Anhang 1: Ergebnisse der Ringversuchsserie „Bakterien- und Pilzgenom-Nachweis (PCR/NAT)“ November 2019

Anhang 1 zu:
Reischl U, Ehrenschwender M, Hiergeist A, Maaß M, Baier M, Frangoulidis D, Grass G, von Buttlar H, Scholz H, Fingerle V, Sing A, Dumke R, Reiter-Owona I, Anders A. Bakterien- und Pilzgenom-Nachweis PCR/NAT: Auswertung des Ringversuchs November 2019 von INSTAND e.V. zur externen Qualitätskontrolle molekularbiologischer Nachweisverfahren in der bakteriologischen Diagnostik. GMS Z Forder Qualitatssich Med Lab. 2020;11:Doc02.
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Attachment 1: Results of the proficiency testing scheme “Bacterial and fungal genome detection (PCR/NAT)” November 2019

Attachment 1 to:
Reischl U, Ehrenschwender M, Hiergeist A, Maaß M, Baier M, Frangoulidis D, Grass G, von Buttlar H, Scholz H, Fingerle V, Sing A, Dumke R, Reiter-Owona I, Anders A. Bakterien- und Pilzgenom-Nachweis PCR/NAT: Auswertung des Ringversuchs November 2019 von INSTAND e.V. zur externen Qualitätskontrolle molekularbiologischer Nachweisverfahren in der bakteriologischen Diagnostik [Bacterial and fungal genome detection PCR/NAT: comprehensive discussion of the November 2019 distribution for external quality assessment of nucleic acid-based protocols in diagnostic medical microbiology by INSTAND e.V.]. GMS Z Forder Qualitatssich Med Lab. 2020;11:Doc02.
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PCR-/NAT *C. trachomatis* & GO (RV 530) November 2019

Tabelle 1: Probenzusammensetzung und erwartetes Ergebnis.
Sample composition and expected results.

	***Erwartet** / expected*	**Probenzusammensetzung** / *Sample composition*
1925301	**+++ / ++**	***Chlamydia trachomatis*** **(~ 1x10^5 IFU/mL)** ***Neisseria gonorrhoeae*** **(~ 5x10^4 CFU/mL)**
1925302	**+++ / (+)**	***Chlamydia trachomatis*** **(~ 5x10^5 IFU/mL)** ***Neisseria gonorrhoeae*** **(~ 1x10^3 CFU/mL)**
1925303	**+++ / ∅**	***Chlamydia trachomatis*** **(~ 5x10^5 IFU/mL)**
1925304	**∅ / +++**	***Neisseria gonorrhoeae*** **(~ 5x10^5 CFU/mL)**

Tabelle 2: Häufigkeit der Mitteilung verschiedener Befunde. Anmerkung: in dieser Tabelle sind nur die Ergebnisse für *Chlamydia trachomatis* dargestellt.
Absolute numbers of reported individual results. ***Note**: only the **C. trachomatis-specific** results are depicted in this table.*

n = 256	**Probennummer** (Sample no.)			
Befund *Result*	**1925301**	**1925302**	**1925303**	**1925304**
Positiv	**255**	**255**	**254**	**5**
Negativ	**1**	**1**	**2**	**251**
Fraglich *Questionable*	**0**	**0**	**0**	**0**

	Inhibition			
	1925301	**1925302**	**1925303**	**1925304**
n.d.	**1**	**1**	**1**	**1**
nein / *no*	**255**	**255**	**255**	**255**
ja / *yes*	**0**	**0**	**0**	**0**

Tabelle 3: Häufigkeit richtig positiver und richtig negativer NAT-Befunde bei Anwendern verschiedener Methoden. Anmerkung: in dieser Tabelle sind nur die Ergebnisse für *Chlamydia trachomatis* dargestellt.

Absolute numbers and relative frequency of reported true positive and true negative results among various NAT methods. ***Note:*** *only the* ***C. trachomatis-specific*** *results are depicted.*

NAT-Methode [Code] (total number *)	**NAT richtig positiv** *True positive results*						**NAT richtig negativ**	
	1925301		**1925302**		**1925303**		**1925304**	
	Absolut *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**
GenProbe CT/NG [20] (n = 7)	**7**	**100**	**7**	**100**	**7**	**100**	**7**	**100**
LightMix CT/NG [21] (n = 6)	**6**	**100**	**6**	**100**	**6**	**100**	**6**	**100**
Roche COBAS [22] (n = 52)	**52**	**100**	**52**	**100**	**52**	**100**	**52**	**100**
Cepheid Xpert CT/NG [23] (n = 34)	**34**	**100**	**34**	**100**	**34**	**100**	**33**	**97**
BD ProbeTec [24] (n = 9)	**9**	**100**	**9**	**100**	**9**	**100**	**8**	**89**
Hain CT/NG [25] (n = 18)	**18**	**100**	**18**	**100**	**18**	**100**	**17**	**94**
Abbott RealTime CT/NG [26](n =30)	**30**	**100**	**30**	**100**	**30**	**100**	**29**	**97**
Other commercial tests [27](n =86)	**85**	**99**	**85**	**99**	**84**	**98**	**85**	**99**
***In house* PCR assay [28] (n = 14)**	**14**	**100**	**14**	**100**	**14**	**100**	**14**	**100**

Tabelle 4: Häufigkeit der Mitteilung verschiedener Befunde. Anmerkung: in dieser Tabelle sind nur die Ergebnisse für *Neisseria gonorrhoeae* dargestellt.

Absolute numbers of reported individual results. ***Note****: only the* ***N. gonorrhoeae-specific*** *results are depicted in this table*

n = 256	**Probennummer** (Sample no.)			
Befund *Result*	**1925301**	**1925302**	**1925303**	**1925304**
Positiv	**255**	**241**	**4**	**255**
Negativ	**0**	**15**[1)]	**252**	**1**
Fraglich *Questionable*	**1**	**0**	**0**	**0**

	Inhibition			
	1925301	**1925302**	**1925303**	**1925304**
n.d.	**1**	**1**	**1**	**1**
nein / *no*	**255**	**255**	**255**	**255**
ja / *yes*	**0**	**0**	**0**	**0**

Tabelle 5: Häufigkeit richtig positiver und richtig negativer NAT-Befunde bei Anwendern verschiedener Methoden. Anmerkung: in dieser Tabelle sind nur die Ergebnisse für *Neisseria gonorrhoeae* dargestellt.
Note: *only the* ***N. gonorrhoeae-specific*** *results are depicted.*

NAT-Methode [Code] (total number *)	**NAT richtig positiv** *True positive results*						**NAT richtig negativ**	
	1925301		**1925302**		**1925304**		**1925303**	
	Absolut *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**
GenProbe CT/NG [20] (n = 7)	**7**	**100**	**0**	**0**	**7**	**100**	**7**	**100**
LightMix CT/NG [21] (n = 6)	**6**	**100**	**6**	**100**	**6**	**100**	**6**	**100**
Roche COBAS [22] (n = 51)	**51**	**100**	**50**	**98**	**51**	**100**	**50**	**98**
Cepheid Xpert CT/NG [23] (n = 35)	**35**	**100**	**35**	**100**	**34**	**97**	**33**	**94**
BD ProbeTec [24] (n = 9)	**9**	**100**	**9**	**100**	**9**	**100**	**8**	**89**
Hain CT/NG [25] (n = 17)	**17**	**100**	**17**	**100**	**17**	**100**	**17**	**100**
Abbott RealTime CT/NG [26](n =30)	**30**	**100**	**30**	**100**	**30**	**100**	**30**	**100**
Other commercial tests [27](n =88)	**87**	**100**	**81**	**92**	**88**	**100**	**88**	**100**
***In house* PCR assay [28] (n = 13)**	**13**	**100**	**13**	**100**	**13**	**100**	**13**	**100**

Comments: [1)] As sample #1925302 contained a low number of *Neisseria gonorrhoeae* target organisms, negative PCR results were not rated “false negative” in this EQAS distribution.

PCR-/NAT *Chlamydia trachomatis*
(RV 531) November 2019

Tabelle 1: Probenzusammensetzung und erwartetes Ergebnis.
Sample composition and expected results.

