

Fast Facts

Fiscal Years
2003 vs 2004

	FY03	FY04
Inpatient Care		
Admissions	12,567	12,614
Average Length of Stay (ALOS)	5.05	5.32
Average Daily Census	173.9	183.8
Occupancy Rate	63.5%	67.1%
Patient Days		
Medical/Surgical	39,846	41,733
Intensive Care Nursery	15,118	15,870
Pediatric Intensive Care Unit	5,373	5,615
CM South Patient Care Unit	3,122	3,883
Total Patient Days	63,459	67,101
Outpatient Visits		
Hospital Clinics	141,181	149,214
CM South Specialty Center	33,681	34,967
CM Northland	432	5,039
Primary Care Clinics	71,353	69,161
Outreach Clinics	2,718	2,825
Total Outpatient Visits	249,365	261,206
Emergency/Urgent Care Visits		
CMH Emergency Room/ Urgent Care	61,236	60,898
CM South Urgent Care Center	31,940	30,858
CM Northland Urgent Care	2,526	10,776
Total Emergency/ Urgent Care Visits	95,702	102,532
Surgical Procedures		
Inpatient	3,660	3,895
CMH Outpatient	7,562	7,469
CMS Outpatient	3,500	4,062
Total Surgical Procedures	14,722	15,426

Northland Adds Ophthalmology

Children's Mercy Northland is continuing to grow with the addition of a pediatric ophthalmology clinic Monday, Tuesday, Wednesday and Friday each week. The clinic offers open access, with clinic appointments often available the same day patients call. For more information, call (816) 234-3046.



Physician's Update is produced monthly by Community Relations and Physician Services. For more information, contact Shawn Arni, (816) 346-1371 or e-mail to sarni@cmh.edu.

Visit the Children's Mercy Web site: www.childrens-mercy.org

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Physician's Update

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Laboratory Vital To CF Care

As the only lab in the region specializing in anatomic pathology and clinical laboratory services for children, the Children's Mercy Hospital Laboratory provides more than 1.3 million tests annually. The Laboratory's breadth of services and unmatched level of expertise with children can be invaluable in helping physicians diagnose and care for patients. Nowhere is that more evident than with complex pediatric diseases such as cystic fibrosis (CF).

"With CF patients, we are not only involved in the initial diagnosis, but in ongoing care for the patient," says Marilyn Hamilton, MD, PhD, associate director of Clinical Laboratories at Children's Mercy. "We do the sweat test and coordinate genetic testing for diagnosis. In addition we do extensive microbiology testing for ongoing care. We do it all and we do it well."



Sweat chloride testing is the gold standard for CF diagnosis.

"High quality sweat chloride testing and microbiology are cornerstones of cystic fibrosis care," says Dr. Black.

Central Processing, Chemistry and Toxicology

Although there are several testing methods to help diagnose cystic fibrosis, sweat chloride is still the "gold standard" that will pick up the largest majority of cases, according to Uttam Garg, PhD, director of the Chemistry and Toxicology Lab.

Children's Mercy is one of only two regional laboratories that offers sweat chloride testing, performing approximately 600 tests each year. Sweat collection is labor intensive and requires about one hour. Due to the skill required, only a few people are trained to collect sweat. The collection must be scheduled by appointment at Children's Mercy Hospital or Children's Mercy South. There is no special patient preparation for the test.

Sweating, generally on the forearms, is induced by pilocarpine iontophoresis. The resulting sweat is collected on gauze and assayed for chloride, which has superior predictive value over sodium. In accordance with the CF Foundation guidelines, an abnormal sweat test (>60 mmol/L) should be repeated; two abnormal sweat tests, taken at different times, are required to establish a diagnosis of CF.

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News Briefs

Kudos and Congrats

Jay Portnoy, MD, section chief for Asthma, Allergy and Immunology, has been invited to participate as a consultant to the FDA Allergenic Products Advisory Committee.

Kudos to **Leland McGinness**, administrative chief of staff, and **Ethylene Haynes**, head cashier, for being chosen as Heroes in Healthcare by *Ingram's* magazine.

Surgical Group Joins Hospital

The surgeons and staff associated with Pediatric Surgical Associates (PSA) have become full-time employees of Children's Mercy Hospitals and Clinics.

Surgeons who are now employed by the hospital include: George W. Holcomb III, MD, who serves as surgeon-in-chief; Walter Andrews, MD; John Gatti, MD, George Gittes, MD; Patrick Murphy, MD; Daniel Ostlie, MD; Ronald Sharp, MD, the newly named General Surgery section chief; and Charles Snyder, MD.

The surgeons will continue to see patients at 5520 College Boulevard, Overland Park, Kan. in the newly named Children's Mercy South Center for Pediatric Surgery and Urology. They will also see clinic patients at Children's Mercy Hospital.

Health Management Program Formed

Children's Mercy has formed a new Health Management department to help develop systems that facilitate delivery of care that is safe, effective, timely, patient centered, efficient and equitable. The department expands on the program originally housed in the Asthma, Allergy & Immunology section and broadens its scope to include other diseases and venues. Jay Portnoy, MD, will be the medical director of Health Management in addition to continuing to serve as section chief of Asthma, Allergy and Immunology.

