Conventional Diagnostics and Treatments of Cancer vs Alternative Diagnostics and Treatments of Cancer

William M Kleber D.C., DABCI

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GROUNDED in Research
ROOTED in Philosophy

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FCA The National DABCI Schedule 2025

Friday 10:20- Noon (Clinical CE) Dr Kleber Cancer Fundamentals: Understanding the Big Picture

Friday 1:00-2:40 (Clinical CE) Dr Wisniewski Immunopathology: Autoimmune Disease, Infection, Cancer Prevention and Recovery-Links, Triggers and Mechanisms

Friday 3:20-5:00 (Documentation) Documenting the Chiropractic Physicians Role in Treating Cancer Patients

Saturday 10:20-Noon (Clinical CE) Oxidative Load and Cancer: Understanding the Metabolic Links to Prevention and Progression

Saturday 1:00-2:40 (Clinical CE) Conventional Diagnostics and Treatment of Cancer vs Alternative Diagnostics and Treatment of Cancer Patients

Saturday 3:20-5:00 (Documentation) Documenting Integrative Medicine in Cancer: Enhancing Patient Outcomes Beyond Conventional Treatment

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Why Isn't There A Cure For Cancer?

- Maybe there is no cure! Maybe there never will be.
- There is no cure for chronic disease and cancer is a chronic disease.
- Maybe we should look to manage it better with less toxic treatments.
- Bureaucracy. Power. Covid as an example.
- Status quo is slow to change.
- No significant reason to change.
- Laetrile
- Hyperthermia
- A lot of Quackery
- Joe Tippins Protocol
- Public has lost support/faith.
- The Lie of America's War on Cancer. Laetrile amygdalin (B17) stopped metastasis 80% of the time.

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The National Cancer Act Dec 23, 1971

The President's Cancer Panel was created to monitor the activities of the National Cancer Program and report to the president of the United States on barriers to progress in reducing the burden of cancer. This may have worked well when Benno Schmidt was chair because he was a personal friend of President Nixon and could pick up the phone and call the president anytime. It is unclear whether anyone else could or did influence policy. President's Cancer Panel veterans are a colorful cast of characters: Armand Hammer, Charlton Heston, and Lance Armstrong.

1971 - PRESIDENT NIXON DECLARES "WAR ON CANCER"
Launching a $1.6 Billion (US) dollar crusade.

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THE LANCET Oncology

Global funding for cancer research between 2016 and 2020: a content analysis of public and philanthropic investments

Stuart A McIntosh, PhD[a] s.mcintosh@qub.ac.uk · Fareesha Ali am, MSc[b] · Laura Adams, BM[c] · Ian S Boon, FRCR[d] · Jonathan Callaghan, MBBCh BAO[d] · Isabella Conti, MBBS[b] · et al

From 2016 to 2020, public and philanthropic organizations invested approximately $24.5 billion in cancer research worldwide across 66,388 research grants.

A decline in cancer research investment was observed over the 2016–20 time period, most strikingly in 2020, with a 45% decrease from 2019. Whether this sharp decline reflects reallocation of research funding to the pandemic, a decrease in available funding (eg, due to fewer charitable donations), or is an augmentation of an underlying trend remains unclear.

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Cancer
An International Interdisciplinary Journal of the American Cancer Society
Otis W. Brawley MD, MACP, Paul Goldberg BA
First published: 07 December 2021
https://doi.org/10.1002/cncr.34040

The 50 years' war: The history and outcomes of the National Cancer Act of 1971

The National Cancer Act has had a tremendous impact on science and medicine over the past 50 years. Most of the impact has been good; some has been bad.

The National Cancer Act provided significant support to the National Clinical Trials Program.

Today, it puts more than 18,000 persons into trials per year.

A study suggests that 80% of NCI clinical trials influence treatment guidelines and that NCI clinical trials have led to a gain of 14 million years of additional life.[9]

9)Unger JM, LeBlanc M, Blanke CD. The effect of positive SWOG treatment trials on survival of patients with cancer in the US population. *JAMA Oncol*. 2017; **3**: 1345-1351.

SWOG stands for Southwest Oncology Group, a cancer research organization that conducts clinical trials for adult cancers. It is one of the five groups that make up the National Cancer Institute's (NCI) National Clinical Trials Network (NCTN).

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Common Diagnostics Shared by Both Traditional and Non- Traditional Practitioners

History:

- Fatigue
- Unexplained weight loss or gain
- Cough , hoarseness
- Difficulty swallowing
- Change in bowel habits
- Pain of unknow origin
- Lumps or thickening of tissue
- Night sweats

Signs of Cancer:

- Swollen lymph nodes
- Changes to moles appearance
- Cuts that won't heal
- Lump or thickening in the breast or underarm, nipple changes or discharge.
- Jaundice

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Common Diagnostics Shared by Both Traditional and Non- Traditional Practitioners

1)Biopsy

2)Imaging tests

- CT
- MRI
- Pet scan
- Ultrasound
- X ray
- Mammograms

3)Blood tests

- CBC
- Tumor markers
- CMP
- Liquid biopsy: Circulating Tumor Cells (CTC)

4) Endoscopic exams

5) Genetic testing

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CT as a Diagnostic For Cancer

Computed tomography (CT) scans are a vital imaging tool in the diagnosis, staging, treatment planning, and monitoring of cancer.

CT scans help identify tumors and other abnormalities by revealing their size, shape, and precise location within the body.

Contrast can be used.

Does well at detecting solid tumors, even small ones.

Can stage cancer by revealing if it has metastasized to lymph nodes, nearby tissues, or distant organs.

Downside is radiation.

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CT as a Diagnostic For Cancer

When contrast is typically used:

Abdominal and pelvic CTs: To evaluate for tumors, inflammation (like colitis or appendicitis), or to assess the extent of bowel disorders.

Chest CTs: For cancer workup, pulmonary embolism, or to assess the mediastinum.

Head CTs: To evaluate tumors, blood vessel health, or conditions like multiple sclerosis or epilepsy.

Neck CTs: To assess for masses or lymph node enlargement.

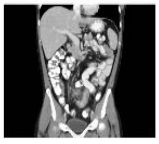
Spine CTs: For evaluating spinal or basal cisternal disease, cerebrospinal fluid leaks, and for detecting tumors.

To differentiate between structures: When structures have similar attenuation (density) on a non-contrast scan, contrast can help distinguish them based on their blood flow. For example, differentiating a blood vessel from a lymph node.

To visualize areas of increased blood flow: Contrast can highlight areas of increased blood flow, which can indicate inflammation, infection, or tumors.

To define vascular structures: For example, to assess the size and shape of blood vessels or to identify abnormalities like arteriovenous malformations.

Barium Oral Contrast



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When is Contrast Ordered

CT contrast material is commonly made from iodine-based compounds such as ohexol, Iopromide, and Iodinated nanoparticles. Barium sulfate may be used as a contrast agent for CT scans of the gastrointestinal tract.

When contrast might not be needed:

To assess for head trauma or brain bleeding: A non-contrast CT is often sufficient for detecting these issues.

To evaluate lung nodules or masses: A non-contrast CT can be sufficient, especially for initial assessment of lung nodules.

If there is a risk of allergic reaction to the contrast agent: In some cases, the potential risks of contrast outweigh the benefits.

If the patient has impaired kidney function: Contrast can potentially worsen kidney problems, so it's crucial to assess kidney function before administering contrast.

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MRI in Cancer Diagnostics

MRI plays a role in the diagnosis and monitoring of cancer by providing detailed images of the body's soft tissues and organs.

MRI contrast agents, primarily gadolinium-based contrast agents (GBCAs), are crucial in many MRI examinations as they enhance the visibility of tissues and lesions, facilitating more accurate diagnoses.

Gadolinium contrast medium is used in about 1 in 3 of MRI scans

it improves the visibility of inflammation, tumors, blood vessels and, for some organs, blood supply.

In patients with normal kidney function, most of the gadolinium contrast medium injected (over 90%) is passed out in the urine within 24 hours.

Tumor detection and localization: MRI scans are particularly adept at visualizing tumors and identifying their precise locations within the body. They can reveal even small tumors and their exact position, which is crucial for treatment planning.

Differentiating between cancerous and non-cancerous masses: MRI can differentiate between various types of tissues, allowing radiologists to distinguish between healthy and abnormal growths, potentially indicating whether a tumor is benign or malignant.

Staging cancer: MRI can help determine how far cancer has spread, providing important information for staging and treatment planning. For example, in breast cancer, MRI can assess the extent of the tumor and whether it has spread to surrounding tissues.

Monitoring treatment effectiveness: After treatment, MRI scans can track changes in tumor size over time to evaluate the effectiveness of therapies like radiation or chemotherapy.

Detecting recurrence: Regular MRI scans after treatment can help detect early signs of cancer recurrence, enabling prompt intervention and potentially improving patient outcomes.

