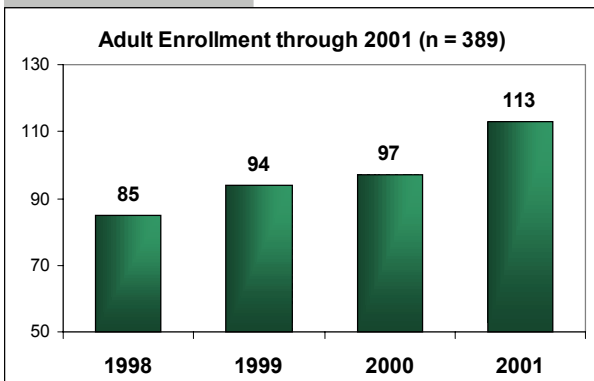




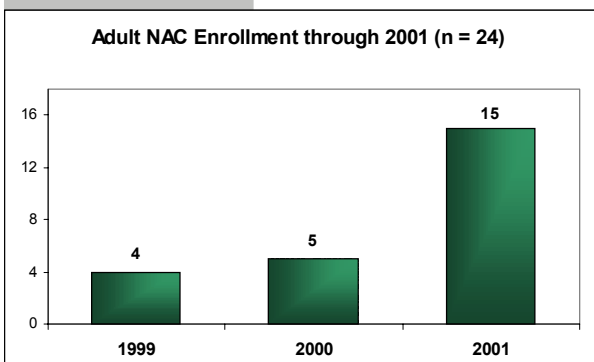
THE TARGET

TARGETING ACUTE LIVER FAILURE TO FIND A CURE IN THE 21ST CENTURY

Looking Ahead: A Word from the PI



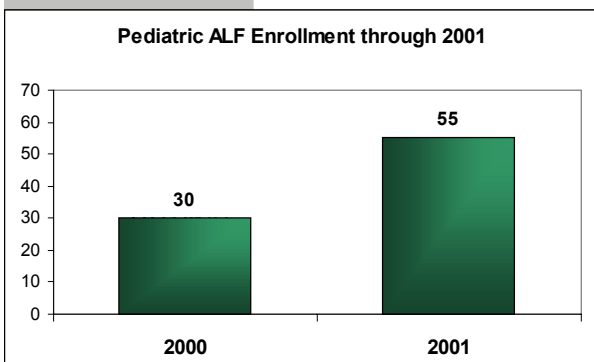
As we look ahead to the beginning of 2002, we are now in the 5th month of year 2 of the 5 year ALF study. Now it gets serious! We must fulfill our mission to test the efficacy and safety of NAC in at least 200 patients. I am confident that we can do this. Our Data and Safety Monitoring Board (DSMB) feels the same way. In December, for example, we enrolled 4 patients—this is the number we need to meet our goals of 50 patients per year. And we still have 7 adult programs not NAC qualified at this point. Nevertheless, it is important that we all keep ‘on message,’ reminding our ICU staffs and colleagues of the importance of early identification and enrollment of new patients for the success of the study. We have money to reimburse you, and, thankfully, most of the contracts are signed. Now the fun begins, and we can do what is most important—study and take care of these very sick patients.



One of the joys of developing this group has been the creative part, figuring out what to explore next and what ancillary studies would be worthwhile to perform. I am delighted with the success of the study of occult Hepatitis B from the University of Michigan crew, published in *Hepatology*. The strength of the group in providing large numbers of samples make almost every study bound to succeed. But there are about 8 other studies in the works: cytokines by Ray Chung and his group at MGH, oxidative stress indicators by Mike Schilsky at Mount Sinai and myself, Gc globulin and alpha fetoprotein by Frank Schiødt, and many, many others studies about to take off, utilizing the great combined resource of the data and serum bank we now have. Let’s see how many of these can develop preliminary data by the next AASLD deadline, June 10th. While I think of it, remember that all abstracts must be cleared through the Dallas office and with the publications committee.

