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CHICAGO
MEDICINE

The Journey: Ovarian Cancer Diagnosis and Survivorship

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Outline

- Defining our terms. What is ovarian cancer survivorship?
- Brief review of ovarian cancer biology and initial treatment
 - Building your treatment and post treatment team
 - Supportive care and Self Care
- Understanding Survivorship
 - Post treatment peaks and valleys
 - Surveillance that is right for you
 - Cancer genetics

Define Survivor:

“Cancer survivorship” was created to describe this broad experience on the cancer continuum

— living with, through, and beyond a cancer diagnosis.

- Defining cancer survivor as anyone who is diagnosed with cancer, undergoing treatment, completed therapy or living with an ongoing cancer diagnosis.

- Conflicted feelings of ovarian cancer survivors to adopt

 - “I’m not a survivor, I am surviving and thriving.”

- Personal choice. The diagnosis does not define you.

La Forza

Inner Strength,

Persistence,

Perseverance,

Resiliency,

Bravery,

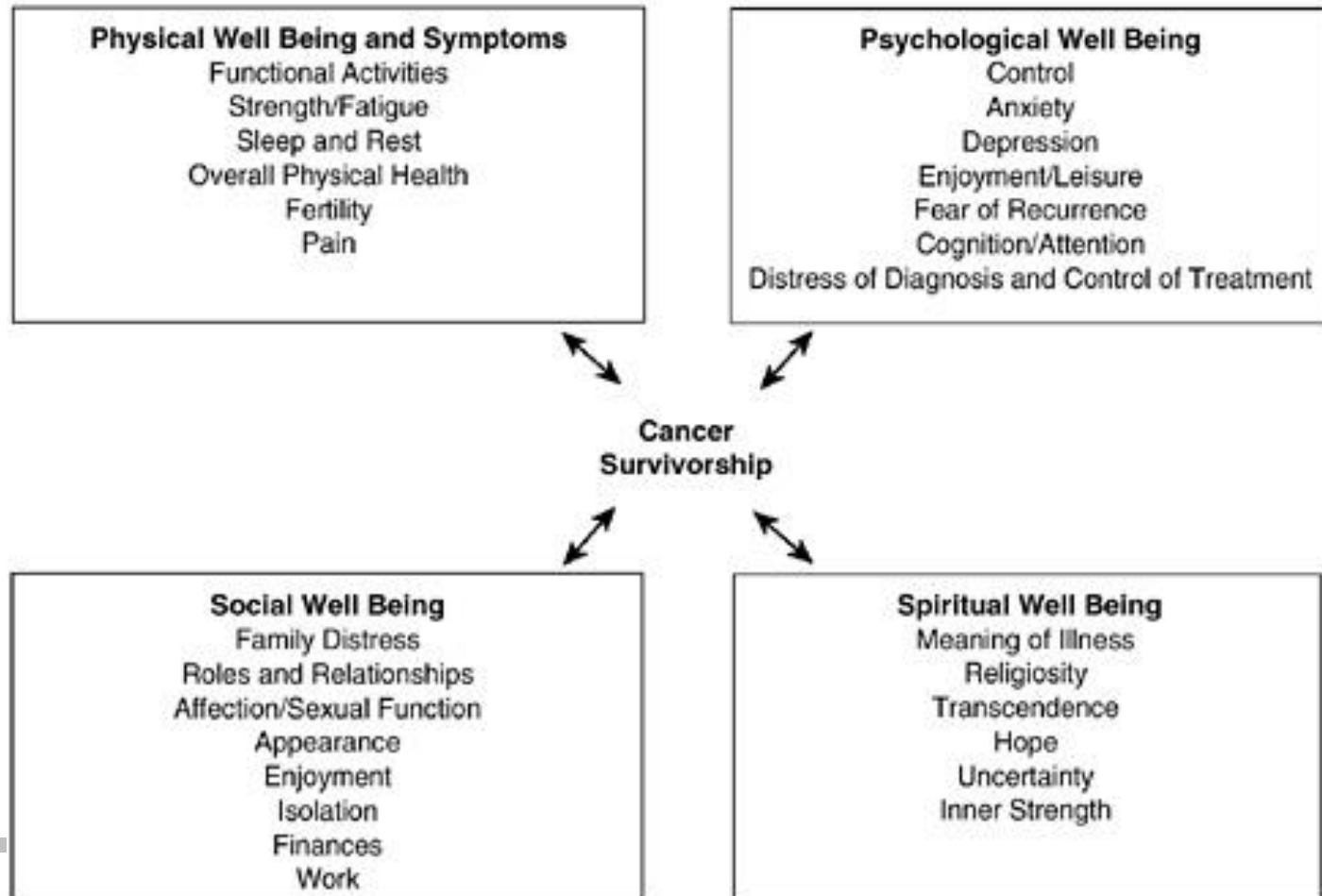
Courage.

Called upon on only in difficult times, often when facing incredible odds.



Institute of Medicine *From Cancer Patient to Cancer Survivor: Lost in Transition.*

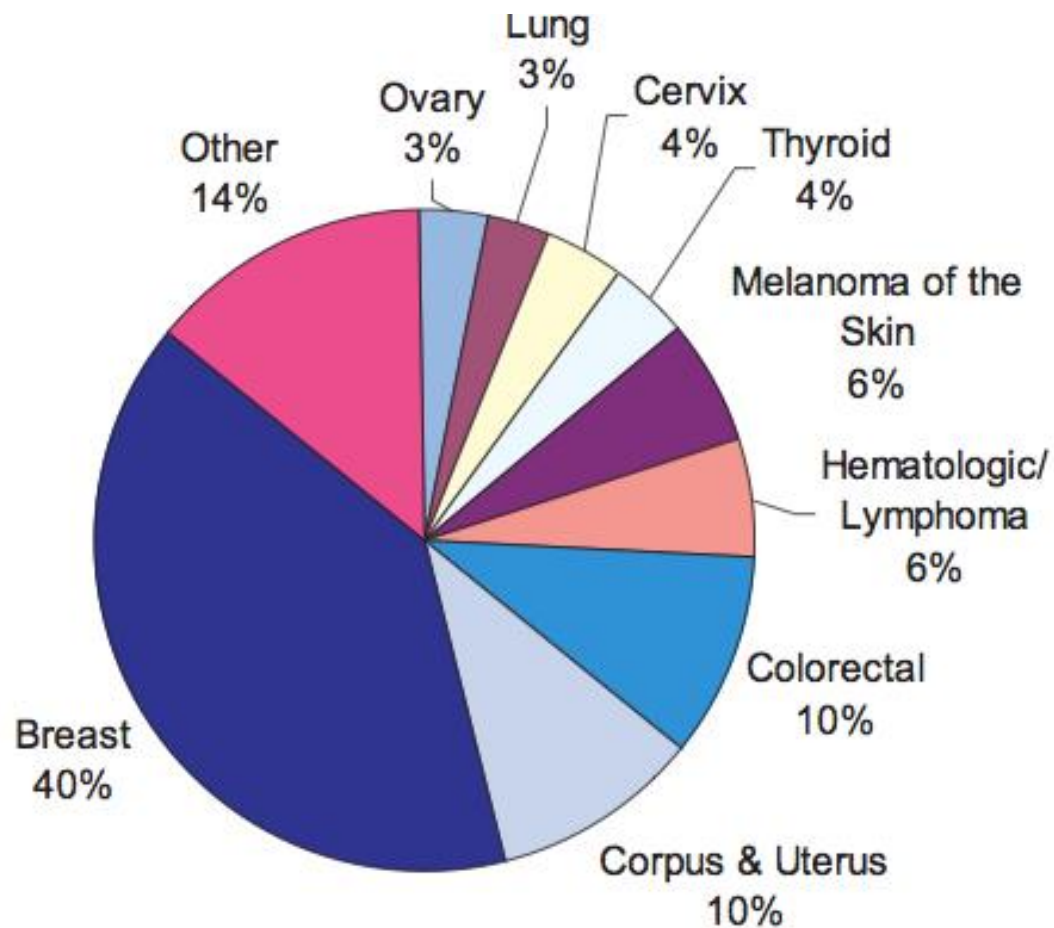
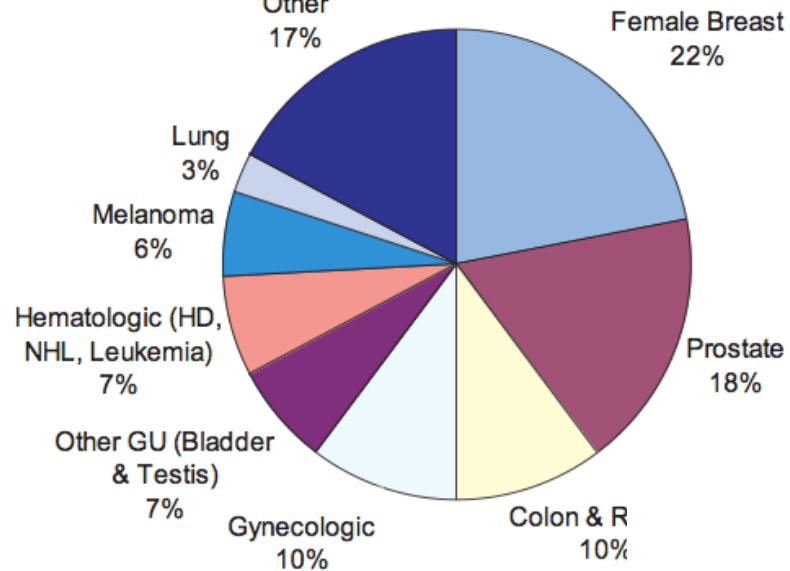
Quality of Life Model Applied to Cancer Survivors



City of Hope Beckman Research Institute (2004). Reprinted with permission from Betty R. Ferrell, PhD, FAAN; and Marcia Grant, DNSc, FAAN, City of Hope National Medical Center.

