WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.453
Volume 13, Issue 9, 1552-1573. Review Article ISSN 2277–7105

UNRAVELING THE COMPLEXITY OF CANCER: A REVIEW OF MOLECULAR MECHANISMS AND THERAPEUTIC STRATEGEIS

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Article Received on
20 March 2024,

Revised on 10 April 2024,
Accepted on 30 April 2024

DOI: 10.20959/wjpr20249-32139

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ABSTRACT

Disease is an illness wherein a portion of the body's cells develop wildly and spread to different pieces of the body. Disease can begin anyplace in the human body, which is comprised of trillions of cells. Malignant growth comes in many structures and types. Malignant growth is the aggregate name given to the sickness where certain cells of the individual's body begin partitioning consistently, declining to stop. The primary thing that causes disease is a substance we know as cancer-causing agents. Yet, how these create or enters an individual's body will rely upon many variables. Early finding and quick clinical consideration are of most extreme significance in malignant growth. At the point when analyzed in the beginning phases, then the treatment becomes simpler and has more odds of coming out on top. All treatment plans, in any case, make different side-impacts. Also, aftercare is one of the main parts of malignant growth treatment. The target of the current survey is to look through types, causes, counteraction, therapy and analytic techniques for disease and the consolidated data may be helpful for the researchers to focus on the need area of exploration yet to be found.

Watchwords: Disease, Harm, Treatment, Melanoma.

INTRODUCTION

Disease can take a few structures, like threat (Harm growths) or neoplasms (New development). Regardless of the way that there are various kinds of malignant growth, they all emerge because of the uncontrolled development of deviant cells. Disease is the second driving causative component for death rate around the world. Universally around 9.6 million

passings were assessed in malignant growth. The commonest tumors are prostate disease (1.28 million), female bosom disease (2.09 million), colorectal disease (1.1 million), stomach disease (1.03 million) and non-melanoma skin malignancies (1.04 million).[6,7] Disease related passings, from most to least continuous, are because of cellular breakdown in the lungs (1.76 million), colorectal malignant growth (862,000) and stomach malignant growth (783,000), liver disease (782,000). More than 100 kinds of tumors influence people It was anticipated by Worldwide segment attributes that around 420 million new instances of malignant growth by 2025 yearly, and that implies expanding disease rate in years.[1]

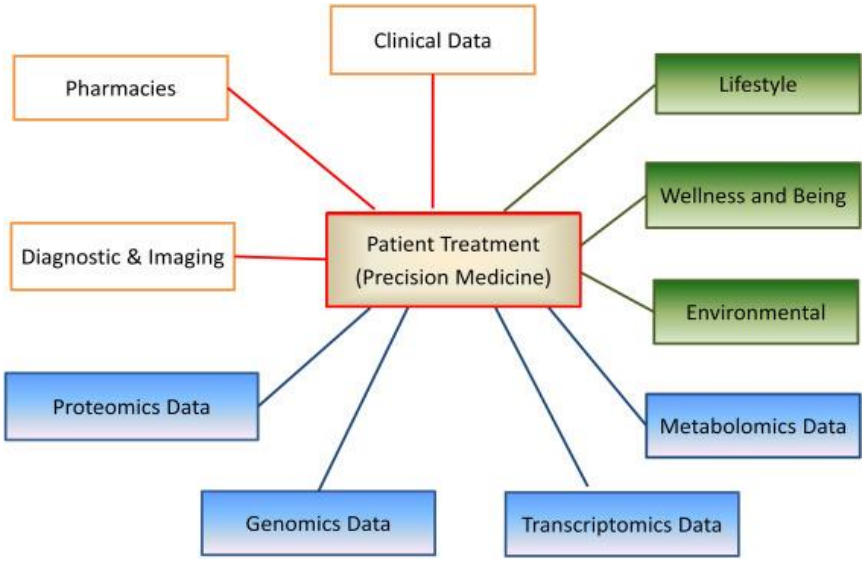

Figure 1: Data useful for the practice of precision medicine.

What is cancer? Cancer is a broad term. It describes Trusted Source the disease that results when cellular changes cause the uncontrolled growth and division of cells.

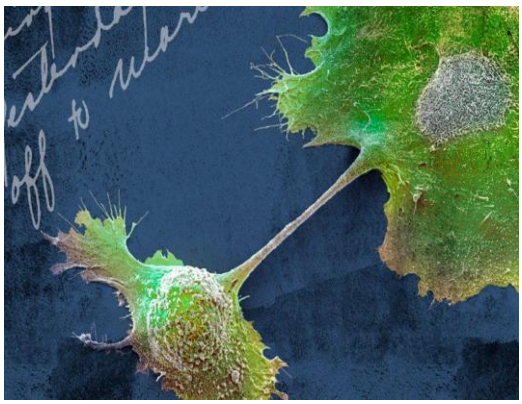

Figure 2: Cancer cell.

Side effects

- Shortcoming or unbelievable lethargy that deteriorates with rest.

- Weight decrease or gain of 10 pounds or something different for not an undeniable clarification
- Eating issues, for instance, not feeling hungry, bother swallowing, stomach torture, or nausea and spewing
- Augmenting or anomalies wherever in the body
- Thickening or bunch in the chest or other piece of the body
- Torture, especially new or with not an incredible clarification, that doesn't vanish or decays
- Skin changes, for instance, a knock that channels or turns finished, one more mole or a change of a mole, a delicate that doesn't retouch, or a yellowish assortment to the skin or eyes (Jaundice).
- Hack or dryness that doesn't vanish
- Weird depleting or expanding out of the blue
- Change in stomach penchants, for instance, block or free entrails, that doesn't vanish or a change of how your stools look
- Bladder changes, for instance, torture while passing pee, blood in the pee or hoping to habitually pass pee basically
- Fever or nights sweats
- Headaches
- Vision or hearing issues
- Mouth changes like wounds, biting the dust, torture, or numbness[2]

Atomic instruments

Sub-atomic components are the sub-atomic communications between a restorative treatment and an organic objective that outcome in a physiological reaction.

Epigenetic changes, including DNA methylation, histone acetylation and methylation, and miRNA articulation, act as sub-atomic instruments that regulate the seriousness and pathogenesis of various human infections.

