

Analyse, post-analyse

Reinoud Cartuyvels
Hans De Beenhouwer



Uitwerken van stalen

Met wat houden we rekening bij het aflezen en verder uitwerken van stalen?

A. Staaltype:

1. Midstream (*expert 8/8*)

- ✓ Midstream
- ✓ Plakzakje
- ✓ Eenmalige sondage
- ✓ Stoma-urine



2. Verblijfssonde (urethraal/suprapubisch)

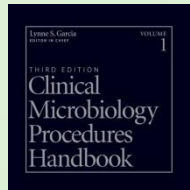
3. Suprapubische punctie



Uitwerken van stalen

Met wat houden we rekening bij het aflezen en verder uitwerken van stalen:

B. Type kiemen (*Garcia, Cumitech2C, expert 7/8*)



Type kiemen

Lynne S. Garcia
EDITOR IN CHIEF

VOLUME
1

THIRD EDITION

Clinical Microbiology Procedures

H

Common Uropathogens

Enterobacter spp.
Enterococcus spp.
Escherichia coli
Klebsiella spp.
Morganella morganii
Proteus spp.
Providencia spp.
Pseudomonas aeruginosa
Serratia marcescens
 Staphylococci (coagulase-negative)
Staphylococcus aureus
Staphylococcus saprophyticus
 Yeasts

Uncommon Uropathogens

Corynebacterium jeikeum
Corynebacterium group D-2
Gardnerella vaginalis
Neisseria gonorrhoeae
Streptococcus Group B

Normal Flora

Bacillus spp.
 Diptheroids
Lactobacillus
Micrococcus
Streptococci (viridans)

Type kiemen

2C

Laboratory Diagnosis of Urinary Tract Infections

YVETTE S. McCARTER, EILEEN M. BURD,
GERRI S. HALL, AND MARCUS ZERVOS

COORDINATING EDITOR
SUSAN E. SHARP

Cumitech

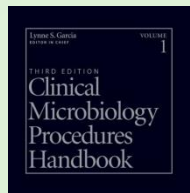
Common Urinary Pathogens

Gram-negative bacilli account for the majority of UTIs, specifically *E. coli*, *Proteus mirabilis*, *Klebsiella pneumoniae*, and *Pseudomonas aeruginosa*. Among the gram-positive cocci, *Enterococcus* spp., *S. saprophyticus*, and GBS are the major etiologic agents. Although the etiologies of community and hospital-acquired UTI are different, *E. coli* remains the single most common etiologic agent of UTI regardless of age. *E. coli* is responsible for up to 90% of cases of uncomplicated UTI in college-aged women (58), 70% of community-onset cases of uncomplicated UTI, and as much as 66% of cases of cUTI or acute pyelonephritis (83, 122). *K. pneumoniae* is often second in incidence to *E. coli* in community-onset cases and has been reported to have increased clinical importance in the renal transplant population, in which isolates are often multidrug resistant (4). *P. mirabilis* and *Morganella* spp. are often associated with older patients and patients with renal calculi or stones. *P. aeruginosa* is more commonly found in nosocomial UTI than in community-onset cases. *S. saprophyticus* is the most common species of coagulase-negative staphylococci to cause UTI. *S. saprophyticus* causes UTI in adolescents and young adult women who experience their first UTI and has been found in up to 11% of UTIs in college-aged women (82). However, it is a rare cause of UTI in elderly females (129). *Enterococcus* spp. have been reported in as many as 10% of all UTI (46) and up to 16% in the subset of nosocomial UTI (140). Enterococci can be more often associated with patients with underlying structural abnormalities or in patients who had prior urologic manipulations (102). *S. aureus* is much rarer as

Uitwerken van stalen

Met wat houden we rekening bij het aflezen en verder uitwerken van stalen:

B. Type kiemen



(7/8)

1. Commensale urogenitale flora
2. Uropathogenen
3. "I" klasse
("I"k weet het niet goed)



Categorieën

1. (Commensale) urogenitale-, huidflora

- ✓ viridans streptokokken,
- ✓ commensale Neisseria's
- ✓ lactobacillen
- ✓ CNS andere dan *S. saprophyticus*



Categorieën

2. uropathogenen

- ✓ Gram-negatieve bacillen
- ✓ *S. aureus* (uro?-pathogeen)
- ✓ *S. saprophyticus*
- ✓ Gisten
- ✓ beta-hemolytische streptokokken (LargeCol)
- ✓ enterokokken



Categorieën

3. categorie "I":

kiemen die niet onder 1 of 2 vallen

- ✓ *Gardnerella vaginalis*
- ✓ *Aerococcus urinae-sanguinicola*
- ✓ Corynebacteriën
- ✓ *Haemophilus sp.*
- ✓ *Actinobaculum schaali*, ...

What to do with these bastards ...



Categorieën

Consensus Categorie "I" :



(8/8)

⇒ Klasseren onder "Categorie 1" indien in minoriteit aanwezig.

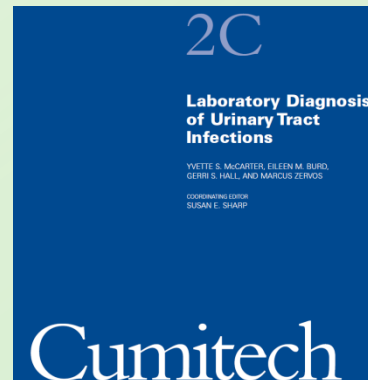
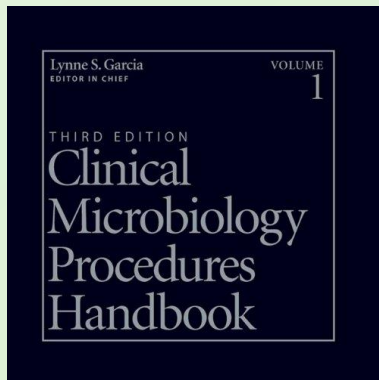
⇒ Klasseren onder "Categorie 2" indien in overmaat aanwezig (10 x meer dan andere flora of in reincultuur)

Maar het resultaat van de kweek dient steeds geïnterpreteerd te worden in de klinische context (commentaren !)



Aflezen en rapporteren

- Aflezen van voedingsbodems
- Rapporteren



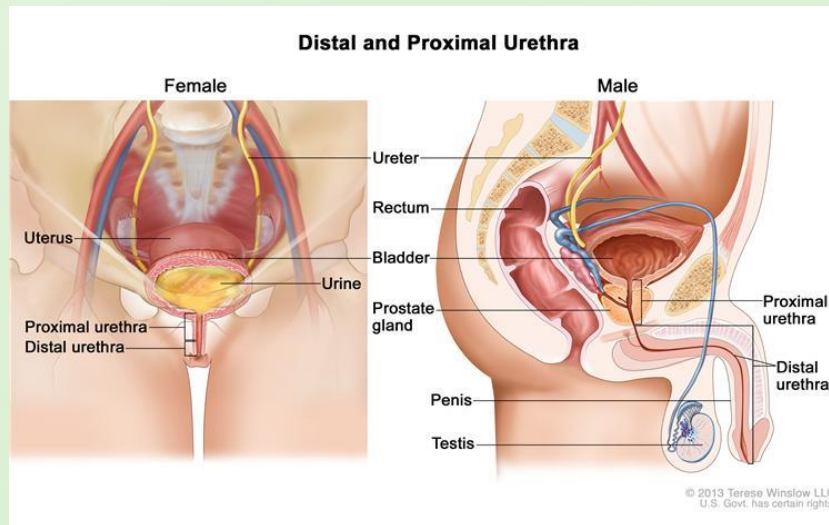
Aflezen van voedingsbodems

Probleem 1:

urine wordt geloosd doorheen niet steriele omgeving

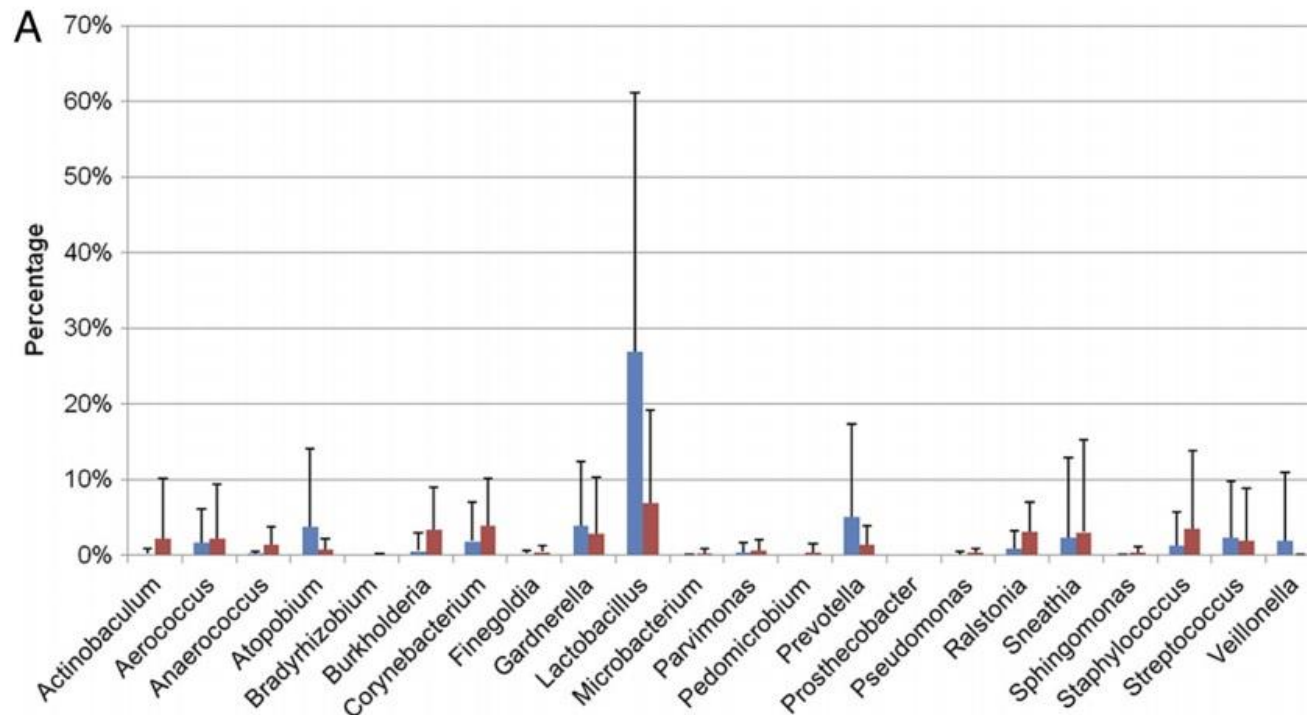
→ risico op contaminatie met flora uit UG-tractus & huid

→ bepaalde kiemen behoren tot normale flora en zijn verwekkers van UTI



Aflezen van voedingsbodems

Probleem 2: urine is niet steriel!



