

A MULTIPHASIC CAREER DEDICATED TO WOMEN'S HEALTH

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In July 1963 I came to Yale to train in Obstetrics and Gynecology so that I could work at my father's side in his medical practice in New York City. My father was Board Certified in General Surgery and also in Obstetrics and Gynecology. He was a "local hero" having returned from WWII where he had been a surgeon for a paratrooper division in the Normandy Invasion. Even before he left for the war, when I was 5 he often took me along when he made house calls and when he visited patients in the hospital. Medicine was in my blood.

I was taught to play the piano by my father's piano teacher, Margaret Wise. I mention her name because she was renowned as a teacher of professional pianists. Indeed, among his many talents, my father was a fine classical pianist. The Steinway baby grand piano my grandfather, a house painter, bought in 1922 was kept in my bedroom. Mrs. Wise represents one of the "threads" in my intellectual development -the life-changing significance of "womentors," a neologism of mine. Mrs. Wise was the first of many womentors for me. These women, most important of whom is my wife, Lorna, were critical to focusing my career on the study of women throughout the life cycle.

I also want to recognize the "father factor", so ably described¹ by Kai Erikson in his "trajectory". My father was the best at everything he did from surgery to piano playing to woodwork. Being the son of a father who was bigger than life has, for me, been both a challenge and a major source of motivation. Perhaps the most important advice my father gave me was that, as a physician, I might have surprising possibilities for new directions in my work. When such surprises occurred he advised, "If you are passionate about doing that work, don't hesitate to make a career shift." Although I have frequently changed my work focus, I have always stayed within the field of women's health.

My career at Yale has had four distinct phases, each lasted about ten years. And, in each phase, I had a sabbatical leave. Each sabbatical served to bring my knowledge and experience to a higher level of expertise. In each, the seeds were planted which led to the development of the next phase. The first phase was in Obstetrics. In the mid-1960s I began and developed the Young Mother's Program and studied teenage pregnancy. In the next phase, in Psychiatry, with Lorna Sarrel, I became a sex educator, therapist and researcher. Parts of that program still continue at Yale University Health Services as the Yale Sex Counseling Program. In the third phase, in the 1980s, I returned to my roots in Gynecology and developed a special academic interest in menopause and developed the Yale Mid-Life Study and the Yale Menopause Program.

Finally, in the 1990s and until my retirement in 2002, I turned back to basic science research and studied the cellular, physiological, and clinical effects of ovarian hormones in women's arteries. All of the programs received Yale support as well as funding from philanthropic foundations and the National Institutes of Health. The sabbatical leaves and the outside funding were crucial to the development of my career.

As predicted by my father, each phase of my career started with an unexpected experience or finding. In each instance I was able to involve others at Yale whose professional experience was different from but complimentary to my own. As a result, I have worked side-by-side with faculty in many different disciplines including nursing, neurology, cardiology, epidemiology, dermatology, psychophysiology, psychiatry, social work, the clergy, and others. I would like to tell you something about each of the four phases of my academic life.

Phase I: The Young Mother's Program (YMP)

The very first week I was here, in July of 1963, I delivered a baby in the Yale-New Haven Emergency Room. There wasn't time to get her to the delivery floor. As I lifted the baby up on to her abdomen, she declared: "That's not my baby." The umbilical cord was still attached to the baby and at the other end to the placenta still inside her. She was very young and obviously psychotic.

The next baby I delivered was born dead. As it turned out, the mother was 10 years old. The pregnancy was the result of father-daughter incest. As a consequence of these two early experiences, I very quickly learned there was much more to obstetrics than prenatal care and childbirth management. Fortunately, our Chairman, Professor C. Lee Buxton, was attuned to the psychosocial issues of pregnancy and he encouraged me to look further into the issues of teen pregnancy.

In my third week at Yale I was awakened in the middle of the night by a call from my brother to tell me that my father had suddenly died, at age of 54, of a hemorrhagic stroke. With my father's death the plan to go into practice with him was gone as was any desire to develop a private practice of my own. I continued my residency and, at the same time, I started research into teen pregnancy. I wanted to figure out how to be helpful to pregnant teenagers. At that time, Lorna was a social worker in pediatrics and helped me take my first steps in understanding the psychological dimensions of teen pregnancy.