	***Erwartet** / expected*		**Probenzusammensetzung** / *Sample composition*
1925311	**+++**	**61**	***Chlamydia trachomatis*** **(~ 5x10^5 IFU/mL)**
1925312	**Ø**	**62**	***Escherichia coli*** **K12**
1925313	**+++**	**61**	***Chlamydia trachomatis*** **(~ 5x10^5 IFU/mL)**
1925314	**Ø**	**62**	***Escherichia coli*** **K12**

Tabelle 2: Häufigkeit der Mitteilung verschiedener Befunde.
Absolute numbers of reported individual results.

n = 65	**Probennummer** (Sample no.)			
Befund *Result*	**1925311**	**1925312**	**1925313**	**1925314**
Positiv	**65**	**1**	**65**	**1**
Negativ	**0**	**64**	**0**	**64**
Fraglich *Questionable*	**0**	**0**	**0**	**0**

	Inhibition			
	1925311	**1925312**	**1925313**	**1925314**
n.d.	**1**	**1**	**1**	**1**
nein *no*	**64**	**64**	**64**	**64**
ja *yes*	**0**	**0**	**0**	**0**

Tabelle 3: Häufigkeit richtig positiver und richtig negativer NAT-Befunde bei Anwendern verschiedener Methoden.
Absolute numbers and relative frequency of reported true positive and true negative results among various NAT methods.

NAT-Methode [Code] (total number *)	**NAT richtig positiv** *True positive results*				**NAT richtig negativ** *True negative results*			
	1925311		**1925313**		**1925312**		**1925314**	
	Absolut *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**
Hain CT [20] (n = 12)	**12**	**100**	**12**	**100**	**12**	**100**	**12**	**100**
TIB Molbiol LightMix CT [21] (n =7)	**7**	**100**	**7**	**100**	**7**	**100**	**7**	**100**
Roche COBAS CT [22] (n = 4)	**4**	**100**	**4**	**100**	**4**	**100**	**4**	**100**
Cepheid Xpert CT [23] (n = 5)	**5**	**100**	**5**	**100**	**5**	**100**	**5**	**100**
BD ProbeTec [24] (n = 9)	**9**	**100**	**9**	**100**	**9**	**100**	**9**	**100**
Artus CT [25] (n = 1)	**1**	**100**	**1**	**100**	**1**	**100**	**1**	**100**
Abbott CT [26] (n = 1)	**1**	**100**	**1**	**100**	**1**	**100**	**1**	**100**
Other commercial tests [27] (n =14)	**14**	**100**	**14**	**100**	**13**	**93**	**13**	**93**
In house **PCR assay [28] (n = 12)**	**12**	**100**	**12**	**100**	**12**	**100**	**12**	**100**

PCR-/NAT *Bordetella pertussis*
(RV 532) November 2019

Tabelle 1: Probenzusammensetzung und erwartetes Ergebnis.
Sample composition and expected results.

	***Erwartet** / expected*		**Probenzusammensetzung** / *Sample composition*
1925321	**+++**	**61**	***Bordetella pertussis* (~ 5x10^5 CFU/mL)**
1925322	**Ø**	**62**	***Escherichia coli* K12**
1925323	**+**	**61**	***Bordetella pertussis* (~ 5x10^3 CFU/mL)**
1925324	**++**	**61**	***Bordetella pertussis* (~ 5x10^4 CFU/mL)**

Tabelle 2: Häufigkeit der Mitteilung verschiedener Befunde.
Absolute numbers of reported individual results.

n = 155	**Probennummer** (Sample no.)			
Befund *Result*	**1925321**	**1925322**	**1925323**	**1925324**
Positiv	**155**	**0**	**133**	**153**
Negativ	**0**	**155**	**21**[1)]	**2**
Fraglich *Questionable*	**0**	**0**	**1**[1)]	**0**

	Inhibition			
	1925321	**1925322**	**1925323**	**1925324**
n.d.	**1**	**1**	**1**	**1**
nein *no*	**154**	**154**	**154**	**154**
ja *yes*	**0**	**0**	**0**	**0**

Tabelle 3: Häufigkeit richtig positiver und richtig negativer NAT-Befunde bei Anwendern verschiedener Methoden.
Absolute numbers and relative frequency of reported true positive and true negative results among various NAT methods.

NAT-Methode [Code] (total number *)	**NAT richtig positiv** *True positive results*						**NAT richtig negativ**	
	1925321		**1925323**		**1925324**		**1925322**	
	Absolut *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**
TIB Molbiol LightMix BP [20] (n =11)	**11**	**100**	**9**	**82**	**11**	**100**	**11**	**100**
Diagenode *B.pertussis* [21] (n = 5)	**5**	**100**	**4**	**80**	**4**	**80**	**5**	**100**
GeneProof Bordetella [22] (n = 7)	**7**	**100**	**5**	**71**	**7**	**100**	**7**	**100**
r-Biopharm RIDAGENE [23] (n = 27)	**27**	**100**	**22**	**85**	**27**	**100**	**27**	**100**
AID CAP Bacteria [24] (n = 4)	**4**	**100**	**4**	**100**	**4**	**100**	**4**	**100**
Other commercial tests [27] (n = 63)	**63**	**100**	**55**	**87**	**62**	**98**	**63**	**100**
***In house* PCR assay [28] (n = 38)**	**38**	**100**	**34**	**89**	**38**	**100**	**38**	**100**

Comments: [1)] As sample #1925323 contained a low number of *Bordetella pertussis* target organisms, negative PCR results were not rated “false negative” in this EQAS distribution.

PCR-/NAT *Helicobacter pylori*
(RV 533) November 2019

Tabelle 1: Probenzusammensetzung und erwartetes Ergebnis.
Sample composition and expected results.

	***Erwartet** / expected*		**Probenzusammensetzung** / *Sample composition*
1925331	**++**	**61**/ 72	***Helicobacter pylori* (~ 5x10^4 CFU/mL)** Clarithromycin susceptible (wildtype 23S rDNA sequence)
1925332	**+**	**61**/ 72	***Helicobacter pylori* (~ 5x10^3 CFU/mL)** Clarithromycin susceptible (wildtype 23S rDNA sequence)
1925333	**+++**	**61**/ 72	***Helicobacter pylori* (~ 5x10^5 CFU/mL)** Clarithromycin susceptible (wildtype 23S rDNA sequence)
1925334	**Ø**	**62**	***Escherichia coli* K12**

Tabelle 2: Häufigkeit der Mitteilung verschiedener Befunde.
Absolute numbers of reported individual results.

n = 47	**Probennummer** (Sample no.)			
Befund *Result*	**1925331**	**1925332**	**1925333**	**1925334**
Positiv	**47**[1)]	**45**[1)]	**47**[1)]	**0**
Negativ	**0**	**2**	**0**	**47**
Fraglich *Questionable*	**0**	**0**	**0**	**0**

	Inhibition			
	1925331	**1925332**	**1925333**	**1925334**
n.d.	**0**	**0**	**0**	**0**
nein *no*	**47**	**47**	**47**	**47**
ja *yes*	**0**	**0**	**0**	**0**

Tabelle 3: Häufigkeit richtig positiver und richtig negativer NAT-Befunde bei Anwendern verschiedener Methoden.
Absolute numbers and relative frequency of reported true positive and true negative results among various NAT methods.

NAT-Methode [Code] (total number *)	**NAT richtig positiv** *True positive results*						**NAT richtig negativ**	
	1925331		**1925332**		**1925333**		**1925334**	
	Absolut *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**
Hain GenoType Helico [20] (n = 15)	**15**	**100**	**14**	**93**	**15**	**100**	**15**	**100**
Ingenetix ClariRes [21] (n = 4)	**4**	**100**	**4**	**100**	**4**	**100**	**4**	**100**
r-Biopharm RIDAGENE [22] (n = 5)	**5**	**100**	**5**	**100**	**5**	**100**	**5**	**100**
Commercial assay [27] (n = 10)	**10**	**100**	**10**	**100**	**10**	**100**	**10**	**100**
***In house* PCR assay [28] (n = 13)**	**13**	**100**	**12**	**92**	**13**	**100**	**13**	**100**

Comments: [1)] Forty-one of the 47 participants reported results for molecular Clarithromycin-susceptibility testing. With the exception of 1 laboratory, all reported results were correct.

