

Supplementary Materials:

Table S1. Summary of published studies evaluating molecular assays for intrapartum detection of Group B Streptococcus (GBS).

Authors / Year	Test / Platform	Sensitivity (%)	Specificity (%)	Index Test Enrichment	Reference Standard	PROM (PPROM) Reporting	Notes / Clinical Context
Gavino & Wang, 2007 (1)	Xpert GBS	95.8 (76.9-99.8)	64.5 (45.4-80.2)	No (direct intrapartum)	Antenatal culture	Not specified	Small prospective study (n=55); low specificity likely due to imperfect reference
El Helali et al., 2009 (2)	Xpert GBS	98.5	99.6	No (direct intrapartum)	Intrapartum culture	Included (high-risk incl. PROM/preterm)	Large cohort (n≈900); strong intrapartum performance; antenatal PPV low
Bourgeois-Nicolaos et al., 2013 (3)	Xpert GBS	~92 (composite)	~98	No (direct; amniotic fluid)	Composite (culture + PCR)	Targeted population (term PROM)	Focus on PROM; different sample type (amniotic fluid)
Helmig & Gertsen, 2017 (4)	Xpert GBS	100 (86.3-100)	97.5 (91.3-99.7)	No (direct intrapartum)	Culture (likely enriched)	Included (PROM/PPROM >14h)	High-risk intrapartum population; very low invalid rate
Rabaan et al., 2017 (5)	Xpert GBS (modified)	100	89.4	Yes (Todd-Hewitt enrichment)	Enriched culture	Not specified	Modified protocol; not representative of true POCT
Plainvert et al., 2018 (6)	Xpert GBS	~78	High	No (direct intrapartum)	Intrapartum culture	Not specified	Women antenatally positive; persistence rate only ~59%
Fullston et al., 2019 (7)	Xpert GBS	Not reported	Not reported	No (direct intrapartum)	Not applicable (clinical impact)	Included (pre-labour ROM)	Reduced unnecessary antibiotics (~70%)
Shin & Pride, 2019 (8)	Panther Fusion, Aries, Xpert GBS LB	~99-100	High	Yes (enriched LB)	Enriched culture	Not specified	Analytical comparison of NAATs; not POCT setting
Andreasen et al., 2019 (9)	BD MAX; GenomEra	84.6 (BD MAX); 71.4 (GenomEra)	High	No (direct intrapartum)	Culture (± enrichment)	Not specified	Intrapartum; GenomEra easier for ward use
Berry et al., 2019 (10)	Panther Fusion vs BD MAX	~99% agreement	High	Yes (enriched)	Enriched culture	Not specified	Antenatal screening; high-throughput platforms
Helmig & Gertsen, 2019 (11)	Xpert GBS	Not reported	Not reported	No (direct intrapartum)	Not applicable (clinical impact)	Included (PROM >14h)	Antibiotic reduction ~40%
Vieira et al., 2019 (12)	Xpert GBS vs qPCR	53 (vs qPCR)	93	Likely direct	qPCR (high-sensitivity reference)	Not specified	High apparent prevalence (51%); sensitivity depends on reference
Choera et al., 2020 (13)	Revogene GBS LB vs Xpert GBS LB	PPA 98.0	NPA 96.5	Yes (enriched LB)	Enriched culture	Not specified	High concordance; not direct POCT

Zanini da Rocha et al., 2020 (14)	Xpert GBS	86.6	High	Likely direct	Granada culture	Not specified	High-risk cohort; PCR more sensitive than culture
Nielsen et al., 2020 (15)	GeneXpert; GenomEra	~91-92	~97-98	Mixed (direct + enriched)	Culture ± enrichment	Included (PROM/PPROM ≥18h)	Intrapartum high-risk; similar performances
Dakin et al., 2022 (16)	GeneXpert (survey)	Not reported	Not reported	Variable	Not applicable	Variable	National survey; heterogeneous practices
Thwe et al., 2022 (17)	Xpert GBS LB XC	99.3 (composite); 99.1 (culture)	98.7; 91.8	Yes (enriched LB)	Culture + composite	Not specified	New generation assay; controlled conditions
Koliwer-Brandl et al., 2023 (18)	Xpert; GenomEra	71.4 (Xpert); 88.1 (GenomEra)	98.6; 99.1	No (direct vaginal)	Culture	Not specified	Direct testing; GenomEra more sensitive but more repeats
d'Otreppe et al., 2023 (19)	Revogene GBS DS	85.7 (66.4-95.3)	99.1 (97.3-99.8)	No (direct intrapartum)	Culture (enriched)	Likely included (labour ward setting)	Multicentre (n=398); invalid ~11%
Guetat et al., 2025 (20)	GeneXpert	Not reported	Not reported	No (direct intrapartum)	Not applicable (clinical impact)	Included (likely PROM cases)	22.4% incomplete prophylaxis (rapid labour)
Li et al., 2025 (21)	CRISPR/Cas13a (PalmCS)	97.5	100	No (direct)	Culture/PCR	Not specified	Emerging portable POCT; small sample (n=40)