I began with a chart review of 100 young women, age 17 or under, who delivered a baby at Yale-New Haven Hospital in 1959. In the next 5 years the girls, by then aged 17 to 22, conceived an additional 249 pregnancies. Only five of the girls did not have a repeat pregnancy. None completed high school. What we were seeing was a major psychosocial problem warranting a multi-disciplinary team intervention. Dr. Ed Hon helped me, as he later helped Dr. Kohorn, in the writing of my first article, "The Young Unwed Primipara". It was accepted for a fast track publication in the American Journal of Obstetrics and Gynecology. Although still a young resident, my academic career had begun.

The Young Mother's Program (YMP) brought me and the Hospital staff together with educators from the New Haven School System and with nurses and nutritionists from the New Haven Health Department. Our teen clinic was based at the Hospital. The School we started, Polly T McCabe, was at St. Luke's Church on Whalley Ave. In the YMP clinic, I was responsible for the prenatal care of the girls and delivery of all of the babies. The interdisciplinary team contained nurses, psychiatrists, social workers, a nutritionist, a pediatrician with advisors from the Hospital Chaplaincy and the School of Public Health.

After Lorna, I think of Dr. Ruth Lidz, a Yale Professor of Psychiatry, as the most significant of my womentors. In our clinic, she taught me how to listen to and analyze what patients were saying and how to make helpful interventions. Most of the teens were very young, not only in age, but in terms of adolescent development. They were frightened and I had to gain their confidence, do their first-ever pelvic examinations and support them through labor and delivery. Also bear in mind, many were victims of sexual assault. I saw each girl at every visit. Afterwards, they stayed for a group meeting led by Dr. Lidz, myself, and one of our two social workers. In the groups, the girls talked about their life circumstances, their questions and anxieties about pregnancy and delivery, and their plans for the future. They stayed in school until their delivery time and returned to school within a week. Since we provided a nursery, the babies came with them. As they grew older, the toddlers attended Dr. Sally Provence's Day Care Center near the Hospital. Results were outstanding – a very low pregnancy complication rate. Only 8 out of 118 required a Caesarean and the toxemia rate was the lowest reported in the obstetrical literature for teenagers. Almost all the girls returned to school and 75% completed high school. Several even went on to college. YMP became a model cited as the basis for almost 300 programs in the United States. With Drs. Jim Jekel and Lorraine Klerman of the School of Public Health, a long-term study was funded by the NIH comparing YMP babies with Hartford Hospital babies whose mothers did not receive the comprehensive medical, social, and educational support. The outcome differences are remarkable but too large a topic to go into at this time. YMP continues to this day.

Phase II: The Yale Human Sexuality Program (HSP)

“If she is going to do something wrong, she should pay the price.”

Dr. Lidz and I heard that comment one day in a YMP group session. We had told the group of teens about one of our research findings – if a girl in YMP had a younger sister, 3/4 of those sisters would have an unplanned pregnancy within the next two years. The group topic that day was how to avoid unwanted pregnancies, so we asked the girls how many of them would bring that information home to their younger sisters. Not one of the girls said she would do that. In their value system, sex was wrong. They were paying a price for having sex. They felt their sisters should also have to pay that price. Their attitude toward sex surprised me. I realized I would have to learn

more about sex values, sexual behavior and how to help young people mature with their sexuality and not be damaged by it.

I was helped by Dr. Mary Calderone, next on my womentors list. I met her at the American Public Health Association Meeting in San Francisco in 1965. She heard my paper about YMP and I heard her description of SIECUS, the Sex Information and Education Council of the US. She had just founded the organization, dedicated to bringing sex education to Americans of all ages.

Dr. Calderone invited me to become a member of SIECUS' Board of Directors and serve on its' Scientific Advisory Committee. I also agreed that we would try to develop a course in human sexuality for Yale medical students. I was at least 20 years younger than almost all the others on that Committee which included the Kinsey investigators Wardell Pomeroy, Paul Gebhardt and Alan Bell, as well as Dr. John Money of Johns Hopkins, Dr. William Masters and Dr. Harold Lief, founder of the Sexuality Program at the University of Pennsylvania. I had read the works of these people since I was a teenager. They were the pioneers of sex research from the 1940s onward. I had never dreamed I would work closely with them.

Yes, you heard correctly; I had been interested in studying sex from the time I was 15. My father brought home a brand new copy of Kinsey's 1953 volume on sexuality in the human female and said I was welcome to read it. In fact, Lorna and I read it together. Lorna, literally the girl next door, and I had been each other's best friend for several years by that time. I attended her 10th birthday costume party dressed as a surgeon and she as a gypsy.

