



# Child healthcare services offered by the Vatican City State in its national territory and in extra-territorial neighboring Italian areas

Alberto Villani<sup>1</sup>, Michele Giuliani<sup>2</sup>, Massimiliano Raponi<sup>1</sup>, Saverio Ladogana<sup>2</sup>, Pierpaolo Cristalli<sup>2</sup>,  
 Michele Sacco<sup>2</sup>, Massimo Pettoello-Mantovani<sup>2</sup>

<sup>1</sup>Ospedale Pediatrico Bambino Gesù (OPBG), SCV, Roma, Italy

<sup>2</sup>Department of Pediatrics, Scientific Institute “Casa Sollievo della Sofferenza” SCV, San Giovanni Rotondo, Italy

## Abstract

Pediatric healthcare activity related to the Vatican City State is carried out at secondary and tertiary levels in the two main pediatric territorial and extra-territorial medical centers, which are administered by the Vatican: the Bambino Gesù Pediatric Hospital and the Mother and Child pediatric Department of the Casa Sollievo della Sofferenza Medical Center. Both centers are recognized by the Italian State and internationally with the formal legal status of Scientific Institutes for Clinical Research. The relations established between the Holy See, in the person of the Secretary of State, the Board of Directors, the President of the Board, and the Board of Auditors regulate the management of the two medical centers. The child healthcare and research activity of the two Vatican State administered medical centers is described in this article.

**Keywords:** Children, extra-territorial, healthcare

## Introduction

The Vatican City State is an independent city-state enclave within Rome, Italy, which was established with the Lateran Treaty, signed between the Holy See and Italy on February 11<sup>th</sup>, 1929. It is under the “full ownership, exclusive dominion, and sovereign authority and jurisdiction” of the Holy See. In 1964, the Vatican State was admitted at the United Nations Assembly, which enables it to vote in various UN conferences and to participate in the General Assembly discussions and consensus agreements.

With an area of just 44 hectares (108.7 acres), the Vatican City State is the smallest independent state in the world, both in terms of the number of inhabitants and of territorial extension. Its boundaries are bordered by walls, and on Piazza San Pietro, by a marble strip that connects the two wings of the colonnade. In addition to the state’s own territory, the Vatican jurisdiction extends in areas of Rome and beyond Rome, which enjoy the right of “extraterritoriality.” In these areas, various

types of institutions and organizations are located, including medical centers providing public care to the Vatican, Italian, and non-Italian population gathering form different parts of the world.

Its status as a Sovereign Entity under international public law is universally recognized [United Nations, the World Health Organization (WHO)], and it is legally distinct from the religious component called the “Holy See.”

The entire territory of the Vatican City State is placed under the protection of the Hague Convention of May 14<sup>th</sup>, 1954, concerning the protection of cultural property in the event of armed conflict. In 1984, the Vatican City was included in the list of world cultural and natural heritage sites, referred to in the UNESCO Convention of November 16<sup>th</sup>, 1972, on the protection of this heritage. There are a total 618 citizens of the State, of whom only 246 (including 104 members of the Swiss Guards) live within the walls.

**Cite this article as:** Villani A, Giuliani M, Raponi M, et al. Child healthcare services offered by the Vatican City State in its national territory and in extra-territorial neighboring Italian areas. *Turk Pediatri Ars* 2020; 55(Suppl 1): S105–S111.

**Corresponding Author:** Massimo Pettoello-Mantovani E-mail: mpm@unifg.it

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DOI: 10.14744/TurkPediatriArs.2020.23690

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About half of the citizens therefore do not reside in the State, but in other countries, above all for reasons of service (in particular diplomatic personnel). The acquisition and the loss of citizenship and various other matters, including mother and child care, are governed by specific provisions, mostly regulated by the 1929 Lateran Treaty, which was signed after a long period of confrontation following the military takeover of the large territory of the Vatican State (11789 Km<sup>2</sup>/4555 mi<sup>2</sup>), by the Italian Kingdom in 1870. The Vatican City State has now, therefore, the singular characteristic of an instrument of independence of the Holy See and of the Catholic Church from any power constituted in the rest of the world, and the structures of the Vatican State are reduced to the minimum indispensable for its functioning.

In 1929, the first documented medical guard in Vatican City State was established, with a medical-surgical clinic attached to the Vatican Pharmacy (1). This is a service, which, since 1969, has been under the direction of the Health Services Directorate, which is responsible for health protection in the microstate territory. The first aid service is provided to anyone who urgently needs it in the Vatican City territory and in the adjacent extraterritorial area and is active especially during events that attract a large number of people.

