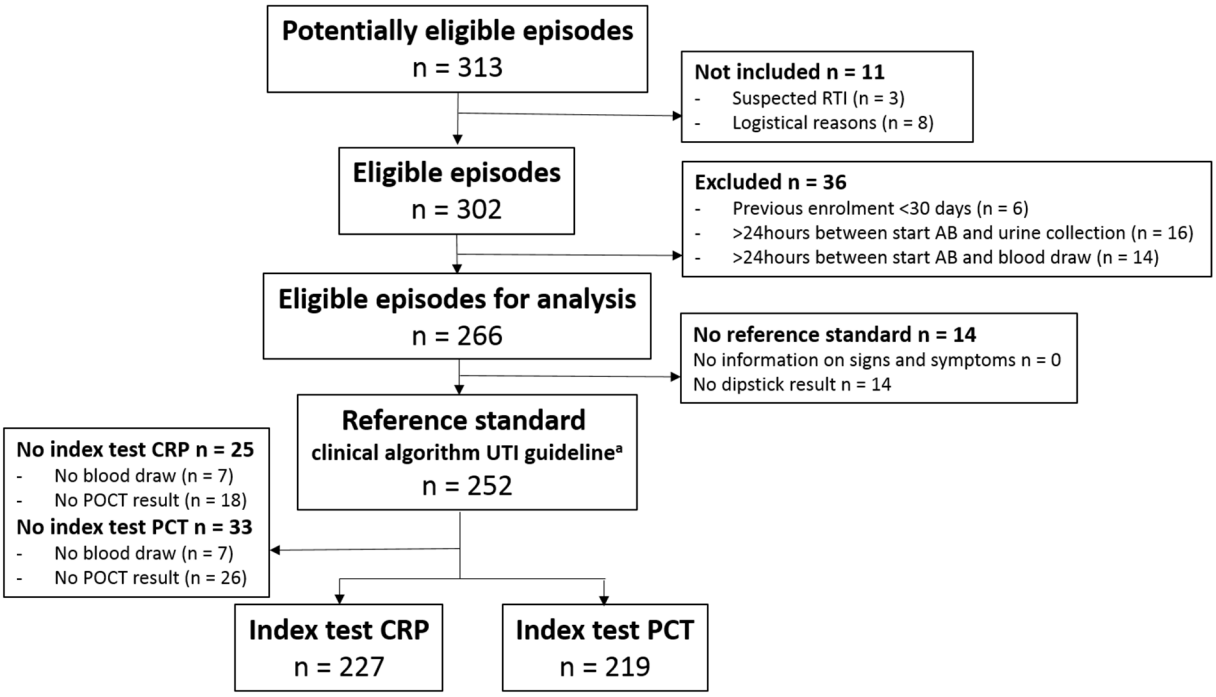
Supplementary file A: Flow of participants in post-hoc analysis using clinical algorithm for UTI diagnosis



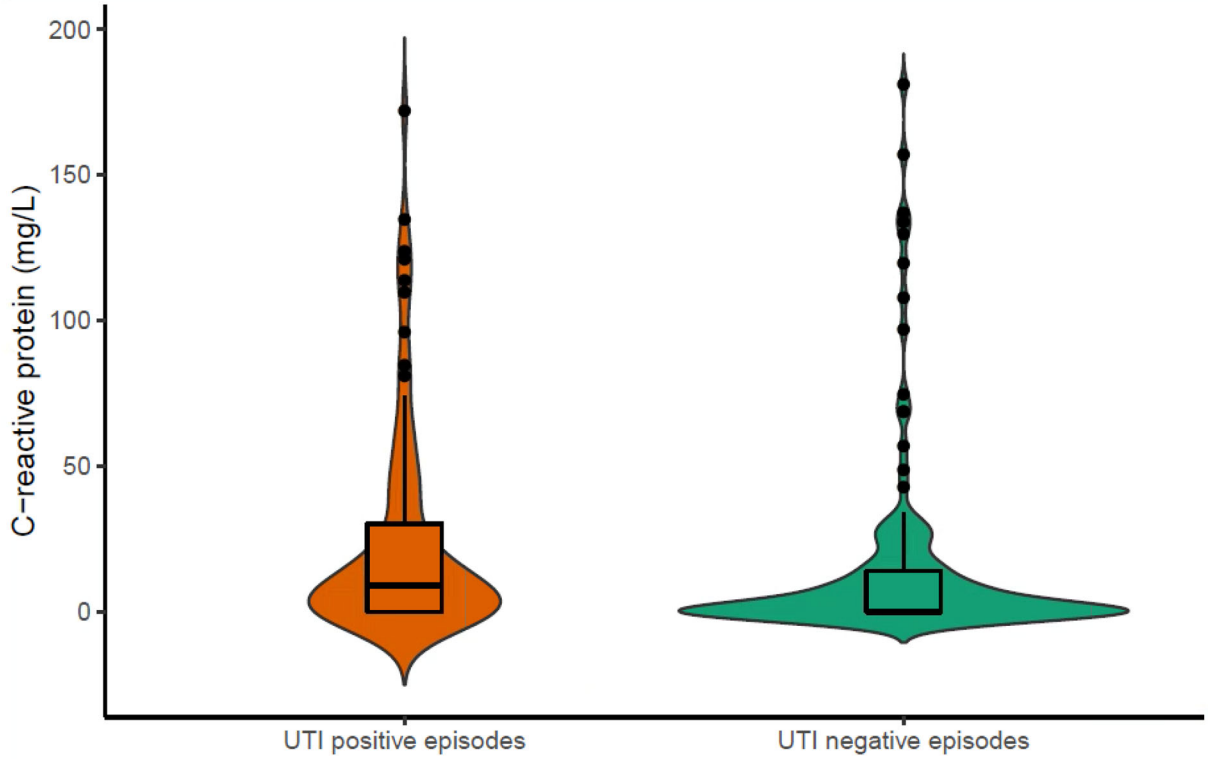
Flow of participants in post-hoc analysis using clinical algorithm for UTI diagnosis