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MRI for Specific Cancers

- **Breast Cancer:** MRI is often recommended for women with a high risk of breast cancer (e.g., those with a family history or genetic mutations) due to its superior sensitivity compared to mammograms, especially in women with dense breast tissue.
- **Brain Cancer:** MRI is the preferred imaging method for detecting brain tumors and evaluating their size, location, and potential spread, which is vital for surgical planning.
- **Prostate Cancer:** MRI is important for staging and assessing the extent of prostate cancer after diagnosis. It can sometimes detect smaller tumors missed by other methods.
- **Liver Cancer:** MRI is highly effective in detecting liver cancer, especially in individuals with cirrhosis or chronic liver disease, outperforming other imaging techniques like ultrasound and CT scans.
- **Ovarian Cancer:** MRI can provide more detailed images of ovarian masses and assess the spread of ovarian cancer.
- **Pancreatic Cancer:** While challenging to detect early, MRI can help identify pancreatic tumors and their spread.
- **Bone and Soft Tissue Cancers:** MRI's ability to clearly visualize soft tissues makes it highly effective for detecting bone and soft tissue cancers.

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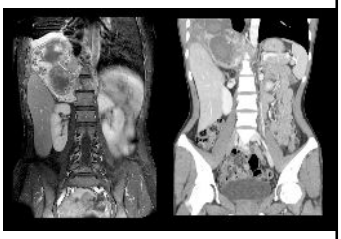
MRI vs CT for Cancer Diagnosis

Type of cancer: MRI is better for soft tissue cancers (brain, spinal cord, breast, prostate), while CT is preferred for bone and lung cancers.

Location of the suspected cancer: MRI excels at visualizing tumors in areas with abundant soft tissue, while CT is better for areas like the chest, abdomen, and pelvis where it can quickly outline abnormalities.

Patient's health condition: Factors like claustrophobia, presence of metal implants, and kidney function (relevant for contrast dye use) may influence the choice.

Need for speed: CT scans are faster and often used in emergencies.



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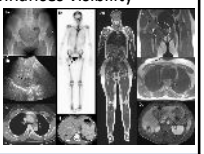
Whole Body MRI for Cancer Detection

Whole-body magnetic resonance imaging (WB-MRI) for cancer screening is controversial. Many companies going direct to consumer.

Major medical professional organizations like the American Academy of Family Physicians do not currently recommend WB-MRI for cancer screening in the general asymptomatic population.

- Cost is between $2,000 and $2,500.
- Contrast is not used.
- But contrast enhances visibility of soft tissue?



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3T MRI (3 Tesla MRI)

Powerful magnetic field that is twice as strong as a conventional 1.5T MRI and up to 15 times stronger than an open MRI.

The stronger magnetic field produces a higher signal-to-noise ratio, resulting in sharper, more detailed images, particularly beneficial for visualizing small structures and intricate details in areas like the brain, spine, and small joints.

Faster scan times

Some metallic implants and devices may only be safe in a 1.5T environment, making 3T scans unsuitable..

Brain and spine, including stroke, multiple sclerosis, and tumors.

Breast cancer screening and evaluation.

Prostate gland and surrounding structures.

Vascular system.

Musculoskeletal system, including joints, bones, and soft tissues

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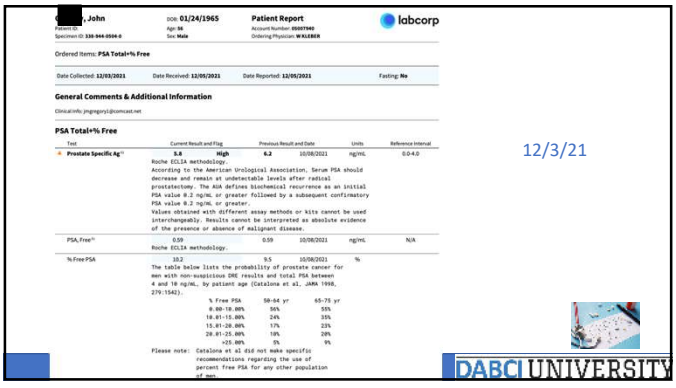
[redacted], John DOB: 01/24/1965 Patient Report labcorp

Ordered Items: PSA Total+% Free

Date Collected: 12/03/2021 Date Received: 12/05/2021 Date Reported: 12/05/2021 Fasting: No

General Comments & Additional Information

PSA Total+% Free

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
Prostate Specific Ag	5.8 High	6.2 10/08/2021	ng/mL	0.0-4.0
PSA, Free	0.59	0.59 10/08/2021	ng/mL	N/A
% Free PSA	10.2	9.5 10/08/2021	%	

Roche ECLIA methodology.

According to the American Urological Association, Serum PSA should decrease and remain at undetectable levels after radical prostatectomy. The AUA defines biochemical recurrence as an initial PSA value 0.2 ng/mL or greater followed by a subsequent confirmatory PSA value 0.2 ng/mL or greater.

Values obtained with different assay methods or kits cannot be used interchangeably. Results cannot be interpreted as absolute evidence of the presence or absence of malignant disease.

Roche ECLIA methodology.

The table below lists the probability of prostate cancer for men with non-suspicious DRE results and total PSA between 4 and 10 ng/mL, by patient age (Catalona et al, JAMA 1998, 279:1542).

% Free PSA	50-64 yr	65-75 yr
0.00-10.00%	56%	55%
10.01-15.00%	24%	35%
15.01-20.00%	17%	23%
20.01-25.00%	10%	20%
>25.00%	5%	9%

Please note: Catalona et al did not make specific recommendations regarding the use of percent free PSA for any other population of men.

12/3/21

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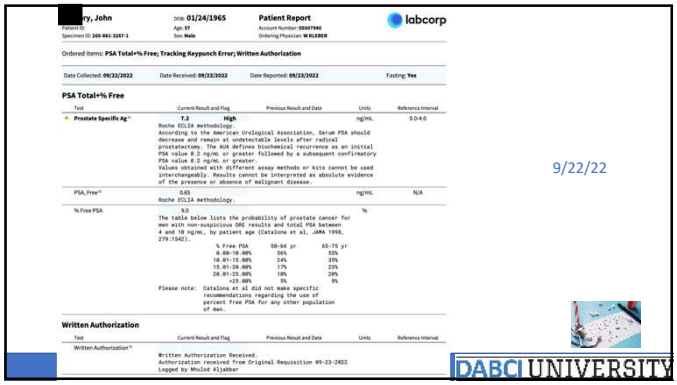
[redacted], John DOB: 01/24/1965 Patient Report labcorp

Ordered Items: PSA Total+% Free; Tracking Keypunch Error; Written Authorization

Date Collected: 09/22/2022 Date Received: 09/23/2022 Date Reported: 09/23/2022 Fasting: Yes

PSA Total+% Free

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
Prostate Specific Ag	7.3 High		ng/mL	0.0-4.0
PSA, Free	0.65		ng/mL	N/A
% Free PSA	9.0		%	

Roche ECLIA methodology.
According to the American Urological Association, Serum PSA should decrease and remain at undetectable levels after radical prostatectomy. The AUA defines biochemical recurrence as an initial PSA value 0.2 ng/mL or greater followed by a subsequent confirmatory PSA value 0.2 ng/mL or greater.
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0.00-10.00%	56%	55%
10.01-15.00%	24%	35%
15.01-20.00%	17%	23%
20.01-25.00%	10%	29%
>25.00%	9%	9%

Please note: Catalona et al did not make specific recommendations regarding the use of percent free PSA for any other population of men.

Written Authorization

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
Written Authorization				

Written Authorization Received:
Authorization received from Original Requisition 09-23-2022
Logged by Khulod Aljabbar

9/22/22

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[redacted] John DOB: 01/24/1965 Patient Report labcorp

Ordered Items: Prostate-Specific Ag

Date Collected: 01/17/2023 Date Received: 01/18/2023 Date Reported: 01/18/2023 Fasting: No

Prostate-Specific Ag

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
Prostate Specific Ag	9.2 High	8.3 12/06/2022	ng/mL	0.0-4.0

Roche ECLIA methodology.
According to the American Urological Association, Serum PSA should decrease and remain at undetectable levels after radical prostatectomy. The AUA defines biochemical recurrence as an initial PSA value 0.2 ng/mL or greater followed by a subsequent confirmatory PSA value 0.2 ng/mL or greater.
Values obtained with different assay methods or kits cannot be used interchangeably. Results cannot be interpreted as absolute evidence of the presence or absence of malignant disease.

Disclaimer
The Previous Result is listed for the most recent test performed by Labcorp in the past 5 years where there is sufficient patient demographic data to match the result to the patient. Results from certain tests are excluded from the Previous Result display.

