

# Examination of Pyelonephritis In Children with magnetic resonance imaging (MRI)

|  |  |  |
|--|--|--|
| <b>Submission date</b><br>01/04/2011   | <b>Recruitment status</b><br>No longer recruiting            | <input type="checkbox"/> Prospectively registered    |
|  |  | <input type="checkbox"/> Protocol                    |
| <b>Registration date</b><br>19/07/2011 | <b>Overall study status</b><br>Completed                     | <input type="checkbox"/> Statistical analysis plan   |
|  |  | <input type="checkbox"/> Results                     |
| <b>Last Edited</b><br>30/11/2012       | <b>Condition category</b><br>Urological and Genital Diseases | <input type="checkbox"/> Individual participant data |
|  |  | <input type="checkbox"/> Record updated in last year |

**Plain English summary of protocol**  
Not provided at time of registration

## Contact information

**Type(s)**  
Scientific

**Contact name**  
Miss Carine Martins Jarnalo

**Contact details**  
Wilhelminalaan 12  
Amsterdam  
Netherlands  
1800 AM

## Additional identifiers

**Protocol serial number**  
NL32462.094.10

## Study information

**Scientific Title**  
Examination of Pyelonephritis In Children with magnetic resonance imaging (MRI): a cohort study

**Acronym**  
EPIC

**Study objectives**

Magnetic resonance imaging (MRI) can be used as an alternative to dimercaptosuccinic acid (DMSA) for the diagnosis of pyelonephritis in children.

### **Ethics approval required**

Old ethics approval format

### **Ethics approval(s)**

METC Noord Holland approved on 30th November 2010, ref: NL32462.094.10

### **Study design**

Validating cohort study

### **Primary study design**

Observational

### **Study type(s)**

Diagnostic

### **Health condition(s) or problem(s) studied**

Pyelonephritis

### **Interventions**

MR-imaging is performed within 8 hours of the DMSA scan. MR examinations of the abdomen and pelvis are performed with the patient in supine position and with a body phased-array coil (better signal-to-noise ratio) on a 1.5-T system (Magnetom Avanto, Siemens, Erlangen, Germany). All MR examinations are performed using a set protocol. Single-shot images (if possible with breath-hold) are made to provide a motion-insensitive image, even in the presence of severe motion. The total examination time is less than 20 min for the MRI in total.

The parents can accompany the patient during the examination. If necessary a nurse from the paediatric department may also accompany the patient.

### **Intervention Type**

Other

### **Phase**

Not Applicable

### **Primary outcome(s)**

1. The sensitivity, specificity, positive and negative predictive value and inter observer agreement of MRI in diagnosing acute pyelonephritis as compared to the reference standard.
  - 1.1. The MRI findings will be compared to the findings at imaging of the standard diagnostic work-up that preceded MRI. The diagnostic value of specific MRI characteristics for pyelonephritis will be calculated. The value of diffusion-weighted imaging (DWI) will be analysed.

### **Key secondary outcome(s)**

1. To determine whether MR-diffusion weighted imaging (DWI) has additional value in the imaging of pyelonephritis
2. To determine whether MRI scanning can differentiate acute pyelonephritis from renal scarring

### **Completion date**

04/04/2013

## Eligibility

### Key inclusion criteria

1. Patients from 0 to 18 years, with:
  - 1.1. Acute pyelonephritis, defined as a urinary tract infection (UTI) with a body temperature above 38 °C
  - 1.2. Suspicion of acute pyelonephritis, suggested by symptoms of a UTI and flank pain
2. For young children (under the age of 1 year and in the pre-verbal phase) other clinical symptoms can suggest pyelonephritis. This is bacteriuria with either fever, vomitus, lethargia, anorexia, abdominal pain, pollakisuria or flank pain
3. Outside the study setting, the patient would have received a dimercaptosuccinic acid (DMSA) scan
4. Patients, or a legal representative, must be able to give informed consent, and the consent must be obtained prior to the MR Imaging and DMSA scanning

### Participant type(s)

Patient

### Healthy volunteers allowed

No

### Age group

Child

### Upper age limit

18 years

### Sex

All

### Key exclusion criteria

1. Previous diagnosis of pyelonephritis
2. All contra-indications for undergoing MRI
3. A psychiatric, addictive, or any disorder that compromises the ability to give truly informed consent for participation in this study

### Date of first enrolment

04/04/2011

### Date of final enrolment

04/04/2013

## Locations

### Countries of recruitment

Netherlands

**Study participating centre**  
**Wilhelminalaan 12**  
Amsterdam  
Netherlands  
1800 AM

## Sponsor information

**Organisation**  
Foreest Medical School (Netherlands)

**ROR**  
<https://ror.org/00bc64s87>

## Funder(s)

**Funder type**  
University/education

**Funder Name**  
The Foreest institute (Netherlands)

## Results and Publications

**Individual participant data (IPD) sharing plan**

**IPD sharing plan summary**  
Not provided at time of registration

### Study outputs

| Output type                                   | Details                       | Date created | Date added | Peer reviewed? | Patient-facing? |
|---|-------------------------------|--------------|------------|----------------|-----------------|
| <a href="#">Participant information sheet</a> | Participant information sheet | 11/11/2025   | 11/11/2025 | No             | Yes             |