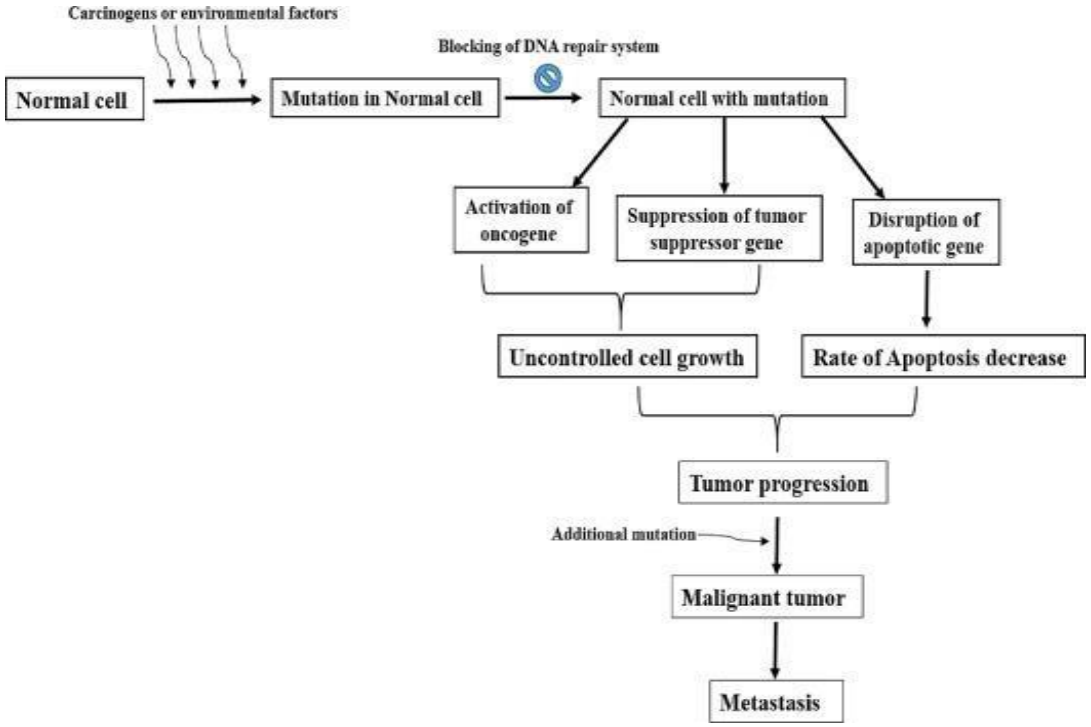

Figure 3: Molecular mechanisms.

Causes

1) **Diet:—** Diet is seen as responsible for 33% of all harmful development cases in the US. For most sorts of sickness, the quarter of the general population with the most un-dietary affirmation of results of the dirt has just twice the dangerous development recurrence as the quarter with the best usage (lung, larynx, oral hole, throat, stomach, colon and rectum, bladder, pancreas, cervix, and ovary).

2) **Compound or hurtful compound openings:-** Benzene, asbestos, nickel, cadmium, vinyl chloride, benzidine, N-nitrosamines, tobacco or tobacco smoke (contains something like 66 known expected disease causing manufactured substances and toxins), asbestos, and aflatoxin.

3) **Ionizing radiation:-** Uranium, radon, splendid shafts from sunshine, alpha, beta, gamma, and X-beam producing sources, and radiation from alpha, beta, gamma, and X-bar exuding sources.

4) **Pathogens:-** HPV, EPV (Epstein-Barr disease), hepatitis B and C, Kaposi's sarcoma-related herpes disease (KSHV), Merkel mobileular polyomavirus, Schistosoma spp., and Helicobacter pylori are the various microorganisms being explored as likely liable gatherings.

5) **Genetics:-** Human characteristics have been associated with different explicit malignancies, including: Chest, ovarian, colorectal, prostate, skin, and melanoma cancers are among the most generally perceived.

6) **Alcoholic rewards:-** Exacerbation of the liver, cirrhosis, and liver threatening development are possible optional impacts. Oral and esophageal harmful developments are both associated with alcohol use. Alcohol use has furthermore been associated with chest sickness.

7) **Tobacco:-** Smoking causes a lot of oxidative tension, and it integrates a lot of mutagens and rodent disease causing specialists. The body's malignant growth avoidance specialists are depleted by the oxidants in tobacco smoke (Generally nitrogen oxides).[3]

Medicines

Experts normally suggest treatments considering the sort of harmful development, its stage at end, and the singular's overall prosperity. A couple of occasions of harmful development treatment include Trusted Source:

- **Chemotherapy:** means to kill perilous cells with medications that target rapidly apportioning cells. The drugs can in like manner help with contracting developments, yet the accidental impacts can be serious.

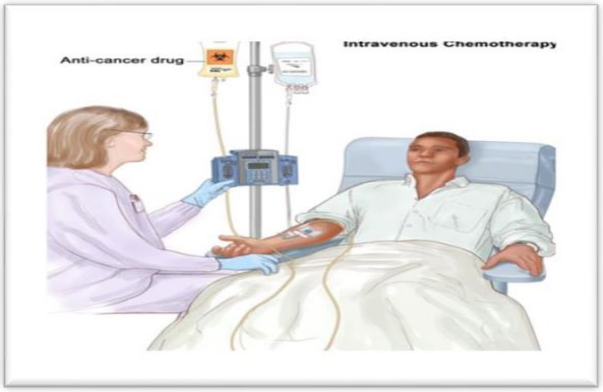

Figure 4: Chemotherapy.

- **Substance treatment:** Incorporates taking remedies that change how certain synthetics work or upset the body's ability to make them. Exactly when synthetic compounds expect a colossal part, in like manner with prostate and chest cancers, this is a run of the mill strategy.

Figure 5: Hormone therapy.

- **Immunotherapy:** uses drugs and various treatments to help the protected system and urge it to fight hazardous cells.

Figure 6: Immunotherapy.

