorship in this vulnerable group.

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editorials

Well-Being During a Time of Crisis and Beyond: Supporting a Culture of Mindfulness in Oncology Practices

Nathan R. Handley, MD, MBA[1]; Oana Tomescu, MD, PhD[2]; and Ana Maria Lopez, MD, MPH[1]

Journal of Clinical Oncology. September 2020. Thomas Jefferson University and U. Penn

In the era of the novel coronavirus, SARS-CoV-2, health care workers are not only at high risk for contracting the disease, but are also at significant risk for depression, anxiety, insomnia, and distress.[1] The stress of the pandemic affects strained health professionals who are already suffering. Nearly a third of physicians in training are experiencing depression or depressive symptoms.[2] Burnout, depression, and suicide are increasing overall among health care workers.[3,4] Oncology care professionals are not immune from adverse mental health effects; the entire interprofessional oncology team, including physicians, physicians in training, nurses, and other staff, may experience burnout. Studies of oncologists describe symptoms of burnout ranging from 20%-71%, with some reports of higher rates in oncologists under 40 years of age.[5-8] For oncology physicians in training, burnout rates between 44% and 88% have been reported.[9-12] Similar levels have been described for nurses and other oncology health professions.[13-16]

Recognizing the stress faced by oncology health professionals, the ASCO Quality Training Program dedicated its entire 6-month program in the spring of 2019 to oncology team wellness and burnout prevention.[17] During the COVID-19 pandemic, the risk for the oncology team is heightened, as bandwidth is stretched thin and concern for our already vulnerable

minds grounded in the present moment. Together, these techniques can be thought of as mind-body practices with the goal of improving core psychological capacities, like attention and emotional self-regulation, by focusing on present-moment awareness.[19,20] Although there are many ways to engage with mind-body practices, we will focus on mindfulness meditation, which has been frequently studied in health professionals. However, all mind-body practices are important self-care tools that enable us to care better for patients both during the COVID-19 outbreak and beyond. As Tara Brach, a well-known meditation teacher, recently noted, "our calm is contagious."[21]

Why does mindfulness make sense for oncology health professionals, and how can it best be implemented? We briefly outline the background behind the medicalization and subsequent popularization of mindfulness meditation and existing evidence for the use of meditation and other mindfulness practices in health care professionals, including oncology health care providers. We then provide examples by which oncology practices can effectively incorporate meditation practices into their culture.

THE MINDFULNESS REVOLUTION

The use of meditation in medicine is not new. Meditation has its roots in ancient Asian medical and spiritual

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JOURNAL OF CLINICAL ONCOLOGY

ORIGINAL REPORT

Examination of Broad Symptom Improvement Resulting From Mindfulness-Based Stress Reduction in Breast Cancer Survivors: A Randomized Controlled Trial

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Cecile A. Lengacher, Sophia Ramesar, Carissa Alinat, Manolete Moscoso, and Kevin E. Kip, University of South Florida College of Nursing; Jong Y. Park and Paul B. Jacobsen, H. Lee Moffitt Cancer Center and Research Institute; Branko Miladinovic and Charles E. Cox, University of South Florida Morsani College of Medicine, Tampa; Richard R. Reich, University of South Florida Sarasota-Manatee, Manatee; Versie Johnson-Mallard, University of Florida, College of Nursing, Gainesville, FL; Carly L. Paterson, National Cancer Institute, Rockville, MD; Pinky Budhrani-Shani, Texas Woman's University, Nelda C. Stark College of Nursing, Houston, TX; and Matthew Goodman, University of Virginia, Charlottesville, VA.

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The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Cancer Institute or the National Institutes of Health. This study protocol was approved by the institutional review board at the University of South Florida to ensure the

ABSTRACT

Purpose
The purpose of this randomized trial was to evaluate the efficacy of the Mindfulness-Based Stress Reduction for Breast Cancer (MBSR[BC]) program in improving psychological and physical symptoms and quality of life among breast cancer survivors (BCSs) who completed treatment. Outcomes were assessed immediately after 6 weeks of MBSR(BC) training and 6 weeks later to test efficacy over an extended timeframe.

Patients and Methods
A total of 322 BCSs were randomly assigned to either a 6-week MBSR(BC) program (n = 155) or a usual care group (n = 167). Psychological (depression, anxiety, stress, and fear of recurrence) and physical symptoms (fatigue and pain) and quality of life (as related to health) were assessed at baseline and at 6 and 12 weeks. Linear mixed models were used to assess MBSR(BC) effects over time, and participant characteristics at baseline were also tested as moderators of MBSR(BC) effects.

Results
Results demonstrated extended improvement for the MBSR(BC) group compared with usual care in both psychological symptoms of anxiety, fear of recurrence overall, and fear of recurrence problems and physical symptoms of fatigue severity and fatigue interference ($P < .01$). Overall effect sizes were largest for fear of recurrence problems ($d = 0.35$) and fatigue severity ($d = 0.27$). Moderation effects showed BCSs with the highest levels of stress at baseline experienced the greatest benefit from MBSR(BC).

Conclusion
The MBSR(BC) program significantly improved a broad range of symptoms among BCSs up to 6 weeks after MBSR(BC) training, with generally small to moderate overall effect sizes.

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JOURNAL OF CLINICAL ONCOLOGY

ORIGINAL REPORT

Effectiveness of Mindfulness-Based Stress Reduction in Mood, Breast- and Endocrine-Related Quality of Life, and Well-Being in Stage 0 to III Breast Cancer: A Randomized, Controlled Trial

Caroline J. Hoffman, Steven J. Ersser, Jane B. Hopkinson, Peter G. Nicholls, Julia E. Harrington, and Peter W. Thomas

Caroline J. Hoffman and Julia E. Harrington, The Haven, London; Steven J. Ersser, University of Hull, Hull; Jane B. Hopkinson, Cardiff University, Cardiff; Peter G. Nicholls, University of Southampton, Southampton; Peter W. Thomas, Bournemouth University, Bournemouth, United Kingdom.

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Presented at the 8th Annual International Scientific Conference for Clinicians, Researchers and Educators, Centre for Mindfulness, University of Massachusetts, Worcester, MA, April 7-11, 2010, and the 1st British Breast Cancer Research Conference, University of Nottingham, Nottingham, United Kingdom, September 15-17, 2010.

Authors' disclosures of potential conflicts of interest and author contributions are found at the end of this article.

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ABSTRACT

Purpose
To assess the effectiveness of mindfulness-based stress reduction (MBSR) for mood, breast- and endocrine-specific quality of life, and well-being after hospital treatment in women with stage 0 to III breast cancer.

Patients and Methods
A randomized, wait-listed, controlled trial was carried out in 229 women after surgery, chemotherapy, and radiotherapy for breast cancer. Patients were randomly assigned to the 8-week MBSR program or standard care. Profile of Mood States (POMS; primary outcome), Functional Assessment of Cancer Therapy–Breast (FACT-B), Functional Assessment of Cancer Therapy–Endocrine Symptoms (FACT-ES) scales and the WHO five-item well-being questionnaire (WHO-5) evaluated mood, quality of life, and well-being at weeks 0, 8, and 12. For each outcome measure, a repeated-measures analysis of variance model, which incorporated week 0 measurements as a covariate, was used to compare treatment groups at 8 and 12 weeks.

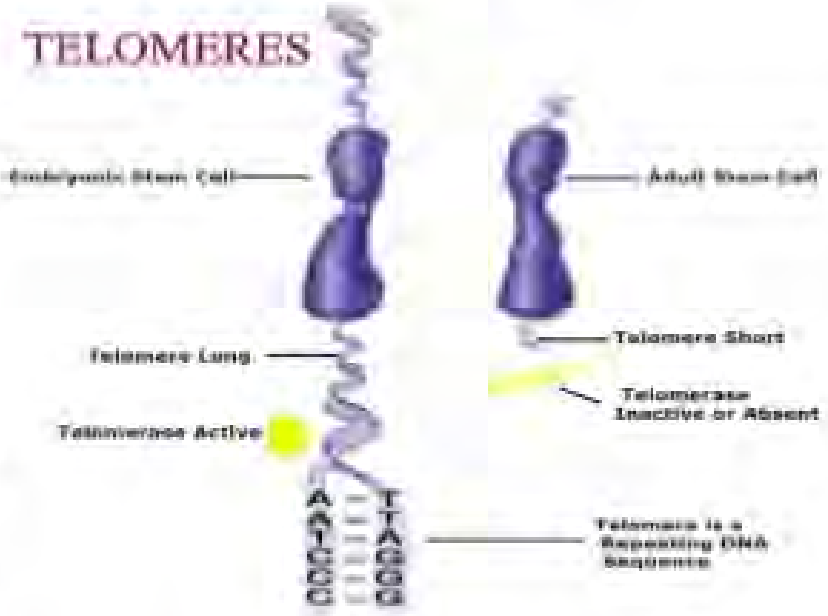
Results
There were statistically significant improvements in outcome in the experimental group compared with control group at both 8 and 12 weeks (except as indicated) for POMS total mood disturbance (and its subscales of anxiety, depression [8 weeks only], anger [12 weeks only], vigor, fatigue, and confusion [8 weeks only]), FACT-B, FACT-ES, (and Functional Assessment of Cancer Therapy subscales of physical, social [8 weeks only], emotional, and functional well-being), and WHO-5.

Conclusion
MSBR improved mood, breast- and endocrine-related quality of life, and well-being more effectively than standard care in women with stage 0 to III breast cancer, and these results persisted at three months. To our knowledge, this study provided novel evidence that MBSR can help alleviate long-term emotional and physical adverse effects of medical treatments, including endocrine treatments. MBSR is recommended to support survivors of breast cancer.

