Verein für **medizinische Qualitätskontrolle**
Association **pour le contrôle de Qualité medical**
Associazione **per il controllo di qualità medico**

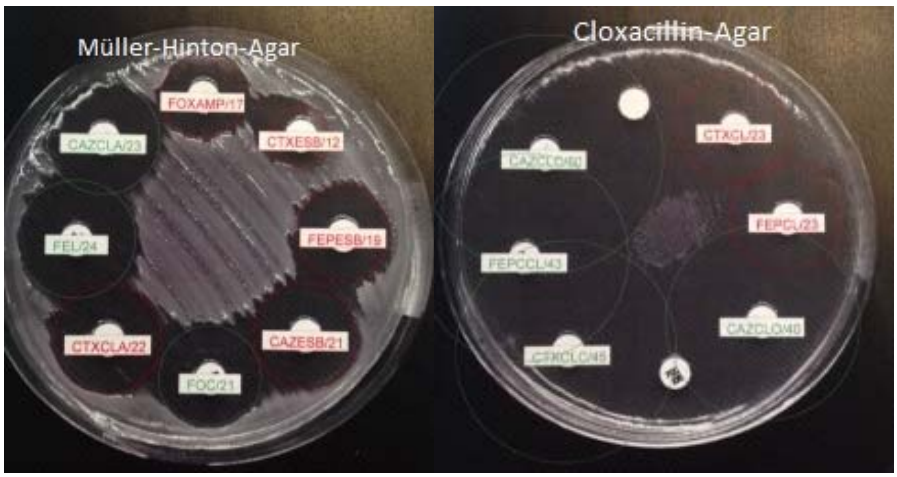
Comment on the Survey Specimen B9 Microbiology 2015-3

Specimen A: Urinary Tract Infection
Requirement: Potentially pathogenic bacteria (genus + species) + resistance testing

This is a strain of *Proteus mirabilis*, which is isolated in acute, and often in chronic or complicated urinary tract infections. The participants were very successful with the identification.

In our strain, an extended-spectrum beta-lactamase (ESBL) of type CTX-M and a plasmid-encoded AmpC beta-lactamase CIT-M were detected (determined by PCR).

Many participants found the ESBL. It could be seen by the difference in the cefepime and cefotaxime inhibition zones with and without clavulanic acid. The AmpC beta-lactamase, however, was only detectable by different growth on Mueller Hinton Agar and Muller Hinton agar with added cloxacillin (weaker growth because of the AmpC beta lactamase inhibition by cloxacillin, see figure). We accepted all results for cefoxitint; normally, cefoxitin is resistant in the presence of AmpC. For cefepime and ceftazidime, we accepted intermediary and resistant as correct (different threshold values for CLSI and EUCAST).



For fosfomycin, we accepted all results this time as well, because this antibiotic is often successfully used as a reserve in ESBL. The values for fosfomycin must in principle be tested via MIC; however, values were also reported in mm. Next time we will evaluate this antibiotic only if MIC values are reported.

Imipenem was sensitive, but it is known that *Proteus* spp., *Morganella* spp. and *Providencia* spp. often have lower resistance against imipenem, which is not based on carbapenemase; we also accepted intermediate.

Ciprofloxacin was resistant with a MIH of 6 mg/L. According to EUCAST (Expert Rules can be found on the EUCAST page, Table 13, Rule 13.5, p. 152), when there is ciprofloxacin resistance, the other fluorine quinolones must also be assessed as resistant. Nalidixinic acid was also resistant.

We accepted "resistant" for nitrofurantoin; however, EUCAST accepts it only for E. coli. In future, we will no longer assess nitrofurantoin in *Enterobacteriaceae* except for *E. coli,* i.e. when only 6 antibiotics incl. nitrofurantoin and fosfomycin (inhibition zones) are reported, deductions can be made if at least two additional antibiotics are not reported.

	Number
Proteus mirabilis	63
Proteus species	1

Specimen B: Cholangitis
Requirement: Potentially pathogenic bacteria (genus + species) + resistance testing

This is a strain of *Hafnia alvei*, which usually appears in the gastrointestinal tract of humans but also in animals. *H. alvei* is occasionally isolated from bile ducts. All participants made a correct diagnosis, one participant reported *Obesumbacterium proteus*; this is a bacterium related to *H. alvei*.

See also: http://ijs.microbiologyresearch.org/content/journal/ijsem/10.1099/ijs.0.013458-0#tab2.

We accepted this result, but it is not useful to communicate the species name to the clinician especially since this bacterium was renamed again. Please be critical about unusual identifications with the new methods (MALDI-TOF etc.).

H. alvei has beta-lactamase of type AmpC. With treatments using amoxicillin/clavulanic acid, piperacillin/tazobactam or cephalosporins (rarely also with cefepim), a treatment failure can result despite in vitro sensitivity, as is the case for all *Enterobacteriaceae* with AmpC. In our strain, AmpC was overexpressed.

