Careers Focused on Purpose (With Respect for Brownian Motion)

Laurel Rice
University of Wisconsin
I have no conflicts/disclosures.
Learning Objectives

- Develop an appreciation for the power of interests and passion, and how these many change over time.

- Identify the importance of opportunity and of being willing to shift to meet opportunities.

- Recognize that useful "lessons" come in many packages.
TIMELINE LWR

• 1989-1993 (MGH)
• 1993-2007 (UVA)
• 2007-PRESENT (UW)
  – Sifted and winnowed for the major “points” from each institution.
How I ended up here for my first job

Passion was simple:
- Solidify my skills as a GYN Oncster
Dr. Isaac Schiff
TRANSITION TO UVA

• PROMPT
  – Chip finished his colorectal fellowship and there was not a great job for him in Boston.
Dean Robert Golden
The general outline.....
JOHN ROCK'S ERROR

John Rock was a scientist at the Church of the Conception in Massachusetts, and in 1928, William O'Connell, a five-year-old child, was among the first to be born. A credit to his mother, he was later known as the “Pill Man.” Rock, who was also one of the inventors of the pill, said that his faith and his science were perfectly compatible.

The birth control pill, introduced in the mid-20th century, was a revolution in reproductive health. It allowed women to control their fertility without resorting to surgery or permanent sterilization. The pill works by suppressing ovulation, preventing the release of an egg from the ovary, and thickening the cervical mucus to prevent sperm from entering the uterus.

In the years following its approval in 1960, Rock was everywhere. He appeared in interviews and documentaries on CBS and NBC, in Time, Newsweek, Life, The Saturday Evening Post. He toured the country tirelessly. He wrote a book, ""Methods of Birth Control"" in 1958, and his work was a turning point in reproductive health.

But the pill was not without controversy. Some religious leaders opposed it, arguing that birth control was against their faith. Others saw it as a threat to traditional family values. The pill became a symbol of liberation for many women, empowering them to control their own bodies and make their own choices.

Despite the criticism, the pill became a widely accepted method of contraception. It has saved millions of lives by preventing unintended pregnancies and deaths from abortion. Today, the pill is a ubiquitous part of modern medicine, and its legacy continues to shape the way we think about reproductive health.

The pill was a technological marvel, but it was also a political and social phenomenon. It marked a shift in the way we think about women's bodies and their roles in society. For many, the pill represented a new frontier in reproductive rights and gender equality.
• 1941: Rock wrote the definitive article on ovulation.

• 1949: Rock wrote the definitive article on “The Physiology of Human Conception”.
In the Middle of all of this... OCPs

- Collaborators
  - Drs. Pincus, Chang, Garcia
    - 1951 = they understood that ovulation could be blocked.
Free Hospital for Women (1875)

Clinical Trial with 50 Women
Late 1959

• A million+ women in the US taking the pill for menstrual disorders.
  – Warning: “Women will not ovulate while taking this drug”.
• Searle filed its application to license the pill as a contraception: October 29, 1959.
  – FDA Approved on May 11, 1960
In hindsight, it is possible to see the opportunity that Rock missed. If he had known what we know now and had talked about the Pill not as a contraceptive but as a cancer drug—not as a drug to prevent life but as one that would save life—the Church might well have said yes. Hadn’t Pius XII already approved
1961

- Dr. C. Lee Buxton – Chair, OBGYN, Yale University Medical Center
- Estelle Griswold – Executive Director of Planned Parenthood League of Connecticut
- Arrested

The Planned Parenthood League appealed the Griswold vs. CT case in 1965.
- The U.S. Supreme Court struck down as unconstitutional the 1879 birth control law.
1972

- **Eisenstadt v. Baird:**
  - The 1972 Supreme Court decision that extended these same privacy protections — and thus the right to obtain birth control — to unmarried women.

- **Roe v Wade 1973**
UW CORE
COLLABORATIVE FOR REPRODUCTIVE EQUITY

Lawrence B. Finer, Ph.D., and Mia R. Zolna, M.P.H.

ABSTRACT

BACKGROUND
The rate of unintended pregnancy in the United States increased slightly between 2001 and 2008 and is higher than that in many other industrialized countries. National trends have not been reported since 2008.

METHODS
We calculated rates of pregnancy for the years 2008 and 2011 according to women's and girls' pregnancy intentions and the outcomes of those pregnancies. We obtained data on pregnancy intentions from the National Survey of Family Growth and a national survey of patients who had abortions, data on births from the National Center for Health Statistics, and data on induced abortions from a national census of abortion providers; the number of miscarriages was estimated using data from the National Survey of Family Growth.