Ovarian Cancer

Basics and Biology

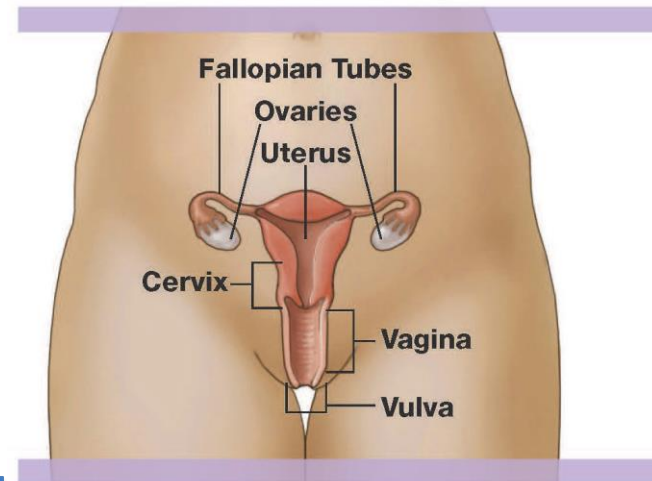


Cancer Incidence in US women

Females



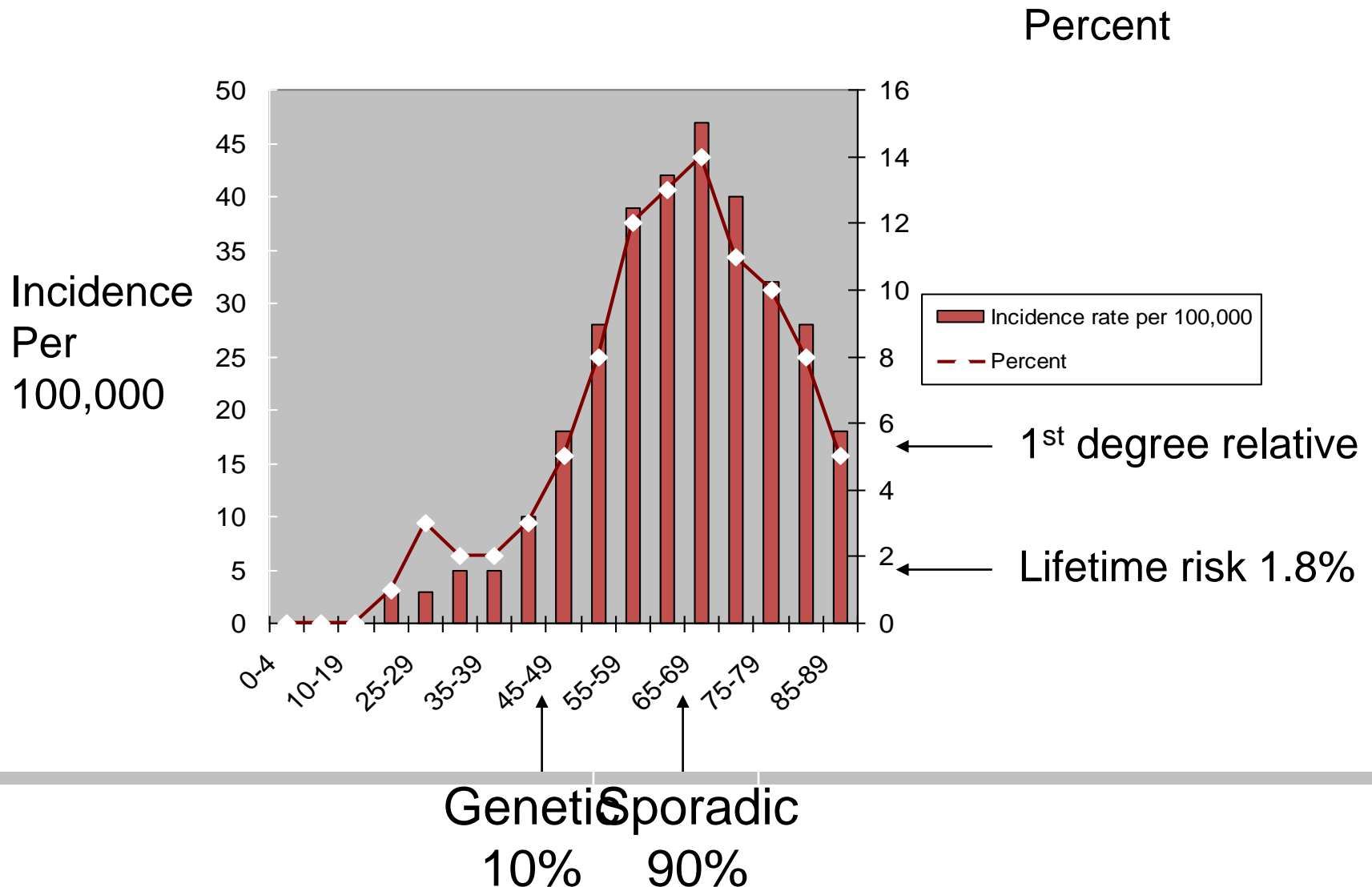
Breast	232,340	29%
Lung & bronchus	110,110	14%
Colorectum	69,140	9%
Uterine corpus	49,560	6%
Thyroid	45,310	6%
Non-Hodgkin lymphoma	32,140	4%
Melanoma of the skin	31,630	4%
Kidney & renal pelvis	24,720	3%
Pancreas	22,480	3%
Ovary	22,240	3%
All Sites	805,500	100%



Cervical Cancer	12,000
Vulvar Cancer	3,500
Vaginal Cancer	1,000



Incidence of Ovarian Cancer by Age



Lifetime risks of Ovarian Cancer

General Population	1.8%
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Familial Ovarian Cancer

1 relative	4.5%
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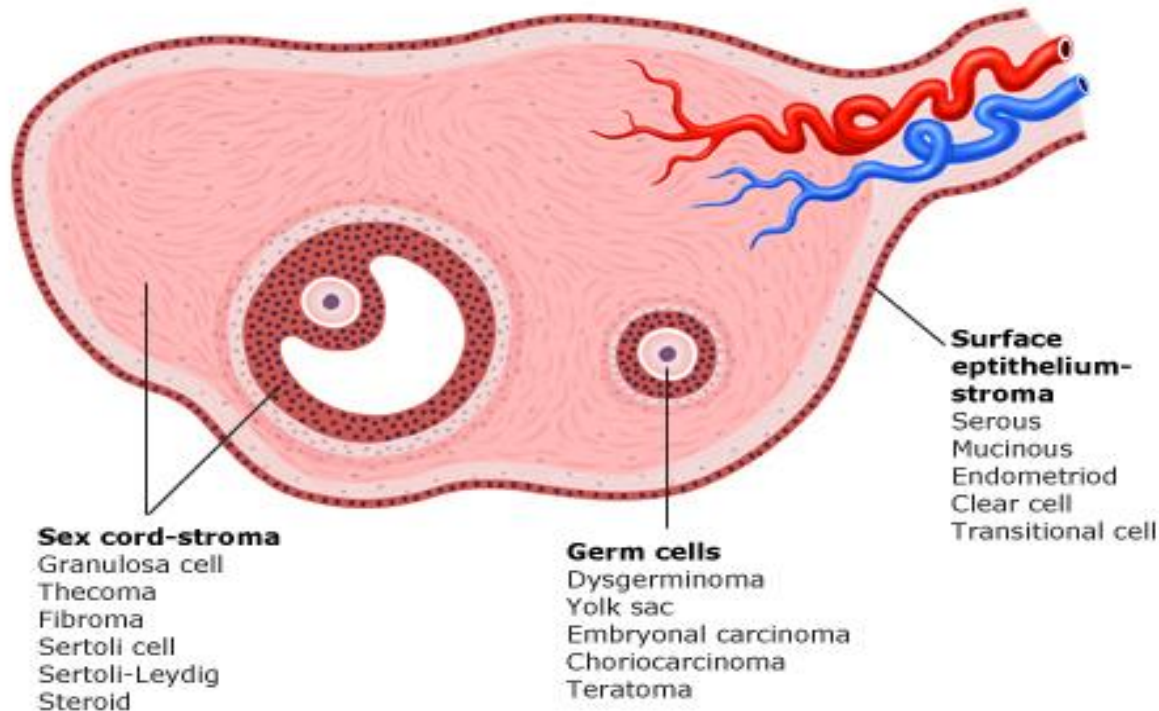
2 relatives	7%
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BRCA1	30-47%
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BRCA2	12-27%
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Lynch Syndrome	5-10%
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Types of Ovarian Cancer