Icon Legend
Out of Reference Range Critical or Alert

Performing Labs
01: DV - Labcorp Denver 8490 Upland Drive, Englewood, CO, 80112-7115 Dir: Earle Collum, MD
For Inquiries, the physician may contact Branch: 303-792-2600 Lab: 303-792-2600

[redacted]
Phone: 303-886-9494
Date of Birth: 01/24/1965
Age: 57
Sex: Male
Patient ID:
Alternate Patient ID:

Physician Details
W KLEBER
Gateway Natural Medicine
1211 Lake Ave, Ste 101, Berthoud, CO, 80513
Phone: 970-532-2755
Account Number: 05007940
Physician ID:
NPI: 1306995816

Specimen Details
Specimen ID: 017-881-2715-0
Control ID: L2300322130
Alternate Control Number: L2300322130
Date Collected: 01/17/2023 0547 Local
Date Received: 01/18/2023 0900 ET
Date Entered: 01/18/2023 0145 ET
Date Reported: 01/18/2023 1009 ET
Rte: 00

1/18/23

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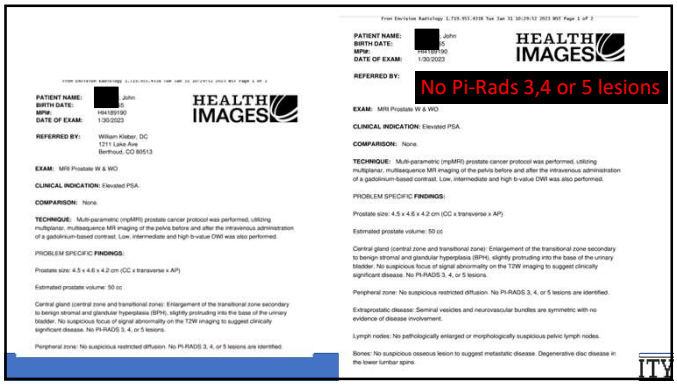
PATIENT NAME: [redacted] John
BIRTH DATE: [redacted]
MPI#: H6130190
DATE OF EXAM: 1/30/2023

HEALTH IMAGES

REFERRED BY: William Kleber, DC
1211 Lake Ave
Berthoud, CO 80513

EXAM: MRI Prostate W & WO

CLINICAL INDICATION: Elevated PSA.

COMPARISON: None.

TECHNIQUE: Multi-parametric (mpMRI) prostate cancer protocol was performed, utilizing multiplanar, multisequence MR imaging of the pelvis before and after the intravenous administration of a gadolinium-based contrast. Low, intermediate and high b-value DWI was also performed.

PROBLEM SPECIFIC FINDINGS:

Prostate size: 4.5 x 4.6 x 4.2 cm (CC x transverse x AP)

Estimated prostate volume: 50 cc

Central gland (central zone and transitional zone): Enlargement of the transitional zone secondary to benign stromal and glandular hyperplasia (BPH), slightly protruding into the base of the urinary bladder. No suspicious focus of signal abnormality on the TZW imaging to suggest clinically significant disease. No PI-RADS 3, 4, or 5 lesions.

Peripheral zone: No suspicious restricted diffusion. No PI-RADS 3, 4, or 5 lesions are identified.

Extraprostatic disease: Seminal vesicles and neurovascular bundles are symmetric with no evidence of disease involvement.

Lymph nodes: No pathologically enlarged or morphologically suspicious pelvic lymph nodes.

Bones: No suspicious osseous lesion to suggest metastatic disease. Degenerative disc disease in the lower lumbar spine.

No Pi-Rads 3,4 or 5 lesions

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Ultrasound for Cancer Detection

Differentiating Lumps: Ultrasound can distinguish between solid masses (tumors) and fluid-filled cysts, which are often benign.

Visualizing Abnormalities: It can highlight suspicious areas or abnormal growths in organs and soft tissues.

Assessing Blood Flow: Doppler ultrasound can analyze blood flow patterns in tumors, which can be an indicator of malignancy.

Guiding Biopsies: Ultrasound guidance enhances the precision of needle placement during biopsies, reducing sampling errors.

Breast Cancer: Especially valuable for evaluating lumps found during a physical exam or mammogram and in women with dense breast tissue.

Thyroid Cancer: Helps identify suspicious characteristics in thyroid nodules, guiding decisions about biopsy.

Liver Cancer: Can detect liver tumors and identify irregularities in liver size or shape.

Ovarian Cancer: Useful for evaluating ovarian cysts and tumors, though may require additional tests for definitive diagnosis.

Kidney Cancer: Can identify masses or abnormal growths in the kidneys.

Prostate Cancer: Ultrasound Direct Scans says: Ultrasound scans are commonly used to detect liver cancer, pancreatic cancer, gallbladder cancer and prostate cancer.

Other Cancers: Ultrasound may also be helpful in detecting cancers of the uterus, pancreas, and lymph nodes in some cases.

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Mammography vs Ultrasound For Detection of Breast Cancer

Mammography:

Uses X ray to capture images of breast tissue. Breast is compressed between 2 plates for clearer images.

Considered the "Gold Standard"

Used to detect potential abnormalities, including tiny calcifications that can be an early sign of cancer.

Breast US:

Utilizes high-frequency sound waves to create images of the breast tissue. Can distinguish between fluid-filled cysts (usually benign) and solid masses (potentially cancerous).

May be more effective than mammography in detecting cancers in women with dense breasts.

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Mammography vs Ultrasound For Detection of Breast Cancer

Mammography Advantages:

Effective for routine screenings, particularly for women over 40.

Can detect cancers years before they become palpable.

Studies have shown it reduces the risk of dying from breast cancer.

Limitations/Disadvantages:

Dense breast tissue can obscure abnormalities.

Radiation

Discomfort

Breast US Advantages:

Radiation-free, making it suitable for pregnant women.

Can distinguish between fluid-filled cysts (usually benign) and solid masses (potentially cancerous).

Can be used to guide biopsies.

May be more effective than mammography in detecting cancers in women with dense breasts.

Limitations/ Disadvantages

Radiation-free, making it suitable for pregnant women.

Can distinguish between fluid-filled cysts (usually benign) and solid masses (potentially cancerous).

Can be used to guide biopsies.

May be more effective than mammography in detecting cancers in women with dense breasts. No calcifications

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HerScan

$295

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PET (Positron Emission Tomography) Scans

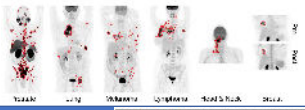
Provide detailed images of the body's metabolic activity, highlighting areas of increased cellular function, which can be indicative of cancerous cells.

A small amount of a radioactive tracer, often a form of glucose called fluorodeoxyglucose (FDG), is injected into a vein.

Cancer cells, due to their rapid growth, have a higher metabolic rate and absorb more of this radioactive sugar than normal cells.

The PET scanner detects the radiation emitted by the tracer and creates 3D color images of the organs and tissues.

Areas with higher concentrations of the tracer, appearing as bright spots or "hot spots" on the images, indicate increased metabolic activity and potentially cancerous areas.



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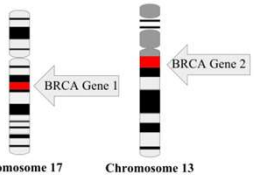
Cancer and Genetics: BRCA

BRCA1 was identified earlier (1990) and is located on chromosome 17, while BRCA2 was discovered later (1994) and is on chromosome 13.

Protein functions: Both are tumor suppressor genes involved in DNA repair, but they produce different proteins that act at different stages in the DNA damage response. BRCA1 has broader functions including checkpoint activation and multiple DNA repair processes, while BRCA2 mainly mediates homologous recombination for DNA repair.



Foulkes WD. Molecular origins of cancer: inherited susceptibility to common cancers. N Engl J Med. 2008;359:2143–2153. doi: 10.1056/NEJMra0802968.

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Cancer and Genetics: BRCA

The BRCA gene refers specifically to two genes: BRCA1 and BRCA2, which produce proteins critical for repairing damaged DNA.

These genes act as tumor suppressors by maintaining the integrity of genetic material and preventing uncontrolled cell growth that can lead to cancer.

Everyone has two copies of each of these genes—one copy inherited from each parent.

People who inherit a mutation in one of these genes have increased risks of several cancers—most notably breast and ovarian cancer, but also several other types of cancer.

More than 60% of women who inherit a mutation in *BRCA1* or *BRCA2* will develop breast cancer during their lifetime. By contrast, about 13% of women in the general population will develop breast cancer during their lifetime.

Having one normal copy of either gene is enough to protect cells from becoming cancer. But the normal copy can change or be lost during someone's lifetime. Such a change is called a somatic alteration. A cell with a somatic alteration in the only normal copy of one of these genes doesn't have sufficient DNA repair ability and can become cancer.

Petrucelli N, Daly MB, Pal T. *BRCA1*- and *BRCA2*-associated hereditary breast and ovarian cancer. 1998 Sep 4 [Updated 2023 Sep 21]. In: Adam MP, Feldman J, Mirzaa GM, et al., editors. GeneReviews [Internet]. Seattle (WA): University of Washington, Seattle; 1993–2024.