We accepted sensitive for nitrofurantoin and fosfomycin. However, please note the handling for specimen A that will be described in future.

	Number
Hafnia alvei	62
Obesumbacterium proteus	1

Specimen C: Urethritis in male
Requirement: Potentially pathogenic bacteria (genus + species)

Our germ was *Neisseria gonorrheae*. This is a common pathogen that causes urethritis in men. The diagnosis did not pose difficulties to most participants. *N. gonorrheae* grows on sheep blood agar, boiled blood agar, and selectively on Thayer-Martin agar. In the API NH system, it responds the same as *Kingella denitrificans* but differs by a positive Superoxol test (catalase positive) and by the gram preparation (gram-negative roll-shaped diplococci). *K. denitrificans* is catalase negative and grows short Gram-negative rods in Gram, which under antibiotic effects can exhibit long rods.

	Number
Neisseria gonorrheae	61
Neisseria species	1
Kingella denitrificans	1

Specimen D: Vaginal swab in pregnancy
Requirement: Potentially pathogenic bacteria (genus + species)

Our strain was *Streptococcus pseudoporcinus, which* caused some difficulties with differentiation. *P. pseudoporcinus* is a beta-hemolyzing group B streptococcus, which is predominantly isolated from the female genital tract. Isolated cases of wound infection and septicaemia have been described (see Schwemaker et al. (2012) J. Clin. Microbiol. 50:3591-7). Except for *Streptococcus agalactiae, we evaluated* all results as a 'correct' because we only wanted to know whether *S. agalactiae* is reported as **detectable**.
In the above-mentioned literature, the speculation is made that possibly several cases of septicaemia with S. pseudoporcinus were incorrectly assigned to S. agalactiae. Perhaps further studies will show this.
Our *S. pseudoporcinus* was positive for CAMP, VP and hippurate and showed agglutination with the group B reagent. Using Vitek and MALDI-TOF, however, our strain could be identified as *S. pseudoporcinus*.

With this specimen, we wanted to point out that it does not always have to be *S. agalactiae* when the Lancefield's agglutination groups respond with B. Apparently, *S. pseudoporcinus* and *S. agalactiae* are distinguished by the different hemolysis sizes, which are much larger in the former (http://path.upmc.edu/cases/case648/dx.html). We have not yet gathered enough experience in this respect. The taxonomy of this streptococci will probably still change (Schwemaker et al. (2012) J. Clin. Microbiol. 50:3591-7).

		Number
Streptococcus pseudoporcinus		31
Streptococcus porcinus		24
Streptococcus uberis		1
Streptococcus pluranimalium		1
Streptococcus agalactiae	2	
No detection of *Streptococcus agalactiae*		2
No pathogenic bacteria of group B		1

Specimen E: Sputum
Requirement: Potentially pathogenic bacteria (genus + species)

This additional sample was *Inquilinus limosus*, a non-fermenter (TSI group 4, agar slant and stab alkaline), which is catalase- and oxidase positive, but nitrate negative. They are usually slimy and lacking pigment; in addition, they are colistin-resistant. With the API 20 NE, *Rhizobium radiobacter* (mostly colistin sensitive, nitrate positive) was reported with a likelihood of 71.9% and a T-value of only 0.54. Using Vitek2, *Roseomonas gilardii* (pink pigment) was reported with a likelihood of 91%.
The negative alkaline phosphatase differentiates *I. limosus* from *Sphingomonas paucimobilis*.
MALDI-TOF and sequencing were able to identify *I. limosus*.

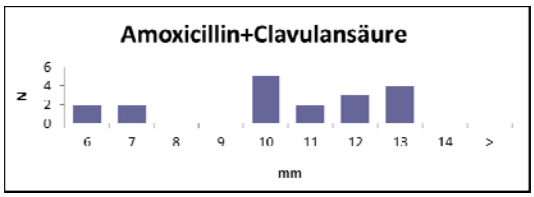
I. limosus was isolated from a child with CF; we kindly received the strain from the University Children's Hospital Zurich. For a more detailed description of the possible clinical significance of colonization with this rather resistant non-fermenter, we refer to the article http://jcm.asm.org/content/43/8/3938.full.

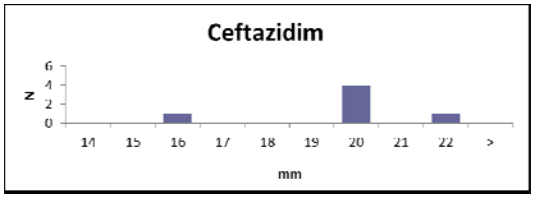
	Number
Inquilinus limosus	40
Burkholderia cepatia	1
Francisella tularensis	1
Neisseria elongate	1
Non-fermenter	1
Pseudomonas aeruginosa	1
Pseudomonas luteola	1
Pseudomonas species	1
Roseomonas gilardii	4
Sphingomonas paucimobilis	9
Stenotrophomonas maltophilia	1
Not Specified	2