### Healthcare in the Vatican City State

Healthcare is entrusted to the “Directorate of Health and Hygiene of the Vatican City State.” Public health is provided through the “Healthcare Fund” (FAS) of the Vatican City State. FAS provides health assistance and coverage for ecclesiastical, religious and lay staff, in-service and retired, of the Roman Curia, of the Governorate of the State of Vatican City, and it is extended to bodies administratively managed, directly, by the Apostolic See, also if located extraterritorially.

The Fund finances the following services, both directly and indirectly: (a) medical and surgical assistance in the event of illness, including chronic or terminal forms; (b) medical and obstetric assistance in case of pregnancy; (c) conservative dental treatments; (d) administration of drugs in accordance with the handbook approved by the Board of Directors; (e) economic contributions for any supplementary services. However, the Fund does not provide the following related services: (a) treatment for diseases intentionally contracted or aggravated; (b) medical or surgical interventions with a purely aesthetic purpose. The Health Assistance Fund is used to fully cover expenses from the administrative fees and contributions paid by members, according to the measures approved from time to time by the Cardinal Secretary of State.

### Main pediatric centers administered by the Vatican City State

The pediatric healthcare activity related to the Vatican City State is carried out at secondary and tertiary levels in two main pediatric medical centers: the Bambino Gesù Pediatric Hospital, located in the territory of the Vatican City State, and the Mother and Child pediatric Department of the Casa Sollievo della Sofferenza Medical Center, located extra-territorially, in Italy. Both centers are recognized by the Italian State and internationally with the formal legal status of Scientific Institutes for Clinical Research (IRCCS) (2, 3).

The relations established between the Holy See, in the person of the Secretary of State, the Board of Directors, the President of the Board, and the Board of Auditors regulate the management of the two medical centers.

### Bambino Gesù Pediatric Hospital

The Bambino Gesù Pediatric Hospital was founded in Rome in 1869 as the first royal Italian pediatric hospital, on the model of the Hôpital des Enfants Malades in Paris, on the initiative of the Salviati dukes. In 1924, it was donated to the Holy See, becoming in effect the Hospital of the Pope. In 1985, it was recognized as a Scientific Institute for Clinical Research (IRCCS), based on its documented research activity of support to medical care. In 2006, it obtained the first accreditation by the Joint Commission International (JCI), which certified the excellence of the Center in the quality of pediatric healthcare (4, 5). In 2014, new research laboratories were inaugurated, which extend over 5000 square meters. They are equipped with the most modern technologies for genetic and cellular surveys, with a Pharmaceutical Workshop (Cell Factory) entirely dedicated to the large-scale production of advanced therapies. In 2015, the Hospital was granted the status of Academic Medical Center by the JCI for the medical and clinical training activity (6).

Healthcare provided by the Bambino Gesù pediatric center is divided into 4 hospitals: the historic headquarters of the Gianicolo hill, the scientific center of Saint Paul's Outside the Walls, both located in the metropolitan area of Rome; and the satellite centers of Palidoro and Santa Marinella, on the Lazio Region coast. The Bambino Gesù pediatric hospital counts 607 beds, of which 62 are in various intensive care units, and 22 in the neonatal intensive care clinical unit.

An average of 29,000 hospitalizations are provided every year, over 30,000 surgical and interventional procedures, 42,000 days of day hospital, and 85,000 accesses to the emergency department. The outpatient services provided

annually are 2,000,000. However, the scope of the Hospital's activity extends beyond the territory of Rome and Lazio: 29% of hospitalized patients come from outside the Region, while 15% are of foreign nationality.

The hospital's care offer covers all medical specialties. Transplantation, genetic, and metabolic diseases, medical and surgical cardiology, neuroscience, oncohematology and rehabilitation are among the sectors of care and research of absolute excellence. The Bambino Gesù Center is the only European center able to respond to all transplant needs of the pediatric age group: heart, marrow, cornea, including the activity of living transplant involving the liver and kidney (in 2018, in total, 324 organ, cell and tissue transplants were performed, including eight artificial heart implants).

Clinical activity is accompanied by an intense reception activity for families, in particular those coming from outside the region engaged in long therapeutic treatments. With the help of a network of associations, foundations and hotel agencies, the Hospital manages to guarantee free housing assistance to more than 4400 families, for about 96,000 nights every year.

The Bambino Gesù is currently present internationally with training and assistance interventions in 12 countries: Central African Republic, Tanzania, Ethiopia, Syria, Jordan, Cambodia, India, China, Russia, Haiti, Ecuador and South Korea.

