

**THE PIONEERING EFFORTS OF WISE WOMEN IN MEDICINE AND THE
MEDICAL SCIENCES**

EDITORS

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PREFACE

A boy and his father are in a terrible car crash. The father is killed and the child suffers head trauma and is taken to the local emergency room for a neurosurgical procedure. The attending neurosurgeon walks into the emergency room and states “I cannot perform the surgery. This is my son.” Who is the neurosurgeon?

Forty years ago, this riddle stumped elementary school students, but now children are perplexed by its simplicity and quickly respond “the doctor is his mother.” Although this new generation may not make presumptions about the gender of a physician or consider a woman neurosurgeon to be an anomaly, medicine still needs to undergo major changes before it can be truly egalitarian.

When Dr. Gerald Friedland’s wife and daughter became physicians, he became more sensitive to the discrimination faced by women in medicine. He approached Linda Shortliffe, MD (Professor of Urology, Stanford University School of Medicine) and asked whether she would be willing to hold the first reported conference to highlight Women in Medicine and the Sciences. She agreed. The conference was held in the Fairchild Auditorium at the Stanford University School of Medicine on March 10, 2000.

In 2012 Leah Dickstein, MD contacted Gerald Friedland and informed him that she had a video of the conference. This video was transformed into the back-bone of this book. The chapters have been edited and updated and the lectures translated into written prose.

The chapters cover various aspects of pioneering women in medicine and the sciences. The first half of the book provides historical reviews, insights into the barriers women physicians face and the authors' roles promoting women in medicine. The second half focuses on authors' interactions with pioneering women in medicine or biographies about influential women physicians and scientists.

We hope this manuscript interests women (and men) in medicine from premedical and medical students to physicians beginning their academic career to leaders in medicine as well as those interested in the history of medicine and/or women's studies. Although much has improved for women in medicine and sciences in the last 14 years, disparities still exist related to academic promotion, salary and opportunities making this manuscript relevant today.

CONTENTS

Chapter	Title	Author	Page
1	Priming the pump: Preparing women to be pioneers in medicine and the medical sciences	Merle Waxman	5
2	Summary of the achievements of women and reflections on the future of women in medicine and the medical	Judith Leavitt, PhD	12
3	Women's Health: Decades Later, What's Still Neglected	Susan J. Blumenthal, MD, MPA	24
4	Science odyssey for women: successes and challenges	Cynthia Friend, Ph.D	52
5	Women's career development: what does this have to do with men?	Janet Bickel, M.A.	60
6	Women in Space	Bettyann Holtzmann Kevles, M.A.	68
7	Male Physicians Replace Female Practitioners in Western Europe 1350-1600: Why?	Barton D. Thurber, Ph.D.	80
8	Elizabeth Blackwell: The First Modern Woman Physician	Selma H. Calmes, MD	95
9	Pioneering Women in Pediatrics	Jennifer Tender, MD Alyssa Tender	104
10	Dame Sheila Sherlock: An Expert in Diseases of the Liver	Jenny Heathcote, MD, FRCP, FRCPC	126
11	A Lady of Culture : Margaret R. Murray	Mary Bartlett Bunge, Ph.D	136
12	The Libel Trial of Dr. Mary Dixon Jones	Regina Morantz Sanchez, PhD	144
13	Women and Mental Health, Part I	Carolyn Robinowitz, M.D.	162
14	Women and Mental Health, Part II	Leah J. Dickstein, M.D., M.A.	174

CHAPTER 1:

Priming the pump: Preparing women to be pioneers in medicine and the medical sciences

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This manuscript is a wonderful tribute to women in medicine and the medical sciences and provides a provocative perspective on the challenges they face. My role as the Director of the Office for Women in Medicine at Yale University for the past 27 and as Associate Dean at Yale Medical School for the last years 20 years, has given me a unique perspective on women in medicine and the ways in which they develop into pioneers.

The History of Women in Medicine at Yale

Louise Farnam wanted to be a physician, a medical missionary. She received a bachelor's degree from Vassar in 1912 and completed her Ph.D. in Chemistry at the Yale Graduate School. In 1916, she was told that Yale Medical School would not accept applications from women.

As it turned out, Louise Farnam's father was a Professor of Economics at Yale. He inquired, on her behalf, and was told that Yale Medical School did not accept applications from women because there was not a suitable lavatory at the Medical School. Professor Farnam then wrote a letter to Arthur T. Hadley, the President of Yale University dated March 31, 1916:

My Dear Arthur:

Word has reached me informally that the faculty of the Medical School are willing to admit a limited number of women provided they are graduates of a college, and provided that funds can be raised to put in a suitable lavatory. As the latter condition seems to have been considered a serious one, I write to say that in case the facts are as I understand them I shall be glad to be responsible for meeting the expenses of suitable lavatory arrangements. Believe me.

Yours very sincerely,

Henry W. Farnam

Let us dissect this letter. Professor Farnam writes, "My Dear Arthur," clearly, he was friends with the President of the University. The word "limited" appears in his letter because during the first few years of co-education at Yale Medical School the number of women was actually limited. Today we would call this a quota. Furthermore, women were not admitted on the same terms as men; they had to meet different and almost certainly some more stringent requirements. Professor Farnam ends his letter by discussing the need for funds for a woman's bathroom. Although this may seem humorous today and makes a good story, this type of exclusionary arguments (we cannot consider admitting x because we do not have y) is dangerous when taken seriously.

Louise Farnam was, once the lavatory issue was resolved, promptly admitted to Yale Medical School and graduated in 1920. The total cost to Professor Farnam was less than \$1,000. At graduation Louise Farnam was awarded the highest scholastic honor, the Campbell Gold Prize.

After further training at Johns Hopkins she realized her ambition and became a medical missionary in Changsha, China, part of the Yale-in-China program. She was the first female

faculty member at this institution. She and her husband, whom she met in China, were forced to flee China by the Communists in 1933, after serving there for 12 years. They moved to England where she continued to practice until she passed away in 1949.

We are fortunate to learn the history of coeducation at Yale Medical School (YMS) because in 1977 a Yale undergraduate named Susan Baserga was enrolled in a course on the History of Women in Medicine that was taught by Dr. Florence Haseltine. In that course Baserga learned why women had been admitted to Harvard and Johns Hopkins by 1916, but the history of the first woman admitted to YMS was unclear. Baserga took it upon herself to piece together the history and publish it,¹ providing a unique set of insight into the history of women at Yale. In addition, Baserga herself went on to receive M.D. and Ph.D. degrees at Yale medical school and is currently on its faculty where her scientific research focuses on ribosome biogenesis.

From the Past, to the Present and Future

Let us now turn from the past to the present and future.

One of the exciting things about medicine and the medical sciences is that there are always new questions, new challenges, and new grounds to explore. Women have come a long way since Farnum's experience in 1916, and they now are among the explorers.

Currently, women make up 47% of the entering class in medical schools nationally.² In 2004, when the more women than men applied to medical school for the second year in a row

¹ Baserga, S.J. The early years of coeducation at the Yale University School of Medicine. *Yale J. Biol. Med.* 1980;53;181-190.

² Joliff L, Leadley J, Coakley E, Sloane RA. Women in U.S. Academic Medicine and Science: Statistics and Benchmarking Report 2011-2012. AAMC 2012.

Jordan Cohen, the President of the American Medical Colleges stated, "We are gratified to see that the gender gap that existed in medicine for so long is disappearing."³

When we talk about future pioneers we are speaking about trainees in the broadest sense. There is an important point here: trainees are not limited to students. Career development is a continuum and at Yale Medical School we have tried to develop a spectrum of programs that promote the development of all trainees, including medical and graduate students, postdoctoral fellows and junior- and mid-career faculty.

Attracting the next wave of Pioneers

How can we attract the most talented women to become pioneers in medicine? We can glean some clues from quotations, taken from applications from students accepted to Yale Medical School in 1999. Statements like these appear on applications to medical school nationwide: "Medicine appeals to me as a scientist, a humanitarian and a perpetual learner." "The defining points of my life have been moments of discovery." "One thing I have learned in my life is to persevere." "I must confess, I like viruses."

The next five statements taken from medical school applicants reflect the importance of experience and mentoring.

1. "My interest in medicine was fueled by my struggle with asthma, which prevented me from having a normal childhood."
2. "When describing his experiences as a surgeon, my uncle stopped at times ... overcome with the reward he feels when he saves lives."
3. "My grandfather, a mechanical engineer, taught me to question how things worked."

³ <http://www.amednews.com/article/20041108/profession/311089958/7/> Accessed April 29, 2013.

4. "As a child of 10, I accompanied my pediatrician father, an admirer of Albert Schweitzer, on his trips to Mexico, where he volunteered his services."
5. "Like many first-generation Mexican-Americans, I cannot write a personal statement without discussing family."

These statements illustrate that the applicants started with good potential that was shaped by experience and mentoring. Women still face many challenges as they develop their careers in medicine and the medical sciences including: Role Model and Mentoring, Critical Mass, Flexibility – Balancing Career and Family, Perception Bias and Support Systems

Taken in their totality, this collection of issues may seem formidable, but if we break the list down into its component parts, there are some significant problems that are solvable. The following sections describe the experience at Yale Medical School in dealing with three of these problems: role modeling, mentoring and balancing career and family.

Role modeling

A major issue for women, as they develop their careers in medicine and the medical sciences, is access to adequate numbers, and an adequate spectrum, of role models.

We hear repeatedly from trainees about the importance of role modeling, especially role models who share similar background, gender, and/or ethnicity. If an individual is to advance professionally, it is important to know that others, of similar background, and makeup, have made it.

Conversely, in the absence of role models, trainees may lower their self-expectations. They get discouraged. One woman medical student told me, "I have this wonderful male advisor, but there is only one woman in the department. She does not have tenure ... and I worry about

fitting into a field with no, or few, women in it.” Other women students have said, “There is no senior woman faculty member I can talk to about my plans and aspirations.”

What can we do about this? Some programs that we developed at my institution to promote role modeling include: lunches to introduce students to women faculty, informal social events with visiting women lecturers, panel discussions, sending students to regional and national meetings, the The Phyllis Bodel Lecture Series and the Leah Lowenstein Award.

The Bodel Lectureship was established to honor the memory of Dr. Phyllis Bodel who was a faculty member in the section of Infectious Diseases. Her work on mechanisms of fever was acclaimed internationally. She was also the first person at the Medical School to be granted academic tenure while working part-time -- something she did in order to balance professional demands with caring for three children. Dr. Bodel was also active in increasing opportunities for women in medicine at Yale and was instrumental in starting the Office for Women in Medicine. The childcare center is also named in her honor.

The Leah Lowenstein Award is a student-nominated award presented annually at graduation to honor a faculty member who is a positive role model for women in the promotion of humane and egalitarian medical education. The recipient’s teaching style and personal example provide a model for the principle of equal opportunity espoused by the late Dr. Lowenstein.

Mentoring:

A mentor serves as someone who offers advice and guidance in order to help foster and promote the professional development of a less experienced person (a protégé). Our experience has been that there are numerous ways to encourage mentoring such as MentorNet,

Student/faculty mentoring programs and workshops on establishing mentoring relationships and how to find a mentor.

Balancing Career and Family Life:

The issue about balancing professional and family life has been repeatedly cited as a major issue for women developing their careers in medicine and the medical sciences. Ruth Potee, a Yale medical student, wrote her thesis on “Medicine and Motherhood: Shifting Trends among Female Physicians from 1922 to 1999,” which was published in *Academic Medicine*.⁴ Dr. Potee mailed questionnaires to all 863 living women who matriculated at Yale School of Medicine between 1922 and 1999. Of the 586 responding women (70% response rate), 82% of those over 40 were mothers. Female physicians without children were more likely to be in surgical specialties, less likely to be in primary care, and more likely to work full-time than were female colleagues with children. The average age of women when they matriculated medical school has increased over the 80 years. Prior to 1950, 24% of the women with children had them during medical training. Between 1950 and 1989, 42% of the women with children had them during medical training. The length of maternity leave increased over the eight decades, although the level of satisfaction with length of leave decreased.

I remain concerned about the climate for women and about opportunities for them in medicine and the medical sciences. At the same time, I am very optimistic. The number of women entering medicine is increasing and this presents an important opportunity. We need to continue to foster the development of these women as they will undoubtedly be our future pioneers in medicine and the medical sciences.

⁴ Potee RA, Gerber AJ, Ickovics JR. *Medicine and motherhood: shifting trends among female physicians from 1922 to 1999*. *Academic Medicine* 1999;74:851-42.

CHAPTER 2:

Summary of the achievements of women and reflections on the future of women in medicine and the medical sciences

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Elizabeth Eckford, one of the Little Rock Nine, who integrated the city's Central High School in 1957, opened one of her speeches with the quotation, "The dead can be buried, but the past cannot."⁵ We can still learn from history, no matter how painful that history is; we should face it and not bury it as if it did not happen. This chapter will examine a small bit of the history of women in medicine in this country and to probe what meaning it still has for us today.

The recognition of problems and the celebration of triumphs are significant parts of our historical heritage. I want to look at some of the everyday experiences and challenges of women in medicine, make some observations about this kind of daily history and suggest that we still have a long way to go before the 21st century can promise to be medicine's century of equality and diversity.

Listen to these voices:

A woman attends her first faculty meeting as an assistant professor. There are perhaps 30 people in the room, five of them women. Not bad, she thinks as she takes her seat and waits for the chair to begin the meeting. "Gentlemen," he says....

⁵ <http://www.oah.org/pubs/nl/2000feb/centralhigh.html>. Accessed February 23, 2013

A woman recently elected as the first woman to chair a department in her medical school, attended her first all-chairs meeting. She walked into the room in which the meeting was to be held, and where a few men already sat around the large conference table. She paused a minute thinking about where to sit. As she stood there, one of the white-haired kindly looking gentlemen approached her, put his arm around her, and said, “My dear, you must be in the wrong room. Where do you need to be?”

A woman starting her first day on the job as assistant professor arrived in the department office, where the department chair greeted her, said he wanted to introduce her to some of her colleagues; then he paused, looked up at her and said “But what will I say to them about how tall you are?”

I could continue with these kinds of stories, which, each of them small incidents, have a way of adding up to bad days, self-doubts and growing insecurities for the individual women involved. You know these stories, you know these women. I want to add one more story to make an additional point.

A woman began her junior year clerkship in internal medicine, wearing a lab coat and carrying a stethoscope. She walked into a patient’s room, where an elderly white man waited to be evaluated for high blood calcium. I quote from her account; “I walked into his room and introduced myself as a student doctor. I proceeded to ask him questions about his medical history. Later the white male intern came out of the patient’s room. “You know what that guy asked?” he laughingly announced. “Why didn’t that girl clean up while she was in here?” My being mistaken for a housekeeper became a joke on the ward team, all of whom, other than myself, were white and male.”⁶

⁶ Gamble, VN (1990). On becoming a physician: A dream not deferred. In White, EC. *The Black Women’s Health Book: Speaking for Ourselves*. (p. 59). Seattle, WA: The Seal Press.

This same woman, Vanessa Northington Gamble, went on to finish her MD, also earned a Ph.D., and in time achieved tenure, published well and became a shining example of an African-American woman with a successful academic career. She was invited to speak about her experiences at a leadership retreat at her medical school. In the audience were the chairs of all the departments and various deans and committee chairs. She stated “I walked to the podium and looked at my audience. It was overwhelmingly male and almost exclusively white...For 15 minutes I discussed the experiences of minority faculty, residents and students at my university and other medical schools---I gave what I thought was a clinical, dispassionate presentation. I reported my observations about some of the obstacles that minorities in medicine face. I made my diagnosis: The medical school needs to create an environment that was more hospitable to people of color.”

Dr. Gamble got police applause, and then the chair of surgery stood up. He said “I talk to a lot of minority students and I’ve not heard what we’ve heard here today. I doubt if it is an accurate depiction of what goes on here. I have a woman resident who will tell you differently.” Our Doctor Gamble continues, “I was taken aback by the hostility of his comments. I had not expected such a response. His words hurt. He was dismissing out of hand my experiences and those of other minority physicians. He was calling me a liar. He was saying that my words could not be trusted but those of a white woman resident who was under his supervision could. He was also disrespecting my status as a senior faculty member. I was the first and only black woman tenured at the medical school, and I was very proud of that accomplishment. I wanted to cry, but I translated my hurt into anger. My voice rising, I retorted, ‘I will not be dismissed. Just because you have not heard the stories does not deny their existence.’ The room went silent. Then the white woman resident in question got up, with her chair looking on, she reported that

sure there were some problems being a woman in surgery, but ‘I just don’t dwell on the problems.’ The dean, not commenting at all, quickly moved on to other topics.”⁷

This story, which cuts to the heart of the problem, demonstrates just how far academic medicine still has to go. But it also demonstrates that sometimes it is the little things that stand in our way the most. Once you obtain your qualifications and are admitted or recruited to a job in the academic world, once you are in and succeeding, and think you have done the hard part, you will still have very bad days. You can’t necessarily count on allies being there for you. Daily survival can be hard and it can be so difficult to get up in the morning and face the remarks, the disbelief, the disregard, the loneliness, yet again.

I want to suggest that unfortunately these stories of daily struggles have a long history, but also want to echo what others have mentioned: there are things we can do to cut the frequency with which they occur and to ameliorate the situations that do arise. These repeated experiences are so very important to how women feel on the job every day.

There is a photograph taken in 1903 at the Chattanooga Medical College where a woman, in a corner, alone of her sex in the room, represents success.⁸ The short version of the rise of women in medicine from Elizabeth Blackwell to the anonymous woman at Chattanooga Medical College is that once women broke into medicine, the numbers grew during the second half of the 19th century. Some of that growth occurred in co-educational settings, such as the University of Michigan, which admitted women beginning in 1870, along with Asians and African Americans, the latter allowing one per class. At Michigan, women were first segregated into separate classes

⁷ Gamble VN. Subcutaneous scars. *Health Affairs* 2000: 166.

⁸ <http://dawson-family-history.blogspot.com/> Accessed May 18, 2013

and later were seated separately but in the same room as the male students. At least once, they were “hooted and showered with abusive notes from young male students” at graduation.⁹

Most of the growth of women in medicine in the 19th century was a result of the 17 women’s medical colleges that women opened when they were denied entrance into most male colleges. In separate medical colleges, which one historian referred to as “islands of feminist strength,” women learned medicine side by side with other women in an atmosphere in which they felt welcomed, and where they were often taught by women professors. But separate medical education, and the sometimes-stigma associated with it by the medical mainstream, remained a second choice for most women physicians.

By the end of the century, notably following Johns Hopkins’ admission of women forced on them by the need for funding from the women’s community, most male schools opened their doors and let small numbers of women matriculate. As they did, most of the women’s schools closed their doors, feeling they had won the battle to get women into medicine. As Emily Blackwell wrote when Cornell began accepting women in 1899, the New York Infirmary Women’s Medical College closed because, “it has now fulfilled its purpose, and medical education may hereafter be obtained by women in New York in the same classes, under the same faculty, and with the same clinical opportunities as men.”¹⁰

Frances Willard summed it up at the end of the century writing “The girl has now no trouble to gain admission into the best medical colleges. They are open to her all the country over. It is only the will to study and to do it.”¹¹

⁹ Markel H. The University of Michigan medical School, 1850-2000. An example worthy of imitation. *JAMA* 2000;283:915-920.

¹⁰ Blackwell, E. *The Women’s Medical Journal*. 1899;8:248.

¹¹ Willard FE, Winslow HM, White SJ. (1897) *Occupations for women: A book of practical suggestions, for the material advancement, the mental and physical development, and the moral and spiritual uplift of women*. Cooper Union, NY: The Success Company.

What was it like for women who entered the predominantly male schools around the turn of the 20th century? Closing most of the women's medical schools (except for Woman's Medical College of Pennsylvania) made her experience more common, and opened women up to the isolation and daily difficulties we are still familiar with to this day. One medical school professor, for example, told a woman student

The delicate organization and predominance of the nervous system render women peculiarly susceptible to suffer, if not to sink, under the fatigue and mental shocks which she must encounter in her professional rounds. Man, with his robust frame and trained self-command, is often barely equal to the task.

Or as the *The London Lantern* editorialized in 1881,

If, while listened to a man's heart beat, the female doctor's eyes and rosebud mouth would be looking right in his face and her wavy hair would be scattered all around, getting tangled in the buttons of his nightshirt, don't you suppose his heart would get in about twenty extra beats to the minutes?

As one woman medical student from the period admitted, "It becomes increasingly evident that in----coeducational institutions the interests of women must subordinate to the interests of men who form the major part of the student body."

So it is not surprising that many women decided not to go into medicine, to avoid being that isolated, lonely woman in the corner of the room.

The number of women in medicine declined in the 20th century. Women's schools closed as male schools admitted women. Co-educational schools themselves closed their women's division, as Northwestern did in 1902. When Northwestern abruptly closed its women's division, surgeon Bertha Van Hoosen, then on the faculty and out of a job, read about it in the

newspaper while she drank her morning coffee. The number of women in co-educational schools also dropped: Hopkins had 33% women students in 1890, but reduced that to 10% in 1920. Michigan admitted a class that was 25% in 1890 and then reduced the proportion to 3% in 1920, adding higher entrance requirement for women. The small number of women who remained in the co-ed schools continued to face attitudes that women were inferior intellectually and physically, they were different, and they belonged at home. Medical education for women had not been abolished early in the 20th century, but it survived only in token form.

One other important note before I leave this historical period. In a photo of the class of the Woman's Medical College of Pennsylvania in the 1890s, the one institution that remained all female until the 1970s, there is only one African American woman. Her name is Halle Tanner Dillon Johnson and she is standing up in the corner. Like the lone woman in the all-male class, this lone black woman in an all-white woman class is set aside, in the corner, suffering her own isolation at the hands of women. Gender and race pose some obviously different issues and different experiences, and should not be merely conflated; but they also share parts from which we must learn. There were at least 115 black women who earned their medical degree and became physicians in the United States between the end of slavery and the end of the 19th century. Their lives and experiences need to be studied further to reveal their particular challenges and triumphs. The experiences of Vanessa Gamble, have both racial and gender components. The white male patients who thought she was a housekeeper would have made different remark about a black male student in a white coat; the chair of surgery who dismissed her experiences as a minority faculty member also, I suspect, would have responded differently to a black male professor telling his stories. At the very least, he would not have brought a white women resident to contradict him. Both gender and race combine to create a double jeopardy

and double hurt. Gender is only one factor explaining women's experiences, and it is always important to realize that other social factors, including race, socioeconomic class, sexual preference and ethnicity and geography can and do affect women's experiences and that women-like men -are not a homogeneous group.

The numbers of women in medicine were in retreat during the first half of the 20th century, and it was not until the late 1960s and 70s, with the help of federal regulations, the women's movement, and decreasing applications from men that the number of women medical school applicants began to rise. The women in those early second-wave years suffered their own problems. Let me give you one example. A woman delayed her dream of going into medicine when she got married and had two children. Once her children were old enough to be in school, she felt free to try again, and she applied to medical school in the 1960s. The letter rejecting her application included the following words:

We notice that you are married and have a family of two children.

This family situation is a handicap for a young woman seeking admission

to a School of Medicine. The medical student's schedule leaves very little time in which a mother can watch over her children and the problems that are a part of their infancy, pre-school age and of the pre-teen and adolescent stages.

The admissions committee felt quite free to judge this female applicant's choices, to states its opinion that until her children were post-adolescent she should not consider leaving home to pursue a medical career, and to call up her husband on the phone to ask him if he was aware what she was up to.

While the number of women medical students and graduates is now at an all-time high, women are still scarce in some medical specialties. Women still receive lower salaries and

financial incentives, women still are promoted at a lower rate than men and women are still rare in the upper echelons of academic medicine.

In 1999, in my capacity as Associated Dean for Faculty in our medical school, I lectured to the second year medical school class, half of which was female, on the subject “gender matters.” I gave a short history of women in medicine, I emphasized the positive growth of women in the field over the last 30 years, and I concluded that despite these great gains in the number of women applicants to medical school, the numbers of women admitted to medical school, and the numbers of women graduating from medical school, “women are not yet, in the 1990s finding their equal place in the medical profession.” My examples of inequality were about salaries and financial incentives, academic positions and promotions, some individual specialties, and administrative opportunities. I took most of my information from the AAMC report. I noted that the mean number of women department chairs in American medical schools is one and that two medical schools have no women at any decanal level.

When I ended my lecture, the response from the class surprised me. The first male speaker class insisted that women want lower salaries because they want part-time work. The women stated that they did not feel that gender matters any more, that women can do anything they want to do, and that barriers no longer exist. I was tooting an old horn, they felt. One woman insisted she could become a surgeon if she wanted without a problem. When I asked her if that was her plan she admitted that she did not want to do surgery, but insisted it was her choice and nothing to do with surgery, medicine, or society that might be guiding that choice. I pushed her a little further about why she did not want to be a surgeon and she said the hours were too long, she wanted to have children, and there weren’t enough women in the field. I felt she

made my point, that medicine itself did not welcome women into all of its parts, but she did not recognize this.

In some ways we should feel pleased about how much we have accomplished if second year medical students think the world is their oyster. In other ways, we know that very few will escape without somewhere or sometime hitting the brick wall. Whether it's a department chair starting a meeting with "gentlemen," their word going unnoticed in a faculty meeting, their experiences discounted as they relate them in a larger forum, or even when they are neurosurgeons on the faculty of a major medical school before they put together a series of experiences and hear a big "click" that illustrated how much gender matters.

I am a worrier. I am worried about young women, especially about attracting them into academic medicine. I know Lynn Nonnemaker reported that women are more likely than men to pursue an academic career. But she also told us that the numbers of women who advance in their academic careers were significantly lower than expected, on both the tenure and non-tenure tracks. Nonnemaker also concludes that women are not more likely than men to enter full-time academic medicine, the lack of senior role models in academic medicine may discourage young women from pursuing such careers, and that as alternative career paths become more appealing to women, medical schools will have to work harder to attract and retain talented women.¹²

I'm worried that young women are likely to choose part-time, lower paid and less challenging work, in the interests of having more time to raise their families, and that they see this as a free choice, as the women in the class I lectured to did. I am worried that women in surgical and other fields still feel as isolated as the woman in the Chattanooga medical college in

¹² Nonnemaker L. Women physicians in academic medicine: new insights from cohort studies. *N Engl J Med.* 2000;342(6):399-405.

1903. I'm worried that some women in academic medicine who have made it to the top, who are the few medical school deans, associated deans, and department chairs, still sit in a lot of rooms where they are the only woman, still feel alone or silences, and still have daily experiences that reinforce that feeling.

I'm worried that with all of our successes, and I do not mean to minimize them, we will feel too complacent and too busy to speak up and be there when individual women need support and mentoring.

I'm worried that too many have worked so hard to get in that they don't understand that especially now they need to continue to work to change academic medicine and make it a place where all women can thrive.

I'm worried that there are still groups of women in academic medicine who are isolated from one another; that white women have not worked hard enough with enough understanding about women of color and some of their particular issues.

I'm worried that the field of medicine, that even with the presence of so many more women who thought they could change things, is moving in a less humane rather than a more humane direction, pushed by market pressures to be less sensitive to differences and nuances.

I'm worried that the cost of success in the system is still much too high to individual women, their families, their bodies and humanity.

I'm worried that too many medical women are still battered by the system.

I always try to be optimistic when I meet with students and faculty, and I do—despite all my worries—still feel optimistic, that we can and will conquer these issues, in alliance with one another and with medical men of good conscience who support us. But it will not be an easy path. It is a path that we can only successfully walk if we are willing to face our problems

together, acknowledging and accepting differences and diversity among us, work hard on building necessary support systems, be willing to stand up and speak in support of other women at the time they need us most. We do not yet have the luxury to be quiet.

I want to be able to tell only the following stories:

I want to tell a story of a new assistant professor who was welcomed to her department by her chair and colleagues who daily found ways to tell her how glad they were that she was there, ask her about her work, offer to help and invite her to lunch.

I want to tell a story of a woman chair who was welcomed by the male chairs at her medical school as they made her feel at ease at her first meeting.

I want to tell the story of a woman neurosurgeon whose department and dean valued her work, admired her accomplishments and worked to give her more prestige and recognition in her medical school.

I want to tell the story of an African American woman who got up to speak about discrimination in medicine, whose voice was heard, whose medical school said lets buckle down and tackle these problems together and who was thanked for pointing them out.