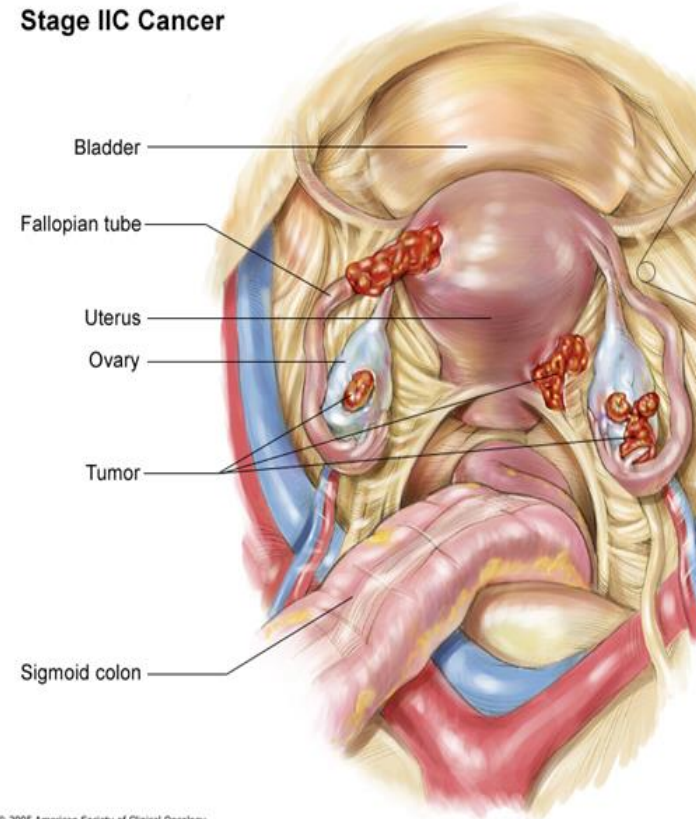


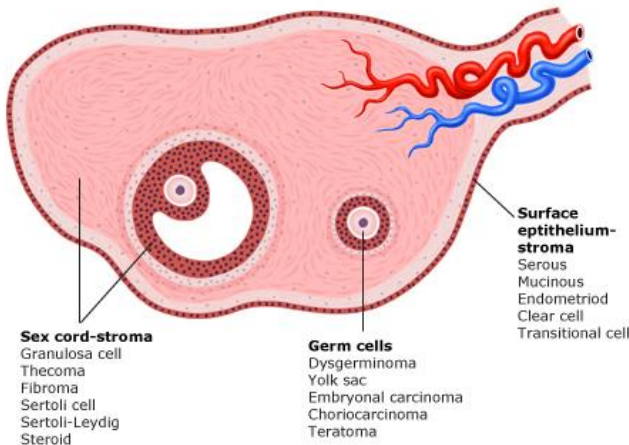
Epithelial Ovarian Cancer

Fallopian Tube Cancer

Primary Peritoneal Cancer

Stage IIC Cancer





Not that simple

Ovarian Cancer is not one disease

Epithelial ovarian cancer

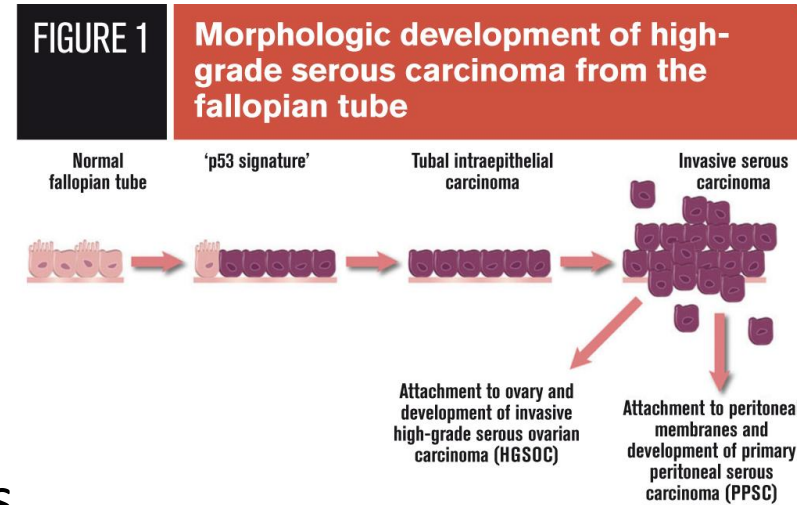
What is the Cell of origin?

fallopian tube origin

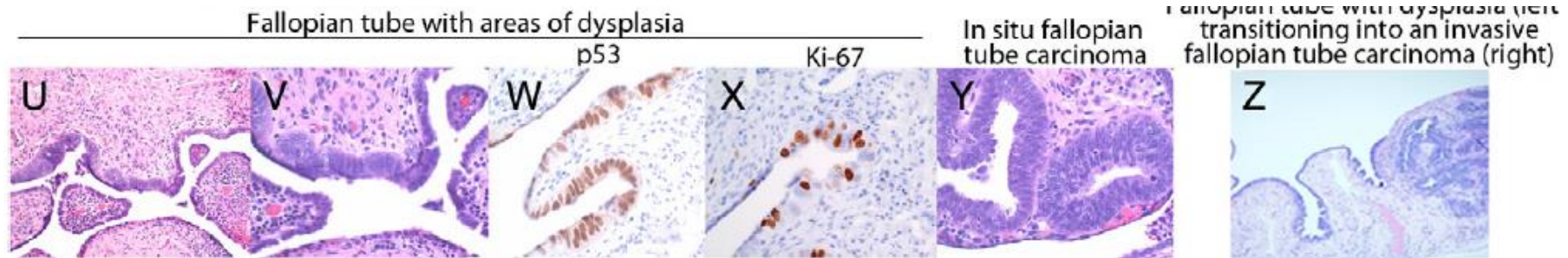
ovarian surface lining cells

endometriosis

lining of the peritoneal cavity



Source: Drapkin R, Karst AM. The new face of ovarian cancer modeling: Better prospects for detection and treatment. *F1000 Med Reports*. 2011;3:22. Used with permission.



Cell types of epithelial ovarian cancers

Type	WHC, %
Serous	67.8
Mucinous	3.4
Endometrioid	8.6
Clear Cell	12.6
Transitional	0.6
Mixed	5.7
Undifferentiated	0.6
Other	0

These cell types may have differences in CLINICAL

- Clinical presentation
 - Age; symptoms
- Optimal treatment regimens
- Recurrence risk
- Response to treatment

BIOLOGIC/MOLECULAR

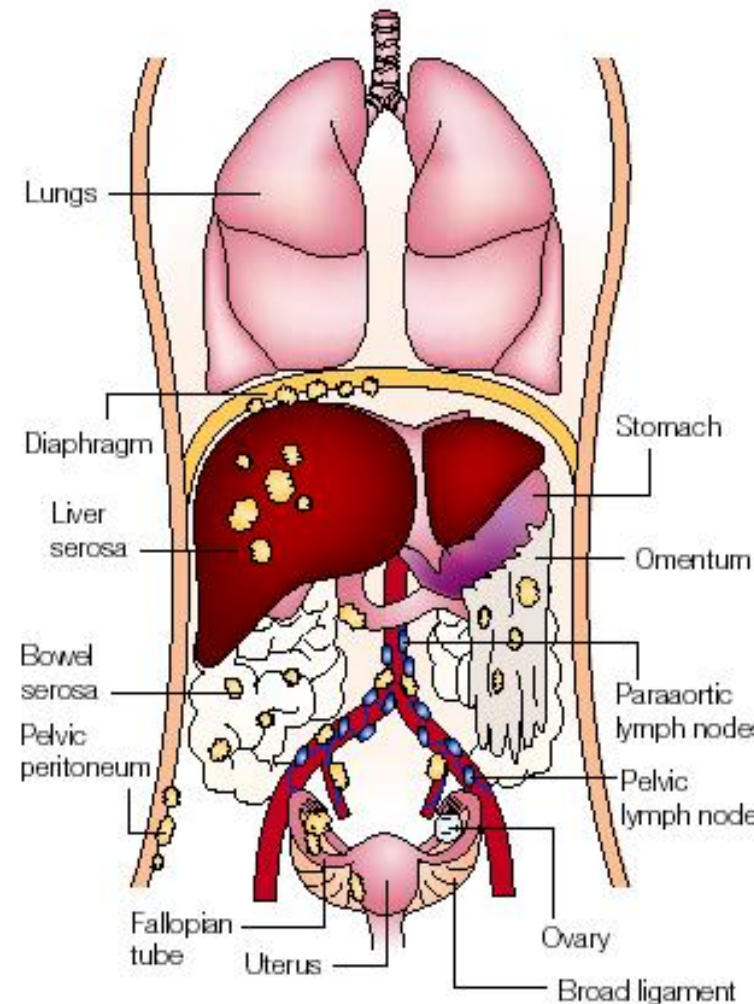
- Different molecular mutations
- Different pathways that are turned on or off that promote cancer development

Ovarian Cancer: Risk Factors

Increase	Decrease
Age	OCPs
Family history	Pregnancy
Infertility	Tubal ligation/hysterectomy
Personal cancer history	Breast-feeding
Early menarche/late menopause	Risk Reducing surgery
Endometriosis	

Where does ovarian cancer go?

- Early direct extension into abdominal cavity
- This pattern is different than other solid cancers
- Shed cells can spread in the abdomen and “land” on other organs.
- Spread through blood stream less common
- Most women are diagnosed with disease in the upper abdomen or beyond (Stage III-IV)



Model of ovarian cancer progression

Peritoneum

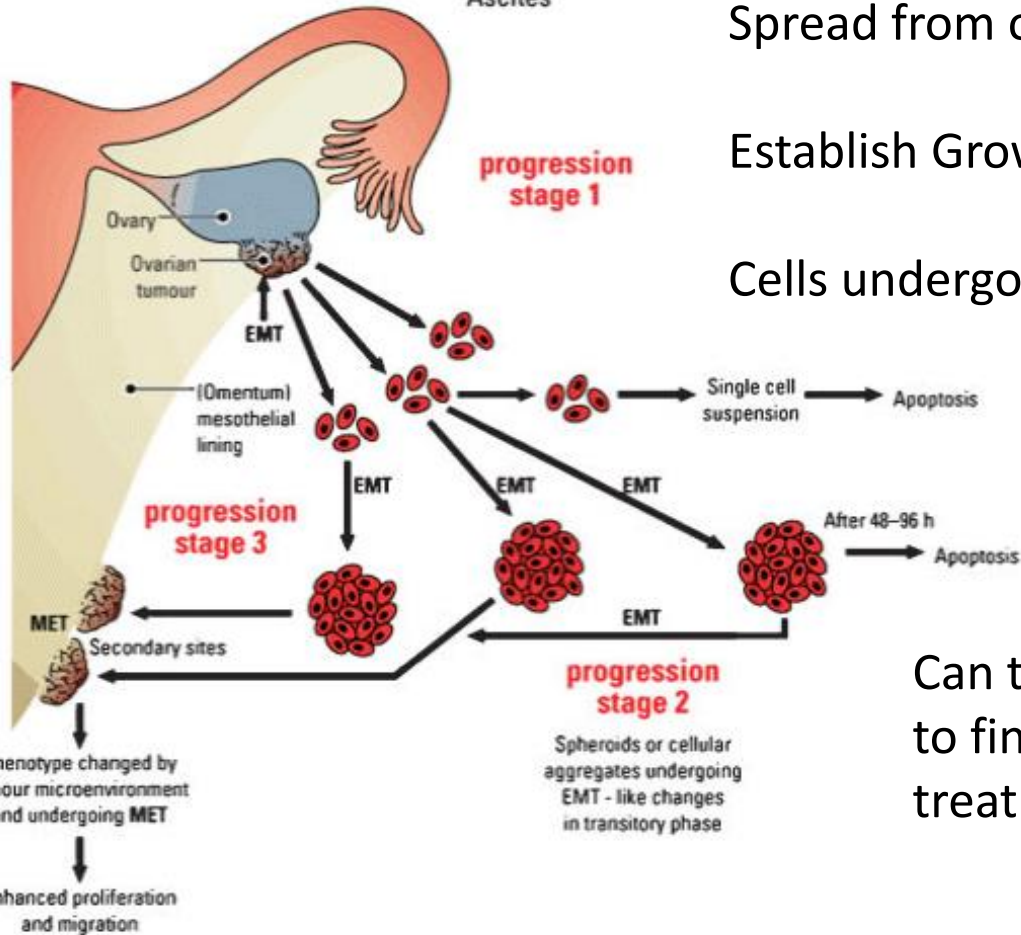
Ascites

progression stage 1

Spread from original site

Establish Growth at other sites in abdominal cavity

Cells undergo specific changes to allow this process



Can these steps be better studied to find better sites for intervention and treatment?

