

Supplementary materials for the article:
 Zhang C. et al. Evaluation of Cell-Free DNA-Based Next-Generation Sequencing for
 Identifying Pathogens in Bacteremia Patients.
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Table SI
 Clinical diagnosis and blood culture results.

Sample	Age (years), gender	Group	Diagnosis	Blood culture result	NGS consistency with BC (or clinical adjudication*)
A1	44, male	NGS ⁺ /BC ⁺	Biliary tract infection and sepsis	<i>Escherichia coli</i>	Yes
A2	34, male	NGS ⁺ /BC ⁺	Urinary tract infection and sepsis	<i>Escherichia coli</i>	Yes
A3	35, female	NGS ⁺ /BC ⁺	Urinary tract infection and sepsis	<i>Escherichia coli</i>	Yes
A4	56, male	NGS ⁺ /BC ⁺	Infective endocarditis and sepsis	<i>Streptococcus</i>	No
A5	46, male	NGS ⁺ /BC ⁺	Urinary system infection and sepsis	<i>Escherichia coli</i>	Yes
A6	39, female	NGS ⁻ /BC ⁺	Biliary tract infection and sepsis	<i>Escherichia coli</i>	No
A7	78, male	NGS ⁺ /BC ⁺	Liver abscess and sepsis	<i>Klebsiella pneumoniae</i>	Yes
A8	57, male	NGS ⁺ /BC ⁺	Biliary tract infection and sepsis	<i>Klebsiella pneumoniae</i>	No
A9	64, male	NGS ⁺ /BC ⁺	Septic shock	<i>Enterobacter cloacae</i> <i>Stenotrophomonas</i> <i>maltophilia</i>	Yes
A10	68, female	NGS ⁻ /BC ⁺	Malignant melanoma and sepsis	<i>Escherichia coli</i>	No
A11	54, male	NGS ⁺ /BC ⁺	Acute promyelocytic leukemia and sepsis	<i>Streptococcus</i> <i>dysgalactiae</i>	Yes
A12	75, male	NGS ⁺ /BC ⁺	Urinary system infection and sepsis	<i>Escherichia coli</i>	Yes
A13	55, female	NGS ⁺ /BC ⁺	Liver abscess and sepsis	<i>Klebsiella pneumoniae</i>	Yes
A14	68, female	NGS ⁺ /BC ⁺	Lumbar intervertebral infection and sepsis	<i>Staphylococcus aureus</i>	Yes
A15	55, male	NGS ⁺ /BC ⁺	Sepsis	<i>Escherichia coli</i>	Yes
A16	63, female	NGS ⁺ /BC ⁺	Liver abscess and sepsis	<i>Klebsiella pneumoniae</i>	Yes
A17	42, male	NGS ⁺ /BC ⁺	Liver abscess and sepsis	<i>Klebsiella pneumoniae</i>	Yes