Let us pledge to work together to bury the part of our medical history that is filled with pain and barriers to women so we can truly concentrate on the future and on making medicine a field that has equal space for us. Let us pledge to help bring “bread and roses” (in the words of early 20th century feminists—by which they meant respect) to the women in our workplace.

CHAPTER 3:

ADVANCING WOMEN'S HEALTH: A NATIONAL PRESCRIPTION

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Introduction

Women's health matters. The Institute of Medicine Report, *Women's Health Research: Progress, Pitfalls and Promise* (2010), underscores that major changes that have occurred over the past twenty years in the U.S. government's support of women's health and the study of sex and gender differences in disease has contributed to increased knowledge as well as improvements in the health of women in America. This new national focus was urgently needed because just two decades ago, women's health had been neglected in the halls of public policy, at the research bench, and in clinical settings despite the fact that women comprise more than 51 percent of the U.S. population, occupy significant roles in society, make 80 percent of health care decisions in families,¹ use more health services, and suffer greater disability from disease as compared to men.

Women were largely excluded as subjects from medical research, and data was not analyzed for sex and gender differences. Although women use more medications and have higher rates of side effects than do men from drugs, many studies on the safety and effectiveness of pharmaceuticals did not include females. Additionally, interventions to prevent tobacco use, to

encourage healthy diets, and to reduce cholesterol did not include women. Inequalities in access to health care services for women limited the availability of certain diagnostic procedures and therapies proven to be effective for specific conditions. Women even had to pay more for the same insurance plans than men because of the possibility of pregnancy and other female conditions.

The bottom line: despite well documented differences in the bodies and experiences of men and women, most research studies in the past were conducted in men only, as if they were the "generic" humans. The results were then generalized to guide the diagnosis, treatment, and prevention of disease in women. This omission of women as research subjects and as the focus of prevention campaigns and clinical trials put women's health at risk, contributing to rising rates of undetected heart disease, lung cancer, autoimmune illnesses, mental and addictive disorders, and the epidemic of AIDS.

What were the reasons for these inequities? Some speculate there was bias. It was also more costly to include women in research studies because of variables such as hormonal factors. And just as women have battled for equality in educational and occupational opportunities, those working in the women's health field had to shatter a myriad of barriers and prejudices in health care practice and research to bring women's health to the forefront and break the history of their exclusion.

Furthermore, in the past, medical education used the 180 pound male as the 'model' patient. Students learned about male anatomy and physiology, but never once did this patient go through menopause or have ovarian cancer. Therefore, it is not surprising that generations of health care providers and researchers, trained with a male model of disease, were not sensitive to sex and gender differences in the causes, treatment, and prevention of illness. Additionally,

because public health education efforts and campaigns did not target females, women were unaware of their risk for heart disease, AIDS, lung cancer and many other conditions.

Another piece of the explanation was the dearth of senior women scientists and health professionals in our nation's medical institutions. While today women represent as many as 48 percent of first year medical students and the majority of residents in several medical specialties including pediatrics, psychiatry, obstetrics and gynecology -- there are still too few women in senior leadership positions in academic and government institutions. Women represent just 12 percent of Deans of U.S. medical schools, fewer than 37 percent of tenured professors and 14 percent of the over 2070 Departmental chairs in our nation's medical schools².

Prompted by women's health advocacy and activism, a Congressional GAO Report in 1990 revealed that data from studies supported by the National Institutes of Health (NIH) were not being adequately analyzed for sex and gender differences and that only 13 percent of the NIH budget was spent on women's health research. These findings led to the passage of legislation in 1993 requiring that women and minorities must be included in clinical trials (where appropriate) resulting in a dramatic change in the way research was conducted in the United States. Additionally, a women's health focus was then woven into the fabric of all Federal agencies, new Federal and state leadership was appointed, policies were established, and many innovative initiatives were implemented to advance women's health.

Writing a New National Prescription to Advance Women's Health

It's been said that, "it is better to light a candle than to curse the darkness." Over the past two decades, a new national prescription has been written to improve women's health both in the Federal Government and in the private sector yielding lifesaving dividends. The guiding principle of this prescription is that our country's research, prevention and service delivery

programs must target all of our nation's women, of all races, ages, socioeconomic and ethnic groups, and must address the health needs of the whole woman—in body and in mind.

Since childhood, women's health mattered to me. When I was 10 years old, my mother developed thyroid cancer. I will never forget visiting her at the hospital and feeling helpless against this disease. It was then that I decided to become a doctor. My summers during high school and college were spent working in laboratories at Stanford University School of Medicine acquiring knowledge and skills about how to conduct research. I also served in the News Bureau at the Stanford Medical Center learning about the importance of communicating scientific advances to the public. My college curriculum was chosen with medicine in mind. In my first year of college, my mother developed breast cancer. In my last year of medical school, the disease metastasized to her spine so that she could no longer walk. My mother fought the disease with great courage and dignity and lived long enough to see her daughter become a doctor. Thirty years ago, when she died of metastatic breast cancer, I vowed that no other woman should have to suffer the way she did. So it hasn't been just a job, but rather a calling and an honor to dedicate my career to improving women's health.

I did this first in the 1980's as a research scientist and branch chief at the NIH, working with other advocates to expose the inequities in women's health. Then in 1993, I was honored to be appointed as the country's first Deputy Assistant Secretary for Women's Health and Director of the Office of Women's Health (OWH) in the U.S. Department of Health and Human Services (HHS). My mission in this new senior level Federal position created by the Clinton Administration was to rectify past inequities and to weave a women's health focus into the fabric of all of HHS's agencies and offices as well as to collaborate with other public and private sector organizations to improve women's health across the lifespan and to eliminate health disparities.

The OWH also worked with health officials globally to advance women's health around the world.

In its work, the HHS OWH defined women's health as the promotion of health over the life cycle as well as addressing conditions that are specific to women; are more common or more serious in women; have distinct causes or manifestations in women; have different outcomes or treatments in women; or have higher morbidity or mortality in women. Additionally, women's health means addressing special issues for women of color, rectifying disparities for women in the health delivery system, in health leadership, and in educational programs.

The HHS OWH convened conferences and consultations, issued reports, developed and supported model programs and innovations in women's health, and worked to educate consumers, researchers and health professionals about a broad spectrum of issues across women's lifespans. As a result of this new national focus, women's health is now a top health priority, funding has dramatically increased, prevention and service delivery programs are targeting women's unique needs, and a broad spectrum of research is underway.

For example, studies are being supported on many of the conditions and diseases affecting women over the lifespan. Several major studies are underway on the seasons of women's lives including a study of children's health, adolescent health, the Study of Women Across the Nation (SWAN) that examines mid-life issues, and the NIH's Women's Health Initiative (WHI) -- the largest clinical research trial ever conducted in either men or women focusing on post-menopausal women's health.

Findings from the WHI established in 1991 have already significantly changed recommendations for the treatment and prevention of disease in women. For example, results from this landmark study resulted in a sea of change in the use of hormone replacement therapy

(HRT) when an increased risk of heart attacks, blood clots and breast cancer in women who took combination estrogen/progesterone hormone replacement therapy for more than five years was reported. As a result, the number of women taking HRT declined dramatically. In 2002, more than 110 million prescriptions for hormone therapy were filled. By 2009, that number had dropped to 40 million³.

The 2010 Institute of Medicine Report emphasized that the focus on women's health research in recent years has contributed to significant progress over the past two decades, but serious gaps still remain and therefore, continued emphasis in this field is of utmost importance.⁴ The study of sex and gender differences in health and disease is one of the most important and fascinating research frontiers of the 21st century and is critical to understanding the processes of human development as well as disease, for medical product approval, and to guide future public policy recommendations.

Some of the accomplishments achieved during my tenure as America's first Deputy Assistant Secretary of Women's Health include developing a coordinated national approach and building infrastructure in the United States to improve women's health. A women's health focus was woven into the fabric of all HHS agencies including the National Institutes of Health (NIH), the Food and Drug Administration (FDA), and the Centers for Disease Control and Prevention (CDC), and regional women's health coordinators were appointed to work at the state level. Scientific and public awareness was significantly increased as were collaborations across agencies of the government and the private sector using a health in all policies approach. Many new initiatives were established on a broad range of health issues including envisioning and implementing the National Centers of Excellence in Women's Health program to help change the way research was conducted, physicians were trained, and health care was provided to women.

These Centers of Excellence serve as national models for improving research, services, public and professional education, and community involvement as well as provide a network to share best practices in women's health. They also foster the recruitment, retention, and promotion of women in academic medicine and scientific careers. A women's health curriculum was designed and distributed to health professional schools so that health care providers and researchers were trained to address important sex differences in health and disease. National Community Centers of Excellence have also been established to strengthen linkages between community based organizations to advance women's health care at the local level.

Because knowledge is power when it comes to health, women needed a single user-friendly point of access to state-of-the-art, comprehensive information about their health. I was among the first in the government to harness the power of the internet for health education by establishing the National Women's Health Information Center (NWHIC). The Center, accessible through a toll free telephone number (800-944-WOMAN) and online at www.womenshealth.gov, provides consumers, health professionals, and researchers with free, state-of-art information on a broad range of women's health issues linking them to thousands of cutting-edge resources in the Federal government and private sector. This kind of resource center was needed to provide trustworthy, comprehensive information on a broad range of women's health topics and conditions for the public and health professionals.

Since the establishment of the NWHIC and website in 1994, it's amazing to think how much has changed as a result of the information technology revolution. At that time, the internet was not being widely utilized for health. In fact, some representatives from the NIH, CDC and other federal organizations were unwilling to provide their brochures and other materials for inclusion on this new website because they were worried that their public affairs budgets might

be affected by a new "one stop shopping" portal for women's health information. This led to an HHS OWH collaboration with the U.S. Department of Defense -- the agency where the internet was first established -- to build the NWHIC. Over the next few years, as the web emerged as a powerful communication tool, the site was transferred to the U.S. Department of Health and Human Services for launching.

Another focus of the HHS Office on Women's Health's work was to establish public-private sector partnerships to leverage and synergize initiatives on osteoporosis, AIDS, girl's and adolescent women's health, senior women's health, eating disorders, mental illness, autoimmune disorders, and heart disease. For example, a focus on heart disease in women was established to educate the public and their health care providers that cardiovascular illness, long considered a disease of men only, is in fact, the leading killer of American women.

The war against breast cancer was also a top priority for the HHS Office on Women's Health. Globally, breast cancer is the most commonly diagnosed cancer and leading cause of cancer mortality among women worldwide, constituting 23% of female cancer cases and 14% of female cancer deaths annually.⁵ In the US, breast cancer is the most commonly diagnosed cancer among women and the second leading cause of cancer death⁶. In 2009, more than 200,000 American women were diagnosed and 70,000 died from breast cancer.⁷

To make progress in the war against this disease, as Deputy Assistant Secretary for Women's Health, I co-chaired and implemented a Presidential initiative on breast cancer that was established as a private/public sector partnership. During this time, government and private sector funding increased to find the causes, to enhance early detection, and to improve treatment and prevention strategies for breast cancer. And over the past two decades, there has been some

very good news: our national investment is yielding lifesaving dividends. The death rate from breast cancer in the United States has decreased from 1990 to 2010⁸

While the ultimate goal is to prevent breast cancer from ever occurring and to discover a cure, early detection today is critical to finding the disease early when there is the best chance of effective treatment. Twenty years ago and again today, there was controversy surrounding the age at which women should obtain their first mammogram and how frequently they should be screened. What struck me in this debate is that mammography, the current "gold standard" for detection, is a 50-year-old technology, and that three out of four lesions it detects are benign leading to many unnecessary biopsies. Furthermore, mammograms miss about 15 percent of breast cancers. I thought that if scientists could see the surface of Mars with the Hubble telescope, then perhaps it was possible to more accurately detect small tumors in women's breasts right here on earth. That's why in 1995, I contacted the Director of the CIA, the Administrator of NASA and the General in charge of the U.S. Department of Defense's Medical Research Command, to explore whether these agency's imaging technologies used for missile detection, intelligence purposes and space exploration might be applied to improve breast cancer detection.

Under my direction, in 1996, the HHS Office on Women's Health convened a conference with scientists from the intelligence, space, and defense communities along with our nation's top radiologists. Recommendations from this meeting resulted in an initiative called "From Missiles to Mammograms." This unique program transferred neural network imaging technology used by spy satellites to find tanks camouflaged behind trees to more accurately detect small tumors camouflaged by dense breast tissue yielding a peacetime dividend from our national investment in defense. Today, technologies including ultrasound, MRI, PET scanning, molecular imaging,

and computer-assisted diagnosis are improving the detection of breast and other cancers.

Knowledge about the genetics and biology of cancer is leading to the development of a whole new generation of therapies with fewer side effects based on an understanding of how cancer arises and is leading to the customization of therapies -- "personalized medicine" -- for individual patients.

Ultimately, in the war against breast cancer, preventing the disease from ever occurring is a critical goal. Studies have found that lifestyle changes (e.g., diet, physical activity, maintaining a healthy weight, limiting alcohol intake) and for women at high risk for the disease, certain medications (e.g., tamoxifen and aromatase inhibitors) and prophylactic mastectomies can help reduce the risk of breast cancer. Research also suggests there are environmental factors that may increase a woman's risk for the disease. One area of concern is exposure to endocrine-disrupting compounds (EDCs) that are found in many commonly available items such as pesticides, plastic bottles, metal food cans, detergents, flame retardants, additives or contaminants in food, toys, personal care products, cosmetics, and pesticides. These substances are both natural and man-made and may interfere with the body's endocrine system, in some cases producing adverse developmental, reproductive, neurological, and immunological effects. More work is needed to better understand the risk EDCs and other environmental factors pose to human health. A Congressionally mandated [report](#) issued in February, 2013 by the Federal Interagency Breast Cancer and Environmental Research Coordinating Committee emphasized the need for additional evidence and understanding about the links between the environment and breast cancer⁹.

In the emerging field of epigenetics, scientists are currently exploring the impact of environmental factors on genes including how these mutations might be inherited and to increase

the risk of cancer. Methylation is one of the best known epigenetic markers, a process by which methyl groups are added to genes, often linked to environmental influences, thus changing how genes are regulated but not changing the underlying DNA sequence. In a study of identical twins, researchers have recently identified a gene that when methylated, appears to increase the risk for developing breast cancer.¹⁰ Epigenetics is also leading to new ways of assessing risk for breast cancer, determining disease prognosis, and targeting chemoprevention drugs.¹¹

Mental health is another issue of utmost importance for women. According to the World Health Organization (WHO), mental illness is the leading cause of disability worldwide. In the United States, one out of five people will experience a mental disorder during any year period¹². Yet, there is still a powerful societal stigma surrounding mental illness. At that time, these disorders were considered by some to be a character flaw or personal weakness, rather than as real, disabling illnesses just like heart disease or diabetes, for which there are established causes and effective treatments. In 1999, the first ever *Surgeon General's Report on Mental Health*¹³ was released that encouraged Americans to get help if they are experiencing emotional problems. The report also underscored that mental health is fundamental to overall health. The document reviewed the scientific advances that have occurred in our understanding of the brain and behavior as well as in the causes and treatment of mental disorders over the life cycle. This new knowledge provides hope for progress in treating and preventing these illnesses in the future.

Over the course of my career, I have worked to increase scientific and public attention about mental illnesses, particularly sex differences in these illnesses. For example, why do women experience eating disorders nine times more often as do men? Why do women suffer from depression twice as often as men? Why are men's suicide rates four times higher than women, but women attempt suicide four times as often as men? Why do boys have higher rates

of learning disabilities and attention deficit hyperactivity disorder (ADHD)? Why do some diseases have their onset in childhood and adolescence and others later in life? What are the biological, psychosocial and environmental factors and their interactions that contribute to these sex differences?

Today, a broad spectrum of research is being conducted that is increasing knowledge about sex and gender differences in the causes and treatment of mental and addictive disorders. National education campaigns and service delivery programs are being supported that target the unique needs of women. Challenges ahead include increasing knowledge about prevention of mental illness as well as achieving full parity in health insurance coverage for chronic mental illnesses such as anorexia nervosa and schizophrenia.

Prevention of violence against women has also been made a critical priority. It is estimated that 30 percent of women in the United States are victims of physical or sexual abuse. A multifaceted initiative was implemented including the establishment in 1995 of a National Advisory Council on Violence against Women, a Federal Interagency Coordinating Committee, a domestic violence hotline (800-799-SAFE), increased funding for intervention and prevention programs as well as training initiatives for health care providers and law enforcement officials.

To address complex public health challenges, my office employed a “health in all policies” approach where all agencies of government were mobilized to address critical health issues including establishing several Federal Coordinating Committees on Breast Cancer, New Imaging Technologies, and on Women's Health and the Environment.

Prevention is Preferable to Cure

Over 2000 years ago, Hippocrates wrote, "Prevention is preferable to cure." Yet, the United States has been a treatment-oriented society rather than a prevention-oriented society. Our nation spends only 3-5 percent of an over \$2.8 trillion dollar health care budget on population-based prevention, yet 75 percent of deaths in the United States are linked to preventable lifestyle and environmental factors¹⁴.

Why is prevention so important? One hundred years ago, women and men, on average, did not live beyond their 48th birthday. Then, women died primarily from infectious diseases and also from complications of childbirth. But thanks to the triumph of government sponsored public health interventions including improved sanitation, immunization programs, safer food and water, environmental and safety regulations, advances from medical research and improved access to health care services, women in the U.S. have gained more than thirty additional years of life expectancy over the course of the 20th century.

Today, the major killers of American women are chronic diseases including heart disease, chronic lung disease, cancer, stroke, diabetes, and also injuries -- conditions for which as much as 50 percent of the cause is attributable to behavioral and lifestyle factors such as tobacco use, obesity, lack of physical activity, alcohol and substance abuse, unsafe sexual practices, and failure to use seat belts. While public health interventions have resulted in a dramatic decline in tobacco use over the past 40 years, smoking continues to be the leading cause of preventable death in the United States with 18 percent of women smoking in the United States today¹⁵. Additionally, studies on sex differences have found that nicotine is more addictive and tobacco is more carcinogenic in women as compared to men. In 1987, lung cancer surpassed breast cancer as the leading cancer killer of women in the United States. Smoking also interferes with a woman's ability to become pregnant, have a healthy pregnancy and a healthy child.

Another enemy to women's health in the 21st century is the growing epidemic of obesity and sedentary behavior, the second leading preventable cause of death in the United States. Every year, 114,000 deaths in the U.S. are linked to obesity¹⁶. As many as 68% percent of Americans are overweight or obese,¹⁷ and less than 20% of adults in the United States get the amount of physical activity recommended by the Federal Government. In the United States, over 30 percent of children and teenagers are overweight or obese representing a tripling in rates since 1960¹⁸. This dramatic rise in obesity has led to an epidemic of Type II diabetes, the seventh leading cause of death in the United States. A recent report predicts that if these trends continue, by 2050, one in three people in America will develop Type II diabetes. As a result, this may be the first generation of children who are not as healthy or live as long as their parents.

These statistics underscore why developing and implementing strategies to reduce health-damaging behaviors are so important and could decrease premature death in America by as much as 50 percent, reduce chronic disability, as well as dramatically cut health care costs. That's why a critical priority for me as Deputy Assistant Secretary for Women's Health, was to ensure that our national prevention campaigns, whether to stop smoking, to encourage a healthy diet and physical activity, as well as to prevent AIDS, focused on women's unique needs. For example, the HHS OWH worked with the Girl Scouts to establish its first partnership with the government—a smoking prevention merit badge program that was launched at the White House with First Lady Hillary Rodham Clinton. The HHS Office on Women's Health also collaborated with Federal and private sector organizations and the media to develop an eating disorders and an osteoporosis prevention campaign as well established a Task Force on Women and AIDS.

The recent health care reform legislation, the *Patient Protection and Affordable Care Act of 2010*, helps to accelerate a prevention revolution by mobilizing all sectors of society to create

a culture of health. Preventive services, including routine check-ups, certain disease screenings, vaccinations, prenatal care and counseling regarding smoking, alcohol use, HIV/AIDS, nutrition and obesity, will be covered by many private plans, by Medicare and by Medicaid on a state-by-state basis as the law is implemented over the next several years. The legislation also established a National Prevention Council with representation from all agencies of government as well as the release of a National Prevention Strategy.

Many new activities are now underway in the public and private sectors to help women make smart and informed health decisions for themselves and their families and to ensure that the prevention of disease and the promotion of good health is a top national priority.

Barriers to Progress

While significant advances have been made in recent years, several barriers still exist that have slowed progress in improving women's health. A key obstacle is socioeconomic status, the most powerful predictor of health around the world. Globally, 70 percent of the 1.4 billion people living in poverty are women. In the United States, women still earn only 70 cents for every dollar earned by men.¹⁹ Therefore, ensuring educational and occupational opportunities is an essential ingredient for a healthier future for women worldwide.

Additionally, barriers still exist in the conduct of research on women's health. While an Institute of Medicine report published in 2001 underscored that sex matters at the molecular, cellular, and organ system levels, nonetheless, basic science studies still generally use only male animals²⁰. This must change in order to better elucidate sex differences for hypothesis generation. Furthermore, the 2010 Institute of Medicine Report, *Women's Health Research: Progress, Pitfalls and Promise*, found that further improvements must be made in the conduct of

research. For example, are the most appropriate and relevant determinants of women's health being fully investigated? Understanding only the sex (biological) differences between males and females that affect health and disease is not sufficient. More attention must be paid to the social and environmental factors that influence women's health—the gender differences—as well as quality of life issues. Advances have been made in determining behavioral factors influencing women's health such as smoking, nutrition and physical activity, but only minimal research has evaluated ways to modify these determinants in women or explored the effects of community and social factors in specific populations of women.

Furthermore, despite efforts to ensure analysis and reporting of gender and racial/ethnic differences in scientific studies, there remains a lack attention to these issues in reporting findings which must be rectified. Scientists should integrate women's health considerations into all health research so that sex and gender based differences are routinely assessed. Additionally, significant disparities in disease burden remain among specific groups of women especially those who are socially disadvantaged because of their race, ethnicity, income and educational levels. These women have been underrepresented in many studies and have not benefitted as much from the progress in women's health research over the past two decades²¹.

Other gaps that must be addressed include expanding and strengthening the national women's health research portfolio to focus on the full range of conditions that affect females such as Alzheimer's disease, HIV/AIDS, mental and addictive disorders, and autoimmune illnesses.

There's another challenge for women's health summed up by the author, Goethe, who once wrote, "Knowing is not enough; we must apply; willing is not enough; we must do." There remains a 15-year science to service gap between the time of a new discovery in the research lab

and its wide dissemination into clinical practice. In the Information Age, why shouldn't this timeframe be reduced to a nanosecond? A great deal of important information about preventing and treating disease --the best practices of public health and evidenced based medicine -- are currently available and could be used today to improve women's health in our country and globally. More work is needed on how to rapidly disseminate research findings to inform clinical practice and public policymaking as well as to provide women with the knowledge they need about research based health recommendations to decrease confusion regarding complex and sometimes conflicting scientific findings.

Several years ago, HHS released a report, *The Decade of Health Information Technology (HIT)*, with recommendations about how to create a seamless information infrastructure to increase the efficiency of the health care system, to decrease medical errors, and to disseminate lifesaving information quickly and effectively in the United States and worldwide. Today, the Office of the National Health Information Technology Coordinator at HHS is working to integrate HIT into health care practices across America. The Economic Stimulus package as well as the *Affordable Care Act of 2010* provides funding and incentives to accomplish this goal. Developing innovative strategies to speed the time from scientific discovery to the application of new knowledge in communities is a critical priority for women's health in the 21st century.

Women's Access to Health Care

While there have been significant advances for women's health over the past two decades, one key component of the national prescription that had been missing and was a barrier to progress until recently was women's access to comprehensive, quality health care. In fact, more than 19 million women²² in America do not have health insurance. Women are more likely to

lose their insurance if divorced or widowed, and have often paid more for premiums than men. Currently, only 50 percent of women have employer-sponsored insurance compared to 57 percent of men²³.

As a result of the passage of the *Patient Protection and Affordable Care Act (ACA) of 2010*, these inequities should be eliminated. The legislation contains several significant improvements towards ensuring an efficient, effective, and equitable health care system for women -- and men—over their lifetimes. One of the victories of the legislation is the elimination of gender ratings of premiums, which will prevent insurance companies from charging women higher rates than men for coverage. Additionally, the legislation allows youth up until the age of 26 to be insured on their parents' plans. As a result of this provision in the new law, 1 million young women now have health insurance. Furthermore, women can no longer be denied coverage for pre-existing conditions like cancer, asthma, or depression. Additionally, the ACA prevents insurance companies from instituting lifetime benefit caps, dropping patients who file reimbursement claims, and spending more than 20 percent of premium payments on administrative costs.

Eligibility for Medicaid which insures low-income individuals is being expanded under the ACA to cover all Americans with incomes at or below 138 percent of poverty level (FPL). Currently, two-thirds of Medicaid beneficiaries are women; the majority of the 55 percent of uninsured women who have incomes below 138 percent of FPL will now qualify for Medicaid coverage in 2014²⁴. Under the ACA, women whose incomes are between 139 percent and 399 percent of the FPL will be eligible for tax-credits towards the purchase of health insurance.

With greater access to health care, women will benefit from the free preventive services provided by the legislation that no longer requires cost-sharing or paying deductibles. These

services include well-woman visits, pap smears, mammography, HIV testing, cervical cancer and colon cancer screenings. Monitoring of cardiovascular health, another preventive service that is now covered under the law, is a particular benefit for women, who die in higher numbers than men from heart disease annually.

Importantly, women's mental health services will be treated on parity with their physical health as a result of the legislation. Women are four times more likely to attempt suicide than men, and experience depression and anxiety disorders at twice the rate of men. Women also experience high rates of domestic violence in America. The ACA covers screenings and counseling for these public health concerns as well.

Coverage for reproductive health services and perinatal care is another important component of the ACA. Contraceptives are included as part of the basic package of free preventive services that insurers are required to cover, with some exceptions given for religiously-affiliated organizations. The legislation also helps pregnant women receive the care that they need. While the United States is one of the most advanced countries in the world, it ranks only 50th in maternal health²⁵. In fact, the maternal mortality rate in America has increased over the last two decades and is among the highest in the industrialized world. The ACA will help to reduce America's alarmingly high maternal mortality rate through the provisions in the law that improve pregnancy related health care. Preventive services that will be covered under the ACA with no cost-sharing include screenings for gestational diabetes, Hepatitis B, Rh incompatibility, HIV, and iron deficiency. Interventions to prevent complications due to alcohol consumption and tobacco use during pregnancy are also covered, as are folic acid supplements to prevent birth defects. Medicaid program services, which currently cover 41 percent of all births in the United States, will be extended beyond delivery for women into the

post-partum period²⁶. Women will also have more options for delivery of their babies with higher reimbursement rates for nurse midwives and birth attendants. Moreover, the ACA includes additional provisions to improve maternal and child health after delivery by requiring coverage of breastfeeding support services and workplace protections for nursing women. Postpartum depression (PPD) detection and support services as well as research and treatment for this condition are also covered by the new law. All of these interventions will have important protective effects on a mother and her infant's health.

Women also have special needs as they age, and constitute 57 percent of the population over the age of 65 and 65 percent of the population over age 85²⁷. In addition to having longer life expectancies, on average, as compared to men and experiencing higher rates of chronic illness, women are less likely than men to have the financial resources to maintain their good health later in life. The ACA expands Medicare benefits for senior women, covering prescription drugs as well as osteoporosis and other screenings for program recipients, 59 percent of whom are women²⁸.

As a result of the passage of the ACA, a critical ingredient has now been added to the national prescription to improve women's health that had been missing until now -- access to comprehensive, quality health care. Many aspects of the ACA focus on the unique needs of women across the lifecycle, from infancy through childhood, adolescence, and adulthood. The results of this legislation should contribute to a healthier future for American women in the years ahead.

Improving Women's Health: A Global Issue

Access to health care for all people is very much a global issue as is advancing women's health. There are over 3.5 billion women worldwide and in many regions of the world, women outnumber men. Yet, a number of factors including poverty, discrimination, violence, and lack of availability of services undermine women's health. The health status of women is critically linked to their empowerment and fundamental freedoms. Women's rights -- human rights -- are essential to national development, economic growth and global progress. However, for women in many countries, discrimination and denial of basic rights, beginning in infancy, negatively impact their health and the trajectory of their lives. That is why worldwide education, occupational opportunities, and access to health care are critical components for a better future.