Ovarian Cancer Symptoms

Not a Silent Disease!

- Patient reported symptoms
 - Abdominal or pelvic pain
 - Bloating or distention
 - Early satiety
 - Irregular bleeding
 - Constipation
 - Urinary symptoms



General Symptoms to seek Gyn Evaluation

Gynecologic Cancer Symptoms Diary

Gynecologic cancer symptoms may be difficult to recognize. Fill in the circles in the diary below for each day that you have a symptom. And see a doctor if you have bleeding that's not normal for you or if you have any of the other symptoms for two weeks or longer. It may be nothing to worry about, but find out for sure.



Symptoms	Cervical Cancer	Ovarian Cancer	Uterine Cancer	Vaginal Cancer	Vulvar Cancer	Week One	Week Two
Abnormal vaginal discharge	●	●	●	●		S M T W T F S	S M T W T F S
Pelvic pain or pressure		●	●		●	S M T W T F S	S M T W T F S
Abdominal or back pain		●				S M T W T F S	S M T W T F S
Bloating		●				S M T W T F S	S M T W T F S
Changes in bathroom habits		●		●		S M T W T F S	S M T W T F S
Itching or burning of the vulva					●	S M T W T F S	S M T W T F S
Changes in vulva color or skin, such as a rash, sores, or warts					●	S M T W T F S	S M T W T F S
Abnormal vaginal bleeding	●	●	●	●		If you have bleeding that is not normal for you, see a doctor right away.	

- Irregular bleeding
- Any bleeding after menopause
- Pain, bloating, changes in bowel and bladder function that are new and lasting for 2 weeks or longer

Be your own advocate. Listen to your body and follow up.
Pelvic Exam – Vaginal and Rectal as part of the workup.

Building Your Care Team

Find Your Gynecologic Oncologist

- Specialist trained in Obstetrics and Gynecology and additional 3-4 years in Gynecologic Oncology in the spectrum of advanced surgery and chemotherapy.
- Evidence that surgical management by Gyne Onc demonstrates improve rates of optimal surgery and overall survival.
- Experience and high volume matters
- Surgical team, surgical support team matters
- Chemotherapy options across the board
 - Access to Gyne Onc specific clinical trials
- Seek Second opinion if you are not comfortable or have unanswered questions
- Referral from your PCP or Gynecologist

Medical Oncology

- Many gynecologic oncologist will provide both surgery and chemotherapy guidance and therapy, while many will work closely with medical oncology in either Cancer Centers or Community Practices
- Is distance to treatment site an issue?
 - Transportation
 - Finances
- Comfort level with surroundings
- Partnership in treatment planning with your Gyne Onc and Med Onc Team
- Links and access to latest technology and advances
- Access to Clinical Trials

Supportive Staff and Services: Who you should know

- Chemotherapy nurses
- Physician Assistants and Nurse Practitioners
- Fellows in training
- Social Work services
 - Resources
 - Advanced care directives
 - Financial questions
- Other community resources and hospital based resources
 - Woman to Woman OCRFA
 - Community Cancer Resource Centers
 - Gilda's Club
 - Wellness House
 - Faye's Light



Caregiving Team – Family and Friends

- Social Support matters
- Who you can rely on for different needs.
- Who you need to say no to for a while.
- Balance of privacy and support
- Change in roles from constant care giving to letting others care for you

Shared Decision Making Model – Individualized Care Plan



1. Surgery
2. Options for Chemotherapy
3. Options for surveillance and follow up care
4. Management of symptoms
5. Management of recurrent disease

Work with your team to feel you understand your treatment plan and goals. Information gathering. Express your priorities but maintain open mind.

Initial Treatment Options

Workup for Suspected Ovarian Cancer

- Physical Exam including bimanual pelvic and rectovaginal exam
 - Labs
 - CBC, Chemistry panel
 - CA125
 - Imaging studies
 - Ultrasound
 - CT scan
 - MRI
-

Cytoreductive Surgery (Tumor Debulking)

- Goal is for optimal tumor debulking
 - No single area of tumor > 1cm
 - No visible disease
 - Usually open surgery with removal of uterus, tubes, ovaries, any visible tumor
 - Improved outcomes in higher volume centers and treatment with specialist in Gynecologic Oncology
-

Initial Chemotherapy

- 2 drug Combination chemotherapy with
 - Carboplatin and Paclitaxel (taxol)
 - 2 drug combination chemotherapy with intra-peritoneal chemotherapy
 - Cisplatin and Paclitaxel
 - Different dosing schedules
 - Generally 6 cycles (once every 3 weeks)~ 4 months
 - Clinical trials
-

Potential Side Effects

Everyone is unique and not all women experience all of these issues!!

- Nausea and appetite changes
- Fatigue
- Hair Loss
- Neuropathy
- Pain
- “Chemobrain”

Figure 2: Clinical Trial Phases



Trial Phase	Definition
I	The first investigation of a potential new drug in people, to determine how the drug reacts in the body, and how the body reacts to the drug – how it is absorbed, distributed and metabolized or altered / used by the body. Commonly conducted in a small number of healthy volunteers.
II	The first study to focus on the clinical effectiveness of the drug, and therefore performed in patients with the disease. At this stage the studies also determine any short-term side effects and safety risks associated with the investigational drug.
III	Studies carried out in large numbers of patients, comparing the investigational drug with the best existing treatment or standard of care in that particular disease. If positive results are obtained all data to date is compiled into a dossier and an application is made to regulatory authorities to request a license for clinical use.
IV	Also known as post-marketing studies, these are conducted after the drug is approved by regulatory authorities and may include thousands of patients. These trials are generally designed to evaluate the long-term safety and efficacy of a drug, and to test it in a "real world" setting of daily clinical practice.

Complementary and Alternative Medication/Treatments

- May help to address both physical and psycho –social needs and symptoms
- Restorative Yoga
- Mindfulness Practice
 - Online based
- Meditation
- Acupuncture
- Massage therapy
- Alternative medications should be discussed with your MD during and after treatment to ensure none interfere with treatment efficacy.

Nutrition and Physical Activity

- Understand goals and limitations during treatment and after treatment
- Mild to moderate physical activity during chemotherapy may be beneficial for physical and emotional health
 - Know your limits
 - Don't be discouraged
 - Small steps
- Understanding resources locally
 - Ask for nutrition consult
 - Ask for possible physical therapy consult

Surveillance and Survivorship: Peaks and Valleys

Post treatment peaks and valleys

Peaks

Completion of therapy

Accomplishment

Resolution of ideally most chemotherapy side effects

Freedom from appointments

Ability to return to more “normal” schedule

Valleys

Worry about cancer recurrence and surveillance

Sudden change in diminished provider and cancer team support

- weekly or every 3 weeks to every 3 months

Reassurance

Finding the new normal

Post treatment peaks and valleys

Goals after initial treatments

•Surveillance:

- for cancer progression, recurrence, or secondary cancers.
- Assessment of medical and psychological late effects is also key.
- ** Critically important in ovarian cancer compared to other early cancers with lesser risk of recurrence

•Prevention: of new cancers and of late effects

•Intervention: for consequences of cancer and cancer treatment.

- Interventions issues: pain, fatigue, psychological distress of the survivor and caregiver (individual, couple's counseling) and sexual dysfunction. Additional concerns may be related to employment, insurance, and disability.

Controversies in Surveillance

- Physical symptoms
- Physical exam
- Imaging
- CA125 and Tumor Markers
- Anxiety and Efficacy

Survivorship Issues

- Psychosocial Concerns
 - Adjustment after diagnosis – the “new” normal
 - Post-treatment concerns – “what now?”, fear of recurrence
 - Fertility concerns and consequences
 - Menopause- Early or sudden
 - Competing causes of illness
 - Obesity related illness – DM, Cardiovascular disease
 - Cancer recurrence or 2nd cancers
 - Sexual Function and Intimacy
 - Fatigue and physical functioning after radical surgery, chemo, radiation
 - Changing Lifestyle after Cancer Diagnosis – Diet and Exercise Recommendations
-

Gynecologic Cancer Living and Owning their Wellness: Ovarian Cancer

- High risk of recurrence and advanced stage disease
 - Physical needs related to intensive surgery and prolonged chemotherapy
 - Neuropathy
 - Fatigue
 - Pain
 - Sexual function
 - Unaddressed distress during and after treatments
 - Anxiety surrounding surveillance and fear of recurrence
 - Depression and readjustment
 - High level of caregiver burden and unaddressed needs of caregivers
 - Fostering and studying resiliency in high risk group
 - Cancer genetics
-

American Cancer Society Guidelines on Nutrition and Physical Activity for Cancer Survivors

Maintain a healthy weight throughout life.