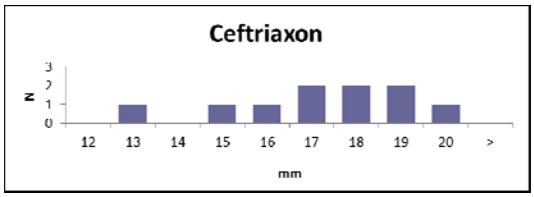
Best regards

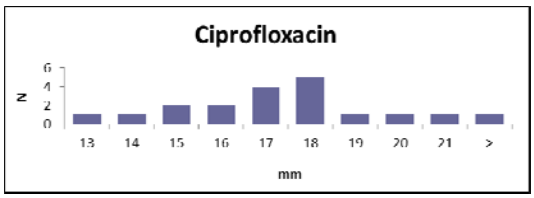
Prof. Dr. R. Zbinden *F.S. Hufschmid-Lim*

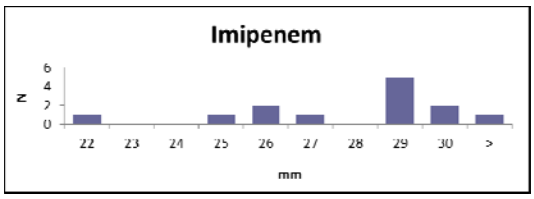
Susceptibility testing sample A

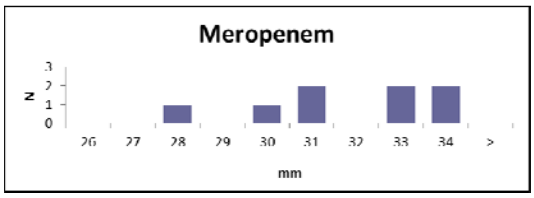


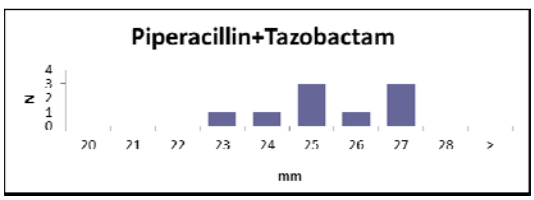




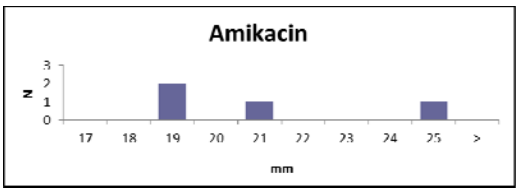


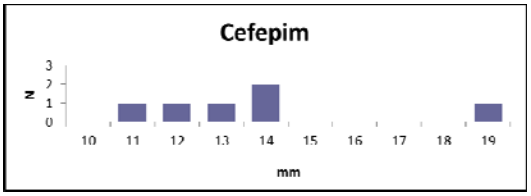


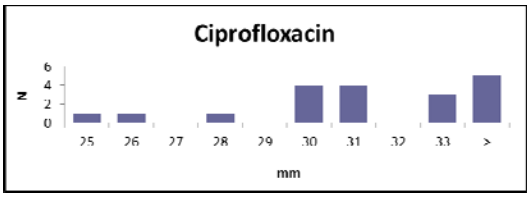


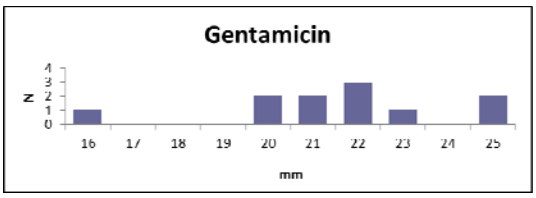


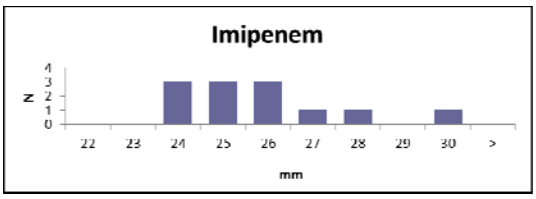
Susceptibility testing sample B

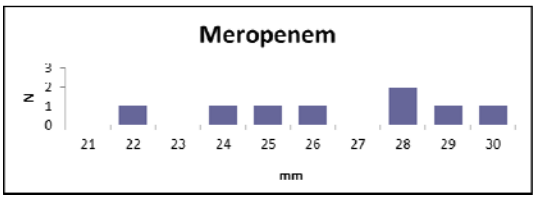


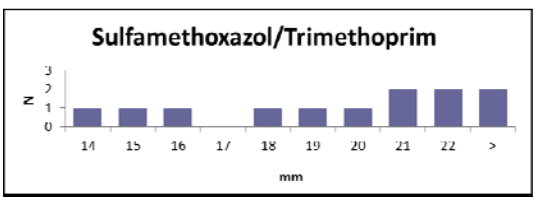












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