PCR-/NAT EHEC / STEC
(RV 534) November 2019

Tabelle 1: Probenzusammensetzung und erwartetes Ergebnis.
Sample composition and expected results.

	Erwartet / expected		**Probenzusammensetzung** / *Sample composition*
1925341	**Ø**	**62**	***S. enterica* ser. enteritidis**
1925342	**+++**	**61** / 71,72,77,78	**EHEC (~1x10^5 CFU/mL) (*stx*-1, *stx*-2, *eae*, *hly*A and O157 positive)**
1925343	**++**	**61** / 71,77,78	**EHEC (~1x10^4 CFU/mL) (*stx*-1a, *eae*, *hly*A and O103 positive)**
1925344	**Ø**	**62**	***Escherichia coli* K12 (negative for eae and hlyA)**

Tabelle 2: Häufigkeit der Mitteilung verschiedener Befunde.
Absolute numbers of reported individual results.

n = 133	**Probennummer** (Sample no.)			
Befund *Result*	**1925341**	**1925342**	**1925343**	**1925344**
Positiv	**1**	**133**[1)]	**132**[1)]	**0**
Negativ	**132**	**0**	**1**	**133**
Fraglich *Questionable*	**0**	**0**	**0**	**0**

	Inhibition			
	1925341	**1925342**	**1925343**	**1925344**
n.d.	**1**	**1**	**1**	**1**
nein *no*	**132**	**132**	**132**	**132**
ja *yes*	**0**	**0**	**0**	**0**

Tabelle 3: Häufigkeit richtig positiver und richtig negativer NAT-Befunde bei Anwendern verschiedener Methoden.
Absolute numbers and relative frequency of reported true positive and true negative results among various NAT methods.

NAT-Methode [Code] (total number *)	**NAT richtig positiv** *True positive results*				**NAT richtig negativ** *True negative results*			
	1925342		**1925343**		**1925341**		**1925344**	
	Absolut *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**
Hain GenoType EHEC [20] (n = 20)	**20**	**100**	**20**	**100**	**20**	**100**	**20**	**100**
r-Biopharm RIDAGENE [22] (n = 40)	**40**	**100**	**39**	**98**	**40**	**100**	**40**	**100**
Other commercial tests [27] (n =31)	**31**	**100**	**31**	**100**	**31**	**100**	**31**	**100**
***In house* PCR assay [28] (n = 42)**	**42**	**100**	**42**	**100**	**41**	**98**	**42**	**100**

Comments: [1)] Partial or complete shiga toxin subtyping, *eae*-, and *hly*A-detection was performed by 113 laboratories. With the exception of 2 laboratories, all reported results were correct.

Tabelle 1: Probenzusammensetzung und erwartetes Ergebnis.
Sample composition and expected results.

	***Erwartet** / expected*		**Probenzusammensetzung** / *Sample composition*
1925351	**++**	**61**	***Borrelia afzelii* (~ 5x10^4 organisms/mL)**
1925352	**+++**	**61**	***Borrelia afzelii* (~ 5x10^5 organisms/mL)**
1925353	**+**	**61**	***Borrelia afzelii* (~ 5x10^3 organisms/mL)**
1925354	**Ø**	**62**	***Escherichia coli* K12**

Tabelle 2: Häufigkeit der Mitteilung verschiedener Befunde.
Absolute numbers of reported individual results.

n = 100	**Probennummer** (Sample no.)			
Befund *Result*	**1925351**	**1925352**	**1925353**	**1925354**
Positiv	**99**	**99**	**97**	**1**
Negativ	**1**	**1**	**1**	**98**
Fraglich *Questionable*	**0**	**0**	**2**	**1**

	Inhibition			
	1925351	**1925352**	**1925353**	**1925354**
n.d.	**0**	**0**	**0**	**0**
nein *no*	**100**	**100**	**100**	**100**
ja *yes*	**0**	**0**	**0**	**0**

Tabelle 3: Häufigkeit richtig positiver und richtig negativer NAT-Befunde bei Anwendern verschiedener Methoden.
Absolute numbers and relative frequency of reported true positive and true negative results among various NAT methods.

NAT-Methode [Code] (total number)	**NAT richtig positiv** *True positive results*						**NAT richtig negativ**	
	1925351		**1925352**		**1925353**		**1925354**	
	Absolut *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**
artus Borrelia LC Kit [20] (n = 7)	**7**	**100**	**7**	**100**	**7**	**100**	**7**	**100**
GeneProof *B. burg.* [21] (n = 12)	**12**	**100**	**12**	**100**	**12**	**100**	**12**	**100**
LightMix Borrelia [22] (n = 6)	**6**	**100**	**6**	**100**	**6**	**100**	**6**	**100**
Other/commercial tests [27] (n = 26)	**26**	**100**	**26**	**100**	**26**	**100**	**25**	**100**
***In house* PCR assay [28] (n = 49)**	**48**	**98**	**48**	**98**	**46**	**96**	**48**	**98**

Tabelle 1: Probenzusammensetzung und erwartetes Ergebnis.
Sample composition and expected results.

	***Erwartet** / expected*		**Probenzusammensetzung** / *Sample composition*
1925361	**++**	**61**	***Legionella pneumophila* SG1 (~ 5x10^4 CFU/mL)**
1925362	**+**	**61**	***Legionella pneumophila* SG1 (~ 5x10^3 CFU/mL)**
1925363	**Ø**	**62**	***Escherichia coli* K12**
1925364	**+++**	**61**	***Legionella pneumophila* SG1 (~ 5x10^5 CFU/mL)**

Tabelle 2: Häufigkeit der Mitteilung verschiedener Befunde.
Absolute numbers of reported individual results.

n = 114	**Probennummer** (Sample no.)			
Befund *Result*	**1925361**	**1925362**	**1925363**	**1925364**
Positiv	**111**	**92**	**2**	**112**
Negativ	**3**	**20**[1)]	**112**	**2**
Fraglich *Questionable*	**0**	**2**[1)]	**0**	**0**

	Inhibition			
	1925361	**1925362**	**1925363**	**1925364**
n.d.	**0**	**0**	**0**	**0**
nein *no*	**114**	**114**	**114**	**114**
ja *yes*	**0**	**0**	**0**	**0**

Tabelle 3:Häufigkeit richtig positiver und richtig negativer NAT-Befunde bei Anwendern verschiedener Methoden.
Absolute numbers and relative frequency of reported true positive and true negative results among various NAT methods.

NAT-Methode [Code] (total number *)	**NAT richtig positiv** *True positive results*						**NAT richtig negativ**	
	1925361		**1925362**		**1925364**		**1925363**	
	Absolut *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**
LightMix Legionella [20] (n = 9)	**8**	**89**	**6**	**67**	**8**	**89**	**9**	**100**
AID CAP Bacteria [21] (n = 3)	**3**	**100**	**3**	**100**	**3**	**100**	**3**	**100**
r-Biopharm RIDAGENE [22] (n = 7)	**7**	**100**	**7**	**100**	**7**	**100**	**7**	**100**
Other commercial tests [27] (n= 61)	**60**	**98**	**48**	**81**	**60**	**98**	**60**	**98**
***In house* PCR assay [28] (n = 34)**	**33**	**97**	**28**	**82**	**34**	**100**	**33**	**97**

Comments: [1)] As sample #1925362 contained a low number of *Legionella pneumophila* target organisms, negative PCR results were not rated “false negative” in this EQAS distribution.

PCR-/NAT *Salmonella enterica*
(RV 537) November 2019

Tabelle 1: Probenzusammensetzung und erwartetes Ergebnis.
Sample composition and expected results.