In many developing nations, women are experiencing the double burden of both chronic and infectious diseases. While life expectancy has increased for females in most developed and developing countries, it has decreased dramatically in sub-Saharan Africa as a result of AIDS. In the early 1980's, AIDS was a disease thought to affect men only so that research and prevention efforts targeted males leaving women unaware of the risk. Today, women account for 50 percent of those who have died from the disease since the beginning of the epidemic. Initiatives are now underway to prevent and treat AIDS in women as well as to prevent maternal- to- child transmission (PMTCT). The goal of these intensified efforts is an HIV-free generation in the years ahead.

Furthermore, the spread of infectious diseases including AIDS and TB²⁹, epidemics like tobacco use and obesity, the safety of the food and water supply, violence against women, human trafficking, and the threat of bioterrorism do not recognize national borders. A woman dies in

childbirth every minute in the world. More than 500,000 women die annually due to complications during pregnancy and childbirth. These health threats are preventable.

The world's population is aging and the incidence and deaths from chronic diseases including heart disease, cancer, diabetes and Alzheimer's disease is increasing dramatically. The number of people over age 60 is expected to rise from 770 million to 1.4 billion in the next two decades -- the majority will be older women. Women are also the majority of caretakers for aging family members. This is why promoting healthy aging must be a top priority in America and worldwide.

While problems cross borders, so do solutions. We are the first generation that has the science, technology, and now we must add the commitment to eradicate preventable disease. That means our work cannot stop at the United States' borders for humanitarian, economic, and national security reasons. SARS crippled China and Toronto's economies because people were afraid to travel there. Millions of orphans overseas whose mothers have died of AIDS, malaria or tuberculosis are an invitation to political instability. Caring for millions of women with HIV/AIDS, tobacco and obesity related diseases, and Alzheimer's bankrupts women of their futures and nations of the human resources and the funds needed to build healthy communities, economies, and countries.

To address these issues, the U.S. Department of Health and Human Services, the U.S. Department of State and many private sector organizations including the Gates Foundation and the Global Fund to Fight AIDS, TB and Malaria, support a broad spectrum of international health programs and initiatives to prevent and treat a range of global health threats to women and to empower them with education and occupational opportunities. Enhancing surveillance of disease, supporting scientific research, health systems strengthening including health

professional training, increasing awareness of cultural issues and emphasizing disease prevention are cornerstones of ensuring a healthy future for women worldwide. The lifesaving program, PEPFAR, established in 2003, has an enormous impact on changing the trajectory for AIDS in women and men through the provision of treatment and prevention services worldwide with the goal of ending the disease in the years ahead.

President Obama's Administration, building on the foundation of PEPFAR, launched the Global Health Initiative (GHI) in 2009 to integrate U.S. investments in disease eradication with health system strengthening. A focus on women and girls was established as a critical element of the GHI. To help implement this vision, the Office on Global Women's Issues was created in the U.S. Department of State led by the Ambassador-at-Large for Global Women's Issues. In 2012, the U.S. Agency for International Development (USAID) launched its new Gender Equality and Female Empowerment Policy in recognition of the fact that long-term sustainable development will only be possible when women and men are given equal opportunity to realize their potential. Girls' education comprises 67 percent of USAID education initiatives, and women receive more than 60 percent of loans from USAID-supported microfinance institutions today.

The focus on women's health issues in the developing world must also address the additional burden these nations are facing due to chronic diseases. The serious omission of chronic disease objectives from the original Millennium Development Goals (MDGs) issued by the United Nations (UN) is finally being addressed. The UN convened its first Summit on Non-Communicable Diseases in 2011 which was long overdue since 70 percent of the chronic disease burden is in the developing world. Specific targets are needed to address chronic disease when

updating the UN's Millennium Development Goals (MDGs) which had focused on infectious diseases, childhood mortality, and poverty reduction in the past.

Summary

Over the past century, advances in women's health in the United States have succeeded in almost doubling the lifespan of women in America and provided a level of care previous generations could not have foreseen. In 1900, even the most prescient of people could not have imagined the dazzling scientific and technological advances such as mapping the human genome and the impact of technology on revolutionizing health care nor could they have anticipated the toll that tobacco, obesity, motor vehicle accidents, and an aging population would take on the health of women in the 21st century.

Madame Curie once remarked, "I never see what has been done, I only see what remains to be done." Yes, much progress has been made to improve women's health over the past two decades, but much work remains to be done. Increased research is needed on sex and gender differences in health and disease and on the conditions that affect women across the lifespan. The result will be increased knowledge that benefits women as well as men. More emphasis is needed on preventing disease as well as to increasing the level of preparedness to meet and beat emerging threats to women's health and safety. We must accelerate progress in rectifying health disparities for women of color as well as rapidly translate knowledge from science and public health to improve the delivery of health care services to women. Investments in global health and development for women must also be strengthened for economic, national security and humanitarian reasons.

The complex healthcare challenges for women in the United States and globally including the epidemics of tobacco use, obesity, AIDS, and mental illness, as well providing access to quality health care requires a multidisciplinary strategy -- a health in all policies approach. The perspectives of public health, medicine, science, and technology should be integrated into a new paradigm to address the opportunities and challenges ahead. Partnerships across government and the private sector are a cornerstone of these efforts, leveraging skills and resources to improve prevention, research, and service delivery programs for women in our country and globally. If we remain vigilant, the results of these efforts should brighten the health futures for women --and men-- in the 21st century.

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CHAPTER 4

SCIENCE ODYSSEY FOR WOMEN: SUCCESSES AND CHALLENGES

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In beauty and wit
No mortal has yet
To question your empire has dared
But men of discerning
Have thought that in learning
To yield to a lady was hard.

- Alexander Pope, 1720

Although this quote was taken from 1720, it represents the crux of the problem today; it is very difficult in our culture for men to release power to women and to view them as true peers.

Clearly there have been substantial changes in the opportunities for women scientists over the years. The fact that I have a chair position at Harvard is an illustration of that. There is no question that would not have been possible, as you will see from some my historical examples, before the 1980s. Opportunities were made available for women in many fields, including the natural sciences and medicine beginning in the 1970s. In fact, my career in a certain sense is an illustration of the timeline for opportunities that arose.

I was a student at the University of California at Davis in the 1970s and never worried about a lack of opportunities, although I was a novelty. I was the only woman in my physical chemistry class. I was told that I would be lucky if I could get a 'C' not by a faculty member, but by another female student. I'm now a physical chemist.

I did have many opportunities and the key to anyone's success, whether you are a man or woman, is having someone to promote your career and coach you every step of the way. I was fortunate enough that there had been enough change affected in our society that I could then be offered a junior faculty position at Harvard. I am, in fact, a beneficiary of the Old Boys' Network which is still well-entrenched, so one of the keys is to make good use of it.

One of the ways that this works is that you can be everyone's daughter when you are younger. Yet, at a certain point you cease to become a daughter and instead become a competitor, a peer, and/or a supervisor. And that's when the professional relationships become challenging.

The barriers today that are facing women in science are sometimes subtle and are rooted in history. It is important to develop strategies to overcome these barriers and therefore we need to work at the root of them. I would like to provide some historical examples of women scientists who have been extremely successful and to examine what barriers they had and then to compare that with what we face today.

But before I launch into an examination of this history, I want pose a question. And that is: Why? Why should we try to advance the careers of women? I know that may seem rather radical, but it is an important question to answer if we are going to convince our colleagues, our deans, our university presidents, and politicians that this is an important endeavor. Without an effective answer, there is not going to be a modus for change.

Of course, there is the moral argument that there should be equal opportunities for women, as there should be equal opportunities for all people. But, this is not going to be the most compelling argument. The most compelling argument is that women represent a very large amount of intellectual capital that we cannot waste if we are going to progress. The historical examples I provide illustrate this clearly because many of the women did not have much opportunity, yet made substantial and significant contributions.

Women often make contributions in fields that are non-traditional, emerging fields, and fields where perhaps men do not want to work. Yet, they made substantial contributions in this field in the earlier part of the 20th century.

Women began to infiltrate the scientific arena in the late 1800s, early 1900s. Ellen Swallow Richards was the first woman to receive a Chemistry Bachelor of Science degree in the United States, in 1871. She went to M.I.T., after attending Vassar, and was allowed to work in a basement laboratory where she discovered Vanadium. She wanted to do graduate work in Chemistry at M.I.T. and they considered this for a short time, but then denied her application and immediately changed their rules to not admit women. She did not become discouraged and continued to work in her M.I.T laboratory where she introduced the word ‘ecology’ in 1892, and studied health issues associated with the water supply. She was able to conduct her research “unofficially” partly because she was married to an M.I.T. faculty member. She died as a result of a heart attack in 1911 at the age of 68.

More women infiltrated the scientific arena as the 1900s progressed. One very prominent woman Astrophysicist was Cecilia Payne Gaposchkin. She started her career at Cambridge University in the early 1900s but she was not given a degree there because they did not award degrees of any sort to women. Instead she went to Harvard in the early 1920s and made an

important discovery about the inter-stellar medium; that stars are primarily made of helium and hydrogen. She employed many women to read the spectroscopic plates at the Harvard Observatory. She was awarded a Ph.D. in 1925 from the Harvard Observatory. Her dissertation was cited as being the most brilliant ever written in astronomy by her department chair. You might think that someone who is that accomplished and made such a significant discovery, would have many opportunities, but in 1925 opportunities for women were rare. Gaposchkin was allowed to work at the observatory as an assistant and 20 years later was finally given a title of Astronomer. She taught classes, but Harvard did not list her classes in the course catalog until after World War II because she was a woman. After World War II, Harvard and Radcliffe ceased to segregate their classes. She was finally given a faculty position in 1956, and became the first woman department chair at Harvard. When she was given this position she was a very large woman and she made some amusing comments about how large the doors had to be opened for her. She made a significant impact in the fields of astrophysics and astronomy and served as a role model for the many prominent women astrophysicists that followed.

Rosalyn Franklin was an x-ray crystallographer in the 1940s and 50s. Without her work there is no question that Watson and Crick would not have solved the structure of DNA. They actually had a different model and it was on the basis of her x-ray data, which was given to them without her permission, that they were able to solve the structure. Unfortunately she died at the very young age of 37 and therefore was not able to share in the Nobel Prize. She made a significant contribution and was working in the mid-1900s when there were limited opportunities and an often hostile environment for women scientists.

Clearly things are very different today. We have many more women in the sciences, especially in biology and the medical profession but unfortunately, many more changes need to

be made. The percentage of women faculty in Science at M.I.T increased at one point, but has been flat for several decades. When are we going to have a critical mass of women in academic science, and in particular, in the senior ranks? When I started at Harvard, I was optimistic that the percentage of women in academic ranks would continue to grow, but that hasn't occurred. The increase we see is in the enrollment of undergraduates. Women comprise 50% of undergraduates in chemistry programs and in some fields, for example bio-chemistry and biology, it often exceeds that. We then see a big drop-off at the graduate school level; the percentage of women entering graduate programs in chemistry is about 30% nation-wide. However, as you go up the ladder there is not a corresponding increase in the percentage of women. As junior faculty are promoted to senior faculty positions, younger women are often making decisions to take less competitive positions. It is important to look at historical examples because this is not the first time in history when women have had opportunities to pursue scientific careers.

Historically, women had opportunities to pursue careers in academic science when there was a need. During World War II men were involved with the war effort and many scientists focused on developing explosives or the nuclear program. Women were allowed to pursue graduate careers in science. One such example is Rosalyn Sussman Yalow, who invented radioimmunoassay for which she received the Nobel Prize in Medicine or Physiology in 1977 with Solomon Berson. She was a New York native, where many women in science originated since education was inexpensive or free. She received a degree in Physics in 1941 from Hunter College in New York. When she finished her degree she was interested in attending graduate school. At first she applied to Purdue but was turned down because of her gender. Yet because of World War II and the need for women graduate students, she was admitted to the University

of Illinois' Physics program. Yalow had difficulty finding someone to allow her to teach but eventually found one faculty member who would accept her as teaching assistant. She had a successful career at the University of Illinois where she met and married her husband who was also a physics graduate student. When she returned to New York after the war ended, she did not have any opportunities, so she volunteered at the Veteran's Administration Hospital at Bronx. It was there that she began her collaboration with Dr. Solomon Berson with whom she shared the Nobel Prize for their work in development of radioimmunoassays. She excelled in her work despite not being given the same opportunities or academic positions that we might expect today.

On the other hand, when I spoke with Rosalyn Yalow, her viewpoint was somewhat different. She actually viewed it as a powerful tool because she wasn't required to work within the system. This enabled her flexibility to raise two children and pursue her scientific career.

Gertrude Elion was another Nobel Laureate scientist who studied during the World War II era. She did not earn a Ph.D. and relied upon her long-term collaborator and co-winner of the Nobel Prize, George Hitchings. He enabled her to do scientific research in his lab and allowed her to take on responsibilities that would normally be reserved for someone with a Ph.D. She shared the Nobel Prize in Physiology or Medicine in 1988 for applying important principles in drug treatment that led to the development of a series of new drugs including those to combat leukemia, malaria, gout, herpes and prevent organ transplant rejection. Gertrude Elion would not have the same opportunities today because she would not fit into our system, but at that time, because of the limited opportunities, they were able to accommodate her.

The careers of Rosalyn Yalow and Gertrude Elion illustrate the opportunities that arose during the World War II era, and also highlight the importance of having a spouse or long-time collaborator as a proponent to provide non-traditional avenues for academic success. It is also

crucial to the success of men but I think it is less common for successful women to not have such a connection.

These women relied on these collaborations and coaches and on the goodwill and patronage of male scientists. I would like to believe that this reliance is not needed today, but it still is and I think it is important to recognize it and to make use of it. The Old Boys' Network is in place. It benefits men, and we need to make sure it also benefits women.

But we now need to cross over from being daughters into being peers. We need to apply our historical experiences to the experiences of today's women scientists. Opportunities come and go. We need to recognize that family and quality of life issues have existed historically are still crucial barriers that face us today.

This is nicely summarized by an excerpt from Veronika Szalai, Postdoctoral Researcher, in a letter to the editor in Chemical and Engineering News:

“Although I love research in science, I would not choose it over my family...perhaps policies that make the pursuit of science mesh more easily with the pursuit of activities outside science would help the number of young women interested in the challenges of attaining top positions.”

The bottom line is that we need to induce a cultural shift in academic science. There is a long-standing tradition of devotion to scientific research which can prevent having a balanced life. There is still glorification of researchers who do nothing but work in the lab. There is a story about a famous physicist at Columbia who would lock himself in his lab for a week at a time during experiments and his wife would shove his dinner under the door. These quality of life issues for both women and men are complex and need serious and thoughtful re-evaluation.

There are also hidden biases that women must face. There is often competition between women peers that men may not experience. This competition may become more noticeable as senior women scientists compete for grants, awards, promotions, or prestigious positions. There needs to be a concerted push for resources for women at every level to receive recognition that is truly commensurate with their accomplishments.

What can be done to change the culture of science? At Harvard we are trying to change the culture of hiring practices. Some of the strategies we are using include: identifying excellent women scientist early in their career, recruiting women vigorously, providing resources and support, improving networking and continuously promoting excellent women scientists. We need to recruit women graduate students and post docs actively and find out what it would take to keep them in academic science. We need to make use of the institutions that are already in place; if the old boys' network has a bad name, let's just make it an old boys' and old girls' network.

CHAPTER 5

WOMEN'S CAREER DEVELOPMENT: WHAT DOES THIS HAVE TO DO WITH MEN?

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For as long and as diligently as I have been studying the question of women in academic medicine and whether the glass is half empty or half full, I'm still very uncomfortable making generalizations about women versus men. Women are just as different from each other as men are from each other.

Looking over the last couple of decades, we don't really see an incredibly shrinking man, but rather an increasing proportion of women entering medical school. However, there has been no significant change in the promotion of women to full professors. Fifteen years ago, 10% of women faculty were full professors compared to 31% of men faculty. These proportions have changed little in the last 15 years. There's a remarkable stability about these proportions that we continue to try to understand. In part it is because of the large influx of women at the entry levels. If the rate of change of women at the full professor level stays the same as it has in the last five years, it will be 40 years before 15% of women are full professors. This is still only half of the proportion of men at that level.

This subject of women becoming leaders in education received a big boost in 1999 when the Massachusetts Institute of Technology (M.I.T.) Study of Women Faculty was published.²⁹ Having had a chance to talk some of the leaders of that effort, one of the reasons they give for

why M.I.T. women did not conduct this study earlier was because they somehow knew that if they started talking and evaluating their situation, their own rage at their lack of benefits and financial recognition would detract from their work. So their denial early on kept the status quo in place. Fortunately, they aligned themselves with an administration that wanted to see change.

I am humbled by the complexity of the issues that these institutional and cohort studies reveal. The issues are a combination of the legacy of sexism, the lack of mentoring and trying to balance life outside of medicine. If one is not practicing medicine full time, it does make a difference in terms of the career path. Ellen Moore, in her new history *Restoring the Balance*, describes that this combination of necessity and choice shapes women's careers.²⁹ She also writes about the concept of cumulative career disadvantages that women have compared to men.

I do not think that the 'Glass Ceiling' metaphor is helpful. One of my colleagues has been quoted as calling it bullet proof, which I think is a highly unfortunate metaphor. I believe that it's much more complex than that. One way in which my office is attempting to help institutions increase their women leaders is to collect and publish data. In 1999 for the first time, we started collecting data including the proportion of women who are tenured, their rank and more fine information. We publish these results by school and compare them with the national mean in order to stimulate the competitive instinct. And it's working. For the first time, deans are sitting down to compare their school to others using these variables. Our goal is to stimulate schools to do this continuously on their own.

It is hard to demonstrate a relationship between a "Women in Medicine program" and women's academic success. When we evaluate the top 10 schools in the country by proportion of women faculty, only one has a women faculty organization. When you assess the bottom 10, in terms of the proportion of women faculty, three schools have very active women faculty

organizations. I've tried every way I can to identify some relationship. Even schools with the most women department chairs, women administrators and highest proportion of their graduates becoming faculty members don't seem to have any identifiable program that creates this environment.

In 2000, 13% of medical schools had a formal women faculty organization and an additional 31% had an informal one, with an average of nine years of longevity. About 70% of schools received funds for women in medicine from the Dean's office-- an even higher proportion than actually had some identifiable women in medicine program. Most of these programs started out in the 1970s as support groups and many have progressed to a high level of organization.

We have learned some lessons. The M.I.T. and Johns Hopkins Department of Medicine studies showed us the importance of data from well-designed studies and of aligning yourself with the administration to convince them that it is in their best interest to support your work. You need a leader, a strong women's faculty organization with multiple sources of energy, and someone who really understands systems change. At Hopkins they had the advantage of the involvement of Emma Stokes, who has strong organizational development skills and is familiar with the culture. A study will not succeed without leadership support from the top, such as they had when the M.I.T. President supported the need to change, or a strong women's faculty organization.

Let us turn to the subject of the executive search process. How do we overcome the 'reflecting pool' method of hiring? The Accreditation Council on Graduate Medical Education's Increasing Women's Leadership Committee had an executive search consultant whose advice focused on playing the game. She reported that many women she contacts to interview do not

return her calls and do not exploit the networking possibilities available to them. She feels that women under-utilize the opportunity for networking. I can understand why – some women have been burned and are tired of being candidates.

I ask deans and department chairs if they are interviewing women for important positions. Most of them say they are looking but the candidates are not there. We understand why they are not there; there are ten times more full professors who are men than women. This means they need to dig deeper and the women need to be mentored and nurtured. We need to help deans and department chairs understand they have to make an investment in the human resource; women professors are not just going to appear magically when they are ready to hire. We need leaders and search committees ready for women candidates and we need to get beyond tokenism. When women comprise less than 20% of a group, they are tokens, will lack clout, will face loyalty tests, and will receive undue attention that detracts from their effectiveness. Since there are only about 20 women full professors per medical school, those women get asked to do everything. It can over-burden those women to serve on every committee.

With regard to confronting the sexism that still exists on search committees, the search consultant mentioned that women candidates sometimes are questioned differently than men. Some still ask women candidates questions such as, “Are you really sure this is right for you in your life?” They would never ask a male candidate this question. And how do we educate the male leaders about this kind of ingrained behavior? Even though well-intentioned, they may not realize they are being unfair. It’s almost like a color-blindness. How do we help them see?

Susan Fiske, a Professor of Psychology at Princeton University, found that dominant personalities tend to ignore information discrepant to their stereotypes. The education of these

individuals, especially if they do not have a daughter who is currently experiencing the barriers of sexism, can be very difficult.

Some advice that this search consultant offered women who are interviewing is to brag enough about themselves; and not internalize failures. As much as we do not want to heed this advice, it is good advice. Another piece of advice is to practice telling your career story with measurable outcomes in bullets. Practice in front of an appreciative or critical audience or even video or tape your career story.

We have a better notion now of what is needed to improve the search process and we have made some progress along these lines. But one huge countervailing force that places women candidates at risk, during this time of financial constraints and the depletion of funding streams, is the need to reduce uncertainty. On the other hand, we are in such a state of flux, with the leadership of institutions differentiating, that this is also a time of opportunity.

I recently heard a dean say in reference to the financial constraints and faculty behavior that his medical school is trying to manage, but “when you’re starving your table manners tend to deteriorate.” Most women are resistant to the ‘Mickey Mouse’ games they see around them. It is difficult to put the best framework on this, to turn it into something constructive. It is a game, it is another culture. We don’t have to play the game the way it’s always been played, but we do have to understand how it is being played.

I’d like to spend a moment reflecting on combining family and careers; the so called “I’m off now to reproduce, but I’ll be back.” Women *are* coming back but there is not much progress in the availability of daycare at our medical centers; there’s still a large unmet need. Our physicians should be national leaders in improving childcare and parental leave policies, and yet we are caught in the same bind that most U.S. workers are caught. We are employed full

time and still do not have the flexibility to design the life we want. There is an irony about that. Now that we have a greater supply of health care professionals than in the past, there is still the ethos of working full time together with financial constraints that have interfered with us creatively evaluating how we can combine all the responsibilities in our lives. Ellen Moore's book *Restoring the Balance, Women Physicians and the Profession of Medicine*, helps us understand the challenges women physicians have overcome to accomplish some life balance over the decades. Also Nancy Kaltreider's, *Dilemmas of a Double Life*, is an excellent book that looks at this balancing act.²⁹ We do know, too, that men are becoming braver about verbalizing their desire to spend time with their families. We increasingly understand that this is a systems problem and is one area that really differentiates medicine from the corporate world. Medicine has not placed value on the retention of talent. The corporate world, in order to retain their best people, builds daycare centers, offers less than full time options to their people. Medicine traditionally has not thought in terms of retaining their best people.

If I were able to advise deans, I would say that they should invest in the human resources. What organization can afford not to? Anybody looking at medicine from outside would ask this right away. How can you afford to not try to retain your best people? I'm excited about the number of schools and academic societies that are putting energy into improving their mentoring programs now, with women's needs taken into account. Many times the women's faculty organizations are starting these programs that then become an institutional value. They are also building leadership development programs and are evaluating department chairs based on their success and devotion to nurturing their faculty, especially their women and minority faculty.

One of the lessons from the Hopkins study which collected data, designed a series of interventions and then conducted a post intervention evaluation four years later, was that not

only did the number of women at the associate professor level increase from four to 26, but their faculty (both men and women) were more committed to academic medicine and wanted to stay at Hopkins. So they found that when the water rises, all boats rise. This is good news.

Women do not need a Fairy Godmother. They would never have one anyway. Women do need to put more effort into nurturing their male colleagues, men of good conscience. Identify men who are on your side, who are closet feminists, and encourage them to raise important issues to overcome the color-blindness of their male colleagues. We do need more men of good conscience and we do need to persist and take the long view.

I would like to ask you to pick among three choices: Is the glass half empty? Is the glass half full? Or do you feel differently depending on the day of the week?

I'd like to close with a poem.

Let us now praise fabulous four mothers, never famous enough,
For all the mountains climbed in those long skirts,
All those channels cut from granite.
So hail and thank you pioneers, questions we have many.
How did you overcome your fears?
Who were your heroines?
A nurse, an aunt, your granny?
Now girls are flush with models, no quotas are their way,
And yet the path is never straight, We make our own delays.
Kids and patients thrive on time, Partners want our best,
Intimacies undulate, Let's redefine the quest.
But where's a myth to guide, inspire?

Pilgrim's Progress, [Syciphas](#), Athena?

She was mentor after all.

Odysseus? Perhaps rewrit, but who would play Penelope?

We stay away from Doris Day, and Eve, before or after fall.

We look to Blackwell and Rebecca Lee,

Cady Stanton, Susan B., Mary Putnam Jacoby,

And glorious in diversity, Steinem, Friedan, Angelo,

Jocelyn Elders, Vivian Pinn, Kurshstein, Healy, Conley.

These torch bearers got burned, some first degree.

But burns are not what we now see,

It's courage and sagacity, the same as needed now.

With stunning crones to guide the way,

You inadvertent pioneers will keep on cutting channels,

Till new routes beckon, for both men and women.

Advice you do not need, but bear with me,

Take credit for the seeds you plant and water.

They're what really matter

And write your stories, write your life,

How it's done without a wife,

How giving learning come around,

How opportunities abound.

CHAPTER 6

WOMEN IN SPACE

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The Space Age began on October 4, 1957 with the launch of *Sputnik*, a small, highly polished steel satellite that reflected sunlight and was conspicuous over almost every city in the world as it orbited the earth several times a day. Its appearance reminded everyone that the Soviet Union could launch anything, including, if they chose, nuclear weapons. The event panicked the American public. The United States responded by creating NASA—the National Air and Space Administration—and by launching *Explorer I* on January 31, 1958. The American satellite, unlike *Sputnik* carried a scientific payload that discovered magnetic radiation belts around the Earth, named after James Van Allen, the scientist in charge.

That was just the beginning. Within the next few years both nations selected, trained and launched cosmonauts and astronauts into orbit. Space became the stage for an expensive but ultimately peaceful competition in which the Cold War behemoths of the second half of the 20th century displayed both technological and social accomplishments to their own publics and to the rest of the world.

The Soviets maintained their lead in April 1961 when they launched Yuri Gagarin, the first man, into orbit from their secret launching pad in Kazakhstan. Two years and five flights later, in June 1963, they launched their 6th cosmonaut, and the first woman, Valentina

Tereshkova. Historically Russian women won suffrage in 1918 and Women in the United States in 1920. Russian women had fought heroically against the Germans during World War II and there was no antipathy to flying a woman cosmonaut. Women had a different military history in the United States. They could not fly in the Air Force during World War II, and did not have equal opportunities in the work force as well. After the war many had to relinquish their jobs to returning veterans. There was no apparent protest at the time. Not yet. However, just as the Space Program moved into gear, the startling publication and success of Betty Friedan's *The Feminine Mystique* in 1963, launched a women's movement that gathered momentum like a tidal wave.

The selection of astronauts and cosmonauts in both nations reflected the changing expectations and accomplishments of women from the 1960s onward. But it would be almost 20 years before the United States selected and then flew female astronauts. When NASA finally admitted its first new class of astronauts in 1978, among the 25 candidates there were six women, of whom two were physicians. Women doctors worked in orbit throughout the Shuttle era, some as Mission Specialists, and some as Payload specialists selected and trained for specific projects on specific flights. Space medicine has been an interesting career for women in medicine.

The Soviet world in 1961 differed from the West in many ways, and Soviet spacecrafts differed from NASA's. The first American space capsules flown by the Mercury Seven splashed into the Atlantic after releasing parachutes that softened the landing. Ships waiting nearby helped Astronauts climb out. The Soviet capsules drifted down from parachutes onto solid ground. As it happened, Parachute jumping was a popular sport in the Soviet world. After Gagarin's flight, thousands of Soviet women wrote letters volunteering to fly and when the Russian Space Agency

decided to fly a woman in 1963, they looked through those parachutists' letters. This seemed as good a way as any for selecting women cosmonauts; after all, it took courage to jump from an airplane. The Agency supplemented its candidates by asking institutes of technology to recommend women as well. After a small number was culled, the women were brought to Star City, the center of space flight operations not far from Moscow. Once there, they went through the identical tests as those used at about the same time to select America's astronauts in a private clinic in Albuquerque, New Mexico. The potential cosmonauts and astronauts did not need to be skilled pilots because the first vehicles, Soviet and American, were almost totally automatic and did not need piloting. As far as we know Gagarin did not complain. He did have the ability to follow instructions from ground control. At NASA, where Astronauts did have a say, engineers added controls to make the capsules pilot-dependent. American astronauts refused to be "spam in a can."

