Reducing Risk, Recurrence, and Treating the Underlying Cause of Breast Cancer

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Cancer development and progression is a complex process that involves a host of functional and genetic abnormalities.

- **Epigenetic modification**: DNA methylation, histone acetylation, genomic mutations and altered gene expression resulting in a change in overall cell function.

- **Cancer cells**: contain full complement of biomarkers necessary for survival: proliferation, differentiation, cell death and expression of cell type function.

- **Cancer cells**: Lack the enzyme, catalase, needed to convert H202 to O2 and H20

- **Cancer cell**: altered regulation of cell function
Tumor Initiation requires two genetic alterations: losing the ability of apoptosis; and loss of cell to cell contact inhibition.
Host Immune Response to Infection and Cancer: Unexpected Commonalities
Inflammation and Cancer

25% of all cancers have a known infection or infection associated chronic inflammation
Bartonella is able to produce tumours

Current Knowledge of Bartonella Species

M. Maurin, R. Birtles, D. Raoult

Bartonella species are now considered emerging pathogens. Of the 11 currently recognized species, four have been implicated in human disease, although only two have been encountered in Europe. Bartonella quintana infections are now being diagnosed among the urban homeless and deprived, manifesting as trench fever, and Bartonella henselae has been shown to be the causative agent of cat scratch disease. Both species also cause a variety of HIV-associated infections, including bacillary angiomatosis. However, perhaps the most significant presentation of Bartonella infection is culture-negative endocarditis. The epidemiologies of Bartonella infections are poorly understood; most Bartonella henselae infections are probably acquired from infected cats, either directly by contact with a cat or indirectly via flea. No animal reservoir has been implicated for Bartonella quintana; however, infection can be transmitted via the human body louse. Diagnosis of Bartonella infections can be made using histological or microbiological methods. The demonstration of specific antibodies may be useful in some instances, although certainly not in all. Cultivation of Bartonella is difficult, as the bacteria are extremely fastidious. Polymerase chain reaction-based or immunological methods for the detection of Bartonella in infected tissues have proven useful. Clinical relapse is often associated with Bartonella infections despite a wide range of prescribed regimens. Only aminoglycosides display in vitro bactericidal activity against intracellular Bartonella species; therefore, they are recommended for treatment of Bartonella infections.

Human infections due to Bartonella species are widely considered emerging diseases. They include long-recognized diseases such as Carrión’s disease (classic bartonellosis), trench fever, and cat-scratch disease and newer clinical manifestations such as bacillary angiomatosis, peliosis hepatitis, septicemia, endocarditis, chronic lymphadenopathy, and neurologic disorders. New molecular biology techniques, mainly based on 16S rRNA gene amplification and analysis, have allowed recognition of the role of Bartonella (formerly Rochalimaea species in a number of these syndromes. The most striking pathological feature of Bartonella infection is the apparent ability of these bacteria to produce angio proliferative lesions in immunocompromised patients, such as those infected with HIV. Capillary and endothelial cell proliferations are characteristic histologic findings of bacillary angiomatosis, peliosis hepatitis, and classic bartonellosis. Bartonella are the only known bacteria with the ability to produce angiogenic tumors in humans, although Agrobacterium species, which belong to the same phylogenetic group as Bartonella species, produce tumors in plants.


“Bartonellae are the only known bacteria with the ability to produce angiogenic tumors in humans”
What are Microbes?

*Microbes*: organisms that are too small to be seen with the naked eye
The human microbiome is made up of more than 2-3 trillion bacteria, fungi, protozoa, and viruses that live in and inside the body.

We have 1-2 times more microbial cells in our body than human cells and the majority live in our guts—especially the large intestine, or colon.

The bacteria in our microbiomes are essential to human health and aid in biological processes such as:

- Extracting energy from food
- Producing essential vitamins
- Regulating our immune system
- Regulating our glucose levels and metabolism
- Protecting us against disease-causing microbes

SYMBIOTIC
The beneficial and symbiotic relationship between humans and our microbiomes has likely evolved and changed throughout human development.
Endo-Biome:

**Microbiome**: controls production, inhibits or supports hormonal balance.

**Depression**: initiates production of serotonin, dopamine and norepinephrine

**Polycystic ovary/endometriosis/Menses / Menopause/breast cancer/prostate cancer**: produces all three estrogens: estrone, estradiol and estriol (estriol - protective against osteoporosis and menopause symptoms) and progesterone.