J Clin Oncol 30:1335-1342. © 2012 by American Society of Clinical Oncology

Mindfulness and cellular ageing

- Meditation may slow genetic ageing and enhance genetic repair
  - "...we propose that some forms of meditation may have salutary effects on telomere length by reducing cognitive stress and stress arousal and increasing positive states of mind and hormonal factors that may promote telomere maintenance."
    - Epel E, Daubenmier J, Moskowitz JT, Folkman S, Blackburn E. Can meditation slow rate of cellular aging? Cognitive stress, mindfulness, and telomeres. Ann N Y Acad Sci. 2009 Aug;1172:34-53.



Biofield therapies (Energy Medicine)

- Healing Touch
- Therapeutic Touch
- Reiki
- Qigong
- Tai Chi
- **Energy Healing: several different names, techniques and practices**
- **Professionals with specific experience**

HEALTH PROMOTION

Growing Healing Touch as supportive cancer care in western New York.

Suzanne M Hess, Lynda M. Beaupin

Journal of Clinical Oncology. February 2017

Abstract

176

Background: Healing Touch (HT) is a specific energy medicine modality that incorporates several techniques to balance the human energy field to help promote healing. It is a safe and non-invasive therapy that complements traditional, standard care and is recognized by NIH's National Center for Complementary and Integrative Health. HT was first introduced to cancer survivors at our NCI-designated Comprehensive Cancer Center in 2013. We demonstrate HT is well-received and easy to integrate into traditional cancer care. **Methods:** A Certified Healing Touch Practitioner taught pediatric survivors and families HT techniques, as well as trained staff and volunteers to participate in the pilot program and to offer HT sessions throughout the year. **Results:** See Table. Qualitative analysis of participant's feedback indicate benefits in the following themes: 1. Physical Symptom Relief 2. Emotional Issue Relief 3. Spiritual/Grief Support 4. Recommendation to Other Patients. **Conclusions:** Healing Touch is an energy medicine modality that is easy to teach, simple to integrate into routine cancer care, and beneficial for caregivers and survivors alike.

Year	Healing Touch	Outcomes
2012	HT Level I techniques taught to hospital volunteers/staff 8-week pilot program to teach Pediatric Caregivers Level I techniques 30 participants	5 volunteers 3 hospital staff • 50% attended all sessions • Feedback surveys indicate: - Training duration was adequate - Expectations were met - Would use HT for their children
2013	• 7 pediatric/adolescent survivors, 19 parents/caregivers, 4 siblings • 8 2-hour sessions	
2014	Collaboration with Hospice and Palliative Care Center of Western New York Healing Touch for Cancer Survivors and Caregivers	Trained volunteers Level I techniques 372 sessions given to 115 cancer patients/survivors/caregivers

DOI: 10.1200/JCO.2017.35.5_suppl.176
Journal of Clinical Oncology 35, no. 5_suppl (February 2017) 176-176.

November 2015, VOLUME 4, NUMBER suppl

Current | Available

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- healing touch
- psychoneuroimmunology
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- medicine

November 2015, Volume 4, Number suppl

INTRODUCTION

« Previous Article | Next Article »

Biofield Science and Healing: An Emerging Frontier in Medicine

Shamini Jain, PhD; John Ives, PhD; Wayne Jonas, MD; Richard Hammerschlag, PhD; David Muehsam, PhD; Cassandra Vieten, PhD; Daniel Vicario, MD; Deepak Chopra, MD, FACP; Rauni Pritten King, RN, MIH, CHTPI; Erminia Guarneri, MD, FACC

Share

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Miraglo Foundation, San Diego, California, Guarneri Integrative Health, and Academy of Integrative Health and Medicine, Duluth, Minnesota (Dr Guarneri)

Correspondence: sjain@ucsd.edu

Citation: Global Adv Health Med. 2015;4(suppl):5-7

About CHI

Our Purpose

The Consciousness and Healing Initiative (CHI) is a nonprofit collaborative of scientists, practitioners, educators, innovators and artists to lead humanity to heal ourselves. CHI augments and shares the knowledge and practice of consciousness and healing so that individuals and societies are empowered with the knowledge and tools to ignite their healing potential and thus lead to more healthy, fulfilling lives.

Our Vision

Our Vision is a healthy, peaceful society where people enjoy harmonious relationships not only within themselves and with each other, but also as sustainable stewards of our planet.

Our Values

Service

CHI is first and foremost about serving our communities –by providing resources to the general public, as well as scientists, educators and healthcare practitioners who are passionate about serving others

Multiple Perspectives

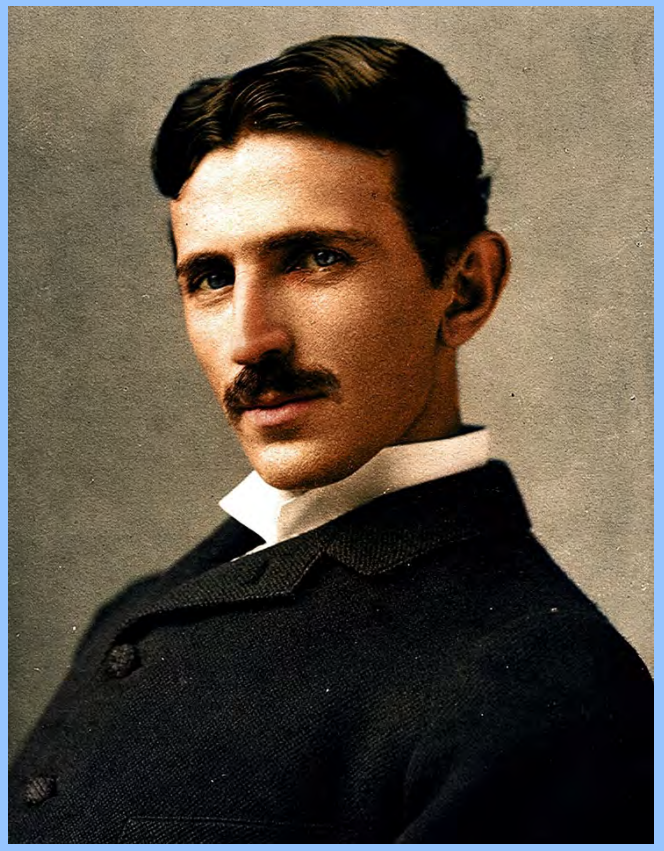
CHI welcomes the diversity and relativity of approaches to the study of consciousness and healing. We understand that no absolute scientific theory or practice can lead us to a complete knowledge of

Qi gong

Fay McGrew

“If you want to find the secrets of the Universe, think in terms of Energy, Frequency and Vibration”

Nikola Tesla (1856-1943)

