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The Beat



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APRIL 1996

RECOGNIZING, INTERVENING, AND PREVENTING BIRTH DEFECTS

The Department of Medical Genetics has initiated a program to track, monitor, and prevent birth defects. The program has come a long way, but there is still a long journey ahead. The experience and expertise in the Department provides a foundation for building a system in order to integrate the intervention and prevention of birth defects at USAMC. A major priority for Dr. Wladimir Wertelecki, Chair, Department of Medical Genetics, is to establish Mobile as the leading site in Alabama for the monitoring and prevention of birth defects.

The leading causes of disability, mental retardation, and infant mortality can be summarized in two words: birth defects. There are at least 3,000 types of birth defects syndromes. Well known examples of birth defects include mental retardation, Down Syndrome, Marfan Syndrome, Fragile X Syndrome, spina bifida. With today's technology, many birth defects can be prevented and ameliorated. For example, 50% of the cases of spina bifida could be prevented if women ingested only 3 cents worth of folic acid per day when planning pregnancy or in the early stages of their pregnancy. The entire cost of a one year supply of folic acid for women is about \$10.

Birth Defects Monitoring Programs have regional, national and international significance. Over 20 states have begun to adopt birth defects monitoring programs. Development of such a program in Alabama has been initiated through a pilot project in the Department of Medical Genetics that was funded by the Alabama Developmental Disabilities Planning Council (ADDPC). The ADDPC is responsible for planning and coordinating services in Alabama for people who have either mental or physical disabilities or both. Dr. Wertelecki is now the chair of the Prevention Committee of the ADDPC.

With a seed grant from the ADDPC, the Department of Medical Genetics has worked in conjunction with the Mobile County Health Department and the Alabama Maternal/Child Health Program to establish a data collection system. The critical and decisive driving force behind the implementation of the pilot project was the support of our University's hospital administration and the collaboration of several departments in the USA's College of Medicine.

An important part of the data for a birth defects monitoring program is found in the birth certificate. Hospital forms at the USA Medical Center were upgraded to include data required to issue both certificates. To further enhance the birth certificate process, a computer program

was written in the Department of Medical Genetics so that birth certificates could be entered electronically instead of manually. With the computerized birth certificate information, reports can now be generated to detect high risk circumstances.

The seed that was planted from the ADDPC grant eventually sprouted into a SPRANS grant (Special Projects of Regional and National Significance) from the U.S. Maternal and Child Health Bureau. The SPRANS grant was awarded to the Mobile County Health Department to work with the Department of Medical Genetics and develop a seamless data collection system concerning prenatal medical services. Notably, USAMC has the largest number of births per year in Alabama, therefore, it is appropriate for USA to have a leading role in any birth defects monitoring program. Furthermore, having a free-standing Department of Medical Genetics with experience in computer technology and birth defects monitoring, makes our medical center ideal to initiate and lead such a program in the State of Alabama.

The Centers for Disease Control (CDC) strongly endorse birth defects monitoring on a nationwide basis. A federal Birth Defects Prevention Act is likely to pass soon. This legislation is supported by 22 major national organizations, in particular, the March of Dimes Birth Defects Foundation.

The prevention of birth defects is also being considered internationally. In 1994, by initiative of the March of Dimes Birth Defects Foundation, a World Alliance of Organizations for the Prevention of Birth Defects was incorporated. This international alliance is dedicated to the world-wide prevention, cure, and amelioration of birth defects. Dr. Wertelecki is the Secretary-Treasurer of this organization.

With the aid of birth defects monitoring programs, families can now be informed about recurrence risks and coping with the occurrence of birth defects. It will be possible to assist individuals who are in need of context-specific information that may not be brought to their attention otherwise. For example, in Virginia, the Virginia CARES program offers assistance to families affected by birth defects to ensure that they receive appropriate information, education, and early intervention services.

An important outcome of birth defects monitoring programs is the ability to inform and educate physicians, health care professionals,

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patients, and families. For several years, the Department of Medical Genetics has developed several computerized information databases. The department has over 30,000 scientific journal articles specifically related to birth defects that can be sent to physicians on request. This type of information is essential for physicians in order to carry out appropriate context-specific interventions. The department has also developed a computerized information center that includes an outstanding collection of educational materials for family support. The family information database, called Famfo, lists over 800 organizations, 400 topics, 200 newsletters, 200 brochures, 200 booklets, 60 books, and 40 videotapes. These information resources can be made available across the State of Alabama.