J Clin Microbiol 2012; 50:1376-83

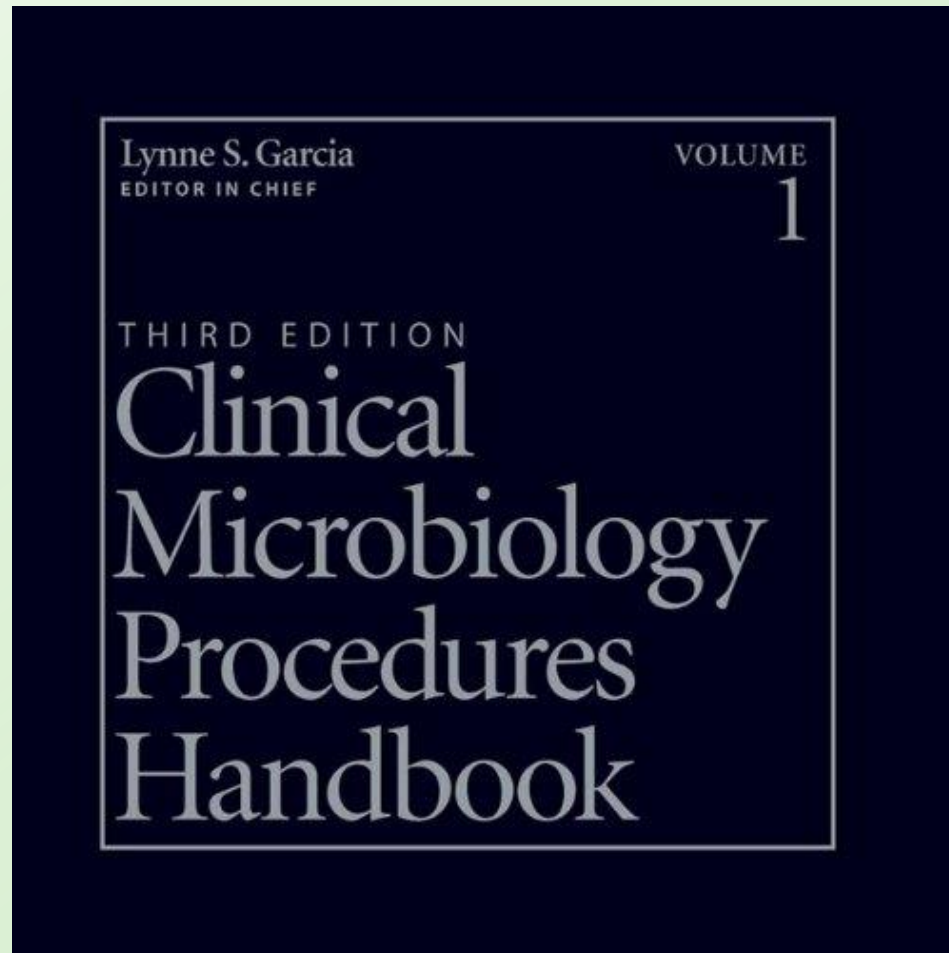


Aflezen van voedingsbodems

Hoe inschatten of bepaalde kiem waarschijnlijke verwekker is van UWI, dus “significant” is?



Aflezen van voedingsbodems



Aflezen van voedingsbodems

Table 3.12–4 Protocol for workup of urine cultures

Type of urine	Inoculation	No. of isolates			Time to final report
		1 isolate ^a	2 uropathogens ^a	≥3 uropathogens	
Voided midstream; obtained in outpatient clinics and doctors' offices from patients <65 yr old	Streak 0.001 ml to BAP for count. Streak MAC (or EMB) in quadrants (CNA or PEA optional).	<10,000 CFU/ml, minimal ID ^b ≥10,000 CFU/ml (or ≥1,000 CFU of uropathogen/ml in females 14–30 yr old); ^c definitive ID ^d and AST	For each <100,000 CFU/ml, minimal ID For each that is ≥100,000 CFU/ml, definitive ID and AST	Report count plus "Multiple bacterial morphotypes present. Suggest appropriate recollection with timely delivery to the laboratory, if clinically indicated."	Day 1 or 2 (minimum incubation, 18 h) ^e
Indwelling catheter; voided from geriatric (≥65 yr old) and all inpatients	Streak 0.001 ml to BAP for count. Streak CNA (or PEA) and MAC (or EMB) in quadrants.	<10,000 CFU/ml, minimal ID ≥10,000 CFU/ml, definitive ID and AST	For each <100,000 CFU/ml, minimal ID For each that is ≥100,000 CFU/ml, definitive ID and AST	If voided urine, or if catheter collected and urinalysis WBCs or leukocyte esterase is available and normal, report as for voided outpatient urine. <i>or</i> Contact caregiver to determine if specimen was collected through catheter port and if patient is febrile or symptomatic. If so, follow protocol as for two uropathogens. <i>otherwise</i> Minimal ID of each uropathogen, with note: "Contact laboratory if definitive identifications are clinically indicated."	Day 2 or 3 (minimum incubation, 36 h)
Straight catheter; pediatric catheterized, suprapubic, kidney, cystoscopy yeast cultures	Streak 0.01 ml to BAP for count. Streak CNA (or PEA) and MAC (or EMB) in quadrants. Add CHOC for surgically collected or prostate specimens.	100 to 1,000 CFU/ml with normal urogenital or skin microbiota, minimal ID ≥1,000 CFU/ml or any pure culture of lower count of uropathogen, definitive ID and AST	For each <1,000 CFU/ml, minimal ID For each uropathogen that is ≥1,000 CFU/ml, definitive ID and AST	For each <10,000 CFU/ml, minimal ID For each that is ≥10,000 CFU/ml, definitive ID and AST <i>or</i> Contact physician to determine extent of workup.	Day 2 or 3 (minimum incubation, 48 h)

^a Urogenital or skin microbiota that is at least 10 times less than the uropathogens is ignored for purposes of workup. If this microbiota is equal to the uropathogens, report "Multiple bacterial morphotypes present. Suggest appropriate recollection with timely delivery to the laboratory, if clinically indicated." For list of uropathogens and urogenital and skin microbiota, see Table 3.12–1.

^b For minimal identification (ID), see Table 3.12–5.

^c Report any amount of group B streptococci (*S. agalactiae*) in this age group. Check staphylococci with novobiocin disk for *Staphylococcus saprophyticus*, a uropathogen in this age group.

^d For definitive ID, see Table 3.12–1.

^e See text (item V.B.5.b) for exceptions.

Aflezen van voedingsbodems

Table 3.12-4 Protocol for workup of urine cultures

Type of urine	Inoculation	No. of isolates			Time to final report
		1 isolate ^a	2 uropathogens ^a	≥3 uropathogens	
Voided midstream; obtained in outpatient	Streak 0.001 ml to BAP for count. Streak MAC	<10,000 CFU/ml, minimal ID ^b	For each <100,000 CFU/ml, minimal ID	Report count plus "Multiple bacterial morphotypes present. Suggest appropriate recollection with timely delivery to the laboratory, if clinically indicated."	Day 1 or 2 (minimum incubation, 18 h) ^c
Straight catheter; pediatric catheterized, suprapubic, kidney, cystoscopy yeast cultures	Streak 0.01 ml to BAP for count. Streak CNA (or PEA) and MAC (or EMB) in quadrants. Add CHOC for surgically collected or prostate specimens.	100 to 1,000 CFU/ml with minimal urogenital or skin microbiota, minimal ID	For each <1,000 CFU/ml, minimal ID	Minimal ID of each uropathogen, with note: "Contact laboratory if definitive identifications are clinically indicated."	Day 2 or 3 (minimum incubation, 48 h)
		≥1,000 CFU/ml or any pure culture of lower count of uropathogen, definitive ID and AST	For each uropathogen that is ≥1,000 CFU/ml, definitive ID and AST	For each <10,000 CFU/ml, minimal ID For each that is ≥10,000 CFU/ml, definitive ID and AST or Contact physician to determine extent of workup.	

Urogenital or skin microbiota that If this microbiota is equal to the uropathogens, report "Multiple bacterial morphotypes present. Suggest appropriate recollection with timely delivery to the laboratory, if clinically indicated." For list of uropathogens and skin microbiota, see Table 3,12-1.

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^d For definitive ID, see Table 3.12-1.

^e See text (item V.B.5.b) for exceptions.

Aflezen van voedingsbodems

Stap 1: Beoordeel verhouding

[urogenitale flora]/[pathogenen]

Doel: Inschatten contaminatiegraad urinestaal.



Aflezen van voedingsbodems

Enkel urogenitale flora	Rapporteer 'Urogenitale flora.'
Urogenitale flora $\geq$ pathogenen	Rapporteer 'Overwegend urogenitale flora met mogelijk aanwezigheid van pathogenen' en vraag een nieuw staal.
Pathogenen $>$ urogenitale flora	Rapporteer 'urogenitale flora' en pathogenen.
Enkel pathogenen	Rapporteer pathogenen.



Aflezen van voedingsbodems

Stap 2: Werk de pathogene bacteriën uit:

- Beoordeel **aantal soorten** pathogenen
- Beoordeel **aantal kolonies**
 - > 100 000 CFU/mL
 - 10-100 000 CFU/mL
 - < 10 000 CFU/mL



Aflezen van voedingsbodems

- “Kass-criteria” asymptomatische bacteriurie in ZS
- Langdurig norm voor diagnose alle UWI

Bacteriuria and Pyelonephritis of Pregnancy

EDWARD H. KASS, M.D., Ph.D., Boston

The interpretation of bacterial cultures of the urine has been greatly aided by the use of quantitative methods. Analysis of the bacterial colony counts of urines obtained from large numbers of patients has indicated that, except for certain defined clinical circumstances,¹ a colony count greater than 100,000 per milliliter of freshly obtained urine generally indicates the presence of true bacteriuria, that is, of actual multiplication of bacteria within the urinary tract. Conversely, bacterial colony counts less than 100,000 usually represent contamination attendant upon the collection of the specimen.^{2,3}

The validity of this approach has been

dimension which must be taken into account in the study of the natural history and pathogenesis of pyelonephritis.

Asymptomatic bacteriuria is found with particular frequency in those population groups that are particularly likely to develop pyelonephritis (i.e., patients with diabetes mellitus, pregnancy, obstructive uropathy, past histories of instrumentation, etc.). At autopsy, active pyelonephritis is almost always accompanied by bacteriuria, although there are many instances of bacteriuria without morphologic evidence of bacterial invasion of the kidneys or bladder.⁸

The available evidence, therefore, indi-

Arch Intern Med 1960; 105:194-8



Aflezen van voedingsbodems

Maar er bestaan geen zekerheden meer!

K3 stopt ermee in huidige vorm, maar: "We geven de fakkel door"

18-03-15, 15.44u

LEES LATER ★



Aflezen van voedingsbodems



- Symptomatische vrouwen, L-UTI

Cut-off CFU coliformen	10^5	10^2
sens	51%	95%
spec		85%

N Eng J Med 1982; 307:463-468.



Aflezen van voedingsbodems

- “Growing evidence” dat er **geen universele cut-off** bestaat voor significante bacteriurie, toepasbaar
 - ✓ op elke bacterie
 - ✓ op elk type staal
 - ✓ in elke klinische context



Aflezen van voedingsbodems

Midstreamstaal:

1 of 2 pathogenen

≥ 10.000 CFU/mL: ID en ABgram

< 10.000 CFU/mL: ID, ABgram bij pyurie



(7/8)



Aflezen van voedingsbodems

- Trend naar lagere cut-off aantal CFU voor diagnose UWI!



Guidelines on Urological Infections

M. Grabe (chair), R. Bartoletti, T.E. Bjerklund-Johansen,
H.M. Çek, R.S. Pickard, P. Tenke, F. Wagenlehner, B. Wullt



Aflezen van voedingsbodems

- Trend naar lagere cut-off aantal CFU in bv.