RESULTS
Less than half (45%) of pregnancies were unintended in 2011, as compared with 51% in 2008. The rate of unintended pregnancy among women and girls 15 to 44 years of age declined by 18%, from 54 per 1000 in 2008 to 45 per 1000 in 2011. Rates of unintended pregnancy among those who were below the federal poverty level or cohabiting were two to three times the national average. Across population subgroups, disparities in the rates of unintended pregnancy persisted but narrowed between 2008 and 2011; the incidence of unintended pregnancy declined by more than 25% among girls who were 15 to 17 years of age, women who were cohabiting, those whose incomes were between 100% and 199% of the federal poverty level, those who did not have a high school education, and Hispanics. The percentage of unintended pregnancies that ended in abortion remained stable during the period studied (40% in 2008 and 42% in 2011). Among women and girls 15 to 44 years of age, the rate of unintended pregnancies that ended in birth declined from 27 per 1000 in 2008 to 22 per 1000 in 2011.
## Decline in Unintended Pregnancies

<table>
<thead>
<tr>
<th></th>
<th>% Decline 2008-11</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL UNINTENDED PREGNANICES</td>
<td>6%*</td>
</tr>
<tr>
<td>AGES 15-17</td>
<td>25%</td>
</tr>
</tbody>
</table>

*51% TO 45%

Figure 2. Rates of Unintended Pregnancy According to Income and Race and Ethnic Group, 2011.
Rates are reported as the number of unintended pregnancies per 1000 women and girls 15 to 44 years of age.
HEALTH DISPARITIES

• MOVED TO WI IN 2007

- Mississippi had the highest infant mortality rate at 9.08 per 1,000 live births
- Massachusetts had the lowest rate at 4.28 per 1,000 live births
- Wisconsin had a rate of 5.92 per 1,000 live births

• Wisconsin has the highest infant mortality rate at 14.28 per 1,000 live births
• This rate is almost 4 times the infant mortality rate of infants born to non-Hispanic white women
Infant Mortality Rate (<365 days) per 1,000 Live Births for Mother's Race/Ethnicity

2015: White (Non-Hispanic) = 14, Black/African American (Non-Hispanic) = 4.2
2016: White (Non-Hispanic) = 15.2, Black/African American (Non-Hispanic) = 5.3
2017: White (Non-Hispanic) = 15.7, Black/African American (Non-Hispanic) = 4.3
2018: White (Non-Hispanic) = 12.8, Black/African American (Non-Hispanic) = 4.8

Huge Racial Disparities Found in Deaths Linked to Pregnancy

African-American, Native American and Alaska Native women are about three times more likely to die from causes related to pregnancy, compared to white women in the United States.

By Roni Caryn Rabin

May 7, 2019

African-American, Native American and Alaska Native women die of pregnancy-related causes at a rate about three times higher than those of white women, the Centers for Disease Control and Prevention reported on Tuesday.

The racial disparity has persisted, even grown, for years despite frequent calls to improve access to medical care for women of color. Sixty percent of all pregnancy-related deaths can be prevented with better health care, communication and support, as well as access to stable housing and transportation, the researchers concluded.

“The bottom line is that too many women are dying largely preventable deaths associated with their pregnancy,” said Dr. Anne Schuchat, principal deputy director of the C.D.C.

“We have the means to identify and close gaps in the care they receive,” she added. While not all of the deaths can be prevented, “we can and should do more.”

Maternal health among black women already has emerged as an issue in the 2020 presidential campaign. Senator Kamala Harris, Democrat of California, and Senator Elizabeth Warren, Democrat of Massachusetts, have both raised the glaring racial discrepancies in maternal outcomes on the campaign trail.

“Everyone should be outraged this is happening in America,” Ms. Harris recently said on Twitter. She blamed the deaths on racial bias in the health system.

The American College of Obstetricians and Gynecologists, which was not involved in the C.D.C. report, recently acknowledged that racial bias within the health care system is contributing to the disproportionate number of pregnancy-related deaths among minority women.
THE WORST PLACE IN THE U.S. TO BE BLACK IS...

WISCONSIN

BY DAN SCHNEIDER | NOVEMBER/DECEMBER 2015
DIVERSITY, EQUITY & INCLUSION

We have been intentional about building an ongoing educational program for the department, using multiple channels and forums.