In this post-hoc analysis the clinical algorithm described in the Dutch guideline on UTI in vulnerably elderly[1] was used as reference standard. This algorithm is based on signs and symptoms, and the presence of leucocytes or nitrite in urine, irrespective of bacterial culture results, or symptom resolution during adequate antibiotic treatment.

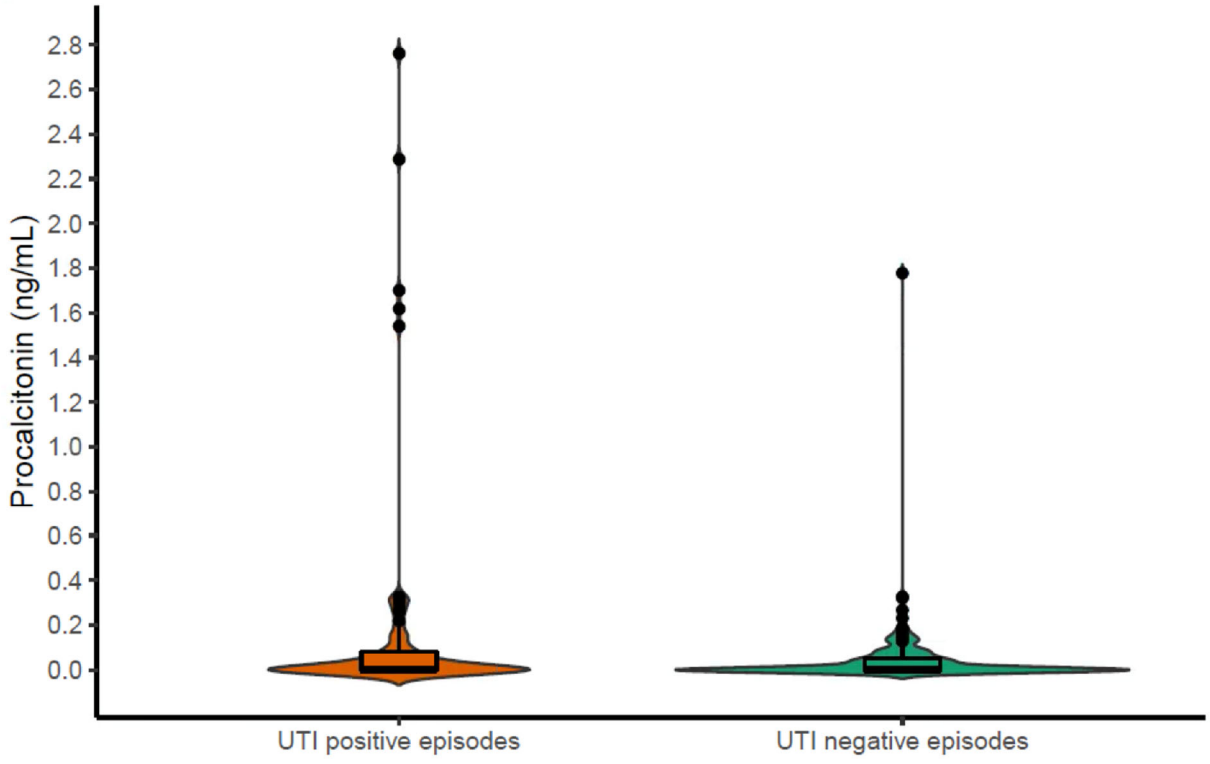
CRP: C-reactive protein; PCT: procalcitonin; PoCT: Point-of-Care test; RTI: Respiratory tract infection; UTI: Urinary tract infection

