Integrative Oncology: An Evolving Discipline

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1. Definitions and History 2. Cancer Challenges 3. Integrative Therapies 4. Research 5. Integrative Oncology - The Future

Evolution Of A Discipline

•Quackery, The Practice of

Questionable Methods of Therapy

Unproven Therapies

•Complementary and Alternative Methods of Therapy

•Integrative Medicine/Health

History

 October 1991 – 104th anniversary of the NCI a public law established an office and advisory panel to recommend a research program that would investigate promising unconventional medical practices

- June 1993 the NIH revitalization Act established the Office of Alternative Medicine
- October 1998 NCCAM and OCCAM were established per the "Omnibus Consolidated and Emergency Supplemental Appropriations Act"

HISTORY

 2000 – The Leonard P Zakim Center for Integrative Therapies at the Dana-Farber Cancer Institute

• A bold initiative by the DFCI

Mission Statement

The Leonard P. Zakim Center for Integrative Therapies at Dana-Farber Cancer Institute is dedicated to enhancing the quality of life for cancer patients and families by incorporating complementary medicine into traditional cancer care. The Center provides affordable clinical services for pediatric and adult patients and their families, educates and empowers patients about their use, and conducts peer-reviewed research.

Clinical Services Offered at Zakim Center

Individual:

- Acupuncture
- Massage
- Reiki
- Integrative Medicine Consults
- Integrative Nutritional Consults

Group:

- Music Therapy
- Expressive Arts Therapy
- QiGong
- Meditation
- yoga

Pain Severity And Interference

Pain Severity Pain Interference



Week

HISTORY

 2003 – The International Society of Integrative Oncology (SIO) was founded through a joint effort of the Dana-Farber Cancer Institute, The Memorial Sloan Kettery Cancer Center and the American Cancer Society

Integrative Oncology

We have come a long way <u>But</u> We still have a ways to go.

What Is CAM?



... medical and health care practices outside the realm of conventional medicine, which are yet to be validated using scientific methods

Complementary: <u>together with</u> conventional practices Alternative: <u>in place of</u> conventional practices

NCCAM



NCCAM

Categories of Integrative Therapies

- Diet, OTC supplements, antioxidants, herbs
- MindBody Medicine
- Physical Activity and Modified Exercise Programs
- Massage and Touch Therapies
- Acupuncture

ACS Challenge Goals 1996-1998

Reduce cancer mortality by 50% by 2015
Reduce incidence of cancer by 25% by 2015
Show measurable improvement in the quality of life; physical, psychological, social and spiritual

QOL Measures

- Assure appropriate care for cancer and treatment related symptom control
- Include palliative care, end of life care and survivorship issues

Cancer as a Chronic Disease

- With a decrease in cancer mortality and a steady incidence of cancer, there are more cancer survivors
- Result is that QOL issues become more important and Integrative Oncology becomes more significant

Integrative Oncology

- Combines the best of both conventional and evidence-based integrative therapies
- Emphasizes patient participation (e.g. exercise, diet, stress management) in maximizing health
- Emphasizes the primacy of the patient provider relationship and the importance of shared decision making
- Emphasizes the contribution of the therapeutic encounter itself
- Seeks to optimize and individuals' innate healing capacity

Snyderman R, Weil AT, Arch Inter Med; 2002;162:395-397

Why an Oncology Center for Integrative Therapies?

 Cancer patients often have interest in or questions about Integrative Therapies

e.g., acupuncture, massage, herbs

- Many patients benefit from Complementary Therapies in conjunction with conventional cancer care
- Patients need advice from clinicians about contraindicated therapies

e.g., "alternative" medicine clinics, drug-herb interactions

Cancer Patient Use of CAM

- 83% of patients across broad-spectrum of malignancies use CAM
- Highest use: vitamins/herbs, movement & physical therapies (excluding spiritual practices)
- Expectations were: improve QOL, alleviate symptoms, prolong life, cure their disease, boost their immune system
- Why did patients use CAM: hopefulness, lack of toxicity, and more control

Richardson et al, JCO 2000;18:2505-14

Who uses Integrative Therapies at Dana-Farber Cancer Institute ?