Sample	Age (years), gender	Group	Diagnosis	Blood culture result	NGS consistency with BC (or clinical adjudication*)
A18	61, male	NGS ⁺ /BC ⁺	Sepsis	<i>Klebsiella aerogenes</i>	Yes
A19	58, female	NGS ⁻ /BC ⁺	Urinary system infection and sepsis	<i>Escherichia coli</i>	No
A20	66, female	NGS ⁺ /BC ⁺	Spontaneous peritonitis and sepsis	<i>Escherichia coli</i>	Yes
A21	71, male	NGS ⁺ /BC ⁺	Biliary tract infection and sepsis	<i>Klebsiella aerogenes</i>	Yes
A22	72, male	NGS ⁺ /BC ⁺	Septic shock	<i>Klebsiella pneumoniae</i>	Yes
A23	51, female	NGS ⁺ /BC ⁺	Acute promyelocytic leukemia and septicemia	<i>Staphylococcus aureus</i>	Yes
A24	59, male	NGS ⁻ /BC ⁺	Sepsis	<i>Escherichia coli</i>	Yes
A25	60, male	NGS ⁺ /BC ⁺	Secondary peritonitis and sepsis	<i>Pseudomonas aeruginosa</i>	Yes
A26	67, female	NGS ⁻ /BC ⁺	Urinary tract infection and sepsis	<i>Escherichia coli</i>	No
A27	66, female	NGS ⁻ /BC ⁺	Urinary system infection and sepsis	<i>Klebsiella pneumoniae</i>	Yes
A28	71, male	NGS ⁺ /BC ⁺	Sepsis and acute pyelonephritis	<i>Escherichia coli</i>	Yes
A29	63, female	NGS ⁺ /BC ⁺	Sepsis and acute pyelonephritis	<i>Escherichia coli</i>	Yes
A30	56, female	NGS ⁺ /BC ⁺	Sepsis and acute pyelonephritis	<i>Escherichia coli</i>	Yes
A31	72, male	NGS ⁺ /BC ⁺	Septic shock	<i>Klebsiella pneumoniae</i>	Yes
A32	68, female	NGS ⁺ /BC ⁺	Liver abscess and sepsis	<i>Klebsiella pneumoniae</i>	Yes
A33	67, male	NGS ⁺ /BC ⁺	Septicemia	<i>Escherichia coli</i>	Yes
A34	78, female	NGS ⁺ /BC ⁺	Urinary tract infection and sepsis	<i>Escherichia coli</i>	Yes
A35	68, female	NGS ⁻ /BC ⁺	Liver abscess and sepsis	<i>Klebsiella pneumoniae</i>	Yes
A36	65, male	NGS ⁻ /BC ⁺	Sepsis, pneumonia and herpes zoster	<i>Enterococcus faecalis</i>	No
A37	54, male	NGS ⁻ /BC ⁺	Sepsis	<i>Escherichia coli</i>	No
A38	45, female	NGS ⁺ /BC ⁺	Acute appendicitis and sepsis	<i>Klebsiella pneumoniae</i>	Yes
A39	57, male	NGS ⁺ /BC ⁺	Sepsis	<i>Staphylococcus aureus</i>	Yes
A40	61, female	NGS ⁻ /BC ⁺	Sepsis	<i>Staphylococcus aureus</i>	Yes
A41	73, female	NGS ⁺ /BC ⁺	Sepsis	<i>Escherichia coli</i>	Yes
A42	69, male	NGS ⁻ /BC ⁺	Biliary tract infection and sepsis	<i>Pseudomonas aeruginosa</i>	Yes

Sample	Age (years), gender	Group	Diagnosis	Blood culture result	NGS consistency with BC (or clinical adjudication*)
A43	58, male	NGS ⁺ /BC ⁺	Sepsis	<i>Acinetobacter baumannii</i>	Yes
A44	87, female	NGS ⁺ /BC ⁺	Sepsis	<i>Enterobacter cloacae</i>	Yes
A45	76, male	NGS ⁺ /BC ⁺	Sepsis	<i>Klebsiella pneumoniae</i>	Yes
A46	67, male	NGS ⁺ /BC ⁺	Sepsis and perirenal soft tissue infection	<i>Streptococcus pneumoniae</i>	Yes
A47	72, male	NGS ⁻ /BC ⁺	Sepsis and acute biliary tract infection	<i>Escherichia coli</i>	Yes
A48	71, male	NGS ⁺ /BC ⁺	Lung abscess, sepsis and cellulitis	<i>Staphylococcus aureus</i>	Yes
A49	54, female	NGS ⁺ /BC ⁺	Sepsis	<i>Klebsiella pneumoniae</i>	Yes
A50	75, female	NGS ⁺ /BC ⁺	Urinary tract infection, pneumonia and septic shock	<i>Escherichia coli</i>	Yes
A51	65, male	NGS ⁻ /BC ⁻	Urinary tract infection and sepsis	negative	-
A52	35, male	NGS ⁺ /BC ⁻	Sepsis	negative	<i>Haemophilus influenzae</i> , “consistent” with clinical manifestation due to that it’s commonly found for respiratory tract infection
A53	67, male	NGS ⁻ /BC ⁻	Sepsis	negative	-
A54	46, female	NGS ⁺ /BC ⁻	Liver abscess and sepsis	negative	<i>Klebsiella pneumoniae</i> , “consistent” due to that it’s commonly found for liver abscess
A55	58, male	NGS ⁻ /BC ⁻	Liver cancer, pneumonia and sepsis	negative	-
A56	66, male	NGS ⁺ /BC ⁻	Sepsis	negative	<i>Staphylococcus aureus</i> , “consistent” due to that it’s commonly found for soft tissue infection
A57	75, male	NGS ⁻ /BC ⁻	Cerebral infarction and sepsis	negative	-