Abbreviations: PROM, premature rupture of membranes; PPROM, preterm premature rupture of membranes; PPA, positive percent agreement; NPA, negative percent agreement; NAATs, nucleic acid amplification tests.

References

1. Gavino M, Wang E. A comparison of a new rapid real-time polymerase chain reaction system to traditional culture in determining group B streptococcus colonization. *Am J Obstet Gynecol.* 2007 Oct;197(4):388.e1-4. doi:10.1016/j.ajog.2007.06.016 PubMed PMID: 17904971.
2. El Helali N, Nguyen JC, Ly A, Giovangrandi Y, Trinquart L. Diagnostic accuracy of a rapid real-time polymerase chain reaction assay for universal intrapartum group B streptococcus screening. *Clin Infect Dis Off Publ Infect Dis Soc Am.* 2009 Aug 1;49(3):417–23. doi:10.1086/600303 PubMed PMID: 19580414.
3. Bourgeois-Nicolaos N, Cordier AG, Guillet-Caruba C, Casanova F, Benachi A, Doucet-Populaire F. Evaluation of the Cepheid Xpert GBS assay for rapid detection of group B Streptococci in amniotic fluids from pregnant women with premature rupture of membranes. *J Clin Microbiol.* 2013 Apr;51(4):1305–6. doi:10.1128/JCM.03356-12 PubMed PMID: 23390279; PubMed Central PMCID: PMC3666785.
4. Helmig RB, Gertsen JB. Diagnostic accuracy of polymerase chain reaction for intrapartum detection of group B streptococcus colonization. *Acta Obstet Gynecol Scand.* 2017 Sep;96(9):1070–4. doi:10.1111/aogs.13169 PubMed PMID: 28504863.