- **Radiation therapy:** uses high-segment radiation to kill hazardous cells. Moreover, an expert could endorse using radiation to wither a disease before operation or diminish development related incidental effects.[4]

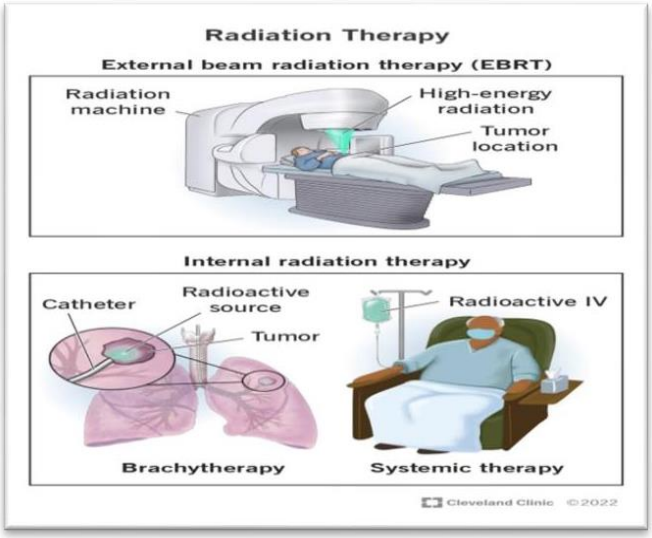

Figure 7: Radiation therapy.

- **Juvenile microorganism:** Move can be especially valuable for people with bloodrelated growths, similar to leukemia or lymphoma. It incorporates killing cells, for instance, red or white platelets, that chemotherapy or radiation has obliterated. Lab experts then, build up the cells and put them in a difficult spot into the body.

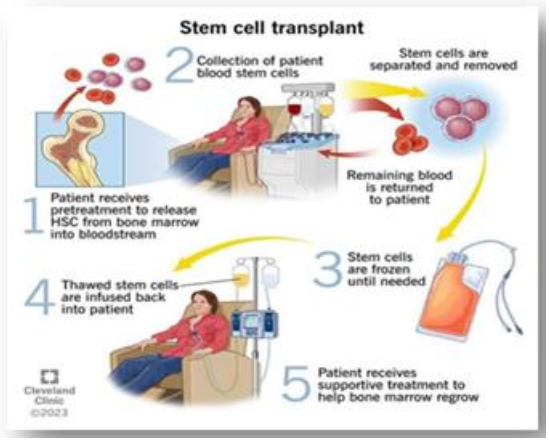

Figure 8: Stem cell transplant.

- **Medical procedure:** Is much of the time a piece of a therapy plan when an individual has a carcinogenic growth. Likewise, a specialist might eliminate lymph hubs to decrease or forestall the illness' spread.

Figure 9: Surgery.

Designated treatments

Designated Treatments carry out roles inside destructive cells to keep them from increasing. They can likewise support the safe framework. Two instances of these treatments are little atom medications and monoclonal antibodies. Specialists will frequently utilize more than one sort of treatment to augment viability.[5]

Little atom drugs

Little particle drugs have been the pillar of the drug business for almost hundred years. Characterized as any natural compound with low sub-atomic weight, little particle drugs enjoy a few unmistakable benefits as therapeutics: most can be managed orally and they can go through cell layers to arrive at intracellular targets. The capacity to plan little atoms fit for communicating with and balancing RNA could open new roads to target testing illness pathways that have recently been thought of as undruggable. Models incorporate anti-toxins (Penicillin), analgesics (Paracetamol) and engineered chemicals (Corticosteroids).

Monoclonal antibodies

Monoclonal antibodies are directed through a vein (Intravenously). How as often as possible you go through monoclonal neutralizer treatment depends upon your sickness and the prescription you're getting. Some monoclonal neutralizer meds may be used in mix with various prescriptions, for instance, chemotherapy or synthetic therapy. Some monoclonal safe reaction drugs are a piece of standard treatment plans. Others are at this point exploratory and used when various meds have not been productive. Model cetuximab (Erbitux) - a treatment for state of the art inside threatening development and head and neck illness.

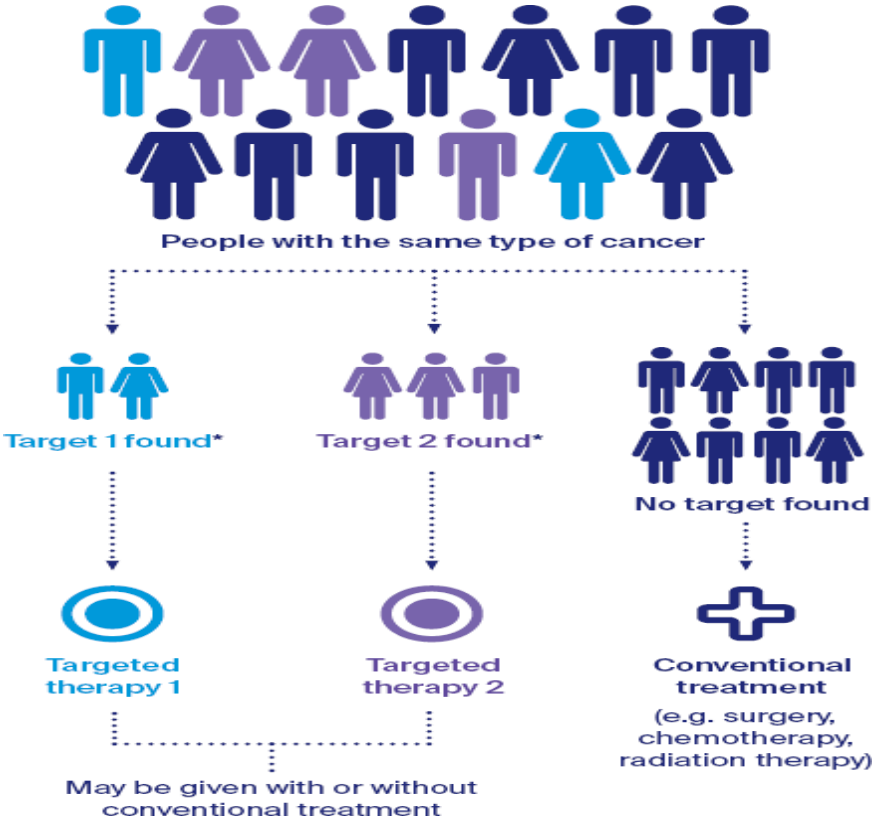

Figure 10: Targeted therapies.

Types

The most notable sort Trusted in Wellspring of threatening development in the U.S. is chest illness, followed by lung and prostate cancers, as shown by the Public Harmful development Association, which kept away from nonmelanoma skin dangerous developments from these disclosures. Consistently, more than 40,000 people in the country get a finding of one of the going with kinds of illness:

- Bladder
- Colon and Rectal
- Endometrial
- Kidney
- Leukemia
- Liver
- Melanoma
- Non-Hodgkin's lymphoma
- Pancreatic
- Thyroid various designs are more surprising.[6]

As shown by the Public Sickness Establishment, there are more than 100 sorts Trusted in Wellspring of harmful development.

