

CANCER CARE

THE ROLE OF REPURPOSED DRUGS
AND METABOLIC INTERVENTIONS
IN TREATING CANCER

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DISCLAIMER

This information is offered as a basis to assist mutual decision-making. Cancer care should always be supervised by a healthcare provider. The treatment interventions outlined in this monograph should be used as adjunctive therapy in addition to the treatment provided by an oncologist.

Seek the advice of a medical professional for proper application of any material in this document to your specific situation. Never stop or change your medications without consulting your provider.

Please note that this is the first iteration of this document which, as a “living” document, will be continuously updated and refined. Please ensure you are reviewing the most recent version.



WHAT IS THIS GUIDE?

Cancer Care is a review of the published literature showing options for repurposed drugs that can be used in cancer treatment. It is not intended as a stand-alone guide to treating cancer.

Nothing in this document should be taken as a basis to initiate treatment without guidance or avoid any treatment prescribed by your treating physician.

This information is offered as a basis to assist mutual decision-making. Cancer care should always be supervised by a healthcare provider.

Patients with cancer should ALWAYS consult with their regular oncologist as well as an integrative provider/oncologist, in addition to their primary care provider.



HOW SHOULD IT BE USED?

The treatment interventions outlined in this monograph should be used as adjunctive therapy in addition to the treatment provided by an oncologist.

The goal is to reduce the toxicity of standard chemotherapy and/or radiotherapy (and lower the dose of chemotherapy when possible) to prevent severe immunosuppression, organ toxicities, and death from standard chemotherapy.

Patients should review this information, independently validate the reliability of the data, and discuss the treatment options with their family/healthcare advocates.

Patients should formulate a treatment plan with their healthcare provider that is compatible with their values and goals.



WHAT ARE REPURPOSED DRUGS?

A repurposed drug is one that is used “off-label,” a common basis for prescribing, but which means that it has not been reviewed and approved by the U.S. Food and Drug Administration for that particular indication.

Around 30 percent of all prescriptions in the United States are written for off-label uses.

Bringing new drugs to market can take decades and cost billions of dollars.

Existing licensed drugs can be repositioned to offer safe, affordable, and effective treatments in a far shorter timeframe.

ON WHAT BASIS ARE THERAPIES INCLUDED?

Dr. Marik studied over 1200 peer-reviewed papers looking for data that demonstrates that the compound kills cancer cells (apoptosis) and that this killing is enhanced in the presence of chemotherapeutic drugs.

There should also be evidence that the agent kills/inhibits cancer stem cells, that the compound kills cancer cells in animal models (in vivo),

and that in these models the agent favorably alters the tumor microenvironment.

Furthermore, there needs to be sufficient scientific evidence that the agent is both “safe and effective”. This does not require the “gold standard” randomized controlled trial, but sufficient and reproducible data from case reports, case series and observational studies.

THE 'TOTALITY OF EVIDENCE'

The following criteria were used to stratify the recommendations:

1. Meta analysis of observational and/or randomized controlled trials (RCTs).
2. Prospective RCTs and/or observational studies.
3. Epidemiological data demonstrating that the agent reduces the risk of cancer and/or improves survival in those with cancer.
4. Case series (≥ 3 cases).
5. Individual case reports (at least 2).
6. In Vivo model demonstrating favorable effect on tumor microenvironment.
7. In Vivo/In Vitro model demonstrating synergistic/additive cancer cell killing in presence of cancer chemotherapeutic agent(s).
8. In Vivo model demonstrating killing of tumor cells and/or cancer stem cells.
9. In Vitro model (cell culture) demonstrating killing of cancer cells



CANCER IS A METABOLIC DISEASE (NOT A GENETIC DISEASE)

“No researcher can point to any single mutation or combination of mutations and say with confidence that it is alone the cause of cancer. Nor can researchers point to a series of cellular systems rendered dysfunctional by mutations and make the same claims with confidence.”

- **Travis Christofferson, author of 'Tripping Over The Truth'**

“We may have to turn our main research focus away from decoding the genetic instructions behind cancer and toward understanding the metabolism within cancer cells.”

- **James Watson, Nobel Prize-winning geneticist**



WHAT IS THE METABOLIC THEORY OF CANCER?

Conventional thinking suggests that cancer arises because of genetic mutations. However, there is more and more evidence to show this theory may not be correct.

An alternate theory, put forward by scientists such as Otto Warburg and Thomas Seyfried, is that cancer is caused by disordered energy production and cellular metabolism.

Hundreds of experiments now bear this out.

In simple terms, this means that cancer cells use glucose as their primary source of energy rather than oxygen.

Accepting this theory leads to very different treatment strategies than the ones traditionally used.

CONTRASTING PERSPECTIVES

Metabolic Theory:

- Altered metabolism is the primary driver of cancer development, with genetic mutations potentially arising as a consequence.
- Any cell within the body has the potential to become a cancer cell if metabolic alterations occur.
- Targeting cancer metabolism may offer new therapeutic strategies to inhibit tumor growth and survival.

Genetic Mutation Theory:

- Specific genetic mutations in normal cells transform them into cancer cells, leading to uncontrolled cell growth and proliferation.
- Therapies should focus on targeting specific genetic mutations or pathways associated with cancer cells.
- Cancer cells harboring specific genetic mutations may respond differently to targeted therapies that address those mutations.



**THE METABOLISM
OF TUMOURS**

Otto H. Warburg



**CANCER AS A
METABOLIC DISEASE**

Thomas N. Seyfried

WHY CANCER MATTERS

Nearly **2 million new cases** of cancer are expected to be diagnosed in the US in 2023.