**Correcting dysbiosis**: may be the key for preventing or reversing estrogen related conditions.
History of FMT

Ancient China
Oral use of human fecal material for food poisoning or severe diarrhea

Veterinary Medicine
Transfaunation (transfer of fresh feces) from healthy horses to treat horses with diarrhea
rumen transfaunation: cows

1958: Dr. Eismann
FMT enema for 4 pts with pseudomembranous colitis (all recovered)
FMT (Fecal Microbiota Transplant)

Drug Companies and Doctors Battle Over the Future of Fecal Transplants - March 3, 2019

One Man’s Poop is Another’s Medicine
Dietary Interventions in Cancer Reduction
Recent research suggests that the microbiota of women with breast cancer differs from that of healthy women, indicating that certain bacteria may be associated with cancer development and with different responses to therapy.
The rise in the new breast cancer cases among women could be attributed to excess body weight. Their dietary pattern, which correlates with obesity, can be an important factor in the etiology of cancer.
A diet rich in colorful, non-starchy vegetables can contribute adequate amounts of polyphenols to help inhibit nuclear factor (NF)-κB (primary molecular target of inflammation).

Understanding the impact of an anti-inflammatory diet on silent inflammation can elevate the status of diet from simply a source of calories to the cutting edge of gene-silencing technology.
Conclusions:

- Greater adherence to the Mediterranean diet has been linked to significant reduction in overall mortality and morbidity.
- Microbiota revealed lower E Coli counts and higher Bifidobacterium.
- Opposite results found in those following fast food consumption.
CRC (Colo Rectal Cancer) is the third most common cancer worldwide

Heme content in red meat is 10 times greater than that of white meat.

N-nitroso compounds (NOCs) produced by bacterial decarboxylation of amino acids and lipid peroxidation create free radicals and increases carcinogenesis.
Free Radical Exposure and Cancer Development

Hydroxyl Radical (OH)

- Extremely reactive if generated in the area of DNA-breaks strands

Superoxide O2 interacts with Nitric Oxide (NO)

- Interacts with protein and causes cell damage
Relationships between Oxidative Stress, Cancer Development and Therapeutic Interventions
Epidemiological studies suggest dietary intake of flavonoids may reduce the risk of tumors of the breast, colon, lung, prostate, and pancreas.

A Major Challenge

Dose and timing of exposure may influence the anticancer response to flavonoid-rich diets. A limited number of intervention trials of flavonoids have documented cancer preventative effects. Proposed anticancer mechanisms for flavonoids are: inhibition of proliferation; inflammation; invasion; metastasis; and activation of apoptosis.
Vitamin C

Vitamin C is a commonly used water-soluble vitamin. Although many mammals can produce vitamin C, humans must obtain vitamin C from foods and other sources.

- Involved in tyrosine metabolism and is a cofactor in the synthesis of carnitine, thyroxin, norepinephrine, dopamine, and tryptophan.

- Vitamin C metabolic processes includes oxidation-reduction reactions and cellular respiration, carbohydrate metabolism, synthesis of lipids and proteins, catabolism of cholesterol to bile acids, conversion of folic acid to folinic acid, and iron metabolism.

- Vitamin C deficiency can cause fatigue, personality changes, and decline in psychomotor performance and motivation within 84 to 97 days.
Vitamin C

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- Hydrogen peroxide is a pro-oxidant, capable of causing free radical damage.
- In normal cells, the enzyme, catalase, disables hydrogen peroxide. Thus, in normal cells, vitamin C retains its antioxidant effect.
- Tumor cells, however, lack catalase, and cancers are thus vulnerable to damage from hydrogen peroxide.
Vitamin C

- Tumor cells also selectively take up vitamin C, so they accumulate it to higher levels than normal cells, increasing their vulnerability to hydrogen peroxide.
- High doses can be harmless (or even beneficial) to normal cells, but at the same time, kill tumor cells.
- Furthermore, since IV C creates a pro-oxidant effect, it is unlikely to counteract the effect of chemotherapy.