- **August 2020:** Presentation on “Moving from Cultural Competence to Anti-Racism” and in October 2020 Bystander Intervention trainings were presented to entire UW ObGyn department by Shiva Bidar-Sielaff and Naomi Takahashi from UWHealth.
- **September 2020:** Sponsor for Black Women’s Health Day and members participated in event registration.
- **September 2020:** Sponsored the YWCA Racial Justice Summit and many faculty and staff attended the event.
- **October 2020:** Annual Women’s Health and Health Equity Symposium with keynote presentation: “Ministration without Representation: The Essential Roles of Inclusion and Voice in Creating Health Equity” by Erica Marsh, MD.
- **February 2021:** Grand Rounds presented by Dr. Jasmine Zapata: “Combatting Racial Inequities in Infant Mortality: A Personal and Professional Journey.”
- **February 2021:** The DEI Committee organized the UW ObGyn 21-Day Racial Equity Habit-Building Challenge, and over 90 department members participated in individual and group activities. This challenge was based on the program created by Eddie Moore Jr. 21-Day Racial Equity Challenge—America & Moore (eddiemoorejr.com)
- **March 2021:** The Department planned and hosted the Wisconsin Contraceptive Care Summit, featuring plenary speaker Loretta Ross, one of the founders of the Reproductive Justice movement. The conference described the historical context of injustice and racism in contraceptive care and ways to incorporate reproductive justice framework into practice. Over 140 individuals participated from Wisconsin and neighboring states.
- **April 11-17, 2021:** Black Maternal Health Week awareness & advocacy: An ad hoc committee planned department awareness and advocacy activities in conjunction with national messaging from the Black Mamas Matter Alliance.
DEI COMMITTEE ACCOMPLISHMENTS

• Continued growth of multidisciplinary membership with representatives across all divisions, administrative staff and residents

• Building sustainability and incorporating DEI into departmental culture:
  ▪ Standardized meeting times during protected Thursday am time
  ▪ Incentivized faculty participation through SAM points
  ▪ Regular visibility/uploads through Department Meetings

• Defined mission and goals
  As a part of the University of Wisconsin-Madison campus and School of Medicine and Public Health, and as partners in the UWHealth System, the UW Department of ObGyn is guided by each institution’s commitments to diversity, inclusion and equity. In our work as professionals in obgyn research, advocacy, clinical care, and education, we are committed to:
  ▪ Making the department more welcoming and inclusive
  ▪ Increasing diversity among faculty, staff, trainees & collaborators
  ▪ Incorporating antiracism principles throughout the department
  ▪ Advancing health equity
  ▪ Improving the patient experience and health outcomes for people from underrepresented groups
DEI COMMITTEE ACCOMPLISHMENTS

• Hosted Department wide learning initiatives
  ▪ Rx for an Inclusive ObGyn Department
  ▪ Anti-Racism Training
  ▪ Bystander Intervention Training
  ▪ 21-day Racial Equity Habit Building Challenge
  ▪ Black Maternal Health Week awareness & advocacy

• Contraceptive counseling project well underway for pregnant women using a reproductive justice framework to:
  ▪ Standardize the timing of the conversation
  ▪ Standardize where the documentation of the conversation/preference to defer the conversation resides
  ▪ Develop a clear guidelines of what is not best practice
  ▪ Reach a consensus with the larger community of providers regarding messaging on contraception and lactation

• “Pipeline” subcommittee refocusing on Radical Inclusivity
  ▪ Spirit of Radical Inclusivity
  ▪ Assisted with a proposal to develop a presence with the Student National Medical Association

• Created a dedicated webpage with resource directory
All Rural Places Are Not Created Equal: Revisiting the Rural Mortality Penalty in the United States

Wesley L. James, PhD

Recent research has identified a new trend in rural–urban, macrolevel mortality disparities in the United States, called the rural mortality penalty. Historically, there has been a penalty associated with urban places; however, in recent decades, a reversal has occurred. Beginning in the mid-1980s, rural and urban mortality rates diverged, and the gap between them has grown for more than 2 decades. According to previous publications that introduced the rural mortality penalty, the rural United States is an aggregation of 6 nonmetropolitan designations distinguished by population size and adjacency to an urban area; this is a typology used in many previous studies. This research uncovers the disproportionate mortality burden across these rural classifications.

Throughout the 19th and early 20th centuries, there was a mortality penalty associated with urban areas. The urban mortality penalty

Objectives. I investigated mortality disparities between urban and rural areas by measuring disparities in urban US areas compared with 6 rural classifications, ranging from suburban to remote locales.

Methods. Data from the Compressed Mortality File, National Center for Health Statistics, from 1968 to 2007, was used to calculate age-adjusted mortality rates for all rural and urban regions by year. Criteria measuring disparity between regions included excess deaths, annual rate of change in mortality, and proportion of excess deaths by population size. I used multivariable analysis to test for differences in determinants across regions.