With help from Dr. Calderone and advice from Dr. Lief and Dr. Masters, I started the first Yale Medical School lecture series in human sexuality. Many members of the faculty and the Dean's office served as advisors and group leaders who met with the students after each of the lectures. There isn't time to go into the details but among the lectures I remember were those of Lincoln Day on family planning, Ernst Prelinger on psychoanalytic theories of sex as well as one of Dr. Tom Detre's infamous jokes about having sex with dogs, cows and a chicken. But, all that is for another day.

Two threads in my trajectory already mentioned are responding to the unexpected and having womentors. A third thread is being exposed to doctors and to medical systems outside of the United States. It began in 1961 when Lorna and I lived in London for three months. I was a 4th Year medical student. NYU approved my studying internal medicine for one semester at St. Bartholomew's Hospital. I still remember the teaching of our Consultant (Bodley-Smith) and the lecturers I heard including Professors Sherlock, Black, and Simon. I feel the British professors taught me a great deal about the art of teaching. It's a matter of careful selection of words, phrases, and data in slides which maintain a focus so that the student learns key messages through the telling of a story. It remains my style to this day.

It was 1967. We were in the midst of the Viet Nam war and I was drafted into the US Air Force. I had three months between leaving Yale and having to report at

Westover AF base in South Hadley, Mass. I decided to learn how other cultures dealt with teen pregnancies.

Dr. Calderone told me about well-established teen pregnancy programs in Europe. She was trained in Public Health and had worked with WHO, making contact with European leaders in this area. With her help and that of Dr. Richard Weirman, I received a grant from the Ford Foundation to study sex education and teen pregnancy programs in Western Europe and behind the Iron Curtain. Lorna, our son Marc and a teenage cousin-baby sitter accompanied me. I interviewed thought leaders in Denmark, Sweden, the Netherlands, Switzerland, Italy, Yugoslavia, Hungary, Czechoslovakia, France and the UK.

In Stockholm, I spent a week with the Head of the RFSU (the international family planning organization), Mrs. Elise Ottesen-Jensen. Each morning for a week, I visited her office and we talked for an hour or more. She described her experience as a sex educator for kindergarten teachers in Norway and Sweden. One day she told me, "We have now reached the point where every child in our country has grandparents who received sex education in the kindergarten." She had just completed the 50th year of her summer sex education workshop for kindergarten teachers. I asked, "Why have you spent so much of your life as a sex educator?" She replied, "It's simple really; because of sexual ignorance people waste too much energy on sex. Think what they could do with that energy for themselves and for others." She was a strikingly beautiful woman. She dressed impeccably. She worked every day and ran the whole Swedish family planning system. She was 92 years old at the time. In Stockholm there was none of the ostracism or lack of opportunity that pregnant teens in the US were forced to endure. The Swedes no longer needed special houses for pregnant teenagers as they were fully integrated into the society. The babies stayed in nurseries in the office buildings in the center of Stockholm where their moms worked, and took breast-feeding breaks. I thought of it as a look into the future.

Each country I visited had something new and interesting to teach – the *Moedrehjælpen* in Denmark, the *F.I.O.M.* in the Netherlands, the *Villaggio delle Madrede del Fanciullo* in Milan et al. Each was an example of a mature system for coping with the pregnant teens' issues within their individual societies. Learning about the different cultures, different attitudes and variety of teen pregnancy programs was eye-opening. My report to the Ford Foundation contains many new ideas as the European programs were far-advanced compared to ours.

The Air Force actually afforded me the opportunity to advance my academic career. They let me do several research studies e.g. of contraceptive pills to suppress lactation. One study I am particularly proud of is my Air Force study of sex and pregnancy. I found that if a woman had intercourse within two weeks of delivery her labor time was decreased by almost six hours and she needed less anaesthesia. On the downside, premature labor could be induced by any sexual stimulation in women who had a history of premature deliveries.

Westover AFB is near Mt. Holyoke College. Lorna is a Mt. Holyoke graduate. It was easy to contact authorities at the College. When I described the Yale Medical School sex lecture series format and content, there was great interest in developing a similar series for undergraduates. The first of the sex education lecture series was developed at Mt. Holyoke with the help of their faculty, Dean's office and ministry. Professor Haskell Coplin, an Amherst psychologist who had known Kinsey and who had been teaching Amherst students about sex for more than a decade, joined the team and Amherst students were bused in to provide a male compliment to the Mt. Holyoke students. The next year, still at Westover, the same "Topics" series was presented at Smith College as well as a repeat at Mt. Holyoke.