- Patients with:
 - Pain
 - Fatigue
 - Anxiety
 - Other Symptoms (e.g., nausea; neuropathy)
 - Interest in nutrition counseling for special diets or supplements or other therapies



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Integrative Nutrition Consults

- Respond to pt inquiries re: diets, supplements, herbs
- Therapies with potential benefit:
 - Fish oil for cancer cachexia
 - Probiotics for bowel irregularities
 - Glutamine for chronic diarrhea
 - Various dietary manipulations for symptom control
 - Ex: a low fiber/residue diet for patients with acute or chronic diarrhea

Nutrition Guidelines

- Avoid being overweight, obesity
- Be physically active
- Avoid sugar
- Consume a phytonutrient rich diet
- Limit red meats, avoid processed foods
- Limit alcohol

ACS, AICR

Integrative Medicine Consults

Respond to questions about CAM:

- Safety
- Efficacy

Discuss role of integrative therapies alongside conventional therapy



"You've been fooling around with alternative medicines, haven't you?"

Guidelines For Advising Patients: Based on Evidence and Efficacy

Therapies that may be recommended:	Therapies that may be accepted:	Therapies that should be Discouraged or unacceptable:
Evidence supports	Evidence regarding	Evidence indicates
efficacy	efficacy is inconclusive	inefficacy
and	but	or
Evidence supports	Evidence supports	Evidence indicates
safety	safety	serious risk

Potential Concerns of Physicians – Herbs and Biologics use:

- Direct toxic effects
- Interactions with other medicine
- Reduced effectiveness of "standard therapy"
- Toxicity not related to cancer
- Impairment in overall "quality-of-life"
- Delay in obtaining known effective therapy

Direct Toxicity Of Cam

Laetrile – cyanide toxicity of CAM

- Moertel CG, et al. JAMA 1981;245-591
- Moertel CG, et al. NEJM 1982;306:201
- Shark cartilage nausea, vomiting, constipation, hepatitis
 - Miller DR, et al. JCO 1998:16:3649
 - Ashar B, et al. Ann Intern Med 2000; 133:877
- Hydrazine sulfate hepatorenal failure
 - Hainer MI, et al. Ann Intern Med 2000;133:877

Interactions With Other Medications

- Perioperative care
 - Cardiovascular effects (ephedra)
 - Bleeding (garlic, ginkgo, ginseng)
 - Hypoglycemia (ginseng)
 - Sedative effects + anesthesia (kava)
 - Increased metabolism (St. John's wort)

Problems with Method of Administration

 Serious/life threatening infections (non-sterile inoculation), severe dehydration/electrolyte loss/hypotension (enemas)

> Markman M. NEJM 1985;312:1640 Green S. JAMA 1992;268:3224 Green S. JAMA 1993; 270:1719 Ca Cancer J Clin 1993; 43:309

Drug-Herb Interactions

 Cytochrome P450 system can be stimulated or inhibited

• Anti-inflammatory effect usually implies antiplatelet effect

Reduced Effectiveness Of "Standard Therapy"

Irinotecan and St. John's wort (reduced systemic exposure to active metabolite)

Mathijssen RHJ, et al. Proc AACR 2002; 43:492

<u>Cyclosporin and St. John's wort</u> (reduced cyclosporin plasma concentrations)

Breidenbach Th, et al. The Lancet 2000; 355:1912

Specific Herbal Remedies to Discourage and Avoid During Chemotherapy

Herb	Concurrent Chemotherapy/Condition (suspected effect)
Garlic	Avoid with decarbazine (CYP2E1 inhibition) ; caution with other concurrent chemotherapy (inconclusive data)
Ginkgo	Caution with camptothecins, cyclophosphamide, EGFR-TK inhibitors, epipodophyllotoxins, taxanes, and vinca alkaloids (CYP3A4 and CYP2C19 inhibition); discourage with alkylating agents, antitumor antibiotics, and platinum analogues (free-radical scavenging)
Echinacea	Avoid with camptothecins, cyclophosphamide, EGFR-TK inhibitors, epipodophyllotoxins, taxanes, and vinca alkaloids (CYP3A4 induction)
Soy	Avoid with tamoxifen (antagonism of tumor growth inhibition), and treatment of patients with estrogen-receptor positive breast cancer and endometrial cancer (stimulation of tumor growth)
Ginseng	Caution with camptothecins, cyclophosphamide, EGFR-TK inhibitors, epipodophyllotoxins, taxanes, and Vinca alkaloids (CYP3A4 inhibition); discourage in patients with estrogen-receptor positive breast cancer and endometrial cancer (stimulation of tumor growth)
St. John's wort	Avoid with all concurrent chemotherapy (CYP2B6, CYP2C9, CYP2C19, CYP2E1, CYP3A4, and P-glycoprotein induction)
Valerian	Caution with tamoxifen (CYP2C9 inhibition), cyclophosphamide, and teniposide (CYP2C19 inhibition), cyclophosphamide, and teniposide (CYP2C19 inhibition)