Results. The rural mortality penalty existed in all rural classifications, but the degree of disparity varied considerably. Rural–urban continuum code 6 was highly disadvantaged, and rural–urban continuum code 9 displayed a favorable mortality profile. Population, socioeconomic, and health care determinants of mortality varied across regions.

Conclusions. A 2-decade long trend in mortality disparities existed in all rural classifications, but the penalty was not distributed evenly. This constitutes an important public health problem. Research should target the slow rates of improvement in mortality in the rural United States as an area of concern. (Am J Public Health. 2014;104:2122–2129. doi:10.2105/AJPH.2014.301989)
FIGURE 1—Rural and urban mortality rates per 100,000 population: Rural Mortality Penalty Study, United States, 1968–2007.
Wisconsin Ob/Gyn Rural Workforce

- 26/72 or 36% of WI counties do not have an Ob/Gyn physician

- 620 Ob/Gyn physician practicing in WI
  - 1.92 per 10,000 women (below the national average of 2.13 per 10,000)
    - Compared to 2.38 per 10,000 women in 2014.

- Adult female population expected to increase by 7.8% by 2030
Alaska Ob/Gyn Rural Workforce

- In 2016, 7 of the 29 Alaska boroughs had no practicing physician

- 67 Ob/Gyn physicians practicing in AK
  - 2.04 per 10,000 women (below the national average of 2.13 per 10,000)

- Adult female population in AK is expected to increase by 28.48% by 2030

UW launches first OBGYN rural residency program in nation

One third of Wisconsin’s counties don’t have active practitioners

One third of Wisconsin’s 72 counties are without a practicing obstetrician or gynecologist — a figure that predominantly affects the state’s rural areas.
Strategic Plan for Native American Women’s Health

• Sustainable Partnerships
  – UW Program Leadership
    • Dr. Rice, Dr. Karnowski, Dr. Spencer from UW
    • Native American Center for Health Professions (NACHP)
      • Danielle Yancey, Bret Benally-Thompson, MD
      • Melissa Metuxen (Tribal Engagement Office)
  – Lac du Flambeau Tribal Clinic
    • Robin Carufel

• Clinical Care
  – Peter Christensen Health Center
  – Marshfield Medical Center - Minoqua
Rural Residency…

- Reproductive rights
- Abortion
Proposed legislation would ban UW employees from training at abortion facilities

Bill's opponents believe it would hamper UW's credibility but proponents say there is no evidence to support that claim

by AVERY AURAND - Apr 4, 2017

UW Hospital.

ALEX ARRIAGA/The Badger Herald

Wisconsin Republicans lawmakers have proposed legislation that could restrict University of Wisconsin faculty from working with institutions like Planned Parenthood.
Senate committee advances bill banning abortion training at University of Wisconsin

By Jessie Opoien  Oct 26, 2017

A state Senate committee voted Thursday on party lines to advance a bill that would bar University of Wisconsin employees from performing or assisting with abortions under the scope of their employment.

The Senate Committee on Health and Human Services voted by paper ballot on that and several other pieces of legislation, the rest of which were approved unanimously. The committee voted in this fashion in order to make the bills available for scheduling when the Senate is on the floor next week, said committee clerk Mattias Gugel, an aide to chairwoman Sen. Leah Vukmir, R-Brookfield.

The bill has the support of some of the Legislature's most conservative members, but has drawn opposition from university officials and a nonpartisan advocacy group of prominent UW alumni.
Bill blocking abortion training at UW-Madison could worsen OB-GYN shortage in Wisconsin, school says

Todd Richmond, Associated Press  Published 12:16 p.m. CT July 16, 2017 | Updated 5:56 p.m. CT July 16, 2017

MADISON - A Republican bill that would block University of Wisconsin-Madison faculty from training resident physicians in abortions would worsen a shortage of obstetrics/gynecological providers in the state, school officials say.

UW-Madison must provide abortion training to maintain its national accreditation for OB-GYN training, Robert Golden, dean of the university’s medical school, said. Without that accreditation, would-be OB-GYNs would find residencies in other states, he said.

Twenty of Wisconsin’s 72 counties already lack an OB-GYN, according to the American Medical Society.
ADVOCACY
A Sample of Current CORE Research

1. Effects of WI medication abortion restrictions on patient care (Higgins and Jacques)

2. Reproductive health and the WI communication ecology (Wagner)

3. Role of expert testimony in WI reproductive health legislation (Mansbach and Von Hagel)

4. State-level policies on mandated abortion counseling (Green)
CLINICAL TRIALS
Thalidomide

- Tranquilizer and painkiller for pregnant women (morning sickness).
  - >10,000 babies born in the early 1960s with flipper-like limbs, heart defects, and other malformations.
  - BUT NOT IN THE U.S.!
Thalidomide Crisis
Frances Kelsey, M.D., Ph.D.
1960: Kelsey was hired by the FDA.
First Assignment:
Review the application by Richardson Merrell for thalidomide:
- Already approved in over 20 other countries.
- Pressure from the Pharmaceutical Industry:
  - Dr. Kelsey withheld approval for the drug and requested further studies.