As I was nearing the end of my tour of duty, I received a call from Dr. Bob Arnstein, the Director of the Yale Mental Hygiene Clinic. Bob had been one of the group facilitators in the Medical School sex lecture series. He had heard about the Mt. Holyoke/Smith/Amherst sexuality class from Smith's President Mendenhall and Yale's William Sloane Coffin who had heard about the presentations from the other colleges' chaplains. Bob asked if I would be interested in providing sex education and counseling for Yale students when I returned in September, 1969 – the moment when Yale was enrolling its' first women undergraduates. It took me only a couple of minutes to consult with Lorna and to reply to Bob:" Yes, we, Lorna and me, would be glad to give it a try." We asked that the program be based in Mental Hygiene because of the reputation Dr. Arnstein had built for his Department with respect to trust and confidentiality. That was most important if we were going to listen to students' sexual histories and concerns and provide helpful services.

Co-education arrived at Yale in September, 1969. Lorna and I returned to Yale that month. I was given a dual appointment-in OB/Gyn and Psychiatry. Thanks to Dr. Arnstein, positions as "sex counselors" had been arranged for us in Mental Hygiene. I continued at the Medical School as a junior member of the Ob/Gyn Department. Dr. Quilligan, our Chairman and Dr. Kase, our Chairman-to-be, fully supported my developing a career in both departments.

Lorna and I created the Yale Human Sexuality Program (HSP) in which counseling was but one part. Also included, and based on the format developed at Yale Medical School, Mt. Holyoke and Smith, was a lecture series about sex called "Topics in Human Sexuality". The topics included sex response, contraception, sexual orientation, sexually transmitted disease, pregnancy and abortion, and sexual dysfunction and its treatment. The lecture was followed by educational films. Some of the films were sexually explicit, showing sexual relating in an intimate and caring relationship. Key issues were accepting sex as a natural and valuable part of life and the importance of communication and building trust in relationships. For the topic of pregnancy and childbirth we showed a film of a delivery. Then, couples with newborns arrived to tell the students about their recent experiences. A question and answer session followed and then the entire group split into small discussion groups which met with student group leaders for the next two hours.

The “Topics in Sexuality” lecture series was first given in Battell Chapel as more than 1200 students signed up, completed an anonymous sex questionnaire, and attended the lectures and small group discussions. The series was held two nights a week for four weeks near the start of each winter term. It continued for 25 years until 1995, as a non-credit course. Even to this day, as I travel across the country lecturing about hormones and sex and ageing, doctors still come up to me to say how much “Topics” meant to them when they were Yale undergraduates and they hope they are carrying on in that tradition. Tapes of the lectures and questionnaire findings are included in our Yale Archive.

“Sex and the Yale Student” was another part of the Program. With the help of students and Dr. Arnstein, we wrote and distributed “Sex and the Yale Student”- a little book about sex which every Yale undergraduate received. President Brewster kept copies of “Sex and the Yale Student” on a table in the entry hall of the President’s house for visitors to read and keep. Revised five times to remain up-to-date, Yale University Press printed more than 40,000 copies which were distributed free over the next 20 years.

This model of a college sexuality program was replicated at more than 30 other colleges and Universities, including Brown, Dartmouth, Harvard, and Princeton. Permission was given to use “Sex and the Yale Student” content as a basis for their own booklets distributed to their students. I helped develop and present the “Topics” series at all of these schools. Over time each of the schools was able to carry on the program with their own people. They also developed their own sex counseling services often led by our graduates or others who had come to train specifically at Yale with Lorna and me.

The Mental Hygiene Sex Counseling Service was the centerpiece of the HSP. Students, faculty and employees came individually or in couples to see us to discuss sexual issues. The two of us saw the students together. In the beginning Lorna focused on the emotional and social issues while I focused on the medical and more specifically gynecological concerns. Over time, I became more and more a psychotherapist. In particular I owe this part of my development to Lorna but also to both of the Drs. Lidz, Dr. Sidney Berman, Dr. Ernst Prelinger and Dr. Arnstein. The Sex Counseling service was a big success among Yale students. To illustrate, in the Class of 1973 there were 223 women of whom 214 saw us at some time during their undergraduate years. Most saw us at least once every year they were at Yale. They came to talk to us about sex as the issues were evolving and we learned a great deal about sexual development in late adolescents and young adults.