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Cancer and Genetics: BRCA

About 30%–40% of breast cancer survivors with inherited *BRCA1* changes and 25% of those with inherited *BRCA2* changes will develop contralateral breast cancer by 20 years after their first breast cancer diagnosis, compared with about 8% of those in the general population.

National Comprehensive Cancer Network: NCCN Clinical Practice Guidelines in Oncology: Genetic/Familial High-Risk Assessment: Breast, Ovarian, and Pancreatic. Version 3.2024.

Male Breast Cancer: About 0.2%–1.2% of men with an inherited harmful change in *BRCA1* and 1.8%–7.1% with an inherited harmful change in *BRCA2* will develop breast cancer by age 70 . By contrast, about 0.1% of men in the general population will develop breast cancer by age 70.

National Comprehensive Cancer Network: NCCN Clinical Practice Guidelines in Oncology: Genetic/Familial High-Risk Assessment: Breast, Ovarian, and Pancreatic. Version 3.2024

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Cancer and Genetics BRCA

Other cancers linked to BRCA1 and *BRCA2*

Pancreatic cancer: Up to 5% of individuals with harmful changes in *BRCA1* and 5%–10% of those with harmful changes in *BRCA2* will develop pancreatic cancer during their lifetime

National Comprehensive Cancer Network: NCCN Clinical Practice Guidelines in Oncology: Genetic/Familial High-Risk Assessment: Breast, Ovarian, and Pancreatic. Version 3.2024

Prostate cancer: About 7%–26% of men with harmful changes in *BRCA1* and 19%–61% of those with harmful changes in *BRCA2* will get prostate cancer by age 80.

Other cancers: Some studies have suggested that people with harmful changes in the BRCA genes have increased risks of melanoma (both skin and eye), stomach cancer, and a rare type of endometrial cancer called uterine serous carcinoma. However, these associations are not yet certain.

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Cancer and Genetics BRCA

Reducing Cancer Risk in BRCA Positive Individuals

Individuals who have inherited a harmful change in *BRCA1* or *BRCA2* have several options for reducing cancer risk. These include enhanced screening, risk-reducing surgery (sometimes referred to as prophylactic or preventive surgery), and taking medication to reduce their risk.

No effective ovarian cancer screening methods are known. In the past, some doctors recommended transvaginal ultrasound and blood tests for the antigen Ca 125 for ovarian cancer screening in women with harmful changes in *BRCA1* or *BRCA2*. However, neither method appears to detect ovarian tumors early enough to improve long-term survival.

Men with harmful inherited changes in a BRCA gene should discuss screening options with their health care provider. Some guidelines recommend that men who carry harmful changes in *BRCA1* or *BRCA2* undergo screening for breast and prostate cancers . This includes an annual mammogram and prostate cancer screening, particularly for men with harmful changes in *BRCA2*, and possible prostate screening for men with harmful changes in *BRCA1*.

Evans DG, Gaarenstroom KN, Stirling D, et al. Screening for familial ovarian cancer: Poor survival of BRCA1/2 related cancers. *Journal of Medical Genetics* 2009; 46(9):593–597

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Cancer and Genetics BRCA

Reducing Cancer Risk in BRCA Positive Individuals

Enhanced Screening

Men with harmful inherited changes in a BRCA gene should discuss screening options with their health care provider. Some guidelines recommend that men who carry harmful changes in *BRCA1* or *BRCA2* undergo screening for breast and prostate cancers . This includes an annual mammogram and prostate cancer screening, particularly for men with harmful changes in *BRCA2*, and possible prostate screening for men with harmful changes in *BRCA1*.

Risk Reducing Surgery

Bilateral risk reducing mastectomy.

Bilateral risk-reducing salpingo-oophorectomy.

Chemoprevention

Tamoxifen and raloxifene are approved by the Food and Drug Administration to reduce breast cancer risk in women who, based on their personal and family medical history, have an elevated risk of breast cancer.

National Comprehensive Cancer Network: NCCN Clinical Practice Guidelines in Oncology: Genetic/Familial High-Risk Assessment: Breast, Ovarian, and Pancreatic. Version 3.2024.

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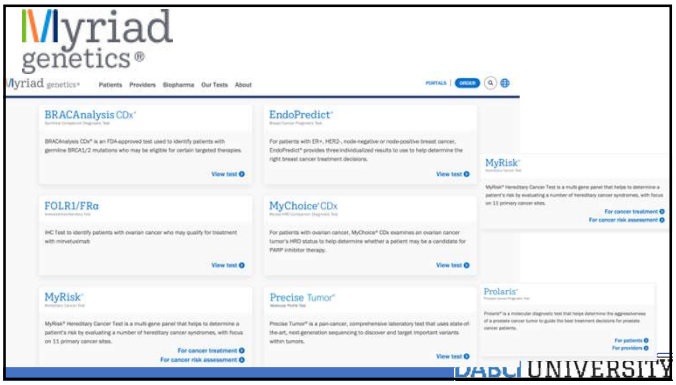

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ER Positive HER2 neg

"ER positive HER2 negative," refers to the characteristics of the cancer cells based on specific proteins found on their surface or within them.

ER positive (Estrogen Receptor positive): This means the cancer cells have receptors that can bind to the hormone estrogen. Estrogen can fuel the growth of these cancer cells.

HER2 negative (Human Epidermal Growth Factor Receptor 2 negative): This indicates the cancer cells do not have high levels of the HER2 protein. HER2 is another protein that can promote cell growth, and cancers that are HER2 positive tend to be more aggressive. ER positive HER2 negative breast cancer is a type where the cancer cells are fueled by estrogen but do not have an excess of the HER2 protein. This subtype accounts for about 70% of all breast cancers.

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Sensitivity vs Specificity

Sensitivity refers to the test's ability to correctly identify individuals who have the disease (true positives). Specificity refers to its ability to correctly identify individuals who do not have the disease (true negatives).

	Sensitivity	Specificity
Definition	Proportion of patients with a disease who test positive	Proportion of patients without the disease who test negative
100% (1.0) Means	The test correctly identify every person who has the target disorder	The test correctly identify every person who does not have the target disorder
Statistical Outcome	True Positive	True Negative
Ideal Test Result	Negative Test Result	Positive Test Result
Test Interpretation	They are definitely not positive → They DON'T have it	They are definitely not negative → They DO have it
The Rule	Rule Out (SnOut)	Rule In (SpIn)

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Common Diagnostics Shared by Both Traditional and Non- Traditional Practitioners

Galleri analyzes patterns in *cell-free DNA* (cfDNA) shed by cancer cells into the bloodstream, specifically looking at DNA methylation patterns unique to different cancers.

The Galleri multi-cancer early detection test is a proactive tool to screen for cancer. With a simple blood draw, the Galleri test can identify DNA shed by cancer cells, which can act as a unique "fingerprint" of cancer, to help screen for some of the deadliest cancers that don't have recommended screening today, such as pancreatic, esophageal, ovarian, liver, and others.

The Galleri test requires a prescription from a licensed healthcare provider and should be used in addition to recommended cancer screenings such as mammography, colonoscopy, prostate-specific antigen (PSA) test, or cervical cancer screening. The Galleri test is recommended for adults with an elevated risk for cancer, such as those aged 50 or older.

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Galleri Blood Test

Multi-cancer early detection (MCED) blood test developed by GRAIL.

It is designed to screen for a "fingerprint" of more than 50 types of cancer, including many that currently lack recommended screening methods. More than 70% of cancer deaths are caused by cancers without recommended screening tests.[1,2*]

They collaborated with leading cancer institutes to study the Galleri test:

Cleveland Clinic · Dana-Farber Cancer Institute · Memorial Sloan Kettering Cancer Center · Intermountain Healthcare · Icahn School of Medicine at Mount Sinai · Sutter Health · UHN · The US Oncology Network · SARAH CANNON · Hartford HealthCare · The Christ Hospital

1) US Preventive Services Task Force. A,B,C grade recommendations, cancer, screenings. [cited 2023 Oct 23]. https://www.uspreventiveservicestaskforce.org/uspstf/topic_search_results

2)American Cancer Society Cancer Facts and Figures 2023. Available at: http://www.cancer.org/content/... GRAIL, Inc. Data on file GA-2021-0065

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Single-cancer screenings play an important role in detecting 5 cancers[1]...