Guidelines on Urological Infections

1.5 Microbiological and other laboratory findings

The number of bacteria is considered relevant for the diagnosis of a UTI. In 1960, Kass developed the concept of significant bacteriuria ($\geq 10^5$ cfu/mL) in the context of pyelonephritis in pregnancy (12). Although this concept introduced quantitative microbiology into the diagnosis of infectious diseases, and is therefore still of general importance, it has recently become clear that there is no fixed bacterial count that is indicative of significant bacteriuria, which can be applied to all kinds of UTIs and in all circumstances. As described in Appendix 16.1, the following bacterial counts are clinically relevant:

- $\geq 10^3$ cfu/mL of uropathogens in a mid-stream sample of urine (MSU) in acute uncomplicated cystitis in women.
- $\geq 10^4$ cfu/mL of uropathogens in an MSU in acute uncomplicated pyelonephritis in women.
- $\geq 10^5$ cfu/mL of uropathogens in an MSU in women, or $\geq 10^4$ cfu/mL uropathogens in an MSU in men or in straight catheter urine in women, in a complicated UTI.

Aflezen van voedingsbodems

The NEW ENGLAND JOURNAL *of* MEDICINE

ESTABLISHED IN 1812

NOVEMBER 14, 2013

VOL. 369 NO. 20

Voided Midstream Urine Culture and Acute Cystitis in Premenopausal Women

Thomas M. Hooton, M.D., Pacita L. Roberts, M.S., Marsha E. Cox, B.S., and Ann E. Stapleton, M.D.



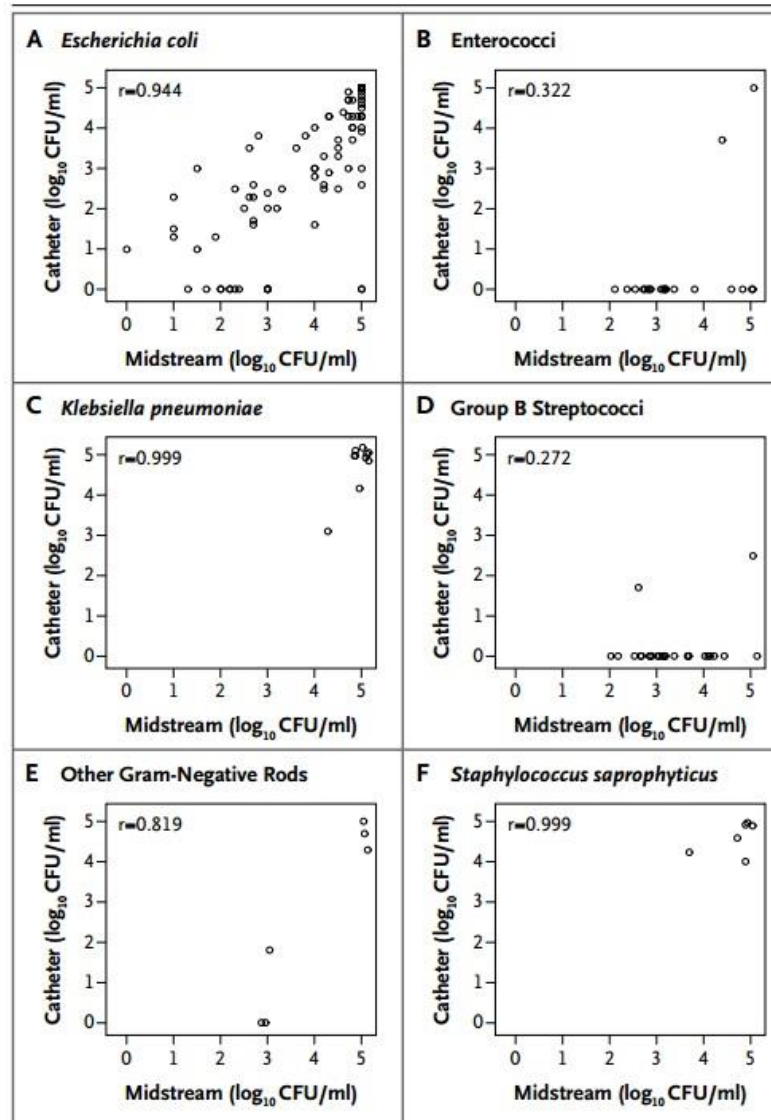
Aflezen van voedingsbodems

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VOL. 369 NO. 20

Acute Cystitis

and Ann E. Stapleton, M.D.



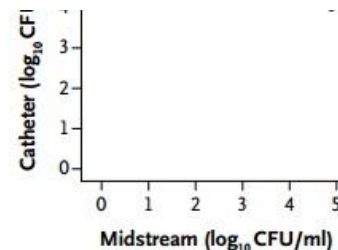
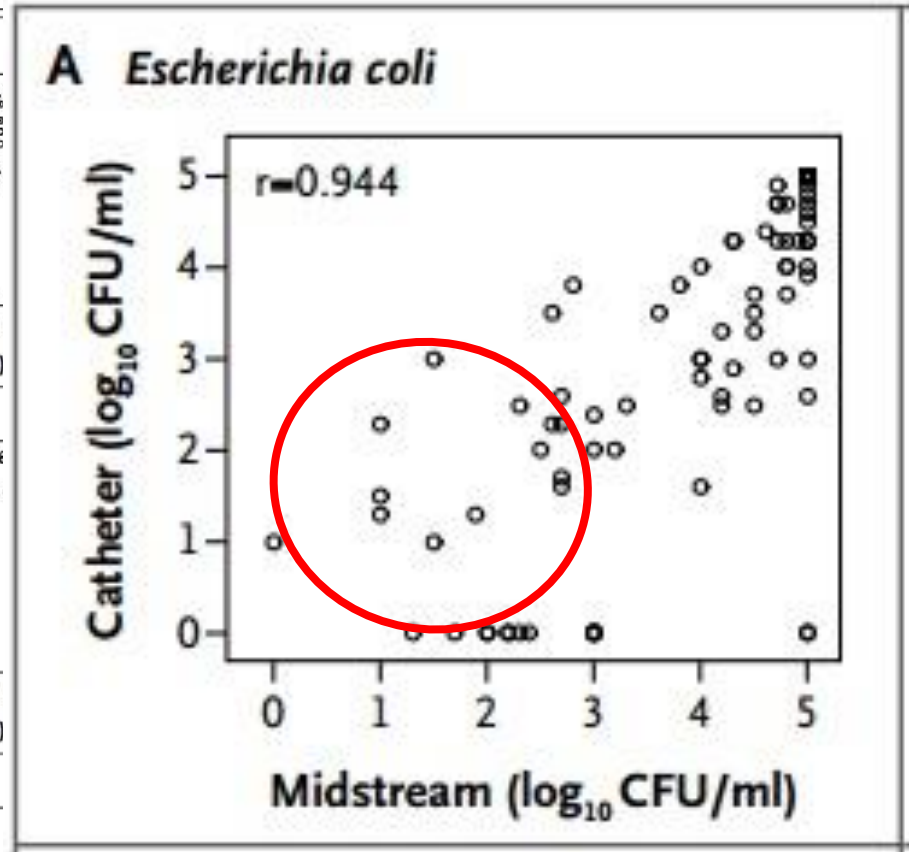
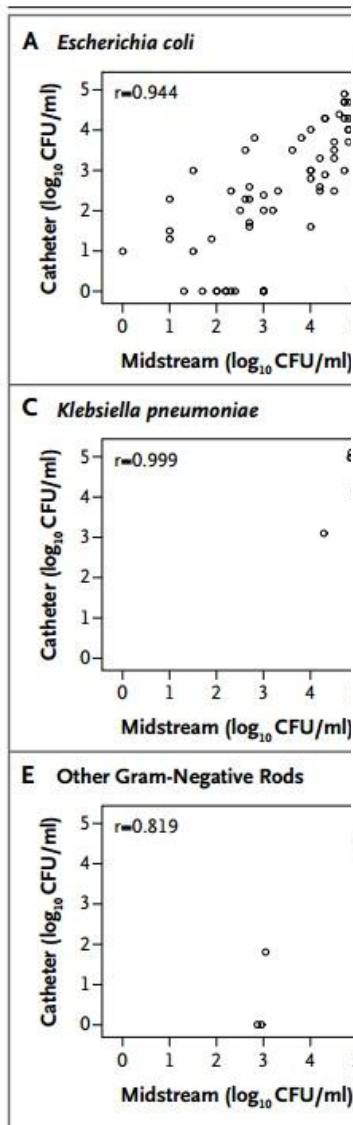
Aflezen van voedingsbodems

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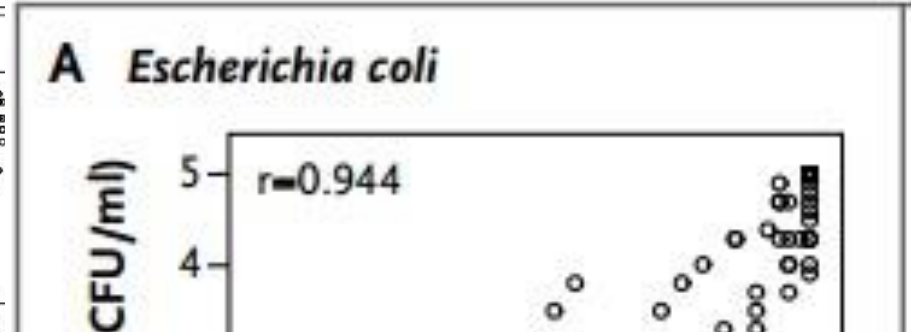
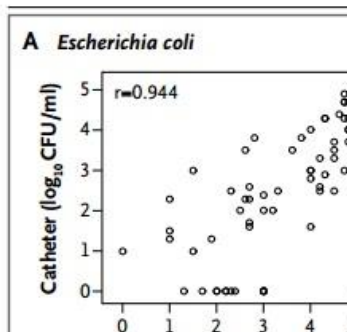
Thomas M. Hoo



and Ann L. Stapleton, M.D.



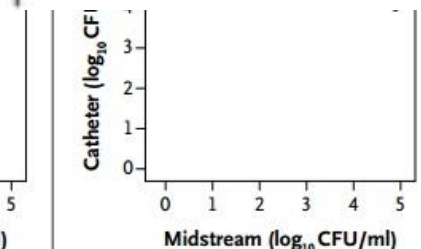
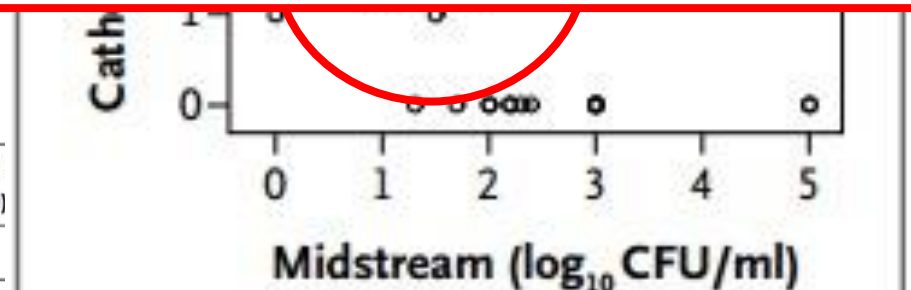
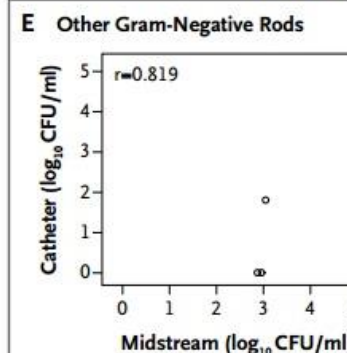
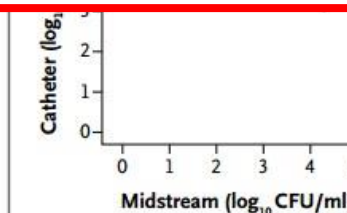
Aflezen van voedingsbodems



The presence of *Escherichia coli* in midstream urine was highly predictive of bladder bacteriuria even at very low counts, with a positive predictive value of 10^2 CFU per milliliter of 93% (Spearman's $r = 0.944$).