Thanks to the support of the Bambino Gesù Foundation, dozens of humanitarian patients are welcomed and cared for each year (in 2018, 62 humanitarian patients from 28 countries were received), children from abroad with serious pathologies or war wounds, which in their own Country would have no possibility of treatment. The commitment to the “peripheries” of the world does not forget the city of Rome, where the Hospital of the Holy See is present with a mobile health unit in the parishes and in the most disadvantaged neighborhoods (7, 8).

The Research Areas are organizational units consisting of the structural and/or functional aggregation of several research projects, which are identified consistently with the strategic guidelines of the hospital in the research sector. The Research Areas are divided into Research Units, identified with the objective of carrying out one or more projects of similar content and pursuing specific objectives of scientific, assistance or management relevance (9). Professionals affiliated to a specific Area express complementary skills, often transversal to different hospital structures.

### **Clinical departments**

The Directorate of Clinical Departments coordinates the clinical-assistance, organizational, and management activities of the Departments. It coordinates the relationship between the Administration and the Clinical Departments directed to the planning and allocation of resources in accordance with the strategic and budget objectives and promotes the development and improvement of clinical-assistance processes. It carries out its functions in accordance with the guidelines of the Health Department and the Scientific Direction, as far as their respective competence is concerned.

The Departments depending on the Directorate are as follows: Surgical Department, Diagnostic Imaging Department, Acceptance Emergency Department, Department of Laboratories, Medical Surgery Department of Pediatric Cardiology, Department of Medical and Surgical Neonatology, Department of Neurosciences and Neurorehabilitation, Department of Oncology and Hematology, Cellular and Genetic Hematology and Therapy, Specialist Pediatrics Department, University-Hospital Pediatric Department.

### **Research activity**

The experimental activity performed at the hospital refers to the Trials Center or directly to the U.O. competence. The Trials Center is a structure created to guarantee excellence and quality of care through advanced pharmacologic experiments; its mission is to promote the excellence of clinical trials in pediatrics, in accordance with Good Clinical Practice, to provide pediatricians with the tools necessary for conducting high-quality research.

Research Areas for the 2016–2019 three-year period were: Genetics and Rare Diseases, Multifactorial Diseases and Complex Diseases, Immunology, Infectious Disease and Development of Pediatric Drugs, Oncohematology, Clinical-Management, and Technological Innovations.

### **Biobank**

The Biobank is a non-profit organization that, in the respect of the rights of the participants involved and according to proven quality standards to guarantee the complete traceability of the activities, manages the collection, processing, storage, and distribution of biologic material and associated data. The stored biologic samples can be of different types (cells, tissues, nucleic acids, biologic liquids and others), and are always accompanied by a panel of data (clinical, scientific, epidemiologic, genetic, family, lifestyle and more) of the participant (patient or healthy person), archived in full respect of ethical, legal, social and privacy aspects.

The samples stored in research biobanks are invaluable and help to transfer conventional medicine to precision, predictive, and preventive medicine. The service provided by a research Biobank therefore has public value, considering that patients, their families, and the entire society are the first beneficiaries of the new diagnostic investigations and innovative therapies that can be designed and developed through the use of samples of the Biobank.

In the years following its classification as a Scientific Institute for Clinical Research the Bambino Gesù Pediatric Center was committed to the collection, for research purposes, of biologic material, with particular regard to rare and complex diseases, genetic and orphan diagnosis, and onco-hematologic diseases.

Currently, in its research laboratories, four historical collections are preserved, including about 100,000 samples, taken from more than 45,000 subjects, which fall into 18 different chapters of the international classification of Diseases and Health Problems (ICD10).

From 2017, a process was started to adapt the activities in line with the international recommendations and best practices for the management of biologic material and related data. The process led to the achievement of two important objectives in 2018: (1) the entry of the Research Biobank into the international Biobanking and BioMolecular Resources Research Infrastructure (BBMRI); (2) the certification of Biobank activities according to the international quality assurance ISO 9001 by the accredited certifying body Det Norske Veritas (DNV-GL).