Sample	Age (years), gender	Group	Diagnosis	Blood culture result	NGS consistency with BC (or clinical adjudication*)
A58	65, female	NGS ⁺ /BC ⁻	Sepsis	negative	<i>Enterococcus faecalis</i> , “consistent” due to that it’s commonly found for UTI
A59	78, female	NGS ⁻ /BC ⁻	Sepsis	negative	-
A60	69, female	NGS ⁺ /BC ⁻	Urinary tract infection with septic shock	negative	<i>Escherichia coli</i> , “consistent” due to that it’s commonly found for UTI
A61	67, male	NGS ⁺ /BC ⁻	Sepsis	negative	<i>Klebsiella pneumoniae</i> , “consistent” due to that it’s commonly found for liver abscess
A62	54, male	NGS ⁻ /BC ⁻	Sepsis	negative	-
A63	75, female	NGS ⁻ /BC ⁻	Sepsis	negative	-
A64	72, female	NGS ⁻ /BC ⁻	Sepsis	negative	-
A65	79, male	NGS ⁻ /BC ⁻	Liver cirrhosis and sepsis	negative	-
A66	76, male	NGS ⁻ /BC ⁻	Urinary tract infection and sepsis	negative	-
A67	58, male	NGS ⁻ /BC ⁻	Sepsis	negative	-
A68	68, female	NGS ⁺ /BC ⁻	Sepsis	negative	<i>Staphylococcus aureus</i> , “consistent” due to that it’s commonly found for soft tissue infection
A69	63, female	NGS ⁻ /BC ⁻	Urinary system infection and sepsis	negative	-
A70	81, male	NGS ⁻ /BC ⁻	Septic shock	negative	-
A71	73, male	NGS ⁻ /BC ⁻	Sepsis	negative	-
A72	69, female	NGS ⁺ /BC ⁻	Sepsis	negative	<i>Enterococcus faecalis</i> , “consistent” due to that it’s commonly found for abdominal infection.
A73	77, female	NGS ⁻ /BC ⁻	Sepsis	negative	-

Sample	Age (years), gender	Group	Diagnosis	Blood culture result	NGS consistency with BC (or clinical adjudication*)
A74	71, male	NGS ⁺ /BC ⁻	Urinary tract infections and sepsis	negative	<i>Enterococcus faecalis</i> , “consistent” due to that it’s commonly found for UTI
A75	67, male	NGS ⁻ /BC ⁻	Sepsis	negative	-
A76	66, female	NGS ⁻ /BC ⁻	Urinary tract infection and sepsis	negative	-
A77	60, female	NGS ⁻ /BC ⁻	Sepsis	negative	-
A78	77, male	NGS ⁻ /BC ⁻	Sepsis	negative	-
A79	76, male	NGS ⁺ /BC ⁻	Sepsis	negative	<i>Streptococcus pneumoniae</i> , “consistent” with clinical manifestation due to that it’s commonly found for respiratory tract infection
A80	62, male	NGS ⁻ /BC ⁻	Chronic myeloid leukemia and sepsis	negative	-
A81	26, female	NGS ⁻ /BC ⁻	Sepsis	negative	-
A82	48, male	NGS ⁺ /BC ⁻	Sepsis	negative	<i>Klebsiella pneumoniae</i> , “consistent” due to that it’s commonly found for abdominal infection
A83	69, male	NGS ⁻ /BC ⁻	Acute tonsillitis and sepsis	negative	-
A84	55, male	NGS ⁻ /BC ⁻	Sepsis	negative	-
A85	76, female	NGS ⁻ /BC ⁻	Sepsis	negative	-
A86	83, male	NGS ⁺ /BC ⁻	Neonatal sepsis	negative	<i>Streptococcus pneumoniae</i> , “consistent” with clinical manifestation due to that it’s commonly found for respiratory tract infection