Frances Kelsey makes headlines on July 15, 1962 after winning her two-year battle to keep thalidomide out of the American market.
Women Excluded from Clinical Trials

• The Harvard Physicians Health Study (ASA use and heart disease); 1989
  – 22,071 men; no women

• The Multiple Risk Factor Intervention Trials (heart disease)
  – 15,000 men; no women
  • HEART DISEASE KILLS MORE WOMEN THAN ANY OTHER CONDITION.

• Baltimore Longitudinal Study of Normal Human Aging
  – Men only for 20 years
Nurses’ Health Study

- 87,000 nurses for 6 years
  - ASA and Cardiac Disease
    - *Observational study only*
      - JAMA 1991
Underrepresentation of Women in Clinical Trials

Why Gynecologic Oncologists Are Worried

Marcela G. del Carmen, MD, MPH, and Laurel W. Rice, MD

In gynecologic oncology, significant advances with improved patient outcomes have clearly and thankfully resulted from randomized clinical trials. The recent restructuring of cooperative groups and decreased funding for phase III clinical trials have unintentionally resulted in a 90% reduction of available trials and accrual in gynecologic oncology. This Commentary reviews the history of the underrepresentation of women in clinical trials, highlighting the challenges that threaten the viability of gynecologic oncology clinical research, resulting in a decreased likelihood of improving the survival of women with gynecologic cancer. We suggest an opportunity for partnering with the U.S. government and the private sector to enhance research funding opportunities while increasing advocacy efforts to reinvigorate our clinical trials platform.

(Obstet Gynecol 2015;125:616-9)
DOI: 10.1097/AOG.000000000000695

Level 1 evidence, randomized clinical trials are the gold standard by which we care for and advise our the addition of chemotherapy to radiation in the treatment of patients with cervical cancer and the adoption of intraperitoneal chemotherapy in ovarian cancer, both of which have resulted in two National Cancer Institute (NCI) clinical alerts.\textsuperscript{1-5} With the recent changes in the NCI’s clinical trials infrastructure, combined with commentary from Dr. Francis Collins and more (see below), there is mounting evidence regarding the disproportionately low allocation of resources for enrolling women in clinical trials in general and in gynecologic oncology trials specifically.

Historically, clinical trials were carried out in men only. The argument for doing so included the rationale that male-only studies were simpler and less expensive to conduct.\textsuperscript{7} Investigators were also reticent to include women of childbearing age, given the potential risk of harming a fetus.\textsuperscript{7} As a result, women were excluded from many vitally important clinical trials.\textsuperscript{7} In the Harvard Physicians’ Health Study, evaluating the effects of aspirin on cardiovascular disease and published in 1989, 22,071 male and 0 female physicians were enrolled.\textsuperscript{22} Despite these glaring inequities, it is estimated that at least 90% of all clinical trials in gynecologic oncology are conducted in men only.\textsuperscript{7}
The design, analysis and reporting of clinical research limits researchers’ ability to perform statistically significant subgroup analysis to determine whether outcomes vary between men and women.

Improving the Representation of Women and Underrepresented Minorities in Clinical Trials and Research

Project Scope:

An ad hoc committee under the auspices of the National Academies of Sciences, Engineering, and Medicine will undertake a study examining the long-term economic and medical impacts of the lack of inclusion of women and underrepresented minority groups in clinical research and subsequent translational work. The study will:

- Review and examine the existing research on the long-term economic and health benefits of increasing the participation of women and racial and ethnic minorities in clinical trials and research, including research on the fiscal implications of inclusion on the nation's overall health care costs.
- Review the existing literature on the factors that affect inclusion, including building equity into research designs and methods, unique inclusion-related challenges of specific medical or behavioral health conditions, and community-driven approaches to researching including women and other underrepresented groups.
- Examine new programs and experimental initiatives in medical centers that are currently working to increase participation of women and members of racial and ethnic minority groups.
- Highlight programs that are positively addressing issues of underrepresentation in clinical trials, including models from individuals and communities to address trust from a patient and community perspective, and analyze whether and how those programs are replicable and scalable.
- Identify more inclusive federal, institutional, and informational policies and procedures to increase the likelihood of improved health outcomes for underrepresented groups, including racial and ethnic minority groups and others, including health referral forms, continuing education classes for practitioners, and more.

The committee will produce a final consensus report with findings and recommendations.