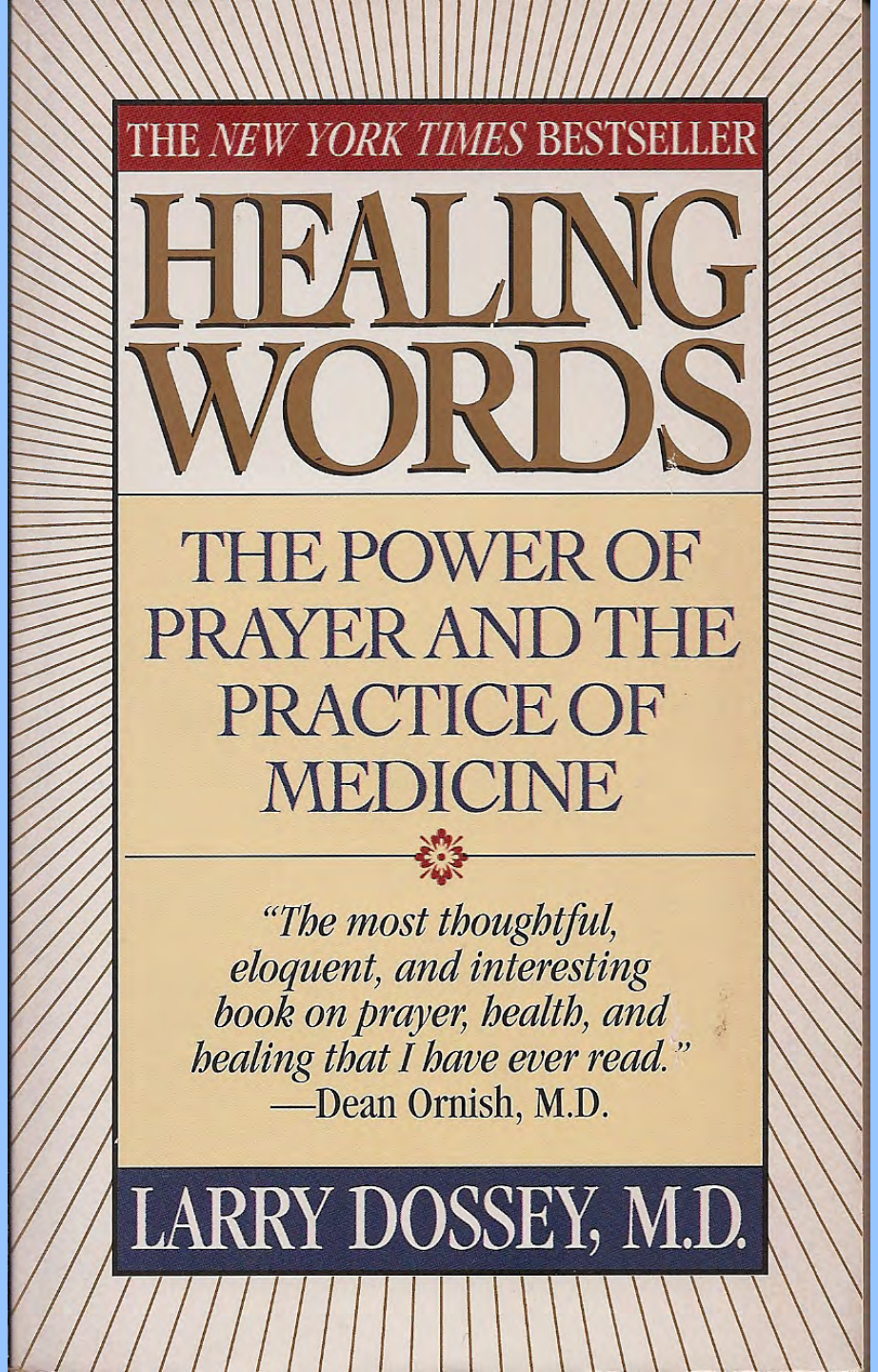


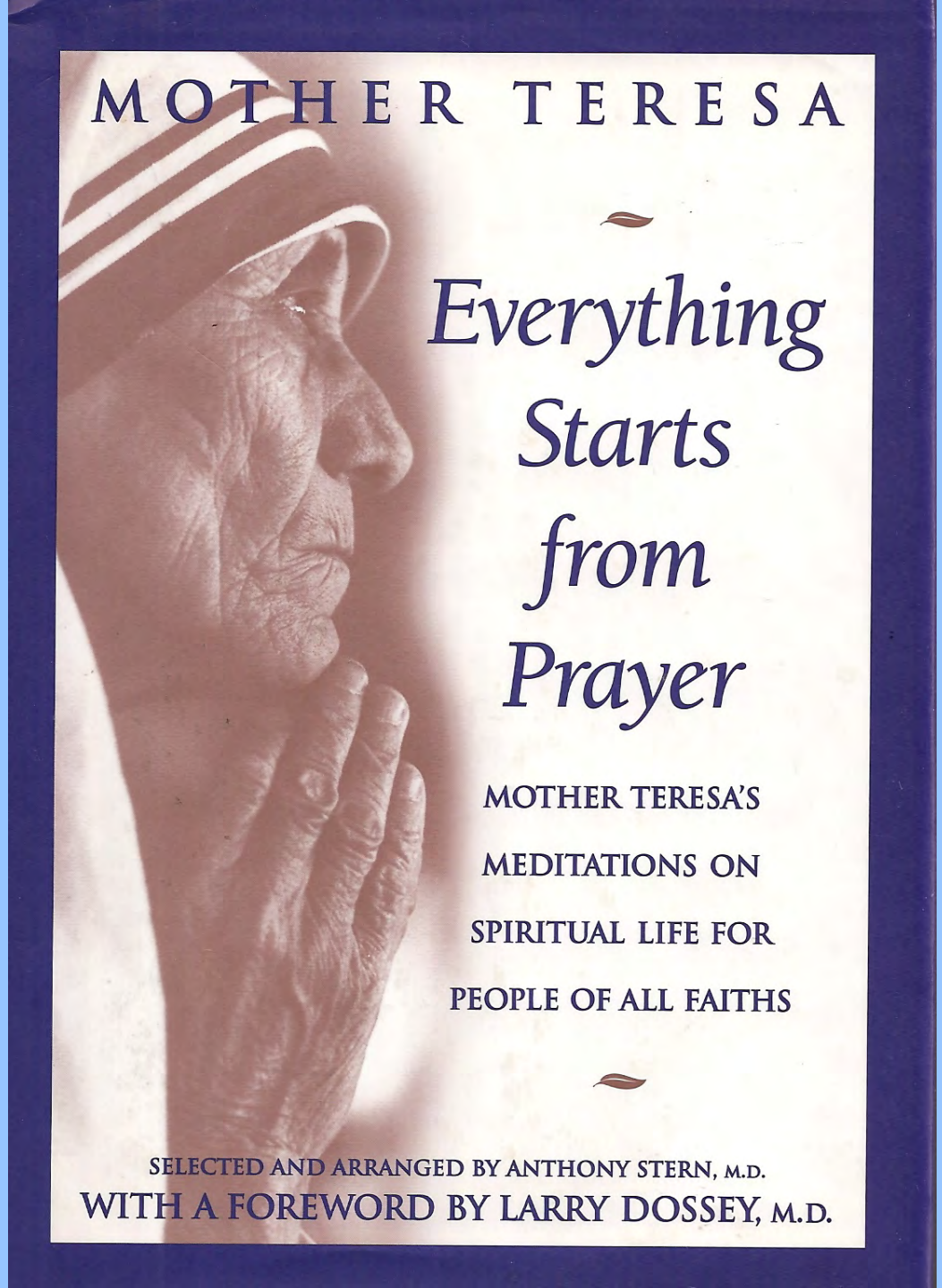
Complementary Modalities (cont.)

- **Integrative Pain Management**
- Physical Therapy
- Craniosacral Therapy
- Art therapy
- Pet therapy
- Music. Sound Therapy
- Humor. Laughter Yoga
- Journaling
- **Grounding. Connecting with Nature**
- QOL: Quality of Life
- Spirituality and Cancer
- Power of Prayer

We need a New Model that Honors the connection between planet health and human health. Embraces sustainability in every action and decision.
A model of Ecological Medicine that honors indigenous healers and our earth

Slide presented at the AIHM Conference on October 31, 2021
Jamie Harvie: Reconnecting to the Sacred
Dr. Mimi Guarneri: Declaration of the Health of People, Planet and our Responsibility


THE NEW YORK TIMES BESTSELLER
HEALING WORDS
THE POWER OF PRAYER AND THE PRACTICE OF MEDICINE
"The most thoughtful, eloquent, and interesting book on prayer, health, and healing that I have ever read."
—Dean Ornish, M.D.
LARRY DOSSEY, M.D.


MOTHER TERESA
Everything Starts from Prayer
MOTHER TERESA'S MEDITATIONS ON SPIRITUAL LIFE FOR PEOPLE OF ALL FAITHS
SELECTED AND ARRANGED BY ANTHONY STERN, M.D.
WITH A FOREWORD BY LARRY DOSSEY, M.D.

Art therapy

Alessandra Colfi, Ph.D.


ED
DURABLE
Papier cire

Hope Made Visible (HMV)

SDCRI **International** Program. Alessandra Colfi, Ph.D.

More than 2,500 Flags by mid 2020


ΚΣ

There is a force within that gives you life–

-Seek that.

In your body there lies a priceless jewel–

-Seek that.

...if you are in search of the greatest treasure,

don't look outside, look within, and seek That.

~Jalaluddin Rumi

CARE DELIVERY

original contributions

Developing a Community for Patients With Cancer Through Longer-Term Art Therapy

Sam Brondfield, MD, MAEd[1]; Naike Bochatay, PhD[2]; and Cynthia Perlis, BS, MFA[3]

Journal of Clinical Oncology JCO. 2020

abstract

PURPOSE Art therapy (AT) improves quality of life and symptoms in patients with cancer. However, previous studies that have demonstrated these effects focused on time-limited interventions. The benefits of longer-term AT interventions for patients with cancer remain unexplored. We aimed to delineate the benefits of one such intervention for patients with cancer.

METHODS The Art for Recovery open art studio (OAS) is a weekly experience that provides patients the opportunity to express themselves through art and discussion. In April 2019, we sent a cross-sectional survey with closed- and open-ended components to all patients attending the OAS. We analyzed the closed-ended results using descriptive statistics and the open-ended results using directed content analysis through the theoretical framework of community-based development (CBD).

RESULTS The response rate was 82% (18 of 22 patients). The median duration of OAS attendance was 2 years, and the median frequency of attendance was three times per month. All respondents found the OAS very helpful, and 17 (94%) of 18 believed that the friendships they had made were very valuable. Directed content analysis revealed three themes: togetherness, active engagement, and familiar surroundings. These themes and our closed-ended results aligned well with the CBD framework.

CONCLUSION Longer-term AT experiences may provide benefits, such as community development, that briefer interventions lack. Medical centers should consider providing longer-term AT experiences for patients with cancer to give them access to these benefits.

JCO Oncol Pract 17:e506-e516.

VOLUME 33 · NUMBER 28 · OCTOBER 1 2015

JOURNAL OF CLINICAL ONCOLOGY

ORIGINAL REPORT

Effects of Music Therapy on Anesthesia Requirements and Anxiety in Women Undergoing Ambulatory Breast Surgery for Cancer Diagnosis and Treatment: A Randomized Controlled Trial

Jaclyn Bradley Palmer, Deforia Lane, Diane Mayo, Mark Schluchter, and Rosemary Leeming

Jaclyn Bradley Palmer, Deforia Lane, and Diane Mayo, University Hospitals Case Medical Center; Mark Schluchter, Case Western Reserve University, Cleveland, OH; and Rosemary Leeming, Geisinger Health System, Danville, PA.

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The Kulas Foundation had no role in the design or conduct of the study; the collection, management, analysis, or interpretation of the data; the preparation, review, or approval of the manuscript; or the decision to submit the manuscript for publication.

Authors' disclosures of potential conflicts of interest are found in the article online at www.jco.org. Author contributions are found at the end of this article.

Clinical trial information: NCT01669733.

Corresponding author: Jaclyn Bradley Palmer, MM, MT-BC, 11100 Euclid Ave, Mailstop WRN 5065, Cleveland,

ABSTRACT

Purpose
To investigate the effect of live and recorded perioperative music therapy on anesthesia requirements, anxiety levels, recovery time, and patient satisfaction in women experiencing surgery for diagnosis or treatment of breast cancer.

Patients and Methods
Between 2012 and 2014, 207 female patients undergoing surgery for potential or known breast cancer were randomly assigned to receive either patient-selected live music (LM) preoperatively with therapist-selected recorded music intraoperatively (n = 69), patient-selected recorded music (RM) preoperatively with therapist-selected recorded music intraoperatively (n = 70), or usual care (UC) preoperatively with noise-blocking earmuffs intraoperatively (n = 68).