The selection of who would fly was decided, in both space programs, with an eye toward the public. When it came to selecting a woman, the Soviets winnowed their applicants to five attractive ethnic Russians in their twenties. They were all civilians. Once selected, they received a military commission. The process was completely secret. In contrast, all the American candidates were male military pilots although NASA, as an organization, was deliberately civilian. From the finalists, the Soviets chose Valentina Tereshkova, a woman Khrushchev called a "female Gagarin" –attractive and a committed communist, from a poor uneducated family whose father had died at the front in 1943.

Tereshkova was not told that she had been selected until she arrived, with her back-up, at the launch site in Kazakhstan. By then she knew only that it would be one of them. They had trained together and only the day of the flight did she learn she had been selected. She then

received a lot of instructions along with a helmet with electrodes wired to her skull to monitor her mental state. It left her unable to move her head. Belted in, she was blasted into orbit. From the start she did not feel well and refused to swallow a pill as instructed by ground control. She did not participate in the medical experiments she had trained to do and ignored most of ground control's instructions. She began to vomit and stopped eating. When she was ready to descend three days later, she was able to follow directions, right the capsule and release the parachute that brought her to the ground several hundred miles from where she had taken off in Kazakhstan. As she opened the door, villagers surrounded the capsule and helped her out. She distributed all of her uneaten food to them and offered them items from the spacecraft as gifts. She explained to the press that she was practicing an old Russian tradition of sharing black bread and salt. Back at Star City she provided the engineers very little information about the flight and waited several weeks before she explained how the window of the capsule had cracked. She had smashed it herself trying to remove a cassette from her camera. She had kept quiet out of fear that reporting it would endanger her future with the program. Her back-up, who never flew, defended Tereshkova's behavior. In post-Soviet Russia she could explain: "At that period it was better to remain silent."

Tereshkova never returned to space, but she became a national hero. Married soon afterwards to another cosmonaut, she bore a healthy child, proving that microgravity had not interfered with her fertility. She was the medical experiment. Elevated to the summit of celebrity, she enjoyed the life of a Prima Donna until the Soviet Union sank into oblivion.

In the 1960s, Americans and Soviets assumed that, physiologically, when it came to space travel, men and women were pretty much the same and there was little reason to study how a woman's body might respond differently to micro-gravity from a man's. After Tereshkova's

performance there was little chance that there would be another Russian woman in space while Korolev directed the program. He had responded to Tereshkova's performance by swearing, reportedly under his breath, that he would never tolerate another "broad," in orbit. He died in 1966.

Some scientists in the United States felt differently. They suggested that women might be preferable to men in space. Edward Teller, well known as the father of the H-bomb, testified in Congress "All astronauts should be women because they weigh less and have more sense," while Arthur Kantrowitz, a leading rocket engineer, suggested to the Maryland Space Research and Technology Institute that that 'the first man' in space could well be a woman, a small woman, and probably a physician because her small size would cost less.

This was idle chatter. By the early 60s space exploration had become a serious political battlefield and the role, or lack of a role, for women in space did not stir Washington's attention. The Soviets had already launched their "firsts," starting with "Laika," the first dog in space, Gagarin the first man, Tereshkova the first woman, and then the first spacewalk. In contrast, the United States sent Alan Shepherd on a suborbital flight after Gagarin, John Glen orbited the earth three times in 1962, a year after Gagarin. The US was playing catch-up in 1961 when President John F. Kennedy raised the ante, spurring NASA into overdrive, by announcing that America would put a man on the moon and bring him back safely by the end of the decade.

The promised man on the moon reflected the mentality of the era. Americans considered only male astronauts. Although NASA, created under Eisenhower in 1958, was civilian, it had military underpinnings. The first Astronauts had to be military test pilots, and no women had then been allowed to fly military jets. The fellows who were later characterized as having "the

right stuff,” were white men who had the stamina to survive endurance tests geared to selecting daredevil, risk-taking, guys. Women were excluded from consideration.

However, a few people associated with NASA were familiar with medical studies that showed women more suited than men psychologically to isolation and deprivation. Dr. Randy Lovelace, chairman of NASA’s special advisory committee on life sciences was one of them. He had a private clinic in Albuquerque, New Mexico and a contract with NASA to test astronaut candidates. He decided on his own to test women as well. In the summer of 1961 he found twenty-five female pilots who agreed to endure the same 87 tests that the male candidates had already gone through. The tests, seen retrospectively, were useless. Nonetheless they were rigorous, challenging and certainly demonstrated good health and determination; candidates spun in a centrifuge, plunged under water, and flew loop-de-loops in an airplane to see if, and how much, they vomited and how quickly they recaptured stability. From the twenty-five women Lovelace tested, he selected thirteen who were at least as tough as the Mercury Seven. They were known to each other as FLATs, First Lady Astronaut Trainees. Lovelace decided that the next step would be to test their flying skills at the Air Force base in Pensacola, Florida. He informed the women of the plan, and they arranged their lives to get there. But when Lovelace checked with NASA to see if they would consider recruiting them, the answer was, “No way!” Most of the women returned to their homes disappointed, except for two who took their case to Washington. In July 1962 they testified before Congress. They were both ace aviators who had broken the sound barrier and flown hundreds of jet plane hours. It did not matter. John Glenn, the newest American hero, told the Representatives that he didn’t think it was the time for women to enter space. That was that for another 20 years.

In the Soviet world the situation differed. Women had flown during World War II, including a squadron known as the “Night Witches” who had terrified the Germans, gliding silently over German cities with their engines off, then swooping low to drop bombs, and then turning their engines back on, escaping quickly. At exactly the same time in the war, American women were not allowed to fly in the military except to ferry supplies. Some lost their lives. They had every right to complain, and did. In 1977 they were retroactively regularized into the United States Air Force.

In the Soviet world, in contrast, no one complained. Everything was secret. While the first astronauts had contracts with *Life* magazine that followed their daily lives, no one knew the names or even the faces of the cosmonauts who trained but never flew. Nor was the name of the Chief Designer, Sergei Korolev, who had designed *Sputnik*, known until after his death. There were so many secrets. Tereshkova learned the day she flew that she, and not her back-up, had been selected. Her mother found out where her daughter was as she stood in a public square in a village near Moscow and saw Valentina’s face on a television screen climbing into the space capsule that was about to be launched into orbit.

After Tereshkova’s return, her colleagues, especially her back-up, were told there would be an all-female flight in 1966 when they would orbit the earth for 10 days and take a spacewalk. The women were ready but the commander died suddenly. The mission, if there had ever been one, was cancelled. An all-women flight was re-evaluated three years later, scheduled, and cancelled again. But this time the women were fired from the Cosmonaut corps, probably because there was longer any interest in an all-female crew. They lost their military commissions, which was an honor and prestigious, because they had only been commissioned in order to become a cosmonaut. They were, however, invited to remain with the program if they

wanted to train other cosmonauts. Most of them stayed, devoted to the space program, to Tereshkova, and to the privileged conditions they enjoyed at Star City.

In the United States, reaction to Tereshkova's flight was mixed. Most Americans told reporters that the flight was unwomanly, that it was typical of Russian brutishness to subject a poor woman to the rigors of space. Two prominent American women disagreed: Margaret Mead felt that it was an interesting experiment. She explained, "Russians treat men and women as interchangeable whereas we treat men and women differently." And Clair Booth Luce, the playwright married to Henry Luce who owned *Time* and *Life* magazines wrote: "Once again the Russians have shown that they knew how to get ahead of us by letting women assume an equal share in society. We must stop trying to make of women paper dolls. They don't like it. They don't need it." And she called America's failure to put women in space the "costliest Cold War blunder." Betty Friedan objected to the idea that there was "a special feminine mystique that women would bring into space" and found the American public's disparagement of Tereshkova's flight "a little obscene."

Compared to America's FLATs, all respected aviators, Tereshkova was an amateur. But she was the first woman in space. That was 1963. A year later the American women's movement had grown so rapidly that the House of Representatives passed Title Seven of the Civil Rights Act adding gender to race, as a group whose interests needed protection. In 1967 an Executive Order required affirmative action in federal agencies for contractors to hire equally on grounds of gender as well as race. As early as 1968 old Institutions including Harvard and Yale began admitting women. NASA fumbled at efforts to admit women astronauts in the early 70s, leaking misleading information about who might be the first American woman. But the missteps ended with the beginning of the Shuttle program. Shuttle crews could have as many as ten members,

and only two of these Shuttle astronauts had to be pilots. The rest could be scientists, engineers or physicians.

When NASA advertised for applicants for the class of 1978, the first new Astronauts in a decade, they identified themselves as “an equal opportunity employer.” Most of the new astronauts would be called Mission Specialists. American women were still ineligible to become pilots or commanders. That would come later, but the barrier preventing women from going into orbit had been removed. Of the thirty-five Astronauts selected for the class of 1978, six were women including two physicians –Rhea Seddon, a surgeon and Anna Fisher.

Their selection was important for women in the cosmonaut class of 1980. They had heard about the American women’s movement, and were grateful to it. One of them explained: “Don’t you see, without your women we would never have had our chance. The Americans made our careers possible.” The Soviets were following changes in Western life. And because everything NASA did was public, they knew about the women. They knew when NASA announced that Sally Ride would fly, and they hustled. They disqualified the women cosmonauts who had waited for a turn to fly as no longer eligible, because they had been inducted into the military as part of becoming cosmonauts. But in 1982 the Soviets decreed that all of their female cosmonauts had to be civilians, like Sally Ride. The Soviets then chose another ten women: five doctors, three engineers, one research scientist, and one who was both an engineer and a test pilot for an aircraft factory.

They chose neither doctors nor research scientist but the engineer-pilot Svetlana Savitskaya. At 21 she had won prizes as an acrobatic aviator, and was the daughter of a World War II hero who was Deputy Commander of all Soviet Air Defenses. Her back-up cosmonauts described the selection process. In addition to the familiar run of physical and now academic

tests, when it was down to about 100 women, there was a beauty contest. Every candidate had to pass through what they called the ‘racial sieve’, which meant “no Jews.”

The planned all female flight was abandoned again as Sally Ride was about to be launched. The Soviets wanted to preempt attention from her trip and rushed Savitskaya along with two male cosmonauts to dock with their new Salyut Seven space station. Anatoli Soloviyov and Valentin Lebedev, who had been on the space station for a while, welcomed her officially at an internationally televised ceremony. They greeted her with a blue apron; then asked her to prepare dinner for them - which she did.

To the public, the crew appeared to get along. But we now know from Savitskaya’s letters and from Lebedev’s diary, how they resented her. Lebedev wrote: “A woman on a space station is the same thing as a woman on a sailing ship – bad luck.” Soloviyov wrote to his wife “a lot of mistakes were being made and in general, the presence of a woman greatly limits the freedom of the station and complicates our daily life.” They grew angry when she took a few minutes to comb her hair. There were personal clashes on most space mission, American as well as Russian, but this was especially intense.

The patient Russian women cosmonauts were told there would still be another flight for them with that long-promised all-female crew. But once again NASA interfered. This time it was the announcement that in 1984 that Cathy Sullivan was going to be the first woman to perform a spacewalk. Desperate for international attention, the Soviets sent Savitskaya up for a second flight, giving them two more firsts: a Russian as the first woman to walk in space and also the first woman to return for a second trip.

Both countries sent women into space to satisfy an international public, but in the United States it was more to satisfy the demands of the American public that they needed to support the

space program. The Soviets in the 1960s boasted of equal opportunities for women, yet stopped at one female cosmonaut, ignoring the others waiting to fly. The cosmonaut corps was the glass ceiling in Star City, and only a few token women made it through. Those women who stayed had interesting careers. One led an expedition to the Arctic to train male cosmonauts under hardship circumstances. It cost millions of rubles to train a cosmonaut, as it takes millions of dollars to train an astronaut. Most Russian male cosmonauts did fly. Most of the women were grounded—an expensive way to fund a gender bias.

All the women in NASA's class of 1978 flew. In 1985 Rhea Seddon was on the Shuttle *Discovery* when a malfunction sent a just-launched satellite awry necessitating an unscheduled spacewalk to retrieve it. Inside the cargo hold Seddon repaired the torn sail on the instrument and relaunched it. Commenting on the procedure at Mission Control, a spokesman described Seddon's work as "the skill of a good housewife." Ride, assigned as an Astronaut assistant at Mission control, corrected him saying it "was the work of a surgeon." During that flight and a second several years later Seddon monitored medical experiments and on a mission dedicated to life science research, with her crew she performed neurovestibular, cardiovascular, cardiopulmonary, metabolic, and musculoskeletal medical experiments on themselves, and on 48 rats, expanding our knowledge of human and animal reactions to microgravity.

After the *Challenger* disaster, NASA took a three year hiatus in launching shuttles. Then in 1991 NASA flew Payload Specialist Millie Hughes-Fulford, who they had trained for five years and had been on leave from San Francisco's VA hospital, to study calcium and muscle loss in the crew and laboratory rats, all the while pondering how trips in microgravity could help her VA patients who could not walk. The next year NASA flew Dr. Roberta Bondar from the Canadian Space Agency who studied her crew as well as fruit flies and frogs' eggs in the space-

lab. An expert in Ultrasound she helped develop ways to monitor the brain in orbit. Women physicians continued to join shuttle crews including Chiaki Mukai, a cardiovascular surgeon from the Japanese Space Agency who in 1994 flew with Neurolab on the Shuttle *Columbia* and in 1998 on the Shuttle *Discovery*. The 1998 mission carried seventy-seven year old John Glenn, who at 41 had flown the first American mission; on this flight he was the subject of a study of the effect of space flight on the aging process.

Throughout the Shuttle years, NASA did little to compare the effects of microgravity on its male and female astronauts. In 1982 before any of the first group of women flew they discussed whether menstruation might handicap them. They agreed to ask NASA to provide, if asked, birth control pills to regulate menses, or a supply of tampons. In the last decades of the 20th century NASA did not take advantage of the Shuttle to study physiological or psychological gender responses to microgravity. Ironically, preliminary twenty-first century studies suggest that menses may in fact favor the role of young women astronauts as a result of estrogen levels that replenish iron in their blood and help women retain magnesium, an element that male astronauts lose significantly. These biochemical differences could factor into considerations of age and gender in selecting future crews for trips to Mars or to the surfaces of other planetary bodies.

CHAPTER 7

MALE PHYSICIANS REPLACE FEMALE PRACTITIONERS IN WESTERN EUROPE

1350-1600: WHY?

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I'd like to begin by asking an apparently straightforward question—why, until recently, have there been so few female doctors?—and respond by examining two moments central to the history of women in medicine: the years 1350 and 1600, in Europe, when much of the (male-dominated) landscape familiar to modern physicians was falling into shape.

But immediately we have a problem. In either year Europe was a patchwork of competing regions, jurisdictions, values and prejudices, and what was happening in one region was not necessarily happening in another. This is especially true of our first specimen year, 1350. That women were not allowed in medieval (or modern, until recently) universities is true; but not quite true, either, because they were allowed, at Salerno and elsewhere in Italy, and had been for centuries. And they studied medicine, because at Salerno in particular there had been a tradition, dating back to at least the 10th century, of *mulieres medici*, medical women, who worked alongside the men, the monks and clerics from Monte Cassino, who were influential in transmitting the works of Arab physicians and scholars to the West. (Getz 66) The most renowned was an 11th century scholar at Salerno, a woman called “Trota” or “Trotula,” who may not have written what 14th century scholars thought she wrote, but she wrote something, the original of which is now lost; but if in fact she is the author of *De Passionibus Mulierum* (The

Diseases of Women) it would have been the first medical text in Western Europe written about women by a woman. (Whaley 11). Her influence, lingers on, perhaps, in the “Dame Trot” of English nursery rhymes. It does not linger in her authorship; one scholar, a man, even argued in 1566 that a woman couldn’t have written it. Trotula must have been a man. (Benton 36)

But there are other problems, too, with our apparently simple question. Without formal education women were far less able to speak for themselves than men, even in 1600, and in 1350 the documentary evidence is scattered, incidental, even accidental, and can take the form of court dispositions, wills, town and guild registers. Medieval female health practitioners, for example, would not have been university-trained physicians in much of Europe; in some locales they may have been surgeons, and some illustrious women were even accorded the title *magistra*, the feminine form of *magister*, “master,” the title university-trained physicians might attain, but if so it was by acclamation, not because of any formal training they received. Far more common were the *vetulae*, midwives and nurses, the occupations women could conventionally occupy; but the term “*vetulae*” in particular is troublesome. It apparently signified old women engaged in the healing arts, though literally it means nothing more than “old women,” and in religious and medical writings it “came to stand equally for everything that was ignorant, illiterate, rustic, superstitious.” (Green 336) Those religious and medical writings, were, of course, written by men, and by men who, from the 14th century, were concerned to define, regulate and control the medical professions. If we ask, “what did those *vetulae* actually do?” there is simply no answer. They left us no record. We don’t know what kinds of practical health care, if any, the common people of Europe received. We do know that physicians and literate surgeons, nearly all of them men, tried systematically to denigrate those they saw as ill-educated competitors. One writer,

Henri de Mondeville, even lumps *vetulae* together with tricksters, prostitutes, midwives and Jews. (Green 336)

Another problem in asking about women in medicine involves the nature of medicine itself. The categories into which people organized their experience, their beliefs, their spiritual concerns, were vastly different in 1350, and only slightly less so in 1600. The “medical” practices of the *vetulae* we can only guess at. To a male, university-trained physician of 1350 “medicine” involved the developing science of astrology, though even the word “science,” as distinct from natural philosophy or humanism generally, did not mean then what it means now; in 1350 “medicine” had only just begun to differentiate itself from the generalized study of philosophy, so that the “physician” consulted the stars as well as the works of Galen, Aristotle, Pliny the Elder or Constantine the African (all were, after all, natural philosophers), perhaps to decide who was right but more often simply to notice what their opinions were and where they differed. To us, of course, it all sounds bizarre, and in terms of the treatment patients actually received it no doubt was. And yet these debates, originally of the 11th and 12th centuries, satirized later as that business with angels and the head of a pin, were in themselves an important step on the road to science. To debate is to question, to probe; Albertus Magnus himself noticed, in the context of a general discussion on the perceived inferiority of women, that women lived longer than men! (Cadden 175) His appeal is to experience, to perceived fact, in opposition to, in this case, Aristotle-- which is a far cry from the short medical handbooks of the 7th and 8th centuries, which were to be memorized, not interrogated.

Yet if Albertus Magnus looks forward, he also looks back. In the same work, *Questiones de animalibus*, he (or a later commentator; Green, *Making Women’s Medicine Masculine*, 211) writes that

Woman's complexion is more humid than man's. [The nature] of the humid receives an impression easily but retains it poorly. The humid is readily mobile, and thus women are unconstant and always something new. Hence when she is engaged in the act with one man, if it were possible, she would like at the same time to be under another.... In short, I should say, every woman is to be avoided as much as a poisonous snake and a horned devil. (Cited in Cadden, 185)

This male sexual hysteria in the face of woman plays, I think, a role in the subjugation of women in the medical professions, particularly, as we'll note in a moment, as midwives and *vetulae* come to be associated with witchcraft.

For the moment, however, I would stress the peculiar blend of ancient and modern, of repression and opportunity, and the contradictory voices in the evidence which has come down to us. It isn't easy to see the past clearly, especially when those pasts with which we are concerned are largely mute or translated, too often, by those whose discourse controls and therefore can *become* the past.

Certain large currents, however, we can see. Almost certainly there were many women in the health professions in 1350. If they were not university-trained scholastic physicians, women could still legally serve as physicians and surgeons, in some places more than in others; they could found and administer hospitals-- nothing like the modern hospital, these institutions were often adjuncts to local abbeys or convents run by women, where the ill or the indigent could receive food, clothing, a place to sleep. If this sounds more like simple hospitality than actual medical care, it is because there was often no difference in the 14th century; and in fact the words "hospital," "hospitality" and "hotel" are related. Other women cared for the sick because there was no choice: the men were gone. Kate Campbell Hurd-Mead claimed in 1938 that there

were seven times as many women than men in the 14th century (Hurd-Mead 247); more recent work puts the ratio at 75 men to every 100 women, (Kowaleski 55) but in any case, given the legacy of the Crusades, European dynastic conflicts and the 100 Years' War, there was evidently a surplus of women, and it meant that they ran the estates and conducted the businesses the men left behind. This would have included "medical" care, even if the women doing it saw no essential difference between that care and sheep-shearing, mowing or reaping-- it was all husbandry, it was all effective management, and some of it was what we would call medical. There were also those old medical women, midwives, nurses and occasional health care workers; because of the evidence problem, because many of the records we have were the work, direct or indirect, of male clerics, academicians and physicians who had a stake in the issue, we cannot be sure of their numbers or their influence. But they were there. We gather, from the prohibitions that began to be introduced in the 14th and 15th centuries, that a number of these male practitioners found female health workers a significant threat, so they must have been capable enough, and numerous enough, to make those prohibitions necessary.

But now we take a second snapshot, this time in Europe in 1600. There were very few female medical practitioners in Europe in 1600. There were some, typically educated or privileged women; but generally by 1600 the hegemony of men in the medical sciences was firmly established. In the aftermath of the Protestant Reformation the convents and the abbeys, and the hospitals associated with them, were gone or going. Midwives and nurses still existed, but their activities were increasingly regulated, chiefly by male physicians, and many may have been persecuted, if not assassinated, in the course of the growing witch hysteria.

What happened?

There is no single answer to that question. I'd like to suggest, though, that there are at least three important factors leading to the disappearance of women from the medical arts: the rise of male-dominated guilds and universities, views of women generally, and that same remarkable, and terrible, witchcraft hysteria.

In 1350 both men and women were medical practitioners, but women were excluded from the higher levels of the clergy, from universities north of the Alps, and from membership in medical guilds unless, as sometimes happened, their husbands or other male relations had already been accepted. As striking as this situation was, though, in reality the situation for women in the medical arts was worse than that. If they were not actually the subject of medieval professional and academic prohibitions, they were caught up in, and their numbers reduced by, the ongoing struggles between universities and guilds-- between town and gown.

In 1311, for example, one of the statutes of the University of Paris declares that “no surgeon or apothecary, man or woman, shall undertake work for which he or she has not been licensed, or approved.”(Hurd-Mead, 215) This is evidence, on the one hand, that there *were* female surgeons and apothecaries in Paris in 1311, and in sufficient strength to prompt the medical faculty to legislate what they could and could not do. On the other hand, already women are caught up in one of the opening salvos in what would become a long and acrimonious debate regarding just what a physician-- male, not female-- could be said to be. In part this was a matter of training. At different times in different places, the centers of text-based learning gradually shifted from monastic settings to the newer universities, and in the process medical education moved away from compilations of empirical medical findings or translations of earlier commentaries, towards an accommodation with the existing curriculum. In universities, medicine needed to find its place alongside the arts, theology and the law as part of the godly

learning initiated by a growing understanding of ancient physicians and the scriptural commentaries of the Church. By 1350 medicine was firmly established as a discipline at Oxford-- a *graduate* discipline, with a clear understanding that a solid undergraduate preparation in the arts was required for admission to the study of medicine-- not, as we might say now, because a student of Latin poetry might, with an adequate background in biochemistry, make an interesting physician, but because what a student of poetry did and what a physician did was essentially the same. At Oxford in 1350, arts masters could examine medical students if no medical regents were available. (Getz 67)

This advanced university preparation was not required of barbers, surgeons and apothecaries; it was not always required of physicians either, for that matter, since certain well-connected individuals could practice medicine without a degree. (Getz 17) But the tension between those with university educations and those without them grew. Paris had its own university, and very early its medical faculty was concerned to distinguish its rights and privileges from those of surgeons and apothecaries; other medieval cities like York or London did not have local universities, and there the absence of resident medical authority created a regulatory vacuum the guilds, and the municipal authorities themselves, rushed to fill. A Guild of Surgeons was formed in England in 1368 (or 1369; Hurd-Mead cites both dates. Hurd-Mead 249, then 265) The purpose was to distinguish themselves from barbers, on the one hand, who thereafter were permitted only to pull teeth, give enemas, bleed, and shave, and from university-educated physicians on the other, who could not be, and did not wish to become, surgeons. Gilbert Kymer, a university physician, tried to overcome this division in 1423, joining forces with the wealthy and powerful surgeons to form what became known as the Conjoint College of Physicians and Surgeons, modeled on the Inns of Court, to educate and regulate *all* medical

practice in England; but it fell apart a year later, probably the victim of the London barber-surgeons, who seem to have resented the uppity strangers from out of town. (Getz 70)

None of this maneuvering, however, was of any use to women. The original English guild (of 1368 or 1369) admitted the existence of several female surgeons, but within a century they were gone. In France the corporations of surgeons banned women from 1484. Though they could continue in the office of surgeon if their surgeon husbands died and they did not remarry, and in theory could continue to practice as surgeon widows until 1694, their numbers gradually, and after 1694 rapidly, declined. (Blumenfeld-Kosinski 99)

Women, that is, were by degrees banned from the significant clergy, the university, and from the medical guild, the only remunerative and broadly sanctioned (and sanctioning) medical professions available. What was left was the midwife, the nurse, the *vetula* or the outlaw.

In itself this is a significant and troubling aspect of European cultural history, and it raises a question still more troubling: what was it about women that kept them out? Here we are in the area of what women were thought to be, by themselves as well as by men, and that is difficult at this remove to grasp-- not simply because the evidence is fragmentary or largely the work of male clerics, but because those attitudes were contradictory and complex.

A number of scholars (Danielle Jacquart and Claude Thomasset, Caroline Walker Bynum, Monica H. Green and, most recently, Joan Cadden) have begun to look at what "male" and "female" signified to the medieval mind. In some respects women were elevated above men; from the 11th and 12th centuries there was a growing fascination with what has come to be known as "courtly love," in which women inspire spiritual as well as physical passion in men. (Russell 280) In the work of the troubadour poets in France and Italy, in Petrarch's sonnets to Laura and in his countless imitators, woman becomes a nearly unattainable spiritual ideal,

casting the male suitor into varying degrees of despair as he ponders what he must become in order to be worthy of her. The idea of the female, moreover, could shade into the idea of the male in important ways-- the pagan “virago” of antiquity, the powerful and virile Amazon, persisted in the medieval period, particularly as she was Christianized. Isidore of Seville had insisted (wrongly) that the words “virgin” and “virago” are related, in the sense of incorruptibility and the capacity to resist passion; Peter the Venerable, abbot of the monastery at Cluny, wrote in the 12th century to Heloise, leader of a small community of nuns, that she had “overcome all women and risen above almost all men,” and compares her to Penthesilea, queen of the Amazons, with the difference that Heloise and her women lead the army of the Lord. (Cadden 206) The idea of Divinity itself could be feminized, from the 12th century; language describing Jesus, Peter, Paul, bishops and abbots as “mother” occurs with increasing frequency, as does the comparison of the Christian soul to the bride of Christ. (Walker Bynum, esp. ch. 4.) Monks could assert their pious humility by declaring themselves weak as women, according themselves a virtue that, in other contexts, was despised. (Walker Bynum 144)

And yet.... there is an atmosphere in all this of damning with faint praise, to our ears; women are superhumanly virtuous, or praiseworthy to the extent that they are like men, or valuable precisely because of their weakness. What is this? The fact is, unfortunately, that there *were* other contexts, in which women are seen as weak, contingent on the male, vicious, approaching, apparently, the criminal-- based essentially on her gender alone.