Abbreviation: EGFR-TK, epidermal growth factor receptor tyrosine-kinase. Sparreboom et al. JCO 22 (12): 2489. (2004)

Toxicity of CAM Use Not Specifically Related to Cancer

- Ginkgo GI symptoms, headache, emesis
- Ginseng diarrhea, headache, insomnia
- Saw palmetto constipation, diarrhea
- Kava liver damage, dizziness, stupor

Delay In Obtaining Known Effective Therapy

 Delay seeking medical attending for symptoms suggestive of a serious illness

Brienza RS, et al. J Women's Health & Gender- Based Medicine 2002; 11:79

Delay initiation of "standard effective treatment" for a malignancy

Coppes MJ, et al. NEJM 1998; 339-846. Ernst E. JCO 2001; 19:2365

Reduced Effectiveness Of "Standard Therapy"

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<u>Cyclosporin and St. John's wort</u> (reduced cyclosporin plasma concentrations)

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Websites

- Memorial Sloan-Kettering Cancer Center: http://www.mskcc.org/mskcc/html/5707.cfm?Criteria=about+herbs&x =13&y=
- The University of Texas MD Anderson Cancer Center: http://www.mdanderson.org/departments/CIMER
- American Cancer Society: <u>http://www.cancer.org/docroot/ETO/ETO_5.asp</u>
- National Center for Complementary and Alternative Medicine: <u>http://nccam.hih.gov/</u>
- National Cancer Institute's Office of Cancer Complementary and Alternative Medicine: <u>http://www.cancer.gov/cam/</u>
- Natural Medicines Comprehensive Database: <u>http://www.naturaldatabase.com</u>
- Natural Standard: http://www.naturalstandard.com

Mind Body Therapies

- Relaxation response and biofeedback
- Mindfulness meditation
- Guided imagery
- Self-hypnosis
- Self-expression in words
- Music therapy
- Expressive arts therapy
- Dance
- Yoga
- Tai chi
- Qi gong
- Support groups

Massage and Touch Therapies

- Swedish massage
- Aromatherapy massage
- Reflexology
- Acupressure
- Shiatsu
- Manual lymphatic drainage
- Reiki
- Deep tissue massage

Effect of Massage Therapy on Stress Levels and QoL in Brain Tumor Patients by: Stephen T. Keir, DRPH, MPH Duke University

- 25 Patients
- 45 minute massage sessions 2x/week for 4 weeks

● stress levels wk 2 through 4; 1 wk after showed increase but not same as baseline

Opt QoL: emotional, social/family and physical well being and specific brain tumor concerns Effects of complementary therapies on clinical outcomes in patients being treated with radiation therapy for prostate cancer. By: Clair Beard, MD DFCI Boston, MA

- 54 men with prostate cancer being treated with radiation
- Assigned to Reiki, Relaxation Therapy or wait list control to measure trends for effects on anxiety, depression and QoL
- 2 50 min sessions of Reiki, 2 60 min sessions of RRT/week for 8 weeks

Acupuncture

- Benefit in QOL of cancer patients
- May be recommended:
 - Chemotherapy-induced nausea and vomiting
 - Cancer pain
 - Post-chemotherapy fatigue
- May be acceptable:
 - Radiation-induced xerostomia
 - Insomnia
 - Anxiety
 - Hot flashes

Will patients accept acupuncture?



Acupuncture Safety

- Of 34,407 treatments:
 - 43 minor adverse events
 - 0 serious adverse events

MacPherson et al BMJ 2001;323:486-7

At DFCI – No adverse events in over 10 years

What We Really Want To Know



Why Research

- Use of research studies & technology to better understand acupuncture & other integrative therapies
- Recognition that patients are continuing to use these therapies, so that questions of dose, synergy, and potential interactions can be investigated through established & refined research methods

Research Issues

- Do the same rules apply as studying a new chemotherapy agent?
- What is the best control for massage or a mind/body intervention?
- Sham acupuncture
- Whole systems vs reductionist research