In 1972 the Ob/Gyn Department paid for us to be trained in sex therapy by Masters and Johnson and we lived in St. Louis with our children for that adventure. Dr. William Masters and Virginia Johnson were fine teachers and much of what we learned in St. Louis has stayed with me all my life: for example, their simple statements such as “Sex is a Natural Function” and “Feelings are facts.” They showed

us that bringing a systematic, structured approach to sex therapy could solve most people's sex problems most of the time. Sex therapy became an integral part of the Yale program. Some of you may remember the Wall St. Journal front page feature titled "Yale Has It's Own Masters and Johnson;" that was us.

In the 33 years that we ran the counseling and therapy programs we worked with more than 10,000 individuals.

As you might imagine, there were some in the Yale community who were critical of the Sexuality Program. One example is a letter from a Yale Class of '26 that appeared in the Alumni Journal. He didn't think it was such a good idea to be talking about sex at Yale. But, he also said "My wife thinks this is just sour grapes and I really wish we had such a program when I was there."

Lorna and I learned a great deal about sexual development as we listened, evaluated, educated and counseled. In 1975, we reported our findings in *Sexual Unfolding*, the book we wrote while on sabbatical leave at Oxford University. That book was translated into several different languages and is still in print in a paperback edition. It has been used as a text in psychology courses in colleges throughout the country. During this sabbatical I was a Macy Foundation Faculty Scholar at Oxford University. While working on our book, I was able to participate in the Psychiatry Department activities and also to venture out and find sources of intellectual stimulation and academic potential.

There were two unexpected occurrences during the Oxford sabbatical leave. I was based in the Warneford Hospital, the Psychiatry Department. Lorna and I became a part of the Oxford Sex Therapy team headed by Dr. John Bancroft. Bancroft was interested in many aspects of sexual behavior including studies of physiological response. I had learned a good deal about sex physiology studies from my training with Dr. Masters. At Oxford Instruments, a scientific equipment firm, I worked with engineers who helped me develop a system for recording pelvic and brain physiological response during sexual stimulation. It proved to be pioneering work and led, in part, to my becoming a Co-Founder of the International Academy for Sex Research. As it will turn out, the most important aspect of these studies was delineating the role of ovarian hormones in the control of vaginal and cerebral arterial blood flow.

The other unplanned development occurred after I was asked to present a Grand Rounds lecture about sex to the Oxford Ob/Gyn Department. Apparently, it went over well and Professor Turnbull invited me to serve as the psychiatric consultant for their new menopause clinic. I attended that clinic each week and worked with a very fine gyn endocrinologist named Ann Anderson. She and I saw the patients together. Listening with a therapist's ear led to a more in-depth understanding of the issues the women were presenting. Yes, there were sex problems that had developed with menopause. There were also issues of depression and anxiety. I was fascinated to find agoraphobic patients in the menopause clinic and many menopause patients in the Warneford agoraphobia clinic. As with the teen pregnancy experience 10 years earlier,

I was seeing an ob/gyn issue that was associated with psychosocial dimensions of great interest. I was hooked on menopause.

Phase III: Mid-Life and Aging Studies

Much more happened with our return to Yale, but the most important new entity was the founding of the Yale Mid-Life Study Program and Menopause Clinic. Keep in mind that in 1975 in the United States, menopause was a taboo subject. As the wife of one of our senior psychiatry faculty confided in me, “My closest friends and I have no problem talking about sex but we never talk about menopause.” In the menopause clinic there was time to listen, diagnose, examine and treat. I was in the fortunate position of being able to offer my patients the opportunity for follow-up discussion with me in Mental Hygiene for issues including sex and the psychological effects of menopause.

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I was able to obtain funding for menopause research especially about the effects of menopause on sexuality. In presenting our study findings at international meetings, I learned about other programs in other countries. I became a member of the international menopause community and in 1978 was one of the founders of the International Menopause Society. I was one of very few Americans committed to the academic study of menopause issues. We in the US were just getting started but in France there were menopause programs that had existed for 100 years. Once again, I realized I had a lot to learn.

My next sabbatical, 1982-1983, was a year dedicated to learning more about menopause. It was also a year in which Lorna and I wrote our book *Sexual Turning Points* about times in the life cycle such as puberty, pregnancy, and menopause which can have profound effects on sexual feelings, attitudes and behavior, and sexual response.