Voided

Thomas M. Hoo



and Ann E. Stapleton, M.D.



Aflezen van voedingsbodems

Midstreamstaal:

1 of 2 pathogenen

≥ 10.000 CFU/mL: ID en ABgram

<10.000 CFU/mL: ID, ABgram bij pyurie



(7/8)



Aflezen van voedingsbodems

Midstreamstaal:

≥ 3 pathogenen

Niet uitwerken, vraag nieuw staal.

Uitz. 1 isolaat ≥ 100.000 CFU/mL en 2 isolaten < 10.000 CFU/mL: ID en ABgram van dominante kiem, minimale ID (bv. genus niveau) van overige isolaten.



(6/8)



Aflezen van voedingsbodems

Urine van patiënt met verblijfsonde:

1 of 2 pathogenen

kiemen ≥ 10.000 CFU/mL: ID en ABgram

kiemen < 10.000 CFU/mL: ID zonder ABgram

≥ 3 pathogenen: zie midstream urine

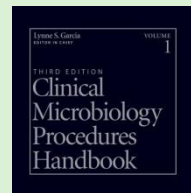


Aflezen van voedingsbodems

Urine bekomen met suprapubische punctie:

Steeds volledig uitwerken (ID en AB).

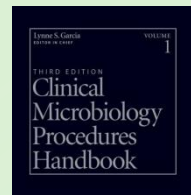
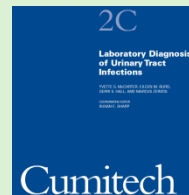
Bij onverwacht resultaat (bv. aanwezigheid van urethrale flora, ≥ 3 pathogenen): contact met aanvrager.



Rapporteren

Stalen zonder groei:

‘Negatief’ of “Geen groei van uropathogenen”



Rapporteren

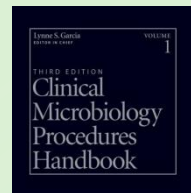
Stalen met groei:

- Vermeld aantal CFU/mL **per kiem**
- Aangepaste categorieën ngl. entvolume

Ten minste volgende (expert opinie, 8/8):

1 μL : $<10^4$, 10^4 - 10^5 ; $>10^5$ CFU/mL

10 μL : $<10^3$, 10^3 - 10^4 ; $>10^4$ CFU/mL



Rapporteren

Enkel urogenitale flora

Rapporteer '*urogenitale flora*' (+ aantal)

Urogenitale flora $\geq$ pathogenen

Rapporteer: '*Overwegend urogenitale flora met mogelijk aanwezigheid van pathogenen. Graag controlestaal indien klinisch relevant.*' (+ aantal)



Rapporteren

Pathogenen > urogenitale flora

Rapporteer pathogenen (+ aantal) en 'urogenitale flora' (+ aantal).

Enkel pathogenen

Rapporteer pathogenen (+aantal).

Mengflora met ≥ 3 soorten pathogenen

Rapporteer '3 of meerdere kiemsoorten, vermoedelijk contaminatie. Graag controlestaal indien klinisch relevant.' (+ aantal)



Rapporteren

URINE: MIDSTREAM

Staalinfo

Urine Midstream

MICROSCOPIE-SCREENING

Rode bloedcellen (hemoglobine)	Negatief		
Rode bloedcellen (microscopie)	* 14	/μL	0-10
Witte bloedcellen (esterase)	Negatief		
Witte bloedcellen (microscopie)	<10	/μL	0-10
Bacteriën (microscopie)	+		

CHEMIE

pH	6.5	4.5-8.0
Densiteit	1.025	
Glucose	Negatief	
Ketonen	++++	
Bilirubine	Negatief	
Urobilinogeen	+	
Eiwit kwalitatief	+	

MICROBIOLOGIE

BACTERIOLOGIE

GRAMKLEURING

Bacteriën	Negatief
-----------	----------

KULTUUR

Kultuur aerob	1: Escherichia coli: > 100 000 CFU/mL @
	2: Normale urogenitale flora: 10 000 - 100 000 CFU/mL



Rapporteren

URINE: MIDSTREAM

Staalinfo

Urine Midstream

MICROSCOPIE-SCREENING

Rode bloedcellen (hemoglobine)

Negatief

Rode bloedcellen (microscopie)

* 14

/μL

0-10

Witte bloedcellen (esterase)

Negatief

Bepaling

11-1512-001453

Eenheid

Ref.waarde

17/03/15

Antiblogram

1. esccol

amoxicilline

R

CLAMOXYL

amoxicilline-clavulaanzuur

R

AUGMENTIN

cefuroxime

S

ZINACEF

aztreonam

S

AZACTAM

amikacine

S

AMUKIN

ciprofloxacin

S

CIPROFLOXACINE

trimethoprim-sulfamethoxazol

S

EUSAPRIM

nitrofurantoin

S

URFADYN

fosfomycine

S

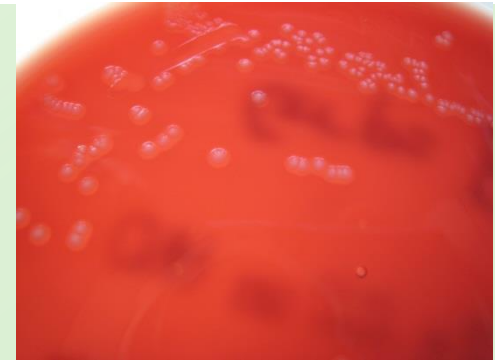
MONURIL



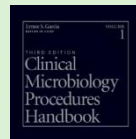
Rapporteren

Streptococcus agalactiae:

overrulen van 'Stap 1',
steeds rapporteren bij



- ✓ ♀ in vruchtbare leeftijd (15-50 jaar) i.k.v. eventuele zwangerschap. (8/8)
- ✓ neonati (8/8)
- ✓ gekende diabetici



Revised Guidelines from CDC, 2010. MMWR 2010: 59(RR10);1-32.



Rapporteren

Categorie 3: kiemen die niet tot categorie 1 of 2 behoren of "*Potentieel uropathogenen*".

Te rapporteren als

- commensale flora indien in minoriteit aanwezig
- uropathogenen indien in overmaat aanwezig (10 x meer dan andere flora of reincultuur)

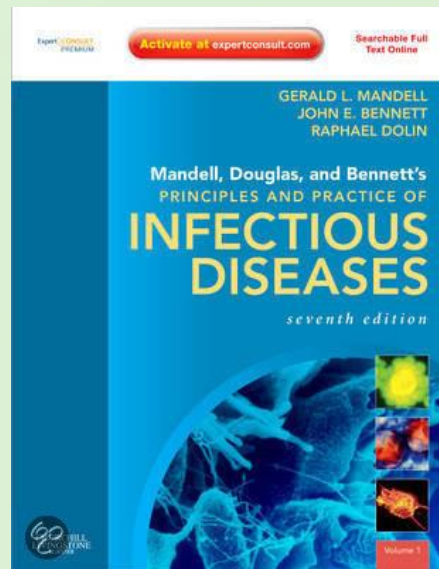
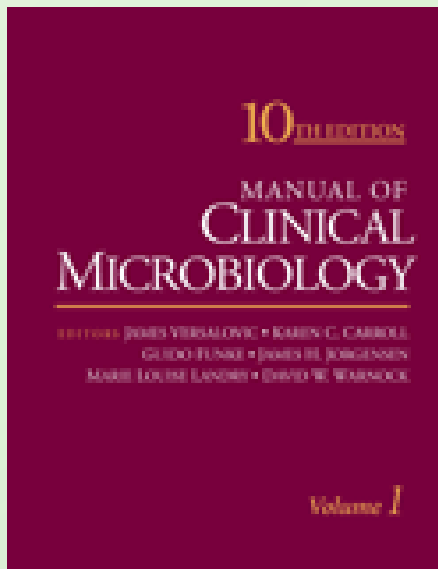


Rapporteren

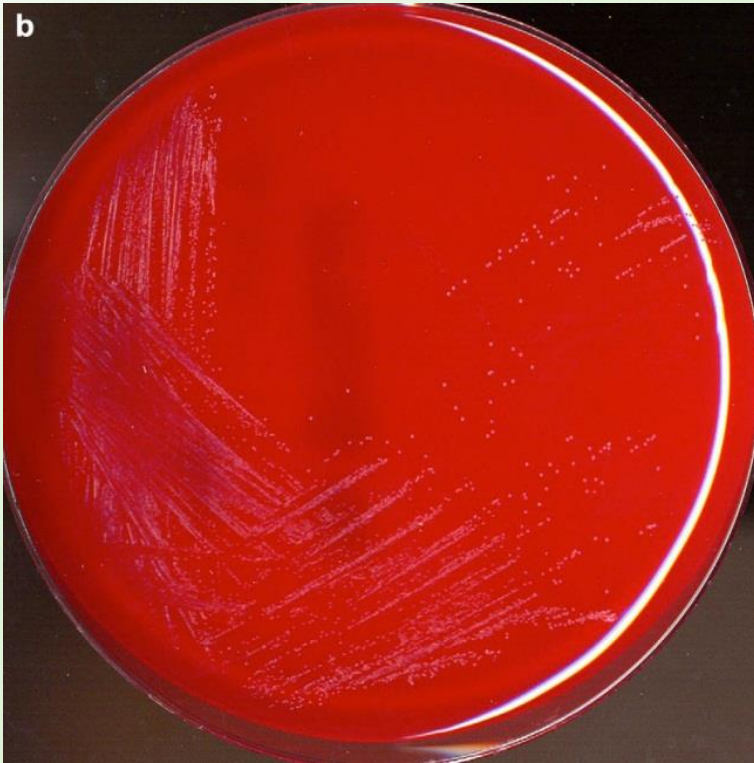
Belangrijk om antwoord te duiden naar aanvrager:

'Laat het rapport niet zomaar los!'