	***Erwartet** / expected*		**Probenzusammensetzung** / *Sample composition*
1925371	**Ø**	**62**	***Escherichia coli* K12**
1925372	**++**	**61**	***S. enterica* ser. paratyphi (~ 5x10^4 CFU/mL)**
1925373	**+++**	**61**	***S. enterica* ser. tennesee (~ 5x10^5 CFU/mL)**
1925374	**+++**	**61**	***S. enterica* ser. enteritidis (~ 1x10^5 CFU/mL)**

Tabelle 2: Häufigkeit der Mitteilung verschiedener Befunde.
Absolute numbers of reported individual results.

n = 24	**Probennummer** (Sample no.)			
Befund *Result*	**1925371**	**1925372**	**1925373**	**1925374**
Positiv	**0**	**23**	**24**	**23**
Negativ	**24**	**1**	**0**	**1**
Fraglich *Questionable*	**0**	**0**	**0**	**0**

	Inhibition			
	1925371	**1925372**	**1925373**	**1925374**
n.d.	**0**	**0**	**0**	**0**
nein *no*	**24**	**24**	**24**	**24**
ja *yes*	**0**	**0**	**0**	**0**

Tabelle 3: Häufigkeit richtig positiver und richtig negativer NAT-Befunde bei Anwendern verschiedener Methoden.
Absolute numbers and relative frequency of reported true positive and true negative results among various NAT methods.

NAT-Methode [Code] (total number *)	**NAT richtig positiv** *True positive results*						**NAT richtig negativ**	
	1925372		**1925373**		**1925374**		**1925371**	
	Absolut *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**
RIDAGENE Bac. Stool Panel [20] (n = 5)	**5**	**100**	**5**	**100**	**5**	**100**	**5**	**100**
Foodproof Salmonella Kit [21] (n = 1)	**1**	**100**	**1**	**100**	**1**	**100**	**1**	**100**
Other commercial tests [27] (n = 12)	**12**	**100**	**12**	**100**	**12**	**100**	**12**	**100**
***In house* PCR assay [28] (n = 6)**	**5**	**83**	**6**	**100**	**5**	**83**	**6**	**100**

Tabelle 1: Probenzusammensetzung und erwartetes Ergebnis.
Sample composition and expected results.

	***Erwartet** / expected*		**Probenzusammensetzung** / *Sample composition*
1925381	**+++**	**61** /71	***Listeria monocytogenes* (~ 5x10^5 CFU/mL)**
1925382	**++**	**61** /71	***Listeria monocytogenes* (~ 5x10^4 CFU/mL)**
1925383	**+**	**61** /71	***Listeria monocytogenes* (~ 1x10^3 CFU/mL)**
1925384	**Ø**	**62**	***Escherichia coli* K12**

Tabelle 2: Häufigkeit der Mitteilung verschiedener Befunde.
Absolute numbers of reported individual results.

n = 43	**Probennummer** (Sample no.)			
Befund *Result*	**1925381**	**1925382**	**1925383**	**1925384**
Positiv	**43**	**43**	**35**	**0**
Negativ	**0**	**0**	**8**[1)]	**43**
Fraglich *Questionable*	**0**	**0**	**0**	**0**

	Inhibition			
	1925381	**1925382**	**1925383**	**1925384**
n.d.	**0**	**0**	**0**	**0**
nein *no*	**43**	**43**	**43**	**43**
ja *yes*	**0**	**0**	**0**	**0**

Tabelle 3: Häufigkeit richtig positiver und richtig negativer NAT-Befunde bei Anwendern verschiedener Methoden.
Absolute numbers and relative frequency of reported true positive and true negative results among various NAT methods.

NAT-Methode [Code] (total number *)	**NAT richtig positiv** *True positive results*						**NAT richtig negativ**	
	1925381		**1925382**		**1925383**		**1925384**	
	Absolut *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**
AmpliGnost LM [20] (n = 2)	**2**	**100**	**2**	**100**	**2**	**100**	**2**	**100**
TIB Molbiol LightMix LM [21] (n = 4)	**4**	**100**	**4**	**100**	**3**	**75**	**4**	**100**
Ingenetix BactoReal LM [22] (n = 4)	**4**	**100**	**4**	**100**	**2**	**50**	**4**	**100**
Other commercial tests [27] (n = 15)	**15**	**100**	**15**	**100**	**12**	**80**	**15**	**100**
***In house* PCR assay [28] (n = 18)**	**18**	**100**	**18**	**100**	**16**	**89**	**18**	**100**

Comments: [1)] As sample #1925383 contained a low number of *Listeria monocytogenes* target organisms, negative PCR results were not rated “false negative” in this EQAS distribution.

PCR-/NAT *MRSA / cMRSA*
(RV 539) November 2019

Tabelle 1: Probenzusammensetzung und erwartetes Ergebnis.
Sample composition and expected results.

	Erwartet / expected		**Probenzusammensetzung** / *Sample composition*
1925391	**+++**	**61** / 72	**MRSA (*S. aureus*, oxa^R, PVL-neg) (~5x10^5 CFU/mL)**
1925392	**Ø**	**62**	***Escherichia coli* K12**
1925393	**+++**	**61** / 72	**MRSA (*S. aureus*, oxa^R, PVL-neg) (~1x10^5 CFU/mL)**
1925394	**Ø**	**62** / 72	**MSSA (*S. aureus*, oxa^S but SCCmec false pos.) mecA dropout variant (~5x10^5 CFU/mL)**

Tabelle 2: Häufigkeit der Mitteilung verschiedener Befunde.
Absolute numbers of reported individual results.

n = 288	**Probennummer** (Sample no.)			
Befund *Result*	**1925391**	**1925392**	**1925393**	**1925394**
Positiv	**286**	**3**	**282**	**23**
Negativ	**2**	**283**	**3**	**261**
Fraglich *Questionable*	**0**	**2**	**3**	**4**

	Inhibition			
	1925391	**1925392**	**1925393**	**1925394**
n.d.	**1**	**1**	**1**	**1**
nein *no*	**287**	**287**	**287**	**287**
ja *yes*	**0**	**0**	**0**	**0**

Tabelle 3: Häufigkeit richtig positiver und richtig negativer NAT-Befunde bei Anwendern verschiedener Methoden.
Absolute numbers and relative frequency of reported true positive and true negative results among various NAT methods.

NAT-Methode [Code] (total number *)	**NAT richtig positiv** *True positive results*				**NAT richtig negativ** *True negative results*			
	1925391		**1925393**		**1925392**		**1925394**	
	Absolut *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**
BD MAX/BD GeneOhm MRSA [20] (n=46)	**45**	**98**	**45**	**100**	**45**	**100**	**38**	**84**
Hain FluoroT / GenoT MRSA [21] (n=28)	**27**	**96**	**27**	**96**	**27**	**96**	**27**	**96**
r-Biopharm RIDAGENE [22] (n=29)	**29**	**100**	**28**	**97**	**29**	**100**	**27**	**93**
Cepheid Xpert / GeneXpert [23] (n=146)	**146**	**100**	**145**	**100**	**143**	**99**	**142**	**99**
Other commercial tests [27] (n =21)	**21**	**100**	**20**	**100**	**21**	**100**	**16**	**76**
***In house* PCR assay [28] (n = 18)**	**18**	**100**	**17**	**94**	**18**	**100**	**11**	**65**

Comments: [1] *For participants who indicated the use of assay concepts for the independent detection of the mecA gene and a S. aureus species marker gene, "questionable" results were accepted in the course of issuing the official QC certificates*

PCR-/NAT *Chlamydia pneumoniae* (RV 540) November 2019

Tabelle 1: Probenzusammensetzung und erwartetes Ergebnis.
Sample composition and expected results.