Results
The LM and the RM groups did not differ significantly from the UC group in the amount of propofol required to reach moderate sedation. Compared with the UC group, both the LM and the RM groups had greater reductions ($P < .001$) in anxiety scores preoperatively (mean changes [and standard deviation: −30.9 [36.3], −26.8 [29.3], and 0.0 [22.7]), respectively. The LM and RM groups did not differ from the UC group with respect to recovery time; however, the LM group had a shorter recovery time compared with the RM group (a difference of 12.4 minutes; 95% CI, 2.2 to 22.5; $P = .018$). Satisfaction scores for the LM and RM groups did not differ from those of the UC group.

Conclusion
Including music therapy as a complementary modality with cancer surgery may help manage preoperative anxiety in a way that is safe, effective, time-efficient, and enjoyable.

J Clin Oncol 33:3162-3168. © 2015 by American Society of Clinical Oncology

JOURNAL OF CLINICAL ONCOLOGY

ART OF ONCOLOGY

August 2017

Love in the Time of Cancer

Lawrence H. Einhorn

Author affiliations and support information (if applicable) appear at the end of this article.

Published at jco.org on August 16, 2017.

Corresponding author: Lawrence H. Einhorn, MD, Indiana University Simon Cancer Center, 535 Barnhill Dr, RT 473, Indianapolis, IN 46202-5289; e-mail: leinhorn@iupui.edu.

0732-183X/17/3599-1/$20.00

As a clinical oncologist for over 40 years, I have often wondered about the factors that drive patients to battle seemingly insurmountable odds with hope and determination. After all these years, I turn to love, in all its many forms, as a compelling force helping our patients combat the uncertainties associated with a cancer diagnosis. Love cannot conquer all—that we know only too well—but it can provide comfort in troubling and unpredictable times, and propel our patients ever forward against the terrible disease they face. The maudlin sentimentality of some works of fiction pales in comparison with the courage and resilience that characterize our patients. As I move toward the end of my career, I more fully realize that it is love that lies behind the resilience of so many of our patients, much like Noble laureate Gabriel Garcia Marquez described in his novel *Love in the Time of Cholera*, in which he demonstrated the power of devotion and enduring love during difficult times over the lifetime of his protagonists.

Illness as metaphor was a concept espoused in a series of essays by Susan Sontag. A paragraph from her work is very moving to me: "Illness is the night-side of life, a more onerous citizenship. Everyone who is born holds dual citizenship, in

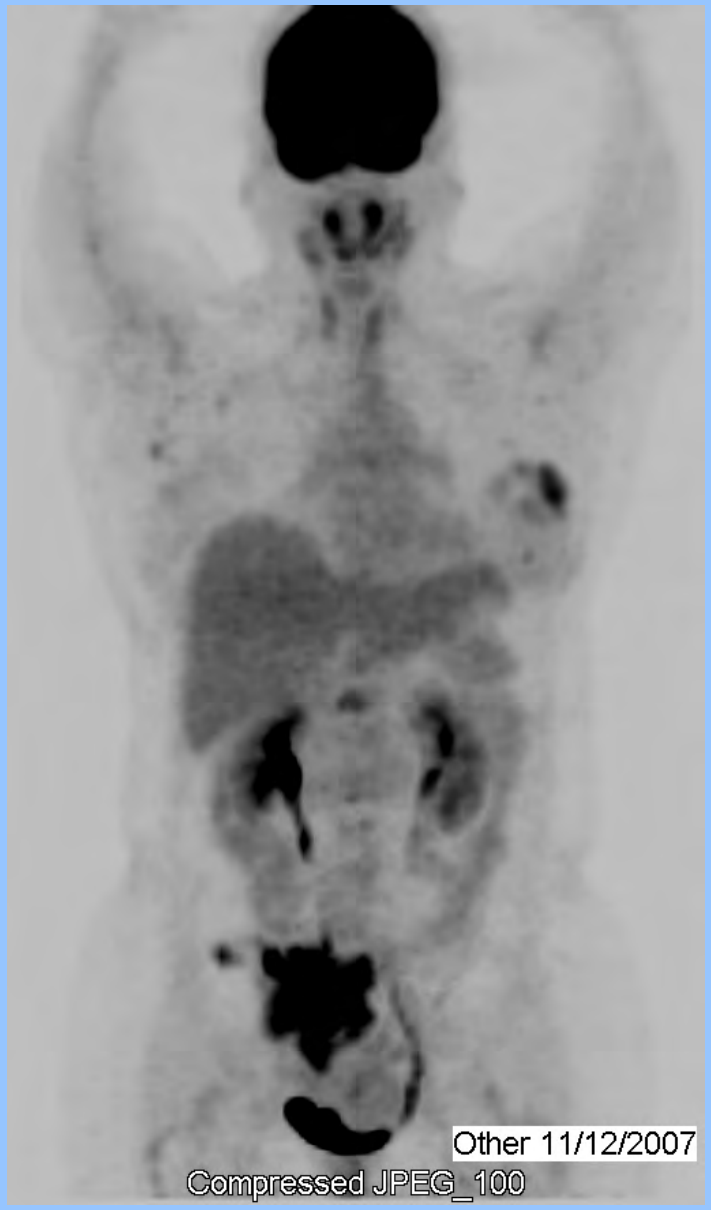
far more concerned than W.G. Unfortunately, 7 years later, he had an asymptomatic late relapse manifested initially by an elevation of his serum α-fetoprotein level. During the ensuing 7 years, he endured frequent attempts at surgical extirpation, with each operation causing more physical and emotional distress. Several chemotherapy regimens produced temporary reductions in his α-fetoprotein level. His wife was always there for him in a very close and loving relationship. Finally, he reached a point where I had to tell him that further treatment would produce far more harm than benefit. W.G. was never enthusiastic about undergoing increasingly toxic treatments at the best of times. However, after the discussion regarding futile and harmful treatment, he asked about any type of therapy, no matter the adverse effects. His rationale was that even if it could provide one more day to be with his wife, he was willing to endure further toxicity. Sadly, we had truly exhausted all options. Shortly thereafter, he died at home with his wife as his constant comfort at his bedside.

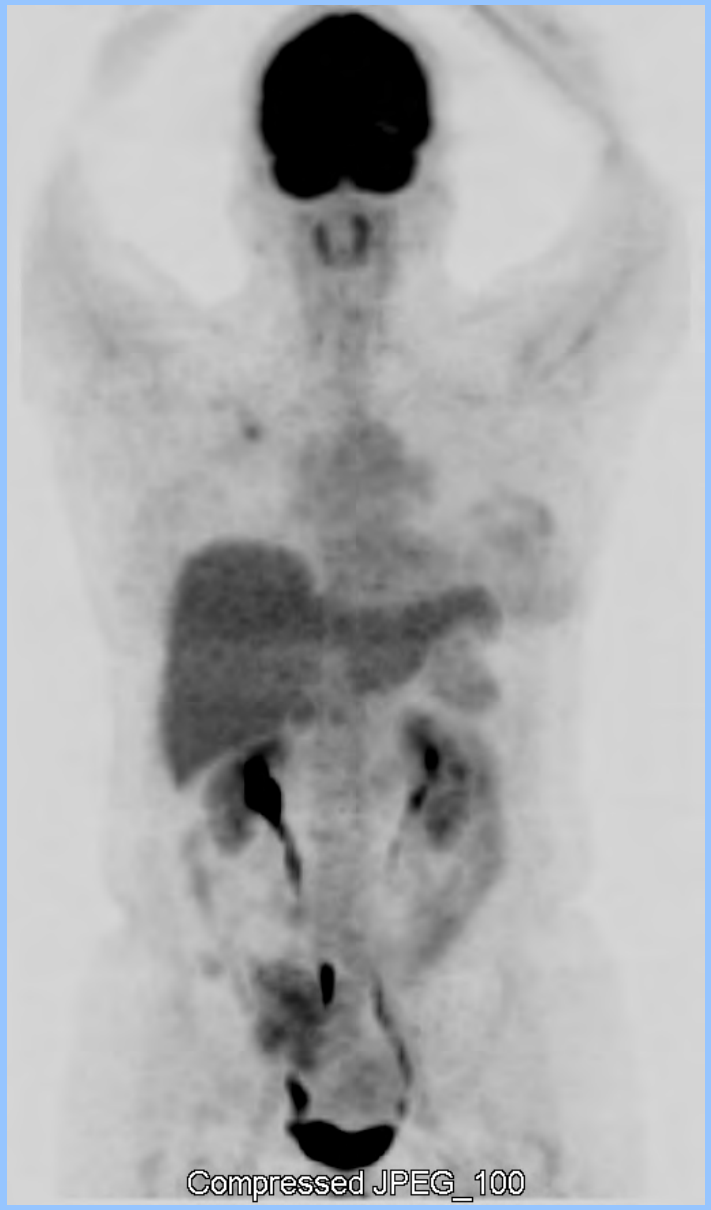
E.S. was 16 years old when he was diagnosed with metastatic testicular cancer. He was treated with bleomycin, etoposide, and cisplatin on a pediatric oncology protocol and achieved a brief

Case Presentation:
45 year old lady widely metastatic breast cancer

- Progressive disease after multiple forms of medical therapy
- By 2007, no other good medical options
- NDE from 2 brain surgeries
- Developed blindness. Cared for by father
- Meditation, Visualization, Prayer
- Surrendering
- Taking some herbs
- She would regularly say: “I’m aligning myself energetically with whatever is available to help my body heal. I'm vibrating at high healing frequencies."