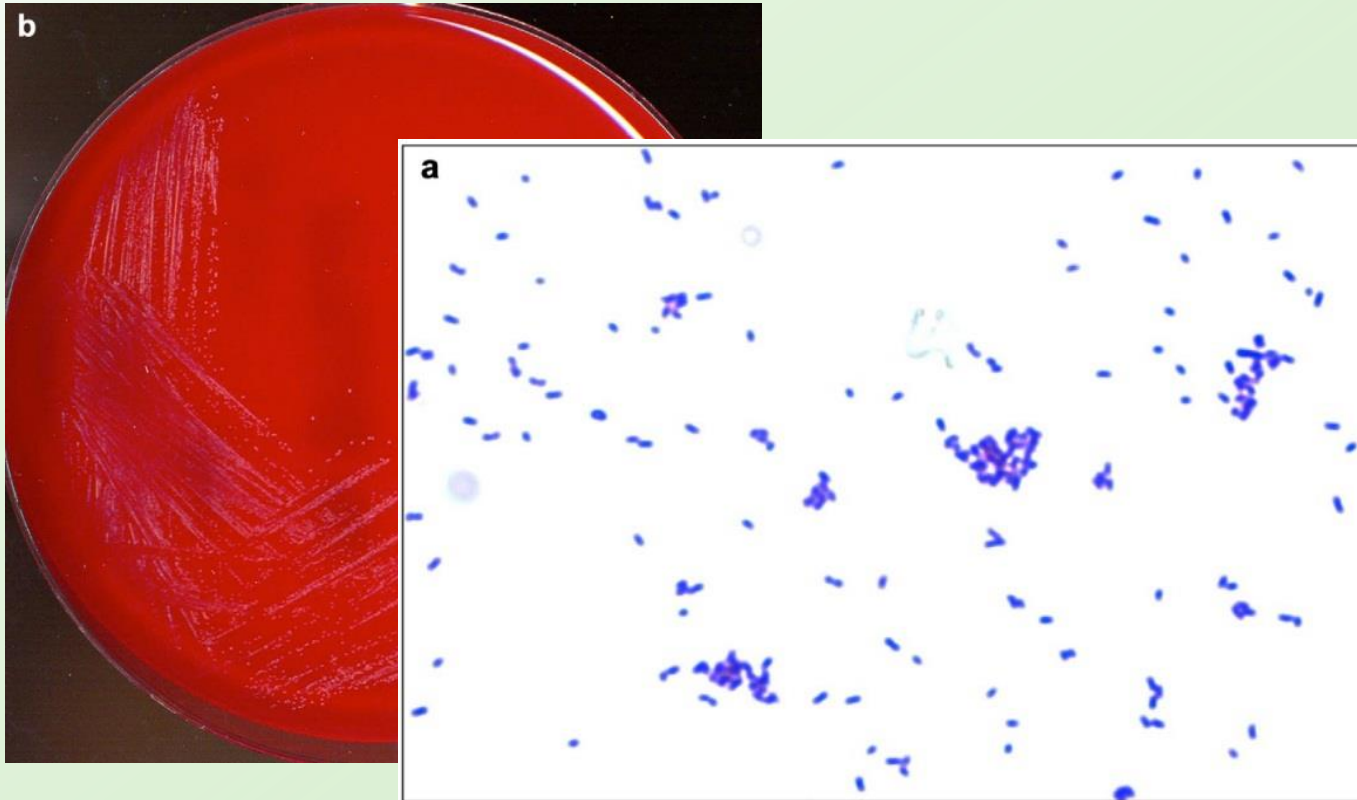
→ informatie ovv. commentaar op rapport



Rapporteren



Rapporteren



Rapporteren



Table 2 Type of infections caused by *A. schaalii*.^{6,8,14–18,20,22–28}

Type of infection	No. of cases (%)	Positive clinical specimens
Urinary tract infections, including:	84 (72)	
<i>Cystitis</i>	59 (70)	Urine
<i>Urosepsis/pyelonephritis</i>	25 (30)	Blood ± urine
Bacteremia	17 (14)	Blood
Endocarditis	1 (1)	Blood
Abscesses	11 (9)	Pus
Cellulitis	2 (2)	Necrotic tissue, blood
Spondylodiscitis	2 (2)	Blood + disc biopsy
Total	117 (100)	



Cattoir V. Actinobaculum schaalii: Review of an emerging uropathogen. J Infect 2012; 64:260-7.



Rapporteren

Actinobaculum schaalii:

‘Deze bacterie maakt deel uit van de normale flora, maar het is ook een gekende verwekker van humane infecties zoals wondinfecties, abcessen en urineweginfecties (UWI). De UWI komen vaak (maar niet exclusief) voor bij ouderen en patiënten met een urologische voorgeschiedenis. Deze kiem is resistent tegen cotrimoxazole en fluoroquinolones en meestal gevoelig aan amoxicilline en cefalosporines.’



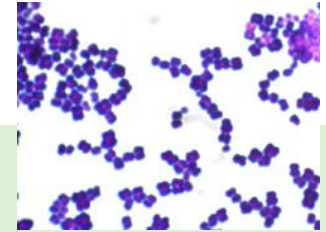
Rapporteren

Aerococcus urinae:

‘Deze omgevingskiem kan voorkomen als commensale flora van de huid en is beschreven als zeldzame verwekker van UWI, endocarditis, peritonitis en lymphadenitis, voornamelijk bij oudere en immuun-gecompromiteerde patiënten.’



Rapporteren



- 34 691 urinestalen in studieperiode
 - ✓ 52 (0,15%) *A. sanguinicola* (urine: 67% UTI)
 - ✓ 66 (0,19%) *A. urinae* (urine: 79% UTI)



Diagnostic Microbiology and Infectious Disease

Volume 70, Issue 4, August 2011, Pages 448–451



Bacteriology

Clinical significance and antimicrobial susceptibilities of *Aerococcus sanguinicola* and *Aerococcus urinae* *

Kelsey Shelton-Dodge^a, Emily A. Vetter^b, Peggy C. Kohner^b, Lisa M. Nyre^b, Robin Patel^{b, c}  



Rapporteren

- En hoe moet dat dan zonder MALDI-TOF?



Rapporteren

- En hoe moet dat dan zonder MALDI-TOF?



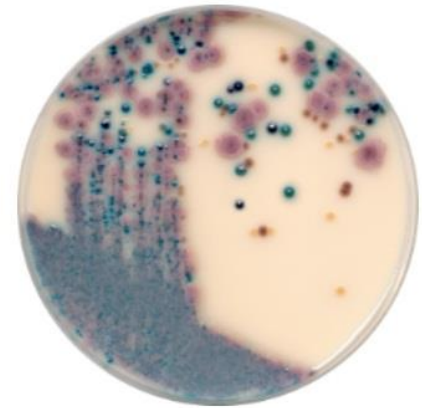
Steekproef 2014

10 125 urinestalen

33 ID's met MALDI-TOF of 0,3%



Rapporteren



- Hoe aanpakken?
 - ✓ Chromogene voedingsbodem
 - ✓ Expertise MLT's
 - ✓ Conventionele ID-testen (microscopie, katalase, oxidase, PHX): progressieve afbouw
 - ✓ Zoek een vriend **MET** een MALDI-TOF en stuur moeilijke identificaties door.



Post-analyse

- Met deze consensus worden 95-98 % van de urineculturen “een makkie”.
⇒ **automatisch valideren dus maar ?**
- Deze consensus behelst het uitwerken van urines en is een guideline of richtlijn, in eerste instantie voor het werk van de MLT.
- Een lijn om de richting aan te geven, geen tunnel of dwangbuis.

want ...



Post-analyse

Cfr *Voorafgaande opmerkingen:*

1. Dit document is een guideline a minima
=> meer doen mag altijd !



Post-analyse

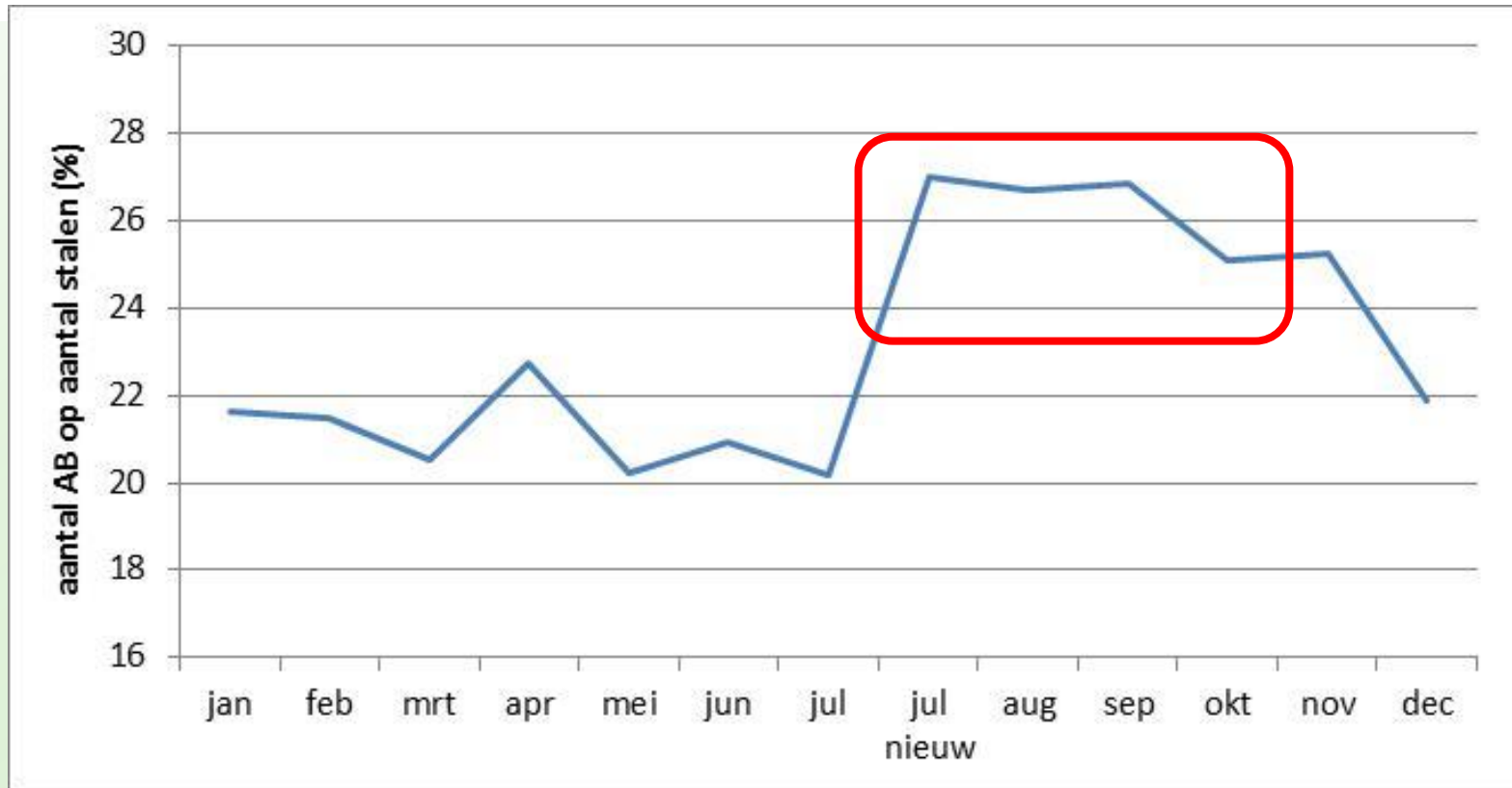
Cfr Voorafgaande opmerkingen:

1. Dit document is een guideline a minima.
2. Dit document heeft een geldigheidstermijn van 3 jaar

⇒ ttz een “levend document”



AI doende leert men



- Introductie in OLVZ van een eerste versie:
Gemiddeld 21% meer antibiogrammen
=> Herziening van “consensus”