Misogyny did not spring suddenly and unannounced into the medieval mind. Females, being “cooler” than males, are clearly the inferior gender in Aristotle (Cadden 23); Pliny the Elder, considering what he takes to be the ill effects of menstruation, claims that menstrual blood causes wine to sour, mirrors to grow dull, metal to rust and bees to die. (Cadden 42) But the

cultures of medieval Europe contributed as well to this vein of thinking about women, either in commenting on their sources or in elaborating new, and noticeably sexual, connotations to the debate. Hildegard of Bingen, a 12th century woman, claims, in a work otherwise notable for its elevation of females, that woman “is not [constituted] in two ways, as man is, of earth and flesh, but only taken from the flesh of man, and thus she is weak and fragile and is the vessel of man.” (Cited in Cadden, 78) In the same century William of Conches, in England, asserts that, although weak, women have stronger libidos than men and do not contract leprosy from intercourse with lepers-- he refrains, coyly, from going into more detail since his work would be read by other monks. (Cadden 89) A commentator on the work of William, again in the 12th century, repeats and expands William’s claim, suggesting that women are more libidinous than either men or animals and that, since sexual pleasure is necessary for conception, and since prostitutes do not get pregnant, women who have been raped, and who become pregnant as a result, must have enjoyed it. (Cadden 99)

Evidently, then, there was something dark, dangerous, and forbidden in the sexuality of women. For Albertus Magnus, straight eyebrows are a sign of femininity, implying adaptability but also “wickedness.” (Cadden 169) That something in female sexuality was threatening specifically to men is evident when, for example, one medical author describes intercourse with the woman on top as “usurpation.” (Cited in Cadden 170)

These concerns became pronounced enough that at least one woman, Christine de Pizan, felt compelled in 1405 to defend her gender:

They [male authorities] all concur in one conclusion: that the behavior of women is inclined to and full of every vice. Thinking deeply about these matters, I began to examine my character and conduct as a natural woman and, similarly I considered other

women whose company I frequently kept, princesses, great ladies, women of the middle and lower classes, who had graciously told me of their most private thoughts, hoping that I could judge impartially and in good conscience whether the testimony of so many notable men could be true. To the best of my knowledge, no matter how long I confronted or dissected the problem, I could not see or realize how their claims could be true when compared to the natural behavior and character of women. (Cited in Blumenfeld- Kosinski 92)

And this defense was becoming necessary. Against the backdrop of a growing and systematic exclusion of women from the seats of professional medical authority, and the dark and, to men, frightening undercurrents involving women's gender and sexuality, tens of thousands of women were, from the fourteenth century, arrested and often murdered for being female, for being medical, or both.

That the witchcraft hysteria in Europe from the 14th to the 18th centuries was largely a crime against women seems beyond dispute; of the more than 100,000 persons executed for witchcraft during that period, 85% were women. (Cited in Blumenfeld-Kosinski, 105) That there is a connection between accusations of witchcraft and the medical practices of women, particularly midwives, is more problematic; but the *Malleus maleficarum*, the "Hammer of Witches," produced in 1486 by two Dominican Inquisitors at the invitation of Pope Innocent VIII, speaks with special scorn about midwives, "who surpass all others in wickedness," and claims that "no one does more harm to the Catholic Faith than midwives." (Blumenfeld-Kosinski 109 and 115)

Why this special concern with midwives? To a large extent, before the advent of professional (male) gynecologists, midwives were the keepers of the reproductive health of

women. But they were concerned with more than childbirth. Their concerns, and to some extent their responsibilities, involved also the early stages of childhood, wetnursing, perhaps, but extended also to the sexual as well as the reproductive health of women-- areas, to men, of forbidden, taboo or, as we have seen, threatening knowledge, involving ways to encourage conception, ways to prevent it, ways to enhance sexual performance. They may also, at times, have been required to report on sexual matters to local ecclesiastical or municipal authorities (Blumenfeld-Kosinski 115)-- they were lightning rods, in other words, for concerns both medical and sexual, and in an equivocal position with respect to the women and children for whom it was their business to care. They were also often older women-- and often widowed or unmarried, like that class of women, the *vetulae*, most scorned by male scholars and intellectuals.

Why were people called witches? At nearly all points the specific concern was with heresy or, more broadly, with insurrection real or perceived, with rebellion and with social unrest. Sometimes a witch trial even had largely political ends, as in that of Joan of Arc or, much earlier, with the politically-motivated annihilation of the Knights Templar. (Russell 261, 194) At other times the concern may have been to put down a particular sect of Christians, the Cathars, the Fraticelli, and especially the Waldensians, whose name became almost a synonym for witchcraft (Russell 243)-- and the majority of Waldensians were women.

As the witchcraft hysteria developed, other notes, less overtly concerned with heresy, political agitation or rebellion and more with the supposed psychosexual behavior of witches, began to accumulate. The witches of Dauphine, a village in France, are accused in the fifteenth century of nocturnal sexual orgies-- witches, all female, having orgies with themselves, demons or the Devil himself (Russell 218); at the end of the same century *Malleus* defines witchcraft as renunciation of the faith, the sacrifice of unbaptized infants to Satan, the devotion of the body

and soul to evil, and sexual relations with incubi (Russell 232) This sexualized definition of witchcraft, now including killing (or, later, cannibalizing) infants and children, would remain constant in descriptions of witchcraft; one Maria “la Medica,” the Doctor, was forced to confess to ritual sex with Satan, with other witches and with assorted demons, in return for which Satan taught her best how to kill children. (Russell 260). The links between forbidden female sex, violence to children, and charms and plots to harm men and women sexually would continue and proliferate into the 16th century and beyond-- and these were precisely the areas in which midwives had the most social and, especially earlier, medical influence.

It is also the period in which women were excluded or being excluded from universities, the clergy, and the professional practice of medicine; the period when the male intellectuals who invented the Renaissance and later the Enlightenment also invented, developed and articulated the theory of witchcraft. (Russell 233).

Was there something dangerous to women, then, in the Renaissance, the Enlightenment, something dark, mysterious and unreasonable inhabiting the growing and largely male temple of Reason?

There may well have been, which is a topic that cries out for further exploration. We can say, though, on the basis of the evidence we have at the moment, that late medieval ideas about women, the male domination of universities and professional associations and the witchcraft craze all contributed to the exclusion, between 1350 and 1600, of women from the medical professions.

And we can say that the consequences of that elimination are still with us today.

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CHAPTER 8

Elizabeth Blackwell: The First Modern Woman Physician

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We cannot discuss Wise Women in Medicine without writing about Dr. Elizabeth Blackwell, to whom all women in medicine owe a great debt and my personal heroine. It was challenging for me to train and practice medicine as a woman in the mid-1960s, but this was nothing compared to what Dr. Blackwell had to endure. She demonstrated the upmost strength and courage and laid the groundwork for those of us who came after her. Her life serves as a marker for us today –showing where we started compared to where are we now.

Elizabeth Blackwell was born February 3, 1821 in Bristol, England. Bristol was a wealthy port city which obtained its prosperity from the slave and sugar trade. Ships would leave Bristol with goods for Africa, pick up slaves in Africa, and take them to the West Indies where they would be sold to plantation owners. The slaves were used to harvest sugar cane which was brought back to Bristol for refining.

Blackwell was born in the family's sugar refinery which also contained housing quarters. The refinery building, which still stands today, is now a brewery. Her father, Samuel Blackwell, in addition to running the sugar refinery, held many other interests and commitments. Her mother, Hannah, supported his efforts. Samuel Blackwell stood out in the Bristol community as a dissenter against the Church of England and involved in the abolition movement which put him

at conflict with the other sugar refiners. He also believed in educating women which was unusual for the time. His children were forbidden from attending school because he was a dissenter, so Mr. Blackwell hired tutors. He was also committed to temperance and the whole family participated in wide ranging intellectual activities. This was an exciting, unusual and intellectually curious family which laid the groundwork for Blackwell's future decisions.

At the age of three, Elizabeth and her family moved to a house on Wilson Street in Bristol. Across the street from the house was a garden where she played. This established her love of the outdoors which later served as a way to help her overcome stressful times.

Driven by the effect of the abolition movement on the sugar trade, Bristol became full of social and political unrest. After a fire destroyed Samuel Blackwell's refinery, he decided to move the family to America in 1832.

They moved to New York City where they had friends and stayed there for three years trying to establish a sugar refinery. He developed a new process to refine beet sugar as opposed to sugar to eliminate the need for slavery. His business endeavors proved unsuccessful and the family moved a step down economically to Jersey City, New Jersey. The depression in 1837 led to further economic problems for the family and they moved to Cincinnati where a friend thought they would have better opportunities.

Cincinnati was a vibrant, dynamic and intellectual city with a large German immigrant community. It was also the first stop on the northern part of the underground railroad and partook in quite a bit of abolition activity. The entire Blackwell family became involved in this movement.

In August, 1838, in the midst of these challenging economic times, Samuel Blackwell died. This was a major financial tragedy because women could not earn an adequate living.

Elizabeth Blackwell's diaries reveal that the family was literally starving at times. The only profession that a respectable woman at that time could do was to become a teacher, and so the three elder Blackwell sisters started a girls' boarding school in their home. It was quite a competitive business but they were slowly successful. When the oldest son turned 14, he began working in a hardware store and the family's economic fortunes improved markedly.

Elizabeth was then free to move to Henderson, Kentucky in 1844 to teach school. She stayed for a year and during that time she faced the evils of slavery. When she returned, the Blackwells had established themselves in Cincinnati's vigorous intellectual life. Harriet Becher Stowe, who was living in Cincinnati at the time became a close friend of Elizabeth Blackwell. Toulane Theologic Seminary attacked many of the leading religious thinkers of the time and the Blackwell family was part of this very large intellectual community. Among the intellectual friends was a woman named Mary, or Marie Donaldson. This woman had a gynecologic cancer and was slowly dying. She had suffered many indignities being cared for by male physicians and she asked Elizabeth Blackwell, "Why don't you study medicine?" Mary Donaldson deserves a lot of credit for raising the question.

Elizabeth Blackwell debated with herself before reaching her decision. The main problem was that she hated everything connected with the body, which makes it very challenging to be a doctor. A factor that influenced her decision was that she was uncomfortable with male/female relationships and did not want to participate in this. She felt that becoming independent would enable her to avoid marriage. The main factor, however, that impacted her decision was the moral aspect; that women have a moral right enter medicine. This inspired her to make her momentous decision which was so important for Elizabeth and women physicians today.

In order to save money to pay for medical school, she taught for two years in North and South Carolina. During this time, she also studied medicine with two physicians, brothers John and Samuel Dickson. At that time, studying under a private physician was an acceptable way to begin your medical education.

In May, 1847, Blackwell moved to Philadelphia. Philadelphia was the main site of medical education in the United States and housed the most prestigious medical schools. She was turned down by every medical school in Philadelphia and the East Coast, including Harvard. Finally she was admitted to Geneva Medical College in upstate New York. This admission began as a joke. The faculty decided to give the decision to the students after Blackwell's letter arrived. The students voted on it and thought they'd play a joke on the faculty by accepting her and putting them on the hot seat. But they did accept her. In November 1847 she went to Geneva Medical College and faced rejection by the town's people. It was difficult for her to find a place to live, and when she walked on the street the women would pull their gowns away so they wouldn't touch her. This was to be the story of her life for a significant period of time. Yet she persevered in a quiet, determined way and the other students slowly began to accept her. On January 23, 1849 she was awarded her diploma from Geneva Medical School. Blackwell wanted to be the best physician and felt that American medical education did not train her adequately, so she returned to England. She could not find a training position that would accept a woman so she went on to Paris and tried to enter a number of hospitals. The only place that would admit her was La Maternite, the maternity hospital in Paris. There she lived with country French girls who were studying to be midwives. It was a very useful experience, however, because she had access to a large volume of deliveries and she built important professional connections with other physicians.

Unfortunately, Elizabeth Blackwell suffered a tragedy at La Maternite. Pus from a baby infected with gonorrhoeal ophthalmia splashed in her eye. She developed a severe infection and no antibiotics were available to treat her. She suffered greatly for 11 months and then finally had her eye removed. This was devastating for Dr. Blackwell and ended her dream to become a surgeon. One wonders, what would have happened to women in surgery if Elizabeth Blackwell had been able to operate. Would the situation for women in surgery be different today?

After this ordeal, she returned to London and finally won support from Sir James Paget, a leading British practitioner who was in charge of the historic St. Bartholomew's Hospital. She was able to follow physicians on rounds and gained crucial clinical knowledge.

She returned to New York City in August 1851, to establish her medical practice. There she again faced every possible discouragement. No one would rent to a female physician and she was ignored by the male physicians of the city. She couldn't practice in hospitals, although many people received medical care in their homes and only indigent patients were cared for in hospitals. In addition, she received anonymous insulting letters which upset and discouraged her. To help her overcome her personal crisis from all these rejections and to help her have closer relationships, Dr. Blackwell adopted an Irish orphan, Kitty Barry, in 1854. Kitty came to live with her and became her supporter and companion for the rest of her life.

Since she was prevented from caring for many patients, she developed a lecture series which was published as the book, *The Laws of Life*. The lectures contained information about physical hygiene for girls and the importance of exercise for women. Many Quakers were attracted to Elizabeth Blackwell's lecture series and her concept of hygienic living as a way to prevent disease. They became her patients and she slowly began to establish and grow her private practice.

In 1853 she opened a once a week dispensary for people living in poverty in one of the tenement areas of New York City. In 1857 she opened the New York Infirmary for Women and Children and hired two other women physicians, her sister, Dr. Emily Blackwell and Dr. Marie Gestovska, from Poland.

In August 1858, she returned to England to promote the entry of women into medicine in England and became the first woman doctor to be entered on the British Medical Register in 1859. She stayed for a year, returning in August 1859 with wonderful plans to start a medical college for women that would contain a nursing school and a Chair of Hygiene so she could advocate for her kind of medical care.

The Civil War, however, interfered with her immediate plans. Elizabeth and Emily Blackwell instead became involved in selecting and training nurses for the war. Meanwhile, they were able to move the New York Infirmary to a larger building and added the Women's Medical College of the New York Infirmary. Although a few other women's medical schools existed, this one had the strictest entrance requirements and most rigorous academics. Applicants had to pass an entrance exam and have a college diploma. The school was three years compared to the typical American medical education that was only two years. Students were also required to have clinical experience which differed from many American medical schools where students never saw patients. The final exams were given by an outside panel of some of New York's finest doctors. This would enable the medical community to recognize the high quality of education her students received. There were some male lecturers at the school as there were not enough women physicians to fill the positions. It was difficult to get cadavers because people felt negatively about women performing dissections. In 1869 Blackwell returned to live in England and did not return to the United States except for one trip at the very end of her life. In

her autobiography she stated that the reason for this trip was to renew her physical strength which had been severely tried. She had worked extremely hard and had reached the point where she couldn't go on any further. Dr. Blackwell established a medical practice, supported women in medicine in the U.K. and took a position at one of the women's medical colleges. She continued to advocate her preventative medicine philosophy through extensive writings and lectures. She retired due to health problems which may have been biliary colic which could have been easily cured today. In 1876 Blackwell retired to Rock House on the south coast of England. Her sisters settled nearby for several years. She and Kitty traveled extensively from Rock House to their favorite spot, Holly Loch in Western Scotland. In a hotel in Kilman, Blackwell injured herself after a severe fall down the stairs, perhaps as a result of a mild stroke. She returned to Rock House and did not travel much for the last three years of her life. She died at Rock House in Hastings and was buried in Kilman.

What is Blackwell's relevance to us today? Blackwell suffered from professional and personal isolation. We have made a lot of progress in terms of the percentage of women physicians, but it will still be several generations before women reach equality.

One issue may be that even though women physicians are more numerous, we are no longer a unified group. As there are more women doctors from diverse backgrounds, there is less commitment to the advancement of women in medicine. There are clearly not enough women mentors or coaches. Women medical students may become complacent and not recognize the need for women who have excelled professionally to teach our young women how to succeed.

We do see increasing numbers of professional clinical networks. In Los Angeles there are about 2,000 plus women doctors with a clear referral pattern. If you want a woman

neurosurgeon you can get one. If you want a woman thoracic surgeon you can get one. You can have an all-female health care team. Yet, this increasingly large group of women is still struggling with the challenges of personal life issues. Can you have it all? Are you willing to pay the price to have a family, an academic career, and a personal life? I'm beginning more and more to wonder if we can really have it all.

The next challenge for Blackwell was her lack of opportunity for medical training and had to keep knocking on doors. That has improved dramatically today. Approximately 50% of first year medical students are women. We are doing well in terms of entry level opportunities. How about the opportunity to succeed at further levels in academic medicine? It is difficult to compare Blackwell's situation with ours today because academic medicine is a new phenomenon, but Blackwell, excluded from the male medical institutions of the time, created her own. She made her own hospital, she made her own school, and clearly it's not feasible to do that today in modern medicine. More women have entered academic medicine but do not advance at the same rate as men and this is where we need to increase our numbers to make changes.

Finally, there is the societal commitment. Blackwell had a very strong focus on preventive medicine and social hygiene. Her medical school had the first Chair of Hygiene, and a social worker who was a physician that went to the patients' homes in the tenements to see how they were living and identify what needed to be changed to improve their health. She wrote extensively advocating her philosophy. She was, however, opposed to vaccinations after a patient died from a vaccine and she also became opposed to animal experimentation. Women today are still focused on preventative medicine and healthy living. But modern medicine isn't

about preventive medicine, but rather about expensive procedures such as open-heart surgery after people become sick.

We accept salaried positions in health care organizations or in academic institutions. We provide patient care that generates desperately needed dollars to maintain financially threatened institutions, but these often are not tenured positions. These positions do not have the influence to make needed policy changes that effect women's health. Women in medicine have become the worker-bees doing patient care and not the leaders creating policies or running academic institutions.

Blackwell was prohibited from making policies and becoming an institutional leader, but now that access has opened, we should take advantage of our opportunities today.

CHAPTER 9:

PIONEERING WOMEN IN PEDIATRICS

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An Overview of the History of Pediatrics in the U.S.

The field of pediatrics in the U.S. was not a distinct specialty until the last half of the 19th century. Dr. Abraham Jacobi (1830-1919) is considered to be the 'father of American Pediatrics.' A German educated physician, he immigrated to America in 1853 and established a training program at New York Medical College where he was the first to implement pediatric bedside rounds. These bedside rounds provided an opportunity to discuss the patient's medical condition in front of colleagues, residents and students and demonstrate important physical findings. In 1860, he created a pediatric clinic at Elizabeth Blackwell's New York Infirmary for Women and Children and was the first person to receive a professorship in pediatrics. He was initially appointed as a Professor of Infantile Pathology and Therapeutics in 1860 at New York Medical College and then again in 1870 as Clinical Professor of Diseases of Infancy and Childhood at Columbia University School of Medicine. In 1880 he established the Pediatric Session of the American Medical Association and was the first president of the American Pediatric Society in 1888, which did not admit women until 40 years later.

In 1885, after visiting Great Ormond Street Hospital for Sick Children in London, Dr. Francis West Lewis together with two other pediatricians established the first Children's Hospital in the U.S. The Children's Hospital of Philadelphia consisted of 12 beds and a dispensary. The first issue of *Archives of Pediatrics* was published in 1884. The American Academy of Pediatrics was founded in 1930 by 35 pediatricians (currently it has 60,000 members) and the American Board of Pediatrics was founded in 1933.

The entry of women into medicine was a slow process. In 1850, the Female Medical College of Pennsylvania was founded by Quakers and in 1851, eight women including Dr. Ann Preston, received medical degrees from this medical school. In 1861, Dr. Preston founded the Woman's Hospital of Philadelphia and became the first dean of an American medical school in 1866. Even by the early 1900s only a few medical schools allowed women to take up 10% of their student population. In 1952, Dr. Katherine Dodd became the first woman (other than Dr. Preston) to chair a pediatric department at the University of Arkansas.

This chapter will focus on a few key pioneering women in pediatrics and touch on other women pediatricians who have made significant contributions in their field.

Helen Taussig:

Ask almost any pediatrician who they consider one of the most famous pioneering women in pediatrics and the answer will most likely be Dr. Helen Taussig. What made her so renown? The simple answer is that she was a founder of pediatric cardiology, revolutionized the treatment of infants with cyanotic heart disease, and prevented an epidemic of birth defects.

Helen Brooke Taussig was born May 24, 1898 in Cambridge, Massachusetts. She was the youngest of four children. Her father, Frank William Taussig, held the Henry Lee chair in economics at Harvard University and her mother, Edith Guild Taussig, was a natural scientist and Radcliffe graduate. Helen's mother died from tuberculosis when Helen was eleven. It is postulated that her grandfather, William Taussig, an Austrian immigrant and well respected physician, businessman and political leader may have inspired her to pursue a medical career. He was interested in helping visually impaired children and The William Taussig School for Handicapped Children in Saint Louis, Missouri was named after him.

Even though Helen suffered from severe dyslexia, her father helped her overcome her challenges and graduate from Cambridge School for girls in 1917, attend Radcliffe, where she was a champion tennis player, and then UC Berkeley where she graduated with a bachelor's degree Phi Beta Kappa in 1921.

Helen Taussig moved back to Boston where her father encouraged her to go into Public Health. Women were discouraged from attending Public Health School and the Dean told her that she could take four years of courses in public health and medicine but would not receive a degree. As Jeanne Hackley Stevenson explains in *Notable Maryland Women*, "[Taussig] later recalled asking the Dean, 'Who wants to study for four years and get no degree at all for that work?' She got the point when the Dean replied, smiling, 'Nobody, I hope.'" She took a histology course without credit at Harvard Medical School where she was required to sit in the corner of the lecture hall and look at slides of human tissue in a separate room. It was not until 1945 that Harvard accepted its first woman into its medical school. Helen Taussig applied to Boston

University Medical School where she studied from 1921 to 1924 before one of her professors encouraged her to enroll at the Johns Hopkins Medical School in Baltimore, Maryland. She transferred to Johns Hopkins and received her medical degree in 1927. Johns Hopkins Medical School was coeducational since its inception in 1898. The medical school was desperate for donors after their financial funding sources fell through and they had already hired renowned faculty. Four wealthy, well educated, unmarried women donors (all daughters of the original University Trustees) agreed to help finance the medical school under the condition that qualified women be accepted. Johns Hopkins Medical School, desperate for funds and afraid of losing their newly recruited professors, agreed to these conditions.

After finishing medical school, Dr. Taussig wanted to apply for an internal medicine internship but Johns Hopkins would only accept one woman per year and the position had already been filled. She therefore changed her career path and accepted an internship in pediatrics at Johns Hopkins in 1928. In 1930 she was appointed Assistant Professor of Pediatrics and in 1931 became Chair of the Pediatric Cardiac Clinic at the Harriet Lane Home.

By the time she entered the position at the Harriet Lane Home, Dr. Taussig had lost a significant amount of her hearing, which was probably a result of having pertussis as a child. By age thirty-five she was using a hearing aid and an amplified stethoscope. Dr. Taussig learned to lip read and examine children's hearts by feeling the rhythm and vibrations of their chest. She would confirm her findings by asking her Fellows to listen to the patients' hearts. She had ear surgery in the 1960's which improved her hearing.

Dr. Taussig entered Johns Hopkins eager to research rheumatic fever but was encouraged to study cyanotic or “blue babies.” The prognosis for these infants born with cyanotic congenital heart defects was dismal and Dr. Taussig felt that physicians who would otherwise not refer to a woman pediatrician “gladly referred their ‘blue babies’ to me as nothing could be done for them.”²⁹ Yet Dr. Taussig embraced the opportunity to help these infants and began to rigorously study their pathology. Dr. Taussig visited and learned from Dr. Maude Abbott in Montreal who had collected a thousand specimens of hearts with congenital defects and had published the “Atlas of Congenital Cardiac Disease” in 1936. Dr. Taussig used a 3-lead electrocardiogram (EKG) and fluoroscopy, a radiographic technique that takes serial images, to study the heart from every angle and determine the degree of blood flow to the lungs. She used barium swallow, where an infant swallows radio-opaque barium to make the esophagus appear white on x-ray to outline the aortic arch and left atrium. The observer could tell if the aortic arch or left atrium were enlarged because they would compress the esophagus. Dr. Taussig would then perform autopsies to correlate her radiographic and EKG findings with infants’ cardiac pathology.

In 1938 Dr. Robert Gross in Boston successfully tied off a patent ductus arteriosus. A patent ductus arteriosus is when a small blood vessel that connects the aorta and pulmonary artery remains open instead of closing after birth and causes too much blood flow to the lungs. Dr. Taussig realized that if a ductus could be tied off to decrease blood flow to the lungs, a ductus could be created to increase blood flow to the lungs and improve oxygenation. She commented “. . . what about turning that idea upside down—keeping the vessel open as a way to increase the blood flow and help the cyanotic patient?”²⁹

Dr. Taussig had to wait until 1941 when Dr. Alfred Blalock became Chair of Surgery at Johns Hopkins. She convinced Blalock and his surgical technician, Viven Thomas to perform a shunt to help these blue babies. The shunt would use one of the arteries to the arm (subclavian) and connect it to the pulmonary artery to increase blood flow to the lungs. Viven Thomas, one of the first African American surgical technicians who was well-respected for his precise techniques, performed surgeries on about 200 dogs prior to the first surgery on a child. On November 29, 1944 Dr. Blalock, under the guidance of Viven Thomas performed the now named Blalock-Taussig (aka Blalock-Thomas-Taussig) shunt on a small, feeble infant named Eileen Saxon with Tetralogy of Fallot. Tetralogy of Fallot is a congenital heart disease with four defects causing poor blood oxygenation. The child survived but then died months later in a second operation. The success of the surgery was apparent by the time the third surgery was conducted on a child described as "as an utterly miserable, small six-year old boy who was no longer able to walk." His purple lips and blue skin improved so much that by the end of the surgery that the anesthesiologist excitedly proclaimed "The boy's a lovely color now!"²⁹ Drs. Blalock and Taussig reported their findings in the *Journal of the American Medical Association* which gave them instant recognition. Physicians came to observe the trio and patients and their families came from all over the world to receive medical and surgical care. Dr. Taussig wrote the book *Congenital Malformations of the Heart and Great Vessels* in 1947, which became a standard for physicians nationally.

Some feel that her academic promotion was slowed because she was a woman. Dr. Taussig was an instructor at Johns Hopkins for sixteen years, then an associate professor for thirteen years and finally was bestowed professorship in 1959, four years before her retirement. Dr. Taussig

was, however, the second woman to receive a full professorship at Johns Hopkins School of Medicine in 1959. The first was awarded to Dr. Florence R. Sabin, an anatomy professor, in 1917.

In 1962, a former pediatric cardiology fellow visited her and informed her about the birth of infants in Germany with limb deformities. Dr. Taussig spent six weeks in Germany and confirmed that thalidomide use early in pregnancy was associated with significant birth deformities. She lobbied the Food and Drug Administration (FDA), testified in congress, and prevented the approval of thalidomide in the U.S. Dr. Taussig's advocacy was instrumental in banning thalidomide and averting widespread morbidity associated with this drug in the U.S.

Although Dr. Taussig retired from Johns Hopkins in 1963, she continued to teach and advocate for various causes such as the use of animal research, legalizing abortion and national health insurance. In 1977, Dr. Taussig moved to a retirement community in Kennett Square, Pennsylvania. She travelled to Delaware where she studied heart defects in birds. She enjoyed outdoor activities, gardening, canoeing and swimming. On May 21, 1986 Dr. Taussig died in a car accident while driving some friends to a local election. She donated her body to Johns Hopkins and was buried in Mount Auburn Cemetery outside of Cambridge, Massachusetts.

Dr. Taussig received many honors and awards for her outstanding contributions to medicine and society. In 1948 she shared the prestigious Passano Foundation Award with Dr. Blalock. This was the first year the award was shared and the first time it was awarded to a woman. In 1954 she received the Albert Lasker for Clinical Medical Research and in 1964 Dr. Taussig received

the Medal of Freedom from President Lyndon Johnson. She received the French Chevalier Legion d'Honneur, the highest French civilian award. In 1965 she became the first female president of the American Heart Association. Johns Hopkins University named the "Helen B. Taussig Children's Pediatric Cardiac Center" in her honor, and in 2005 the Johns Hopkins School of Medicine named one of its four colleges after her.