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Further Vitamin C Studies

**High Doses of Vitamin C to Improve Cancer Treatment Passes Human Safety Trial**
*Cell Press*, March 30, 2017

**Intravenous Vitamin C Administration Improves Quality of Life in Breast Cancer Patients during Chemo-/Radiotherapy and Aftercare: Results of a Retrospective, Multicentre, Epidemiological Cohort Study in Germany**
*In Vivo*, 2011 Nov-Dec;25(6):983-90
Authors: Claudia Vollbracht, Berthold Schneider, Van Leentert, Gabrielle Weiss, Leo Auerbach, Josef Beuth

**High-Dose Parenteral Ascorbate Enhanced Chemosensitivity of Ovarian Cancer and Reduced Toxicity**
*Science News*. Authors: Yan Ma, Julia Chapman, Mark Levine, Kishore Polireddy, Jeanne Drisko and Qi Chen
The applicable part of turmeric is the rhizome. Turmeric's major active constituents are curcuminoids including curcumin (diferuloylmethane), a yellow pigment used as a food coloring.

- Curcumin seems to have anti-inflammatory activity, possibly by inhibiting cyclooxygenase-2 (COX-2), prostaglandins, leukotrienes, and other cytokines involved in proinflammatory signaling pathways.
- Turmeric also exhibits chemopreventive and growth inhibitory activity against several tumor cell lines. It seems to induce apoptosis in cancer cells and may inhibit angiogenesis.
- Curcumin might reduce activity of procarcinogenic eicosanoids, such as prostaglandin-E2 and 5-hydroxyeicosatetraenoic acid (5-HETE), via inhibition of cyclooxygenases and 5-lipoxygenase.
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- Preliminary evidence suggests curcumin can also reduce precancerous rectal aberrant crypt foci. Curcumin might have antithrombotic effects. Preliminary research suggests it might inhibit platelet-activating factor and arachidonic acid platelet aggregation, possibly by interfering with thromboxane synthesis.
- Other preliminary research suggests that turmeric and curcumin might also have antioxidant and immunostimulatory effects.
Impact of Antioxidant Supplementation on Chemotherapeutic Toxicity: A Systematic Review of the Evidence from Randomized Controlled Trials

IJC International Journal of Cancer, Authors: Keith I Block, Amanda C. Koch, Mark N. Mead, Peter K. Tothy, Robert A. Newman, Charlotte Gyllenhaal

- The majority (24) of the 33 studies included reported evidence of decreased toxicities from the concurrent use of antioxidants with chemotherapy.
- Only 1 study (vitamin A) reported a significant increase in toxicity in the antioxidant group.
- Five studies reported the antioxidant group completed more full doses of chemotherapy or had less dose reduction than control groups.
- This review provides the first systematically reviewed evidence that antioxidant supplementation during chemotherapy holds potential for reducing dose-limiting toxicities.

Literature suggests that up to 87% of patients with cancer take antioxidant supplements.
Hyperbaric Oxygen Therapy
Hyperbaric Oxygen Therapy (HBOT)
Cancer and Hyperbaric

Hyperbaric oxygen therapy (HBOT) is currently being utilized in conjunction with conventional treatments, including radiation and chemotherapy. Cancer thrives in hypoxic environments and HBOT has been shown to increase these oxygen levels to weaken tumors and reduce their aggressiveness. Studies have demonstrated the benefits of HBOT for cancer with the following:
Enhance “Conventional” Cancer Therapies and Treatments with HBOT

- Reduce Tumor Hypoxia
- Better Radiation Therapy Results
- Improves Chemotherapy Outcome
- Enhances Brain Treatment
- Decreases Tumor Drug Resistance
- Allows for Optimal Therapy Dosage to be Attained
- Increases Post-Op Fibroblast Activation
Reduce Side Effects of “Conventional” Cancer Therapies and Treatment with HBOT