Cfr 1

1. D

2. D

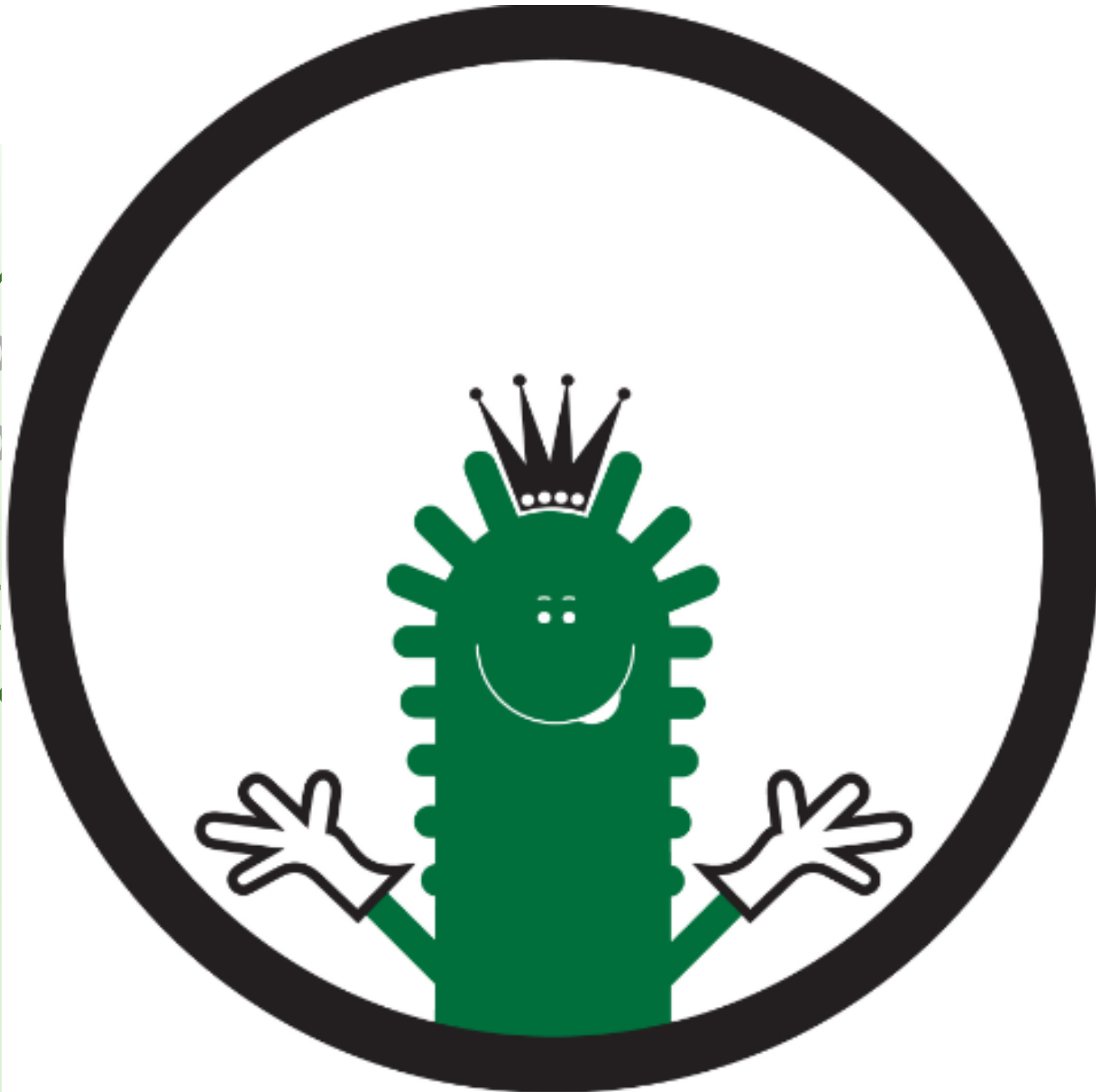
3

3. E

v

n van

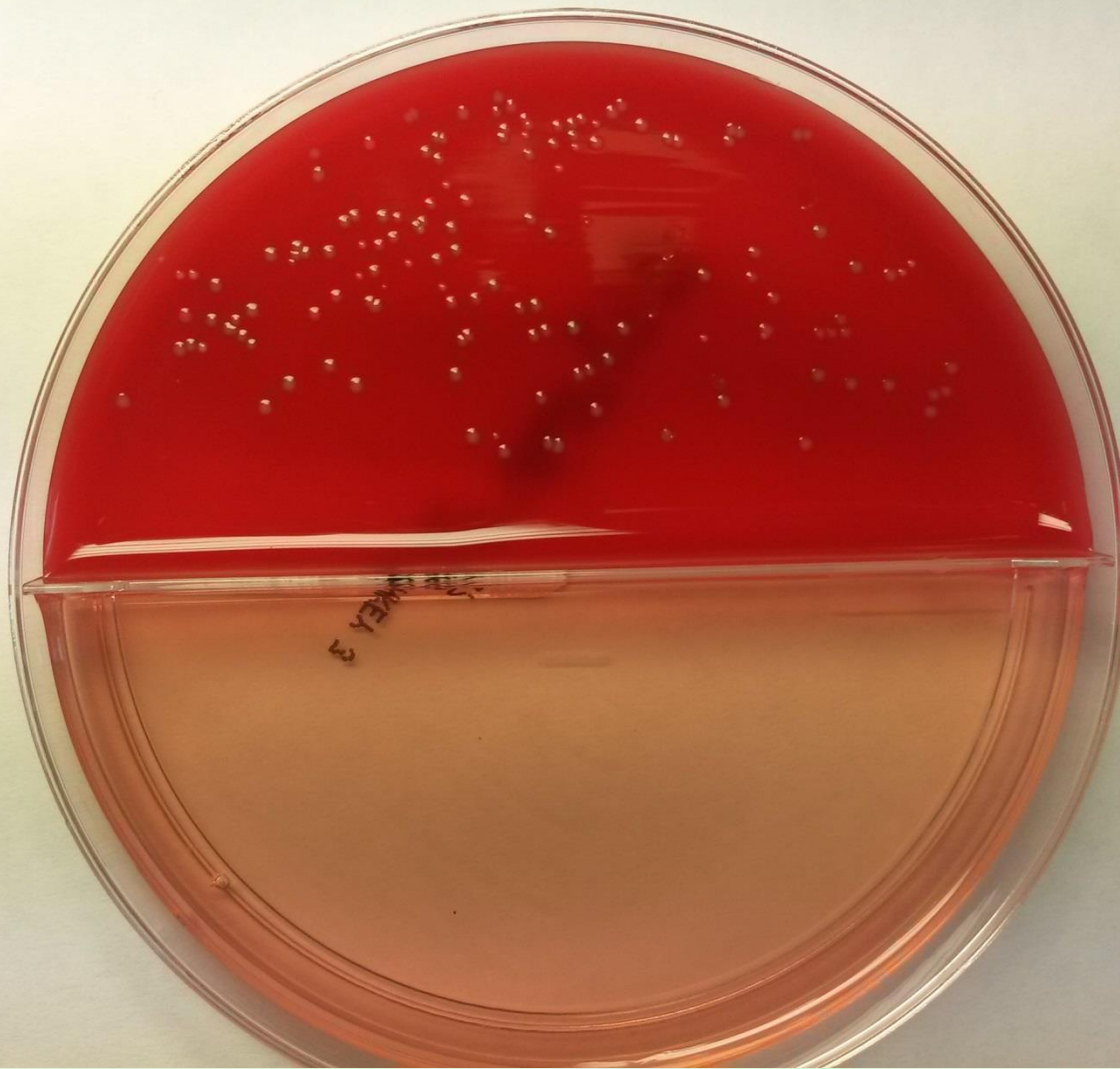
worden



Post-analyse

- ⇒ Resultaat moet altijd **finaal geïnterpreteerd** worden aan de hand van de klinische inlichtingen, context, ...
- ⇒ Enkele voorbeelden:



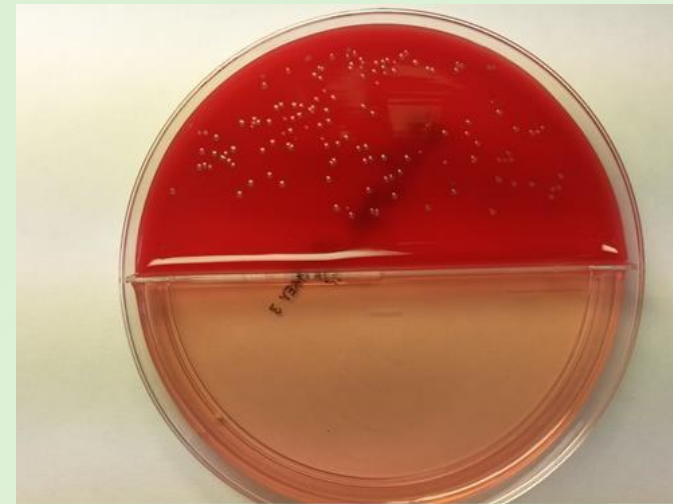


Case 1: 10-50.000 CFU/ml : Enterokokken



Enterokokken

- Categorie 1: "Primaire uropathogenen"
- ♀ , 38j, midstream, afname gynaecoloog
- 24 wbc/ μ L, 150 rbc/ μ L, epi 12/ μ L



10-50.000 CFU/ml : Enterokokken

Enterokokken



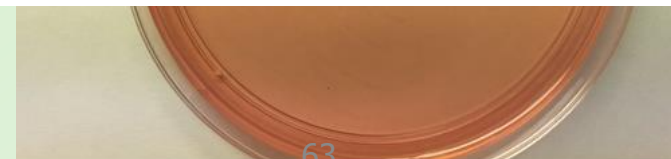
The NEW ENGLAND JOURNAL of MEDICINE

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ORIGINAL ARTICLE

Voided Midstream Urine Culture and Acute Cystitis in Premenopausal Women

Thomas M. Hooton, M.D., Pacita L. Roberts, M.S., Marsina E. Cox, B.S., and Ann E. Stapleton, M.D.
N Engl J Med 2013; 369:1883-1891 | [November 14, 2013](#) | DOI: 10.1056/NEJMoa1302186



63

10-50.000 CFU/ml : Enterokokken

Enterokokken

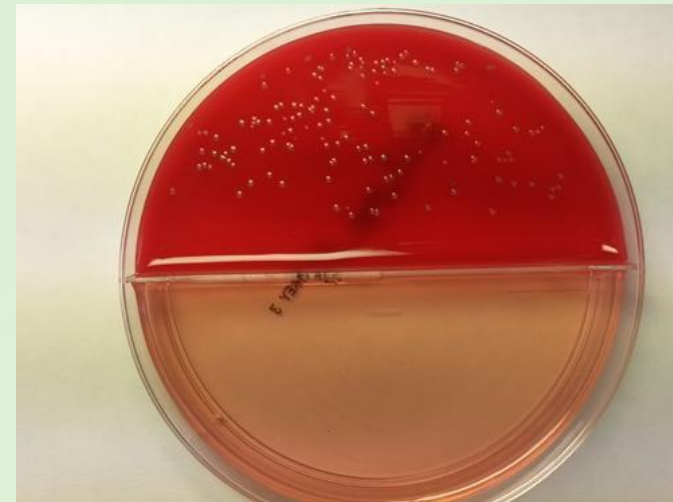
Conclusions:

Cultures of voided midstream urine in healthy premenopausal women with acute uncomplicated cystitis accurately showed evidence of bladder *E. coli* **but not of enterococci or group B streptococci**, which are often isolated with *E. coli* but appear to rarely cause cystitis by themselves.

