

Volume XV Issue III

## PATIENT PROFILE WHEN TO CALL FOR "H.E.L.L.P."

**High Risk Obstetrics** - KATHY LOGEE, RN, FLIGHT NURSE & MANAGER OF CLINICAL QUALITY AND EDUCATION

Of the various types of specialty transports that REACH performs, one of the most potentially dynamic is the transport of the high risk obstetric patient. It is on these transports that the REACH medical crew is responsible for the care of two lives, the mother and the unborn child.

The focus of this article is a syndrome which is seen in approximately 10% of women who have high blood pressure during pregnancy. The syndrome is called H.E.L.L.P. This acronym describes the characteristics of the syndrome which are **hemolysis, elevated liver enzyme levels and a low platelet count.**

Last summer REACH was called to Sutter Lakeside Hospital in Lakeport, Calif.

to transport a woman who began to have headaches, elevated blood pressure and severe edema to her lower extremities one week prior to being seen at the hospital. When admitted to Sutter Lakeside she was 36 weeks pregnant. A diagnosis of pre-eclampsia and H.E.L.L.P. was made due to her decreasing platelet count, abnormal coagulation studies, and proteinuria. In addition to concerns about the health of this mother-to-be, was the health of the fetus.

While at Sutter Lakeside, this patient was on continuous external fetal monitoring. Through two electronic devices strapped to the mother's abdomen, the heart rate of the fetus as well as the strength, duration and frequency of contractions were being read by specially trained labor and delivery nurses.

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## EXPANDING OUR REACH Meeting the Needs of Those We Serve

- JIM ADAMS, CEO

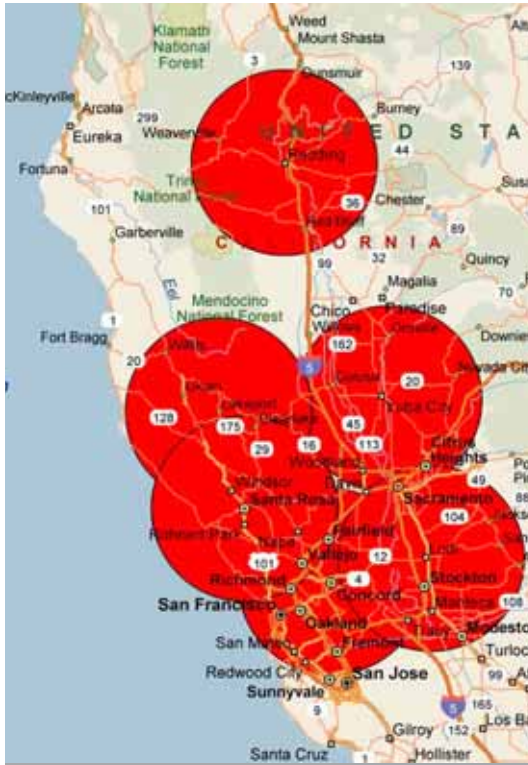
We take great pride in serving our patients and their communities. Our commitment to service coupled with our founding principle of always doing what is right for our patients provides the guidance and roadmap for our daily services, and also drives us to continuously improve the level of care and services we provide. Meeting the needs of those we serve is always at the forefront of our thoughts and actions.

We have spent considerable time meeting with, and talking to, patients, local healthcare professionals, community leaders, fire and emergency service agencies, hospital staff, and physicians within our medical communities. We asked our colleagues "how can we better serve the emergency and critical care patient needs throughout Greater Central and Northern California?" In addition, REACH worked closely with Enloe FlightCare, established in 1985, which is based at Enloe Medical Center in Chico, Calif., to determine the need for an additional air medical resource to serve the region.

One of the most consistent messages we heard across the spectrum is the desire to have our presence and services increase within specific communities or regions. It was from this outreach analysis that we arrived at the decision to expand our reach.

We responded to the requests of our customers by establishing a new base, REACH 7, on May 2, 2005, at the Yuba County Airport in Marysville, Calif. and have been very pleased and excited with the reception and support we have been afforded. By placing an aircraft at this location we are now able to better meet the growing needs of our patients in the Northern Sacramento Region as well as the growing population and communities in Colusa, Nevada, Placer, Sutter, Yolo, and Yuba Counties.

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REACH BASE LOCATIONS:

CONCORD, LAKEPORT, LODI, MARYSVILLE, REDDING,  
SANTA ROSA, AND SACRAMENTO

## MEET PART OF THE REACH 7 TEAM

### Brian Carlin, Pilot and Donna Knapp, RN

-LINDA MCDONALD AHMADI

**M**et two of REACH's flight crew members serving from our newest base, REACH 7, in Marysville, Calif: Brian Carlin, REACH's "Pilot of the Year" in 2004, and Donna Knapp, RN, base operations manager at REACH 7.