When asked to reflect on her accomplishments Dr. Taussig modestly replied “It's the clinical errors that keep you humble. . . You have your sadness as well as your successes. One reads all about the successful operation, but not about the unsuccessful ones, the sorrow and background of hard work. On the whole, though, I think I've done more good than harm.”²⁹ Indeed, this pediatrician who overcame barriers to excel academically in a male dominated field, developed alternative techniques to evaluate the heart when she became hearing impaired and lobbied to deny FDA approval of the teratogenic drug thalidomide did significantly “more good than harm.” When questioned by skeptics about the value of women becoming physicians, Dr. Taussig responded “it [is] cheaper to educate a few women than to build a battleship—and a lot more profitable to the country.”²⁹

Virginia Apgar

Although Virginia Apgar was not a pediatrician, she made many important advances to pre and post-partum infant care. Her most famous contribution to the field of pediatrics was the Apgar score developed 1952. The Apgar score was “first standardized method of evaluating the newborn’s transition to life outside the womb.”²⁹

Virginia Apgar was born on June 7, 1909 in Westfield, New Jersey to Helen and Charles Apgar. Even though her father was a businessman his true passion was science. Virginia Apgar's childhood home contained a basement laboratory where her father conducted experiments involving electricity and radio frequencies. Many attribute her father's scientific aspirations and her brothers' chronic health issues to Virginia Apgar's desire and determination to become a doctor. After graduating from Westfield High School, Virginia Apgar attended Mount Holyoke College where she graduated with a degree in zoology in 1929. She entered Columbia University's College of Physicians and Surgeons just before the start of the Great Depression. Despite major financial problems and being only one of nine women in a ninety person class, Dr. Apgar was able to graduate fourth in her class. After graduation, she started her two year surgical internship at Columbia. Despite her success as a surgical resident, Dr. Alan Whipple, the Chair of Surgery, encouraged her to become an anesthesiologist because he realized that one of the best ways to make improvements in surgery was to improve the field of anesthesiology.

After completing her surgical residency in 1937, Dr. Apgar spent the year training at Presbyterian's nurse-anesthetists program before attending residency at the University of Wisconsin in Madison for six months and then another six months at New York's Bellevue Hospital. In 1938 Dr. Apgar returned to the Surgery Department at Presbyterian Hospital and became the first woman to be a Director of Anesthesiology. Dr. Apgar had some problems recruiting residents to study anesthesiology because it was a new medical field that paid substantially less than other medical specialties. However, by 1940 the field of anesthesiology, with a lot of help from Dr. Apgar, had gained respect in the medical community.

In 1949 Columbia University created a Department of Anesthesiology, but because of her gender Apgar was not selected to become the new department head. She was, however, given full professorship at the university. During this time, Dr. Apgar's interests shifted towards obstetric anesthesia and in particular the effect of "maternal anesthesia on newborns, and in lowering the neonatal mortality rates."²⁹ Dr. Apgar created a scoring system to "evaluate the health status of newborns."²⁹ The Apgar score rates newborns on a scale from 0 to 2 in five categories one and five minutes after birth. The categories include the newborn's heart rate, respiratory effort, muscle tone, reflex irritability (response to nose suction), and color. In addition to the Apgar score, Dr. Apgar is credited with founding the subspecialty field of perinatology, which focuses on the prenatal care of complicated pregnancies.

In 1959, at the age of 50, Dr. Apgar went back to school and received a master's degree in public health at John Hopkins University. This sparked Dr. Apgar's interest in the medical care of children after birth, and caused her to rededicate her life to the prevention of birth defects through increasing public education and funding for research. Dr. Apgar was heavily involved in The National Foundation for Infantile Paralysis. She joined the foundation in 1959 and served as the Director of Congenital Malformations until 1967, then became the Vice President of Basic Research until 1972 and the Senior Vice President in Charge of Medical Affairs from 1973 until 1974. On August 7, 1974, Virginia Apgar died in New York City at the age of sixty five.

Virginia Apgar will always be remembered for her life saving work with newborns. Her Apgar score created an objective way for physicians to recognize which infants needed resuscitation

immediately after birth. In 1994 Dr. Apgar was honored on a commemorative US postage stamp, and in 1995 she was inducted into the National Women's Hall of Fame.

Janet B. Hardy

Janet Baillie was born in British Columbia and grew up in Victoria, B.C. Despite her father's objections who once told her "No daughter of mine is ever going to be a physician,"²⁹ Janet graduated from the University of British Columbia and then from McGill University Medical School in Montreal in 1941. She was one of five women in a class of 150. Dr. Hardy came to Johns Hopkins in 1942 where she headed the hospital's first neonatal ward. She was director of the Baltimore Health Department's Bureau of Child Hygiene for six years and then returned to Johns Hopkins in 1957.

Dr. Hardy helped design and implement the Collaborative Perinatal Project, a 12-center longitudinal study of 60,000 pregnant mothers and their children living in poverty. The study evaluated the physical and social development of these children. Dr. Hardy studied 4,000 Baltimore mothers and their children and published numerous papers. A few of her significant contributions include: identifying the dangers of acquiring rubella during pregnancy and its detrimental effects on the fetus, noting that childhood smoking was correlated with problems later in life and recognizing that older maternal age is associated with better outcomes for their children. In 1983, Dr. Hardy stated "We really ought to let people know that having children while young compromises their [children's] chances."²⁹

In the 1970s, Dr. Hardy established the Johns Hopkins Adolescent Pregnancy and Parenting Programs. Dr. Hardy's program included education, counseling and access to contraception for

Baltimore students. These measures resulted in a 30% drop in pregnancy rates when compared to a 58% increase in schools without the program.

Dr. Hardy was married for 69 years to Dr. Paul Hardy and had two children and three grandchildren. She died October 23, 2008 at the age of 92 from a stroke. George Dover, M.D., director of the Johns Hopkins Children's Center and Department of Pediatrics at the Johns Hopkins School of Medicine said that "[Dr. Hardy's] determination and tenacity yielded research findings that have benefited generations of healthier newborns, children and adults."²⁹

Ethel Collins Dunham

Ethel Collins Dunham was born on March 12, 1883 in Hartford Connecticut to Samuel G. Dunham, a wealthy utility executive, and Alice Collins. She was the oldest of seven children. After graduating from high school, she spent two years at boarding school and then several years traveling. She felt dissatisfied with this leisurely lifestyle and realized she wanted to pursue a medical career. Ethel Dunham enrolled at Bryn Mawr College and then graduated from Johns Hopkins University School of Medicine in 1917. It was there that she met her life time partner, Martha May Eliot.

In 1918 Dr. Dunham completed her pediatric internship at Johns Hopkins and then became the first woman house officer at New Haven Hospital in 1919. In 1920 she served as the director of the outpatient clinic and newborn nursery. This endeavor sparked Dr. Dunham's lifelong interest in premature infants. In 1933 she published a study of 1000 infant deaths, noting that prematurity was one of the most important risk factors in neonatal death. She presented her results to the

American Pediatric Society and was named as head of the committee on neonatal studies. In 1935 Dr. Durham moved with Dr. Eliot to Washington, DC to become the chief of child development at the Children's Bureau. Dr. Eliot became assistant chief. In 1943 she published *Standards and Recommendations for the Hospital Care of Newborn Infants, Full Term and Premature* and in 1955 *Premature infants: A Manual for Physicians*. Between 1949 and 1951 she went with Dr. Eliot to Geneva to study premature infants with the World Health Organization.

In 1957 Dr. Durham was awarded the highest honor of the American Pediatric Society, the John Howland Medal. Dunham was the first woman pediatrician to receive the award. Her partner, Martha May Eliot was the second, honored in 1967. Dr. Dunham died from bronchopneumonia at her home on December 13, 1969.

Hattie Elizabeth Alexander

Hattie Elizabeth Alexander is known for developing the first effective treatment for Haemophilus Influenza infections and studying antibiotic resistance.

Hattie Elizabeth Alexander was born April 5, 1901 in Baltimore, She was the second of eight children born to Elsie May (Townsend) Alexander and William Bain Alexander, a merchant. She graduated from Goucher College in 1923 and worked as a bacteriologist at the US Public Health Service before enrolling at Johns Hopkins University medical school. She received her medical degree in 1930, completed her internship at the Harriet Lane Home of John Hopkins from 1930 to 1931 and in 1932 became an instructor and researcher at Columbia University.

Haemophilus influenza (H. Flu type B) has been nearly eradicated in the US after the 1992 implementation of the HIB conjugate vaccine for infants. In the 1940's however, when Dr. Alexander began researching, H. Flu type B infections were nearly universally fatal. By combining rabbit antiserum, sulfa drugs and then later streptomycin, Dr. Alexander reduced the mortality rate associated with H. Flu type B infections from 100% to 20%.

Dr. Alexander was the first physician to report antibiotic resistant strains of Hib and correctly postulate the etiology of this resistance through her study of microbiological genetics. She extended her study of antibiotic resistance and genetics to other bacteria and viruses including poliomyelitis. Alexander received numerous honors and awards for her work, including the E. Mead Johnson Award in 1942 and the Oscar B. Hunter Memorial Award in 1961. In 1964, she became the first woman to be elected president of the American Pediatric Society.

Alexander lived with her partner, Dr. Elizabeth Ufford, in Port Washington, N.Y. where she enjoyed music, boating, travel, and growing exotic flowers. She died from liver cancer on June 24, 1968, at the age of 67.

Ruth Lawrence

Dr. Ruth Lawrence is a pioneer in raising national awareness about the importance of breastfeeding and educating physicians about breastfeeding medicine. Born in 1924, she completed her medical school training at the University of Rochester and her pediatric residency at Yale New Haven Hospital from 1949 to 1952. It was during her residency that she became

interested in helping breastfeeding mothers. She returned to Rochester where her medical colleagues asked for her expertise to assist with patients with breastfeeding challenges. Dr. Lawrence notes that "I inadvertently became a lactation resource, and so I established for myself a library of what there was in literature at the time. Then one thing led to another and in the middle of the 1970s, I thought, I bet I could write a book about this."²⁹ The first edition of her book *Breastfeeding: A Guide for the Medical Profession* was published in 1979. It is now on its fifth edition.

Dr. Lawrence established two landmark institutions in Rochester. The first is the Finger Lakes Regional Poison and Drug Information Center which she helped create in 1954 as the second poison control center in the U.S. She remains the center's medical director. The second institution is The Breastfeeding and Human Lactation Study Center at the University of Rochester which she established in 1985. Dr. Lawrence helped found the Academy of Breastfeeding Medicine in 1994 and write the American Academy of Pediatrics guideline recommending US infants breastfeed for at least one year. Dr. Lawrence advocates for women to become physicians. "Medicine is a great place for women. They're welcomed in most branches now and they can make great contributions-and still raise children!"²⁹ Dr. Lawrence has modeled this by becoming the nation's expert in breastfeeding medicine and nationally recognized for her work with poison control centers while raising her nine (yes nine!) children.

Renee Jenkins

Renee Jenkins is best known as the first African American woman president of the American Academy of Pediatrics. Renee Jenkins was born in suburban Philadelphia in 1947. The school

system was still segregated and every day she took the twenty minute bus ride past the Caucasian neighborhoods to her school. Dr. Jenkins believes that her interest in medicine stems from her aunt when who was an affluent physician with five children. Dr. Jenkins attended both undergraduate and medical school at Wayne State University, completed her residency at Jacobi Hospital/Albert Einstein College of Medicine in New York City and her fellowship in Adolescent Medicine at Montefiore Hospital in New York. In 1975 Dr. Jenkins came to Howard University and became their first director of Adolescent Services for the Department of Pediatrics and Child Health. In 1986 Dr. Jenkins completed a post-doctoral fellowship at the Population Dynamics Department at Johns Hopkins University. Dr. Jenkins became nationally known for her work with adolescent health issues, wrote the section on adolescent health in Nelson's *Textbook of Pediatrics* and in 1989 became the first African American president of the Society of Adolescent Medicine. In 2001, she was elected to the National Academy of Sciences and then from 2007-2008 she served as the president of the American Academy of Pediatrics. She was the first African American and the 5th woman to serve as president of the AAP. Dr Jenkins believes that "gender and race can be barriers in a number of situations. Coming from a minority institution I had to climb over greater heights to get acknowledged." She is surprised that there are still so few women in leadership roles. Despite all her contributions to pediatrics, Dr. Jenkins believes that one of her biggest accomplishments is that she has been able to live a 'normal' life. She was able to have a successful career and be a mother because "many women have to give that up."

Mary Ellen Avery

Born May 6, 1927 in New Jersey, Mary Ellen Avery's role model was her neighbor, Dr. Emily Bacon, who established the first exclusively pediatric practice in Philadelphia. Dr. Avery she was inspired by her kindness and was impressed that her "life [was] more exciting and meaningful than most of the women I knew."²⁹ Dr. Avery graduated summa cum laude in chemistry from Wheaton College in 1948 and then from Johns Hopkins Medical School in 1952. Dr. Avery developed tuberculosis soon after graduating from medical school, and as part of her recovery she relaxed in Europe for two years. Her bout with tuberculosis may have sparked her interest in lung diseases. Dr. Avery returned to the U.S. where she completed her residency at Johns Hopkins, a two year NIH-sponsored research fellowship at Harvard and then returned to Johns Hopkins where she stayed for nine years and served as the Pediatrician-In-Charge. Dr. Avery then moved to Canada to become Professor and Chairman of the Department of Pediatrics at McGill University and in 1974 she returned to Harvard Medical School and became the first woman to serve as Physician-in-Chief at Children's Hospital, Boston.

It was during her two year research fellowship at Harvard that Dr. Avery discovered the association between surfactant deficiency and Respiratory Distress Syndrome (RDS) in premature infants. Dr. Avery noticed that infants' lungs would collapse when they exhaled if their lungs did not contain a foamy substance that increased their surface tension. After a Maryland physiologist, Dr. John Clements, identified pulmonary surfactant Dr. Avery realized that this was the component in the foamy substance that increased surface tension. After visiting Dr. Clements, Dr. Avery returned to build a machine to measure surface tension in premature infants' lungs. Dr. Avery and her colleague Dr. Mead, published their paper in the *American Journal of Diseases of Childhood* in 1959. In 1980 a Japanese pediatrician, Tetsuro Fujiwara,

published an article in *Lancet* showing that surfactant derived from cow lungs and delivered via endotracheal tube to the lungs of premature infants prevents and/or mitigates RDS. He solidified his results by demonstrating that artificial surfactant delivered to one lung of a premature infant appears normal radiographically while the lung that does not receive surfactant develops RDS. In 1991, surfactant replacement became the mainstay treatment in the U.S. for infants with RDS. This treatment, together with maternal steroid injections prenatally that increase the infant's natural surfactant and positive end expiratory pressure provided by a ventilator or a continuous positive airway pressure (CPAP) machine to prevent the infant's lungs from collapsing, has dramatically decreased neonatal death from RDS.

In 1991 President George Bush conferred the National Medal of Service on Dr. Avery for her work on RDS. In 1994, she was elected to the National Academy of Sciences and served as president of the Academy in 2003. Dr. Avery's discovery that surfactant deficiency causes respiratory distress syndrome (RDS) which lead to the use of replacement surfactant is credited with saving over 830,000 premature infant lives.

Pediatrics has so many pioneering women that not all could be included in this chapter. We will briefly mention a few of women whose advocacy has been instrumental in advancing the well-being of children.

Jocelyn Elders, born in 1933 and raised in a rural, segregated area of Arkansas, became the first African American and second woman to serve as US Surgeon General. She was fired 15 months into office by President Clinton when she agreed to the statement that masturbation should be

advocated as an alternative to risky sexual behavior. Dr. Elders also promoted condom use, gun control, legalization of marijuana, comprehensive sexual education in schools, national health care, abortion rights and education about AIDS.

Antonia Novello, born and educated through medical school in Puerto Rico, became the first woman and first Latina U.S. Surgeon General. After completing residency at Michigan and pediatric nephrology fellowship at Georgetown University Hospital, she worked her way up the ranks of the NIH to become the Deputy Director of the National Institute of Child Health and Human Development. In 1991 President George Bush appointed her as Surgeon General where she focused on improving immunization rates and preventing childhood injuries, AIDS, underage drinking and smoking. Dr. Novello raised controversy for her support of prohibiting family planning workers who receive federal funding from discussing abortion with their patients. After leaving office, Dr. Novello worked both nationally and internationally but had legal challenges regarding her use of employees' time when she served as NY State Health Commissioner.

It is also important to also recognize the numerous women pioneers in pediatrics who have helped children in their community. For example, **Dr. Muriel Wolf**, a general pediatrician and pediatric cardiologist, received the Senior Section Child Advocacy Award from the AAP in 2006 for her work identifying the dangers of lead dust exposure from remodeling older homes and creating the LEAD Committee in the 1970s that helped dramatically decrease childhood lead toxicity in the District. Dr. Wolf also helped create one of the first pediatric nurse practitioner

programs in the U.S. as a collaboration between Catholic University, Children's National Medical Center and the DC Department of Health.

Women have made significant contributions to pediatrics from lifesaving procedures to life saving policies. Although women now constitute the majority of pediatric residency programs, they still hold a disproportionately small number of leadership positions. We look forward to the time when the demographics of the leadership more accurately reflect the make-up of pediatrics.

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CHAPTER 10:

DAME SHEILA SHERLOCK: An Expert in Diseases of the Liver

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Professor Dame Sheila Sherlock was a pioneer in hepatology. I was a medical student at the Royal Free Hospital School of Medicine for Women where Dame Sheila Sherlock was a Professor Medicine. This was the first medical school in England that enrolled only women. After the National Health Service was implemented, the Royal Free Hospital was forced to take men as all medical schools were made co-educational. Medical school in England is very different from the U.S.; there was only one Professor of Medicine in the academic unit in what is otherwise a national hospital.

I had no intention of working with Sheila Sherlock; in fact I had never met her. One night, when I was at the pub, one of my peers persuaded me to apply for her internship position. So I staggered up the stairs to her office and asked if I could apply. She asked, “Well, who are you?” I introduced myself and again stated that I wanted to apply for the house job. “Well, are you any good?” I did not really know how to respond to that. So she looked at my exam marks and said, “Well, you can apply.”

My 6-month internship was a real eye-opening experience. There were two interns and 66 patients with liver failure; we had only every other Sunday afternoon off. It was the most

amazing experience because she had 30 research fellows from all over the world, two interns and two registrars, and all 34 would come on ward rounds with her.

I thought that was just an interesting episode in my life and that I would never see Professor Sherlock again but it so happened that she was one of the examiners for the member of the Royal College of Physicians exam when I took mine. In the evening when they were discussing the results, my name came up and she heard that I had passed the MRCP examination. She called me and said, “Don’t worry about the envelope tomorrow.” Of course, she was not allowed to actually tell me whether I’d passed or failed. I was dragged back to London and I became a Medical Research Council fellow back at the Royal Free Hospital which changed my life.

I became a lecturer and then left to come to Stanford because, like a teenager, I had to cut the umbilical cord. Dame Sherlock had promoted me so much that I had to determine if I could manage on my own. I came to Stanford which was a mega-culture shock. For starters, I had been used to women running medicine; our dean was a woman, all the professors of every department were women, but I found that was not the case at Stanford.

Sheila Sherlock attended a regular grammar school, and decided she wanted to go into medicine. Yet, no medical school would accept her. Then Edinburgh offered her a place to start the following week. She moved from the south of England to Edinburgh and graduated in 1941 with a gold medal. Even though most of the men were away at war, and Sheila Sherlock was a gold medalist from one of the best medical schools in the United Kingdom, no one would give her an internship. A surgeon, however, recognized her splendor and asked her to work as his clinical assistant for a year until he could persuade his colleagues that they would be most unwise to turn this woman down. His friend, Sir Michael, who was at Hammersmith

Postgraduate Medical School, then employed her as his house physician a year later. The Royal Postgraduate Medical School is the most prestigious hospital, even though it is in the worst part of London. It was then and still is. A couple of years later she was a Medical Research Council Fellow, after which she won a Rockefeller Foundation scholarship and studied biochemistry at Yale for a year.

Her first staff position was at the Royal Postgraduate Medical School where she was a consultant for 11 years. There are many famous American experts on liver diseases who trained with her at Hammersmith. She was a woman ahead of her time because although she chaired the first international liver meeting in 1950, the first journal dedicated to diseases of the liver was not published until 1981. In 1951 she married Gerraint James and had two children at the age of 42 and 45. When pregnant, she did her last ward rounds in a wheelchair, delivered the same day, and was back two weeks later. Her husband was a resperologist, very well known in the field of sarcidosis, and was supportive of her throughout. As she became older, he would attend all her meetings, just to make sure that everything went smoothly. When her daughters were young, they came to all the functions, all the dinners, and traveled all over the world with her.

In 1959 she was appointed as the first Professor and Chair of Department of Medicine at the Royal Free Hospital. She was not given much space; in fact, her office was on the roof. To reach it you had to climb a spiral metal staircase, walk across some duckboards and into a wooden hut. The foreign fellows that came were not terribly impressed by this. She did not stand on ceremony and foreign fellows often mistook her secretary for The Professor and The Professor for a housekeeper.

In 1976 she was made a Senior Censor and Vice President at the Royal College of Physicians and a Senator at the University of London. The most significant event in her career

was when she was Knighted by the Queen in 1978. All of us noticed a change. We had been praising her for years about the significance of her work, yet it was not until the Queen, who doesn't understand the intricacies of medicine, acknowledged her accomplishments that she believed for the first time that she had done something important. In 1990, after her retirement, she became President at the Royal Free Hospital School of Medicine.

Those are her major academic appointments. Sheila Sherlock also pioneered clinical investigative medicine. I mentioned "the hut," which is probably where the peak activity of her career occurred. She had these world-famous Wednesday afternoon rounds when she would present the cases the intern had summarized. Well, of course, I had never worked with her as a medical student. So my first Wednesday afternoon, she presented a case and I realized the story she was not quite telling us the story I had gleaned from the chart. So I put up my hand and said, "Excuse me professor, but he did not have that in 1964." She looked at me and said, "Were you there in 1964?" I said no. She said, "Well, shut up then!" And I realized then that she was a tough task-master who also had a story to tell. She was not going to have anyone ruin it. By the end of the six months I got pretty good at this. One of my assignments was to create a huge graph of the ins and outs of liquid for patients with fluid in the abdomen. We were often doing this at 3 or 4 in the morning. She had spoken for half an hour during afternoon rounds about the management of this patient's abdominal fluid, and said, "Now I'm sure Dr. Heathcote will show me the graph." And sure enough, out came a graph, which, of course, said exactly the opposite of what she had just been saying. There was no way I could change the graph. She looked at me and said, "Dr. Heathcote, don't you think you could tell a fib, just once for me in six months?" She has a great sense of humor.

In 1974 she moved to a brand new building in Hampstead, which is one of the nicest and prettiest parts of London. The atmosphere changed because although we had beautiful laboratories, we were spread out and just did not have the same camaraderie and feeling as in the hut.

Her major accomplishments have been in the field of clinical investigative medicine. Though she didn't develop the liver biopsy, she was the one to apply the use of the liver biopsy to classify diseases of the liver. She was the first to catheterize the hepatic vein and conduct various studies of carbohydrate metabolism. She very bravely studied the splanchnic blood flow by performing the risky procedure of puncturing the spleen. She conducted numerous studies evaluating the causes of high blood pressure in the portal vein, fluid in the abdomen, and diseases of the brain due to liver failure. She was the first to do exchange transfusions, which is a laborious, bloody affair. We still do not have good treatments aside from transplantation for liver failure but all the treatments that we have are based on exchange transfusions.

Dr. Sherlock was one of the first to recognize the importance that the immune system played in liver disease. Together with a pathologist named Deborah Doniach, she identified the various non-organic specific antibodies which are hallmarks of autoimmune liver disease. In 1971 she published the first trial of corticosteroids to treat autoimmune hepatitis, demonstrating a remarkable improvement in survival. Her studies were later collaborated by Mayo Clinic.

Sheila Sherlock was one of the first people who realized the significance of viral hepatitis and its role in chronic liver disease and liver cancer. In 1971, after I passed my exam, she called me back to London to help her work on hepatitis. She had attended a meeting of the Medical Research Council in 1968 when the discovery of the Australian Antigen had been announced as a marker for "serum hepatitis." We then realized that many people had contracted Hepatitis B

who had not received a blood transfusion. It was a real quandary how hepatitis was transmitted. I was hired to interview patients, many of whom came from California. They knew, and had known for years, that hepatitis came from homosexual relationships. I am very grateful for their openness with me. Back in 1971, people did not openly discuss homosexual relationships and I was derided all over London for being a 25 year old woman asking incredibly personal questions. Yet, Sheila Sherlock supported me throughout this rough ride. This research resulted in a 1973 publication showing that hepatitis B was sexually transmitted with homosexual men having a greater risk of transmission.

Sheila Sherlock was also an innovator. She was the founder and the first president of the International Association for the Study of the Liver, an association with the goal of educating the world about liver disease. She was also the co-founder of the American Association for the Study of Liver Disease.

She wrote the single-authored book which has been translated into six languages called *Diseases of the Liver and Biliary System*. This is still regarded by those who train in internal medicine as the best book on liver diseases. She became editor of *Gut*, an appropriately named journal and also referred to as *The Royal Free Glossy*, from 1967 to 1975. She was the first editor of the *Journal of Hepatology*, which represents the European Association for Study of the Liver.

You will note that she was not president of any British liver society and as is so often the case, a prophet isn't recognized in their own country. It was only when she was made a Dame by the Queen in 1978 that the world realized how much she had done for England.

These weekly Wednesday afternoon rounds are indeed famous because she was one of the most astute clinicians that you are ever going to meet. She was also extremely bright, very

quick witted, and very observant. You had to know how to behave at these rounds, which was basically: keep quiet until you were spoken to. But we used to get young American medical students who would burst in with questions and comments, and she would immediately say, “Well, who are you?” They were quickly put in their place. We became used to all of her put downs and treated it like water off a duck’s back because we knew that she would always support us.

Famous liver experts from around the world also came and participated in these rounds. As a young intern I had met every single famous international expert in diseases of the liver. There was always a sherry party in the evening when she introduced everybody.

Sheila Sherlock published over 500 papers and received honorary degrees from 15 universities. So what were the secrets of her success? I have already mentioned that she was one of the most intelligent people and the best clinician that I have ever met. She thought extremely quickly and the reason she survived academically is that she knew how to stand her ground. She was able immediately to hone in on the issue, always able to see the trees through the woods. Her writing and her speaking style were extremely crisp and informative.

When we were going to present papers, she insisted that we write out our slides for her to review and that we rehearse in front of her. You can always recognize someone who has trained with Sheila by their slides and by their presentation style. She was innovative, creative and supported her students lifelong. In 2000, I met her in Madrid. Her body was failing her and she could not get up and down the stairs for the coffee and lunch breaks, so I offered to bring her coffee and tea. She found this very hard to accept until I explained to her that she had helped me for 30 years so could she just let me help her for three days? She conceded. At the end of the three days, her husband who always sits reading a novel at the back, took out of his raincoat

pocket the novel he had been reading and said, “Here Jenny, read this and sip champagne all the way back on the plane.” That was their way of saying thank you. Whenever we have had receptions in Toronto for her at my house, she would come with a plastic bag in yesterday’s Times, tea bags, an Advent Calendar or anything she could lay her hands on. It was never anything terribly elegant but always very thoughtful.

She was extremely hard working. I asked her what she was doing at a meeting at 82 and she said she was going to write a summary of the meeting. I said, “My goodness. Why are you doing that?” She said, “Because it’s good for me.” “At 82 you are still doing things that are good for you?” She didn’t say anything and then I realized, of course, she was completely right. Her body was failing her, it hurt all the time, and if she had to concentrate for three days to write the summary she was not going to think about her aches and her pains.

She had a wonderful sense of humor and was amazingly generous. As a professor of medicine in England, you cannot keep the money earned by seeing private patients. So, she used the money to send all over the world to present papers. She had a great sense of fun; there were parties every three months. Subsequently I realized that if you want to keep a group of people together, then you must have time to socialize together so that you get to know each other. I now have a group of about 13 and we have a rule that everyone’s birthday gets celebrated and that day is a special day for that person.

She fostered international collaboration. I think this is extremely important as it is dangerous to become parochial in your ideas. She sent her students all over the world to meetings. In 1972 I had an abstract accepted to an American meeting. I did not know much about America, so she arranged for me to stay with several of her friends. I arrived in Rochester with my cardboard suitcase with most of my clothes falling out of it and met William

Summersgil, the grandfather of liver pathology and head of the gastrointestinal division at the Mayo clinic, who was a very elegant man, always pulling down his cuffs to make sure he looked perfect. I could see that this man had great difficulty wondering whether or not to accept this disheveled looking student, but he did. Then I needed to wash my hair and they did not have a hair dryer because his wife always went to the hair dresser, so he lit the drawing room fire so that I could dry my hair. This is how her friends looked after her students.