During the past year, data have been analyzed for 4,000 infants born at USAMC. Of these births, 153 had major malformations; 33 of the malformed infants died. With a birth defects monitoring program, the attention given to birth defects will not be merely statistical reporting. The system will translate into multi-disciplinary and multi-faceted context-specific care and will serve as a catalyst to integrate USAMC resources. An essential part of the process is to assess the occurrence or recurrence risk for birth defects. With the valuable information supplied by a birth defects monitoring program, it will be possible to ensure that the appropriate resources are made available to families affected by birth defects at an appropriate and critical time.

USA DOCTORS HOSPITAL TO BE RENAMED USA CHILDREN'S AND WOMEN'S HOSPITAL

The University has made a commitment to continue to develop the USA Children's and Women's Hospital into the region's only hospital dedicated specifically to the health care needs of children and women. "Such a conversion will provide enhanced services for children and women and will also provide more space for the other programs remaining at the USAMC," said Dr. Robert Boerth, Chair of Pediatrics.

The experience and the unique services represented by the hospital and its staff, allows these young patients and women to remain in Mobile for sophisticated medical treatments. By remaining close to home for this care, appropriate treatment is initiated rapidly, while the patient recovers with their family near by. Services which will be available at the USA Children's and Women's Hospital that are unique to our area include: pediatric intensive care, a child life program, a school program for hospitalized children, a center designed specifically for pediatric emergency care, and a high-risk obstetrical center. Construction to add a 56,000 square foot two-floor wing onto the existing facility is currently underway.

Perinatal services, now located at USA Medical Center, will occupy this new addition. "We hope to be in the newly constructed area within 6 to 12 months," said Dr. Boerth, "and the public should have access to this new facility within that same time." Once construction is completed, USA Doctors Hospital will be renamed the USA Children's and Women's Hospital, which will stand as one of only five freestanding hospitals in the United States providing care to children and women exclusively.

WELLCOME VISITING PROFESSOR IN THE BASIC MEDICAL SCIENCES

A visit by Max Costa, Ph.D., to the College of Medicine was supported by the Burroughs Wellcome Fund, sponsored by the Federation of American Societies for Experimental Biology. Dr. Costa holds the position of Professor and Chairman in the Department of Environmental Medicine at the New York University Medical Center and the Director of the Nelson Institute of Environmental Medicine. His area of expertise involves the effects of metals on biological systems and he is also considered the leading authority in this country on nickel toxicity. Selections for this award are based on the needs of the institution, credentials of the nominee, scope of the proposed program, and the expected benefits. The purpose of the award is to stimulate interest in the basic sciences and to enhance communication with scientists at the host institution.

USA TRANSPLANTATION CENTER APPROVED

The membership and Professional Standards Committee of the United Network for Organ Sharing (UNOS), approved the USA TRANSPLANT CENTER to perform kidney and pancreas transplants at the University of South Alabama beginning in the Spring of 1996. This has been a culmination of efforts which began in 1988 to initiate a comprehensive multi-disciplinary center for management of End Stage Renal Disease (ESRD) at USA. The first phase of this project was the opening of the outpatient dialysis facility. This center serves as a focal point for the growing ESRD population in the USA service area and a major transplant referring source for the transplant center.

As currently envisioned, the Transplant Center, in conjunction with the Dialysis Center will offer comprehensive care to ESRD patients. These services include: dialysis therapy, vascular and peritoneal access, kidney and kidney/pancreas transplantation. This center concept will encourage an interdisciplinary approach to the complexities of the level of patient care required to serve this patient population. Plans are underway for allocation and dedication of space identified as the USA Transplant Center. This center will be staffed by physicians, nurses, and other professionals specializing in the care of the Transplant patient. This will facilitate the integration of multi disciplinary services for high quality, efficient, cost-effective health care demanded by today's market environment. Further expansion of services, including other transplant endeavors, particularly for the care of the end stage liver disease and the development of transplant research are in the future for USA.

Previously, the state of Alabama was the only state of its size (4.2 million) with only 1 transplant center, the University of Alabama in Birmingham. Therefore, patient's needing organ transplantation had to travel to UAB or outside the state. This can be emotionally as well as financially draining for the patient and family and often impedes the patient's ability to cope with the waiting process. The opening of the USA Transplant Center therefore fills the void by expansion of services to ESRD patient in this area at a great savings in cost, reduction in inconveniences and improvements in the access to care for patients with end stage real disease.