	Erwartet / expected		**Probenzusammensetzung** / *Sample composition*
1925401	**+**	**61**	***Chlamydia pneumoniae* (~ 1x10^4 IFU/mL)**
1925402	**+++**	**61**	***Chlamydia pneumoniae* (~ 5x10^5 IFU/mL)**
1925403	**Ø**	**62**	***Mycoplasma pneumoniae* (~ 1x10^5 genome copies/mL)**
1925404	**Ø**	**62**	***Escherichia coli* K12**

Tabelle 2: Häufigkeit der Mitteilung verschiedener Befunde.
Absolute numbers of reported individual results.

n = 120	**Probennummer** (Sample no.)			
Befund *Result*	**1925401**	**1925402**	**1925403**	**1925404**
Positiv	**120**	**120**	**1**	**1**
Negativ	**0**	**0**	**119**	**118**
Fraglich *Questionable*	**0**	**0**	**0**	**1**

	Inhibition			
	1925401	**1925402**	**1925403**	**1925404**
n.d.	**0**	**0**	**0**	**0**
nein *no*	**120**	**120**	**120**	**120**
ja *yes*	**0**	**0**	**0**	**0**

Tabelle 3: Häufigkeit richtig positiver und richtig negativer NAT-Befunde bei Anwendern verschiedener Methoden.
Absolute numbers and relative frequency of reported true positive and true negative results among various NAT methods.

NAT-Methode [Code] (total number)	**NAT richtig positiv** *True positive results*				**NAT richtig negativ** *True negative results*			
	1925401		**1925402**		**1925403**		**1925404**	
	Absolut *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**
TIB Molbiol LightMix CP [21] (n = 12)	**12**	**100**	**12**	**100**	**12**	**100**	**12**	**100**
Diagenode MP/CP [22] (n = 3)	**3**	**100**	**3**	**100**	**3**	**100**	**3**	**100**
AmpliGnost CP PCR Kit [23] (n = 7)	**7**	**100**	**7**	**100**	**7**	**100**	**7**	**100**
AID CAP Bacteria [24] (n = 6)	**6**	**100**	**6**	**100**	**6**	**100**	**6**	**100**
Other commercial tests [27] (n = 55)	**55**	**100**	**55**	**100**	**55**	**100**	**54**	**100**
***In house* PCR assay [28] (n = 37)**	**37**	**100**	**37**	**100**	**36**	**97**	**36**	**97**

PCR-/NAT *Mycoplasma pneumoniae* (RV 541) November 2019

Tabelle 1: Probenzusammensetzung und erwartetes Ergebnis.
Sample composition and expected results.

	Erwartet / expected		**Probenzusammensetzung** / *Sample composition*
1925411	**++**	**61**	***Mycoplasma pneumoniae* (~ 5x10^4 genome copies/mL)**
1925412	**Ø**	**62**	***Escherichia coli* K12**
1925413	**+++**	**61**	***Mycoplasma pneumoniae* (~ 5x10^5 genome copies/mL)**
1925414	**+**	**61**	***Mycoplasma pneumoniae* (~ 5x10^3 genome copies/mL)**

Tabelle 2: Häufigkeit der Mitteilung verschiedener Befunde.
Absolute numbers of reported individual results.

n = 139	**Probennummer** (Sample no.)			
Befund *Result*	**1925411**	**1925412**	**1925413**	**1925414**
Positiv	**138**	**2**	**138**	**133**
Negativ	**1**	**137**	**1**	**6**[1)]
Fraglich *Questionable*	**0**	**0**	**0**	**0**

	Inhibition			
	1925411	**1925412**	**1925413**	**1925414**
n.d.	**0**	**0**	**0**	**0**
nein *no*	**139**	**139**	**139**	**139**
ja *yes*	**0**	**0**	**0**	**0**

Tabelle 3: Häufigkeit richtig positiver und richtig negativer NAT-Befunde bei Anwendern verschiedener Methoden.
Absolute numbers and relative frequency of reported true positive and true negative results among various NAT methods.

NAT-Methode [Code] (total number)	**NAT richtig positiv** *True positive results*						**NAT richtig negativ**	
	1925411		**1925413**		**1925414**		**1925412**	
	Absolut *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**
LightMix *M.pneumoniae* [20] (n = 15)	**14**	**93**	**15**	**100**	**15**	**100**	**15**	**100**
AID CAP Bacteria [21] (n = 5)	**5**	**100**	**5**	**100**	**5**	**100**	**5**	**100**
AmpliGnost MP PCR Kit [23] (n = 6)	**6**	**100**	**6**	**100**	**6**	**100**	**6**	**100**
Diagenode MP/CP [24] (n = 3)	**3**	**100**	**3**	**100**	**3**	**100**	**2**	**67**
r-Biopharm RIDAGENE Mp [25] (n = 6)	**6**	**100**	**6**	**100**	**6**	**100**	**6**	**100**
GeneProof *M. pneumoniae* [26] (n = 8)	**8**	**100**	**8**	**100**	**7**	**88**	**8**	**100**
Commercial assay / kit [27] (n = 58)	**58**	**100**	**57**	**98**	**54**	**93**	**57**	**98**
***In house* PCR assay [28] (n = 38)**	**38**	**100**	**38**	**100**	**37**	**97**	**38**	**100**

Comments: [1)] As sample #1925414 contained a low number of *Mycoplasma pneumoniae* target organisms, negative PCR results were not rated “false negative” in this EQAS distribution.

PCR-/NAT *C. burnetii* & *B. anthracis* (RV 542) November 2019

Tabelle 1: Probenzusammensetzung und erwartetes Ergebnis.
Sample composition and expected results.

	***Erwartet** / expected*	**Probenzusammensetzung** / *Sample composition*
1925421	**+ / +**	***Coxiella burnetii*** **(~ 1x10^4 genome copies/mL)** ***B. anthracis*** **Pasteur Stamm (~ 5x10^3 genome copies/mL)**
1925422	**∅ / +++**	***B. anthracis*** **Pasteur Stamm (~ 1x10^6 genome copies/mL)**
1925423	**∅ / ∅**	***Escherichia coli*** **K12**
1925424	**++ / ++**	***Coxiella burnetii*** **(~ 5x10^4 genome copies/mL)** ***B. anthracis*** **UR-1 Stamm (~ 5x10^4 genome copies/mL)**

Tabelle 2: Häufigkeit der Mitteilung verschiedener Befunde. Anmerkung: in dieser Tabelle sind nur die Ergebnisse für *Coxiella burnetii* dargestellt.
***Note**: only the **C. burnetii-specific results** are depicted in this table*

n = 41	**Probennummer** (Sample no.)			
Befund *Result*	**1925421**	**1925422**	**1925423**	**1925424**
Positiv	**41**	**1**	**1**	**41**
Negativ	**0**	**39**	**40**	**0**
Fraglich *Questionable*	**0**	**1**	**0**	**0**

	Inhibition			
	1925421	**1925422**	**1925423**	**1925424**
n.d.	**0**	**0**	**0**	**0**
nein *no*	**41**	**41**	**41**	**41**
ja *yes*	**0**	**0**	**0**	**0**

Tabelle 3: Häufigkeit richtig positiver und richtig negativer NAT-Befunde bei Anwendern verschiedener Methoden. Anmerkung: in dieser Tabelle sind nur die Ergebnisse für *Coxiella burnetii* dargestellt.
Absolute numbers and relative frequency of reported true positive and true negative results among various NAT methods.
***Note:** only the **C. burnetii-specific results** are depicted in this table.*

NAT-Methode [Code] (total number)	**NAT richtig positiv** *True positive results*				**NAT richtig negativ** *True negative results*			
	1925421		**1925424**		**1925422**		**1925423**	
	Absolut *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**
LightMix C. burnetii [20] (n = 1)	**1**	**100**	**1**	**100**	**1**	**100**	**1**	**100**
Commercial assay / kit [27] (n = 7)	**7**	**100**	**7**	**100**	**6** §	**100**	**7**	**100**
In house **PCR assay [28] (n = 33)**	**33**	**100**	**33**	**100**	**32**	**97**	**32**	**97**

Tabelle 4: Häufigkeit der Mitteilung verschiedener Befunde. Anmerkung: in dieser Tabelle sind nur die Ergebnisse für *Bacillus anthracis* dargestellt.

Absolute numbers of reported individual results.