The Research Biobank of the Bambino Gesù Pediatric Hospital Center is regulated by specific criteria for the evaluation of requests for conservation and use of biologic material and related data, taking into consideration the quality of the research projects. These criteria do not exclude third parties interested in the pediatric Center Research Biobank collections, with a view to international collaboration with associations, networks, research institutes, and private subjects involved in translational and personalized medicine activities

#### **Casa Sollievo Della Sofferenza Medical Center - mother and child department**

The Mother and Child Department is part of the Casa Sollievo della Sofferenza (Home for the Relief of Suffering) Medical Center, also known as the Hospital of Padre Pio, is formally classified as a “highly ranked religious hospital.” It is administered and falls under the jurisdiction of the Vatican City State. The Casa Sollievo della Sofferenza medical center, is considered one of the largest

extra-territorial polyclinic hospitals hosted in the Italian geographical territory, and it is recognized as a leading institution in the medical and social care, as well as in scientific research in the Center-Southern area of Italy. The Medical Center, including the Mother and Child Department, is part of a Vatican Medical not-for-profit Foundation, which Board is the governing body of the Organization. Since 2006, the Mother and Child Department has been part of the centers of Excellence, hosting the university residency training in pediatrics of the Italian University of Foggia. During the last 10 years, the pediatric team of Casa Sollievo della Sofferenza published over 200 scientific articles in various fields of clinical pediatrics, all in prestigious international scientific journals, listed in PubMed and reported in Scopus.

Pediatric healthcare professionals, working for the Casa Sollievo della Sofferenza Medical Center, are directly engaged in clinical care and offer their expertise in various childcare specialties. In particular, the Mother and Child Department includes four Pediatric Units: the general and polyspecialistic pediatrics unit, the pediatric hematology-oncology unit, the neonatology and high education and clinical research academic unit (10). The non-medical staff counts over 2700 employees.

The department's activity aims at providing high quality care and social assistance to all subjects in the developmental age up to 16 years, suffering from the most frequent acute and chronic pathologies and rare diseases. During 2018, over 5000 patients were admitted in the various units of the Mother of Child Department.

The first pediatric unit, which began its clinical activity on May 5<sup>th</sup>, 1956, as part of the original medical building, moved in 2002 to its new location in the new medical complex called John Paul II. The children's hospital includes clinical units and research sections, the ambulatory and day hospitals facilities, the outpatient departments, and the Child Neuropsychiatry Service, which are all functionally aggregated to the department.

#### **General pediatrics and polyspecialistic unit**

The general pediatrics and polyspecialistic unit counts 29 beds, of which four are dedicated to day hospital activities, and includes several specialty sections: diabetology, endocrinology, gastroenterology, hepatology, bronchus pneumology, allergology, rheumatology, nephrology, and urology, rare diseases. The Infant Neuropsychiatry Unit is also part of the Pediatric Unit, and provides care for children and adolescents with neurologic pathologies, in particular epilepsy, headache, cranial trauma, neuromuscular diseases, and mental retardation.



Since 1986, the department has been recognized as a Regional Center for the Diagnosis and Therapy of Hypophyseal Nanism and the Pediatric Unit is recognized by the Puglia Region as the center of reference of the National Network of Rare Diseases and for the following diseases: Kawasaki syndrome, neurofibromatosis, septo-optical dystrophy, and pediatric rare liver diseases.

The Pediatric Basic Life Support-Defibrillation (PBLSD) Training Center has been set up at the Pediatric Operative Unit together with the First Aid and Resuscitation Unit; it is recognized by the Italian Resuscitation Council and is part of its national training network.

The center operates in the field of training for health personnel, offering several training courses, including PBLSD.

The clinical activity of diagnosis and treatment of pediatric patients performed by these facilities is divided into two macro areas of competence: General and Polyspecialistic Pediatrics.

The activity of the pediatric center is performed in close coordination with the regional network of primary care pediatricians (11, 12). The areas of clinical excellence that characterize the pediatric center of Casa Sollievo are reported and briefly described below.

#### **Auxo-endocrinology-diabetology section**

Clinical activity involves the integration of endocrinologic, dietary, and neuropsychiatric skills.

The main diseases treated are insulin-dependent diabetes mellitus and other alterations of carbohydrate metabolism (D.M.type II, MODY); pituitary dysfunction; thyroid dysfunction; gonadal dysfunction and abnormalities of sexual differentiation; adrenal dysfunctions; and eating disorders.

The main procedures performed in the field of endocrinology diagnostics are dynamic tests for the evaluation of the function of endocrine glands and glucose metabolism, which involve the infusion/administration of substances with stimulatory or suppressive properties and peripheral blood sampling.

#### **Gastroenterology section**

This unit deals with all gastroenterological diseases in the pediatric and adolescence years, following the young patient from the diagnostic phase to long-term follow-up. The main diseases treated are malabsorption syndromes; celiac disease-food allergies; intractable chronic diarrhea; chronic intestinal inflammatory diseases; gastroesopha-

geal reflux and esophagitis; gastroduodenitis and Helicobacter pylori infection.