Sample	Age (years), gender	Group	Diagnosis	Blood culture result	NGS consistency with BC (or clinical adjudication*)
A87	55, female	NGS ⁺ /BC ⁻	Sepsis	negative	<i>Escherichia coli</i> , “consistent” due to that it’s commonly found for abdominal infection
A88	73, male	NGS ⁺ /BC ⁻	Sepsis	negative	-
A89	55, female	NGS ⁻ /BC ⁻	Sepsis	negative	-
A90	38, female	NGS ⁻ /BC ⁻	Acute gastroenteritis complicated with septicemia	negative	-
A91	44, female	NGS ⁻ /BC ⁻	Sepsis	negative	-
A92	58, male	NGS ⁺ /BC ⁻	Septicemia	negative	<i>Escherichia coli</i> , “consistent” due to that it’s commonly found for abdominal infection
A93	68, female	NGS ⁺ /BC ⁻	Septicemia and hydronephrosis	negative	<i>Klebsiella pneumoniae</i> , “consistent” due to that it’s commonly found for hydronephrosis
A94	51, male	NGS ⁺ /BC ⁻	Sepsis	negative	<i>Staphylococcus aureus</i> , “consistent” due to that it’s commonly found for soft tissue infection
A95	85, male	NGS ⁺ /BC ⁻	Sepsis	negative	-
A96	56, female	NGS ⁻ /BC ⁻	Sepsis	negative	-
A97	71, male	NGS ⁻ /BC ⁻	Sepsis	negative	-
A98	44, male	NGS ⁻ /BC ⁻	Sepsis	negative	-
A99	76, male	NGS ⁺ /BC ⁻	Acute pyelonephritis and sepsis	negative	<i>Escherichia coli</i> , “consistent” due to that it’s commonly found for UTI
A100	67, female	NGS ⁺ /BC ⁻	Sepsis	negative	-
A101	83, male	NGS ⁻ /BC ⁻	Periamygdalitis, sepsis	negative	-
A102	63, female	NGS ⁻ /BC ⁻	Periamygdalitis, sepsis	negative	-
A103	46, male	NGS ⁻ /BC ⁻	Sepsis	negative	-
A104	55, female	NGS ⁻ /BC ⁻	Sepsis	negative	-
A105	71, male	NGS ⁺ /BC ⁻	Sepsis	negative	-

Sample	Age (years), gender	Group	Diagnosis	Blood culture result	NGS consistency with BC (or clinical adjudication*)
A106	76, female	NGS ⁻ /BC ⁻	Sepsis	negative	-
A107	78, male	NGS ⁻ /BC ⁻	Sepsis	negative	-
A108	68, female	NGS ⁺ /BC ⁻	Urinary system infection and pneumonia	negative	-
A109	76, male	NGS ⁺ /BC ⁻	Septicemia and hospital-acquired pneumonia	negative	<i>Klebsiella pneumoniae</i> agreement, “consistent” due to that it’s commonly found for hospital-acquired infection
A110	86, male	NGS ⁻ /BC ⁻	Sepsis	negative	-
A111	48, female	NGS ⁺ /BC ⁻	Sepsis	negative	<i>Streptococcus dysgalactiae</i> , “consistent” due to that it’s commonly found for soft tissue infection
A112	41, male	NGS ⁺ /BC ⁻	Liver abscess and sepsis	negative	<i>Klebsiella pneumoniae</i> , “consistent” due to that it’s commonly found for liver abscess
A113	67, female	NGS ⁺ /BC ⁻	Sepsis	negative	<i>Streptococcus sanguinis</i> , “consistent” with clinical manifestation due to that it’s reported with subacute endocarditis
A114	73, male	NGS ⁻ /BC ⁻	Sepsis	negative	-

* – NGS⁺/BC⁻ samples, pathogen results were combined with symptoms and infectious lesions and assessed by three clinicians

BC – blood culture, NGS – cell-free DNA metagenomics next-generation sequencing,

+ – positive, - – negative

Table SII

The consistency of bacterial species identified by BC and mNGS.

Pathogens	BC ⁺		consistency	BC ⁻
	BC	mNGS		mNGS
<i>Escherichia coli</i>	21	21	16	8
<i>Klebsiella pneumoniae</i>	13	19	12	16
<i>Staphylococcus aureus</i>	5	7	5	8
<i>Klebsiella aerogenes</i>	2	2	2	0
<i>Enterobacter cloacae</i>	2	4	1	2
<i>Stenotrophomonas maltophilia</i>	1	2	1	2

BC – blood culture, mNGS – cell-free DNA metagenomics next-generation sequencing

Table SIII

Viruses detected by mNGS in this study.

Virus	Group	
	BC ⁺	BC ⁻
Torque teno virus (TTV)	12	11
Human herpesvirus 4 (EBV)	16	4
Human endogenous retrovirus	5	6
Human herpesvirus 1	6	3
Human herpesvirus 5	2	2
Hepatitis B virus (HBV)	1	1
Human polyomavirus 2	2	0

BC – blood culture, mNGS – cell-free DNA metagenomics next-generation sequencing