At this time, we have a lot of reasons to be grateful. First, we have great support from NIDDK, and devoted personal attention and encouragement from Pat Robuck, our project officer. Our DSMB is equally loyal and highly underpaid. But we have also had a ton of encouragement from FDA, specifically Jim Bona, our project officer for the Orphan Product division; from Jay Hoofnagle and Len Seeff at NIDDK, and finally our own staff at UT Southwestern Medical Center. This study could not exist were it not for the hard work and dedication of Grace Samuel, Annelise Thornton, Summer Gammage, Stephanie Jones, the staff of ACS who are featured in this issue of the Target, and Frank Schiødt who was here at the beginning of the study and

has now returned for yet another go at ALF. Thanks also to the AASLD/Schering Fellowship for funding Frank’s return to Dallas.



As we look forward, there is likely a new Request for Applications proposed by NIDDK in 2003 for a multi-center network for Drug-Induced Hepatotoxicity. Be thinking of what role you see yourself or our group playing in that arena. If you hear of new viruses or new examples of drug toxicity that we need to keep an eye out for, let us know so that we can quickly spread the word to the group. And be thinking always as to what we could do better and how we could serve our patients more completely. After all, isn’t this is what medicine is all about?

Meeting Attendance Increases By 42%

University of Washington Anne Larson, MD; Hao Do Washington University Laura Gerstle University of California, San Francisco Tony Bass, MD; Lily Luu; Philip Rosenthal, MD University of Nebraska Tim McCashland, MD; Tamara Bernard; Simon Horslen, MD; Beverly Fleckton MayoClinic Eileen Hay, MD; Linda Lairson; Piero Rinaldo, MD Baylor University Medical Center Jeff Weinstein, MD; Sonnya Coultrup University of Pittsburgh Obaid Shakil, MD; Diane Morton Northwestern University Andres Blei, MD; Humberto Soriano, MD Oregon Health and Science Univeristy



Atif Zaman, MD; Ken Ingram, PA University of California, Los Angeles Steven Han, MD; Anjanette Urdanivia University of Michigan Robert Fontana, MD; Kimberly Morton; Seema Sonnad, PhD Mt. Sinai Mike Schilsky, MD; Nila Villa, MD; Ben Shneider, MD; Jill Savitzky University of Alabama, Birmingham Brendan McGuire, MD; Pam Davis University of Colorado Michael Narkewicz, MD; Angela Walz-Jones Massachusetts General Hospital Deb Purkis Mayo Scottsdale Gail LeBrun University of Cincinnati Jamie Aranda-Michel, MD; Lauren Fulkerson; John Bucuvalas, MD; Susan Krug Columbia-Presbyterian Robert Brown, MD; Steven Lobritto, MD; Melissa Brown University of Southern California John Donovan, MD; Connie Olson Albert Einstein Santiago Munoz, MD; Stacey Carmody Medical College of Virginia Todd Stravitz, MD; Melanie White UC Davis Lorenzo Rossaro, MD; Larry Kochie Harvard University Laura Krawczuk Johns Hopkins University Kathy Schwarz, MD; May Kay Alford Baylor College of Medicine, Houston

Saul Karpen, MD UT Southwestern Medical Center Will Lee, MD; Frank Schiodt, MD; Cori Wentworth, PA-C; Grace Samuel; Annelise Thornton; Rob Squires, MD; Nancy Simonds; Linda Hynan, PhD; Joan Reisch, PhD; Joe Webster; Julie Polson, MD; Summerjoy Gammage; Stephanie Jones; Tom Boetcher; Janet Duermeyer NIDDK Patricia Robuck, PhD, MPH Abbott Laboratories George Dawson, PhD; Suresh Desai, PhD Food and Drug Administration Lori Love, MD, PhD



Annual ALF Meeting a Huge Success

On December 9th and 10th, the Acute Liver Failure Study Group held its fourth annual meeting in Dallas. This year was the largest meeting in the group's history, with 72 members in attendance. One hundred percent of the active adult sites were represented as were 93 percent of the actively enrolling pediatric sites. One highlight of this year's program was the line-up of outside speakers. George Dawson, PhD, from Abbott Laboratories, gave an overview of viral discovery pertraining to viral hepatitis. Lori Love, MD, PhD, of the FDA, then discussed safety and regulatory concerns of botanicals and other "natural" products. This is in particular a hot topic due to the hepatotoxic characteristics of many herbs. Finally, Piero Rinaldo, MD, of the Mayo Clinic, entertained and enlightened the group during his talk on fatty acid metabolism.