The Gastroenterology and Digestive Endoscopy unit provides the following tests: ph-metha esophageal continuation; manometry; breath tests; endoscopy of the upper and lower gastrointestinal tract; operative endoscopy; biopsy of the endoscopic intestinal mucosa; evaluation of pancreatic function; cardiopulmonary resuscitation (CPR); positioning of percutaneous endoscopic gastrostomy (PEG); echo-guided liver biopsy; and serous therapy of esophageal varices. The Diagnostic Radiology section provides the following diagnostic exams: cholangiography and arteriography of the celiac tripod, and the Dietary Service performs dietary regimes in gastrointestinal pathologies, and parental and enteral nutrition.

#### **Hepatology and liver transplantation section**

This section deals with all liver and kidney diseases, following up pediatric patients already transplanted or with serious liver diseases for which there is an indication for inclusion in a transplant list. The main diseases treated are neonatal cholestasis and extra-hepatic bile duct atresia, Wilson's disease and metabolic hepatopathies, chronic HBV and HCV-related hepatitis, autoimmune hepatitis, biliary calculus, steatosis and steatohepatitis, and portal hypertension.

#### **Immunology, allergology, and bronchopneumology section**

In this specialized field, the activity is extended to the diagnosis and treatment of acute and chronic respiratory diseases: bronchial asthma, acute pneumopathies, chronic pneumopathies, immuno-allergic disorders, atopic dermatitis, urticaria, food allergies, allergic rhinoconjunctivitis, rheumatologic pathology, recurrent arthralgias, acute and chronic arthritis, collagenopathies, and recurrent and periodic fevers.

#### **Nephrology and urology section**

This section provides diagnostic procedures and treatment of kidney and urinary tract diseases in children and adolescents. The main diseases treated are congenital nephropathy, acute and chronic renal failure, acute and chronic nephritis, infections, and malformations of the urinary tract.

#### **Neurocutaneous syndromes section**

Specialists here deal with the diagnosis and treatment of patients with NF1 (neurofibromatosis type 1) and neurocutaneous syndrome in collaboration with the Medical Genetics service, and adopt specific multidisciplinary approaches in order to ensure complete assistance to young patients.

**Table 1. Clinical activity of the neonatology unit\***

Clinical expertise
Preterm and neonatal anemia
Preterm and neonatal apnea
Perinatal asphyxia
Neonatal convulsions
Bronchopulmonary dysplasia
Respiratory distress
Necrotizing enterocolitis (NEC)
Congenital infections
Kidney failure
Severe respiratory failure
Hyperbilirubinemia
Pulmonary hypertension
Hypoglycemia and neonatal hypocalcemia
Hemorrhagic disease of the newborn
Serious and/or complex malformations
pneumothorax
Prematurity and/or low birth weight
Gastroesophageal reflux
Retinopathy of prematurity (ROP)
Sepsis and meningitis
Mechanic inhalation syndrome
Respiratory syndrome of pulmonary hyaline membranes
Transient newborn tachypnea
Areas of excellence
Newborns with severe respiratory failure
Preterm infants, including gestational age and extremely low birth weight
Neonatal Transport and Emergency Service
Milk Bank

\*: Mother and Child Department of Casa Sollievo della Sofferenza Medical Center

### Neuropsychiatry and psychotherapy section

This deals with all clinical disorders that involve the nervous system and the psyche of children and adolescents, as well as their families. Moreover, a good part of its activity, is conducted profitably as day and outpatient admissions, carrying out electroencephalography (EEG) performed with video recording and taking care of patients with mental retardation, headache, behavioral disorders, autism, specific developmental disorders, and chronic neurologic diseases.

The main treated diseases are epilepsy, mental retardation, headache, behavioral disorders, autism, specific developmental disorders, and chronic neurologic diseases.

### Oncohematology unit

The Pediatric Oncology Hematology Unit counts 20 beds and is one of the Italian Centers accredited by the Italian Association of Pediatric Hematology and Oncology (AIEOP) for the diagnosis and treatment of hematologic and oncologic diseases of patients aged 0 to 16 years. It is authorized to perform hematopoietic stem cell transplantation.

### Neonatology unit

The neonatology unit includes 24 beds, of which eight are located in the intensive care section. The Milk Bank is active at this unit and provides its services to the regional community. The clinical expertise of the unit is reported in Table 1.

### Conclusions

Pediatric care in medical centers related and administered by the Vatican City State has reached a worldwide high-quality level, widely documented by the scientific activity produced by medical and research personnel in the pediatric units and related research centers. These centers of excellence are able to provide top clinical care and to develop clinical studies and perform translational research, which contributes to the global advancement of pediatric science (12–14).

**Conflict of Interest:** The authors have no conflicts of interest to declare.

**Financial Disclosure:** The authors declared that this study has received no financial support.

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