**B**rian is one of four pilots who operate the Agusta 109 helicopters which are now regularly seen flying the skies in Yuba and its surrounding counties.

Brian had always been fascinated with flying and began flying lessons at the age of 24. In 1993 he began flying helicopters while working as a commercial pilot in Alaska as a "bush carrier" (flying hunters and fisherman.)

Brian, born and raised in Long Island, NY, joined REACH in 2002. As a reflection of Brian's commitment and comradery, he was recognized by his peers as the pilot of the year in 2004. Brian was selected for this award because he is a pilot who is instrumental to REACH. He is diverse and flexible. Additionally, Brian is admired for his openness and his sense of humor.

"I love the new base," Brian replied when asked how the transition went for him after being based in Lakeport and Santa Rosa. "The Yuba County Airport is a great airport. We are all really happy to be here."

"The best part about working at REACH is every day I come to work, I get to be with people who really love what they are doing," continued Brian. "It is very rewarding for me."

Brian resides in Yuba County with his wife, Kirsten and has three daughters, Holly, Sophie and Audrey.

**D**onna joined REACH in 2004 as a seasoned flight nurse. She was an emergency nurse and a flight nurse at Enloe Medical Center in Chico, Calif., for 20 years prior to joining the REACH team.

"The greatest part of being in Marysville is how welcomed we have been by the community, the EMS system, the local hospitals, and the airport," said Donna. "We have been embraced with open arms."

As Donna trained in the pre-hospital arena, part of a job requirement at her previous position, she quickly found she loved the element of the "unknown" involved in pre-hospital care.

"The pager goes off and there is anticipation and adrenaline since we never know exactly what is going to happen once we arrive on scene or at the hospital," said Donna. "Decisions must be made quickly and efficiently. It is a challenge I enjoy."

"I love working at REACH because the talent of the people who are part of the team is exceptional," continued Donna.

As a flight nurse Donna works 24-hour shifts and believes working 24-hour shifts and living with her teammates builds a strong bond and makes them work well as a team. Donna lives in Butte County and in her spare time she enjoys video editing and spending time with her grandson and granddaughter as well as her three children.



*"We have been embraced with open arms."*

Donna Knapp, RN

## EXPANDING OUR REACH - CONTINUED FROM PAGE ONE

In April 2005, we relocated our helicopter base in Sacramento, REACH 2, to Lodi, Calif., an area which has growing demand for our services. The rationale behind this relocation was to shorten the time required to reach and care for patients in the southern end of the Greater Sacramento Region as well as the northern end of the San Joaquin County Region. As with the move to the Yuba County Airport, our move to Lodi has allowed us to broaden our area of service by allowing us to reach and serve more patients in a much larger geographic area.

Another change involving REACH occurred in Redding, Calif. While our services in Redding are not new, the model by which we now provide our services has changed. On May 1, 2005, REACH assumed full operational control of Redding AirMedTeam, which had previously been a hospital-based program owned and managed by Shasta Regional Medical Center. Prior to this transition REACH had been providing AirMedTeam with an aircraft, pilots, mechanics, as

well as dispatch, billing and communications services. The clinical staff were employed by the hospital. Now, the nurses and paramedics are REACH team members and the program, REACH 5, is a stand-alone community-based program owned and operated by REACH. REACH continues to partner with Shasta Regional Medical Center to deliver excellence in air medical transport services.

This past year and, in particular, the past several months, have been very active for all of us at REACH. We are extremely excited about these changes and are sincerely committed to ensuring the success of our service to you. Most importantly, we are truly committed to listening to, and responding to, those we serve. As the needs of our communities and our patients change and evolve we are devoted to seeking new and innovative ideas and solutions to better meet the needs of our customers.

# CARE GUIDELINES: HIGH RISK OBSTETRICS

## Basic Principles of Care Management - KATHY LOGEE, RN, FLIGHT NURSE & MANAGER OF CLINICAL QUALITY & EDUCATION

**H**E.L.L.P. syndrome is a distinct type of preeclampsia in which the woman generally presents with a multiplicity of complaints including generalized malaise, epigastric pain, nausea, vomiting, and headache.

Differentiation of H.E.L.L.P. from other viral illnesses involves identification of common laboratory markers for a syndrome. These include hemolysis, elevated liver enzymes (LDH levels) and a low platelet count. This subset of women (ranging from 2-12% of all pregnant women with pregnancy induced hypertension) progress from preeclampsia to the development of multiple organ system compromise. Many women with this disease show few signs of preeclampsia which leads to maternal and perinatal morbidity and mortality. Management of the patient with H.E.L.L.P. syndrome poses complex management decisions which must carefully weigh the estimated gestational age and the condition of the mother and fetus.