PET/CT Scan: November 2007 and October 2008





BLESSING

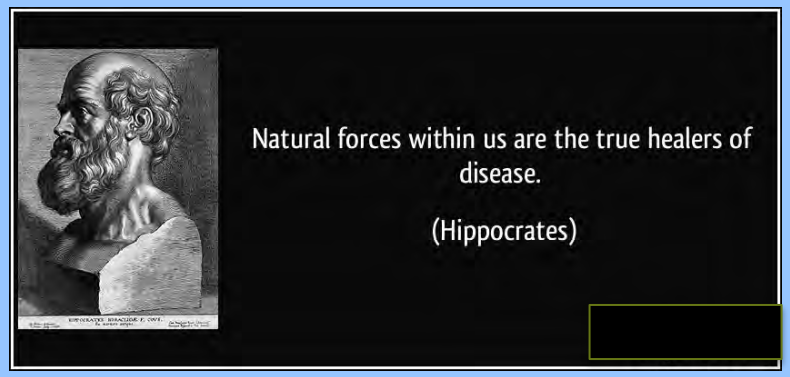
- Water
- Food
- Medicines
- Supplements
- Chemotherapy
- Radiation Therapy
- Everything and Everyone!

Integrative Modalities
Mechanisms and effects

- Immune modulating
- Anti-inflammatory
- Endorphin producing
- Hormone regulating
- Antioxidant
- Induce apoptosis
- Antiangiogenesis
- Epigenetic effect
- Restore balance and harmony
- **Goal** is **Synergy**: improve medical Rx outcomes
- Often *results* can be "**practitioner dependent**"

IMPORTANT REMINDER for PATIENTS

Through your Meditation and Intuition, find those integrous professionals (and teams), powerful healers and treatments that will help you feel **empowered** and **support** you in your healing journey.




EARTH

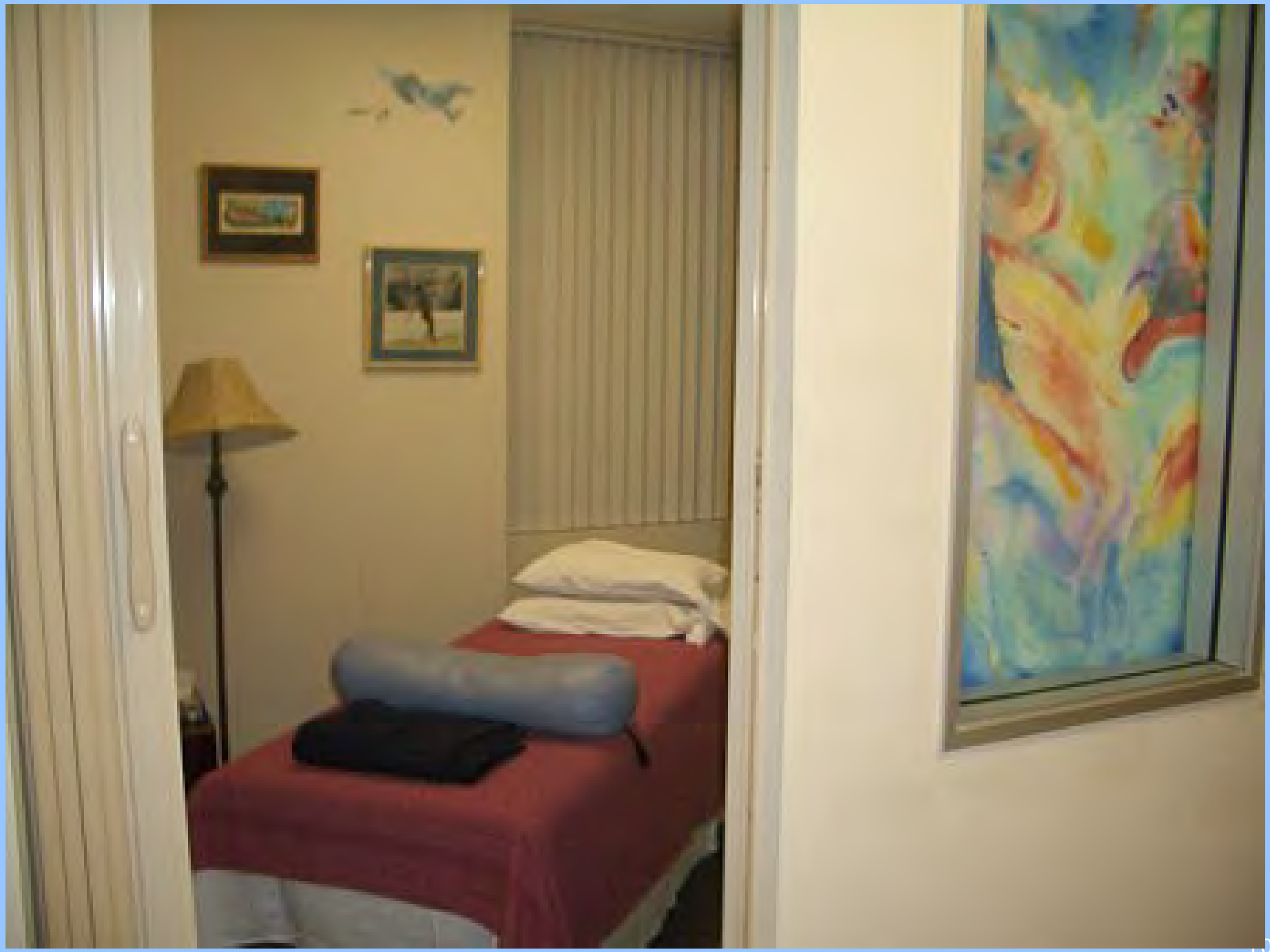
Gracie (with Norma Spencer)

Isabella (con Teri Polley)

Integrative Oncology Program at the San Diego Cancer Center (SDCC) and creation of SDCRI

- **Created in 1995**. At SDCC. Under same roof. Co-creation
- First modalities: support groups, massage, acupuncture, nutrition classes
- San Diego Cancer Research Institute (SDCRI): Non-profit created in 1998: www.sdcri.org
- **Community Co-creation: practitioners of the healing arts who volunteered** at SDCC
  - Volunteers were devoted experienced practitioners of the many healing arts who were accredited, licensed and had a very successful practice
- The compl***e***mentary modalities were compl***i***mentary (**free**) and open to the cancer community: community based Integrative Program
- **Average of 150 visits per week; over 200 cancer patients every month**
- At one point, there were up to 50 active volunteers enrolled in the program
- From **1995 till 2015**: two decades
- **This was a model of what's possible**


BISTRO
CAFÉ



Integrative Oncology Program at SDCC and SDCRI (cont.)

- Regular meetings with practitioners of all the healing arts
- Learn from each others profession and experience
- Support each others journeys
- Educational programs for patients and for the practitioners
- Appreciation dinner twice a year
- Co-created an optimal healing environment
- We continue to meet once a year since 2015
- During the pandemic: zoom every 3-4 months

Integrative Oncology Program at SDCRI

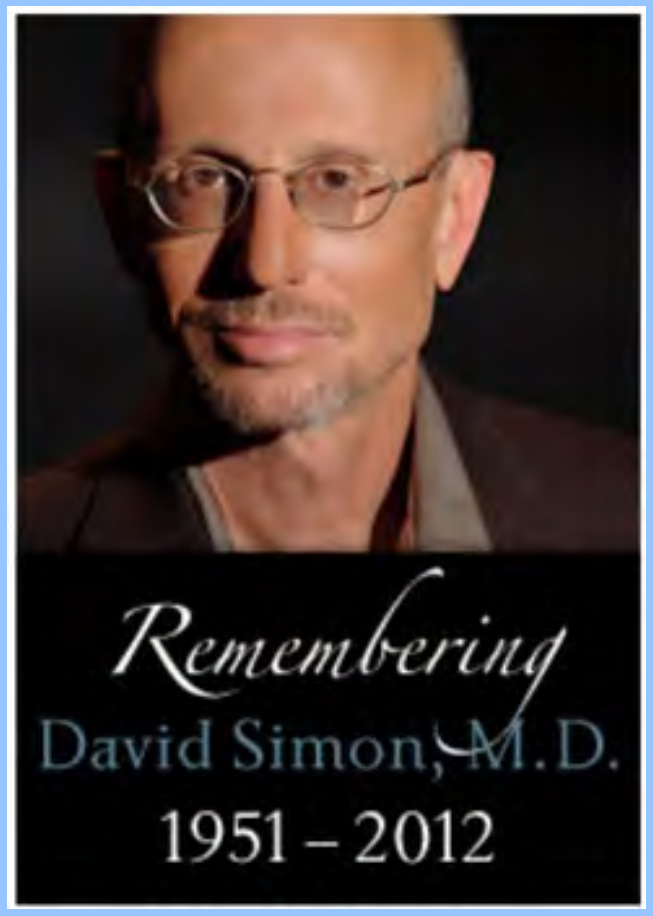
U.C. San Diego Cancer Center
Oncology R.N.'s (Infusion room)

Taking care of ourselves

- **Apply Wisdom of all healing traditions**
- "Practice what we preach"
- **Patients as Teachers**
- Crying with staff and patients. Grieving
- Dealing with stress, helplessness, overwhelm, burnout
  - **"Compassion fatigue"**
- Challenges in the medical environment
- Embracing uncertainty/unpredictability
- Accepting cycle of life and death
  - Important Role of Hospice Team (poem)

