

## STA 6707: HW 5

**Due at 3 pm: Thursday April 28**

### Problem 1:

The main idea of this data set is to come up with an algorithm, which will perform the presumptive diagnosis of two diseases of urinary system. It will be the example of diagnosing of the acute inflammations of urinary bladder and acute nephritises. For better understanding of the problem let us consider definitions of both diseases given by doctors. Acute inflammation of urinary bladder is characterised by sudden occurrence of pains in the abdomen region and the urination in form of constant urine pushing, micturition pains and sometimes lack of urine keeping. Temperature of the body is rising, however most often not above 38C. The excreted urine is turbid and sometimes bloody. At proper treatment, symptoms decay usually within several days. However, there is inclination to returns. For persons with acute inflammation of urinary bladder, we should expect that the illness will turn into protracted form.

Acute nephritis of renal pelvis origin occurs considerably more often at women than at men. It begins with sudden fever, which reaches, and sometimes exceeds 40C. The fever is accompanied by shivers and one- or both-side lumbar pains, which are sometimes very strong. Symptoms of acute inflammation of urinary bladder appear very often. Quite not infrequently there are nausea and vomiting and spread pains of whole abdomen.

Each line of the data file starts with a digit which tells the temperature of patient.

-- Attribute lines:

For example, '35,9 no no yes yes yes yes no'

Where:

'35,9' Temperature of patient

'no' Occurrence of nausea

'no' Lumbar pain

'yes' Urine pushing (continuous need for urination)

'yes' Micturition pains

'yes' Burning of urethra, itch, swelling of urethra outlet

'yes' decision: Inflammation of urinary bladder

'no' decision: Nephritis of renal pelvis origin

Can you develop an algorithm that performs a presumptive diagnosis of the two diseases of the urinary system?