Table 1: Current regimen of treatment for lung cancer.[7]

Drug name	Genetic name	USE
Xeloda	Capecitabine	anti-metabolites
Avastin	Bevacizumab	VEGF/VEGFR inhibitors
Tarceva	Erlotinib	EGFR inhibitors
Cytoxan	Cyclophosphamide	alkylating agents
Taxol	Paclitaxel	mitotic inhibitorsa
Taxotere	Docetaxel	mitotic inhibitors
Platinol –AQ	Cisplatin	alkylating agent

Development of malignant growth cells: Malignant growth forebear cells and movement of metastatic disease. a: hexagons with yellow specks address typical cells; b: blurred green, twisted hexagons with yellow spots address malignant growth forebear cells; c: begetter cells are expanding in number; d: star-like earthy colored cells address the metastatic type of disease cells, a blended populace of forebear and grown-up cells; e: abundance of metastatic cells; f: both metastatic and grown-up forebear cells leave site. Movement: Malignant growth ancestor cells create from ordinary cells (a to b); After development (b to c), they go through

EMT (c to d); Separation signals lessening and development signals increment, creating a mix of begetter and grown-up metastatic disease cells (d to e); After the outgrowth of metastatic cells, movement to a far off area happens (e to f); (B) Model for the improvement of grade-explicit tumors. Malignant growth begetter cells stop at each grade of separation and multiply from that grade while keeping up with the capacity to separate further; and (C) Model of the advancement of grade-explicit diseases. A few cells progress further through separation than others, stop separation, and afterward multiply, leading to clonal populaces of disease cells a particular grades.[8]

Types of cancer

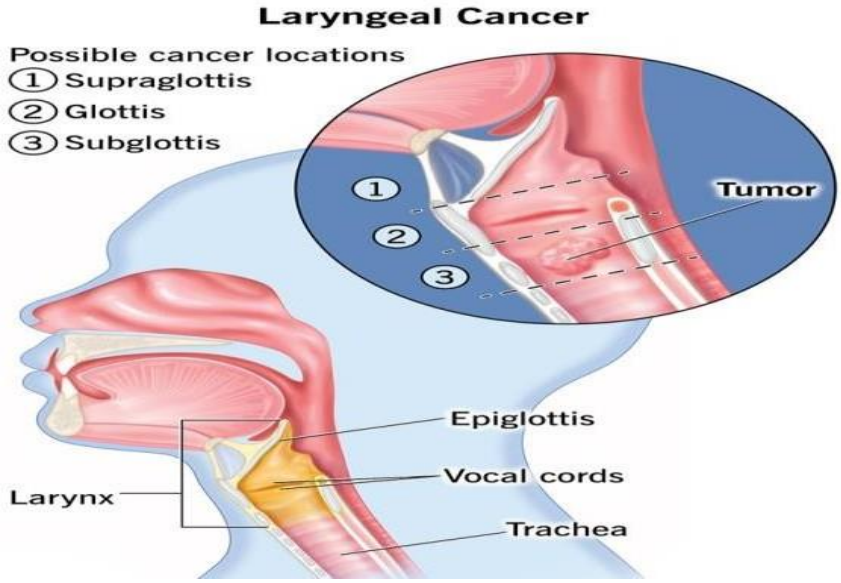

Figure 11: Laryngeal cancer.

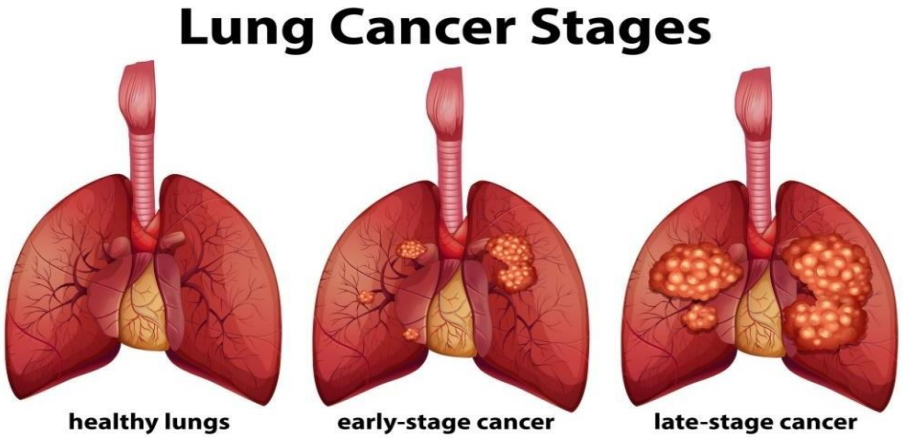

Figure 12: Lung cancer stages.

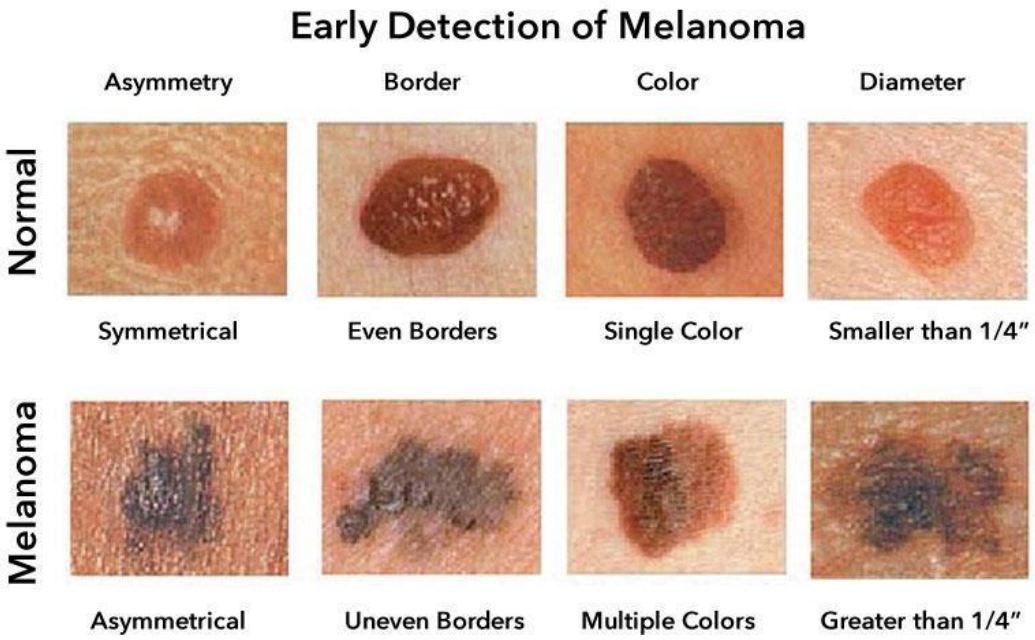

Figure 13: Melanoma cancer.