O. Carl Simonton, M.D.

1942 - 2009

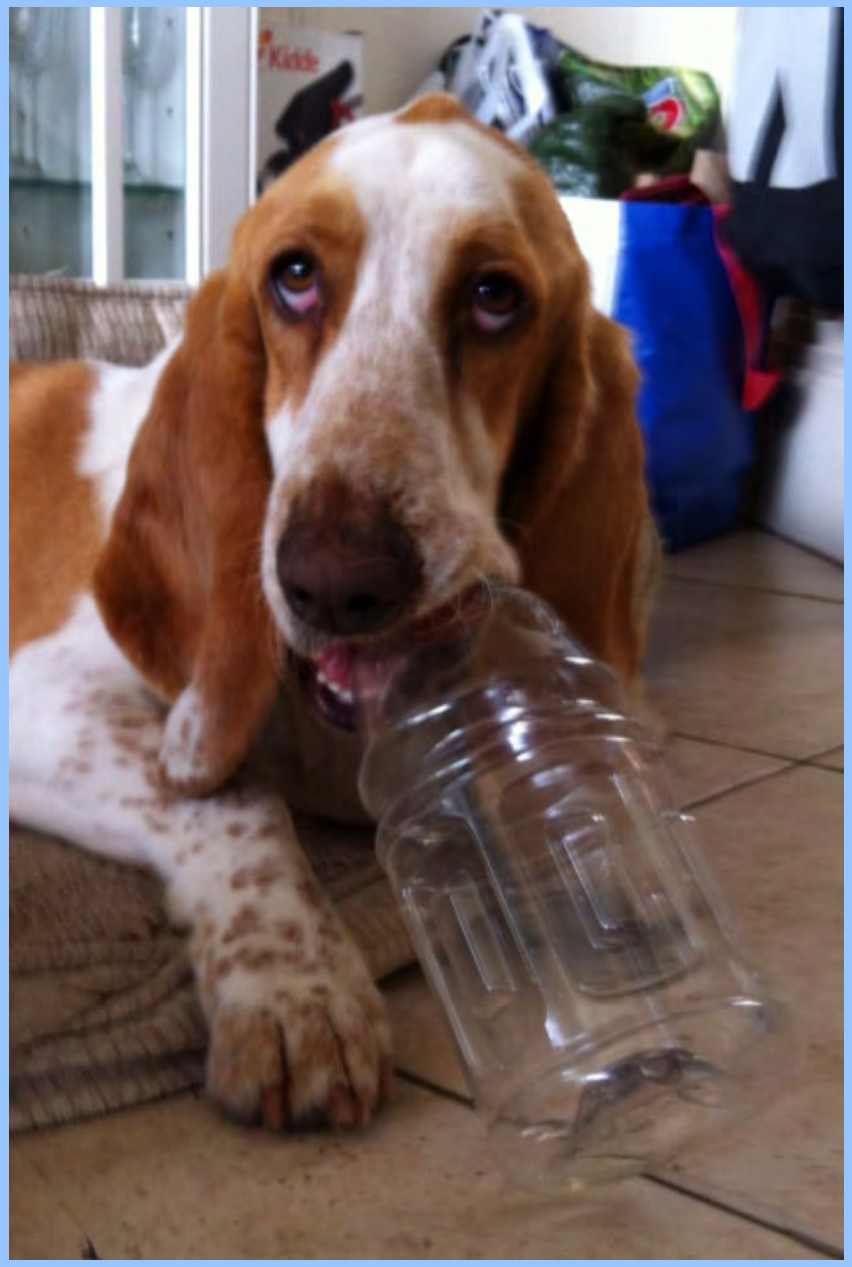


Thomas Chippendale, M.D.

1949 - 2014

Jeremy Geffen, M.D.

1956 - 2015



Challenges with cancer

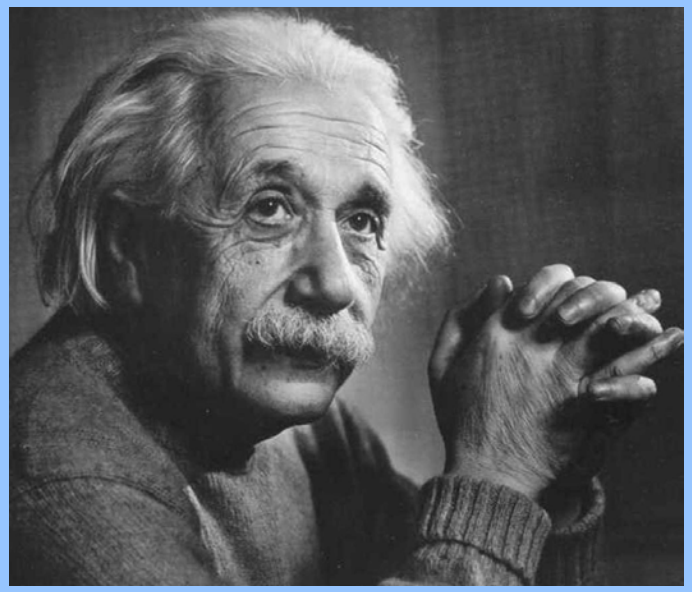
- We can do everything right and still develop cancer
- Children with cancer. Healers with cancer
- Resistant tumors
- Recurrent cancers
- The importance of QOL
- **The Blessing of Palliative Medicine and Hospice Teams**
- There is always **Hope**

Case Presentation

- 37 year old lady with widely metastatic ovarian cancer
- Progressive disease after multiple different chemotherapy programs
- In 2001, poor general condition, poor performance status
- Signed up with Hospice
- Rapid deterioration into a coma
- Agonal breathing
- Lasted several days
- Slowly improved
- Awoke from the coma after several weeks
- **After 6 months was almost back to normal**

“There are only two ways to live your life. One is as though nothing is a miracle. The other is as though *everything is a miracle*.”

Albert Einstein (1879-1955)



For those who have or had cancer

- Honor all your feelings: fear, anxiety, sadness, anger, shame, helplessness, anguish, overwhelm, etc.
- Trust your powerful inner wisdom, **intuition**.
- Be with those who make you feel good, peace
- You are unique. Do not compare yourself with others
- Accept help. You are always giving
- Professionals are doing the best they can with the resources they have
- See medicines and chemotherapy as Healing treatments, tools in your healing journey
- Visualize your potential for infinite possibilities and healing
- Message of **hope**: for any condition considered “incurable” at this time, an answer may be around the corner
- Miracles do happen. Spontaneous remissions

How to best support someone with cancer

- You know how!
- Being present with Intention. Empathy. Compassion.
- Healing and Curing
- Respecting beliefs and cultural differences
- Supporting them in creating their own **optimal healing environment** (OHE)
- Non verbal: embracing uncertainty, hope, belief, faith
- Alchemist: transmute disease into ease (St. Francis prayer)
- **Entrainment, limbic resonance, mirror neurons**

Visualization exercise: see yourself with a loved one with cancer. You can share with them nonverbally the following: “I’m here to be of service. You are an infinite being, you have within you **all** the resources needed to heal.”

Cancer during COVID-19 pandemic

- As health care professionals, our duty and responsibility to protect the patients, their families, their communities and society at large
- Prevention
- The importance of Covid-19 Vaccination, especially in those at high risk
- Resources and guidelines from the CDC

General Information about COVID-19 & Cancer

This page was last updated on 9/17/2021. Please check back frequently for updates.

What are the current data on care of patients with cancer and COVID-19? Are patients with cancer more likely to be infected? Do they have more complications?

The CDC is frequently updating its information on COVID-19. For the most up-to-date general information on the virus and the epidemic, the CDC is the best source of information.

Mortality of patients with cancer and COVID-19

The best available evidence available at this time suggests that patients with cancer are at increased risk of death compared to patients without cancer. Multiple meta-analyses of studies of mortality in patients with cancer and COVID-19 have been reported (Giannakoulis et al, JCO Glob Oncol; Venkatesulu et al, medRxiv; Tian et al, Int J Cancer; Zhou et al, Int J Infect Dis; Singh et al, Diabetes Obes Metab, Cheruiyot et al, Am J Emerg Med; Luo et al, Clin Cardiol; Biswas et al, Intervirology; Yang et al Cancer Biol Med). These meta-analyses had differing inclusion criteria and search windows, but the results were consistent and found statistically significant odds ratios for increased risk of death in COVID-19 patients with cancer versus those without ranging 1.66 to 3.16. The largest review, Luo et al, found an OR of 1.90 (95% CI 1.57-2.30).

Daily Ritual Summary

1. Stress management
2. Good sleep. Plenty of rest
3. Meditation. Reflection. Prayer
4. Optimizing Nutrition
5. Exercise. Yoga. Breathing Techniques
6. Grounding. Being in Nature
7. Honoring our emotions. Embracing uncertainty
8. Feeling in Control. Empowerment
9. Balance. Inner Peace
10. Sense of purpose. Gratitude

INSTITUTE FOR NATURAL MEDICINE
Residency Consortium

Naturopathic Therapeutic Order

A Common Sense Approach to Healthcare

What is the Therapeutic Order?

Naturopathic Doctors (NDs) use the Therapeutic Order as a logical approach to patient care which aims to maximize benefit and reduce the potential for harm. Licensed NDs use this to prioritize, individualize and guide treatment for our patients.

The Therapeutic Order starts with more general strategies of establishing a healthy environment like personalized, appropriate diet and exercise ***(level 1)*** and moves stepwise to more symptomatic and targeted therapies, like pharmaceutical drugs and surgery if needed ***(level 7)***.

By prioritizing minimally invasive therapies to support the body's health-restoring ability, the Therapeutic Order puts the power back in the hands of naturopathic patients for long-term health and translates to fewer and less severe treatments.