Status: Current

PIN: PGA-POLICY-20-19

Project Duration (months): 22 month(s)

RSO: Helman, Alex

Division(s):

Health and Medicine Division
Policy and Global Affairs

Board(s)/Committee(s):

Committee on Women in Science, Engineering and Medicine
Health and Medicine Division
U.S. Science and Innovation Policy
NIH to balance sex in cell and animal studies

Janine A. Clayton and Francis S. Collins unveil policies to ensure that preclinical research funded by the US National Institutes of Health considers females and males.

NIH Funding

  - NIH-funded scientists are required to account for the possible role of sex as a biological variable (SABV) in vertebrate animal and human studies.
  - Study sections will review this information.
Women Are Being Excluded From Clinical Trials

"Complexities of the menstrual cycle" are to blame

By MEAGHAN LEE CALLAGHAN  JUNE 8, 2016

It’s not hard to think of jobs and positions that women have been barred from in the past because of their sex — doctors, scientists, astronauts, even professional athletes. But an editorial out this week in the *British Journal of Sports Medicine* adds a new modern day position to the list: clinical trial participant.

Even though sex-based equality has progressed in other fields, women have been routinely excluded from clinical trials, the group of British and American experts say, though medical problems and treatments affect them equally, if not more,
Crisis in Enrollment to GYN CA Clinical Trials

THE CURRENT STATE: A SEVERE DECLINE IN AVAILABILITY OF CLINICAL TRIALS FOR WOMEN WITH GYNECOLOGIC CANCER

- 90% reduction in enrollment!
- 68% reduction in available trials!
Disparities in the allocation of research funding to gynecologic cancers by Funding to Lethality scores

Ryan J. Spencer a,⁎, Laurel W. Rice a, Clara Ye b, Kaitlin Woo c, Shitanshu Uppal d

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b University of Wisconsin School of Medicine and Public Health, Madison, WI, United States of America
c Department of Biostatistics and Medical Informatics, University of Wisconsin School of Medicine and Public Health, Madison, WI, United States of America
d Division of Gynecologic Oncology, University of Michigan Medical School, Ann Arbor, MI, United States of America

HIGHLIGHTS

- There are disparities across cancer sites when NCI funding is measured using the Funding to Lethality score.
- The three major GYN cancers show consistently decreasing Funding to Lethality scores over time.
- Increased funding for GYN cancers is needed to keep pace with laboratory and clinical discoveries of other cancer sites.

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Resource allocation

ABSTRACT

Purpose: To analyze National Cancer Institute (NCI) funding distributions to gynecologic cancers compared to other cancers from 2007 to 2014.

Methods: The NCI's Surveillance, Epidemiology and End Results (SEER), Cancer Trends Progress Report, and Funding Statistics were used to analyze 18 cancer sites. Site-specific mortality to incidence ratios (MIR) were normalized per 100 cases and multiplied by person-years of life lost to derive cancer-specific lethality. NCI funding was divided by its lethality to calculate Funding to Lethality scores for gynecologic malignancies and compared to 15 other cancer sites.

Results: Ovarian, cervical, and uterine cancers ranked 10th (score 0.097, SD 0.008), 12th (0.087, SD 0.009), and 14th (0.057, SD 0.006) for average Funding to Lethality scores. The highest average score was for prostate cancer (score 1.182, SD 0.354). In U.S. dollars per 100 incident cases, prostate cancer received an average of $1,827,000 per person-years of life lost, while ovarian cancer received $97,000, cervical cancer $87,000, and uterine cancer $57,000. Ovarian and cervical cancers had lower average Funding to Lethality scores compared to nine other cancers, while uterine cancer was lower than 13 other cancers (p < 0.01 for all comparisons). Analyses of eight, five-, and three-year trends for gynecologic cancers showed nearly universal decreasing Funding to Lethality scores.

Conclusion: Funding to Lethality scores for gynecologic cancers are significantly lower than other cancer sites, indicating a disparity in funding allocation that persists over the most recent eight years of available data. Prompt correction is required to ensure critical discoveries for women with gynecologic cancers.