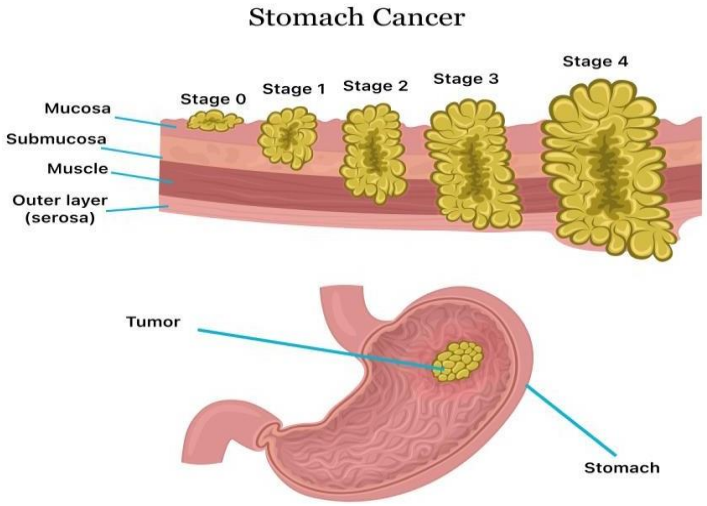

Figure 14: Stomach cancer.

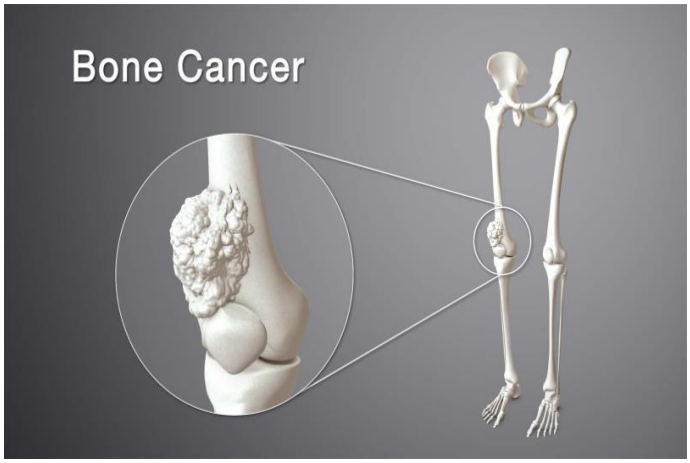

Figure 15: Bone cancer.

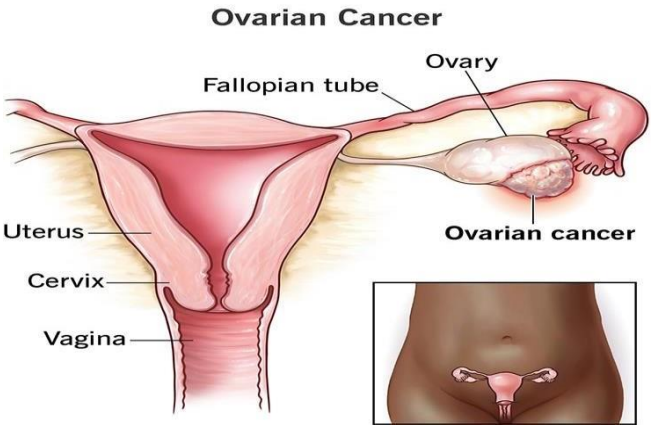

Figure 16: Ovarian cancer.

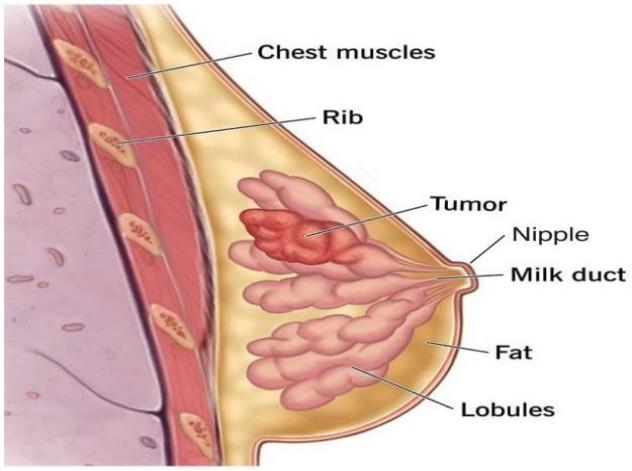

Figure 17: Brest cancer.

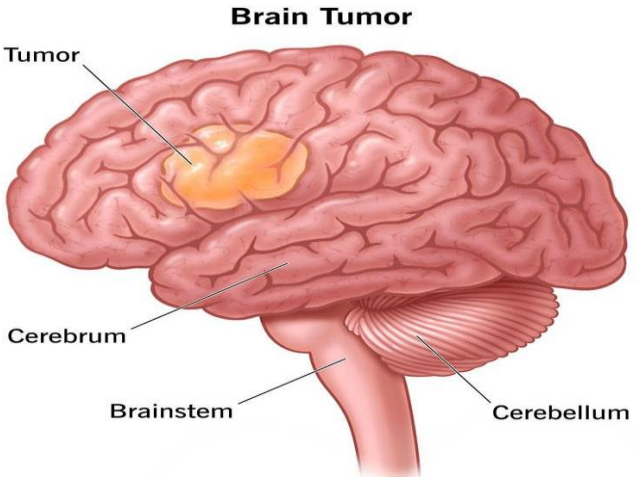

Figure 17: Brain cancer.

- **Laryngeal malignant growth:** Laryngeal malignant growth is an illness where harmful (Disease) cells structure in the tissues of the larynx. Utilization of tobacco items and drinking an excessive amount of liquor can influence the gamble of laryngeal malignant growth.

- **Melanoma disease:** Is a sort of skin malignant growth that beginnings in the melanocytes. Melanocytes are cells that make the shade that gives skin its tone. The color is called melanin. This delineation shows melanoma cells reaching out from the outer layer of the skin into the further skin layers.