Approximately **609,820 people are expected to die from cancer** in the US in 2023.

That's about 1,670 deaths per day.

Source: American Cancer Society. Cancer Facts & Figures 2023. Atlanta: American Cancer Society; 2023.



IT DOESN'T HAVE TO BE THIS WAY

At least 42% of newly diagnosed cancers in the US — excluding non-melanoma skin cancer — are **potentially avoidable**.

- 19% of cancers are caused by smoking
- 18% of cancers are caused by a combination of excess body weight, alcohol consumption, poor nutrition, and physical inactivity.

Source: American Cancer Society. Cancer Facts & Figures 2023. Atlanta: American Cancer Society; 2023.

HOW TO PREVENT CANCER: THE BASICS

- Tackle insulin resistance
- Quit smoking
- Limit alcohol
- Get enough Vitamin D
- Avoid processed foods
- Avoid sugary drinks and pure fruit juice
- Get enough exercise (aerobic and resistance training)
- Reduce stress
- Get at least 8 hours of quality sleep



HOW TO PREVENT CANCER: VITAMINS AND NUTRIENTS

- Vitamin D3: 5,000 IU daily (adjusted according to baseline levels)
- Omega-3 fatty acids: 2-4 g daily
- Green tea catechins: 500-1,000 mg daily
- Melatonin: 0.75-5 mg (slow release) nightly
- Metformin: 250 mg-2,000 mg daily

TOP 18 CANCER INTERVENTIONS

* items highlighted in red require a prescription

1
Glucose management and ketogenic diet

2
Exercise (aerobic and resistance training)

3
Stress reduction, sleep, and sunshine

4
Vitamin D3

5
Melatonin

6
Green tea catechins

7
Metformin

8
Curcumin (nanocurcumin)

9
Mebendazole/fenbendazole/albendazole

10
Omega-3 fatty acids

11
Berberine

12
Atorvastatin or Simvastatin

13
Disulfiram

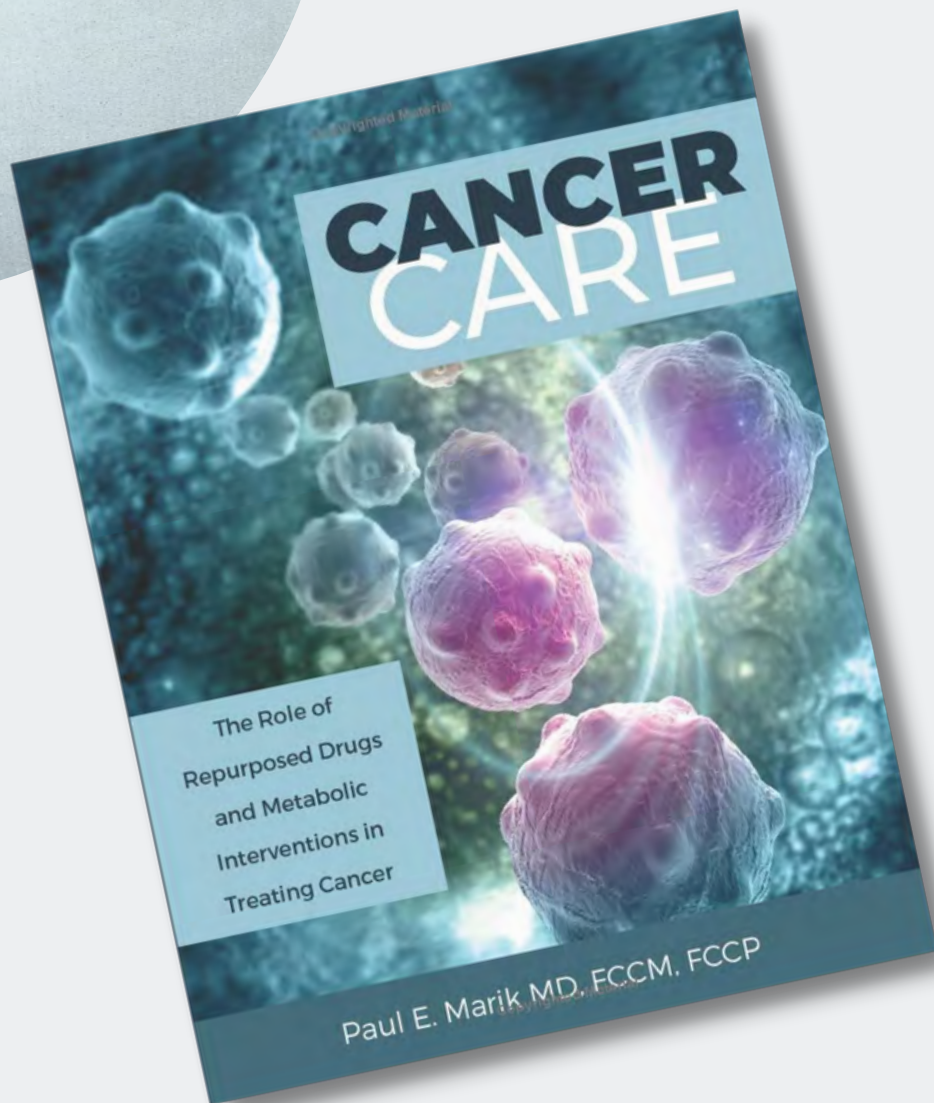
14
Cimetidine

15
Mistletoe

16
Ashwagandha

17
Sildenafil, tadalafil, and vardenafil

18
Itraconazole



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