Supplementary file B: Distribution of C-reactive protein (A) and procalcitonin (B) concentrations in UTI episodes fulfilling or not fulfilling the UTI definition as defined by the clinical algorithm used in post-hoc analysis

A



B



Distribution of C-reactive protein (A) and procalcitonin (B) concentrations in UTI episodes fulfilling or not fulfilling the UTI definition as defined by the clinical algorithm used in post-hoc analysis

Violin plots with a boxplot overlay showing the distribution of C-reactive protein (A) in UTI positive (orange, n=86) and in UTI negative episodes (green, n=141) and the distribution of procalcitonin (B) in UTI positive (orange, n=83) and in UTI negative episodes (green, n=135). The width of the orange and green areas show the proportion of cases along the concentration of C-reactive protein or procalcitonin. The boxplots show the median, interquartile ranges and outliers. One observation was left out: procalcitonin 35 ng/mL, UTI negative. In this post-hoc analysis the clinical algorithm described in the Dutch guideline on UTI in vulnerably elderly[1] was used as reference standard. This algorithm is based on signs and symptoms, and the presence of leucocytes or nitrite in urine, irrespective of bacterial culture results, or symptom resolution during adequate antibiotic treatment.

UTI: Urinary Tract Infections; UTI negative episodes: Episodes that do not fulfill the clinical algorithm UTI definition; UTI positive episodes: Episodes that do fulfill the clinical algorithm UTI definition

Supplementary file C: Table with frequencies of test with a result below lower limit of quantification for the following subgroups: age groups, type of nursing home ward, and the likely presence of tissue involvement.

Variable group	group size	procalcitonin			c-reactive protein		
		available	< llq		available	< llq	
	N = 266	N = 226	N = 130		N = 235	N = 109	
	n	n	n	%*	n	n	%*
Age							
65 – 74	23	21	12	57.1	21	14	66.7
75 – 84	78	63	33	52.4	71	24	33.8
85 – 94	147	126	76	60.3	128	66	51.6
>= 95	18	16	9	56.3	15	5	33.3
Type ward							
Somatic	33	28	12	42.9	28	9	32.1
Psycho-geriatric	204	176	108	61.4	182	95	52.2
Rehabilitation	29	22	10	45.5	25	5	20.0
Type UTI[#]	N = 49	N = 46	N = 28		N = 44	N =19	
Tissue invasion likely[$]	11	10	4	40.0	8	2	25.0
Tissue invasion not likely[$]	38	36	24	66.7	36	17	46.2

* of test results available; # study definition; $ based on reported fever and/or flank pain and/or chills; UTI: urinary tract infection; LLQ: lower limit of quantification (pct: <0.02 ng/mL; crp: <5 mg/L)

Table with frequencies of test with a result below lower limit of quantification for the following subgroups: age groups, type of nursing home ward, and the likely presence of tissue involvement.

We enrolled a heterogenous study population. The overall aim of the study was to assess the effect of a single marker on the diagnosis of UTI in a routine setting of a nursing home. As such, we specifically did not want to divide the eligible population into subgroups but approach the study population as one heterogenous group in a specific setting. This aligns with the potential implementation of a PoCT test in this setting, where most likely all residents would be eligible to be tested when the clinical suspicion of UTI is made by the medical staff. We calculated the number of participants with a test results below the limit of quantification for the two markers, and compared these between age groups, type of nursing home ward, and the likely presence of tissue involvement (as a proxy for distinguishing between upper and lower UTI). Based on this metric there is no clear evidence that there are marked differences between these groups. This strengthens us in the decision to perform the analysis on the total study population.

* of test results available; # study definition; $ based on reported fever and/or flank pain and/or chills; UTI: urinary tract infection; LLQ: lower limit of quantification (pct: <0.02 ng/mL; crp: <5 mg/L)

REFERENCES

1. Hertogh CMPM, drs. J. Haaijman, J. Richtlijn Urineweginfecties bij kwetsbare ouderen: Verenso, 2018.