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Objectives

• To analyze whether NCI funding distributions are equitable across cancer sites using the *Funding to Lethality ratio*. 
### Incidence vs Mortality vs Burden of YRS. of Life Lost

<table>
<thead>
<tr>
<th>Cancer Site</th>
<th>Years of life-lost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Testicular</td>
<td>36.0</td>
</tr>
<tr>
<td>Cervix</td>
<td>26.4</td>
</tr>
<tr>
<td>Breast</td>
<td>18.9</td>
</tr>
<tr>
<td>Ovary</td>
<td>17.7</td>
</tr>
<tr>
<td>Uterus</td>
<td>17.5</td>
</tr>
<tr>
<td>Melanoma</td>
<td>17.0</td>
</tr>
<tr>
<td>Leukemia</td>
<td>15.6</td>
</tr>
<tr>
<td>Colon/ rectum</td>
<td>15.6</td>
</tr>
<tr>
<td>Kidney</td>
<td>15.5</td>
</tr>
<tr>
<td>Lung/bronchus</td>
<td>15.2</td>
</tr>
<tr>
<td>Pancreas</td>
<td>15.1</td>
</tr>
<tr>
<td>Non-Hodgkin</td>
<td>14.0</td>
</tr>
<tr>
<td>Prostate</td>
<td>10.0</td>
</tr>
</tbody>
</table>

Funding to Lethality Ratio

• Metric to standardize the impact of mortality, incidence, & impact on life span

• Annual data from 2007-2014:
  – Mortality and incidence data from SEER registry
  – Years of life-lost per cancer death from NCI data
  – Funding levels obtained from the NCI funding portfolio
MATH

- MORTALITY:INCIDENCE ratios
  - M:I ratios = cancer burden on a population.

- “Person-years of life lost” = cancer burden on a population.
  - Convert to a rate (person-years of life lost per 100 new cases):
    - Using a rate rather than raw numbers standardizes the playing field.

- M:I ratio x years of life lost.
Funding to Lethality Score Calculation

**Step 1: Calculate the Mortality to Incidence ratio (M:I)**

- **Mortality**
  - 7,019 ovarian cancer related deaths
  - 19,118 prostate cancer related deaths

- **Incidence**
  - 11,349 new cases of ovarian cancer
  - 99,671 new cases of prostate cancer

- **Deaths per new cancer diagnosis**
  - M:I ratio = 7,019/11,349 = 0.618
  - M:I ratio = 19,118/99,671 = 0.192

### Funding to Lethality Score Calculation

#### Example for Ovarian cancer (2014)
- **Mortality** (7.0191 deaths/100,000) ÷ **Incidence** (11.3496 deaths/100,000) = 0.618 deaths/new cancer
- 0.618 deaths/new cancer x 17.5 years of life-lost/death = 1081.5 YLL per 100 new cancers
- $91.5 mill USD ÷ 1081.5 = $85,000 per YLL per 100 new cancers

#### Example for Prostate cancer (2014)
- **Mortality** (19.1189 deaths/100,000) ÷ **Incidence** (99.6716 deaths/100,000) = 0.192 deaths/new cancer
- 0.192 deaths/new cancer x 9.9 years of life-lost/death = 189.9 YLL per 100 new cancers
- $217.8 mill USD ÷ 189.9 = $1,147,000 per YLL per 100 new cancers

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## All GYN cancers: Amongst the Lowest in Funding

<table>
<thead>
<tr>
<th>Rank</th>
<th>Cancer Site</th>
<th>Funding/Lethality Score*</th>
<th>USD per years life-lost per 100 new cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Prostate</td>
<td>1.811</td>
<td>$1,811,000</td>
</tr>
<tr>
<td>2</td>
<td>Breast</td>
<td>1.803</td>
<td>$1,803,000</td>
</tr>
<tr>
<td>3</td>
<td>Melanoma</td>
<td>0.519</td>
<td>$519,000</td>
</tr>
<tr>
<td>4</td>
<td>Colon/rectum</td>
<td>0.442</td>
<td>$442,000</td>
</tr>
<tr>
<td>5</td>
<td>Lung/bronchus</td>
<td>0.363</td>
<td>$363,000</td>
</tr>
<tr>
<td>6</td>
<td>Leukemia</td>
<td>0.353</td>
<td>$353,000</td>
</tr>
<tr>
<td>7</td>
<td>Non-Hodgkin</td>
<td>0.284</td>
<td>$284,000</td>
</tr>
<tr>
<td>8</td>
<td>Kidney/renal pelvis</td>
<td>0.112</td>
<td>$112,000</td>
</tr>
<tr>
<td>9</td>
<td>Ovary</td>
<td>0.097</td>
<td>$97,000</td>
</tr>
<tr>
<td>10</td>
<td>Cervix</td>
<td>0.087</td>
<td>$87,000</td>
</tr>
<tr>
<td>11</td>
<td>Pancreas</td>
<td>0.074</td>
<td>$74,000</td>
</tr>
<tr>
<td>12</td>
<td>Uterus</td>
<td>0.057</td>
<td>$57,000</td>
</tr>
<tr>
<td>13</td>
<td>Testicular</td>
<td>0.044</td>
<td>$44,000</td>
</tr>
</tbody>
</table>

*Represents mean score from 2007-2014
DISCUSSION

• Strengths:
  – Reliable data from a single source (NCI)
  – Nationally represented sample of all cancers
  – Trends are easily observable
DISCUSSION

• Weaknesses:
  – Not all research funding comes from the NCI
  – Unable to determine the contribution of cooperative groups
  – Funding gaps are multifactorial
CONCLUSIONS

• Uterine, ovarian, and cervix cancers are disproportionately underfunded.