In the afternoon, the pediatric and adult members split for smaller workshop style meetings. The adult investigators and coordinators listened to updates on the current ancillary studies before meeting separately; the investigators broke into committees and the coordinators were trained in the logistics of the Long-Term Follow-Up protocol. The Adult ALFSG then reunited for reports given by each committee: Steering, Publications, Serum Bank and Ancillary Studies. The Pediatric ALFSG discussed the Fatty Acid Oxidation in Children ancillary study protocol and the use of IV NAC in children before splitting into two groups, investigators and coordinators. While the coordinators reviewed daily management details of the study, the investigators continued discussing protocol issues and management of ALF in children.

Let's Hear from the ALF Committees

The following recaps what was discussed in each committee meeting during the afternoon session of the Annual ALFSG Meeting.

Steering Committee

In order to maintain and increase enrollment in the study, marketing efforts will be scaled up this year. Suggestions were made at the meeting to develop a brochure on the NAC trial and to write a letter that can be sent to referring physicians. This correspondence will specifically target gastroenterologists and ER physicians. Reminders, such as flyers and emails, will also be made available for distribution at the sites.

We are concerned that the sites are not keeping up with billing. Remember that each site will be reimbursed \$400 for each data and serum patient enrolled and \$1800 for each NAC patient enrolled. When a patient enters the follow-up phase of the study, \$100 will be paid for each follow-up visit.

It's important that we maintain standards for site performance regardless of the size of the site. The steering committee recommends that minimum criteria be set for performance standards. Meeting these criteria will prevent a site from becoming inactive data collection centers. These standards will ensure that we meet our enrollment goals and will provide a platform for exceeding them.

Ancillary Studies Committee

Seven studies tangential to the ALF data and serum study are currently in process. These projects look at the hepatitis B virus, alpha-fetoprotein, acetaminophen overdoses, the SEN-V virus, S-100 β markers, the development of an ALF

management protocol and long-term outcomes. Other studies that have been proposed focus on fatty acid oxidation, cytokines and Gc proteins. Updates on these ancillary studies will be made in future issues of The Target newsletter. If you have an idea for an ancillary study, write a short proposal and send it to the Ancillary Studies Committee via Dallas. Several areas, such as the long-term follow-up study, hepatitis E and ICP monitoring, provide fertile ground for future studies. We hope that you will take advantage of the data; it's there for you to mine!

Publications Committee

The Publications Committee is responsible for reviewing all of the manuscripts, abstracts and presentations on the ALF Study, including the NAC treatment trial and the ancillary studies. A list of all submissions and printed publications will be made available to the entire group. We will keep this list updated for reference purposes. The committee is available to help you determine which conferences and journals to submit abstracts and papers to.

Several concerns about publications and presentations have been raised in 2001 – standardizing our public image and authorship on papers. We aim for the ALF Study Group to present a consistent face to the medical community at large. A standard slide about the group is being developed for inclusion in every slide presentation made by a group member. This slide will consist of a list of all sites and principal investigators involved in the study as well as a standard logo that identifies the group.

To ensure that the proper individuals are appropriately

See Committee Reports, p. 6.

What Happens to All the ALF Data?

Data Management and Statistical Analysis for the ALF Study Group

Academic Computing Services (ACS), under the direction of Dr. Joan S. Reisch, serves as the database management and statistical consulting group for the ALF Study Group. The Database section consists of five programmers who provide database management for all types and sizes of projects and custom programming for data entry, manipulation and

reporting. Six statisticians, five with Ph.D.'s, provide expertise in formulating hypotheses, determining sample size requirements, selecting appropriate statistical analysis techniques, analyzing and reporting data and preparing manuscripts for publication. ACS also has three data entry personnel.

The data management process involves many

steps that may not be obvious to research personnel. Before the database management system is written, data forms are designed, reviewed and tested by clinicians and modified until they reflect the best judgment of the research personnel. Joe Webster designed the database system for management of the Acute Liver Failure Study data and makes further modifications whenever data forms or procedures change. It is written in Microsoft Access. The patients' data forms are sent or faxed to the Dallas Coordinating Center and go through a clinical review process by Drs. Lee, Schiødt, and Squires as well as Grace Samuel and Nancy Simonds. They send the completed forms to Joe Webster who reviews them for data management considerations and records the patient and site information. Next the forms go to Marcia Lewis who performs the data entry; then Janie Munoz performs the verification entry. After a group of forms have been double entered, a computer-programmed comparison of the data is performed to determine any differences between the two sets of entries. Differences must be resolved before data are released for analysis. When the data form copies are clear with legible entries, all steps - data entry, verification and the subsequent comparison - go more quickly.