I presented my first paper in 1972, but Sheila Sherlock was not there. There were 400 men and me. In those days they used to drink cocktails and I walked into a room where 400 men had two or three whiskey sours. I was the only woman and found it to be an intimidating experience. Frank Iver, who had also trained with Sheila, obviously recognized I needed to be rescued. He took me out to dinner and has been one of my friends ever since. Sheila creates an incredible sense of family. Another time, in Mexico City, I was lying in my room, and I got a phone call from someone saying, "I'm Louis Graverio. You don't know me. I was Sheila's first resident. Would you like to come to dinner tonight?" We now have this network worldwide and we have learned to expand it to each other. In fact, every year at our American liver meetings we had a reunion. In 1998, we met to celebrate her 80th birthday and there were 250 of us at that wonderful banquet.

She encouraged leadership and a sense of duty to the profession. Three years ago the Presidents of the Royal College of Physicians in London and the Royal College of Physicians in Australia were both former trainees of Sheila. Most of her trainees stayed in academic medicine. Some became Presidents of American Associations, I became President of the Canadian Association. Many of her trainees head departments devoted to diseases of the liver all over the world.

In summary, what are the lessons that Sheila Sherlock taught us? First and foremost, she taught us about the importance of being a constant mentor. She taught us about the need to look into the future; she had great vision as to where medicine was going. She instilled in us a sense leadership and the need for duty to our profession and our academic association. She also taught us the value of academic friendship and the importance of family. If we can live up to these traits, it will help us greatly in our success in academia. She was my medical mother, and I would never have had such an exciting life if I had not met her. I'm very grateful to her and so are hundreds of other people.

Dame Sheila Sherlock passed away on December 30, 2001.

CHAPTER 11

A Lady of Culture : Margaret R. Murray

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A founder of nerve tissue culture, Margaret R. Murray was born on November 16, 1901 in her mother's family home in Mathews, Virginia. The family home, Riverlawn, was built before 1789 on a large acreage located on Put in Creek, where ships could find safe harbor from the Chesapeake Bay. She was the only child of Harriet Ransone and Archibald Campbell Murray. Margaret grew up in Baltimore but she spent many holidays and summers at Riverlawn; her roots were thus deep in Virginia. Her father's forebear, Governor Sir George Chardley, arrived from England in 1609 and somewhat later in 1652 Harriet Ransone's ancestor secured 1100 acres in Mathews County. Some of those acres still remain in possession of the family, a remarkable feat that relatively few of us can claim. She was awarded a four year scholarship to Goucher College where she graduated as a member of Phi Beta Kappa in 1922. Years later, at

the dedication of the Hausberger Science Building, Margaret was among distinguished alumnae to receive a citation and she, in turn, was generous in a bequest to the college.

Her commitment to a scientific career cannot be precisely dated. She did create a biological supply business during her college years and in Riverlawn one can see a jar of preserved jellyfish of local provenance as a residual inventory of this business. In 1924 she earned an M.S. degree at Washington University in St. Louis and was inducted into Sigma Xi. Her stories from Washington University were embellished with recollections of participating in energetic social and scientific evenings at the homes of faculty. She then went to R.R. Bensleys, Department of Zoology at the University of Chicago, where in 1926 she graduated Magna Cum Laude with a Ph.D. thesis entitled: "The cultivation of planarian tissues in vitro," With Professor Charles Manning Child as her mentor, she remained there for another two years as a National Research Council Postdoctoral Fellow.

The title of her doctoral thesis was prophetic for, after a year at Florida State College in Tallahassee, she was invited to Columbia University College of Physicians and Surgeons in New York to help Dr. Arthur Purdy Stout establish a research program in Surgical Pathology. The aim was to study the behavior of human tumors grown in vitro. This was the start of a 41 year long career at Columbia University where she steadily rose in academic rank.

The first decade and a half were devoted to the determination of the cellular origins of neoplasms; the culture characteristics of the tumors could be used to diagnose the tumor type. In a paper published in 1947, Drs. Murray and Stout described distinctive characteristics of sympathetic tumors cultivated in vitro.²⁹ A method for prompt diagnosis, this method is widely used to this day. It is a tribute to the modesty and scholarship of these two investigators that they did not attach their names to the tumors whose origins they had identified and that the names

they provided remain unchallenged today. Recognition of her work spread when she published in 1939 that peripheral nerve sheath tumors originate from Schwann cells. These cells brought her the most fame. A newspaper article noted her rising notoriety.

Not content with laboratory research alone, she began to assume leadership roles. Margaret was in a group of 19 who founded the Tissue Culture Commission in 1946. She was first Secretary and later President. It was her dedication that kept the organization alive during its formative years. It became a Tissue Culture Association (TCA) in 1950. The goal of the organization was to promote the development of tissue culture techniques to solve important problems in biology and medicine. The organizers were motivated by the idea of developing technology that would give consistent and comparable results in laboratories regardless of their geographic locations. The TCA also played a prominent role in the founding of the American Society for Cell Biology, one of our most important scientific societies today. Margaret was the only woman to be a part of this visionary group of 21 that met in New York City in 1960.

Many in this group became nationally recognized leaders and culture media in use today carry their names. Another founder was Dr. Keith R. Porter, an esteemed cell biologist whose use of tissue culture enabled him to discover the endoplasmic reticulum in the mid-1940s. There were three stated goals of the new TCA: 1) to establish a course to teach the techniques of tissue culture, 2) to compile a bibliography of all published works using tissue culture and, 3) to establish a testing laboratory to supply tissue culture materials of guaranteed quality. This led to the production of commercial culture media. She took on the responsibility to accomplish all three of these goals. For several years she was accountable for organizing the tissue culture courses. Fellow instructors were some of the giants of not only early tissue culture but also of the emerging discipline of cell biology. The second goal, a herculean task, was to prepare with

G. Kopech a bibliography of tissue culture papers from 1884-1950. It is doubtful that a single reference was missed. As many as 2,900 articles were read, 5,500 ghost references were traced; every citation was written on a separate card and cross-referenced. This effort, published in 1953, was difficult but it was one more example that once committed, Margaret carried through to the very end. Finally, she opened her laboratory to trainees and investigators from all over the world to learn organotypic nerve tissue culture techniques. She created a highly favorable environment for this purpose, including frequent afternoon teas. In 1970, it could be said that 75% of the worldwide research effort in the field of nerve tissue culture was carried on by scientists trained in her laboratory and by their third generation graduate students and trainees. She was honored by the TCA by hanging a commissioned painting of her in their headquarters.

In addition to the culture of neoplasms she developed the organotypic explant culture technique to study the long-term in vitro differentiation of explanted embryonic tissues from both the peripheral and central nervous systems. This involved maintaining a glassed-in sterile room that was washed down once per week, creating special culture chambers (the Maximov double coverslip assembly) and devising complex media (considered the “kitchen sink” media replete with embryo extract and human placental serum). The organotypic nerve tissue culture technique enabled the requisite interactions to occur among the different cell types in the explants for differentiation.

One of her chief accomplishments with Edith Peterson was achieving myelination by Schwann cells in tissue culture, reported in 1955. Myelination was proof that Schwann cells could perform in vitro the acrobatics for which they were famous in the animal: they spiraled their surface cell membrane in jelly roll fashion around the axon to form the myelin. This process had just been revealed by Dr. Betty Ben Geren Uzman for *in vivo* myelination the year

before. The myelin sheaths, visible in the living culture, could be followed for weeks or months. This was a ground breaking discovery for neurons and Schwann cells and their myelin sheaths could be subjected to various substances and treatments to better understand the causes of myelin breakdown and disease. Treatments that could not be tested *in vivo* could now be easily examined *in vitro*.

Central myelination in cerebellum cultures was achieved along with one of her prodigies Dr. Murray Bornstein. Nerve cells were for the first time examined electrophysiologically in her laboratory by her graduate student, Stanley Crain. When Richard Bunge and I were in her laboratory, another milestone of differentiation was achieved and that was the formation of synapses in cultures of developing spinal cord. By electron microscopy, we could detect stages in the formation of these cell contacts which had not been done up to that time.

Margaret continued to work and publish after she retired from Columbia starting in 1973 at the National Institute of Neurological and Communicative Disorders and Stroke. She collaborated with another woman from her laboratory at Columbia to establish a tissue and cell culture unit for themselves and other NIH investigators. She spent seven productive years there. She started to assemble an updated bibliography of tissue culture papers but finally put it aside, not suspecting and finally overwhelmed by the tremendous number of studies and advancements that her work, leadership and training had spawned. The opportunity to work at the NIH fortuitously allowed her to provide more oversight of her husband's care in Virginia.

What was she like? Terms that describe her are urbane, world traveler, highly cultured, gracious, witty, extraordinarily energetic, highly articulate, soft spoken and tenacious. Beneath the cover of southern gentility was a legendary power of determination and persistence, qualities needed if a woman was to succeed at that time. A hint of her tenacity and determination is

apparent in the following. For decades she lived in a large apartment building close to Columbia Presbyterian Hospital; it was leased to her for life but the building changed hands and she was asked to relocate. She held out for a considerable length of time, long after others had moved away. The building was dark at night except for one light bulb in her hallway. It was very risky to stay there alone in such a large and dark building in that area of Manhattan. It was only when Columbia University offered her an apartment on top of the nurse's dormitory, with a full and spectacular view of the Hudson River that she finally relented and vacated the building. She was an exceptional gourmet cook and I remember fondly several dinner parties with many courses accompanied by just as many alcoholic beverages. On one occasion for dessert, she served apricots prepared from the dried state, simmered one to one in sugar and topped with whipped cream. The dessert was exquisite and her mint juleps could preserve tissue.

Her second marriage was to Burton LeDoux in 1941. A freelance writer from Canada, he was the first to expose the occupational dangers of coal dust and silica to the health and lives of miners. His articles on black lung disease were presumably the basis for a near fatal automobile "accident" in Montreal. Riverlawn was a safe haven. After a stroke confined him to a wheel chair, he started to study and invest in the stock market. He died in 1979, his investment successes allowed Margaret after her stroke in 1980 to be cared for with dignity and privacy in Mathews. Margaret passed away July 13, 1986 at the age of 84. A few months later, when a number of her colleagues attended a Society for Neuroscience meeting in Washington, they took an afternoon off to attend a memorial service in her home town of Mathews to pay final tribute. At the conclusion of this service her ashes were entered in the family burial ground under the trees that shaded generations of her ancestors. My husband, Richard, and I were privileged to attend the memorial service. We had gone to Columbia College of Physicians and Surgeons in

1960 after earning our M.D. and Ph.D. degrees, respectively, at the University of Wisconsin. Richard went to learn Margaret's tissue culture techniques and I was to bridge that laboratory and an electron microscopy laboratory to subject the cultures to ultrastructural scrutiny for the first time. Cultures of dorsal root ganglia containing sensory neurons and Schwann cells were so studied as was the development of central synapses *in vitro*.

Three years after being in Margaret's laboratory, Richard was offered a faculty position in Columbia's Anatomy Department. The mother laboratory once again had given birth to yet another new tissue culture offspring, and more members of a third generation began to be trained in our laboratory. When we moved to new faculty positions at Washington University School of Medicine in 1970, Richard and Dr. Patrick Wood departed from the organotypic culture technique to prepare purified populations of the sensory neurons, Schwann cells and fibroblasts that were found in the dorsal root ganglion cultures (Wood, 1976). Re-combinations of these enabled us to discover interactions between these various cell types: a signal on the surface of axons caused Schwann cells to proliferate, and several components of extracellular matrix were generated in cultures of Schwann cells and neurons without fibroblasts, for example. This new approach yielded much new information about the biology of the Schwann cell, including a better understanding of the requirements for myelination. One of the advantages of cultures of only neurons and Schwann cells was that, in thin outlying areas of the culture, the visibility of forming myelin is exceptionally clear (Bunge et al., 1989).

Richard Bunge envisioned as early as 1975 that the purified Schwann cells generated in culture could be used for repair after CNS injury. Schwann cells are key in enabling the regrowth of axons in the peripheral nervous system: why not put them into the CNS to accomplish the same thing? One of the intriguing aspects of Schwann cells is that a piece of

peripheral nerve can be removed from the leg of a spinal cord injured person as a source of Schwann cells. We now have the technology to generate many millions of primary human Schwann cells in a few weeks to be transplanted into the area of injury of the same person, thus avoiding the need for immune suppression. Our research in rats has shown promise for this therapy with the consequence that application to the FDA for an autologous human Schwann cell clinical trial is in its final stages. A vision expressed in 1975 is near realization. And it evolved from a trainee going to New York to learn nerve tissue culture from Dr. Margaret R. Murray.

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CHAPTER 12:

The Libel Trial of Dr. Mary Dixon Jones

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In February and March, 1892, a sensational libel trial pitted Brooklyn, New York's largest newspaper, the *Eagle*, against Dr. Mary Amanda Dixon Jones, a gynecological surgeon of no small reputation. The proceeding involved a series of lurid articles the newspaper had written in the spring of 1889. Besides hinting at financial improprieties at the hospital, the newspaper painted Dixon Jones as an ambitious and calculating social climber; a knife-happy and irresponsible surgeon who forced unnecessary operations on innocent women and used the specimens gleaned from them to advance her reputation in diagnosis and pathology. These pieces about Dixon Jones and her hospital, the Woman's Hospital of Brooklyn, set off an avalanche of public criticism against her, giving rise to two manslaughter charges and eight malpractice suits that wended their way through the courts. It took almost two years for Dixon Jones to clear her name of all criminal charges; she then retaliated with a suite against the *Eagle*, seeking \$300,000 in damages. When she lost the case, she was forced to close the hospital and relocate across the river to New York City to continue her medical work.

The national press covered the trial with interest and public attendance the proceedings was impressive. The *Brooklyn Medical Journal* claimed that the event involved the 'honor and

reputation' of its medical establishment, and even the *Journal of the American Medical Association* commented on the verdict. Newspapers gave it abundant play. The New York Tribune dubbed the inquiry 'by far the most important ever tried in this city,' and the Philadelphia Ledger hailed the case as 'the most important...since the Beecher scandal,' a reference the salacious Beecher-Tilton adultery trial that riveted citizens in the New York area in the early 1870s.

In the past decade, historians have gained much from learning to read legal proceedings as social theater. Certainly not all court cases can said to imbue ordinary social life with dramatic meaning, but some do draw in a large public audience, expressing moments of collective self-reflection, crisis resolution, or transformation. I argue that Dixon Jones' libel trial was such an occurrence, one deeply revelatory of ongoing structural tensions and processes of change in social and medical relations. The trial is a study in professional rivalry, and marks the emergence of new models of professional identity, of medical specialization and of relations between the public and medical profession. It also illuminates how gender tensions structures these other social phenomena inn specific ways. I cannot possibly do justice to all the broad themes attached to this event, but would like to concentrate on those regarding gender; asking the question of what this even that occurred a hundred years ago can say to us about women doctors and their uneasy relationship to a profession still dominated by men. You will not be reading a tired and simplistic narrative of male oppression and female victimization. On the contrary, the story is a more complicated one that reflects not just conditions in the emerging specialty of gynecological surgery at the end of the nineteenth century but also speaks to circumstances in our own day as well.

When Mary Dixon Jones presented herself in court in 1892, claiming that the Brooklyn *Eagle* had ruined her career, she was a nationally and internationally known ovariologist, a pioneer whose innovative operations and contributions to the cellular pathology of the female reproduction system were well known by male colleagues in the United States and abroad. She had negotiated this professional identity for herself over a period of thirty years in the practice of medicine at a time when boundaries, behaviors and ideologies of practices were in flux. At the end of the nineteenth century, few other than a handful of women physicians had achieved such prominence. Moreover, Dixon Jones, was probably the only one whose volume of published work consistently and over a long period of time addressed the larger discussions and therapeutic debates taking place among her surgical peers.

Dixon Jones' career was in some ways typical and in others unique among women physicians who entered the profession between 1845 and 1870. She came from a middle-class Maryland family, taught in a female seminary before turning to medicine, married a lawyer and bore three children. In 1862 she received a sectarian medical degree, worked as a water cure physician in Brooklyn, gave health reform lectures and advertised in the radical women's journal, The Revolution. Meanwhile, her practice flourished. Between 1862 and 1872 her income rose from \$1000 to \$5000 a year, at a time when male physicians in New York earned an average annual salary of \$1500-\$2000.

In 1872, however, Dixon Jones made a momentous decision which eventually altered both her status and collegial relationships within the profession of medicine and her therapeutic world view: she returned to medical school for a second, regular medical degree, matriculating at the Woman's Medical College of Pennsylvania in Philadelphia in 1875.

Her new courses exposed her to weekly surgical clinics at Blockley Hospital, intensive studies in anatomy, obstetrics and diseases of women, a tutorial by the leading Philadelphia surgeon, Benjamin B. Wilson, and laboratory work in chemistry and histology. In this latter subject, she worked with John Gibbons Hunt, a newly appointed professor who was a skilled and up-to-date technician. Jones would eventually apply what she learned from him to her work in surgical pathology.

Until this moment in her medical career, Mary Dixon Jones had negotiated her professional identity by following pathways in the profession particularly amenable to women physician at mid-century. Easing into the study of medicine at an institution and under the auspices of a medical sect that was particularly proud of its receptivity to women, she did not, like the Blackwell sisters, have to deal immediately with the culture of orthodox medical professionalism or directly confront the deep ambivalence many male physicians had toward women doctors. Moreover, studying water cure linked her to traditional female health reform networks.

It is difficult to know for certain how Dixon Jones responded to the female professional culture she found in Philadelphia. Although her reminiscences suggest that she appreciated the support of women and her links to female physician profession networks, they were not enough to gratify a powerful ambitious for success as a surgeon among her male peers and a genuine interest in the newest frontiers of medical science. She returned to Brooklyn to pursue a set of career strategies different from those of her female peers, one that would be less constrained by the predominantly female world she would have encountered had she accepted apposition on the faculty of the Woman's College in Philadelphia. Largely indifferent to the female networks that were developing among women practitioners, Dixon Jones turned her attention to means of self-advancement readily being utilized by aspiring male surgeons.

Exploring these career strategies highlights certain transformations in the world of later nineteenth-century gynecology. Its recent emergence as a specialty separate from general practice made it vulnerable to criticism from seasoned practitioners and the public. Traditional physicians suspected any form of specialization, while many ordinary people associated hospitals and surgeons with experimentation on patients. The embryonic state of the specialty also meant that pathways into the profession were flexible, a situation that an ambitious and determined woman like Mary Dixon Jones could use to her advantage. But even during this formative period, her aspiration could be pushed only so far. Eventually, the accessibility of gynecology and gynecological surgery to women declined with its maturation and enhanced status, its institutionalization in formalized courses of study and internship and residency programs, and the emergence of gatekeeping specialty societies. Nonetheless, Dixon Jones played a role in promoting the new specialty, and many of her male colleagues understood the importance of having a woman physician enthusiastically supporting their therapeutic modalities.

Aspiring surgeons in this period acquired their skills through a loose system of apprenticeship, intellectual exchange, and observing and assisting each other in the operating room. Such networks were largely unavailable to women; but some female physicians did become expert in surgery. Most kept abreast of developments in surgical gynecology; some performed ovariectomy. But their opportunities for expanding their skills were circumscribed by their marginalization within the profession and by the tiny number of women who could serve as mentors. For these reasons, women tended to form their own professional networks and maneuver primarily within them. Few sought recognition and approval from the professional company of male surgeons with the insistence and energy that Mary Dixon Jones did. While

they may have privately regretted and publically protested their constricted opportunities, their reference groups were primarily female and linked to women's institutions.

It is difficult to know whether Dixon Jones consciously shunned this trammled road to achievement; I believe she did. In declining the invitation to join the faculty and female community of the Woman's Medical College of Pennsylvania, she chose a more individualistic, more aggressive, indeed for her social context, a more 'masculine' route to successful practice. As far as I know, no other woman of her generation followed a similar path with such perseverance. Her case is instructive in part for being unique.

Dixon Jones returned to Brooklyn in 1876 and reopened her practice just as the medical profession was becoming aware of exciting new developments in gynecological surgery. In the next several years she saw patients suffering from serious and life threatening gynecological problems, including fibroid tumors, various forms of uterine and ovarian cancer, and infected ovarian tubes. She immediately commenced studying pathology with Dr. Carl Heitzman, a Hungarian-born immigrant trained in surgery and a skilled microscopist. She also utilized the rich resources of New York City, taking a course in gynecology from Benjamin Franklin Dawson at the newly established Post-Graduate Medical School and Hospital. Dawson, the founder of the *American Journal of Obstetrics and Diseases of Women and Children*, was well connected in the emerging world of gynecological surgery.

In 1881, Dixon Jones accepted an appointment as chief medical officer with the Women's Dispensary and Hospital of the City of Brooklyn, a charitable institution she helped organize. Running her own hospital provided her with the clinical opportunities to pursue her interest in gynecological surgery. Taking an object lesson from the Woman's Hospital of New York, established in 1854 by J. Marion Sims, now a world-famous gynecological surgeon, Dixon Jones

understood, as did other male and female practitioners in this critical period, the essential significance of women's specialty hospitals in advancing careers and technological skill. Indeed, the rise of specialty hospitals in the United States and England was an important chapter in the development of advanced operative techniques. Given the necessity of operating on as many patients as possible to gain experience, the less interference physicians encountered from hospital managers, the better.

Dixon Jones performed her first laparotomy in 1883. Benjamin Dawson, her son, Charles, and two prominent local members of the Kings County medical Society, were at her side to aide and encourage her. In the next decade, Dixon Jones performed between 100 and 300 laparotomies. In the beginning, in addition to consulting Dawson, she sought the advice and assistance of other experienced practitioners in New York and Brooklyn. Several of these men, themselves in the process of building careers, attended her operations. Moreover, Jones continued to attend operations at the New York Woman's Hospital and at Bellevue, where she undoubtedly met Lawson Tait, the renowned English ovariologist, and saw him operate during his trip to the U.S. in 1884.

Even more remarkable than Dixon Jones' early identification with the leading male gynecological surgeons of New York was her meticulous construction of an international professional identity. She reached out, although hardly as an invited guest, to as many professional networks as would have her. Dixon Jones understood the importance of publishing; she strategically placed her own articles in leading specialty journal at home and abroad and served on several editorial boards.

Dixon Jones published approximately 45 papers, and several letters to editors of various medical journals. She also received numerous journal notices for presentations she made at the New

York Pathological Society, where she was admitted as a member in 1887. Her articles can be divided into three categories. Surgical case reports highlighted her accomplishments in the operating room and her innovative technique. A second set of case reports drew attention to her diagnostic abilities, deliberately engaging the heated debates in the field between ‘radical’ and ‘conservative’ approaches to female pelvic ailments. Finally, a third collection of pieces ventured into surgical pathology, substantiating malignant cell formations and identifying new forms of disease. Each type of narrative highlighted a different aspect of her skill. Taken together, they painted a portrait of an experienced, innovative, up-to-date surgeon and diagnostician who (she never hesitated to remind her readers) was a recognized authority among the international surgical community.

Her earliest articles exhibited a formula and style that was repeated and refined in the next two decades. The interpretive narrative in her work, considerably elaborated in later accounts and often accompanied by pathological data and reprints of microscopic slides, told an elaborate and detailed tale of patient suffering. Dixon Jones’ diagnosis argued for radical cure through surgery, usually regretting that an operation had not been performed years earlier and implying that conservative doctors that allowed the patient to deteriorate while they fiddles with ineffective treatments and improper diagnoses.

When in other articles she described antiseptic precautions or operative technique, she typically implicated a host of distinguished surgeons, the most renowned of whom was the British ovariologist, Lawson Tait. Tait was not only a hero but a role model after whom she patterned her career.

Male surgeons who published in the same journals also cited others’ techniques and frequently drew attention to themselves. But Dixon Jones’ efforts were noticeably excessive. Often she

paused to reprint colleagues' letters to her. In her second articles, she dramatically included a missive from Lawson Tait, who praised her work, indicated he had read her first publication, and complimented her courage and skill. This strategy of engaging with the community of elite surgeons through personal communication and professional forums was highly effective. Several prominent practitioners stood ready to cite her in their own publications; others corresponded with her. Moreover, in 1886 Dixon Jones and her son Charles toured European operating theaters, where she cemented relationships with British, German and French leaders in their field.

Though clinical case reports and exercises in diagnosis comprised the bulk of her early work, Dixon Jones was especially proud of her writings in cellular pathology, which depicted her as a clinician who brought the new science to the bedside. Indeed, eagerness to cloak surgical decisions in the patina of the new science of the laboratory was characteristic of the group of surgeons with whom she identified. But not all practitioners welcomed the new science. In fact, the use of the microscope to diagnose disease and describe pathological organs being surgically removed became a bone of contention among practitioners in this period. By 1910, though, microscopic diagnosis would be used routinely for its predicative significance in screening patients for surgery. Dixon Jones participated in these debates and she and her fellow radicals deserve credit for the role they played in transformation medical practice by hastening the clinical use of insights derived from the laboratory.

In addition to contention over the use of pathology, controversy raged in the 1880s and 1890s between 'radical' and 'conservative' practitioners over the quick resort to the knife. Dixon Jones' support of the radicals is particularly noteworthy, because some women physicians were outspoken against ovariectomy. But Lawson Tait and Henry McNaughton Jones, two of her

promoters in England, were clearly delighted to have a woman surgeon on their side, acting as a bridge bot to female patients and to skeptical colleagues. For example, in one of his responses to critics who decried the sterility resulting from his operation, Tiat offered Dixon Jones' argument that the disease, not the operation, causes sterility. Her quoted her comments with a telling prefacing, noting 'I have great belief in the opinions of women upon all matters concerning their own sex. Here is the opinion of a very clever woman on this subjection, Dr. Mary Dixon Jones of Brooklyn.' Using Dion Jones to chide a more conservative rival who complained about over-eager surgeons, Tait observed, 'He will see how a woman can understand, recognize and successfully treat the troubles of these out-of-the-way organs when the subjects is of irreparable disease.'

Dixon Jones' libel trial in many respects remains the centerpiece of her story because it is in interpreting this very public event that I can make some observations about the significant of many of the themes I have been exploring. The trial raised issues that divided members of the medical profession and had little to do, at first blush, with gender: indications for surgery, what constituted malpractice, questions of informed consent, radical versus conservative approaches to therapy, grounds for judging operative and diagnostic competence, and the role of pathology in diagnosis. Tensions between the profession and public were also appearing. Fears that patients would be treated as experimental subjects and suspicions that public coffers might be bilked to finance questionable science were themes in *Eagle* editorials. How did her immediate colleagues react?

Many physicians worried over the increase in malpractice suites; a few even began to promote the use of countersuits as a means of defending the honor of the profession and curbing the inclinations of unscrupulous lawyers and money-hungry patients. In spite of these anxieties, I

believe that most of Dixon Jones' surgical colleagues were embarrassed by her suit for libel, and, if given the choice, would have preferred a more private venue for airing professional disagreements. The *Journal of the American Medical Association*, for example, carefully avoided taking an editorial position on the case, reflecting discomfort with the sensational publicity surrounding serious rifts within the professional community. Although many prominent practitioners traveled across the Brooklyn Bridge to testify on Dixon Jones' behalf, they did so not necessarily out of loyalty to her, but because they felt that their surgical careers were also on trial.

The trial offered up the spectacle of a woman physician accused of misusing professional power and expertise to manipulate and harm her female patients. While Dixon Jones' lawyers employed her sex in her defense, urging that she embraced the 'best in femininity' in her work, many detractors found her behavior particularly heinous because she was a woman. These critics described her as difficult, imperious and determined to go her own way. The closing statement of the *Eagle's* attorney is revealing in this regard. In choosing to repeat his encounter with her at the beginning of the trial, when she refused to be called Mrs. Jones and claimed for herself the professional appellation of "Doctor," he implied that she had unsexed herself. Moreover, gynecological surgery created public anxiety in part because it rendered women sterile at a moment when there were inordinate fears of "race suicide" generated by the declining birthrate of the white Anglo-Saxon middle class. The 1890s were the beginning of the new immigration, where close to a million refugees from economic and social dislocation in Southern and Eastern Europe poured in to the United States to seek a better life. Not surprisingly, the *Eagle's* lawyer also drew on images of witchery in characterizing Dixon Jones, pronouncing her 'an old woman' with an "uplifted knife' who rendered women childless

inside the doors of a “bastard” hospital, while giving in to an “unholy” craze. The refrain of science perverted also reverberated throughout his remarks. These images were powerful and familiar ones in American culture, and by successfully articulating with jurors’ prior familiarity with such stereotypes from other settings, these arguments may well have helped create a context for their verdict.