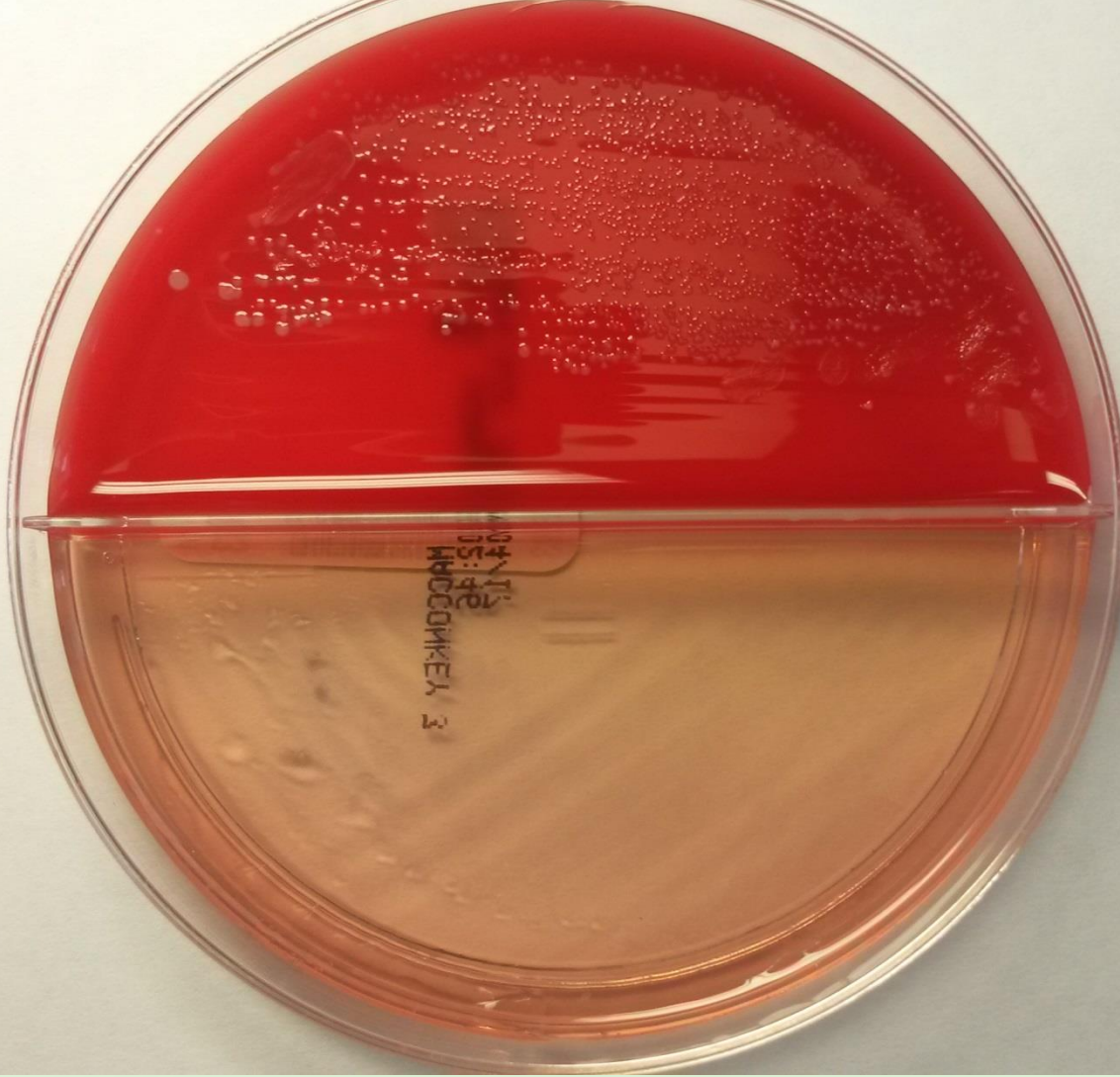
- Jonge vrouwen
- Enterokokken en GBS

⇒ herziening van de interpretatie

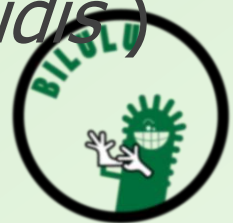
⇒ herziening van consensus



10-50.000 CFU/ml : Enterokokken



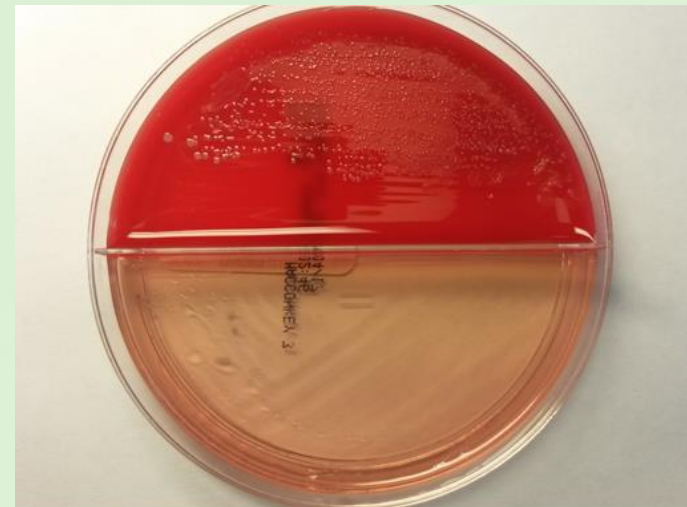
Case 2: >100.000 CFU/ml : CNS (*S.epidermidis*)



CNS

- Categorie 2 “urogenitale flora”
- ♀ , 68j, midstream
- 146 wbc/ μ L, <5 rbc/ μ L, epi <5/ μ L

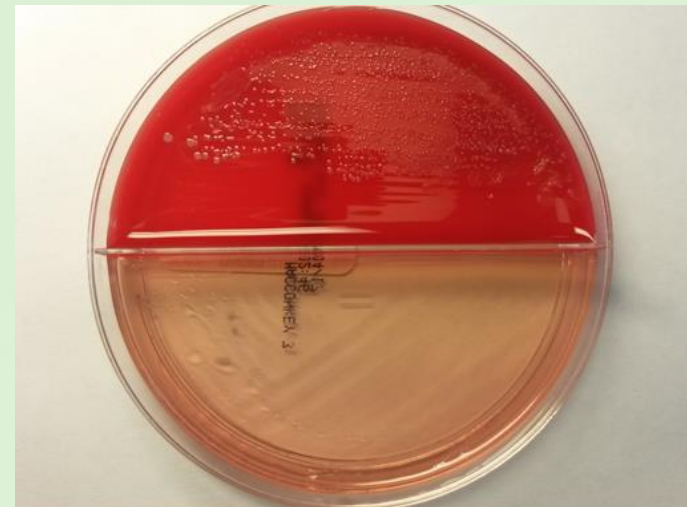
⇒ urogenitale flora



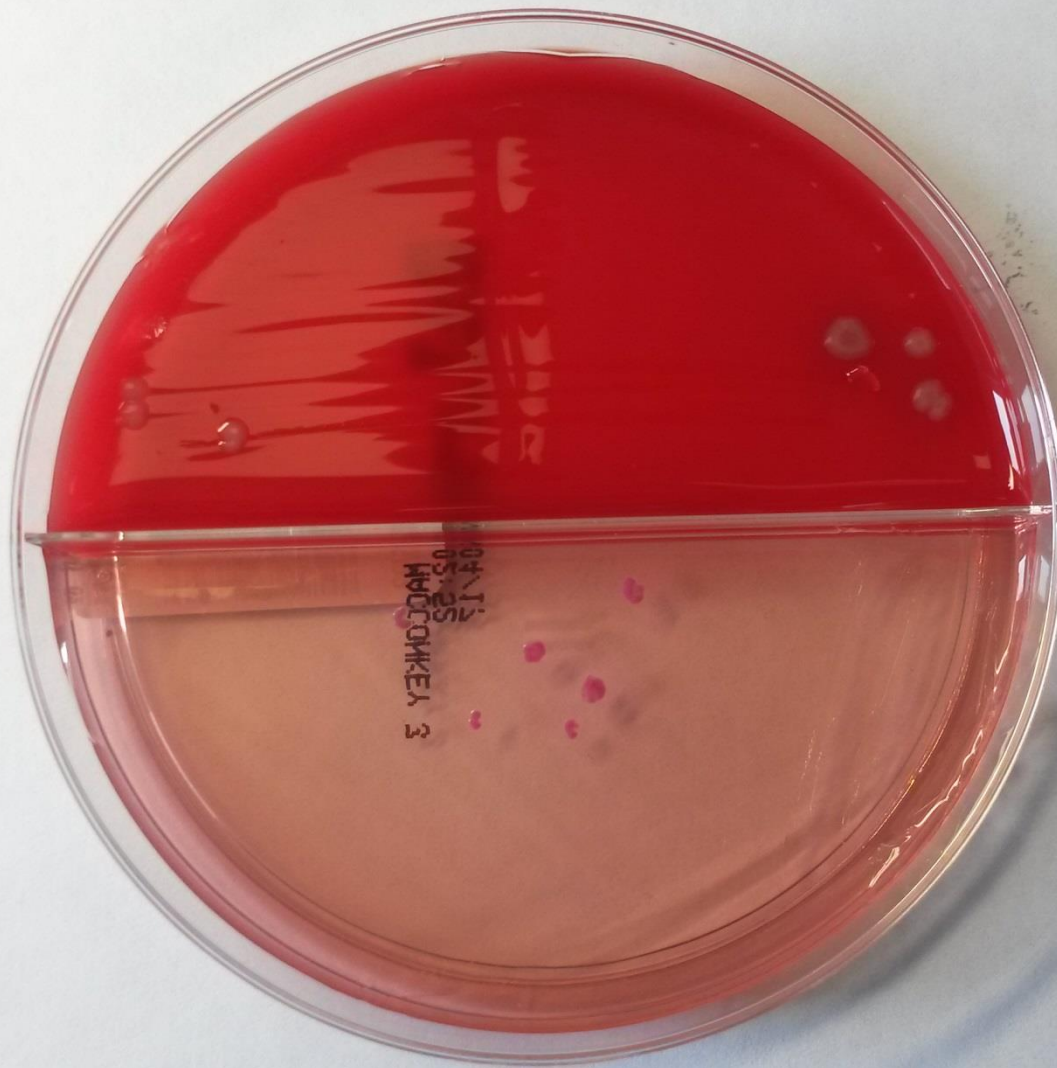
> 100.000 CFU/ml : CNS (*S.epidermidis*)

CNS

- Controlestaal gevraagd.
- Resultaat 3 dagen later: idem
- Tel => urologische voorgeschiedenis in ander ziekenhuis.
- RX => J-splint Li ureter !



> 100.000 CFU/ml : CNS (*S.epidermidis*)