***Note**: only the **B. anthracis-specific results** are depicted in this table*

***n* = 22**	**Probennummer** (Sample no.)			
Befund *Result*	**1925421**	**1925422**	**1925423**	**1925424**
Positiv	**15**	**21**	**0**	**21**
Negativ	**5**[1)]	**1**	**22**	**1**
Fraglich *Questionable*	**2**[1)]	**0**	**0**	**0**

	Inhibition			
	1925421	**1925422**	**1925423**	**1925424**
n.d.	**0**	**0**	**0**	**0**
nein *no*	**22**	**22**	**22**	**22**
ja *yes*	**0**	**0**	**0**	**0**

Tabelle 5: Häufigkeit richtig positiver und richtig negativer NAT-Befunde bei Anwendern verschiedener Methoden. Anmerkung: in dieser Tabelle sind nur die Ergebnisse für *Bacillus anthracis* dargestellt.

Absolute numbers and relative frequency of reported true positive and true negative results among various NAT methods.

***Note:** only the **B. anthracis-specific results** are depicted in this table.*

NAT-Methode [Code] (total number)	**NAT richtig positiv** *True positive results*						**NAT richtig negativ**	
	1925421		**1925422**		**1925424**		**1925423**	
	Absolut *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**
LightMix *B. anthracis* [21] (n = 3)	**1**	**33**	**2**	**67**	**1**	**100**	**3**	**100**
Commercial assay / kit [27] (n =3)	**2**	**67**	**3**	**100**	**2**	**100**	**3**	**100**
***In house* PCR assay [28] (n = 16)**	**12**[§]	**86**	**16**	**100**	**17**[§]	**89**	**16**	**100**

[§] Due to reporting questionable results, the number of true results (denominator in the „relative“ column) has been reduced.

Comments: [1)] As sample #1925421 contained a low number of *Bacillus anthracis* target organisms, negative PCR results were not rated “false negative” in this EQAS distribution.

Tabelle 1: Probenzusammensetzung und erwartetes Ergebnis.
Sample composition and expected results.

	***Erwartet** / expected*	**Probenzusammensetzung** / *Sample composition*
1925431	∅ / +++	***Brucella melitensis*** **(~ 1x10^5 CFU/mL)**
1925432	+++ / (+)	***Franc. tularensis subsp. holarctica*** **(~ 1x10^5 CFU/mL)** ***B. melitensis*** **(~ 1x10^3 CFU/mL)**
1925433	++ / ++	***Franc. tularensis subsp. holarctica*** **(~ 1x10^4 CFU/mL)** ***B. melitensis*** **(~ 1x10^4 CFU/mL)**
1925434	∅ / ∅	***Escherichia coli*** **K12**

Tabelle 2: Häufigkeit der Mitteilung verschiedener Befunde. Anmerkung: in dieser Tabelle sind nur die Ergebnisse für *Francisella tularensis* dargestellt.
Absolute numbers of reported individual results.
***Note**: only the **F.tularensis-specific results** are depicted in this table*

n = 25	**Probennummer** (Sample no.)			
Befund *Result*	**1925431**	**1925432**	**1925433**	**1925434**
Positiv	**0**	**24**	**22**	**0**
Negativ	**24**	**1**	**1**	**24**
Fraglich *Questionable*	**1**	**0**	**2**	**1**

	Inhibition			
	1925431	**1925432**	**1925433**	**1925434**
n.d.	**0**	**0**	**0**	**0**
nein *no*	**24**	**25**	**25**	**24**
ja *yes*	**1**	**0**	**0**	**1**

Tabelle 3: Häufigkeit richtig positiver und richtig negativer NAT-Befunde bei Anwendern verschiedener Methoden. Anmerkung: in dieser Tabelle sind nur die Ergebnisse für *Francisella tularensis* dargestellt.
***Note:** only the **F.tularensis-specific results** are depicted in this table.*

NAT-Methode [Code] (total number *)	**NAT richtig positiv** *True positive results*				**NAT richtig negativ** *True negative results*			
	1925432		**1925433**		**1925431**		**1925434**	
	Absolut *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**
LightMix *F.tularensis* [20] (n = 5)	**5**	**100**	**5**	**100**	**4** §	**100**	**4** §	**100**
Commercial assay / kit [27] (n = 1)	**1**	**100**	**0**	**0**	**1**	**100**	**1**	**100**
***In house* PCR assay [28] (n = 19)**	**18**	**95**	**17** §	**100**	**19**	**100**	**19**	**100**

§ Due to reporting questionable results, the number of true results (denominator in the „relative“ column) has been reduced.

Tabelle 4: Häufigkeit der Mitteilung verschiedener Befunde. Anmerkung: in dieser Tabelle sind nur die Ergebnisse für *Brucella* dargestellt.

Absolute numbers of reported individual results.

***Note**: only the **Brucella-specific results** are depicted in this table*

***n* = 23**	**Probennummer** (Sample no.)			
Befund *Result*	**1925431**	**1925432**	**1925433**	**1925434**
Positiv	**23**	**8**	**20**	**0**
Negativ	**0**	**12**[1)]	**2**	**23**
Fraglich *Questionable*	**0**	**3**[1)]	**1**	**0**

	Inhibition			
	1925431	**1925432**	**1925433**	**1925434**
n.d.	**0**	**0**	**0**	**0**
nein *no*	**23**	**23**	**23**	**23**
ja *yes*	**0**	**0**	**0**	**0**

Tabelle 5: Häufigkeit richtig positiver und richtig negativer NAT-Befunde bei Anwendern verschiedener Methoden. Anmerkung: in dieser Tabelle sind nur die Ergebnisse für *Brucella* dargestellt.

Absolute numbers and relative frequency of reported true positive and true negative results among various NAT methods.

***Note:** only the **Brucella-specific results** are depicted in this table.*

NAT-Methode [Code] (total number *)	**NAT richtig positiv** *True positive results*						**NAT richtig negativ**	
	1925431		**1925432**		**1925433**		**1925434**	
	Absolut *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**
LightMix *Brucella* Genus [21] (n = 1)	**1**	**100**	**1**	**100**	**1**	**100**	**1**	**100**
Commercial assay / kit [27] (n =2)	**2**	**100**	**1**	**50**	**2**	**100**	**2**	**100**
***In house* PCR assay [28] (n = 20)**	**20**	**100**	**10**	**65**	**17** §	**89**	**20**	**100**

§ Due to reporting questionable results, the number of true results (denominator in the „relative“ column) has been reduced.

Comments: [1)] As sample #1925432 contained a low number of *Brucella melitensis* target organisms, negative PCR results were not rated “false negative” in this EQAS distribution.

PCR-/NAT Carbapenemasen
(RV 544) November 2019

Tabelle 1: Probenzusammensetzung und erwartetes Ergebnis.
Sample composition and expected results.

	***Erwartet** / expected*		**Probenzusammensetzung** / *Sample composition*
1925441	**+++**	**61** / 71,72	***K. oxytoca* KPC-3, VIM-1 (~ 1x10^6 genome copies/mL)**
1925442	**Ø**	**62**	***Escherichia coli* K12**
1925443	**+++**	**61** / 73	***K. pneumoniae* OXA-245 (~ 1x10^6 genome copies/mL)**
1925444	**+++**	**61** / 75	***K. pneumoniae* NDM-9 (~ 1x10^6 genome copies/mL)**

Tabelle 2: Häufigkeit der Mitteilung verschiedener Befunde.
Absolute numbers of reported individual results.

n = 86	**Probennummer** (Sample no.)			
Befund *Result*	**1925441**	**1925442**	**1925443**	**1925444**
Positiv	**86**	**0**	**78**	**85**
Negativ	**0**	**86**	**8**	**0**
Fraglich *Questionable*	**0**	**0**	**0**	**1**

	Inhibition			
	1925441	**1925442**	**1925443**	**1925444**
n.d.	**1**	**1**	**1**	**1**
nein *no*	**85**	**85**	**85**	**85**
ja *yes*	**0**	**0**	**0**	**0**

<u>Tabelle 3</u>: Häufigkeit richtig positiver und richtig negativer NAT-Befunde bei Anwendern verschiedener Methoden.

Absolute numbers and relative frequency of reported true positive and true negative results among various NAT methods.