Once H.E.L.L.P. is diagnosed, routine treatment includes hospital admission with the initiation of magnesium sulfate prophylaxis for seizures as well as antihypertensive therapy. Diazepam is not generally recommended as a first line agent to stop seizure activity in the pregnant female due to its depressant effect on the fetus and mother.

Maternal central hemodynamic status is carefully monitored. The cardiovascular assessment should include careful monitoring for symptoms of pulmonary edema (including tachycardia and tachypnea), weight gain, skin color, temperature, turgor and capillary refill changes. Respiratory assessments are performed to

identify signs of pulmonary edema, respiratory compromise and magnesium toxicity. Careful renal assessments will help to identify signs of renal failure. Hypovolemic oliguria is a relatively common clinical occurrence which generally responds well to fluid volume replacement. Caution should be exercised with the use of albumin and hetastarch as volume expanders due to their association with increasing pulmonary edema and uteroplacental insufficiency. Normal urine output should be at least 25 - 30 cc/hr. Central nervous system assessments are also very important for a patient with H.E.L.L.P. syndrome. A detailed assessment will help to identify signs of hypoxemia, increasing CNS irritability, increasing intracranial pressure, cerebral hemorrhage and magnesium toxicity. Deep tendon reflexes (most commonly the knee-jerk response) should be tested for any patient on magnesium sulfate therapy. A decrease or absence of deep tendon reflexes may indicate impending magnesium toxicity. The presence of a headache, visual changes, or changes in behavior or level of mentation may be early signs of increasing intracranial pressure. Finally, ongoing fetal assessments must occur. Uteroplacental perfusion is decreased in women with H.E.L.L.P. (as well as with preeclampsia), thereby putting the fetus in jeopardy. The fetal heart rate should be continually assessed for rate, variability, and reassuring vs nonreassuring patterns.

The mortality rate for women with HELLP is approximately 1%. Infant morbidity and mortality rates range from 10 - 60% depending on the severity of the maternal disease. Patients who have had H.E.L.L.P. syndrome in the past have a 19 - 27 % chance of developing the syndrome in subsequent pregnancies.

## The Role of Human Factors in Aviation and Medical Safety Programs - JEFF BARKER, REACH AVIATION SAFETY ADVISOR

**W**hat do aviation and medicine have in common? These highly technical fields are both areas in which seemingly minor omissions can have serious results.

The catastrophic and widely publicized nature of these failures (and those of the nuclear power industry) has driven much of the advancement in human factors studies over the past twenty years. The application of this knowledge has been aimed primarily at aviation and industrial settings. It is imperative that these lessons be shared with the medical community in order to best serve our patients.

While medicine doesn't lend itself to spectacular, headline-grabbing failures, the cumulative effect of medical errors is staggering - an estimated 44,000 to 98,000 patients a year die from medical errors (IOM report, 1999). Even assuming the lower figure, it exceeds the annual mortality from motor vehicle accidents (43,458), breast cancer (42,297), and AIDS (16,516). The causes of these errors tend to be similar in all fields; the goal of this article is simply to develop an awareness of what is considered in human factors investigations.

Who gets blamed when a mistake is made? Historically, errors are blamed on the front line operator. It's quick, it's easy, and

responsibility is contained at a low level. However, if the underlying causes are not addressed, the error will continue to be repeated once the awareness level gets back to normal over time. To break this cycle, human factors investigators take a systems approach to investigating and preventing accidents.

A systems approach should consider all factors that influence one's ability to properly perform their job. Hearing the phrase "human factors" probably brings to mind fatigue and stress studies, work station design, and other topics directly related to an individual's well being or capabilities. Investigators are also increasingly considering the influence of corporate culture, error management practices, standard operating procedures design, and regulatory oversight deficiencies when performing causal analysis.

The key to long term improvement is to focus on the system vice of blaming individuals. Look at your SOPs, your culture, your environment, your tools, your training program. Do they support doing the right thing or are "work arounds" the norm? Safety shouldn't just be a poster on the wall or a slogan contest - it should be inherent in what you do and how you do it.

Sites for training information: <http://www.aviatrends.com>, [www.hf.faa.gov](http://www.hf.faa.gov), <http://human-factors.arc.nasa.gov/ihs/flightcognition>

## PATIENT PROFILE - CONTINUED FROM PAGE ONE

Based on the electronic information transmitted, the fetus did not appear to be in any distress and the mother was not having any contractions. The patient was also placed on magnesium sulfate (a smooth muscle relaxant) by continuous infusion. Magnesium sulfate is used in this condition to prevent seizures.