USPSTF grade A, B, C recommended cancer screening:

BREAST · CERVICAL · COLORECTAL · PROSTATE* · LUNG**

USPSTF, United States Preventive Services Task Force
*Prostate screening, men aged 55+ discuss the possible benefits and harms of PSA screening with their health care provider. **Lung cancer screening is recommended for adults aged 50+ who have a 20 pack-year smoking history and smoke or quit recently. 1.United States Preventive Services Task Force Cancer Screening Recommendations Grade A, B,C. https://www.uspreventiveservicestaskforce.org/uspstf/topic_search_results

...Yet, **~70% of cancer deaths** are caused by cancers^ with no recommended screening[2]

Including, but not limited to: Pancreas, Liver, Bladder, Brain, Esophageal, Kidney, Ovarian, Melanoma, Stomach, Endometrial, Head & Neck, Larynx, Thyroid, Vulva

^ Assumes screening is available for all prostate, breast, cervical, and colorectal cancer cases and 43% of lung cancer cases (based on estimated proportion of lung cancers that occur in screen-eligible individuals older than 40 years).
[2]Estimated deaths per year in 2022 from American Cancer Society, Cancer Facts & Figures 2022. Available at: http://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2022/cancer-facts-and-figures-2022.pdf. Data on file GA-2021-0065

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Early diagnosis can dramatically improve cancer survival

5-year cancer-specific survival (all cancers)[1]

Early diagnosis	Late diagnosis
89%	**21%**
invasive localized tumors that have not spread beyond organ of origin	invasive cancers that have metastasized beyond the organ of origin to other parts of the body

1 Surveillance, Epidemiology, and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat Database: Incidence - SEER 18 Regs Research Data, Nov 2018 Sub. Includes persons aged 50-79 diagnosed 2006-2015. Data on file GA-2021-0064.

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Desirable characteristics of a multi-cancer early detection test[1-3]

- Screens for **many of the deadliest cancers** that lack recommended screening today
- **High positive predictive value** and a **low false-positive rate** to limit unnecessary workups
- **Predicts the origin** of the cancer signal to help guide diagnostic work-up

Supported by large-scale clinical studies in the intended-use population

1 Hackshaw A, et al. Cancer Cell. 2022;40(2):109-113. 2 Jamshidi A, et al. Cancer Cell. 2022; 40: 1537-49. 3 Ahlquist DA. NPJ Precis Oncol. 2018;2:23.

40

Development supported by 2 clinical studies with >20,000 participants[1,2]

Clinical sites included academic and community institutions, such as:

Dana-Farber Cancer Institute · Memorial Sloan Kettering Cancer Alliance · Cleveland Clinic · The US Oncology Network · SARAH CANNON · Hartford HealthCare Cancer Institute · Icahn School of Medicine at Mount Sinai · SYLVESTER · Intermountain Health · Sutter Health · The Christ Hospital · UHN Princess Margaret Cancer Centre

GRAIL Clinical Development Program

These 2 clinical studies are part of population-scale studies of multi-cancer early detection tests with **>380,000 participants**

1 Klein E. et al. Ann Oncol. 2021;32(9):1167-77. 2 Schrag D. et al. Lancet. 2023;402:1251-60.

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The Galleri test is being adopted by partners nationwide

36 Health Systems: Community Health Network · Ochsner · Intermountain Healthcare · FirstHealth · Henry Ford Health · Mercy · HCA Healthcare

70 Employers: Amazon · salesforce · illumina · Leander ISD · valmont · Robins & Morton · Lilly · Pfizer

80+ Fire Departments

4 Payers: Fountain Health · Alignment Healthcare · Point32Health

7 Life Insurers: Munich RE · John Hancock · M Financial Group

8 Partners: carrum health · one medical · Concentra · USWellness

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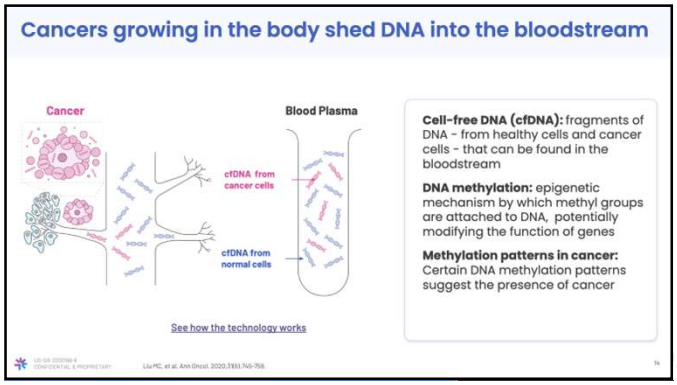

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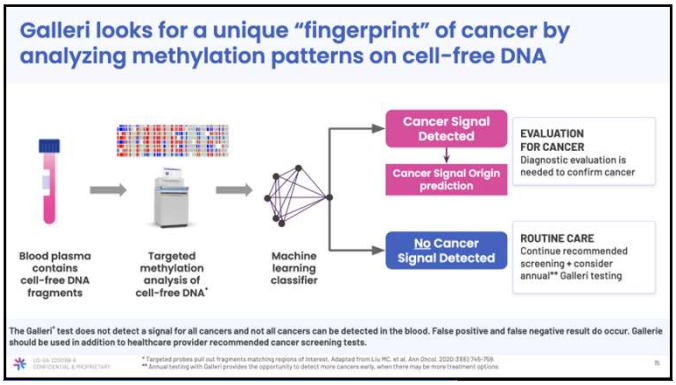

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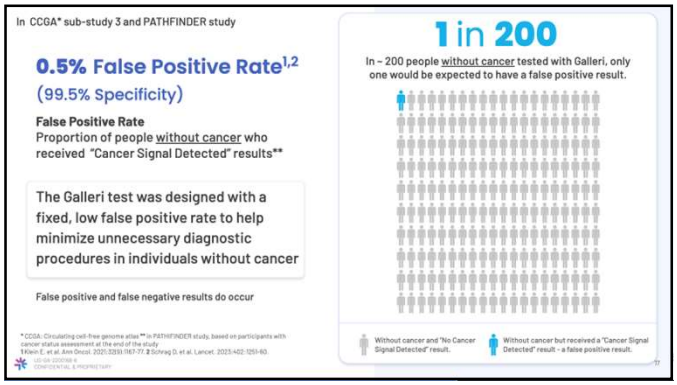

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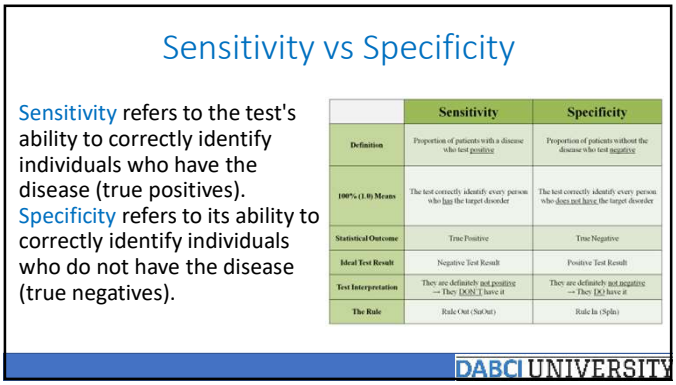

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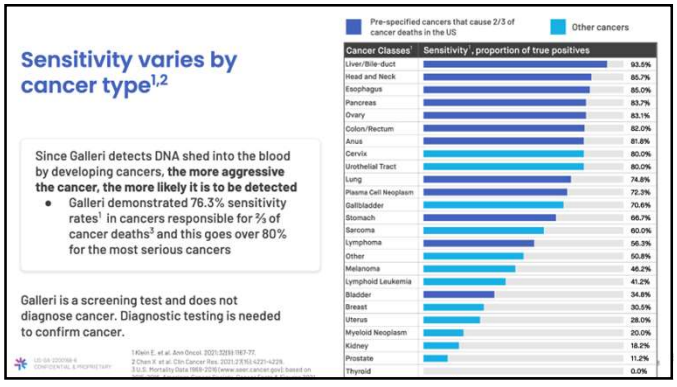

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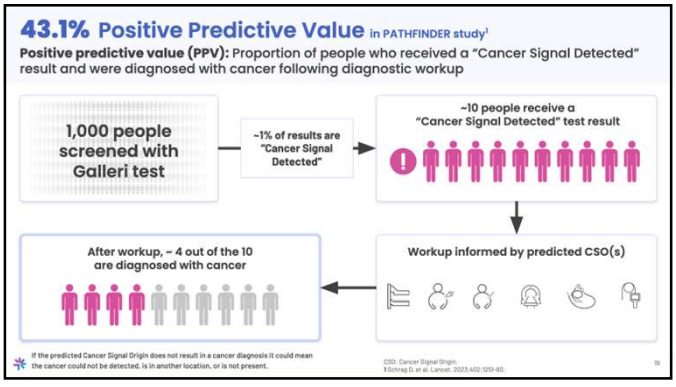

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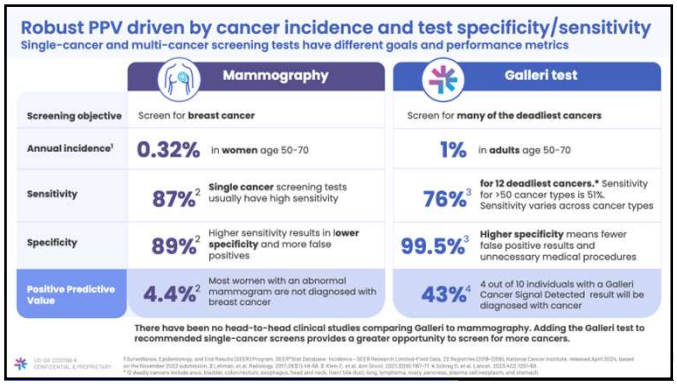