5. Rabaan AA, Saunar JV, Bazzi AM, Soriano JL. Modified use of real-time PCR detection of group B *Streptococcus* in pregnancy. *J Med Microbiol.* 2017 Oct;66(10):1516–20. doi:10.1099/jmm.0.000604 PubMed PMID: 28920845.
6. Plainvert C, El Alaoui F, Tazi A, Joubrel C, Anselem O, Ballon M, et al. Intrapartum group B *Streptococcus* screening in the labor ward by Xpert® GBS real-time PCR. *Eur J Clin Microbiol Infect Dis Off Publ Eur Soc Clin Microbiol.* 2018 Feb;37(2):265–70. doi:10.1007/s10096-017-3125-2 PubMed PMID: 29082442.
7. Fullston EF, Doyle MJ, Higgins MF, Knowles SJ. Clinical impact of rapid polymerase chain reaction (PCR) test for group B *Streptococcus* (GBS) in term women with ruptured membranes. *Ir J Med Sci.* 2019 Nov;188(4):1269–74. doi:10.1007/s11845-019-01977-x PubMed PMID: 30706295.
8. Shin JH, Pride DT. Comparison of Three Nucleic Acid Amplification Tests and Culture for Detection of Group B *Streptococcus* from Enrichment Broth. *J Clin Microbiol.* 2019 Jun;57(6):e01958-18. doi:10.1128/JCM.01958-18 PubMed PMID: 30944190; PubMed Central PMCID: PMC6535594.
9. Andreasen T, Kjølseth Møller J, Rohi Khalil M. Comparison of BD MAX GBS and GenomEra GBS assays for rapid intrapartum PCR detection of vaginal carriage of group B streptococci. *PloS One.* 2019;14(4):e0215314. doi:10.1371/journal.pone.0215314 PubMed PMID: 30990861; PubMed Central PMCID: PMC6467400.
10. Berry GJ, Zhang F, Manji R, Juretschko S. Comparison of the Panther Fusion and BD MAX Group B *Streptococcus* (GBS) Assays for Detection of GBS in Prenatal Screening Specimens. *J Clin Microbiol.* 2019 Nov;57(11):e01034-19. doi:10.1128/JCM.01034-19 PubMed PMID: 31462552; PubMed Central PMCID: PMC6812996.
11. Helmig RB, Gertsen JB. Intrapartum PCR-assay for detection of Group B *Streptococci* (GBS). *Eur J Obstet Gynecol Reprod Biol X.* 2019 Oct;4:100081. doi:10.1016/j.eurox.2019.100081 PubMed PMID: 31673691; PubMed Central PMCID: PMC6817646.
12. Vieira LL, Perez AV, Machado MM, Kayser ML, Vettori DV, Alegretti AP, et al. Group B *Streptococcus* detection in pregnant women: comparison of qPCR assay, culture, and the Xpert GBS rapid test. *BMC Pregnancy Childbirth.* 2019 Dec 30;19(1):532. doi:10.1186/s12884-019-2681-0 PubMed PMID: 31888631; PubMed Central PMCID: PMC6937909.
13. Choera T, Jung-Hynes B, Chen DJ. Comparative study of Revogene GBS LB assay and GeneXpert GBS LB assay for the detection of group B *Streptococcus* in prenatal screening samples. *BMC Infect Dis.* 2020 Jan 14;20(1):38. doi:10.1186/s12879-019-4756-y PubMed PMID: 31937247; PubMed Central PMCID: PMC6958782.
14. Zanini da Rocha J, Feltraco J, Radin V, Vitola Gonçalves C, Almeida da Silva PE, Von Groll A. *Streptococcus agalactiae* colonization and screening approach in high-risk pregnant women in southern Brazil. *J Infect Dev Ctries.* 2020 Apr 30;14(4):332–40. doi:10.3855/jidc.12025 PubMed PMID: 32379709.
15. Nielsen SY, Møller JK, Khalil MR. A comparison of GenomEra® GBS PCR and GeneXpert® GBS PCR assays with culture of GBS performed with and without broth pre-enrichment. *Eur J Clin Microbiol Infect Dis Off Publ Eur Soc Clin Microbiol.* 2020 Oct;39(10):1945–50. doi:10.1007/s10096-020-03934-4 PubMed PMID: 32535806; PubMed Central PMCID: PMC7497322.
16. Dakin A, Ferguson W, Drew R, McCallion N, Higgins MF, Eogan M. Assessing standards for prevention of early onset group B streptococcal (GBS) disease in Ireland. *Ir J Med Sci.* 2022

Apr;191(2):785–91. doi:10.1007/s11845-021-02639-7 PubMed PMID: 33988805; PubMed Central PMCID: PMC8120250.

17. Thwe PM, Faron ML, Pride DT, Cruz A, Gerstbrein D, Nahmod KA, et al. Multicenter Evaluation of the Cepheid Xpert GBS LB XC Test. *J Clin Microbiol.* 2022 Dec 21;60(12):e0135622. doi:10.1128/jcm.01356-22 PubMed PMID: 36472424; PubMed Central PMCID: PMC9769564.
18. Koliwer-Brandl H, Nil A, Birri J, Sachs M, Zimmermann R, Zbinden R, et al. Evaluation of two rapid commercial assays for detection of *Streptococcus agalactiae* from vaginal samples. *Acta Obstet Gynecol Scand.* 2023 Apr;102(4):450–6. doi:10.1111/aogs.14519 PubMed PMID: 36772902; PubMed Central PMCID: PMC10008276.
19. d’Otreppe S, Lefèvre P, Meex C, Devey A, Sacheli R, Gerard M, et al. Multicenter Performance Evaluation of the Revogene® GBS DS Real-Time PCR Assay for Group B *Streptococcus* Detection During Labor. *Mol Diagn Ther.* 2023 Sep;27(5):611–20. doi:10.1007/s40291-023-00660-3 PubMed PMID: 37470972.
20. Guetat C, Roussel L, De Antonio M, Accoceberry M, Houle C, Petillon F, et al. Does delocalised PCR for *Streptococcus B* in the labour ward allow adequate administration of antibiotics to prevent early neonatal infection? *Braz J Infect Dis Off Publ Braz Soc Infect Dis.* 2025;29(4):104553. doi:10.1016/j.bjid.2025.104553 PubMed PMID: 40413980; PubMed Central PMCID: PMC12159896.
21. Li T, Chen S, Chen X, Yang S, Huang H, Xu J, et al. CRISPR-based sensing platform for the Group B *streptococcus* screening in pregnant women. *Anal Chim Acta.* 2025 Oct 8;1370:344390. doi:10.1016/j.aca.2025.344390 PubMed PMID: 40750194.