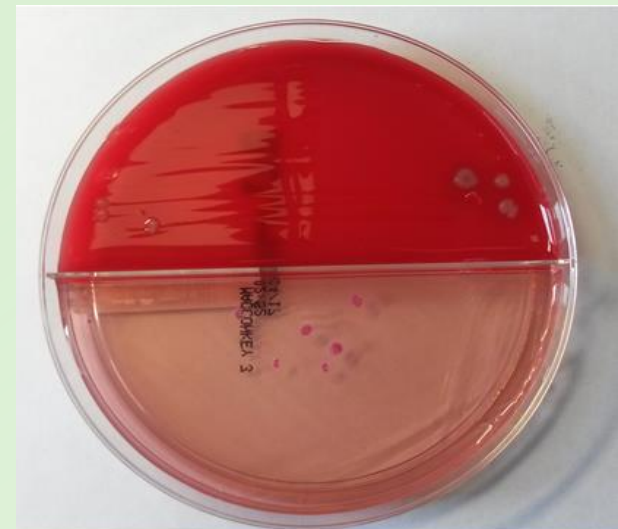
Case 3: < 10.000 CFU/ml : *E.coli*



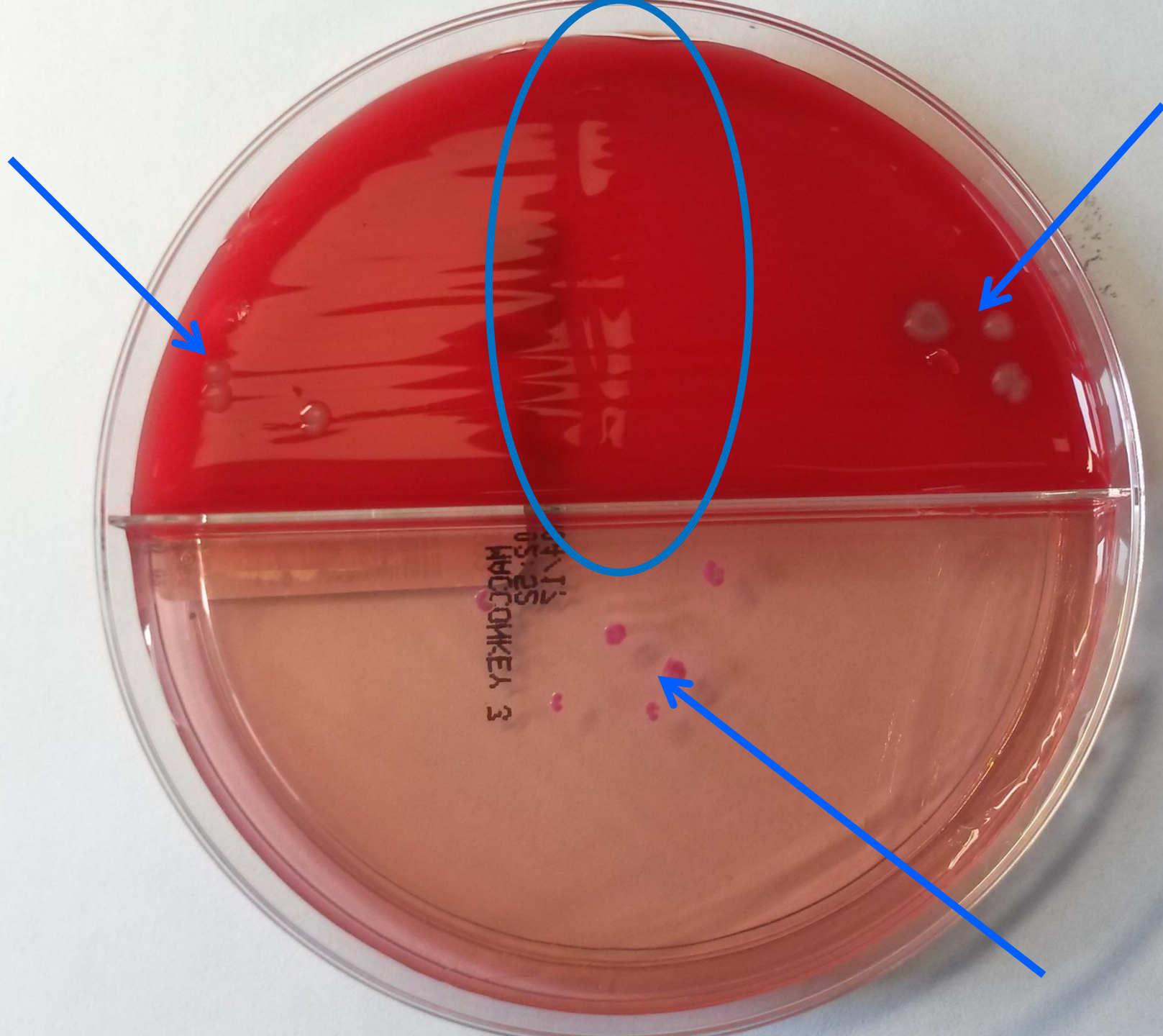
E. coli

- Categorie 1 “Primaire uropathogenen”
- ♂ , 72j , urethrale verblijfssonde
- 456 wbc/ μ L, 25 rbc/ μ L, epi <5/ μ L

⇒ enkel ID

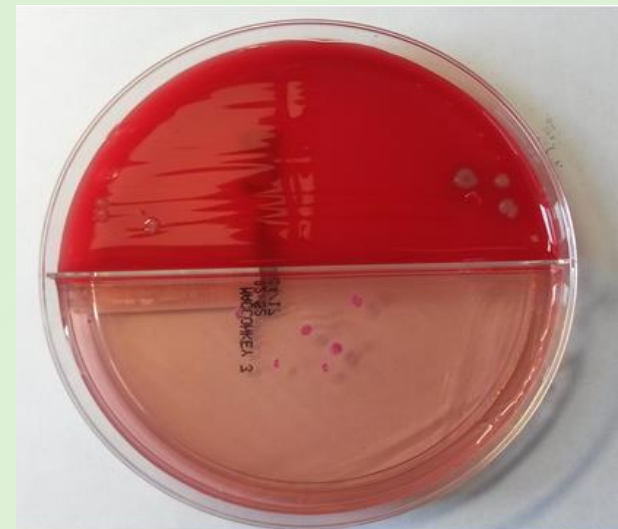


< 10.000 CFU/ml : E.coli



E. coli

- Categorie 1 “Primaire uropathogenen”
 - ♂ , 72j , urethrale verblijfssonde
 - 456 wbc/ μ L, 35 rbc/ μ L, epi <5/ μ L
- ⇒ AB-effect
- ⇒ telefonisch contact
- ⇒ recent AB opgestart
- ⇒ >100.000 CFU

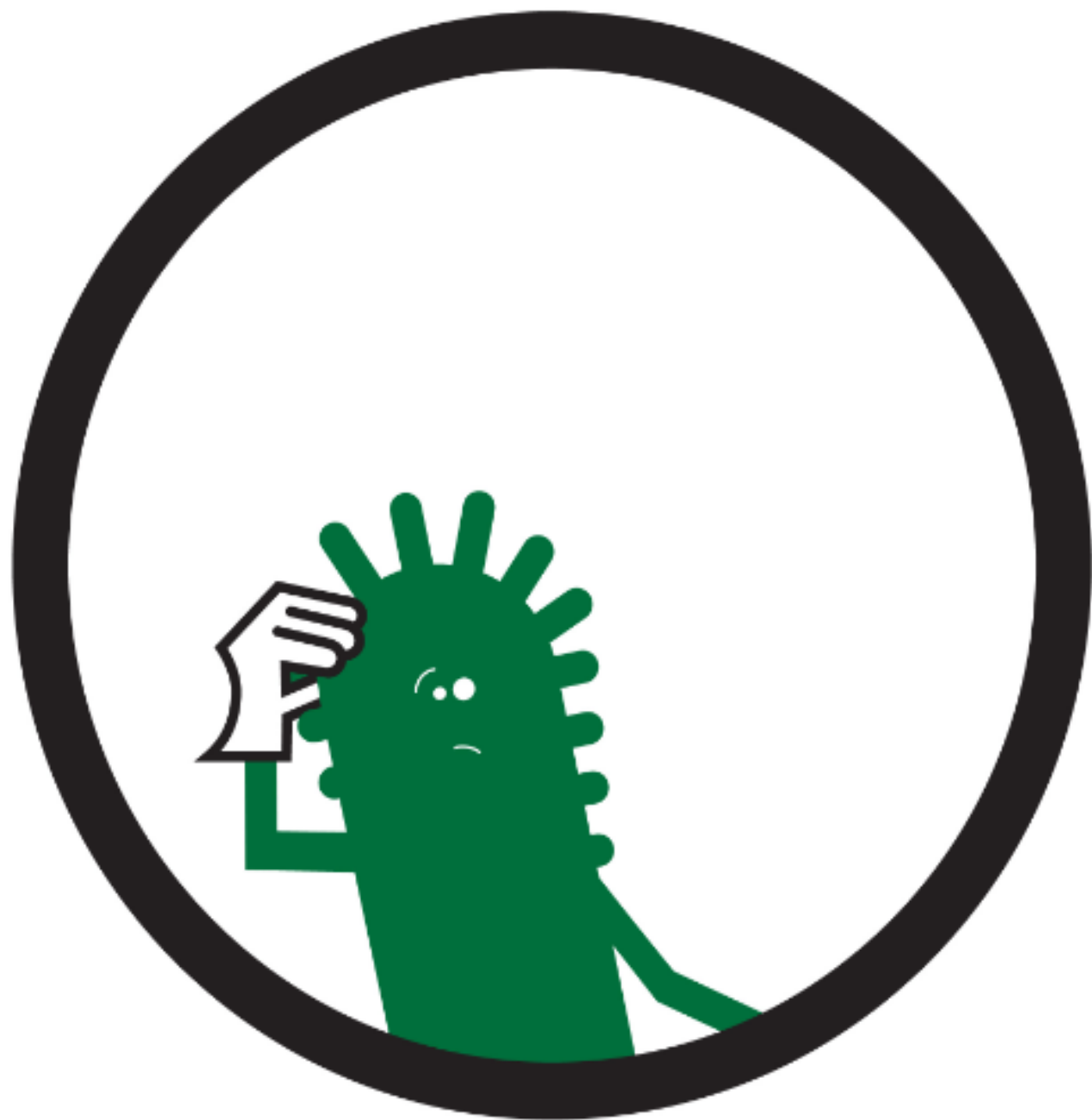


< 10.000 CFU/ml : E.coli

PUP

- “I” categorie
- Potentiële UroPathogenen
- Nieuwe namen vaak obv nieuwe identificatiemogelijkheden (Maldi)
- Pathogeniciteit ? Case reports, reeksen, geen RCT





9/03/2015

Station: A. M. Bacteriologie

Neen

Status: Geautoriseerd

URI_WBC: <10 URI_RBC: <6 URI_EPI: 17.60
URI_GIST 0.00

AER

agers

medium	Dat.	Comment.
P/MC	09/03 ?	

Isolaten

#	Dr	Organisme	Beoor.	Rp	Cf	Ab	I.Comm	E.Comm.
1	A	AERURI	m100	X	A		1, L-10903, Aerococcus urinae, ++, 2.09%	?
2	A	CUGF	10-50	X	A		?	?

Isolaat Testen

Is	Test	Dat.	Waarde
1	MALDITOF	10/03	A 2.0982
1	MHBL	10/03	OK

1. Aer.urinae -

Antibioticu	1
AMPI	S
FURAD	S
CIPRO	S
NORFLOX	S

Procedures

- ☐ M_URI_UTWBP_AER
☐ M_MVAR.URI *
☒ Alle

Resultaten van monster

T	Bepaling	N	Sts	C	Waarde
	M_URI_UTWBP_AER		Aut		Klaar
	M_VAR.URI		Aut		Urine : midstream

10/03/2015

1121044 ()
12/08/31
Aanvr: Verpleegeenheid /

Dr:
URI_WBC: <10 URI_RBC: <6 URI_EPI: 29.04
URI_GIST 0.00

Station: A. M. Bacteriologie
Status: Geautoriseerd
Neen

AER

Dragers			Isolaten								Isolaat Testen			
Medium	Dat.	Comment.	* Dr	Organisme	Beoor.	Hp	Cf	Ab	I. Comm	E. Comm.	Is	Test	Dat.	Waarde
A BP/MC	10/03	?	1	A AERURI	m100	X	A		1, L-10903, Aerococcus urinae, ++, 2.004; zie 540 5525		1	MALDITOF	11/03	A 2.0047
			2	A CUGF	min10	X	A		?	?				

Procedures

- ☐ M_URI_UITW_AER
- ☐ M_MVAR.URI *
- ☒ Alle

Resultaten van monster

T	Bepaling	N	Sts	C	Waarde
	M_URI_UITWBP_AER		Aut		Klaar
	M_VAR.URI		Aut		Urine : midstream

URI_WBC: <10 URI_RBC: <6 URI_EPI: <6
URI_GIST 0.00

Neen



© AER

[illegible]

*Dr	Organisme	Beoor.	Rp	Cf	Ab	I.Comm	E.Comm.
Geen groei							

☐ M_URI_UTW_AER

☐ M_MVAR.URI *

☒ Alle

[illegible]

CONSENSUS =
Oplossing voor “bijna” alle problemen