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Positive Predicted Value (PPV)

Calculated by dividing the number of true positive results by the total number of positive results (true positive and false positives)

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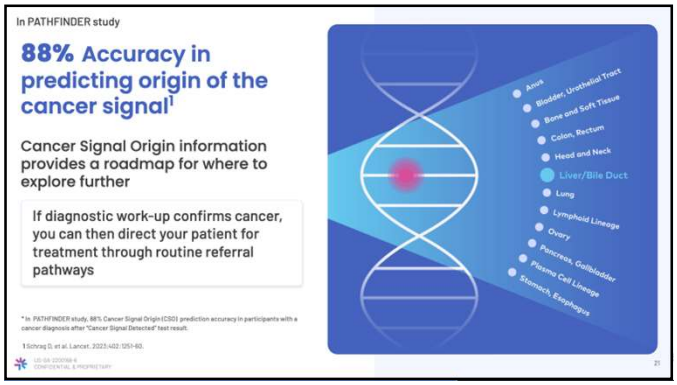

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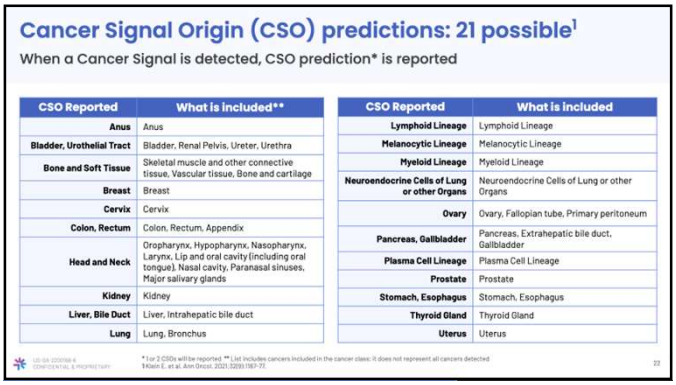

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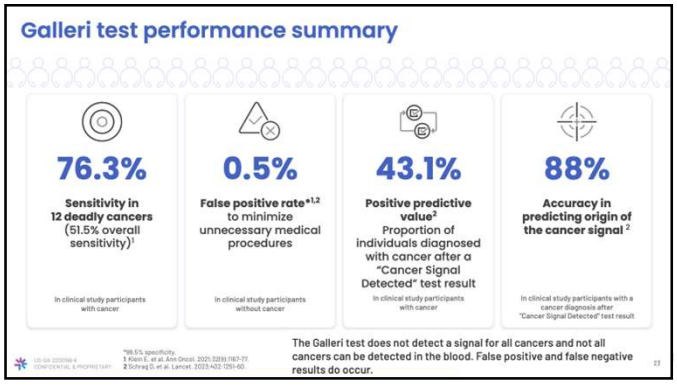

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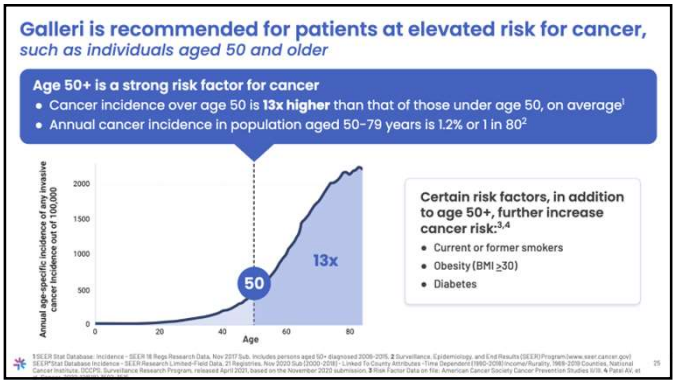

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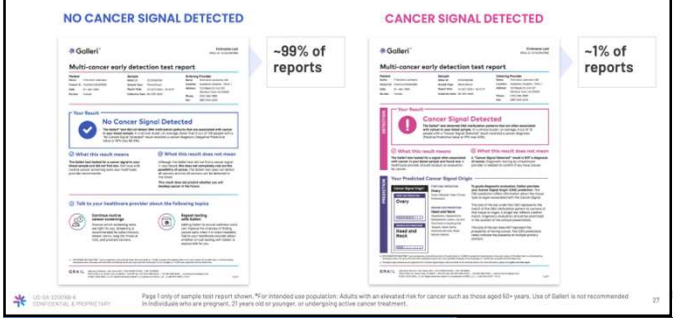
Galleri sample test reports



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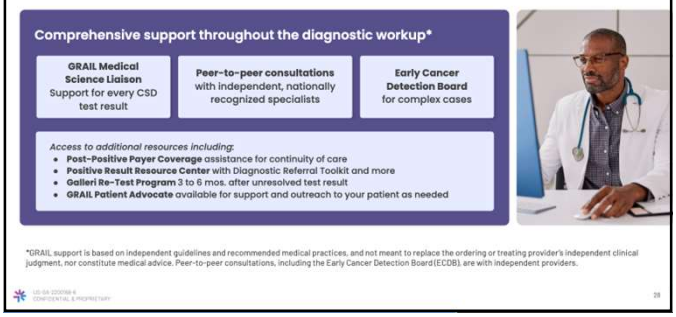
GRAIL support for "Cancer Signal Detected" results



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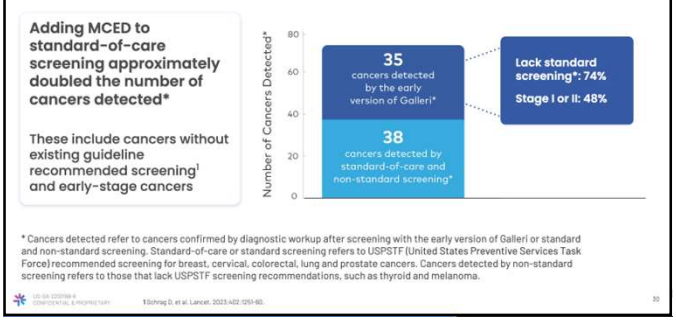
Maximize the chances of early cancer detection



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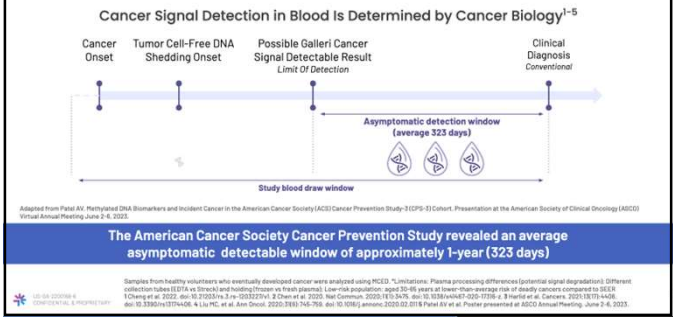
Cancer signal detection aligns with an annual screening interval



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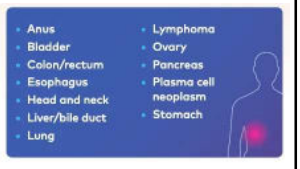
Galleri Blood Test

- Adrenal Cortical Carcinoma
- Ampulla of Vater
- Anus
- Appendix, Carcinoma
- Bile Ducts, Distal
- Bile Ducts, Intrahepatic
- Bile Ducts, Perihilar
- Bladder, Urinary
- Bone
- Breast



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Galleri Blood Test

- Cervix
- Colon and Rectum
- Esophagus and Esophagogastric Junction
- Gallbladder
- Gastrointestinal Stromal Tumor
- Gestational Trophoblastic Neoplasms
- Kidney

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Galleri Blood Test

- Larynx
- Leukemia
- Liver
- Lung
- Lymphoma (Hodgkin and Non-Hodgkin)
- Melanoma of the Skin
- Merkel Cell Carcinoma
- Mesothelioma, Malignant Pleural

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Galleri Blood Test

- Nasal Cavity and Paranasal Sinuses Nasopharynx
- Neuroendocrine Tumors of the Appendix
- Neuroendocrine Tumors of the Colon and Rectum
- Neuroendocrine Tumors of the Pancreas
- Oral Cavity
- Oropharynx (HPV-Mediated, p16+)
- Oropharynx (p16-) and Hypopharynx
- Ovary, Fallopian Tube and Primary Peritoneum

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Galleri Blood Test

- Pancreas, exocrine
- Penis
- Plasma Cell Myeloma and Plasma Cell Disorders
- Prostate
- Small Intestine
- Soft Tissue Sarcoma of the Abdomen and Thoracic Visceral Organs
- Soft Tissue Sarcoma of the Head and Neck