Dr. Malcolm Whitehead accepted me as a member of his menopause research and clinical team at King's College Hospital and Medical School in London. Whitehead and his colleagues taught me new ways to think about menopause, the hormone changes that occur at that time and their significance. The British approaches to evaluation and treatment of menopausal women were different from those practiced in the United States. Two hundred Londoners became my patients for the year and they taught me a great deal about the menopause and its treatment.

I have been applying lessons I learned in London that year to my clinical practice, to research and to teaching ever since. For example, the key change in hormone production at menopause is cessation of estradiol production by the ovaries. Women who are vulnerable to adverse effects of estradiol deficiency can develop symptoms such as hot flashes and sleep disturbance, sexual dysfunction and bone loss. They can replace the lost estradiol with estradiol. We weren't doing that in this country. We used, and still often use, a complex extract of estrogens and many other substances derived from horse urine. Another example: American gynecologists prescribed estrogen replacement 21 days per month for menopause treatment. Whitehead and other Europeans, especially the French, Dutch, Danes and Swedes, prescribed estra-

diol daily. They reasoned that prior to menopause ovaries made estradiol every day of the menstrual cycle. Why not just replicate the natural course of production? Whitehead and other pioneers in this field in Europe had developed an estradiol treatment protocol with better results and fewer adverse effects than we had in even the best American programs. In my view the Europeans are still doing it the right way while we have gone down a cul-de-sac. American women now suffer more as a result of our national hormone study which used, in the words of a Danish menopause expert, “the wrong drug to treat the wrong women.” I’ll say more about that in a moment.

During my 1982-83 sabbatical the unplanned development was the chance to study hormone effects on blood flow. I studied the women in my King’s College practice and it became clear that diverse effects of hormones on blood flow were causing problems such as migraine headache, angina and stroke. In the years that followed my return to Yale, funding from the NIH allowed me to study the vascular effects of ovarian hormones. With Dr. Larry Brass, a Yale Professor of Neurology, a “neuro-gynecology” clinic was started. We studied neurological conditions that occur predominantly in women and which are affected by ovarian hormones. These conditions include stroke, migraine, and cyclical dystonia. By 1989 I was ready for my next sabbatical. This time I wanted to become more knowledgeable about coronary arteries and ovarian hormone actions in the cardiovascular system.

Phase IV: Arterial Research

Between September 1, 1989 and August 31, 1990 I was a Visiting Professor and NHS Consultant in the Department of Cardiac Medicine at the National Heart and Lung Institute in London. My mentor was Professor Philip Poole-Wilson. The cardiologists Philip assigned to my team were Dr. David Lindsay (a Yorkshireman), Dr. Canwen Jiang (newly-arrived from China), Dr. Peter Collins (a Welshman) and Dr. Giuseppe Rosano (you can easily guess where he’s from). Each of these cardiologists brought youthful enthusiasm, great intelligence and a different point of view on the issues we addressed. Poole-Wilson was the ultimate guide for our journey together. For 12 months, and for a decade afterwards, we worked together, played together, and developed a strong bond as a cardiology research team. We engaged in research at many different levels. We studied the effects of estradiol on the cells lining arteries (endothelial cells) as well as the muscle cells surrounding the arteries (estradiol blocked calcium channels in these cells and helped the muscle relax). We explored the effects of infusing estradiol into coronary arteries of women and men with coronary artery disease and showed that the hormone induced a protective increase in arterial flow in the women but not in the men. In women with severe angina whose arteries were blocked by spasms, and not by atherosclerosis, the pathophysiology was reversed by estradiol and normal function restored. Using an estradiol skin patch the women we treated became pain free.

Overall, we published just over 100 scientific papers in the cardiology literature describing our work and supporting the protective actions of estradiol in women’s cardiovascular health.