After the data have been "cleaned", the data are ready for statistical analysis. Joe Webster constructs queries to provide the dataset for analysis. Dr. Linda Hynan works with the

Dallas Coordinating Center group to analyze the information prior to preparing abstracts and manuscripts. She is also responsible for preparing the statistical results for the annual report and for the semiannual meetings of the Data Safety and Monitoring Board.

Dr. Joan Reisch develops the stratified randomization of subjects in the NAC Clinical Trial. Each site has its own randomization schedule that is sent to the research pharmacist at the site. Grace Samuels send the drug (NAC) for the study to each site. Dr. Hynan is responsible for the drug accountability sheets and receives requests when more drug is needed.

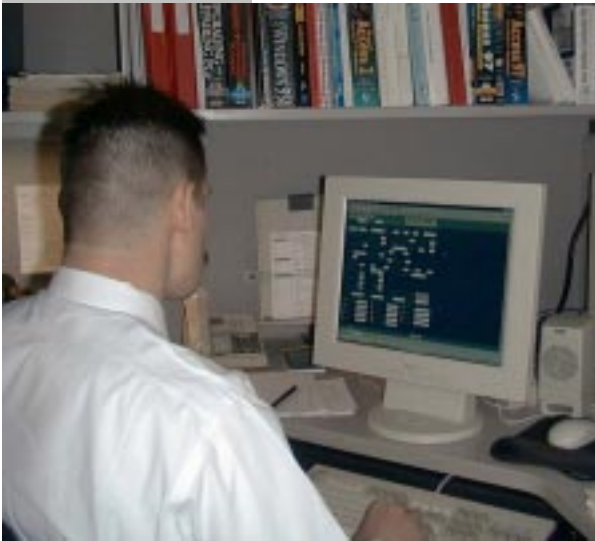
Dr. Reisch, Dr. Hynan, and Mr. Webster meet regularly with Drs. Lee, Schiødt, and Squires, Grace Samuel, Nancy Simonds and Annelise Thornton.

Joan S. Reisch, Ph.D.

Dr. Reisch is the team leader for the statistics and data management activities for the Acute Liver Failure Study. For the clinical trial of N-acetyl cysteine versus placebo, she develops the stratified randomization schedules utilized by the research pharmacists at each participating institution. She is an Associate Professor of Biostatistics and directs Academic Computing Services (ACS), the statistics and database management consulting group for the University of Texas Southwestern Medical Center. Dr. Reisch graduated from Southern Methodist University in Dallas with a Ph.D. in mathematical statistics.

Dr. Reisch has been an active member and a protocol reviewer for the Institutional Review Board for Human Research since 1983 and for the Executive Committee of the General Clinical Research Center. Research fellows and faculty as well as students of Public Health and of the Southwestern Graduate School enroll in the credit course in Biostatistics taught by Dr. Reisch. Her professional interests include the use of computers in medicine, the integration of statistics and data management techniques in the support of research, and the design of clinical trials. Joan and her husband, John W. Boddie, (also a Ph.D. statistician) enjoy travel, downhill skiing, gardening, and family.

In addition to the Acute Liver Failure Project, Dr. Reisch, Dr. Hynan and Mr. Webster support two other major studies: the Alzheimer's Disease Center at UT Southwestern and the American Spinal Muscular Atrophy Randomized Trial (AmSMART).



Joe Webster modifies the Access® database each time the case report forms are updated.

ALF Data, Cont.

Linda S. Hynan, Ph.D.

Dr. Linda Hynan is the statistician for the ALF Study Group, a non-voting member of the Data Safety and Monitoring Board, and is the person the pharmacist contacts for receiving NAC. At UT Southwestern, she is a Biostatistician in ACS, Assistant Professor of Psychiatry, and a member of the graduate faculty in Clinical Psychology. She received her Ph.D. from the University of Illinois (Urbana) in Quantitative Psychology with a minor in Statistics. This year, Dr. Hynan is the President of the Society for Applied Multivariate Research and the VP/Program Chair of the North Texas Chapter of the American Statistical Association. Linda is the statistics editor for *Pediatric Infectious Disease* and reviews for several other medical journals.