Collaborative efforts are already enhancing educational and research endeavors of the College in the areas of transplant immunology, xenograft development and primate biology.

GRADUATE STUDENTS OUTLOOKS

The objective of the Basic Medical Science (BMS) graduate program in the College of Medicine is to produce graduates with training and general knowledge in basic human biology with an in-depth knowledge of a basic medical science discipline. The BMS program offers students the opportunity to select academic specialization from five disciplines, while providing high quality education and training in a stimulating research environment.

The program strives to offer many opportunities to form a winning future for the students as they prepare to succeed in the world after graduation. Brad Bearson of Microbiology, Wes Driggers of Structural and Cellular Biology, and Letitia Jones of Pharmacology are just a few of the many multi-talented graduate students in the College of Medicine. These three students are highlighted, providing their outlook on educational and training experiences.

Brad Bearson, originally from a small town in Vancleave, Mississippi, obtained his B.S. in Biomedical Sciences from the University of South Alabama and decided to complete his Ph.D. degree here as well. "I had performed an undergraduate research project in the department of microbiology at USA and really enjoyed the work," said Bearson. Mr. Bearson stated that he wanted to pursue research involving genetics and was interested in concentrating in this field, thus influencing him to stay and obtain his Ph.D. at USA.

Brad is currently doing research on *Salmonella typhimurium*, concentrating on the organism and its ability to adapt and survive acid. Brad's impression of the Ph.D. program is one that provides a solid base of scientific knowledge, especially in basic medical sciences. His future plans involve obtaining clinical postdoctoral experience and managing a diagnostic lab.

In speaking with Wes Driggers of Structural and Cellular Biology, we learned he is from a very large family, with a grandmother of sixteen children. Mr. Driggers is originally from a small town called Jasper, located in north Florida. He received a B.S. in Biology from Valdosta State University in Georgia. Driggers stated that initially the encouragement of an undergraduate advisor from Valdosta State University influenced him to attend USA's doctorate program in the basic medical sciences. "Once I was granted an interview at USA, I realized that the faculty were both intra and interdepartmentally helpful and seemed to be cooperative in allowing students from other departments to learn various procedures in laboratories besides their own. I thought this was very conducive to advancing science in a variety of fields and thus greatly influenced my decision to attend USA," said Driggers.

Mr. Driggers concluded the most valuable aspect of the BMS graduate program at USA was the personnel. "One can be in a great environment with excellent facilities and endless resources, but if the people in your environment aren't making you feel appreciated, the process of learning would be most hindered." Wes is currently involved with research pertaining to DNA repair mechanisms specifically of oxidative damage in the mitochondria.

Letitia Jones, originally from Lucedale, Mississippi, received a B.S. in Biology from the University of Mobile. Ms. Jones is currently studying gene regulation in neuroendocrine cells. Her primary concentration involves a protein called secretogranin II, which is found co-localized with peptide hormones in secretory granules. Letitia is also studying the molecular basis for neuroendocrine specific expression of secretogranin II and its regulation by the second messenger cAMP.

Letitia states the reason why she chose her course of study: "I've always been interested in hormones and how they achieve their effects in the body, so I took an endocrinology course as an undergraduate from the

University of Mobile." During the course, Letitia became fascinated by hormone action and realized that she wanted to pursue her graduate studies in this area. Her future plans are to secure a post doctoral position and to obtain a faculty position in a basic medical sciences program.

Letitia's overall "graduate student experience" has been very positive. "It has been challenging, sometimes very stressful and difficult, but it has provided me with a graduate education in the basic medical sciences which includes: how to function technically in a laboratory setting, how to interpret scientific data, how to improve my writing skills, and how to strengthen my presentation skills." She emphasized that the size of the program promotes the atmosphere of a scientific community, rather than the spirit of competition.

ANNOUNCEMENTS...

John Rothrock, M.D., Professor and Chair of Neurology, has been acknowledged in the March 1996 issue of *Good Housekeeping* as one of the country's best neurologists who treat victims of strokes. The article entitled "The Country's Best Heart Doctors" specifies *Good Housekeeping's* lifesaving list of the most outstanding cardiologists, surgeons, neurologists, and other heart and stroke specialists. How were the country's best heart doctor's found? The Country's Best Heart Doctors cited in *Good Housekeeping* were identified by 260 department chairs and section chiefs at major medical centers across the country who work in related fields. Telephone interviews were conducted with each department chair. One of the questions asked "In your own opinion, which specialist provide the most expert treatment and are the leading clinicians in heart disease and strokes?" In order to eliminate any bias, the physicians could not recommend anyone from their own institutions. From more than 1,000 specialists named in the telephone interviews, the interviewers gathered the 357 names cited most often to determine who are among the most outstanding heart doctors in the country.