- Balance caloric intake with physical activity.
- Avoid excessive weight gain throughout the lifecycle.
- Achieve and maintain a healthy weight if currently overweight or obese.

Consume a healthy diet, with an emphasis on plant sources.

- Choose foods and beverages in amounts that help achieve and maintain a healthy weight.
- Eat five or more servings of a variety of vegetables and fruits each day.
 - Choose whole grains in preference to processed [refined] grains.
 - Limit consumption of processed and red meats.

If you drink alcoholic beverages, limit consumption.

- Drink no more than one drink per day for women or two per day for men.



LIVES Ovarian Cancer Study



- Determine if disease-free women who completed therapy for Stage II-IV ovarian, fallopian tube or primary peritoneal cancer randomized to a healthy lifestyle intervention have increased progression free survival compared to those randomized to usual care
- *Opportunity to evaluate pre-randomization body mass index as a modifier of lifestyle intervention efficacy*

Clinical Trials Addressing Lifestyle Change in Cancer Survivors

Below is a list of ongoing trials exploring the role of exercise in endometrial cancer. Please go to clinicaltrials.gov for contact information and location of studies, as these can change periodically.

[NCT01870947](#)

Assisted Exercise in Obese Endometrial Cancer Patients

This is an assisted exercise trial involving exercise on a stationary bike, brain imaging and DNA (genetics) sampling. The purpose of this study is to find out if performing a progressive, supervised assisted exercise program on a stationary bike improves quality of life, increases motivation to continue to exercise, improves dietary behavior and leads to sustained weight loss in women who have had early-stage endometrial cancer. Questionnaires will be used to assess exercise motivation and dietary behavior. Brain's responses to different visual images will also be assessed.

[NCT00501761](#)

Physical Activity after Endometrial Cancer

Researchers propose to apply Social Cognitive Theory to improve understanding of the mechanisms of physical activity adherence for endometrial cancer survivors participating in a physical activity intervention.

These trials are focused on the role of exercise in the health of all cancer survivors.

[NCT01883635](#)

Exercise Intervention for Cancer Survivors and Caregivers

The purpose of the study is to see whether exercise can improve the health and well-being of cancer survivors. We also want to know about the health and well-being of caregivers. The intervention will include a progressive walking and resistance exercise program.

[NCT01978899](#)

Healthy Living after Cancer: Weight Management Pilot Study
Programs that reduce calories and increase exercise have been shown to help cancer survivors lose weight, but more research is needed to develop and test weight loss programs in cancer survivors. This study is designed to look at the ability of a 16-week diet and exercise program to help cancer survivors lose weight. The investigator will look at changes in weight, body composition, quality of life, fatigue, body image as well as diet and exercise patterns, to see if this program can help men and women feel better and live healthier lives after cancer diagnosis.

The following clinical trials address diet and nutrition specifically for ovarian cancer patients.

[NCT01439659](#)

A phase II trial of Juice Plus+ and Juice Plus+ Complete in Ovarian Cancer

This study looks at the addition of this supplement to diet to improve outcomes in ovarian cancer patients.

[NCT00719303](#)

A randomized phase III trial of diet and physical activity change in ovarian cancer survivors

This study compares a diet and exercise intervention to usual care in ovarian cancer survivors and is conducted through the Gynecologic Oncology Group (now NRG Oncology) nationwide.

[SGO.ORG/OBESITY](https://sgo.org/obesity)



Society of Gynecologic Oncology

Ovarian Cancer Recurrence

- Many women face recurrence in the first 1-5 years
 - Risk may depend on several factors
 - Age, tumor type, stage, response to initial treatment
 - Individual Biology
 - Chemotherapy resistance
 - Can we have model of chronic disease for women facing recurrence of their cancer?
-
- Individualized treatment planning

Chemotherapy in recurrent setting

- Must be individualized
- Retreatment with combination of carboplatin and other chemotherapy
 - Must watch for side effect profile and QOL
- Series of drugs that are chemotherapy that can be given in alone or combination

Cancer Genetics:

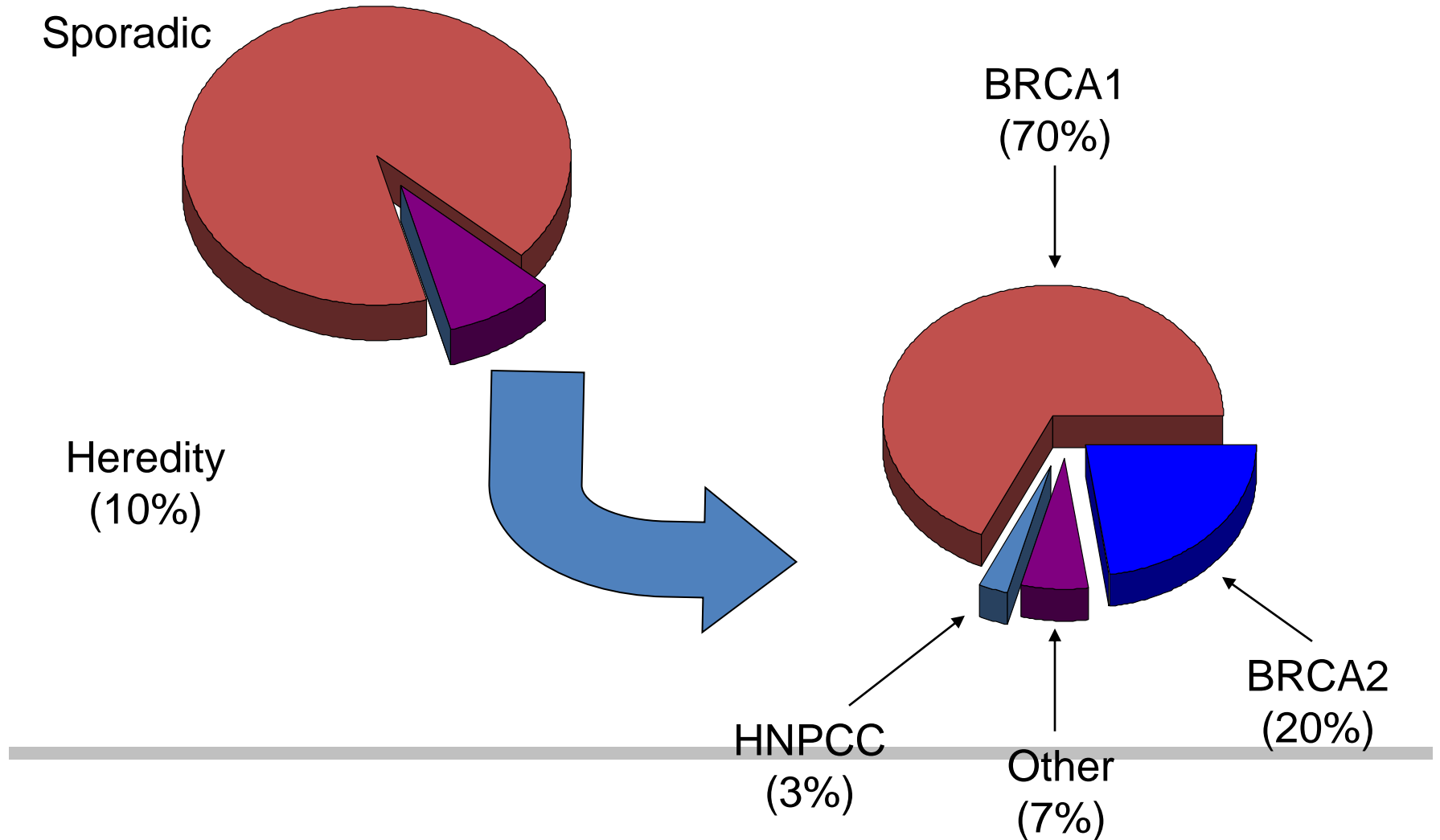
What about my kids and family?

Cancer Genetics

- Understand disease biology
- Predict tumor behavior and clinical outcome
- Stratify patients for standard and experimental treatment
- Individualize treatments in primary and recurrent disease



Hereditary Ovarian Cancer



BRCA 1 and 2 genes

- Function as tumor suppressor genes.
 - 2 hit hypothesis applies.
 - These genes encode for BRCA 1 and 2 proteins which are involved in DNA repair mechanism.
 - BRCA1 – cell cycle checkpoints, DNA repair in response to DNA damage
 - BRCA2 – repair of replication-mediated DS DNA breaks
 - Loss of both alleles results in deficiency in homologous-recombination double strand DNA repair.
-