NAT-Methode [Code] (total number *)	**NAT richtig positiv** *True positive results*						**NAT richtig negativ**	
	1925441		**1925443**		**1925444**		**1925442**	
	Absolut *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**
Check direct CPE oder MDR [21] (n =2)	**2**	**100**	**2**	**100**	**2**	**100**	**2**	**100**
Hyplex Superbug (Amplex) [23] (n =1)	**1**	**100**	**0**	**0**	**1**	**100**	**1**	**100**
Eazyplex (Amplex) [23] (n =7)	**7**	**100**	**1**	**14**	**7**	**100**	**7**	**100**
LightMix (TIB Molbiol) [24] (n =8)	**8**	**100**	**8**	**100**	**8**	**100**	**8**	**100**
GeneXpert CarbaR [25] (n =44)	**44**	**100**	**44**	**100**	**44**	**100**	**44**	**100**
Commercial assay / kit [27] (n =13)	**13**	**100**	**12**	**92**	**12** §	**100**	**13**	**100**
***In house* PCR assay [28] (n = 11)**	**11**	**100**	**11**	**100**	**11**	**100**	**11**	**100**

§ Due to reporting questionable results, the number of true results (denominator in the „relative“ column) has been reduced.

Comments:

1) 87 participants reported dedicated carbapenemase identification (carbapenemase genes)
2) One participant did not detect the KPC-3 gene in sample # 1925441.
3) One participant did not detect the VIM-1 gene in sample # 1925441.
4) One participant has wrongly reported detection of the NDM gene and an other participant detection of the IMP gene, in sample 1925441.
5) Eight participants did not detect the OXA-48 gene in sample # 1925443.
6) One participant has wrongly reported detection of the OXA gene and an other participant detection of the VIM gene in sample # 1925444.
7) One participant did not detect the NDM-9 gene in sample # 1925444.

PCR-/NAT *Clostridium difficile*
(RV 545) November 2019

Tabelle 1: Probenzusammensetzung und erwartetes Ergebnis.
Sample composition and expected results.

	***Erwartet** / expected*		**Probenzusammensetzung** / *Sample composition*
1925451	**+++**	**61** / 71,72	***Clostridium difficile*** **(~ 1x10^6 CFU/mL)**
1925452	**Ø**	**62**	***Escherichia coli*** **K12**
1925453	**Ø**	**62**	***Escherichia coli*** **K12**
1925454	**++**	**61** / 71,72	***Clostridium difficile*** **(~ 1x10^5 CFU/mL)**

Tabelle 2: Häufigkeit der Mitteilung verschiedener Befunde.
Absolute numbers of reported individual results.

n = 149	**Probennummer** (Sample no.)			
Befund *Result*	**1925451**	**1925452**	**1925453**	**1925454**
Positiv	**148**	**1**	**2**	**146**
Negativ	**1**	**148**	**147**	**2**
Fraglich *Questionable*	**0**	**0**	**0**	**1**

	Inhibition			
	1925451	**1925452**	**1925453**	**1925454**
n.d.	**2**	**2**	**2**	**2**
nein *no*	**147**	**147**	**147**	**147**
ja *yes*	**0**	**0**	**0**	**0**

Tabelle 3: Häufigkeit richtig positiver und richtig negativer NAT-Befunde bei Anwendern verschiedener Methoden.
Absolute numbers and relative frequency of reported true positive and true negative results among various NAT methods.

NAT-Methode [Code] (total number *)	**NAT richtig positiv** *True positive results*				**NAT richtig negativ** *True negative results*			
	1925451		**1925454**		**1925452**		**1925453**	
	Absolut *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**
Cepheid Xpert *C.difficile* [20] (n =45)	**44**	**98**	**43** §	**98**	**45**	**100**	**45**	**100**
BD MAX *C.difficile* [21] (n =18)	**18**	**100**	**18**	**100**	**18**	**100**	**17**	**94**
r-Biopharm RIDAGENE Cdif [22] (n =34)	**34**	**100**	**34**	**100**	**34**	**100**	**33**	**97**
Commercial assay / kit [27] (n =41)	**41**	**100**	**40**	**98**	**40**	**98**	**41**	**100**
In house **PCR assay [28] (n = 11)**	**11**	**100**	**11**	**100**	**11**	**100**	**11**	**100**

§ Due to reporting questionable results, the number of true results (denominator in the „relative“ column) has been reduced.

PCR-/NAT VRE
(RV 546) November 2019

Tabelle 1: Probenzusammensetzung und erwartetes Ergebnis.
Sample composition and expected results.

	Erwartet / expected		**Probenzusammensetzung** / *Sample composition*
1925461	**++**	**61** / 71	***Enterococcus faecalis* vanA (~ 1x10⁴ CFU/mL)**
1925462	**Ø**	**62**	***Escherichia coli* K12**
1925463	**Ø**	**62**	***E. faecalis* (~ 1x10⁵ CFU/mL)**
1925464	**++**	**61** / 72	***Enterococcus faecium* vanA + vanB (~ 1x10⁴ CFU/mL)**

Tabelle 2: Häufigkeit der Mitteilung verschiedener Befunde.
Absolute numbers of reported individual results.

n = 56	**Probennummer** (Sample no.)			
Befund *Result*	**1925461**	**1925462**	**1925463**	**1925464**
Positiv	**56**[1)]	**0**	**0**	**54**[1)]
Negativ	**0**	**56**	**56**	**2**
Fraglich *Questionable*	**0**	**0**	**0**	**0**

	Inhibition			
	1925461	**1925462**	**1925463**	**1925464**
n.d.	**1**	**1**	**1**	**1**
nein *no*	**55**	**55**	**55**	**55**
ja *yes*	**0**	**0**	**0**	**0**

Tabelle 3: Häufigkeit richtig positiver und richtig negativer NAT-Befunde bei Anwendern verschiedener Methoden.
Absolute numbers and relative frequency of reported true positive and true negative results among various NAT methods.

NAT-Methode [Code] (total number *)	**NAT richtig positiv** *True positive results*				**NAT richtig negativ** *True negative results*			
	1925461		**1925464**		**1925462**		**1925463**	
	Absolut *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**
Cepheid Xpert vanA / vanB [20] (n = 25)	**25**	**100**	**25**	**100**	**25**	**100**	**25**	**100**
Hain GT Enterococcus CT [22] (n = 8)	**8**	**100**	**8**	**100**	**8**	**100**	**8**	**100**
Commercial assay / kit [27] (n = 12)	**12**	**100**	**10**	**83**	**12**	**100**	**12**	**100**
***In house* PCR assay [28] (n = 11)**	**11**	**100**	**11**	**100**	**11**	**100**	**11**	**100**

Comments: [1)] Fifty-three participants reported dedicated vanA / vanB identification. With the exception of 5 laboratories, all reported results were correct.

PCR-/NAT Urogenital Panel
(RV 547) November 2019

Tabelle 1: Probenzusammensetzung und erwartetes Ergebnis.
Sample composition and expected results.