- **Cellular breakdown in the lungs:** Cellular breakdown in the lungs is a sort of disease that starts in the lungs. Your lungs are two springy organs in your chest that take in oxygen when you breathe in and discharge carbon dioxide when you breathe out.[9]

- **Stomach disease:** Stomach malignant growth, which is likewise called gastric malignant growth, is a development of cells that beginnings in the stomach. The stomach is in the upper center piece of the gut, just beneath the ribs. The stomach assists with separating and digest food. Stomach malignant growth can occur in any piece of the stomach. In the vast majority of the world, stomach tumors occur in the principal part of the stomach. This part is known as the stomach body.

- **Bone disease:** Osteosarcoma is the most well-known type of bone malignant growth. In this growth, the destructive cells produce bone. This assortment of bone disease happens most frequently in kids and youthful grown-ups, during the bones of the leg or arm. In uncommon conditions, osteosarcomas can emerge beyond bones.

- **Ovarian disease:** Ovarian malignant growth is a development of cells that structures in the ovaries. The cells duplicate rapidly and can attack and obliterate sound body tissue. The female conceptive framework contains two ovaries, one on each side of the uterus. The ovaries each about the size of an almond produce eggs (ova) as well as the chemicals estrogen also, progesterone. Ovarian malignant growth treatment for the most part includes a medical procedure and chemotherapy.

- **Cerebrum disease:** A mind cancer is a development of cells in the cerebrum or close to it. Cerebrum growths can occur in the mind tissue. Cerebrum growths additionally can occur close to the mind tissue. Close by areas incorporate nerves, the pituitary organ, the pineal organ, and the layers that cover the outer layer of the cerebrum.

- **Bosom disease:** Bosom disease is a sort of malignant growth that starts as a development of cells in the bosom tissue. After skin malignant growth, bosom disease is the most widely recognized disease analyzed in ladies in the US. In any case, bosom malignant

growth doesn't simply occur in ladies. Everybody is brought into the world with some bosom tissue, so anybody can get bosom malignant growth.[10]

Anticipation of malignant growth

For in excess of 25 years, avoidance has been the essential malignant growth control objective, yet the commitment of anticipation has generally gone neglected. The association of Qualities and Climate The potential for understanding disease etiology through hereditary affiliation and quality climate research is tremendous. Great examination plan and strategic thoroughness, then again, are basic. Studies should be enormous, reproducible, and all around fueled, with legitimate case and control choice methods, to examine these connections and collaborations really and precisely. The target of distinguishing high-risk individuals for preventive measures has a few similitudes to genomics research and its commitments of custom-made counteraction — the objective being to recognize people with defenselessness prescient hereditary markers. Albeit north of 100 qualities have been recognized as causing Mendelian genetic disease disorders, they just record for a little part of the family bunching of common malignancies. In the general populace, the higher family relative gamble of malignant growth should for the most part be because of okay qualities.

Inferable gamble appraisals

Over thirty years prior, the Workplace of Innovation Evaluation of the US Congress dispatched two famous English disease transmission experts, Sir Richard Doll and Sir Richard Peto, to survey the proof on ways of staying away from malignant growth and evaluate the decreases in death rates that could be accomplished by preventive estimates assumed control over the course of the following one to twenty years. Disease has various causes that connect with one another at various places throughout everyday life; the amount of inferable parts of reasons for malignant growth isn't 100 percent; rather, the aggregate is boundless. Diseases are multifactorial with numerous etiologic pathways; anticipation might be conceivable by zeroing in on a few distinct variables at different times all through one's lifetime.[11]

Clinical components of malignant growth avoidance

Since malignant growth avoidance is connected to different parts of the clinical consideration framework through this malignant growth control continuum, preventive wellbeing administrations, for example, bosom or colon disease screening, tobacco discontinuance directing, and inoculation against irresistible sicknesses have acquired conspicuousness since

the mid-1970s (e.g., Tamoxifen, Raloxifene). The medical services framework, then again, is bound to influence malignant growth occurrence than bleakness and endurance Besides, taking into account sickness counteraction as a feature of a continuum with disease determination and therapy presents a conundrum: if viable, disease anticipation would stop the later periods of the infection.

Meaning of modifiable gamble variable

Numerous singular gamble factors (e.g., sex, age, hereditary legacy, and at times schooling and cash) are viewed as fixed and not movable. Normally, modifiable or preventable malignant growth risk factors are partitioned into two classifications: way of life and climate. Individual ways of behaving, for example, tobacco smoking, terrible eating routine, and actual idleness are frequently portrayed as ways of life. At the cultural level, factors like natural pollution, risky circumstances for active work, and food deserts, where individuals have restricted admittance to products of the soil, are elements to consider (a variable that excessively influences low financial [SES] populaces). Tobacco use is an illustration of a gamble factor that is both conduct and cultural, requiring separate counteraction systems. Local area based mediations (e.g., raising tobacco costs, using broad communications to counter tobacco industry advancement related to different intercessions, limiting minors' admittance to tobacco items) are effective methods for bringing down the extent of young people who begin smoking.

Social determinants of disease

Since wellbeing is essentially associated with instructive level and SES, a few significant associations have required an emphasis on friendly determinants of wellbeing. The "upstream" social determinants of ailment and wellbeing incorporate the local conditions, natural openings, social and word related conceivable outcomes, and individual assets that lay out the setting in which wellbeing choices and ways of behaving are made. Harm to organ frameworks or qualities is a "downstream" consequence of such financial determinants. Bosom and skin malignant growth are huge special cases, in spite of the fact that when those disease structures are recognized in low-SES people, they have horrendous endurance rates.