DFCI Research

- Immunologic Activity, Physical Status, and QOL in Connection with Two Exercise Programs (Modified Exercise and Qigong)
 PI: Paul Richardson
- Acupuncture on Pain, Nausea and Quality of Life in Advanced Cancer PI: David S. Rosenthal, MD
- Acupuncture and Neutropenia in Ovarian Cancer Co-PIs: Ursula Matulonis, MD, Weidong Lu, MB, MPH, Lic.Ac.
- QiGong on Mood and Cortisol in Breast Cancer PI: Ursula Matulonis, MD
- Use of Music Therapy with Metastatic Breast Cancer Co-PIs: Susan Bauer-Wu, D.N Sc., Suzanne Hanser, Ed.D., MT-BC
- Reiki and Relaxation Response in Prostate Cancer Pts Receiving Radiation PI: Clair Beard, M.D.

Effect of Acupuncture on the Pain, Nausea, and Quality of Life for Patients with Advanced Cancer

- **R21, Feasibility Study 40 patients**
- Advanced ovarian or breast cancer receiving conventional palliative treatment
- 12 acupuncture sessions over 8 weeks
- Standardized Protocol
- Pre- and Post-Treatment symptom assessment at each acupuncture session
- QOL Questionnaires 5 time points

Results/Conclusions

- 26 (65%) completed 8 wks of acupuncture
- 14 (35%) withdrew from study
- Feasible
- QOL results Pts reported positive benefit from acupuncture treatments both for physical symptoms and measures of QOL
- No adverse events occurred
- Further analysis ongoing

Symptom Response Rates

Symptom	Overall % with Symptom Pre-treatment	Response Rate	95% Confidence Interval
Fatigue	40%	60%	54 - 67%
Pain	32%	57%	50 - 64%
Anxiety	24%	47%	40 - 58%
Depression	18%	49%	40 - 58%
Nausea	7%	35%	23 - 47%

Pain Severity And Interference

Pain Severity Pain Interference



Week

Acupuncture for chemotherapy-induced neutropenia in patients with gynecologic malignancies, a pilot randomized, sham controlled clinical trial

> Weidong Lu, M.B., MPH, Lic.Ac. Ursula A. Matulonis, M.D.

Anne Doherty-Gilman, MPH; Hang Lee, Ph.D.; Elizabeth Dean-Clower, M.D., MPH; Andrew Rosulek, B.S.; Carolyn Gibson; Roger B. Davis, Sc.D.;

Julie E. Buring, Sc.D.; Peter M. Wayne, Ph.D.; Anne Kathryn Goodman, M. D.; David S. Rosenthal, M.D.,; Richard T. Penson, M.D.

Dana Farber Cancer Institute

Massachusetts General Hospital

Harvard Medical School

Specific Aims

- To test the hypothesis that acupuncture administered during chemotherapy can produce a higher WBC count and/or ANC at nadir of cycle 2 and 1st day of cycle 3 compared to sham acupuncture
- To determine whether acupuncture will increase G-CSF levels compared to sham
- To test the feasibility of conducting such a trial in 50 patients
- To test the effects of acupuncture on patients' quality of life



Change of Neutrophil and Acupuncture in a 21day Chemo Protocol



Patient Eligibility (cont.)

- For newly diagnosed patients: standard DF/PCC carboplatin and paclitaxel (Taxol) chemotherapy, which is: paclitaxel 175 mg/m2 IV over three hours, followed by carboplatin AUC 5 IV over 30-60 minutes
- Other myelosupressive chemo in recurrent setting except liposomal doxorubicin
- No use of regular acupuncture in past 120 days
- Able to give informed consent, >18 yrs of age

Treatment Plan

- Enrolled patients are randomized to receive:
 - 1) Active acupuncture
 - or
 - 2) Sham acupuncture/delayed active acupuncture
- Each arm will receive a total of 10 treatments during first and second cycles

Study Results



Acupuncture effect on WBC between two groups during chemotherapy

Median WBC	changes	between acupunctu	ure and sham	n groups during chen	notherapy			
Median WBC (cell/µL) (range)								
	Acupuncture group		Sham group					
Time points	o of patients No of patients			P value				
Baseline	11	3600 (2200-7400)	9	2600 (1700-5200)				
1 st recovery	10	5600 (1900-11200)	10	4400 (2000-10000)	0.686			
Pre-nadir	8	5150 (2800-7600)	7	2600 (1900-5200)	0.108			
Nadir	8	3650 (3000-7400)	7	2300 (1600-4600)	0.16			
2 nd recovery	9	8600 (4800-12000)	8	4400 (2300-10000)	0.046			
Note: All p values were measured after adjusting for baseline difference by ANCOVA.								