The University of South Alabama College of Medicine is honored to have Dr. John Rothrock recognized in his field as one of the country's best stroke doctors.

Development of a College of Medicine Faculty Reference Manual has been completed by the Dean's Office. The Faculty Reference Manual focuses on policies and procedures specific to the College of Medicine, providing an overview of resources and responsibilities and is to be used as a supplement to the *University of South Alabama Faculty Handbook*. Each department has received a copy of the manual. However, materials in this manual may be duplicated and made available as needed. Hereafter, new faculty members will be provided with a copy of the manual and its contents discussed at an orientation session coordinated by the Dean's office.

CYTOMETRY CORE ACQUIRES A MICROPHYSIOMETER

The College of Medicine (COM) was notified recently of its selection as the recipient of an Academic Grant from Molecular Devices Corporation. A matching-fund grant of \$29,750 made possible the purchase of a Cytosensor microphysiometer. Seven investigators representing the Departments of Physiology, Pharmacology, and

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Biochemistry submitted project outlines detailing how the microphysiometer would benefit their research.

The Cytosensor® is a real-time noninvasive semiconductor-based system for monitoring cellular signal transduction by measuring the rate at which cultured cells acidify their environment. The acidification rate represents both a measure of the metabolism of cells through excretion of acidic metabolites such as lactic acid and

of the control of intracellular pH through the regulation of proton transport across the cell membrane. As energy metabolism and proton homeostasis are involved in many cellular biochemical processes initiated on receptor activation, this system has been used to study a large number of differently coupled receptors including growth factors and cytokines. The microphysiometer is located in CSAB 353 and is available to all investigators in the COM. For additional information about the Cytosensor®, or to make arrangements for its use, please call Dr. Raymond Hester at 460-6029.

"MATCH DAY" RESULTS

Residencies Received by Seniors at the University of South Alabama

Recent graduating classes of the College of Medicine have been recipients of very successful Match Day records. This special time and day, near the end of the four years of medical school occurs across the nation at noon Eastern Standard Time on the middle Wednesday of March each year. It is the time of general release of the results of the National Residency Matching Program (NRMP). The NRMP allows senior medical students who are seeking first year post graduate positions and institutions that are offering positions the opportunity to rank their preferences confidentially at a uniform date. The NRMP matches each senior to the residency position.

Most of the seniors utilize the NRMP Match, but some students in each class utilize other systems to secure a residency, e.g., military match, subspecialty match, etc. In these matches, each senior prepares a rank-order-list of programs to which the students "Match." As with all medical schools, a few students always fail to match initially, but all unmatched "South" seniors will undoubtedly receive a position by the end of Wednesday Match day. The results of "Match Day" were distributed on March 20, 1996 at 11 a.m. in the Magnolia ballroom at USA Brookley Complex.

University of South Alabama Seniors Residencies Received by Discipline

	Class of 1992		Class of 1993		Class of 1994		Class of 1995		Class of 1996	
PRIMARY CARE:	26	51%	37	56%	40	58%	26	60%	47	73%
Internal Medicine	12	24%	17	26%	18	26%	14	23%	26	41%
Family Medicine	11	22%	10	15%	12	17%	16	27%	15	23%
Pediatrics	2	4%	9	14%	7	10%	5	8%	4	6%
Med/Peds	1	2%	1	2%	3	4%	1	2%	2	3%
Anesthesiology	6		3		7		3		2	
Emergency Medicine	0		0		1		1		2	
Neurology	1		3		2		1		0	
Neurological Surgery	0		0		0		2		0	
Ob/Gyn	5		3		3		2		4	
Ophthalmology	0		0		2		2		1	
Orthopaedics	1		4		0		1		0	
Otolaryngology (ENT)	0		0		1		0		0	
Pathology	1		2		4		4		2	
- Psychiatry	0		1		2		1		4	
Radiology	0		2		0		2		2	
Surgery	9		10		7		2		0	
Transitional	0		0		0		2		0	
Urology	0		0		0		1		0	

If you would like to submit an article for publication, please forward it to:
 Karrye E. Jackson, College of Medicine, CSAB 170
 or FAX (334) 460-6073

EXPANSION OF NEW NEONATAL UNIT

The University of South Alabama has the largest Neonatal Intensive Care Unit (NICU) in the State of Alabama. New quarters for this large unit are currently under construction at USA Doctors Hospital. This 70 bed unit will have greatly increased space which will allow for more ready access to the patients, thus enhancing the quality of care to these sick newborn infants.