The medical staff at Sutter Lakeside determined it was necessary to transport this patient to Sutter Medical Center of Santa Rosa for specialized, high-risk obstetric care. REACH was dispatched for the transport.

The REACH team arrived at the hospital and the staff provided the flight crew with a detailed patient report. A focused patient assessment was performed. Additionally, a brief neurological examination was performed which included deep tendon reflexes (due to the magnesium sulfate infusion.) A decrease in the patient's deep tendon reflexes might indicate magnesium sulfate toxicity, a condition which would need prompt recognition and intervention in order to avoid harm to the patient and fetus. The patient continued to complain of a headache



PHOTO BY GORDON WORLEY

REACH 7 IN MARYSVILLE, CALIF., IN FRONT OF CALIFORNIA'S SMALLEST MOUNTAIN RANGE, THE SUTTER BUTTES

(a symptom of her elevated blood pressure). A phone call was placed to the receiving physician. An order for Labetolol was received specifying the need to administer this blood pressure lowering drug should the patient's condition worsen. The patient was packaged for transport and relocated to the awaiting helicopter.

During the flight from Lakeport, Calif. to Sutter Medical Center of Santa Rosa, the patient and fetus were carefully monitored. The flight crew knew any change in the patient's level of consciousness or hemodynamics would worsen the

baby's condition. The mother and unborn child quickly arrived at Sutter Medical Center of Santa Rosa without a change in condition.

Prompt recognition of this life threatening condition by the Sutter Lakeside staff, specialized REACH transport services, and definitive high-risk obstetric care provided by Sutter Medical Center of Santa Rosa contributed to a positive outcome for mom and baby.

## SAFETY CORNER:

## HUMAN FACTORS



Photo by: JAES Photo

# PARTNERS: BI-COUNTY AMBULANCE

- BARRY HICKERSON, EMT-P, BASE DEVELOPMENT MANAGER

**Y**uba City and Marysville are "home" to Bi-County Ambulance Service. In February of 1976, Kelly Bumpus began providing ambulance service to Yuba and Sutter Counties with one ambulance. Today, Kelly and his seasoned management team oversee a fleet of 14 ambulances and six ambulance stations which provide advanced life support to the 140,000+ residents of and visitors to Yuba and Sutter County.

Covering 789,250 acres is no small task and this team knows it all too well. During the floods of 1997, Bi-County Ambulance evacuated over 2,000 people in less than 6 hours in the Yuba City and Marysville area.

Steve Brock, the Director of Operations for Bi-County summarized what Bi-County is all about in two words, "Patient Care."

Bi-County sets their sites on always providing the best possible care for every patient, every time. That simple, yet focused philosophy has won Bi-County exclusive contracts for providing emergency services to Yuba

County and Sutter County since 1978. It has also won their company the respect and admiration of surrounding fire departments and other emergency service providers.

Highways 70 & 99 and the rural nature of Yuba County and Sutter County produce many serious accidents that demand a responsive emergency medical system. Working hand-in-hand with Bi-County Ambulance EMTs and paramedics, REACH teams will work to provide the citizens and visitors of Yuba County and Sutter County with quality patient care and air transport.

Steve and his management team, including Randy Brock, Ron Welch, Jeff Kennedy, Steve Mackey, and Ronnie Sheffield have set their sites on always providing the best possible care for every patient, every time. It looks like this tradition will continue at Bi-County with Kelly's son, Alex Bumpus. Alex is currently responsible for overseeing the administrative and operational aspects of Bi-County Ambulance.

## BREAKING NEWS: REACH MEMBERSHIP PROGRAM

### REACH FOR LIFE...OUR MEMBERS ARE FAMILY.

**Y**ou never know when an emergency will strike; whether you're simply caring for your family or enjoying the outdoor activities that make this area so special. Protect your family by joining ours.

Many health plans don't cover the entire cost of emergency air medical transportation. Does yours? You could be at risk for thousands of dollars in medical bills if you or someone in your family needs emergency air transportation.

About 10 cents a day provides REACH emergency air ambulance membership services to you and your family and guarantees no additional out-of-pocket costs.

With a REACH membership you can depend on urgent access to specialists that may not be available in remote areas or even close to home.