	***Erwartet** / expected*	**Probenzusammensetzung** / *Sample composition*
1925471	**+++**	***Trichomonas vaginalis*** **(~ 1x10^5 CFU/mL)**
1925472	**++**	***Gardnerella vaginalis*** **(~ 5x10^4 CFU/mL)**
1925473	**++**	***Mycoplasma genitalium*** **(~ 5x10^4 CFU/mL)**
1925474	**Ø**	***Escherichia coli*** **K12**

Tabelle 2: Häufigkeit der Mitteilung verschiedener Befunde. Anmerkung: in dieser Tabelle sind nur die Ergebnisse für *Mycoplasma genitalium* dargestellt.
Absolute numbers of reported individual results.
***Note**: only the **M.genitalium-specific results** are depicted in this table*

n = 68	**Probennummer** (Sample no.)			
Befund *Result*	**1925471**	**1925472**	**1925473**	**1925474**
Positiv	**0**	**0**	**68**	**1**
Negativ	**68**	**68**	**0**	**67**
Fraglich *Questionable*	**0**	**0**	**0**	**0**

	Inhibition			
	1925471	**1925472**	**1925473**	**1925474**
n.d.	**0**	**0**	**0**	**0**
nein *no*	**21**	**22**	**22**	**21**
ja *yes*	**1**	**0**	**0**	**1**

Tabelle 3: Häufigkeit richtig positiver und richtig negativer NAT-Befunde bei Anwendern verschiedener Methoden. Anmerkung: in dieser Tabelle sind nur die Ergebnisse für *Mycoplasma genitalium* dargestellt.
Absolute numbers and relative frequency of reported true positive and true negative results among various NAT methods.
***Note:** only the **M.genitalium -specific results** are depicted in this table.*

NAT-Methode [Code] (total number *)	**NAT richtig positiv**		**NAT richtig negativ** *True negative results*					
	1925473		**1925471**		**1925472**		**1925474**	
	Absolut *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**
Multiplex Kit [20] (n = 20)	**20**	**100**	**20**	**100**	**20**	**100**	**19**	**95**
Commercial assay [27] (n = 38)	**38**	**100**	**38**	**100**	**38**	**100**	**38**	**100**
In house **PCR assay [28] (n = 10)**	**10**	**100**	**10**	**100**	**10**	**100**	**10**	**100**

Tabelle 4: Häufigkeit der Mitteilung verschiedener Befunde. Anmerkung: in dieser Tabelle sind nur die Ergebnisse für *Trichomonas vaginalis* dargestellt.

Absolute numbers of reported individual results.

***Note**: only the **T.vaginalis-specific results** are depicted in this table*

n = 55	**Probennummer** (Sample no.)			
Befund *Result*	**1925471**	**1925472**	**1925473**	**1925474**
Positiv	**53**	**1**	**0**	**1**
Negativ	**2**	**54**	**55**	**54**
Fraglich *Questionable*	**0**	**0**	**0**	**0**

	Inhibition			
	1925471	**1925472**	**1925473**	**1925474**
n.d.	**0**	**0**	**0**	**0**
nein *no*	**55**	**55**	**55**	**55**
ja *yes*	**0**	**0**	**0**	**0**

Tabelle 5: Häufigkeit richtig positiver und richtig negativer NAT-Befunde bei Anwendern verschiedener Methoden. Anmerkung: in dieser Tabelle sind nur die Ergebnisse für *Trichomonas vaginalis* dargestellt.

Absolute numbers and relative frequency of reported true positive and true negative results among various NAT methods.

***Note:** only the **T.vaginalis-specific results** are depicted in this table.*

NAT-Methode [Code] (total number *)	**NAT richtig positiv**		**NAT richtig negativ** *True negative results*					
	1925471		**1925472**		**1925473**		**1925474**	
	Absolut *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**
Multiplex Kit [20] (n = 19)	**19**	**100**	**19**	**100**	**19**	**100**	**19**	**100**
Commercial assay [27] (n = 27)	**25**	**93**	**26**	**96**	**27**	**100**	**26**	**96**
***In house* PCR assay [28] (n = 9)**	**9**	**100**	**9**	**100**	**9**	**100**	**9**	**100**

Tabelle 6: Häufigkeit der Mitteilung verschiedener Befunde. Anmerkung: in dieser Tabelle sind nur die Ergebnisse für *Gardnerella vaginalis* dargestellt.

Absolute numbers of reported individual results.

***Note**: only the **G.vaginalis-specific results** are depicted in this table*

n = 16	**Probennummer** (Sample no.)			
Befund *Result*	**1925471**	**1925472**	**1925473**	**1925474**
Positiv	**0**	**14**	**1**	**1**
Negativ	**16**	**2**	**15**	**15**
Fraglich *Questionable*	**0**	**0**	**0**	**0**

	Inhibition			
	1925471	**1925472**	**1925473**	**1925474**
n.d.	**0**	**0**	**0**	**0**
nein *no*	**16**	**16**	**16**	**16**
ja *yes*	**0**	**0**	**0**	**0**

Tabelle 7: Häufigkeit richtig positiver und richtig negativer NAT-Befunde bei Anwendern verschiedener Methoden. Anmerkung: in dieser Tabelle sind nur die Ergebnisse für *Gardnerella vaginalis* dargestellt.

Absolute numbers and relative frequency of reported true positive and true negative results among various NAT methods.

***Note:** only the **G.vaginalis-specific results** are depicted in this table.*

NAT-Methode [Code] (total number *)	**NAT richtig positiv**		**NAT richtig negativ** *True negative results*					
	1925472		**1925471**		**1925473**		**1925474**	
	Absolut *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**
Multiplex Kit [20] (n = 3)	**3**	**100**	**3**	**100**	**2**	**67**	**3**	**100**
Commercial assay [27] (n = 5)	**3**	**60**	**5**	**100**	**5**	**100**	**5**	**100**
***In house* PCR assay [28] (n = 8)**	**8**	**100**	**8**	**100**	**8**	**100**	**7**	**88**

Comments: [1] *Mycoplasma hominis*-detection was performed by 64 laboratories. With the exception of 2 laboratories, with 1 false positive result, all reported results were correct.
[2] *Ureaplasma parvum*-detection was performed by 60 laboratories. All reported results were correct.
[3] *Ureaplasma urealyticum*-detection was performed by 63 laboratories. All reported results were correct.
[4] *Treponema pallidum*-detection was performed by 32 laboratories. With the exception of 1 laboratory, with 1 false positive result, all reported results were correct.

PCR-/NAT *Pneumocystis jirovecii*
(RV 560) November 2019

Tabelle 1: Probenzusammensetzung und erwartetes Ergebnis.
Sample composition and expected results.

	***Erwartet** / expected*		**Probenzusammensetzung** / *Sample composition*
1925601	**+**	**61**	***Pneumocystis jirovecii* (~ 5x10^3 organisms/mL)**
1925602	**++**	**61**	***Pneumocystis jirovecii* (~ 1x10^5 organisms/mL)**
1925603	**+**	**61**	***Pneumocystis jirovecii* (~ 1x10^4 organisms/mL)**
1925604	**Ø**	**62**	***Escherichia coli* K12**

Tabelle 2: Häufigkeit der Mitteilung verschiedener Befunde.
Absolute numbers of reported individual results.

n = 120	**Probennummer** (Sample no.)			
Befund *Result*	**1925601**	**1925602**	**1925603**	**1925604**
Positiv	**105**	**120**	**119**	**0**
Negativ	**14**[1)]	**0**	**1**	**120**
Fraglich *Questionable*	**1**[1)]	**0**	**0**	**0**

	Inhibition			
	1925601	**1925602**	**1925603**	**1925604**
n.d.	**1**	**1**	**1**	**1**
nein *no*	**119**	**119**	**119**	**119**
ja *yes*	**0**	**0**	**0**	**0**

Tabelle 3: Häufigkeit richtig positiver und richtig negativer NAT-Befunde bei Anwendern verschiedener Methoden.
Absolute numbers and relative frequency of reported true positive and true negative results among various NAT methods.

NAT-Methode [Code] (total number *)	**NAT richtig positiv** *True positive results*						**NAT richtig negativ**	
	1925601		**1925602**		**1925603**		**1925604**	
	Absolut *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**	**Absolut** *Absolute*	**%**
TIB Molbiol LightMix PJ [21] (n = 10)	**9**	**90**	**10**	**100**	**10**	**100**	**10**	**100**
r-Biopharm RIDAGENE PJ [22] (n = 33)	**31**	**94**	**33**	**100**	**32**	**97**	**33**	**100**
AmpliGnost PJ PCR Kit [23] (n = 9)	**9**	**100**	**9**	**100**	**9**	**100**	**9**	**100**
Sacace PJ Real TM [24] (n =4)	**4**	**100**	**4**	**100**	**4**	**100**	**4**	**100**
Commercial assay / kit [27] (n = 33)	**24**	**73**	**33**	**100**	**33**	**100**	**33**	**100**
***In house* PCR assay [28] (n = 31)**	**28**	**93**	**31**	**100**	**31**	**100**	**31**	**100**

Comments: [1)] As sample #1925601 contained a low number of *Pneumocystis jirovecii* target organisms, negative PCR results were not rated “false negative” in this EQAS distribution.