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Galleri Blood Test

- Soft Tissue Sarcoma of the Retroperitoneum
- Soft Tissue Sarcoma of the Trunk and Extremities
- Soft Tissue Sarcoma Unusual Histologies and Sites
- Stomach
- Testis

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Galleri Blood Test

- Ureter, Renal Pelvis
- Uterus, Carcinoma and Carcinosarcoma
- Uterus, Sarcoma
- Vagina
- Vulva

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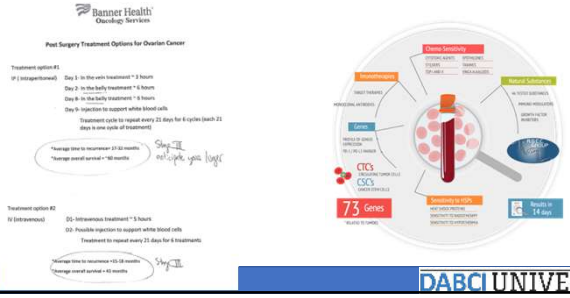
Oncology Options/RGCC Circulating Tumor Cell Test



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RESEARCH GENETIC CANCER CENTER [RGCC]: RGCC Testing

Onconomics Plus Panel

Onconomics Plus is our most comprehensive treatment testing tool that provides information to help build cancer treatment protocols for patients.

The Onconomics Plus panel provides information about the following details.

Circulating tumor cell (CTC) count

Genetic and physiological expressions of your cancer cells

Effectiveness of 50+ chemotherapeutic agents on your cancer cells

Effectiveness of 50+ natural substances on your cancer cells

The Onconomics Plus test is performed on a sample of your blood using our liquid biopsy technique.

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RESEARCH GENETIC CANCER CENTER [RGCC]: RGCC Testing

The use of a simple blood sample with RGCC-Ltd works with ALL cancers (solid tumors, blood cancers, sarcomas, etc..) except brain and central nervous system primary tumors (glioblastomas, astrocytoma, meningioma etc..), RGCC Labs can still work with these cancers when provided with a small, live tissue sample from the tumor.

Circulating Tumor Cells/ Cancer Stem Cells (CTC's/CSC's). This is rapidly becoming the focus of much cancer research, how to stop these peripheral CTC's and CSC's from causing metastatic tumors which is responsible for at least 90% of all cancer related deaths. Furthermore, the CTC's and CSC's are suspected by many scientist to be the cause of almost if not all the metastasizes that do occur. With this new information what should be one of the main targets by oncologists? Not just the tumor (as it is now) more importantly the circulating CTC's and CSC's from each individual, these are the real troublemakers.

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RESEARCH GENETIC CANCER CENTER [RGCC]:RGCC Testing

It is well known and widely accepted by the scientific community that the primary tumor consists of stroma (fibroblast, monocytes, lymphocytes, vessels, etc.) and the malignant cells which are heterogeneous since they are composed from different subgroups and subclones with different features and abilities. These are known as cancer tumor cells (CTC's). A portion of these CTC's are actually cancer stem cells (CSC's).

Only very few of this population will develop metastatic ability which will allow them to invade the surrounding tissue, pass into the circulation and perform the epithelial to mesenchymal transition (EMT) creating the circulating CSC's. These cells now have all the information and ability to form micro-colonization and micro-metastases and often will later develop into potent micro-metastases, this is why cancer returns. This is also why we see these CSC's still in the blood long after the patients primary tumor is not detectable by PET/CT, MRI, CT, standard blood markers (CA 125, CA 19-9 etc.) or any other standard traditional measurements.

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RESEARCH GENETIC CANCER CENTER [RGCC]:RGCC Testing

The CSC's are the real trouble makers. Remember these CSC's are immortal (they have no Hayflick limit for cell division) and can divide as long as they live. They are circulating in the blood stream 24/7/365 days a year just waiting for the right opportunity (when your internal micro-environment {immune system} is not "up to par") to start another tumor or they may go dormant for up to 30+ years only to raise their ugly heads again.

For this reason RGCC has selected blood samples as the most appropriate form for analysis since it includes the circulating cancer cells with the most relevant information for calculating the risk for both a potent metastasis and/or a reoccurrence from a few months to many years later.

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SOT Therapy

Supportive Oligonucleotide Technique (SOT) has shown to be a very effective cancer support technique. SOT has the ability to induce apoptosis in the CTC's, CSC's, the primary and ALL metastatic tumors (regardless of size, while able to cross the blood brain barrier with ease).

SOT is not a genetic technique as is most antisense techniques. There are no genotoxic drugs used. SOT will remain active in the blood stream for approximately 14-16 weeks (maybe longer) per dose. The reason being, it actually features a stealth like capability that keeps the body from recognizing and destroying it. SOT will work 24/7 and has no decreased efficacy with any concurrent technique

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SOT Therapy

SOT therapy, which utilizes siRNA molecules developed from one's own CTC's/CSC's cancer cells, has been demonstrated to benefit roughly 77% of cancer cases on their own or in tandem with other therapies.

siRNA molecules are known as "small interfering RNA" and sometimes referred to as "short interfering RNA" or "silencing RNA". SOT therapy is one of a field of ARMPs (advanced therapy medicinal products).

SOT therapy is created by Research Genetic Cancer Center in Greece and effectively kills cancer cells by creating a complementary oligonucleotide sequence that is designed to bind to a specific gene of interest that controls the cancer cell, thereby interrupting survival and/or growth of one's cancer cells by disrupting how the cancer cells replicate.

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RESEARCH GENETIC CANCER CENTER [RGCC]:RGCC Testing

How do we analyze the harvested cells and use them to show risk of cancer relapse in clinical reality? This is done by appropriate expansion of the CTC's. The CTC's will expand as the cancer stem cell like cell and then enter into exponential phase of growth which will generate a respectful number of CSC's (100's of billion to even trillions) in a very short period of time (~24-36 hours). At the same time we manage to keep intact both the genotype and phenotype of the cells and avoid any changes from your original CSC's. Therefore, after the final expansion we have maintained the identical genotype, phenotype and epigenetic expression.

The key to this exponential (rapid) growth phase is the cell culture. Dr. Papasotiriou has a proprietary method for this cell culture which does not change the genetics or epigenetics of the original CTC's/CSC's as shown by his patent. Th

It must be noted that RGCC results provides the physician an actual percentage of both sensitivity and resistance to both natural substances and chemo-drugs.

The RGCC lab does not rely on the genetic assay only, as most other labs do, they actually test each individual chemo and natural substances to see if it really works and how well it works or not.

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RESEARCH GENETIC CANCER CENTER [RGCC]:RGCC Testing

RGCC, Ltd. will test ~ [45-49] natural substances covering cytotoxic agents; immunostimulants/immunomodulators, cytokines; and increase of PBMC & NK, growth factor inhibitors of EGFr, IGFr, VEGFr, PDGFr, FGFr, and signal transduction pathways. The results show the % of sensitivity and/or resistance of each individual agent to induce apoptosis (cell death) to your cancer cells, i.e. ex-vivo.

The test also includes ~ [53] chemotherapeutic agents. These include [22] alkylating agents, [1] epothilone, [3] inhibitors topoisomerase 1, [9] inhibitors topoisomerase 2, [5] nucleus spindle stabilizer 1, [3] nucleus spindle stabilizer 2, and [10] nucleoside analogues. You will also receive [4] resistance factors (MDR1, MRP, LRP, GST). The results shows, in %, the sensitivity and resistance of each agent tested. In other words which chemotherapy works best against your cancer cells.

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RESEARCH GENETIC CANCER CENTER [RGCC]:RGCC Testing

You also receive results on ~ [72] tumor related genes: [27] related to growth factors and proliferation stimuli; [14] related to self-repair and resistance; [5] for angiogenesis; [9] for cell cycle regulation and immortalization/apoptosis; [5] covering angiogenesis-metastasis; [13] concerned with drug metabolism and targets; and [4] markers and [45] biological modifiers.

THE STRATEGY:

The first goal is to decrease the tumor burden and the CTC's/CSC's in the patient. The CTC's/CSC's severely stresses the patient's immune system everyday all day. There are several ways to accomplish a reduction in global tumor burden.

First option is surgery, which early on in the disease process, will work 50% of the time for the primary tumor (rarely killing any CTC's/CSC's).

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RESEARCH GENETIC CANCER CENTER [RGCC]:RGCC Testing

Second, is chemo therapy which can be used in conjunction with surgery.

Third is radiation and this can be used in combination with any of the previous (rarely killing any CTC's/CSC's). However, this is up to the co-treating oncologist to decide. Ideally, the oncologist would choose the chemo-drug that kills your cancer.

In regard to the natural substances options, the goal is to help support the immune system, help improve lifestyle, and support the physiological and biochemical processes of the human body by offering the integration of various nutritional support systems. This is also accomplished using the RGCC test results to develop a Personalized Patient-Centered Cancer Care program for the patient.