Intensive care nursery activities within the University of South Alabama began many years ago through the efforts of Dr. Hollis Wiseman. As the first Neonatologist in our region of the Gulf Coast, Dr. Wiseman established a Neonatal Intensive Care Unit at the old Mobile General Hospital prior to its purchase by the University of South Alabama. Under his loving, thoughtful and professional guidance, this unit increased from only a few beds up to its current compliment of 70 beds. Dr. Wiseman was able to develop and build upon the theme of regionalized care for newborn infants such that all seriously ill neonates in Southwestern Alabama would be brought to the NICU at USA. Currently, the NICU is under the able medical leadership of Dr. Fabien Eyal who came to USA from Johns Hopkins University in Baltimore.

The new Neonatal Intensive Care Unit will provide state-of-the-art facilities for the care of these important patients. Not only the facilities but the staff are especially prepared to take care of this unique patient population. For example, the nursing staff, respiratory therapists, pharmacists, social workers, etc. have had special training and experience which allows them to provide state-of-the-art care in their particular service area.

In addition to medical care and procedures done for such neonates, the new Neonatal Intensive Care Unit will have facilities for performing some surgical procedures on these patients. One such procedure is the tying off or ligating of a blood vessel called a Patent Ducts Arteriosus. This is a blood vessel present in newborn infants which normally closes after birth. In such premature infants this blood vessel often stays open thus creating extra stress on the heart and lungs of those babies. Rather than having to transport these critically ill premature infants for a surgical procedure, the new facility will allow the procedure to be done right within the Neonatal Intensive Care Unit.

The University of South Alabama Hospitals can be proud to have the largest state-of-the-art Newborn Intensive Care Unit within our state and region. This new facility is the result of efforts and support on the part of many individuals including: the University Board of Trustees, University and Hospital Administration, and all the specialized professional staff who take care of these fragile youngest members of our society.

NEONATOLOGISTS:

Fabien Eyal, M.D., Professor of Pediatrics and Chief and Louise Lenior Locke Professor of Neonatology, joined the department in December 1994. He is also the Medical Director for Southwest Regional Intensive Care Nurseries. Dr. Eyal was previously Chairman of the Department of Neonatology at Francis Scott Key Medical Center in Baltimore, MD. He completed his fellowship training in neonatology at the Regional Newborn Center of the University of Tennessee in Memphis. Afterwards, he continued research training at University of Tennessee and then moved to Winnipeg for additional research training at the University of Manitoba. Dr. Eyal's research interests include high frequency ventilation, liquid ventilation, nitric oxide and pulmonary hypertension.

Keith J. Peevy, M.D., joined the University in 1979 as an Assistant Professor in Pediatrics. In 1991, Dr. Peevy was promoted to full professor with tenure. He completed his residency in pediatrics at USAMC and a fellowship in

neonatology at Duke University Medical Center. Dr. Peevy's research interests include lung barotrauma and perinatal and neonatal epidemiology.

Charles R. Hamm, M.D., joined the Division of Neonatology in the Department of Pediatrics as an Assistant Professor. Dr. Hamm received his pediatric residency training and served as pediatric chief resident at the University of Louisville Kosair-Children's Hospital. He received his fellowship training in neonatology at the University of Louisville, Johns Hopkins Hospital and the Independent Division of Neonatology at Francis Scott Key Medical Center. Dr. Hamm's research interests include mathematical modeling of blood flow distribution. Other interests involve adaptation of basic science to clinically relevant models of acute pulmonary disease.

Richard M. Whitehurst, Jr., M.D., joined the Division of Neonatology in July 1994 as an Assistant Professor. Dr. Whitehurst completed his fellowship training in neonatology at the University of Miami. He completed both his M.D. degree and pediatric residency training from the University of South Alabama. Dr. Whitehurst's research interest include pulmonary hypertension as related to neonatal sepsis.

Beverley J. Roy, M.D., was appointed to Assistant Professor in the Division of Neonatology in the Department of Pediatrics in July 1992. Dr. Roy completed her pediatric residency training and fellowship training in neonatology at Emory University. Dr. Roy's current research interests involve pulmonary physiology.