Zeff, J.L., Snider, P., & Myers, S., DeGrandpre, Z.(2013). A Hierarchy of Healing: The Therapeutic Order. A Unifying Theory of Naturopathic Medicine. In J.E. Pizzorno & M. Murray Textbook of Natural Medicine. Churchill Livingston, Missouri
https://www.researchgate.net/publication/273634914_A_Hierarchy_of_Healing_The_Therapeutic_Order_A_Unifying_Theory_of_Naturopathic_Medicine

www.naturemed.org

Summary: Cancer experience

- **Honoring our body's need to rest, recover and heal**
- Meditation. Inner peace. Embracing uncertainty
- **Practice healing modalities regularly (one or just a few)**
- **Add tools to the Toolbox: techniques, experiences, lessons**
- **Embracing all wisdoms: medicine & all healing modalities**
- **Feel in control. Empowered**
- **Balance. Avoiding extremes**
- Accepting help
- Connection. Know that they are loved

Recognition and Gratitude

- Institute for Natural Medicine (INM) and American Association of Naturopathic Physicians (AANP)
- Staff, Nurses, Colleagues and Volunteers of the San Diego Cancer Center (SDCC) and San Diego Cancer Research Institute (SDCRI)
- Honoring cancer Patients and their families
- Professionals and Practitioners of all the healing arts caring for cancer patients (especially Angel Nurses)
- Caregivers and Caretakers
- Volunteers
- Researchers. Scientists
- Centers for Integrative Medicine and for Healing
- My Family and Friends

KOS, the Island of Hippocrates where ancient Medicine was Born

Malone et al. Genome Medicine (2020) 12:8
https://doi.org/10.1186/s13073-019-0703-1

Genome Medicine

REVIEW Open Access

Molecular profiling for precision cancer therapies

Eoghan R. Malone[1†], Marc Oliva[1†], Peter J. B. Sabatini[2], Tracy L. Stockley[2] and Lillian L. Siu[1*]

Abstract

The number of druggable tumor-specific molecular aberrations has grown substantially in the past decade, with a significant survival benefit obtained from biomarker matching therapies in several cancer types. Molecular pathology has therefore become fundamental not only to inform on tumor diagnosis and prognosis but also to drive therapeutic decisions in daily practice. The introduction of next-generation sequencing technologies and the rising number of large-scale tumor molecular profiling programs across institutions worldwide have revolutionized the field of precision oncology. As comprehensive genomic analyses become increasingly available in both clinical and research settings, healthcare professionals are faced with the complex tasks of result interpretation and translation. This review summarizes the current and upcoming approaches to implement precision cancer medicine, highlighting the challenges and potential solutions to facilitate the interpretation and to maximize the clinical utility of molecular profiling results. We describe novel molecular characterization strategies beyond tumor DNA sequencing, such as transcriptomics, immunophenotyping, epigenetic profiling, and single-cell analyses. We also review current and potential applications of liquid biopsies to evaluate blood-based biomarkers, such as circulating tumor cells and circulating nucleic acids. Last, lessons learned from the existing limitations of genotype-derived therapies provide insights into ways to expand precision medicine beyond genomics.

Background

In the past decade, the field of oncology has witnessed substantial changes in the way patients with cancer are managed, with departure from a "one-size-fits-all" approach and increasing focus on precision medicine based on genomic variants. Cancer precision medicine is defined as "the use of therapeutics that are expected to confer benefit to a subset of patients whose cancer displays specific molecular or cellular features (most commonly genomic changes and therapeutic agents. Precision medicine has already transformed cancer care: both common and rare malignancies can be targeted by specific therapies to improve clinical outcomes in patients (Table 1). This review focuses on current and emerging approaches, highlights successes and challenges, and proposes potential solutions in the implementation of precision medicine in clinical research and practice (Fig. 1). The expansion to other molecular characterization technologies beyond genomics, such as

CANCER GENOMICS

Clinical Utilization, Utility, and Reimbursemen for Expanded Genomic Panel Testing in Adult Oncology

Susan J. Hsiao, MD, PhD[1]; Anthony N. Sireci, MD[1]; Danielle Pendrick, DrPH[1]; Christopher Freeman, MS[1]; Helen Fernandes, PhD[1]; Gary K. Schwartz, MD[2]; Brian S. Henick, MD[2]; Mahesh M. Mansukhani, MD[1]; Kevin A. Roth, MD, PhD[1]; Richard D. Carvajal, MD[2]; and Jennifer A. Oberg, EdD[3]

Journal of Clinical Oncology **JCO**. September 2020

original reports abstract

PURPOSE The routine use of large next-generation sequencing (NGS) pan-cancer panels is required to identify the increasing number of, but often uncommon, actionable alterations to guide therapy. Inconsistent coverage and variable payment is hindering NGS adoption into clinical practice. A review of test utilization, clinical utility, coverage, and reimbursement was conducted in a cohort of patients diagnosed with high-risk cancer who received pan-cancer panel testing as part of their clinical care.

MATERIALS AND METHODS The Columbia Combined Cancer Panel (CCCP), a 467-gene panel designed to detect DNA variations in solid and liquid tumors, was performed in the Laboratory of Personalized Genomic Medicine at Columbia University Irving Medical Center. Utilization was characterized at test order. Results were reviewed by a molecular pathologist, followed by a multidisciplinary molecular tumor board where clinical utility was classified by consensus. Reimbursement was reviewed after payers provided final coverage decisions.

RESULTS NGS was performed on 359 high-risk tumors from 349 patients. Reimbursement data were available for 246 cases. The most common reason providers ordered CCCP testing was for patients diagnosed with a treatment-resistant or recurrent tumor (n = 214; 61%). Findings were clinically impactful for 229 cases (64%). Molecular alterations that may inform future therapy in the event of progression or relapse were found in 42% of cases, and a targeted therapy was initiated in 23 cases (6.6%). The majority of tests were denied coverage by payers (n = 190; 77%). On average, insurers reimbursed 10.75% of the total NGS service charge.

CONCLUSION CCCP testing identified clinically impactful alterations in 64% of cases. Limited coverage and low reimbursement remain barriers, and broader reimbursement policies are needed to adopt pan-cancer NGS testing that benefits patients into clinical practice.

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Higher-Level Pathway Objectives of Epigenetic Therapy: A Solution to the p53 Problem in Cancer

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American Society of Clinical Oncology. 2018 Educational Book

OVERVIEW

Searches for effective yet nontoxic oncotherapies are searches for exploitable differences between cancer and normal cells. In its core of cell division, cancer resembles normal life, coordinated by the master transcription factor MYC. Outside of this core, apoptosis and differentiation programs, which dominantly antagonize MYC to terminate cell division, necessarily differ between cancer and normal cells, as apoptosis is suppressed by biallelic inactivation of the master regulator of apoptosis, p53, or its cofactor p16/CDKN2A in approximately 80% of cancers. These genetic alterations impact therapy: conventional oncotherapy applies stress upstream of p53 to upregulate it and causes apoptosis (cytotoxicity)—a toxic, futile intent when it is absent or nonfunctional. Differentiation, on the other hand, cannot be completely suppressed because it is a continuum along which all cells exist. Neoplastic evolution stalls advances along this continuum at its most proliferative points—in lineage-committed progenitors that have division times measured in hours compared with weeks for tissue stem cells. This differentiation arrest is by mutations/deletions in differentiation-driving transcription factors or their coactivators that shift balances of gene-regulating protein complexes toward corepressors that repress instead of activate hundreds of terminal differentiation genes. That is, malignant proliferation without differentiation, also referred to as cancer "stem" cell self-renewal, hinges on druggable corepressors. Inhibiting these corepressors (e.g., DNMT1) releases p53-independent terminal differentiation in cancer stem cells but preserves self-renewal of normal stem cells that express stem cell transcription factors. Thus, epigenetic-differentiation therapies exploit a fundamental distinction between cancer and normal stem cell self-renewal and have a pathway of action downstream of genetic defects in cancer, affording favorable therapeutic indices needed for clinical progress.

The search for solutions to the fundamental problems of toxicity and resistance in oncotherapy reduces to a search for druggable differences between cancer and normal self-replication. Self-replication is the engine that drives all biologic evolution, including neoplastic evolution. Huge public and private efforts have focused on investigations of the mechanisms of cancer self-renewal and the development of candidate drugs that target this as the heart of the malignancy.[1] Fundamental differences between malignant and normal self-renewal have been identified. These

benign tumors (e.g., adenocarcinoma from adenoma), while the degree of differentiation failure identifies more from less aggressive transformation (e.g., Richter syndrome from chronic lymphocytic leukemia, and acute myeloid leukemia [AML] from myelodysplastic syndromes [MDS]). Even when loss of differentiation is not readily apparent by light microscopy, it is evident by gene expression analyses. For example, grade 1 hepatocellular carcinomas, although "well-differentiated" by light microscopy, demonstrate suppression of hundreds of hepatocyte specialization genes

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Epigenetics in cancer

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Abstract

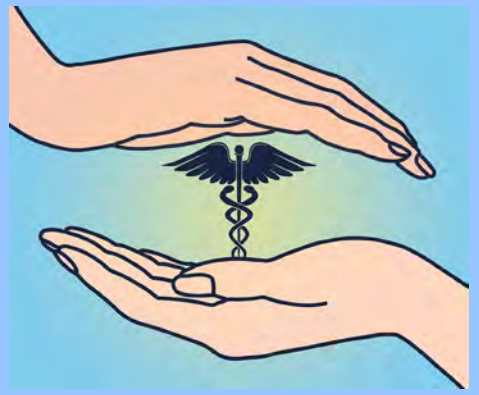
Go to:

Epigenetic mechanisms are essential for normal development and maintenance of tissue-specific gene expression patterns in mammals. Disruption of epigenetic processes can lead to altered gene function and malignant cellular transformation. Global changes in the epigenetic landscape are a hallmark of cancer. The initiation and progression of cancer, traditionally seen as a genetic disease, is now realized to involve epigenetic abnormalities along with genetic alterations. Recent advancements in the rapidly evolving field of cancer epigenetics have shown extensive reprogramming of every component of the epigenetic machinery in cancer including DNA methylation, histone modifications, nucleosome positioning and non-coding RNAs, specifically microRNA expression. The reversible nature of epigenetic aberrations has led to the emergence of the promising field of epigenetic therapy, which is already making progress with the recent FDA approval of three epigenetic drugs for cancer treatment. In this review, we discuss the current understanding of alterations in the epigenetic landscape that occur in cancer compared with normal cells, the roles of these changes in cancer initiation and progression, including the cancer stem cell model, and the potential use of this knowledge in designing more effective treatment strategies.

Definition of Integrative Medicine

"Bringing together the best that Medicine and Science have to offer, with the riches of nature, wisdom of the human body, the best in natural, complementary, multidisciplinary and multidimensional approaches, the strength of social interactions and the power of the Human **Spirit** to Heal the whole person in an optimal **healing** environment ."