Other critics resented her self-advertisement. For example, Dr. Reuben C Moffat, president of the Saturday and Sunday Association, a charitable organization that distributed money to hospitals and had denied Dixon Jones’ hospitals’ solicitations, testified that he had been struck by the ‘pretentiousness of the institution’ in offering a consultants list including Lawson Tait, who, ‘is the first gynecological authority in the world and would surely have no interest in this relatively petty hospital in Brooklyn.’

Finally, even some women physicians disapproved of her. Although Mary Putnam Jacobi testified in the defense of Dixon Jones, several Brooklyn women physicians publically voiced their reservations regarding her medical reputation. Caroline S Pease, a graduate of the Woman’s Medical College of Pennsylvania, who had worked with Dixon Jones briefly in 1886 , complained to the court that she detected in Dixon Jones’ practice a ‘very marked discrimination’ in favor of surgical cases. Eliza Mosher and her partner, Lucy Hall Brown, questioned Dixon Jones’ character. In a letter to Elizabeth Blackwell written the week Dixon Jones’ first case reported appeared in the American Journal of Obstetrics, Mosher stated:

There are several regularly graduated women who are already
Members of the Kings Co Med Society. There is one who, judging
from her paper read before the Pathological Socy not long since,
is rather an able woman, but her manners are beyond description—

We could not identify ourselves with her safely and she is an element of evil because of her coarseness...

I have argued elsewhere that the criticism of Dixon Jones by these women physicians represented much more than discomfort with her personal style. Like some of their more traditional male colleagues, they were suspicious of her willingness to embrace a new ideology of medical professionalism. This ideology was increasingly characterized as masculine at the end of the nineteenth century. The gendering of professional behavior animated by an activist, empiricist, and experimental stance evoked a materialistic conception of the body that encouraged the practitioner to think not in terms of the whole patient but about specific organs or local infection. In contrast, women like Eliza Mosher and her mentor, Elizabeth Blackwell, held fast to a more familiar approach to patient care—one shared by both sexes earlier in the century—that was now being identified as feminine. In sketching out their concept of the good practitioner, they drew on past holistic relationships of disease and crafted a version of female professionalism that utilized the language of feeling and sympathy. Ironically, Dixon Jones troubled the cultural boundaries that they helped erect. One might indeed argue that, in the final analysis, it was not for attending medical school that she was condemned, or for treating women with surgery, or even for running her own hospital. Her negative image was not produced by any of these single acts. Indeed, I would suggest that Dixon Jones embodied competing images of the woman doctor, one a nurturing caregiver, who taught Sunday school in a respected Methodist church on the side, the other a hard scientist. In that sense, she remains a troubling figure, and one not easily contained. What made Dixon Jones a “persona non grata” was her failure utterly and completely to live up to the feminine images she, her lawyer, and other women doctors endeavored to project. Her story demonstrates how far women physicians had

professed by the end of the century, as well as how, why and in what ways they could be penalized for their achievements.

Dixon Jones appears curiously unaware or impervious to these fast-developing, but unspoken prescriptions for female professionalism. Her apparent willingness to forsake the relatively safe but always professionally marginal women's medical community to pursue her self-interest in the world of men not only made the female physician of Brooklyn uncomfortable, but also allowed the *Brooklyn Eagle* to paint her as a monster rather than a simple anomaly; as a woman who resorted to "the surgeon's knife on any and all occasions not stopping to consider the small matter of necessity." The *Eagle* implied that her "mania" for surgery reflected monetary greed, an unnatural desire to acquire more laboratory samples for her research, or a twisted urge to deprive women of their childbearing capacities. There was no room in these gendered notions of the woman physician to accept that her interest in radical surgery might have grown out of sincere intellectual and therapeutic judgment. In relation to public assumptions about proper female behavior and emergent models of comportment for women physicians, Dixon Jones had truly stepped out of bounds.

Verbally aggressive and unwilling to defer to male colleagues, perhaps even dishonest in the financial management of her hospital, Dixon Jones had few collegial supports in Brooklyn. Yet, while most of her female peers covered on the margins of medicine, she compelled male colleagues to take notice of her accomplishments. For this reason the notion that she probably was unaware of her shortcomings is especially poignant. In several brief digressions in articles published after the trial, she referred vaguely to the persecution of women physicians. In one she wrote, obviously referred to herself "Women physicians sometimes have very little quarter, and many suffer most seriously, when doing their best, and the best that can be done. I know a

woman physician who suffered infinitely more than a possible arrest, and on infinitely slightly grounds of accusation, and at a time when she was doing noble work, for which she ought to have been greatly honored.”

Yet, no amount of Monday morning quarterbacking could alter the painful verdict. In the end, Dixon Jones’ inconsistent behavior became a significant factor in determining the outcome of the libel suit. She spoke out of turn on the stand, made comments under her breath, demanded that the prosecuting attorney address her as “Doctor” and began the trial as such as an uncooperative and sarcastic witness that, in its openings days, the presiding judge felt it necessary to admonish her. Her self-presentation as a rational and objective scientist whose colleagues were all male, her apparent calm in the midst of the pathos engendered by the stories of female patients ridden with incurable disease, could hardly have helped to win an ordinary middle-class male jury to her cause.

Though perhaps modern feminists understand her better than her contemporaries did, we share at least some of their discomfort with her careerism, albeit for different reasons. Indeed, Dixon Jones’ story reminds us of the difficult choices that ambitious and talented women like her are still compelled to make. Her ambition garnered success in numerous ways. She gained recognition among her male colleagues, and she is practically the only woman from her generation whose work in surgery is mentioned in standard histories of gynecology. For a while she ran her own hospital and participated in the heady scientific debates that animated the embryonic specialty of which she chose to be a part. In return for the respect of radical surgeons—who were themselves somewhat beleaguered by collegial and public cries of ‘too much surgery.’ She provided the legitimacy that only a woman’s endorsement could render. But, even as we contemplate her accomplishments, we understand why most other women were

unable to duplicate them. Attaining such recognition took bravura and as astute gift for self-advancement. Dixon Jones was the nineteenth-century version of the ‘difficult woman.’ Hers was an uneasily negotiated identity. Most women physicians, socialized in an age when women did not steal the limelight from men even when they were independent-minded enough to seek medical training chose not to behave as she did, and, as a result remained safely ensconced on the margins of medicine.

The eminent Johns Hopkins surgeon Howard Kelly’s curious sketch of Dixon Jones in the Dictionary of American Medical Biography speaks to her complexity as a historical figure. His mention of her ‘resorting to a suit for libel against allegation of malpractice by the *Brooklyn Eagle*’ is clearly reproachful in tone. Summing up her life, he observed,

Dr. Jones was peculiar in person, flashy, and tawdry in appearance, but undoubtedly a student. Lack of judgment and an intimate contact with the better members of the profession may have been responsible for a certain mental obliquity with which she is accredited. The Nestor of surgery in Brooklyn [undoubtedly A.J.C. Skene] declared that she was ‘quite a pachyderm.’

One pauses here at the use of the word ‘tawdry.’ Though the *Brooklyn Eagle* took pains to paint Dixon Jones in a negative light, the newspaper, which did discuss her appearance, never suggested that she looked cheap or gaudy. Her biographer’s choice of words suggests that these men had no appropriate language to describe her unconventionality, resorting instead to familiar terms of female denigration. In Victorian parlance, ‘pachyderm’ referred to a person who was thick-skinned and insensitive, an individual who did not shrink from a fight. We recognize

Dixon Jones as a woman who either deliberately or unknowingly ignored the gender scripts which continue to dictate professional behavior even today. But the editors concede, ‘she was undoubtedly a student.’ In her willingness to engage with her male colleagues on their turf, to take seriously her abilities to contribute to the most heated medical debates of her time, Dixon Jones, through enormous effort, snatched herself from the jaws of historical obscurity, an all too frequent fate for women physicians in the nineteenth century.

Caroline Pease, one of the women physicians who testified against Dixon Jones at the trial, wrote Dean Clara Marshall of the Woman’s Medical College of Pennsylvania to reassure her that the *Brooklyn Eagle* focused idealistically on Dixon Jones’ individual infractions, and was not out to get women physicians as a group. Unfortunately, Pease did not have our hindsight. An unconventional woman herself, who had boldly chosen to step out of her sphere, Pease had taken on as her cause the advancement of women. Yet her own unorthodoxy made her incapable of understanding the gendered nature of the professional values she had embraced when she fought to become a doctor. Not could Pease possibly perceive then the ways in which she and women physicians like her participated in the castigation of one particularly unruly member of their sisterhood, whose ungovernable behavior reflected badly on them all.

Despite the contemporary verdict, our own judgment need not be as harsh. History can be kind and more than a hundred years have passed since Dixon Jones struggled to accomplish great things. We are now capable of enumerating her achievements with more generosity and certainty than even she could, despite her fulsome efforts at self-promotion late in life. History is also indebted to transgressors. But, for her early missteps, and the excessive zeal of a newspaper hungry for its own place in the historical record, Dixon Jones might have received an entry in the Dictionary of American Biography as glowing and unblemished as that of her arch rival, A.J.C

Skene. Instead, her life provides us a window onto Brooklyn, surgery, gender tensions, and the relationship of an emerging medical profession with its public, one that might never have opened had she been as well behaved as Caroline Pease. In the final analysis, this may be small recompense to Dr. Mary Dixon Jones. But with hindsight, we might well mark this, too, as one of her many accomplishments.

CHAPTER 13:

Women and Mental Health, Part I

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There is an undeserved dearth of women leaders in psychiatry. Dr. Jeanne Spurlock was the first woman to chair a department of psychiatry in the U.S. when she was appointed chair of the Department of Psychiatry at Meharry Medical College in Nashville in 1968. Dr. Spurlock helped medical providers recognize the effect of stress from poverty, single motherhood and discrimination. Dr. Mildred Mitchell Bateman, who was also an African American leader, was the third woman to chair a psychiatry department. She was instrumental in advocating for public health care for the mentally ill. Marion Kenworthy was a child and adolescent psychiatrist, the first woman president of the Advancement for Psychiatry and integral in incorporating psychiatry into social services. In 1980, Paula Clayton became the first woman in the U.S. to chair an academic department of psychiatry at the University Of Minnesota School Of Medicine. Leah Dickstein, has contributed not just to psychiatry, but to medical education. During her presidency at the American Medical Women's Association she founded the Gender Equity Award. This prestigious award, offered at every U.S. medical school, bestows up to two faculty

members, one in the basic and one in the clinical sciences, and is voted upon by the student body.

With all these wonderful, pioneering people why are women still under-represented as leaders in psychiatry? I harken back to a story from more than a hundred years ago of Ellen Swallow; she was the first woman admitted to Massachusetts Institute of Technology and she tried to blend in with her fellow students in chemistry. She dispensed with the bustles and extra petticoats of the time, and instead wore plain, dark-colored dresses and pulled her hair straight back. Even those faculty members who had opposed admitting women to a science curriculum, which was said to injure their brains and reproductive systems, came to appreciate what they regarded as her “humble dedication to service.” She won over the strongest objectors when she carried out the bulk of the laboratory analysis for a project which tested the sewage, streams, and water supplies of Massachusetts. Driven by her outrage over the filth and sewage in the streams and streets of Boston, she became a remarkable public health pioneer. Yet, she was denied a doctorate from M.I.T. because they felt that awarding a doctorate in chemistry to a woman would demean the university. They did offer, however, to let her stay on and conduct research, without pay or a title. With few options available to her, she accepted the offer. She was one of the founders of the science of ecology, although credit was given to one of her male colleagues and she was then described as the founder of home economics.

The history of women in science is brimming with similar tales of overt and more subtle discrimination, with contributions that have been lost or misunderstood simply because their originator was a woman. As we look today, and ask, “is our glass half empty or half full?” we have to say the answer to that question is “yes.” The glass is half full but at times it is half empty, because women still are under-represented in medicine’s leadership. We see economic

disparity in terms of the hours worked. When men have taken time off for reasons similar to women's, men return and make up the financial disparities rapidly.

Women make different leaders. The Wall Street Journal has told us that this is not bad, but rather a change in corporate culture and strategy. Perhaps business enterprises are more aware of the value of their employees than unfortunately are some of our scientific enterprises. Women are seen as more care-taking, nurturing, more sharing of information and power. They create a more democratic organization, enhance other's self-worth and work to promote and support other's job satisfaction and success. Women are less rigid about organizational structure and pay less attention to the rewards and punishments that come with the bureaucratic organizational structure.

Women are often uncomfortable with overt competition and tend to avoid it. Women are often seen as looking to be affirmed and rescued and even if it's not by a fairy godmother, it may be by someone in higher authority approving our work.

What are the psychological issues that we as women leaders face? We want to be liked. We want to be nice. We want to be good. We do not like to be aggressive and demanding and we were taught this by our parents. This was the way to succeed, the way to get ahead. Some of us were deviant, and certainly not all women live up to the status quo. This is not a one-size-fits-all woman. This is a one-size-fits-no one, but it describes a group. We are on a continuum from those of us who cannot tolerate anyone not liking us for 30 seconds, to those of us who are willing to take some risks that result in not being loved.

We also have discomfort with self-promoting, which makes it difficult to sell yourself to a search committee. Although this has changed to some extent, women still lack teamwork competitive play experience. Soccer may have done more for the advancement of women in

science than anything else, but nonetheless, this can still difficult for women who were trained and encouraged to get along. The team sport may be tennis rather than soccer for many young girls.

How do we find our right voice to express ourselves? And if we find a voice, how do we get people to listen? You may think that this good, kind problem-solver may remind you of someone. It does. It's the same backwards and forwards: M O M. Women tend to be, whether they have children of their own or not, good mothers, good care-takers, good nurturers, peace-makers and kind. All of these nice, self-affirming things that we do as leaders are the kinds of things that are done by good parents and good mothers in particular. We tend to be caretakers, we tend to be non-charismatic, and we tend not to take risks.

When I started doing this work awhile back, it was a little disconcerting to find how much of this fit me and how well I had been socialized growing up. We want to have one big happy family. Consequently we are uncomfortable with the kind of fighting and back-biting and jockeying for power that tends to occur in most organizations whether it is a science laboratory, a hospital work group or the faculty promotions committee.

The need for affirmation exists, particularly if you're a pioneer. Many of my colleagues and I have been the first and sometimes the only woman in an academic setting. The rules are not there. You do not know how to behave. It does not feel comfortable to behave like the men, but it also does not feel comfortable to behave differently.

This is a quote about organizational structure from the Association of American Colleges and Universities newsletter.

“Findings about women scientists parallel a recent study of women lawyers that found women were routinely criticized if they did not play both aggressive litigator

roles and nurturing, friendly roles at work. Female attorneys could never measure up to the male-oriented standards for both good litigator and woman. Thus subordinate status gets to be reproduced as individuals choose and then respond to activities which actually organize power relations in the same old way. The content of what it means to be a woman in science has changed, but the power relation between a woman and a dominant group has somehow been retained. Even in marginal settings women are expected to play supportive roles and although women now have greater access to science, their trajectories have altered very little.”

We looked at women at the National Institute of Mental Health and discovered that most of them were in the laboratories but very few of them headed a laboratory. Women may join but they must fit into the old arrangements which support the continuing dominance of elite science, narrow professional identities, and prototypic white males.

Women are evaluated as mothers and good caretakers. The problem with being evaluated as a mother is that often our male colleagues transition into adolescence. As close and warm as they are to their mothers and fathers, they reach a point when they need to separate from them. We encourage this and as painful as it is for a parent, you don't want your 40 year old child still at home being nurtured, but rather to grow up, separate, differentiate, and become their own person. Just as children have expectations of their mothers' omnipotent ability, so do our male colleagues often have expectations that we too will solve all their problems in a painless way and give them what they want.

The biggest challenge I have had in my current job is trying to make a decision informed and then enduring the heat when the decision is not what some, or even most of them, want. That is the problem of a challenge for any leader but it is particularly a problem for a woman

who may be seen as not caretaking enough, not giving them what they want, not listening enough, much like the mother who tells the child, “No you can’t have these six cookies before dinner.”

We also have to confront the problems related to sexuality. Behaving in certain stereotypic fashions, what you can and cannot say or do, become an issue the higher women rise in an organization. These women may be less able to enjoy some of the informal interactions. Many of my women colleagues are in senior leadership positions report that their best friends are their administrative assistants because they can feel a little more comfortable with these women and not have to worry about what they say or do.

How do men see it? Well first, we are seen as not looking or acting the part of a leader. There’s a story about Dr. Nancy Andreasen, who was a candidate years ago for the director of the National Institute of Mental Health. Dr. Andreasen makes me look tall. She’s about 4’ 8”, petite and has more energy than any two people you can put together. Someone asked one of the people on the search committee, “Well, how was her interview?” The response was, “Well, it was fine. She certainly knows a lot of science but she doesn’t look like an NIMH Director.” Well, of course not! Up until that point, the directors had all been males and certainly taller than 5 feet, so she could not have very well looked like them. But our stereotypes, our expectations of what a leader should be, look and behave like, are so ingrained that it is hard to for people to accept this paradigm shift.

Both women and men report being uncomfortable working for a woman. This always surprises me because I thought that women would be more comfortable, but apparently not. This is not in our lexicon. Men report that they feel women are weak, unfit for the job and that they will cry easily. If there’s anything that will scare someone off, it is tears or the threat of tears.

The stereotype, that women are not as adept in math and science, remains even for women who excel in this area. Men voice fears that they will be accused of harassment if they do anything to make a women feel uncomfortable. Men also tend avoid women when they are tough, set limits, are strong or outspoken.

Sports and military metaphors were frequently used in the early 1970s when I was at the University of Miami. When the Miami Dolphins were becoming a presence, everything I did was couched in a football metaphor. Up until that point you could put what I knew about football in a very small thimble, but I realized I needed to learn about it to relate to my peers and get ahead. Many people view life, as either a win/win or a lose/lose. But in football there is a win/lose philosophy. You score, you win, you demolish your opponent. You don't share, you don't take turns. This is not hopscotch. This is not jump rope. This is something where somebody wins, someone loses, and the loser (and sometimes the winner) tends to get bloodied. This is an important lesson because women tend, when they get bloodied, to retire from the fray. It is easy, being an academic dean in a medical school undergoing a great deal of financial stress, to think about retiring, and getting out of the middle of the onslaught of bullets. Yet, we need to remember that in the football, the victor as well as the loser is bloodied, but has stuck it out.

What about us as leaders? What do we have to worry about? Well, the most important is the omnipotent fantasy. These are probably the same fantasies that parents have for their children; that they are going to grow up to be – fill in the blank – a Supreme Court Justice, President, Nobel Prize Laureate, who we will manage all difficult problems. Of course, these expectations often lead to great disappointment. How much do we compromise? How much to we give in? At what point is it weakness? I think for all leaders this is an issue, but particularly for a woman who may feel if she gives in she will lose her power, she will lose her authority.

Mastering the balance between shared and earned power and authority is difficult and challenging.

Many of us are fearful of causing pain to others and we will avoid doing so at all costs to a point where we can lose our authority. Women tend to be self-demeaning, defeating, in their language. We tend to personalize the response to the game. In the early 70s, I was involved in a forensic work with children, and went to court. I gave my testimony, believing that I represented right, justice and the fair treatment of children. The opposing attorneys questioned each other's parentage and competence, and when the trial was over they put their arms around one another and went off and had a drink. That is something that we have not learned well, the ability to deal with competition and not to take it personally; to brush ourselves off if we slip or fall and to keep moving.

Women also have an easy out. This may contribute to the fact that although more women enter academia, they do not remain, are not promoted as rapidly, and leave. Married women are more apt to leave and women who are married with children or single parents are even more apt to leave. This may be there is a normative alternative, an easy out, a way to find satisfaction. This may be particularly true in psychiatrist because for relatively no financial investment we can open an office. This alternative sometimes makes staying in psychiatric research, leadership, or academia a very difficult and daunting task.

Our system tends to be much more unforgiving of errors, particularly when they are made by women. I am reminded of an apocryphal, but nonetheless, wonderful story of the first women department chair at Harvard University. This is not a true story. They held a departmental retreat where the dean, administrators, and chairs went to a secluded island off of Cape Cod. They had to get there by boat. On the way out, the woman discovered that she had left her

sweater on shore and it was cold. So she stepped out of the boat, walked on the water, back to the shore, picked up her sweater and walked back on the water to the boat. As she was walking back, keeping her feet dry as she did so, one of the male chairs turned to the others and said, “Wouldn’t you know it – the first women department chair and she can’t even swim.”

Only 13% of medical school deans are women. It is a challenging job. One’s power and authority is sometimes more limited than one’s omnipotent fantasies ever would lead you to believe. I realized that I may not be able to make major changes but I could make minor ones. I could see that every committee had more than the token women on it. I could encourage the women faculty. I could to invite women scientists across all disciplines to speak at grand rounds, to give a not-so-subtle message that women are competent and productive scientists.

What do we know about female-friendly environments? The educators tell us that female environments are much more personal, friendly, less competitive, team oriented, with a win/win orientation. Does that sound like medical school?

The social context is very important. Medical school institutionalized sexism makes it less likely to be female friendly. We asked young women and men in junior high, high, and college “What makes for a good teacher? What makes for a good classroom experience?” Note the differences. The women responded with very personal demands of the teachers’ qualities: needs to be available, nice, interested and friendly, calm you down, care about you and patient. What attributes do men like in a teacher? They wanted someone who is competition engendering, is entertaining and stimulates and challenging. In reality, women need that kind of teacher too, and men also need the nurturing teacher. Yet, the expectations which young women and men bring to higher education sets up a dichotomy.

What do we know about bright girls? Bright girls and women high school and college students tend to have unduly low expectations of their performance. One of my favorite studies concerned men and women applying to medical school. Women were much less likely to apply if they had low grade-point averages, or low MCAT scores, than were men. Men voiced a higher sense that they would be accepted with the same scores with which women decided not to apply. Women tend to avoid the challenge. In psychiatry fewer women proportionally are certified by the Board of Psychiatry than are men. When we first looked at this figure we wondered, “Are women failing the boards more frequently than men?” It turned out that was not the case. What we discovered was that women would take the initial board exam which was a written multiple choice exam. They failed at the same rate as did their male counterparts. The men who failed came back and retook it but the women were much less likely to retake it. Prior to the current era of managed care, they could practice without being certified. Yet, to be on managed care panel now you have to be board certified, so it has changed some the behavior. When women are queried about their failure, they respond that they are less capable, they did not study and other self-demeaning responses. The men say, “Maybe I didn’t study the right stuff,” or “The examiner was too hard on me.” Women are more debilitated by failure and consequently less able to pursue success again.

For women there are many more life style and career issues. Men and women are expected to do things that require someone else, whether it is driving the children to the dentist or having dinner for colleagues. The full time working person may not have the time or the energy, never mind the ability, to do this.

Women of color, women from different ethnic backgrounds, and, lesbians are sometimes looked at with an even brighter light and microscope.

Our cultural norm and expectations are still there. It is heartening to see that the young men are as interested in their families as the young women. Increasing men's involvement in the family, will hopefully produce a generation of better informed young people.

Jobs that do not provide flexibility may encourage women to take an "easy out." We may be losing as much as 50% of our human resources, 50% of the people who can enhance science and provide care to our patients.

What can we do to reduce the covert and institutionalized sexism? In the Harvard Business Review, January / February 2000, and again reported in the AAMC women's newsletter, the statement was made that gender discrimination now is so deeply embedded in organizational life as to be virtually indiscernible. Even the women who feel its impact are often hard-pressed to know what hit them, and let me add parenthetically it is often so subtle, so covert, that people think they have just awakened to an unpredictable earthquake or thunder storm. It's not the ceiling that is holding women back, it is the whole structure of the organizations in which we work. We need to start in elementary school, middle school, high school, and college. We need to open up accessibility of career paths and encourage diversity in gender, ethnicity, and sexual orientation. And we need to develop critical masses.

Those of us who were pioneers are often very lonely and we are seen as idiosyncratic. There need to be more people at the middle and at the top and they need to be nurtured and rewarded and encouraged. We need to develop the experiences that will recognize and celebrate the differences.

One of my colleagues has said it will not be until the men's daughters reach the glass ceiling, the brick wall and face the subtle discrimination, that things will change. Well, these

daughters have reached that age and it is time for all of us to unite and to open the doors to provide the opportunities for all of us. Our country deserves no less and neither do we.

CHAPTER 14

Women and Mental Health, Part II

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In the 1944 text, *One Hundred Years of American Psychiatry*, in the index, the word ‘women’ is followed with “feeble minded, of child-bearing age, female nurses on male wards, first physician appointed as an assistant at Augusta, Maine, and physicians.” Dr. Daniel Hacktook of England visited North American mental institutions in 1884 and, it was said, approved of staff appointments in mental institutions for women physicians.

Dr. Elizabeth Blackwell worried that the exciting discoveries in bacteriology would focus physicians on organs and organisms instead of on the suffering of a whole person in a social context. It was primarily women who expanded the mental hygiene and child guidance movements in the 1920s.

Selecting from a list of 20th century women psychiatrists and other mental health professionals whose scientific contributions have impacted in major ways the understanding of mental illness, diagnosis, and treatment has been an extraordinary challenge.

In the early 1900s, psychiatry and psychoanalysis were viewed as separate fields. Before and after World War II European analysts, who escaped Nazi persecution to teach and practice in

the United States, offered an enlarged treatment approach to understanding patients' symptoms and then offered analytic treatment beyond electroconvulsive therapy, insulin shock, and sedating medications.

Anna Freud, Sigmund's youngest of six who told her not to consider medicine, was an elementary school teacher, obtained analytic training, collected data on child development, and wrote *The Ego and the Mechanisms of Defense* in 1936, as an eightieth birthday gift for her father. She introduced child psychoanalysis and started the Vienna Jackson Day Nursery where she used psychoanalysis for underprivileged one and two-year-olds. She repeated this at the Residential Hampstead Nurseries for children in London from 1939 to 1945 on children from birth to 5 years. She also compiled *Data Collection of Behaviors and Treatment*. She worked with pediatricians and their patients with diabetes and was founding editor of the *Psychoanalytic Study of the Child*.

Greta L. Biebring, a psychiatrist who emigrated from Germany to Boston, was the first woman to be promoted to professor at Harvard where, at Beth Israel Hospital, she headed the psychiatric service. Her research revealed the association between age and social class in psychological reactions of male patients following a heart attack. Reactions ranged from depression in men in their 50s, to cheerfulness in their 60s, from extreme anxiety in white collar men, to casualness in blue collar workers, from cooperation with the medical regimen, to active defiance in the white collar group. She found younger men in their 50s revealed more depressive reactions to their activity limitations and appeared to be in a crisis of denial, similar to adolescence, and conflicted over loss of achievement potential. Men in their 60s, by contrast, were more passive and dependent, kind and moral and accepted their dependent role.

In 1939 Helen Flanders Dunbar, a psychiatrist at Columbia University, became the first editor of *The Journal of Psychosomatic Medicine*. She redefined psychosomatic illnesses by abandoning traditional definitions of disease entities and described dynamic processes in ill persons, including behavioral and somatic symptoms, e.g. the emotion-behavioral syndrome associated with the physical symptoms of high blood pressure. In 1935 she published the first compendium of research on psychosomatic medicine called, *Emotions and Bodily Changes*. She wrote that psychosomatic medicine is merely an adjective describing a conceptual approach to the human organism and all its ailments. She noted a parallelism between degree of crystallization of the physiologic dysfunction and somatic damage and degree of crystallization of psychological defenses in the character of the patient. We speak of behavioral, alternative, complementary, mind-body spirit medicine as if it were new rather than a continuation of Dr. Dunbar's work 50 years earlier. She concluded, "the psychosomatic approach is more effective early in the disease when there is less character rigidity and less structure damage."

Dr. Carolyn Robinowitz, child, adolescent, and adult psychiatrist, former senior deputy medical director at the American Psychiatric Association, former Dean at Georgetown Medical School, past APA President and a national leader in many organizations (AMA) has contributed in countless major ways to psychiatry.

The achievement of women psychiatrists and other mental health professionals each contribute together to complete the puzzle, the web, the quilt of knowledge about mental illness and health. This knowledge has enabled and will continue to enable practitioners to treat patients appropriately and to meet their unique needs, particularly related to gender. Many women have contributed so much in the past century, despite personal, political, academic, and professional barriers which said, "Women not welcome." These women persevered, with their inner courage

and intellectual prowess, to accomplish goals to achieve scientific understanding, in order to serve psychiatric patients well. Hopefully you will be challenged to read further about their work and their lives, as you gain courage to pursue your own work and lives.