Michael M. Zayek, M.D., joined the Neonatology Division as an Assistant Professor of Pediatrics in October 1994. Dr. Zayek completed a neonatology fellowship at the State University of New York at Buffalo. Dr. Zayek's research interests include pulmonary hypertension and pulmonary physiology.

DEPARTMENT HIGHLIGHTS: EMERGENCY MEDICINE

As an independent department of the College of Medicine, Emergency Medicine will be four years old in 1996. Each year has brought significant advances in clinical care capabilities and educational programs. The Department of Emergency Medicine is a recognized teaching area for all levels of housestaff. This program receives recognition by the medical students and housestaff yearly. The overall program is coordinated by Dr. T. Phillip Bell and Dr. Michael L. Sternberg.

The USAMC Emergency Department has nearly 50,000 visits annually providing a wide variety of patients from the acute urban area. The Level I Trauma Center has provided a unique range of injuries and trauma patients. The aeromedical helicopter program, Southlite, has provided a major support for the citizens of Mobile bringing critically injured patients to the Level I Trauma Center. Southlite has added to a broad based learning experience for all physicians.

Pre-hospital emergency medical services, "EMS", is an additional clinical experience for emergency medicine. It provides for the direct coordination of a wide variety of pre-hospital medical and surgical care situations.

The Department also maintains an active clinical research program under the direction of Drs. Christen A. Zuschke and Alfifa Halim Kirolos. Faculty, housestaff, and medical students participate in the applied clinical research programs.

In March 1995, the Department of Emergency Medicine moved to consolidated faculty offices and conference area on the 10th floor of the

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University of South Alabama Medical Center. A computer learning center, slide presentation and production area, and a photographic area to support the faculty and housestaff have been incorporated, and are under development in the departmental offices.

The Department of Emergency Medicine assumed the responsibilities for the USA Knollwood Park Hospital Emergency Department in July 1994. The clinical faculty staffing at this site include Drs. Deanna K. Croizer, L. Randall Lockhart, Carol R. Parks, and Christian A. Zuschke. This emergency medicine group provides the clinical care for over 15,000 patients per year. Joint efforts in pediatric emergency medicine are conducted in coordination with the USA Doctors Hospital with Drs. Tim J. O'Connor and W. Ricks Hanna in the Childrens Evaluation Center.

The Department of Emergency Medicine continues to develop clinical capabilities and innovative educational opportunities for medical students, housestaff, and faculty alike. A critical balance of emergency patient care, teaching, and research is ongoing. Capabilities in medical photography, slide presentation development, and computer assisted learning are major developmental goals. With the acquisition of additional attending faculty, the approval of a full residency program in Emergency Medicine is a prime goal of the Department of Emergency Medicine for the future.

FACULTY

Frank Pettyjohn, M.D., (*Professor and Chair*) joined the University in 1986 as Clinical Professor of Medicine. In May of '89, Dr. Pettyjohn was appointed Director of Emergency Services; and joined the faculty as a Professor in the Department of Medicine in July. Currently, Dr. Pettyjohn

serves as Professor and first Chair of Emergency Medicine. He completed a rotating internship followed by a residency in internal medicine at the Madigan General Hospital in Tacoma, Washington. Thereafter, he completed his training in aviation medicine and received a fellowship in cardiology at Madigan General Hospital.

T. Phillip Bell, M.D., (*Assistant Professor*) started in the Department of Medicine as an Assistant Professor in 1990. In August 1992, Dr. Bell's primary appointment was transferred to the Emergency Medicine department. He completed a internship and residency in internal medical at the University of South Alabama Medical Center.

Alfifa Halim Kirolos, M.B., B.Ch., (*Instructor*) expertise is in the area of clinical investigation. She joined the University in July 1990 as an Instructor and Director of Clinical Investigation Services in the Department of Internal Medicine. In 1995, Dr. Halim transferred to the Department of Emergency Medicine and plays an important role in the Clinical Research Division within the department.

Michael L. Sternberg, M.D., (*Assistant Professor*) joined the Department of Emergency Medicine as an Assistant Professor in July 1992. He completed an internship and residency training in internal medicine at USAMC.

Christen A. Zuschke, M.D., (*Assistant Professor*) joined the University in October 1990, as Assistant Professor in the Department of Internal Medicine. In 1993, Dr. Zuschke was appointed Assistant Professor in the Department of Emergency Medicine. He completed a combined general surgery/transitional internship and residency in internal medicine at Good Samaritan Medical Center/VA. Medical Center in Phoenix, Arizona.

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