- Reduces Radiation Therapy Side Effects
- Decreases Chemotherapy Side Effects
- Accelerates Post-Operative Healing & Prevents Infection
- Reduces Chemo-Brain Syndrome Symptoms
Enhance IV Cancer Treatments with HBOT

- Increase Intravenous Vitamin C Therapy Effects
- Enhance Chemotherapy Uptake

Reduce Tumor Aggressiveness with HBOT

- Weakens Hypoxic Tumors
- Targets Metastatic Tumors

Increase Natural Killer Cell Activity with HBOT

- Increase Oxy-Radical Production
- Amplifies Apoptosis Effect
Acupuncture
Helps subdue the Pain from conventional Cancer treatments

Services

63%
OF CANCER PATIENTS EXHIBITED POSITIVE RESULTS

Acupuncture

Up to 31%
of patients Use Acupuncture
Acupuncture is an effective intervention for managing the symptom of cancer-related fatigue and improving patients' quality of life.

Electroacupuncture has demonstrated benefit for chemotherapy-induced acute vomiting.

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

Alexander Molassiotis, Joy Bardy, et al.

Journal of Clinical Oncol 30:4470-4476

Acupuncture-Point Stimulation for Chemotherapy-Induced Nausea and Vomiting

Real-Life Application
Case Presentation

• Patient was tested in early twenties as part of a research study. Patient + BRCA 2.

• October 2005- DCIS- s/p right breast lumpectomy s/p radiation- completed 6 weeks.

• July 2015- had mammogram- patient developed lump in left breast and chose to have a double mastectomy with implants. All biopsies have been ER+. No chemotherapy or radiation at this time. Patient reports she has never had hormone therapy.

• August 2018- patient saw PCP and had blood work and was called immediately and advised to go to the hospital. Patient reports "something about a C-protein and concern for infection and anemia". Patient also had a chest x-ray that also made PCP concerned. Patient was told she had stage IV metastatic breast cancer to bones (spine, pelvis, sternum and ribs). Patient reports blood count was 9.0 and her recent blood work revealed 7.8.
Most prominent symptom:

- Generalized pain
  Intensity: 7/10 (10=worst), it can go down to 3/10
  Frequency: Daily

- Ambulating with a walker because it makes her more comfortable.
Images Representing Metastasis
### Patient Details
- **DOB:** 11/09/1972
- **Address:** P.O. Box 1234, Anytown, USA
- **Gender:** F
- **SSN:** 123-45-6789
- **Patient ID:** 3150485.15841
- **Date collected:** 09/26/2018
- **Local Date:** 1116

### General Comments & Additional Information
- **Alternate Control Number:** 0000157296
- **Alternate Patient ID:** 3150485.15841

### Test Results
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<tr>
<th>Test</th>
<th>Result</th>
<th>Flag</th>
<th>Units</th>
<th>Reference Interval</th>
<th>Lab</th>
</tr>
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<tbody>
<tr>
<td>C-Reactive Protein</td>
<td>116.74</td>
<td>High</td>
<td>mg/L</td>
<td>0.00 - 3.00</td>
<td>01</td>
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</table>

### Results confirmed on dilution.
Relative Risk for Future Cardiovascular Event
- **Low:** 1.00
- **Average:** 3.00
- **High:** 3.00

### Tumor Necrosis Factor-Alpha
- **Low:** 2.2
- **Not formed**

### Interleukin-2
- **Low:** 0.0 - 3.12
- **High:** 0.0 - 3.12

### Interleukin-6
- **Low:** 0.0 - 15.5
- **High:** 0.0 - 15.5

### Other Biomarkers
- **Neutrophils:** 60
- **Lymphs:** 17
- **Monocytes:** 9
- **Eos:** 1
- **Baso:** 0

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This document contains patient and confidential health information protected by state and federal law. If you have received this document in error, please call 888-434-1230.
### Interleukin-6, Serum

- **Result:** 50.6 pg/mL
- **Reference Interval:** 0.0 - 66.1 pg/mL
- **Flag:** 02
- **Comment:** Results for this test are for research purposes only, by the assay's manufacturer. The performance characteristics of this product have not been established. Results should not be used as a diagnostic procedure without confirmation of the diagnosis by another medically established diagnostic product or procedure.