Amateur radio is a major hobby of Linda's. She is an extra class operator and a volunteer examiner for ARRL and W5YI, a Radio Amateur Communications Emergency Services (RACES) member for the Irving Emergency Management Office and an Amateur Radio Emergency Services (ARES) member for the Waco Emergency Management Office. Linda's husband, Ed, retired from the Air Force as a Chief Master Sergeant, teaches ROTC in a Waco high school. Her son, Pat, is a systems administrator for the School of Engineering and Computer Science at Baylor University.

Joe Webster

Joe Webster is the database programmer for the Acute Liver Failure Study Group. Joe designed and programmed the ALF database; he modifies it as changes are made to the data entry forms or to study procedures. Joe is an integral part of the team in making sure that the data are entered correctly and in a timely manner. He works with Marcia Lewis and Janie Munoz in the entry of data and with Dr. Hynan to produce files to summarize and analyze the data. Mr. Webster is a Programming Applications Supervisor in the ACS Database Consulting Group. He joined ACS in 1999 after working as a programmer/analyst in the Department of Psychiatry at U. T. Southwestern and as an analyst for The Psychological Corporation in San Antonio. Today, he has over 12 years experience in both the database and networking fields with current expertise in Microsoft Access and database programming. Joe earned a Bachelor's Degree in Mathematics from Texas Lutheran University. Outside work, he spends time with his wife Vicki, a schoolteacher, and sons Joseph, 8, and Jacob, 1. Two pastimes that gain his attention are running and landscaping their home.

Marcia F. Lewis

Marcia Lewis recently joined the statistics and data management team in ACS. After the data forms are reviewed in Dr. Lee's office and by Mr. Webster, Marcia enters the information into the database created for the ALF project. After Janie Munoz enters the data for verification, the data sets are compared and any discrepancies are resolved before a final "clean" set of research data are available for analysis. Prior to joining ACS, Ms. Lewis had been with UT Southwestern for two years and has 26 years of solid secretarial experience. She is a conscientious and capable addition to the data management team. Marcia is married to Scott Elliott, an Information Technology Manager for Abbott Laboratories in Las Colinas. She has three stepchildren ages 18, 20, and 22. Claiming her interest are hobbies of gourmet cooking and flower arranging.

Juanita (Janie) Munoz

Janie Munoz joined ACS in late 1999 as a data entry operator and a member of the administrative staff. She quickly became familiar with the use of Microsoft Access for data entry and became adept at the double/entry and compare process utilized by the ACS data management systems. Along with Marcia Lewis, Janie is responsible for the accurate and timely entry and verification of data and for assistance in resolving discrepancies between the two sets of data. After the comparison agrees, Janie adds the Case Report Forms (CRF's) to those already filed. Recently widowed, Janie is the loving mother of four children, Frank Jr., John, Robert, and Sandra, and dotes on her eight grandchildren. Baking is one of her favorite activities.

(l to r.) Linda Hynan, Joan Reisch, Joe Webster and Marcia Lewis. *Not pictured: Janie Munoz.*



Fatty Acid Oxidation Defects in ALF

by Benjamin Shneider, M.D.

Defects in fatty acid oxidation (FAO) are the result of enzymatic deficiencies in the complex process involved in the catabolism of fatty acids. At least 20 different specific fatty acid oxidation disorders have been described. These disorders are protean in their manifestations and can include; sudden death, skeletal and cardiac myopathy, seizures and acute liver disease. Typically, they become apparent in times of fasting and/or stress, when fat is utilized as an energy source. The pathophysiology of this group of disorders is related to both energy deficiency and accumulation of toxic intermediate metabolites of fatty acid oxidation.

At present it is suspected that four of the over twenty different FAO defects are associated with acute onset of severe liver disease. Diagnosis is often suggested by the finding of nonketotic hypoglycemia and characteristic dicarboxylic aciduria. These characteristic features may be transiently present and thus many cases may not be clinically recognized. Accurate diagnosis of FAO defects may lead to lifesaving metabolic therapy, genetic counseling for siblings and identification of systemic diseases that may not be amenable to liver transplantation.