Acupuncture effect on WBC between two groups during chemotherapy



Acupuncture Effect on ANC changes between two groups during chemotherapy

Median ANC changes between acupuncture and sham groups during chemotherapy								
Median ANC count (cell/µL) (range)								
	Acupuncture		Sham Control		P value			
Time points	No.of patients	No. of patients						
Baseline	11	1640 (350-5250)	9	1610 (50-3870)				
1 st recovery	10	4110 (1470-8510)	10	3660 (760-8340)	0.619			
Pre-nadir	8	3260 (990-3970)	7	1510 (980-3800)	0.11			
Nadir	8	2080 (1050-4770)	7	1310 (160-2770)	0.115			
2 nd recovery	9	6670 (2630-10800)	8	3345 (1360-8200)	0.099			
Note: All p values were measured after adjusting for baseline difference by ANCOVA.								

Acupuncture Effect on ANC changes between two groups during chemotherapy



Limitations and Challenges of Study

- Recruitment is challenged by:
 - competing protocols
 - distance to travel the study sites
 - # of acupuncture sessions/week
 - use of myelosuppressive chemotherapy regimens (IV/IP combinations) that already incorporate neupogen/neulasta
- The small sample size limits a definitive conclusion
- Sham acupuncture may also elicit physiological responses

Conclusions

- Although a larger randomized trial is necessary to determine the effects of acupuncture on chemotherapy induced myelosuppression, there were consistent trends, and recovering WBC counts were significantly higher in patients receiving acupuncture. Formal evaluation of CAM is vital to confirm potentially clinically meaningful benefits.
- Acupuncture appears to be safe for this population
- Conducting rigorous and controlled acupuncture studies during a chemotherapy period is challenging, but important.





Acupuncture for Chemotherapy-Induced Peripheral Neuropathy: A Pilot Randomized Controlled Trial

Weidong Lu, MB, MPH, PHD Jennifer Ligibel, MD David S. Rosenthal, MD Anita Giobbie-Hurder, MS Laura Shockro & Kelly Stecker Zakim Center & Breast Cancer Oncology Dana-Farber Cancer Institute, Harvard Medical School July 6, 2015

Background

- Chemotherapy-induced peripheral neuropathy (CIPN) is one of the most common side effects of taxane chemotherapy.
- Symptoms of CIPN: paresthesia and pain of extremities.
- Incidence rates of CIPN in breast cancer rage from 30% to 97% with adjuvant taxanes.
- Results in loss of physical function, difficulty in ADL's, decreased QOL, dose reductions and termination of treatment
- No established therapy is currently available for this condition.

Prevalence of chemotherapy-induced peripheral neuropathy: A systematic review and meta-analysis

31 studies with 4179 patients

Paclitaxel

70.80/0(95% CI = 43.5–98.1)

PAIN 155 (2014) 2461-2470

Acupuncture

- A number of small studies have looked at acupuncture as a potential treatment of CIPN
 - A RCT (n=64) reported response rate of 88% for paclitaxel-specific CIPN
 - Studies to date not breast cancer specific.
- Potential mechanism of action for acupuncture and CIPN
 - Suppression of local and central inflammation
 - opioid system activation
 - nerve fiber regeneration

Garcia et al. Journal of Hematology & Oncology 2014, 7:41 http://www.jhoonline.org/content/7/1/41



JOURNAL OF HEMATOLOGY & ONCOLOGY

RESEARCH

Open Access

Electroacupuncture for thalidomide/ bortezomib-induced peripheral neuropathy in multiple myeloma: a feasibility study

M Kay Garcia¹, Lorenzo Cohen¹, Ying Guo², Yuhong Zhou³, Bing You⁴, Joseph Chiang⁵, Robert Z Orlowski^{6,7}, Donna Weber⁶, Jatin Shah⁶, Raymond Alexanian⁶, Sheeba Thomas⁶, Jorge Romaguera⁶, Liang Zhang⁶, Maria Badillo⁶, Yiming Chen⁶, Qi Wei¹, Richard Lee¹, Kay Delasalle⁶, Vivian Green⁶ and Michael Wang^{6*}