Collaborating with Poole-Wilson and the NHLI team led to making contacts among European and American cardiophysiology researchers and developing a personal presence in that world. Immersing myself in cardiology afforded me the opportunity to learn from a different point of view, to consider clinical conditions in women I had not thought of before, for example stroke, and to embark on a series of studies exploring the role of ovarian hormones in the circulatory system. As before during sabbatical leaves, I encountered new people with new equipment and ideas which I could then use on my return to Yale. For example, I learned about a British medical instrument company which made a blood flow measuring device that enabled me to carry out simple office studies to identify vascular conditions affected by change in ovarian hormones. In particular, with their laser Doppler (Moor Instruments) I was able to measure the skin blood flow effects of estradiol depletion and replacement during hot flashes. At the cellular level, our single cell chamber studies showed estradiol blocked calcium channels in vascular smooth muscle. With these findings I was able to convince cardiology molecular biologists at Yale to carry out their own studies, which have proved important. The work of Dr. Jeffrey Bender and Dr. Terry Caulin-Glaser was originated after Dr. Larry Cohen told them about our findings in London. In a recent (2010) Medical Grand Rounds, Dr. Cohen has re-stated the importance of the work I did that sabbatical year.

Research into the vascular effects of estradiol was interrupted by the 2002 publication of the NIH-funded Women's Health Initiative study. Let me try to explain. The WHI first reported findings among women who had been given estrogen combined with another hormone (MPA). MPA counteracted the beneficial effects of estrogen and increased the risk for breast cancer. In addition, the women enrolled in the study at an average age of 63, an age when atherosclerosis is already advanced beyond the point when estrogen could prevent its development. I was not surprised when WHI first reported an increased risk for breast cancer, stroke, cardiovascular disease, venous thrombosis, and pulmonary embolus in women receiving estrogen plus MPA. When the findings of the second part of WHI (women who received unopposed estrogen) were published, they found no increase in breast cancer and, among the women under the age of 60, there was a significant reduction in heart attacks and over-all mortality. Unfortunately, the initial publication of the WHI findings led to confusion about estrogen and the heart. As a result, for the past seven years, women and physicians have feared that estrogen increases cardiovascular risks. Believing strongly in the work we had done, and the 50 years of prior research substantiating estrogen's cardiovascular benefits, I have felt like the voice in the Dartmouth motto "Vox Clamantis in Deserto". However, the tide is finally turning and professional consensus has been coming back to my beliefs. Just a few weeks ago a new WHI report of the 11-year follow-up findings showed that women enrolled in WHI when they were under age 60, who received estrogen versus placebo, had almost 50% fewer heart attacks and a decreased mortality of almost 50%. Incidentally, the women enrolled in

WHI in all the age-groups (50 to 80) showed estrogen helped prevent breast cancer. None of these findings are a surprise to me or my colleagues. It is what we expected!

The major undertaking at Yale which started after my cardiology research year in London was the Women's Estrogen for Stroke Prevention (WEST) trial. It was a nine-year randomized clinical trial (RCT) of the effects of estradiol in women who have had an ischemic stroke. Dr. Ralph Horwitz was the principal investigator. From an intellectual development point of view, it offered me the opportunity to learn from working on a randomized clinical trial. Although the trial did not show the protective effects of estradiol we were hoping for, it did teach me about statistics and RCT experiences which are crucial for understanding results and their possible meanings in clinical practice.

Since Retirement

Since retiring from the Medical School in 2002, I have been fortunate to be able to continue many of my former activities. Dr. Lorraine Siggins made it possible for me to continue as Director of the Sex Counseling program for another 7 years. Working with Dr. David Katz at the Griffin Hospital, I continued vascular research studies and participation in a research team devoted to preventive medicine. Although I no longer participated in the Ob/Gyn Department's menopause program, I continued to work with menopausal women at the Yale Health Plan. I have also worked as an advisor for sex research projects. I continue to lecture about menopause, hormones and the circulatory system and sexual function and dysfunction. All of this "after the fact" activity continues to be a source of intellectual stimulation motivating me to keep learning about what's new and advising others of directions they could take in their own careers.

Lorna pioneered our retirement adventures outside the sex field. For over a decade she has been a docent at Yale's Center for British Art. I volunteer for several organizations. One I like a lot is "Big Apple Greeters." About 300 of us "greeters" offer a free tour in NYC for visitors to the Big Apple. My special area is "mid-town." On Friday mornings when I am in the City I walk for about 4 hours with a couple or an individual and teach them about the history, the buildings, the art, and the many ways to enjoy NYC. Of course it's meant a lot of reading about NYC, taking courses in its history and exploring on my own to find the special treats I can then show off during the visits. As a Dartmouth undergraduate I majored in Art History and had thoughts of becoming an architect. Being a Big Apple Greeter has reconnected me with many of the places and ideas that revolved in my mind in those days.

Come and join me some Friday.