#### Benefits of Membership:

- No out-of-pocket costs for emergency air transportation.
- Hassle-free coordination with your health plan.
- Referral management in partnership with your doctor.
- Coverage if a REACH or REACH air medical partner is first on scene.
- Out-of-town resource assistance.
- Biannual newsletter.
- 5 percent discount on REACH Training Institute courses for healthcare professionals or community citizens (e.g. CPR classes and much more to help protect your family.)



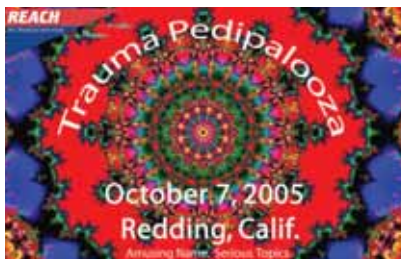
REACH Air Medical Services membership program:

**REACH for LIFE. Our members are family.**

[www.reachairambulance.com](http://www.reachairambulance.com)

1-866-76-REACH (1-866-767-3224)

## TRAINING INSTITUTE NEWS



**Trauma Pedipalooza**  
Amusing name.  
Serious topics.

The **Trauma Pedipalooza** conference provides stimulating education

about both trauma and pediatrics. The conference features serious topics presented by physicians, nurses and paramedics representing top hospitals throughout Northern and Central California. Please join us for this educational experience! Check our website for details and register now!



**The Ninth Annual California Pediatric Emergency Care Conference**

**Fairfield, California**

**October 20 & 21, 2005**

Join us as we present a fabulous two-day conference focusing on all aspects of pediatric emergency care. The conference offers both general tracks and special tracks for hospital and pre-hospital professionals.

Look for topics you asked for, an evening get-together and more. Mark your calendars now.

# RIVETS FACTS

## Do you know?

- REACH now has a full-time airplane base at Sacramento Executive Airport in Sacramento, Calif.
- REACH staffs a special events aircraft, REACH 4, at Infineon Raceway for all NASCAR and other major race events.
- REACH is equipped with night vision goggles in Lakeport (R6), Lodi (R2) and Redding (R5).

View our website for more information about the facts: [www.reachairambulance.com](http://www.reachairambulance.com)



## TRAINING INSTITUTE: SCHEDULED COURSES FOR SUMMER

### JULY

July 9	<i>BLS Healthcare Provider Renewal</i> Santa Rosa, Calif.
July 12	<i>PALS Renewal</i> Santa Rosa, Calif.
July 13 & 14	<i>PALS Full Class</i> Santa Rosa, Calif.
July 15	<i>NorCal Critical Care Experience Conference</i>
July 19	<i>PALS Renewal</i> Elk Grove, Calif.
July 19 & 20	<i>PALS Full Class</i> Elk Grove, Calif.
July 23 & 24	<i>PHTLS Combined Course</i> Redding, Calif.
July 30	<i>BLS Healthcare Provider</i> Santa Rosa, Calif.

### AUGUST

Aug. 2	<i>ACLS Renewal w/BLS</i> Santa Rosa,
Aug. 3 & 4	<i>ACLS Full Class w/BLS</i> Santa Rosa,
Aug. 13	<i>BLS Healthcare Provider Renewal</i> Santa Rosa, Calif.
Aug. 14	<i>BLS Healthcare Provider</i> Santa Rosa, Calif.
Aug. 15	<i>ACLS Renewal w/BLS</i> Elk Grove, Calif.
Aug. 15 & 16	<i>ACLS Full Class w/BLS</i> Elk Grove, Calif.
Aug. 20	<i>ACLS Instructor Course</i> Santa Rosa, Calif.
Aug. 27 & 28	<i>ACLS Full Class w/BLS</i> Clearlake, Calif.

### SEPTEMBER

Sept. 10	<i>BLS Healthcare Provider Renewal</i> Santa Rosa, Calif.
Sept. 11	<i>BLS Healthcare Provider</i> Santa Rosa, Calif.
Sept. 13 & 14	<i>PHTLS Combined Course</i> Santa Rosa, Calif.
Sept. 17 & 18	<i>AMLS</i> Sacramento, Calif.
Sept. 23	<i>PALS Instructor Course</i> Santa Rosa, Calif.
Sept. 24 & 25	<i>Pediatric PreHospital Care</i> Clearlake, Calif.
Sept. 29 & 30	<i>PALS Full Class</i> Lakeport, Calif.



Children's Hospital Oakland  
Sponsoring Hospitals  
St. Helena Hospital  
Affiliate Hospitals  
Frank R. Howard Memorial Hospital  
Mendocino Coast District Hospital  
Sutter Medical Center, Santa Rosa  
Sutter Lakeside Hospital  
Ukiah Valley Medical Center  
Redbud Community Hospital  
Santa Rosa Memorial Hospital

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