When to Make a move Hurt decrease (Diminishing openness to realized malignant growth causes), helpful therapies (Immunizations, chemoprevention), and wellbeing advancement (Elevating propensities connected to bring down disease risk) have all been utilized in the battle against disease Albeit significantly more examination on synthetic openings and

different parts of disease counteraction is required before researchers, policymakers, and general wellbeing associations can mediate on possibly destructive or defensive variables, researchers, policymakers, and general wellbeing associations should consider the limits of proof that they consider significant.(84) Numerous areas of safeguard research have wrestled with issues in regards to the level of verification expected for activity Individual ways of behaving and exercises might impact individual openings, natural debasement, and society changes, which could further develop anticipation draws near. Likewise, a more profound information on how social, financial, and natural variables influence, energize, or compel "way of life" and different ways of behaving at different times of life is required. The Public Counteraction Technique, recently gave, expects to raise the level of Americans who are sound at each phase of life by coordinating activities across numerous settings, and it presents an especially pertinent methodology for Malignant growth avoidance.[12]

Chosen discoveries

Malignant growth pervasiveness

An expected 13.7 million Americans with a background marked by malignant growth were alive on January 1, 2012. This gauge does exclude carcinoma in situ of any site aside from the urinary bladder, and does exclude basal cell and squamous cell skin diseases. The 10 most normal disease locales addressed among survivors are displayed in Figure 1. The 3 most normal tumors among male survivors are prostate (43%), colorectal (9%), and melanoma of the skin (7%). Among female survivors, the most widely recognized diseases are those of the bosom (41%), uterine corpus (8%), and colorectum (8%). Most of malignant growth survivors (64%) were analyzed at least quite a while back, and 15% were analyzed at least quite a while back (Table 1). Almost one-half (45%) of disease survivors are matured 70 years or more established, while just 5% are more youthful than 40 years (Table 2). As of January 1, 2022, it is assessed that the number of inhabitants in malignant growth survivors will increment to almost 18 million (8.8 million guys and 9.2 million females).[13]

	MALE			FEMALE		
YEARS SINCE DIAGNOSIS	NO.	PERCENTAGE	CUMULATIVE PERCENTAGE	NO.	PERCENTAGE	CUMULATIVE PERCENTAGE
0 to < 5	2,608,320	40%	40%	2,339,950	32%	32%
5 to < 10	1,628,010	25%	65%	1,595,410	22%	54%
10 to < 15	997,060	15%	80%	1,135,160	16%	70%
15 to < 20	570,290	9%	89%	791,880	11%	81%
20 to < 25	305,140	5%	94%	536,670	7%	88%
25 to < 30	154,470	2%	96%	343,300	5%	92%
30+	179,010	3%	100%	499,210	7%	100%

Figure 19: Selected findings.

Treatment

We examined disease therapy information from 2 sources: the Public Malignant growth Information Base (NCDB) and the Diviner Federal medical care connected database.National Malignant growth Information Base The NCDB is an emergency clinic based disease library mutually supported by the American Malignant growth Society (ACS) and the American School of Specialists, and remembers roughly 70% of all dangerous tumors for the US from in excess of 1400 offices certify by the American School of Specialists' Bonus on Disease (CoC).9 In spite of the fact that chemotherapy use information in the NCDB are less finished than information on medical procedure or radiation treatment and data concerning explicit chemotherapeutic specialists isn't accessible, the information are adequately finished to allow engaging investigations of disease therapy designs by site and stage.[14]

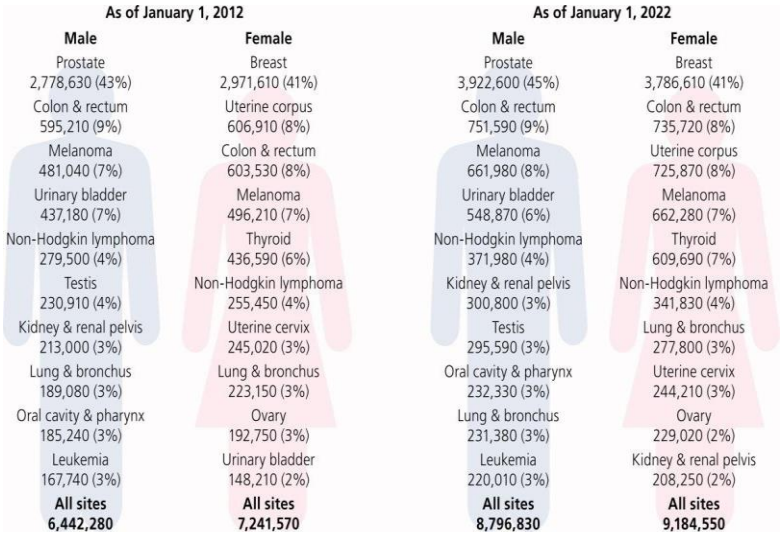

Figure 20: Treatment.

Diseases in youngsters: Adolescence malignant growths (from birth to mature 14 years) are uncommon, addressing under 1% of all new disease analyze, however they are the subsequent driving reason for death in kids, surpassed exclusively by mishaps. It is assessed that there are 58,510 overcomers of life as a youngster disease living in the US, and 12,060 extra kids will be analyzed in 2012. The most widely recognized diseases in youngsters are leukemia (34%), mind and other sensory system malignancies (27%), neuroblastoma (7%), Wilms growth (5%), non-Hodgkin lymphoma (NHL) (4%) and Hodgkin lymphoma (HL) (4%), rhabdomyosarcoma (3%), retinoblastoma (3%), osteosarcoma (3%), and Ewing sarcoma (1%).[15]

Aspiratory brokenness: Medical procedure for cellular breakdown in the lungs is typically

connected with dyspnea and decreased lung working. Moreover, alkylating specialists and radiation treatment cause aspiratory fibrosis that might advance asymptomatically for quite a long time after therapy.[16]

Sexual brokenness

Albeit sexual brokenness is commonly connected with guys treated for prostate disease, an enormous level of female overcomers of gynecologic and bosom malignant growths likewise experience sexual brokenness. After the consummation of therapy, 20% to 30% of bosom disease survivors and almost 80% of prostate malignant growth survivors report sexual troubles. In female survivors, agonizing sex is the most predominant side effect, while the most widely recognized side effect for men is erectile brokenness. For the two genders, a lessened interest in sex is much of the time revealed and is frequently tenacious. Factors causing or adding to sexual brokenness incorporate actual changes connected with disease therapy (Eg harm from radiation therapies, nerve harm from prostatectomy), hormonal changes (eg, androgen-smothering therapies for prostate malignant growth or ovarian disappointment), negative self-perception, and disease related weakness.[17]

Spices Utilized IN Disease Medicines

- Turmeric is advanced as an elective malignant growth treatment. There is some proof that curcumin, a substance in turmeric, can kill disease cells in specific tumors. However, we want more examination. Turmeric is a flavor filled in numerous Asian nations.

Figure 21: Turmeric.

- **Ginger:** has been viewed as powerful against different GI malignant growths like gastric disease, pancreatic malignant growth, liver malignant growth, colorectal malignant growth.[18]

Figure 22: Ginger.