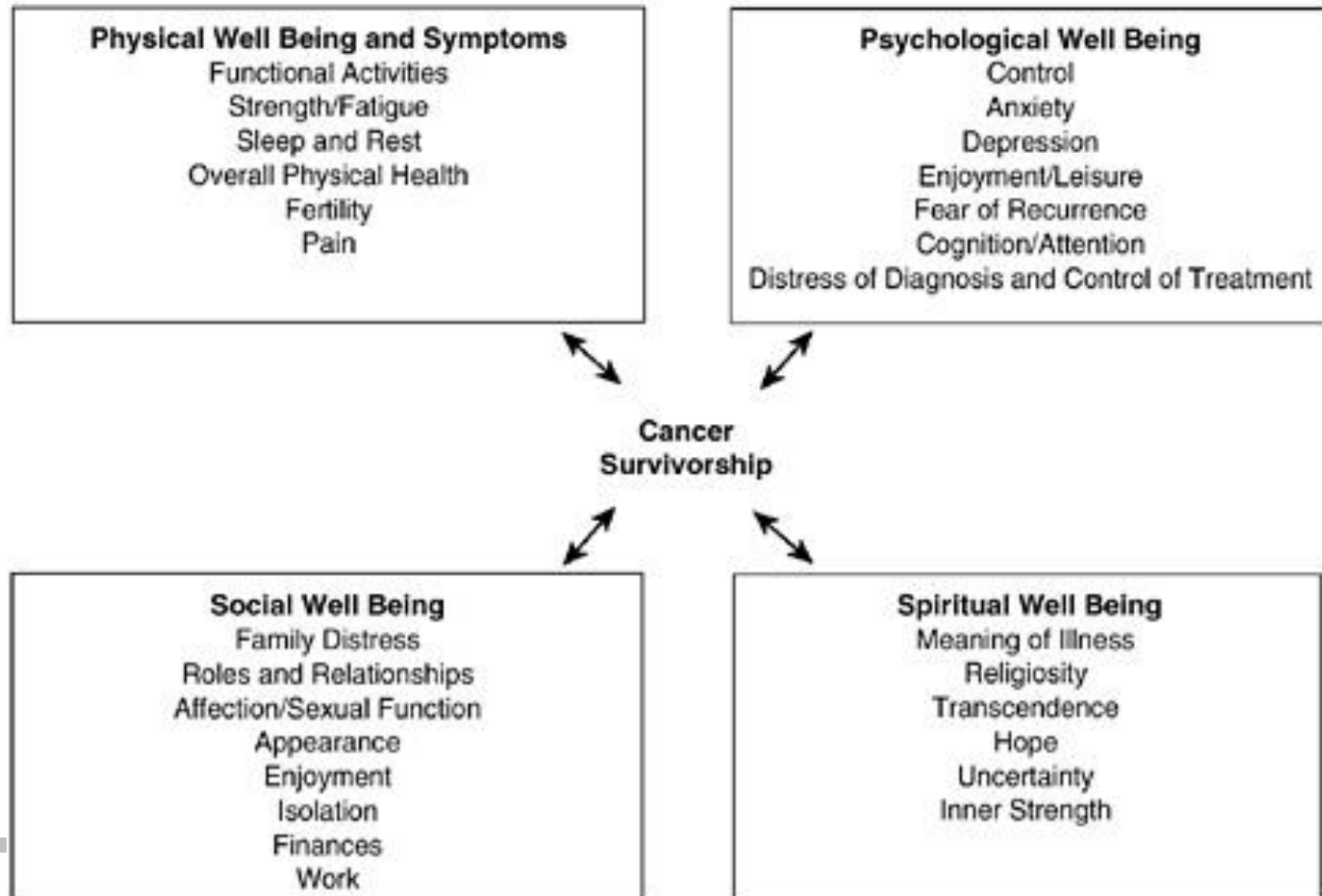
BRCA 1 and 2 Associated Cancers

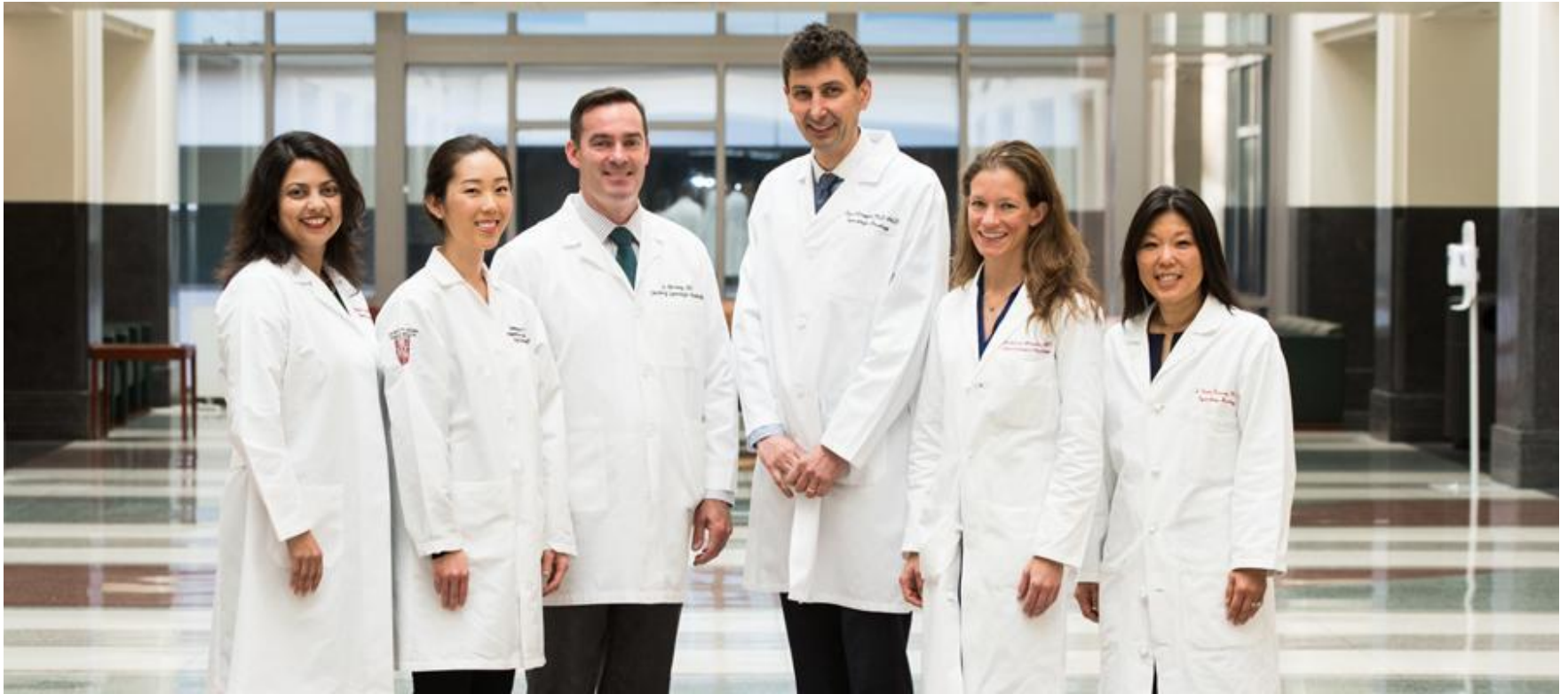
- Breast cancer
 - Premenopausal
 - 2nd primaries/ contralateral breast cancers
 - Male breast cancers
 - 10% of Ashkenazi Jewish women with Breast cancer carry a founder mutation in BRCA1/2
 - Higher if triple negative breast cancer
- Prostate cancers
- Ovarian, fallopian tube, and primary peritoneal
- Pancreatic
- Melanoma



Institute of Medicine *From Cancer Patient to Cancer Survivor: Lost in Transition.*

Quality of Life Model Applied to Cancer Survivors

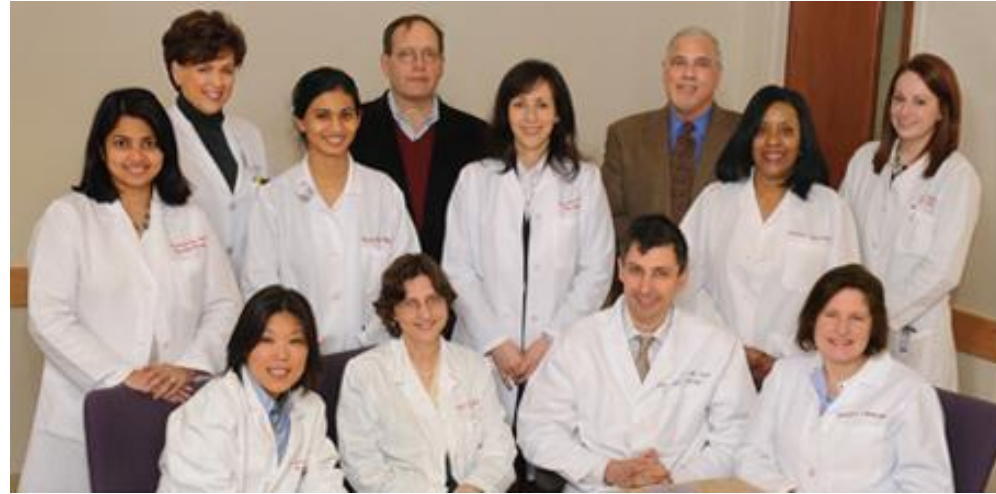




The Section of Gynecologic Oncology provides comprehensive and compassionate women's health care to a diverse population of women.

Unite **Patient Care** and **Discovery** to improve the life of women with gynecologic cancer.

Thank you



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CHICAGO
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AT THE FOREFRONT OF MEDICINE®

woman
to
woman

A program of OVARIAN CANCER RESEARCH FUND

Sponsored By 

Newer therapeutics: Targeted Agents, Immunotherapy



PARP Inhibitors

PARP – is an enzyme present in cell including cancer cells
poly(ADP)-ribose polymerase (PARP)

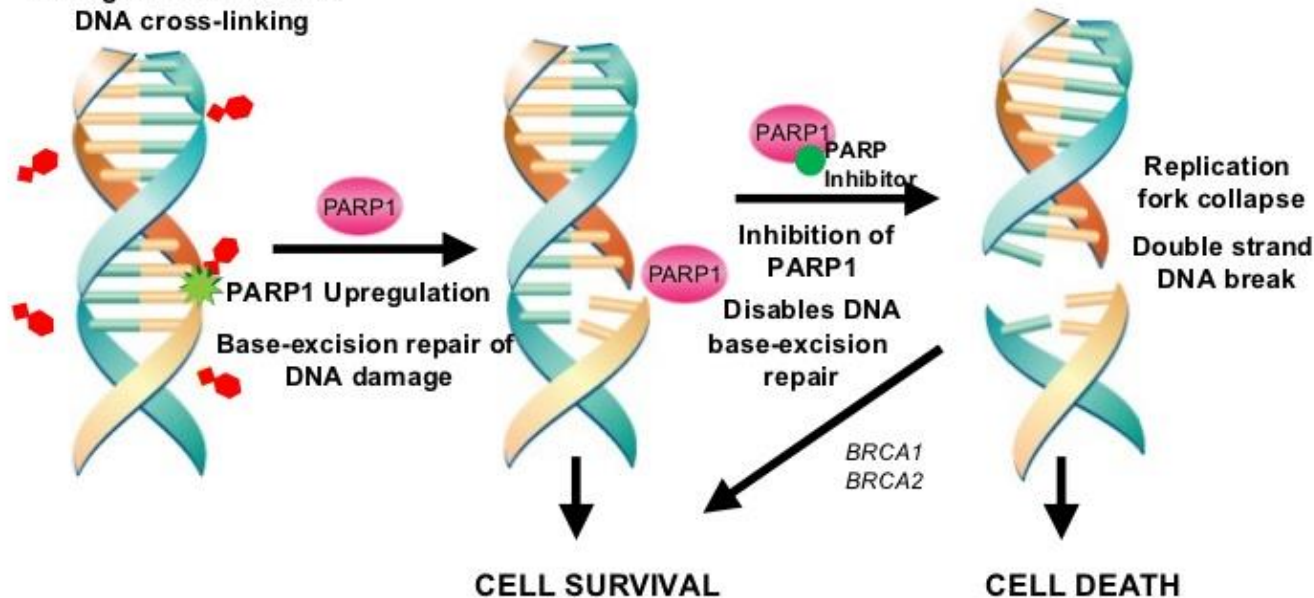
PARP inhibitors are a class of drugs that inhibit the function of this enzyme leading to cells which cannot repair certain DNA damage

In BRCA1/2 mutation carriers in whom tumor cells have defective homologous recombination (HR) DNA repair, PARP inhibitors can be used to promote cell death of cancer cells that are damaged due to chemotherapy.