Case Report

- Joined the study from Nov. 25, 2014 to January 14, 2015
- Pain scores at the beginning: 9 out of 10 both hands and feet
- Acupuncture 18 sessions
- Pain scores at the end of the study: 3 out of 10 (hands); 5 out of 10 (feet)
- Continued acupuncture post study
- Pain scores: 2 out of 10 (hands); 4 out of 10 (feet) as of June 30, 2015
- The patient says: "I have tried everything and nothing works for my pain." "After acupuncture, I can feel my toes and fingers. It is wonderful!"
Previous Acupuncture Studies on CIPN

- A systematic review evaluated 7 acupuncture RCTs on CIPN
 - Franconi et al. Evid Based Complement Alternat Med ,2013
- One RCT from China (n = 64): 67% overall response rate; 88% response in paclitaxel specific CIPN using PNQ
 - Xu et al. Zhongguo Zhen Jiu 30:2010
- Another non-RCT trial (n=47), a significant increase of nerve amplitude in sural and tibial nerves measured by NCS test (response: 76% vs. 15%)

- Schroeder et al. Acupunct Med, 2011

 However, poor quality design in general and non-breast cancer specific

Select Inclusion Criteria

- 1. Stage I- III Breast Cancer
- 2. Completion of adjuvant taxane-based chemotherapy (as single agents or in combination with platins or HER-2 directed therapy).
- 3. Presence of grade I or greater neuropathy
- 4. ECOG performance status of 0 or 1
- 5. Adequate hematological function: neutrophil count >1.0 x109/L, platelet count >50x109/L
- 6. Patients who are on a stable dose of prescription medications or dietary supplements for CIPN and still symptomatic as defined above will be allowed to participate in the study

Outcome Measures

- The Patient Neurotoxicity Questionnaire (PNQ)
- The Functional Assessment of Cancer Neurotoxicity (FACT/NTX) subscale
- The European Organization for Research and Treatment of Cancer (EORTC) Quality of Life Questionnaire-Cancer (QLQ-C30) (version 3.0)
- The EORTC QLQ Chemotherapy-induced Peripheral Neuropathy 20 questionnaire (CIPN 20)
- Patient Medication Log.
- Blood draw

Statistical Considerations

- Primary Aim:
- Evaluate the impact of acupuncture on PNQ score by comparing changes from baseline between acupuncture and usual care arms at the end of week 8.
- The response rate is defined as the proportion of patients in whom there is a one unit or greater reduction in PNQ score between baseline and week 8.

Current Status of the Study

- Protocol submitted for IRB review: Feb. 12, 2014
- IRB Approval received: April 14, 2014
- Study acupuncturists training: April 27, 2014
- Clinicaltrial.gov (NCT02129686): April 30, 2014
- IRB Activation: June 12, 2014
- Major Amendment No. 1 Approved: July 14, 2014
- DSMC approval: Feb. 24, 2015
- IRB continuing review approval: March 9, 2015
- The study is currently activated and ongoing

Study Recruitment Status

- The overall target goal: N = 40 (100%)
- First patient was registered in the study on Aug. 15, 2014
- 20 (50%) patients consented as of June 22, 2015
- 20 (50%) patients enrolled into the study:
 - 10 immediate, 10 delay
- 5 (12.5%) active patients: 3 delay, 2 immediate
- 12 (30%) patients completed the study
- 3 (7.5%) withdrawn from the study
- No serious acupuncture related complications

Financial Issues

Funding Appropriations for IM

National Center for Complementary and Alternative Medicine	NCI / OCCAM
FY 2011: \$127.7 million	\$122.5 (includes Recovery act)
FY 2005: \$123.1 million	
FY 2004: \$117.7 million	\$129 million
FY 1998: \$19.5 million (OA	M) \$28 million

Integrative Oncology

The Future

GENOMICS

Cancer is now defined more by a genetic defect and less by site of origin

GENOMICS Gene Profiling

- Individualizing cancer risk
- Individualizing cancer therapy
- Individualizing integrative therapies

Services Available To Cancer Patients And Their Primary Care Oncologists, Often Operating In Silos



Coach/Navigator Assists Patient, Primary Care Oncologist In Individualizing Care.



Proposed Model

SIO Website



SIO 12th Conference 2015

SOCIETY FOR INTEGRATIVE ONCOLOGY 12TH INTERNATIONAL CONFERENCE



JOINT CONFERENCE ACUPUNCTURE::ONCOLOGY::FASCIA

SATURDAY NOVEMBER 14, 2015 8AM - 5PM

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TABLE PERSONNEL SECOND



"It only takes one person to start a revolution of thought and spirit." Lenny Zakim