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Molecular Genetics

Genetic testing is useful for diagnosing patients who do not produce an adequate volume of sweat, or for patients with borderline sweat chloride levels. Identifying two pathogenic CF mutations is another way to establish a diagnosis of CF.

Although Children's Mercy performs many genetic tests, DNA testing for CF is coordinated with an outside lab. "DNA testing for CF is complicated by the size of the gene and the number of pathogenic mutations," says Carol Saunders, PhD, director of the Clinical Molecular Genetics Lab. "The testing is quite involved, so it is more efficient for us to send this out."

Three (3) cc of whole blood in an EDTA lavender-top tube is required for DNA testing. Guthrie cards are also an option (kits available upon request). Results are provided within 7-10 days.

Microbiology and Virology

Once a child has been diagnosed, the laboratory remains involved in caring for CF patients through ongoing testing in the Microbiology and Virology Lab.

"Chronic pulmonary infection is the most common cause of mortality for CF patients, so we see a sample for culture testing every time patients come to the clinic," says Rangaraj Selvarangan, PhD, director of the Microbiology and Virology Lab.

Samples from CF patients are treated differently from other patients, according to Dr. Selvarangan. In a normal population, there are many pathogens which can cause disease. With CF, there are a small number known to be associated specifically with the lung diseases in these patients, the most common being *Pseudomonas aeruginosa*, *Staphylococcus aureus*, and *Burkholderia cepacia*.

"High quality sweat chloride testing and microbiology are cornerstones of cystic fibrosis care," says Phil Black, MD, Pulmonology section chief. "Without the laboratory's support, we could neither diagnose nor treat our patients."

For more information, contact the Laboratory at (816) 234-3230.

Molecular Genetic Testing For CF

Cystic fibrosis (CF) is caused by mutations in the CFTR (CF transmembrane conductance regulator) gene, which lead to defective chloride channel functioning and the classic clinical triad of pancreatic insufficiency, chronic pulmonary disease, and salt loss in sweat. CF has an incidence of ~1 in 3200 live births, making it the most common life-limiting autosomal recessive disease in Caucasians.

The CFTR gene is very large, harboring over 1,000 known disease-causing mutations that are scattered throughout the gene. This prohibits routine whole gene analysis; fortunately, targeted analysis is feasible due to the high frequency of common mutations. The most common mutation, deltaF508, accounts for ~70 percent of all CF alleles in Caucasians.

Our patients are tested for a total of 86 CF mutations, yielding a clinical sensitivity of approximately 90 percent in Caucasians. The sensitivity of molecular testing, as well as the incidence of CF, varies greatly according to ethnicity. Since the clinical sensitivity is not 100 percent, some CF patients test negative for these mutations, or test positive for just one mutation. As such, the "sweat test" is still the primary and most sensitive

test for CF. However, there are a few special circumstances in which DNA testing *is* the initial diagnostic test:

- Testing infants who do not produce an adequate volume of sweat
 - Testing symptomatic siblings of an affected individual in whom both CFTR mutations have been identified.
 - Prenatal testing
- Other uses for molecular testing include:
- To aid in diagnosing patients with repeatedly borderline sweat chloride levels.
 - To yield prognostic information in known CF patients, such as the severity of pancreatic disease. Genotype-phenotype correlations are not reliable for pulmonary disease.
 - Carrier screening is recommended to identify the nearly four percent of Caucasians who carry a CF mutation. CF testing should be offered to adults with a positive family history of CF, partners of individuals with CF, and couples planning a pregnancy or seeking prenatal care. Carrier testing in children is not recommended.

For more information on CF, visit www.genetests.org

Carol J. Saunders, PhD
Director, Clinical Molecular Genetics Lab



The CFTR gene is very large, harboring over 1000 known disease-causing mutations that are scattered throughout the gene.

Diversity and Diagnosis

A recent report from the American Association of Medical Colleges documents that, for the first time, first year medical students are now predominantly women. The number of minority students has increased twelve-fold since 1968, but they still only constitute 15 percent of enrolled students. These numbers made me wonder how the rest of the health care work force is doing.

A survey commissioned from the Institute of Medicine indicates that the health care workforce as a whole continues to lack appropriate diversity. Nursing, for example, continues to be primarily a female profession. Physician assistants are the most rapidly growing group of health care workers and are more ethnically diverse. As a consequence, they serve a higher proportion of non-English speaking patients and, in particular, tend to be found in more rural areas.

All of this indicates that the efforts to attract diverse students into all segments of the health care workforce need to continue. Provider diversity has been shown to be important to our health care system for a number of reasons. The educational benefit extends to a broadened per-

Minorities Still Needed

spective of racial, ethnic and cultural differences. Diversity improves access for the underserved and helps direct medical research into appropriate issues. Cultural competence has become a much more complicated issue than when diversity initiatives were formulated in the 1960's and the more that providers reflect the values of today's American communities, the more effective that care will be.

Diversity issues are never static. For example, in the past few years intergenerational values have shifted from those of the silent generation, through the baby boomers and generation X into the culture of the new, emerging generation. Some issues, however, remain the same. One of the keys to recruitment to health care is to start early, a fact that we should always keep in mind when talking with our little patients.

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