D.V. 1995



Personalized Nutrition in Oncology
Current scientific data

- Moderate Carb restriction
  - HR positive postmenopausal breast cancer
  - Colorectal cancer and overweight
- Ketogenic Diet
  - Glioblastoma multiforme
  - Radiation
- Fasting
  - Chemotherapy: 24 hours before and after
  - Cancer Risk Reduction

Living a Whole Food, Plant-Based Life

March 3, 2017 — *Updated May 30th, 2019*

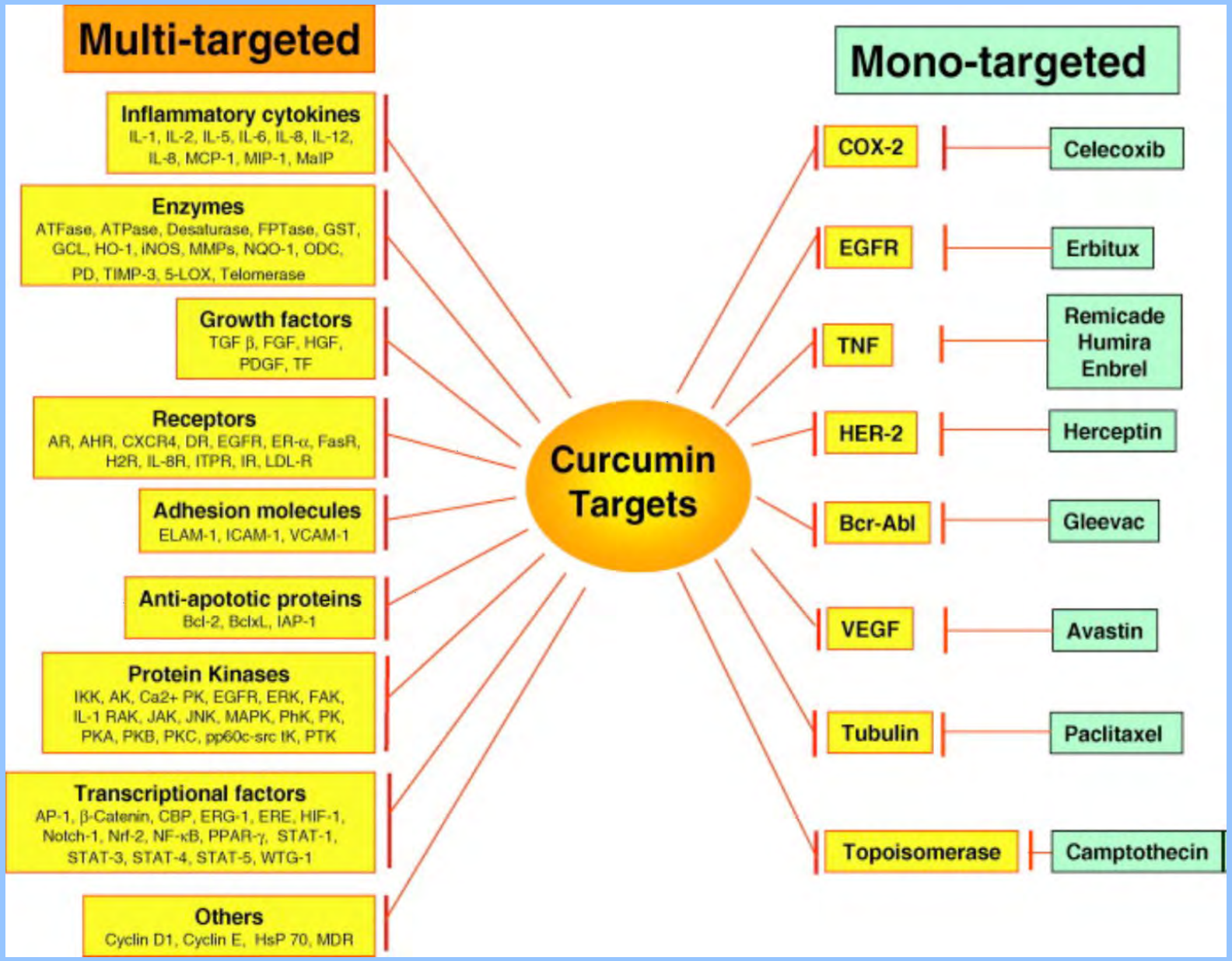
Are you curious about a whole-food, plant-based diet (WFPB)? The T. Colin Campbell Center for Nutrition Studies is here to help you get started.

The term "whole" in WFPB describes foods that are minimally processed. This includes as many whole grains, fruits, vegetables, and legumes as you want.

Many eventually give up the "diet" label, in favor of "lifestyle." Perhaps that's because our popular notion of dieting has become so confusing. A WFPB lifestyle is different. It's not a short-term punishment charged by guilt. It's not a set of complicated meal plans. It's simply a return to whole foods, rich flavors, and natural health.

Curcumin (turmeric)

- Several scientific studies have been done, integrating into cancer treatments
- Anti-inflammatory
- Antioxidant
- Anti-Angiogenesis
- May enhance Chemotherapy activity. Inducing Chemosensitivity
- May have chemo-related protection (cardiac, liver, renal and brain)
- Overcoming chemo-resistance (MDR)
- What’s the ideal dose?
- We need more research


Multi-targeted
Inflammatory cytokines
IL-1, IL-2, IL-5, IL-6, IL-8, IL-12, IL-8, MCP-1, MIP-1, MaIP
Enzymes
ATFase, ATPase, Desaturase, FPTase, GST, GCL, HO-1, iNOS, MMPs, NQO-1, ODC, PD, TIMP-3, 5-LOX, Telomerase
Growth factors
TGF β, FGF, HGF, PDGF, TF
Receptors
AR, AHR, CXCR4, DR, EGFR, ER-α, FasR, H2R, IL-8R, ITPR, IR, LDL-R
Adhesion molecules
ELAM-1, ICAM-1, VCAM-1
Anti-apototic proteins
Bcl-2, BclxL, IAP-1
Protein Kinases
IKK, AK, Ca2+ PK, EGFR, ERK, FAK, IL-1 RAK, JAK, JNK, MAPK, PhK, PK, PKA, PKB, PKC, pp60c-src tK, PTK
Transcriptional factors
AP-1, β-Catenin, CBP, ERG-1, ERE, HIF-1, Notch-1, Nrf-2, NF-κB, PPAR-γ, STAT-1, STAT-3, STAT-4, STAT-5, WTG-1
Others
Cyclin D1, Cyclin E, HsP 70, MDR
Curcumin Targets
Mono-targeted
COX-2
Celecoxib
EGFR
Erbitux
TNF
Remicade
Humira
Enbrel
HER-2
Herceptin
Bcr-Abl
Gleevac
VEGF
Avastin
Tubulin
Paclitaxel
Topoisomerase
Camptothecin

Acupuncture-Point Stimulation for Chemotherapy-Induced Nausea and Vomiting

Jeanette Ezzo, Andrew Vickers, Mary Ann Richardson, Claire Allen, Suzanne L. Dibble, Brian Issell, Lixing Lao, Michael Pearl, Gilbert Ramirez, Joseph A. Roscoe, Joannie Shen, Jane Shivnan, Konrad Streitberger, Imad Treish, and Grant Zhang

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The results of this study have not been published or presented elsewhere.

Authors' disclosures of potential conflicts of interest are found at the end of this article.

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ABSTRACT

Purpose
Assess the effectiveness of acupuncture-point stimulation on acute and delayed chemotherapy-induced nausea and vomiting in cancer patients.

Materials and Methods
Randomized trials of acupuncture-point stimulation by needles, electrical stimulation, magnets, or acupressure were retrieved. Data were provided by investigators of the original trials and pooled using a fixed-effects model.

Results
Eleven trials (N = 1,247) were pooled. Overall, acupuncture-point stimulation reduced the proportion of acute vomiting (relative risks [RR] = 0.82; 95% CI, 0.69 to 0.99; $P = .04$), but not the mean number of acute emetic episodes or acute or delayed nausea severity compared with controls. By modality, stimulation with needles reduced the proportion of acute vomiting (RR = 0.74; 95% CI, 0.58 to 0.94; $P = .01$), but not acute nausea severity. Electroacupuncture reduced the proportion of acute vomiting (RR = 0.76; 95% CI, 0.60 to 0.97; $P = .02$), but manual acupuncture did not; delayed symptoms were not reported. Acupressure reduced mean acute nausea severity (standardized mean difference = −0.19; 95% CI, −0.38 to −0.01; $P = .03$) and most severe acute nausea, but not acute vomiting or delayed symptoms. Noninvasive electrostimulation showed no benefit for any outcome. All trials used concomitant pharmacologic antiemetics, and all, except electroacupuncture trials, used state-of-the-art antiemetics.

Conclusion
This review complements data on postoperative nausea and vomiting, suggesting a biologic effect of acupuncture-point stimulation. Electroacupuncture has demonstrated benefit for chemotherapy-induced acute vomiting, but studies with state-of-the-art antiemetics as well as studies for refractory symptoms are needed to determine clinical relevance. Acupressure seems to reduce chemotherapy-induced acute nausea severity, though studies did not involve a placebo control. Noninvasive electrostimulation seems unlikely to have a clinically relevant impact when patients are given state-of-the-art pharmacologic antiemetic therapy.

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Jon Kabat-Zinn

Jon's books and guided meditation programs describe meditation practice in such commonsensical, relevant, and compelling terms that mindfulness meditation practice has become a way of life for thousands of people. His work has contributed to a growing movement of mindfulness into mainstream institutions in our society such as medicine, health care and hospitals, schools, higher education, corporations, prisons, the legal profession, and professional sports.

Speaking Schedule