### IL-2 Receptor Alpha

- **Result:** 1560 High U/mL
- **Reference Interval:** 223 - 710 U/mL
- **Flag:** 02
- **Comment:** Results of this test are labeled for research purposes only by the assay's manufacturer. The performance characteristics of this assay have not been established. Results should not be used for diagnostic procedure without confirmation of the diagnosis by another medically established diagnostic product or procedure. The performance characteristics were determined by Labcorp.

### MTHFR

**MTHFR, DNA Analysis**

- **Result:** AL1298C/AL1298C
- **Interpretation:** This individual is homozygous for the MTHFR A1298C variant (two copies). The MTHFR C677T variant was not identified. This MTHFR result is not associated with an increased risk of hyperhomocysteinemia, venous thrombosis, coronary artery disease, or recurrent pregnancy losses. Hyperhomocysteinemia may also occur due to mutations in enzymes other than MTHFR that are involved in homocysteine metabolism, or arise due to acquired factors. In the evaluation of vascular and obstetric risk, consider measuring fasting homocysteine. Other risk factors may be detected through systematic clinical laboratory analysis.

**Please Note:** Methyleneetetrahydrofolate reductase (MTHFR) is a key enzyme in the folate pathway and is responsible for the metabolism of homocysteine. There are two common variants in the MTHFR gene, c.675C>T (p.Ala222Val), referred to as C677T, and c.1298A>C (p.Glu432Glu), referred to as A1298C. Individuals homozygous for C677T (two copies of the variant), have decreased activity of the MTHFR enzyme and a predisposition to hyperhomocysteinemia, particularly when deficient in folate. Hyperhomocysteinemia is a risk factor for venous thrombosis and coronary artery disease and is associated with an increased risk of fetal open neural tube defects. The C677T variant does not independently increase risk of these conditions in the absence of hyperhomocysteinemia. The AL1298C variant is not associated with...
# Treatment Plan

## Supplements
- Melatonin
- Collagen Peptides
- Methyl Factors
- Iron Bisglycinate
- MRS Mushroom Formula
- Turkey Tail
- ProEPA
- Turmeric

## Adjunct Therapy
- Acupuncture
- IV Vitamin C 50 g 2x per week
- Hyperbaric Oxygen with a total of 40 sessions
<table>
<thead>
<tr>
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<th>Reference Range</th>
<th>Lab</th>
<th>QNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>DORF, DORO WOLTERSHIEN</td>
<td>111</td>
<td>34-56</td>
<td>40-190 ng/mL</td>
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<tr>
<td>ASL</td>
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<td></td>
<td>0.24-0.9 mg/dL</td>
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<td>C-REACTIVE PROTEIN (CRP)</td>
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<td>0.2-5 mg/dL</td>
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<td>INTERLEUKIN 4, HIGHLY SENSITIVE</td>
<td>4.71</td>
<td>0.31-5.50 ng/mL</td>
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<tr>
<td>INTERLEUKIN 8 (IL-8)</td>
<td>98</td>
<td></td>
<td>&lt;=5 pg/mL</td>
<td>ABT</td>
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</tbody>
</table>

**Additional Notes:**
- This test was performed using a kit that has not been cleared or approved by the FDA. Results are not used for diagnosis without confirmation by other medically established means.
- Interleukin 8 (IL-8) is not to be used for blood samples only. Reference ranges for body fluids other than blood have not been established.
- This test was performed using a kit that has not been cleared or approved by the FDA. Results are not used for diagnosis without confirmation by other medically established means.
- Tumor Necrosis Factor Alpha (TNF-alpha) is not to be used as a diagnostic procedure without confirmation of the diagnosis by another established product or procedure.

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</tr>
</thead>
<tbody>
<tr>
<td>VEGF-B-II</td>
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<td>31-84 ng/mL</td>
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<td>Tumor Necrosis Factor Alpha (TNF-alpha)</td>
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<td>0.56-1.40 pg/mL</td>
<td>QNT</td>
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Questions