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RESEARCH GENETIC CANCER CENTER [RGCC]:RGCC Testing

Generally, the patient will be re-tested (onco-count or onco-trail, not the entire test as in the beginning) every 3-4 months to measure the actual circulating tumor and/or stem cell like cell numbers. Additionally, the patient should follow their oncologist's schedule of ongoing PET/CT, MRI etc. testing. Since cancer is a systemic, chronic disease, ongoing vigilance is paramount. The goal is to have the tumors gone or stable and the patient's cell count below 2 cells/ml.

Tumor Cells Accessing the Blood Stream:

How large does a tumor have to be in order to have access to the blood stream? The Answer: between ONLY 1-2 mm (which is only 1/4 to 1/2 the size of a BB @ 4.4mm). This is how early cancer can send out the circulating CTC's and CSC's into your blood stream, no wonder we have such a problem with cancer metastasis. Most all CT, MRI, PET scans cannot even see the tumor at this size, even if they knew where to look and this early you would have absolutely no symptoms! …most primary solid tumors probably go through a prolonged state of avascular, and apparently dormant, growth in which the maximum size attainable is ~1–2 mm in diameter.

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Up to this size, tumor cells can obtain the necessary oxygen and nutrient supplies they require for growth and survival by simple passive diffusion; these microscopic tumor masses can, in some way, eventually switch on angiogenesis by recruiting surrounding mature host blood vessels to begin sprouting new blood vessel capillaries which grow toward, and eventually infiltrate the tumor mass, thus setting in motion the potential for relentless expansion of the tumor mass and hematogenous metastatic spread as well…

Robert S. Kerbel ,Tumor angiogenesis: past, present and the near future, Carcinogenesis (2000) 21(3): 505-515 doi:10.1093/carcin/21.3.505

RGCC Sensitivity Testing, tests for (53) CHEMOTHERAPEUTIC AGENTS TESTED + (4) RESISTANCE FACTORS

ALKYLATING AGENTS:

Alkylating agents were one of the earliest classes of drugs used to treat cancer, beginning in the 1940's. The biggest weakness of most cancer cells is that they are very sensitive to DNA damage. Alkylating agents work by reacting with the proteins that bond together to form the very delicate double helix structure of a DNA molecule, adding an alkyl group to some or all of them. This prevents the proteins from linking up as they should, causing breakage of the DNA strands and, eventually, the death of the cancer cell. This phenomenon is essentially a mutation that takes away the cancer cell's ability to multiply.

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Therefore, alkylating agents directly damage DNA to prevent the cancer cell from reproducing.

As a class of drugs, these agents are not phase-specific; in other words, they work in all phases of the cell cycle. Alkylating agents are used to treat many different cancers, including leukemia, lymphoma, Hodgkin disease, multiple myeloma, and sarcoma, as well as cancers of the lung, breast, and ovary.

Because these drugs damage DNA, they can cause long-term damage to the bone marrow. In rare cases, this can eventually lead to acute leukemia.

EPOTHILONES:

Epothilones are cytotoxic macrolides with a similar mechanism of action to paclitaxel but with the potential advantage of activity in taxane-resistant settings in preclinical models. Phase I studies have shown that dose-limiting toxicities of epothilones are generally neurotoxicity and neutropoenia although initial studies with patupilone indicated that diarrhea was dose limiting. Neuropathy induced by ixabepilone may be schedule dependent.

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INHIBITORS OF TOPOISOMERASE I:

Topoisomerase I inhibitors are a new class of anticancer agents with a mechanism of action aimed at interrupting DNA replication in cancer cells, the result of which is cell death. Most if not all Topoisomerase I inhibitors are derivatives of the plant extract camptothecin. The dose-limiting toxicity is myelosuppression. There are other derivatives of camptothecin, as well as new formulations of the parent plant extract, that are in various stages of clinical trials.

Topoisomerase II inhibitors are chemicals that inhibit a group of DNA enzymes called type II topoisomerases (topoisomerase IIs). Topoisomerase IIs regulate the structure of DNA and are essential in separating multiple intertwined DNA daughter strands after DNA replication and prior to mitosis. These enzymes resolve knots and tangles in the genetic material by transiently creating and resealing DNA double strand breaks. One category of topoisomerase II inhibitors acts by stabilizing the covalently bound form of topoisomerase II with DNA, resulting in increased topoisomerase II-cross-linked DNA strand breaks. A second category of topoisomerase II inhibitors are referred to as catalytic inhibitors. Inhibitors in this category prevent topoisomerase II from carrying out its required physiological functions, like DNA supercoil relaxation, decatenation (unlinking), and unknotting. These agents can cause additional cancers.

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NUCLEUS SPINDLE STABILIZER I:

These are microtubule stabilizing agents, Treatment of cells with these agents prior to anaphase produces an increase in astral microtubules, a reduction in kinetochore microtubules and a decrease in spindle length thereby inhibiting mitotic progression and cell proliferation. These agents use one tyrosine to cleave one DNA strand.

NUCLEUS SPINDLE STABILIZER II:

These are also microtubule stabilizing agents. This category uses ATP hydrolysis to catalyze decatenation of DNA entanglements, promoting sister chromatid resolution.]]]]]

There were 3 different chemo drugs tested in this category: VINBLASTINE—VELBAN // VINCRISTINE—ONCOVIN // VINORELBINE—NAVELBINE

NUCLEOSIDE ANALOGUES:

These therapeutic compounds mimic physiological nucleosides in terms of uptake and metabolism and are incorporated into newly synthesized DNA resulting in synthesis inhibition and chain termination. Some of these drugs also inhibit key enzymes drugs also inhibit key enzymes involved in the generation of the purine and pyrimidine nucleotides and RNA synthesis, and directly activate the caspase cascade. All of these effects may lead to cell death.

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RGCC Practitioners

Here are the steps to become an RGCC provider:

1. Express Interest

Potential practitioners can contact RGCC through their website, a podcast, conferences, or an existing RGCC practitioner.

2. Complete the Vetting Form

An RGCC representative will email you a vetting form after you express interest.

This form is required for all practitioners onboarding into the network.

3. Undergo Training

Once vetting is successful, you will receive links to schedule live training sessions through RGCC College.

These sessions cover topics like selecting appropriate tests, interpreting results, and developing personalized treatment protocols.

The training is mandatory to ensure practitioners understand the tests and methodologies.

4. Order Tests

After training, you will be a registered clinician in the RGCC network.

You can then order RGCC tests for your patients.

The blood samples are sent to RGCC's labs for analysis.

The RGCC network can connect you with practitioners if you are a patient, or you can connect with RGCC if you are a practitioner.

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In Conclusion

The traditional allopathic community is slow to change.

Diagnostics and treatments need to be thought through more completely so that diagnostic and treatment are less invasive.

Patients need to trust the process and the only way that will happen is to have diagnostics and treatments make sense to the patient.

The chiropractic physician has a unique role to play in patients with cancer.

The chiropractic physicians role is in the diagnosis and initial screening. Many patients have lost their trust in the traditional medical establishment especially since covid. They will seek your care and guidance, and you must be able to identify cancer and know what to do next.

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In Conclusion

Chiropractic physicians must learn to identify cancer, guide patients by giving them all potential options. This includes diagnostic and treatment options-both traditional, adjustive and alternative.

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4 Ominous Signs of Cancer

- Cholesterol < 140
- Albumin 3.5 or below with an absolute lymphocyte count below 1500
- Albumin: globulin ratio <1
- A calcium/albumin ratio greater than 2.7

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Blood Chemistries Indicating Metastatic Bone Cancers

- Elevated Calcium and
- Elevated Alkaline Phosphatase.
- Alk phos is normally elevated in children and pregnant patients.

Primary cancer type	Relative incidence in bone	Median survival from diagnosis
Breast	65%–75%	19–25 mo
Prostate	65%–75%	12–53 mo
Lung	30%–40%	6 mo
Thyroid	40%–60%	48 mo
Bladder	40%	6–9 mo
Renal	20%–25%	12 mo
Melanoma	14%–45%	6 mo

Data in the table based on Suva et al. (2011) and Macedo et al. (2017).

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Multiple Myeloma

- Malignancy of plasma cells- characterized by replacement of bone marrow by malignant plasma cells
- SSx- bone pain, often low back, may be chest, recurring infections advancing osteoporosis
- May present with pathological fracture, esp. of femoral neck, renal failure, spinal cord compression, nausea, vertigo
- Labs: Anemia approaches 100%, elevated ESR, hypercalcemia, proteinuria, 60% will have beta 2 macroglobulin. Bone marrow biopsy to confirm.
- Treatment: Palliative usually for bone pain, chemo, bone marrow transplantation
- Prognosis: 3-year median survival time, shorter time with complications, such as kidney failure, etc.

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