- **Saffron:** As a major constituent in saffron, crocin inhibits tumor growth in several types of cancers, while cell cycle arrest is one of the important mechanisms in preventing cancer. The anti- leukemic effects of crocin have been investigated in a human leukemia cell line in vitro and in vivo.[19]

Figure 23: Saffron.

- **Ashwagandha**

Ashwagandha additionally showed anticancer impacts against a few disease cell lines however was ineffectual against drug-safe malignant growth immature microorganisms. It forestalled chemotherapy-prompted neutropenia in a murine model, and the compound Withaferin An improved oxaliplatin impacts in human pancreatic disease cells.[20]

Figure 24: Ashwagandha.

Capsaicin

Capsaicin is a homovanillic corrosive subordinate and it has been displayed to change the outflow of a few qualities engaged with disease cell endurance, development capture, angiogenesis and metastasis.[21]

Figure 25: Capsaicin.

CONCLUSION

Cancer mortality continued to decline in the United States through 2021, resulting in an overall drop of 33% since 1991 because of re ductions in smoking, earlier detection for some cancers, and improved treatment, including recent developments in targeted therapies and immunotherapy. However,progressis lagging in cancer prevention, as incidence continues to increase for 6 of the top 10 cancers, including breast, prostate, uterine corpus, pancreas, oropharynx, liver (female), kidney, and melanoma, as well as CRC and cervical cancer in young adults. Among adults younger than 50 years, CRC is now the leading cause of cancer death in men and the second-leading cause in women (behind breast cancer), despite ranking fourth in 1998.

All the strategies developed so far, and the drugs approved until now have their own limitations and toxicities associated with their use. Nevertheless, due to the lack of more sophisticated ways of treatments, the patients suffering from the advanced terminal stages of the disease usually are left with very few options to live with. Several new treatment plans are underway and may need a decade or more to be available for patients of developing countries at an affordable cost. Most of the research conducted around the world is now limited to finding ways of trimming away large branches (symptoms) of a tree (cancer), which may further grow and proliferate at new sites. The knowledge of the point of origin of the tree and ways to cut it from the bottom is still missing and needs extensive work. The field may need a complete turnaround in the approaches of looking at the disease in order to

find proper solutions. It is hard at present to predict how much time we still require in reaching a definitive solution. However, yes, there always remains a hope, and we must follow it.

REFERENCE

1. Sanga Mitra, Sayak Ganguli, Jayprokas Chakrabarti, Cancer and Noncoding RNAs, Translational Epigenetic, 2018; 1-23.
2. Seyed Hossein, Hassanpour, Mohammadamin, v Review of cancer from perspectiveof molecular, 2017; 4, 4: 127-129.
3. Anupam Saini, Manish Kumar, Shailendra Bhatt, Vipin Saini and Anuj MalikCANCER causes and treatments IJPSR, 2020; 11: 7.
4. *World Health Organization*. September, 2018; 12: 19.
5. Cappellani A, Di Vita M, Zanghi A, Cavallaro A, Piccolo G, Veroux M, Berretta M, Malaguarnera M, Canzonieri V, Lo Menzo E. "Diet, obesity and breast cancer: an update". *Frontiers in Bioscience, 2012;* 4(1): 90–108.
6. Ames BN, Gold LS, Willett WC. The causes and prevention of cancer. Proceedings of the National Academy of Sciences.
7. Malshe AG. Hydrogen ion/Proton Dynamics: A Possible Therapeutic Approach in Malignancy Treatment. J Clin Exp Oncol.
8. Assessing national capacity for the prevention and control of noncommunicable diseases: report of the 2019 global survey. Geneva: World Health Organization, 2020.
9. Edward B. silberstein. M.D., Cancer Diagnosis the Role of Tumor-Imaging Radiopharmaceuticals, February the Amerkan Journal of MedicIns Volume, 1976; 60.
10. Khawaja S, Saiyed A, Thayabaran D, Udayasankar S, Dias J. A comparison between oncoplastic breast conserving surgery and standard wide local excision: a UK experience. J Blood Lymph, 2015.
11. Garraway L. A. and Lander E. S. Lessons from the cancer genome. Cell, 2013; 153: 17-37
12. Campbell P. J., Yachida S., Mudie L. J., Stephens P. J., Pleasance E. D., et al. The patterns and dynamics of genomic instability in metastatic pancreatic cancer. Nature, 2010; 467: 1109-1113.
13. Dreyfuss G., Matunis M. J., Pinol Roma S. and Burd C. G. hnRNP proteins and the biogenesis of mRNA. Annu Rev Biochem, 1993; 62: 289-321.
14. Kaur H., Mao S., Li Q., Sameni M., Krawetz S. A., et al. RNA-Seq of human breast

ductal carcinoma in situ models reveals aldehyde dehydrogenase isoform 5A1 as a novel potential target. PLoS ONE, 2012; 7: e50249.

15. Zhao Z., Tavoosidana G., Sjolinder M., Gondor A., Mariano P., et al. Circular chromosome conformation capture (4C) uncovers extensive networks of epigenetically regulated intra- and interchromosomal interactions. Nat Genet, 2006; 38: 1341-1347.
16. American College of Surgeons Commission on Cancer. National Cancer Data Base, 2008 Data Submission. Chicago, IL: American College of Surgeons, 2011.
17. Pui CH, Campana D, Pei D, et al. Treating childhood acute lymphoblastic leukemia without cranial irradiation. N Engl J Med, 2009; 360: 2730-2741.
18. Surveillance, Epidemiology, and End Results Program. SEER-Medicare Data (2004-2006). Bethesda, MD: National Cancer Institute, Division of Cancer Control an Population Sciences, Applied Research Program, Health Services and EconomicsBranch, 2010.
19. North American Association of Central Cancer Registries (NAACCR). CiNA Explorer interactive tool for quick access to key NAACCR cancer statistics based on the Cancer in Nor America (CiNA) dataset from the NAACCR. Accessed September, 2023; 1.
20. Servaes P, van der Werf S, Prins J, Verha gen S, Bleijenberg G. Fatigue in disease free cancer patients compared with fatigue in patients with chronic fatigue syndrome. Support Care Cancer, 2001; 9: 11-17.
21. Chen R, Aschmann HE, Chen YH, et al. Racial and ethnic disparities in estimated excess mortality from external causes in the US, March to December 2020. JAMA Intern Med, 2022; 182(7): 776-778. doi:10.1001/jamainternmed.2022.1461