PARP Inhibitors

Suggested Mechanism of Action

Chemotherapy inflicts DNA damage via adducts and DNA cross-linking



PARP = poly (ADP-ribose) polymerase; DNA = deoxyribonucleic acid.
O'Shaughnessy et al, 2009.

IMER
www.IMERonline.com

PARP Inhibitors are more effective in cells with BRCA mutations because cells cannot properly repair DNA damage

15-20% of ovarian cancer patients may have germline BRCA mutations
More may have BRCA mutations in the tumor cells only

Parp Inhibitors

- Lynpraza (olaparib) now FDA approved for BRCA mutation carriers with recurrent ovarian cancer
 - Requires repeat BRCA testing



Ovarian Cancer and the Immune System

1. Modulate the immune system through use of specific small molecule to act as specific Checkpoint Inhibitors

- targeting molecules that serve as checks and balances in the regulation of immune responses. By blocking inhibitory molecules or, alternatively, activating stimulatory molecules, these treatments are designed to unleash or enhance pre-existing anti-cancer immune responses.
- Toll like receptor agonist
- Ipilimumab (Yervoy™), which targets the CTLA-4 checkpoint molecule
- tremelimumab (anti-CTLA-4) and MEDI4736 (anti-PD-L1)

2. Therapeutic vaccines

- several ovarian cancer-related antigens—molecules on or in cells that are capable of eliciting an immune response—that can serve as targets for immune recognition and attack
- Ex. antibodies targeting CA-125, which is elevated in 79% of all patients with ovarian cancer

Ovarian Cancer and the Immune System

3. Adoptive T cell transfer

- T cells are removed from a patient, genetically modified or treated with chemicals to enhance their activity, and then re-introduced into the patient with the goal of improving the immune system's anti-cancer response.
 - Phase 1 and 2 trials at select centers

Checkpoint Inhibitors and Immune Modulators

- Three phase II trials of pembrolizumab (Keytruda®, MK-3475), an anti-PD-1 antibody, in patients with recurrent ovarian, fallopian tube, and primary peritoneal cancer (NCT02608684, NCT02440425, NCT02537444).
- A phase I/II trial of durvalumab (MEDI4736), an anti-PD-L1 checkpoint inhibitor, in patients with recurrent ovarian cancer (NCT02484404).
- A phase I/II trial of durvalumab (MEDI4736) and motolimod, a Toll-like receptor 8 agonist, for patients with ovarian, primary peritoneal, or fallopian tube cancer for whom doxorubicin is indicated (NCT02431559).
- A phase I study of durvalumab (MEDI4736) and tremelimumab, a CTLA-4 checkpoint inhibitor, for patients with advanced solid tumors, including ovarian, primary peritoneal, or fallopian tube cancer (NCT01975831).
- A phase I/II study to test nivolumab (Opdivo®), a PD-1 antibody, combined with INCB024360, an IDO1 inhibitor, in patients with advanced cancer, including ovarian, fallopian tube, or primary peritoneal cancer (NCT02327078).

CLIA Testing With Foundation Medicine

FOUNDATIONONE

Patient Name: Katherine McDonald | Report Date: 05.29.2012 | Diagnosis: Colorectal Cancer

Date of Birth: 11/14/1952 | Client: Mercy Hospital | Specimen Received: 10/15/2012
 Gender: Female | Physician: Dr. Smith | Specimen Site: Colon
 FMI Case #: 1052100252 | Additional Recipient: N/A | Collection Method: Core biopsy
 Medical Record #: 1234C | FMI Client #: FMI02001 | Specimen Date: 10/21/2011
 Block ID: JK32145 | Pathologist: Dr. Jones | Specimen Type: Block

About the Test:
 FoundationOne is a next-generation sequencing (NGS) based assay which identifies genomic alterations within hundreds of cancer-related genes.

Patient Results | Tumor Type: Colorectal Cancer

3 genomic alterations | pp1-2
 2 therapies associated with clinical benefit | pp3-4
 2 therapies with lack of response | pp3-4
 50+ clinical trials | pp5-8

Genomic alterations identified
 PTEN Loss
 KRAS G12D
 APC E941*, E1552

Additional disease-relevant genes with no reportable alterations detected
 BRAF

Therapeutic Implications

Genomic Alterations Detected	FDA Approved Therapies (In patient's tumor type)	FDA Approved Therapies (In another tumor type)	Potential Clinical Trials
PTEN Loss	None	Temsirolimus Everolimus	Yes. See Clinical Trials section.
KRAS G12D	(-) Panitumumab† (-) Cetuximab†	None	Yes. See Clinical Trials section.
APC E941*, E1552*	None	None	Yes. See Clinical Trials section.
BRAF No alteration detected			

† (-) Patient may be resistant to therapy

Note: Genomic alterations detected may be associated with activity of certain FDA approved drugs; however, the agents listed in this report may have varied clinical evidence in the patient's tumor type. Neither the therapeutic agents nor the trials identified are ranked in order of potential or predicted efficacy for this patient, nor are they ranked in order of ease of evidence for this patient's tumor type.

Electronically Signed by Jeffrey S. Ross | May 29, 2012 | CLIA Number: 2202027531
 Foundation Medicine, Inc. | One Howard Square Dr. | 02035 | Cambridge, MA | 617.489.2385

Page 1 of 1

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- No germline specimen sequenced
- Somatic alterations are putative
- Germline mutations will be identified
- Competition will develop

Model of ovarian cancer progression

Peritoneum

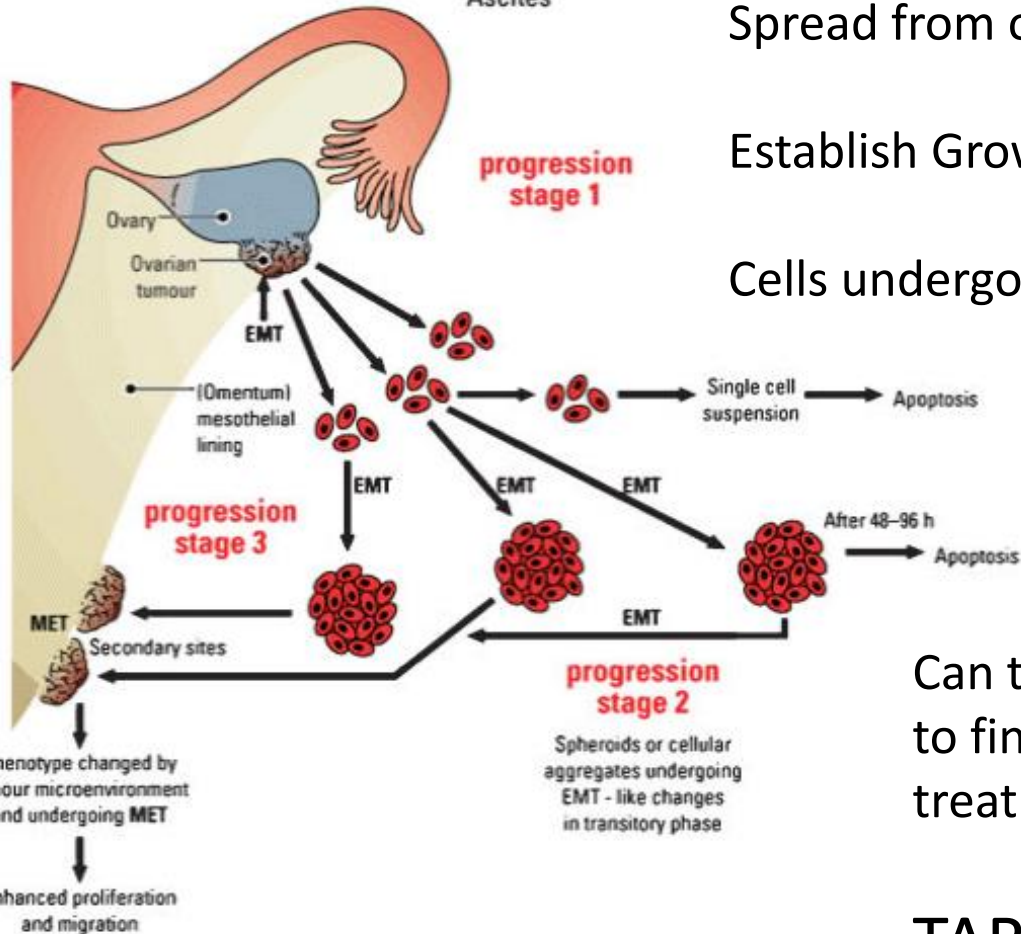
Ascites

progression stage 1

Spread from original site

Establish Growth at other sites in abdominal cavity

Cells undergo specific changes to allow this process



Can these steps be better studied to find better sites for intervention and treatment?