The current analysis of FAO defects seeks to comprehensively characterize these disorders in a cohort of children with acute liver failure. The study will prospectively examine liver, bile and fibroblasts from children enrolled in the acute liver failure study who undergo either liver transplantation or autopsy. These samples allow a more comprehensive and accurate

assessment of potential fatty acid oxidation defects. The primary goals of the investigations are to determine the prevalence and outcome of FAO defects in children with life-threatening acute liver failure.

Selected References

Rinaldo P, Raymond K, Al-Odaib A, Bennett MJ. Fatty acid oxidation disorders: Clinical and biochemical features. *Curr. Op. Pediatr.* 1998; 10:615-621.

Boles RG, Buck EA, Blitzer MG, Platt MS, Cowan TM, Martin SK, Yoon H, Madsen JA, Reyes-Mugica M, Rinaldo P. Retrospective biochemical screening of fatty acid oxidation disorders in postmortem liver of 418 cases of sudden death in the first year of life. *J. Pediatr.* 1998; 132:924-933.

Al Odaib A, Shneider BL, Bennett MJ, Pober BR, Reyes-Mujica M, Friedman AL, Suchy FJ, Rinaldo P. A defect in the transport of long-chain fatty acids associated with acute liver failure. *N. Engl. J. Med.* 1998; 339:1752-1757.

Committee Reports, Cont.

recognized as authors on papers, we will review the participation of each member who has worked on a publication. We certainly don't want to leave anyone out! A writing group will be created for each paper – both for main papers and ancillary studies papers. The authors will then be listed on the publication in order according to effort. If you head up an ancillary study, for instance, your name will appear as the first author. Everyone in the group may take advantage of the opportunity to author a paper. You don't have to be a top enrolling site... we wish to encourage active participation from everyone!

Serum Committee

The Serum Committee will review each research protocol that requires access to the serum bank. Priority on access to the serum bank will be given to investigators who wish to study viral unknowns, prognostic data and encephalopathy. To date, several ancillary studies plan to make use of the serum bank. These protocols focus on the study of Gc protein, cytokines and other proteins. When submitting a request for access to the serum bank, keep in mind that there are several requirements. The minimum number of



Committee Reports, Cont.

samples that may be used in a study is 20 to 30. The investigator will have to document the purpose and feasibility of the study for review prior to receiving the samples. Samples of 250 to 500 mL per sample will be sent once the protocol is approved by first the ancillary studies committee and then the serum committee.

Whenever possible, please send the serum bank, housed at UT Southwestern, tissue blocks. We would like to compile a database on analysis done on each tissue block, so it's important to report your findings to the committee if you use a sample. Although we encourage submission of frozen liver tissue, we realize that you may be able to collect it only on rare occasions. Recently, there has been a problem with labels on the serum tubes being rubbed off. To avoid this problem which causes havoc for the lab technicians and results ultimately in the loss of valuable samples, please use permanent markers to label your samples before sending them to the central site.

Briefly, DNA collection has been approved for inclusion in the protocol. Each site must now submit an amendment to their IRB to obtain patient's consent for DNA studies. DNA samples will be an important adjunct to the overall repository

Pediatric Investigators

Rob Squires, MD, presented the pediatric NAC protocol. Since the meeting, the protocol has been reviewed and modified, taking into account concerns and suggestions by the study group. We look forward to the initiation of this ground-breaking study. The pediatric investigators established several working groups to refine the pediatric study protocol and address discrepancies in defining the causes of ALF in children. We aim to establish a more consistent disease management approach. Three working groups will focus on defining the metabolic causes, infections causes and non-metabolic, noninfectious causes of ALF in children and will outline specific diagnostic criteria for these diagnoses. Another group will identify, collate and synthesize management and diagnostic protocols from ALFSG members with the goal of designing a diagnosis and management framework for ALF in children. A work group on long-term outcomes for children with ALF will determine specific aims to guide the creation of a long-term outcome data set. And finally, a group will liaise with those who maintain the "SPLIT" database to minimize duplication of effort and identify areas of collaboration.

Please remember how valuable your input is to your respective committee! With active participation, you will strengthen our "cutting edge" study and contribute to the success of our model network of researchers.



