

### *Clinical Facilities*

ELFID is associated to the Department of Mother and Child Health of the University Hospital “Federico II”. For the implementation of research activities special connections have been established with the following Sections.

**The Celiac Disease Center**, serving the whole Regione Campania, offers the possibility of diagnosis of the disease, also in unclear cases with the help of advanced histological techniques and genetic investigations. Celiac children are also followed up on a gluten free diet with scheduled visits by paediatrician and nutritionist to monitor growth, compliance to the diet and onset of any clinical and nutritional complication. Special interest is paid to the children with potential celiac disease. Cohort of at risk children are followed-up in view of possible prevention programs.

**The GI Endoscopy and Motility Suite** provides pediatric investigations for diseases of the GI tract, including food-diseases. The Unit is committed to training, development and education of its staff and offers opportunities for research.

GI Endoscopy. Among diagnostic procedures the Unit offers upper and lower GI endoscopy and wireless capsule endoscopy. GI endoscopies are done under anesthesia or under deep sedation in the operatory room and in a renewed endoscopy suite, respectively. The main indication for upper GI endoscopy for food-induced diseases are celiac disease and food allergy, in particular eosinophilic esophagitis and eosinophilic colitis.

pH studies and manometric studies. The unit offers multichannel intraluminal impedance that allows for detection of flow throughout the esophagus. It is, therefore, able to detect all gastroesophageal reflux (GER), whether acid, weakly acid, or weakly alkaline. It not only detects all GER but also enables us to more accurately reveal associations between GER and symptoms. It finds application in the diagnostic approach of children with suspected food induced diseases (e.g. eosinophilic esophagitis, secondary gastroesophageal reflux disease). Esophageal, antroduodenal and anorectal motility studies can be performed by high-resolution pressure topography (HREPT). HREPT has several advantages compared with conventional manometry, the technology that it was designed to replace. Compared with conventional manometry, HREPT has improved sensitivity for detecting achalasia, largely due to the objectivity and accuracy with which it identifies impaired esophago-gastric junction relation. The main indication for GI manometric studies in food-induced diseases is food allergy-related chronic constipation.

**Food Allergy Comprehensive Education, Treatment and Support Program** is designed to treat all aspects of food allergies, including medical, dietary, social and psychological concerns by a multidisciplinary team composed by pediatricians, allergists, dieticians, nutritionists, social workers, nurses, psychologists, neuropsychiatrists, and allergy biotechnicians. The Program has been accredited as the Reference Center for Pediatric Allergy by the Italian Society of Allergy and Pediatric Immunology (SIAIP) (<http://centri.siaip.it/>).

Main activities of the Program are:

- Integrated clinical, instrumental and laboratory management for pediatric allergic diseases (food, drug, and environmental allergies).

- Personalized nutritional counseling for effective dietary programs for the prevention and treatment of food allergies with a full assessment of the nutritional status.
- Active diet-therapy plans based on pro-/post-biotics, baked foods and functional foods to speed up the acquisition of immune tolerance.
- Allergen specific immunotherapy with biological drugs.

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### Integrated Diagnostic Work-up Procedures

The diagnostic work-up consists in a broad range of *in vivo* and *in vitro* tests, including:

- Skin prick testing (SPT) for the first line approach in IgE-mediated diseases.
- Atopy patch testing (APT) for the evaluation of patients with delayed type hypersensitivity reactions.
- Total and specific IgE assay for the evaluation of total and specific serum IgE against food allergens by enzymatic immunoassay.
- Molecular allergy diagnostic tests with component-resolved diagnostics (CRD) to differentiate primary, species-specific from secondary, cross-reactive sensitizations to single food allergens.
- Basophil activation test (BAT) using flow cytometry for the assessment of basophil activation after exposure to a specific food antigen to investigate IgE-mediated reaction, to limit the risk of oral food challenge, and to monitor immunotherapy.
- Spirometry for the evaluation of subjects with food-induced-asthma.
- Provocation tests for inducible urticaria are performed using physical stimuli (friction, water, cold, heat, weight) for the differential diagnosis with food-induced conditions and for the diagnosis of symptomatic dermographism, delayed pressure urticaria, aquagenic, heat and cold-induced urticaria.
- Oral food challenge (OFC) the gold standard procedure to obtain an accurate diagnosis of food allergy and consists of a gradual feeding of the tested food under close observation.
- Allergen Specific Immunotherapy is available for desensitization protocols in IgE-mediated food allergy patients.

### **Clinical Nutrition Unit**

A personalized nutritional counseling, provided by a team of experienced dietitians and nutritionists, drive a modern dietary program with the aim to avoid allergic reactions, help all phases of the diagnostic work-up (including the diagnostic elimination diet and oral food challenge), ensure normal body growth and development, and stimulate immune tolerance.

An advanced nutritional evaluation is provided to the patients through the use of:

- Plicometry, a non-invasive method to measure body adiposiy.
- Indirect calorimetry, a non-invasive method to investigate basal metabolism.
- Bioelectrical Impedance Analysis (BIA), for the estimation of body composition, in particular body fat and muscle mass.
- Dual X-ray Absorptiometry (DEXA), for the evaluation of bone growth and of body composition (bone mass, fat mass and muscle mass).

- BOD POD (Gold Standard Body Composition Tracking System), a fast and non-invasive tool which is considered the Gold Standard for the assessment of body composition, basal metabolism and energy consumption.

**Liver Unit**

The Liver Unit strictly cooperates with the pathologist to offer histological definition of several types of hepatobiliary disease. Liver biopsy is performed with ultrasonography assistance. Particular interest is paid to obesity related diseases and metabolic and autoimmune liver diseases.