Simple acute pyelonephritis (no complication risk factor)

- Clinical presentation:
  - inconsistently associates signs of cystitis and signs suggesting renal parenchymal involvement (fever, chills, pain in the lumbar fossa, typically unilateral, radiating downward to the genitals, spontaneous or provoked).
  - digestive signs may sometimes be at the forefront;
  - there are mild forms with simple low grade fever and low back pain only when provoked, hence the importance of looking for these symptoms in a woman consulting for cystitis.

- Performance of dipstick and, if positive, a cytobacteriological examination of the urine (CBEU) with antibiotic sensitivity testing.
  - the diagnosis is suggested if urine leukocytes $> 10^4$/ml and bacteria $\geq 10^3$ CFU/ml for *Escherichia coli*, *Staphylococcus* and $\geq 10^4$ CFU/ml for other enterobacteria, *Corynebacterium urealyticum*, *Pseudomonas aeruginosa* and *Staphylococcus aureus*.
  - it is not necessary to perform blood cultures or other laboratory testing.
  - Renal ultrasound indicated in the first 24 hours if hyperalgiesic pyelonephritis or if there is an unfavorable outcome after 72 hours of antibiotic therapy.

- Hospitalisation in the following cases:
  - hyperalgiesic pyelonephritis;
  - diagnostic uncertainty;
  - vomiting making oral treatment impossible;
  - unfavorable socioeconomic conditions;
  - concerns about treatment compliance;
  - treatment by antibiotic with hospital prescription (rare situations of multiple allergies).
Probabilistic treatment should be started immediately after doing the UCT:

The following antibiotics are not indicated: amoxicillin, amoxicillin-clavulanic acid or trimethoprim-sulfamethoxazole.

Relay treatment (other relay treatments possible after sensitivity testing):
- amoxicillin (to be prioritised in sensitive strain) 1 g x 3/day;
- amoxicillin-clavulanic acid, 1 g x 3/day;
- cefixime, 200 mg x 2/day;
- cotrimoxazole, 2 tab/day.

If ESBL are present: specialist opinion (see the recommendations of the Société de pathologie infectieuse de langue française [French Infectious Diseases Society]).

Total treatment duration:
- 7 days if 3rd generation cephalosporins or fluoroquinolones,
- 10 days in the other cases

Follow up
- No follow up CBEU unless unfavorable clinical outcome.
- In case of fever after 72 hours: CBEU with sensitivity testing on treatment and radiological examination by urogenital CT scan (unless contraindication).
**Acute pyelonephritis with complication risk, without signs of severity**

- At least one complication risk factor.
- Performance of dipstick and, if positive, a cytobacteriological examination of the urine (CBEU) with antibiotic sensitivity testing.
  - Laboratory testing: CRP, creatinine.
  - A urogenital CT scan is indicated, most often urgently, and within 24 hours at the latest. If there is a contraindication or if the suspicion of complication is low, the alternative is renal ultrasound.
- **Probabilistic or relay antibiotic treatments:** comparable to those for simple pyelonephritis, with no signs of severity, for a duration of 10 days.
- **Follow up**
  - Clinical re-evaluation at 72 hours. No followup CBEU unless unfavorable clinical outcome.
  - In case of fever after 72 hours: CBEU with sensitivity testing on treatment and radiological examination by urogenital CT scan (unless contraindication).

**Severe acute pyelonephritis**

- **Severity criteria:**
  - severe sepsis (drop in blood pressure or organ dysfunction: respiratory, renal, cerebral, hepatic, or coagulation abnormalities);
  - septic shock or need for surgical or interventional drainage of the urinary tract.
- **Systematic hospitalisation**

**Fried Criteria**

- involuntary weight loss during the past year
- slow walking speed
- poor endurance
- weakness/fatigue
- reduced physical activity