TARGETED AGENTS

Areas of Targeted Therapy

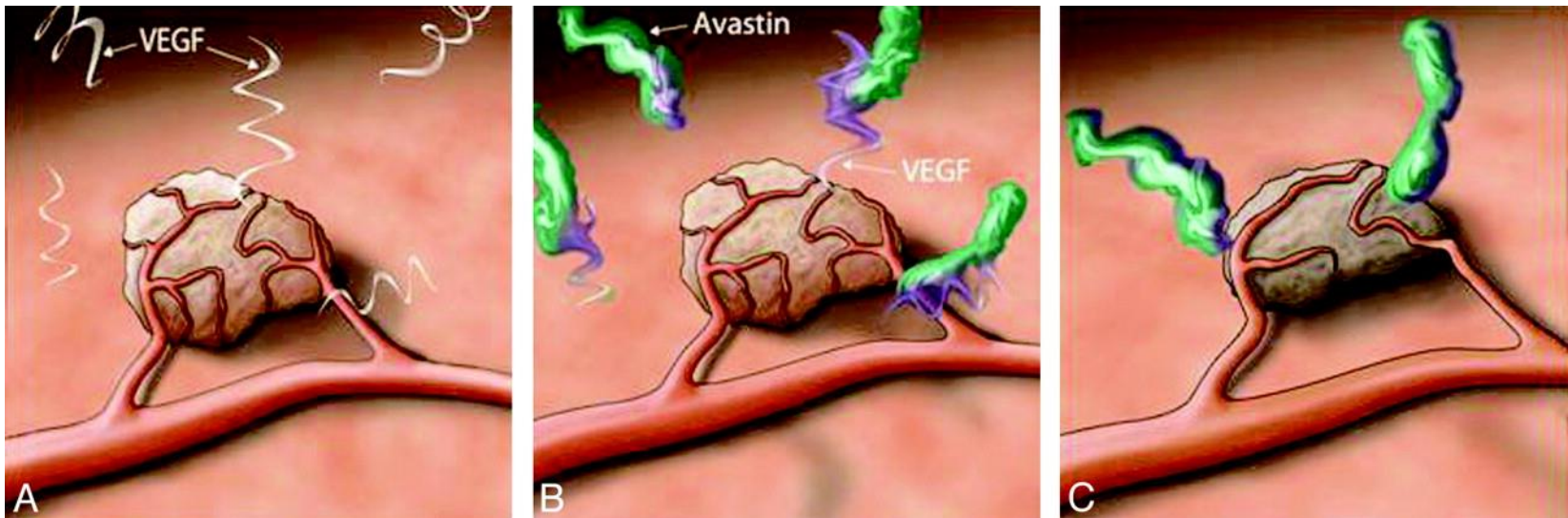
- Anti-Angiogenesis
- PARP inhibitors
- Immune therapy

Targeted monoclonal antibodies

- A phase II trial of farletuzumab that targets folate receptor alpha, which is highly expressed in ovarian cancer, in patients with low CA-125 platinum-sensitive ovarian cancer (NCT02289950).
- A phase II study of mirvetuximab soravtansine (IMGN853) in patients with folate receptor alpha-positive advanced epithelial ovarian, primary peritoneal, or fallopian tube cancer (NCT02631876).
- A phase I study of mirvetuximab soravtansine (IMGN853) in patients with folate receptor alpha-positive advanced ovarian, primary peritoneal, or fallopian tube cancer (NCT02606305).
- A phase I trial of mirvetuximab soravtansine (IMGN853) in patients with ovarian cancer that expresses folate receptor alpha (NCT01609556).
- A phase I/II trial testing IMMU-132, an antibody-drug conjugate targeting Trop-2, in patients with epithelial cancers (NCT01631552).
- A phase I trial of DNIB0600A, an antibody conjugated to the anti-mitotic agent MMAE, for patients with platinum-resistant ovarian cancer (NCT01363947).
- A phase I trial of DNIB0600A for patients with platinum-sensitive ovarian cancer (NCT01995188).
- A phase I/II trial to test demcizumab (OMP-21M18), a monoclonal antibody targeting Delta-like ligand 4 (DLL4), an activator of the Notch signaling pathway (which is known to be important in cancer stem cells and cancer), in patients with platinum-resistant ovarian, primary peritoneal, or fallopian tube cancer (NCT01952249).
- A phase I trial of monalizumab, targeting NKG2A receptors, in patients with ovarian, fallopian tube, and peritoneal cancer (NCT02459301).

Tumors require new blood vessel growth to maintain growth and spread
Angiogenesis – growth and development of vessels

Schematic Illustration of the mechanism of bevacizumab.



There is a hypervascular tumor surrounded with VEGF protein. *B*, The bevacizumab compound binds to the free VEGF and reduces the concentration of the free VEGF. *C*, The reduction of available VEGF results in diminished blood supply to the tumor and tumor shrinkage.

Trials in Ovarian Cancer targeting Angiogenesis

Avastin

Improved progression free survival PFS (time until disease progresses) in patients treated with chemo + avastin vs chemo alone

- Side effects
 - Hypertension
 - Protein in urine
 - Rare risk of bowel perforation
 - Wound healing delayed

Trebanamib (AMG386)

Inhibits other proteins angiopoietin 1 and 2 involved in blood vessel growth

Improved PFS

VEGF receptor tyrosine kinase inhibitors ex. Cediranib

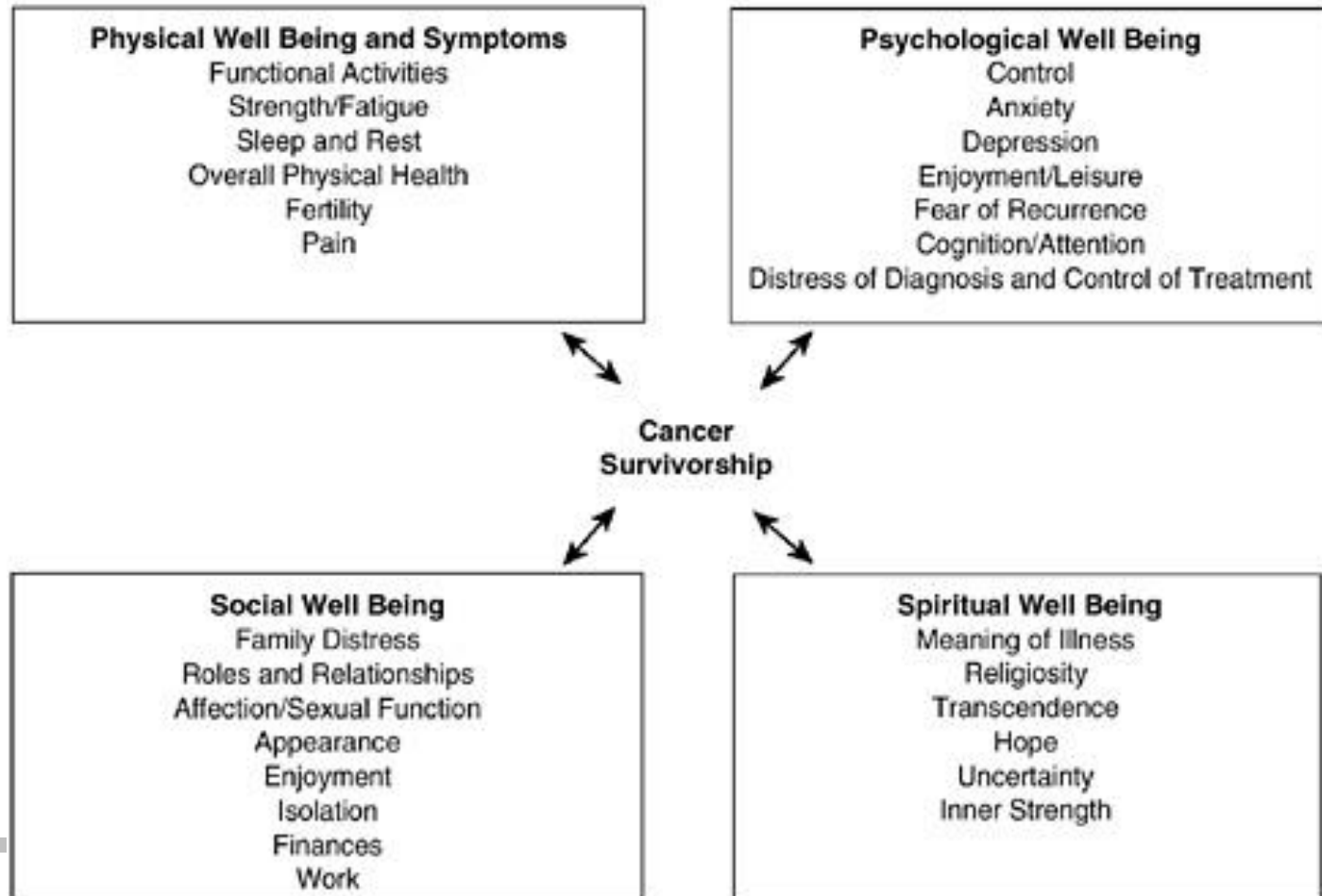
Improved PFS in patients receiving maintenance agent

Emotional and Psychosocial Support and Wellness

- Friends, family, partners
- Local support groups
- Online support options
- Peer mentoring for cancer patients
- Wellness focus on complementary and alternative therapies
 - Acupuncture
 - Massage
 - Healing touch
 - Reiki
 - Exercise

Institute of Medicine *From Cancer Patient to Cancer Survivor: Lost in Transition.*

Quality of Life Model Applied to Cancer Survivors



Local Resources

- Imerman Angels
- NOCC
 - Teal Mentors
- Wellness House
 - Mercy Gyne Cancer Survivors Group
- Gilda's Club
- University of Chicago
 - Woman to Woman – peer mentoring program for all gyne onc cancers
 - Survivors Teaching Students
 - Illinois chapter of national program
 - Supportive Oncology
 - Palliative Care
- Faye's Light
 - Free supportive and integrative services for cancer patients