• Trends over time are not improving.
MEETING NEWS

Gynecologic cancer research disproportionately underfunded

April 6, 2018

NCI funding for research of gynecologic cancers appeared significantly lower than for other cancer sites, according to study results presented at the Society of Gynecologic Oncology Annual Meeting on Women’s Cancer.

Additionally, this disparity persisted over time.

“Our initial interest came about after seeing that gynecologic cancers tend to have a lower number of high-level evidence-based guidelines for diagnosis, treatment and surveillance,” Ryan J. Spencer, MD, assistant professor in the gynecologic oncology program at University of Wisconsin School of Medicine and Public Health and the associate director of the gynecologic oncology fellowship training program, told HemOnc Today. “Because of this, we wanted to investigate potential causative factors. One that we deemed important to explore was the funding awards for cancer sites from NCI-sponsored research.”

Spencer and colleagues used data from the NCI SEER database, Cancer Trends Progress Report and funding statistics to assess funding received across 13 cancer types from 2007 to 2014.

Researchers calculated a score for each cancer site for the funding received per years of life lost from 100 incident cases, called funding-to-lethality scores.

Scores would be the same across cancer types if funding was equitably allocated based on considerations of incidence and mortality.

However, funding for three gynecologic cancers appeared significantly lower than for the cancers ranked first through eighth in funding-to-lethality scores ($P < .05$ for all comparisons).
AGOS: Women First Research Coalition

- American College of Obstetricians and Gynecologists
- American Gynecological & Obstetrical Society
- American Society for Reproductive Medicine
- American Urogynecologic Society
- Infectious Diseases Society for Obstetrics and Gynecology
- North American Society for Pediatric and Adolescent Gynecology
- Society for Assisted Reproductive Technology
- Society for Academic Specialists in General Obstetrics and Gynecology
- Society of Family Planning
- Society of Gynecologic Oncology
- Society for Maternal Fetal Medicine
- Society for Reproductive Endocrinology and Infertility
- Society for Reproductive Investigation
Call to Action

Increasing NIH funding for academic departments of obstetrics and gynecology: a call to action

Laurel W. Rice, MD; Marcelle I. Cedars, MD; Yoel Sadovsky, MD; Nazema Y. Siddiqui, MD, MHS; Stephanie B. Teal, MD; Jason D. Wright, MD; Andrea Zorbas, MBA, MAcc; Marcela G. del Carmen, MD, MPH

Introduction
Research is the driving force behind improving healthcare. In the United States, the National Institutes of Health (NIH) is the dominant funding source for health research. The US Congress recently increased funding for research, specifically the Ovarian Cancer Research Program (Department of Defense) and the NIH. Although this increase acknowledges the importance of research in healthcare for all areas, funding for reproductive sciences, which is primarily carried out in academic departments of OB/GYN, represents a core inequity, with only 1% of the $14.3 billion in NIH funding designated to OB/GYN departments in 2018. Although this represents an increase of $4 million from 2017, the increase in other subspecialties during the same time interval was more significant, with pediatrics, for example, receiving a $43 million increase. This differential in support affects research efforts in myriad ways but perhaps more importantly, research in reproductive sciences would

funds both women’s health and pediatrics research. The K-series grants are career developmental training grants awarded to junior faculty to help them develop into independent investigators. Of the $732 million designated to K-series funding in 2018, only $49.2 million (6.7%) was earmarked to the NICHD. Although we support increased funding for all research at the NICHD, we advocate for a proportional increase in funding for academic departments of OB/GYN specifically. Importantly, research in reproductive sciences would
Learning Objectives

• **Develop an appreciation for the power of interests and passion, and how these many change over time.**

• **Identify the importance of opportunity and of being willing to shift to meet opportunities.**

• **Recognize that useful “lessons” come in many packages.**
Our mission at the University of Wisconsin Department of Ob-Gyn is to improve the quality of life for women in the state of Wisconsin and beyond by providing compassionate patient care and by advancing knowledge through research, education and advocacy. We do so in an environment of collaboration, humility, integrity and respect.
Far and away the best prize that life has to offer is the chance to work hard at work worth doing.

Theodore Roosevelt
Thank you.