Angela Walz-Jones, pediatric coordinator at University of Colorado Health Sciences Center, and Lily Luu, adult and pediatric coordinator at UCSF, made friends at the Annual ALF Meeting.



Dr. Piero Rinaldo, expert on fatty acid oxidation at the Mayo Clinic, listens as Dr. Philip Rosenthal, UCSF pediatric principal investigator, makes a point during the pediatric breakout session.



The Pediatric Coordinators, (clockwise from top) Angela Walz-Jones, Jill Savitzky, Susan Krug, Laura Krawczuk, Nancy Simonds, Mary Kay Alford and Bev Fleckton, met separately after the pediatric breakout session to discuss logistics, share experiences and learn from each other to improve the Pediatric ALF Study.

ADULT SITES ~ Albert Einstein College of Medicine of Yeshiva University ~ Baylor University Medical Center ~ Columbia-Presbyterian Medical Center ~ Massachusetts General Hospital ~ Mayo Clinic ~ Mayo Clinic Scottsdale ~ Virginia Commonwealth School of Medicine ~ Mount Sinai School of Medicine of the City University of New York ~ Northwestern University Medical School ~ Oregon Health Sciences University ~ University of Alabama School of Medicine ~ University of California Davis Medical Center ~ University of California Los Angeles Medical Center ~ The Medical Center at the University of California, San Francisco ~ University of Colorado Health Sciences Center ~ University of Cincinnati Medical Center ~ University of Michigan Medical School ~ University of Nebraska Medical Center ~ University of Pittsburgh Medical Center System ~ University of Southern California School of Medicine ~ University of Texas Southwestern Medical Center at Dallas ~ University of Washington School of Medicine ~ Washington University School of Medicine ~

PEDIATRIC SITES ~ Baylor College of Medicine ~ Birmingham Children's Hospital, England ~ Children's Hospital in Boston ~ Children's Hospital of Philadelphia ~ Children's Medical Center of Dallas ~ Children's Memorial Hospital in Chicago ~ Children's Hospital Medical Center in Cincinnati ~ Children's Hospital and Medical Center in Seattle ~ Columbia-Presbyterian Medical Center ~ Duke University Medical Center ~ Johns Hopkins School of Medicine ~ King's College London ~ Mayo Clinic ~ Mount Sinai School of Medicine of the City University of New York ~ University of Alabama School of Medicine ~ University of California Los Angeles Medical Center ~ The Medical Center at the University of California, San Francisco ~ University of Colorado Health Sciences Center ~ University of Miami School of Medicine ~ University of Michigan Medical School ~ University of Nebraska Medical Center ~ University of Southern California School of Medicine ~ Washington University School of Medicine ~

PARTICIPATING MEDICAL CENTERS

Welcome New Sites

Several new sites have joined the Acute Liver Failure Study Group in recent months.

James Trotter, M.D., is the principal investigator for the adult study at the University of Colorado Medical Center in Denver. The liver transplant center performs 60-70 transplants a year. With these numbers, we expect to see quite a few ALF cases submitted by Jim and his team. The membership of the Adult ALFSG now includes 23 active sites.

The Pediatric Acute Liver Failure Study Group has recently expanded to include an international component of the group. Two international sites, Kings College London and Birmingham Children's Hospital in England, joined the group in the fall. **Anil Dhawan, M.D.** and **Deirdre Kelly, M.D.** lead the study as principal investigators at each site respectively. Although contracts still need to be worked out, there is much enthusiasm from these new members. **Saul Karpen, M.D.**, the principal investigator at Baylor College of Medicine in Houston, also recently joined the group and attended the December Annual ALF Meeting.

Welcome to all new members of the ALFSG. We look forward to your participation and your results!

Save the Date...

January

25 Site initiation visit at the University of Colorado, Denver. (Adult)

February

26-27 Site visit at UC, San Francisco. (Adult)

March

7-8 Site visit at University of Washington, Seattle. (Adult)

*Acute Liver Failure Study Group
UT Southwestern Medical Center
5323 Harry Hines Blvd.
Dallas, Texas 75390-9151*

*Tel: 214.648.2665
Fax: 214.648.2070*

acuteliverfailure@utsouthwestern.edu