

Supplementary table 1. Studies assessing the performance of serum and bronchoalveolar fluid galactomannan for the diagnosis of IPA in critically ill patients with existing definitions as reference

Diagnostic performance of serum GM										
Study	Design	Type of IPA #	Sensitivity %	Specificity %	PPV %	NPV %	LR+	LR-	DOR	Population
GM cut-off	Timeline	IPA prevalence ##	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	
	Reference	N/total (%)								
Janssen et al., 2021* [1]	Observational Prospective ECMM/ISHAM criteria for CAPA [2]	Proven/probable/possible CAPA Discovery cohort 42/279 (15) Validation cohort 21/209 (10)								ICU patients with COVID-19
0.5 OD (Discovery cohort)			11 (2-28)	100 (98-100)	100 (29-100)	86 (79-90)	Infinite	0.9 (0.8-1.0)	Infinite	
0.5 OD (Validation cohort)			22 (6-48)	100 (98-100)	100 (40-100)	92 (86-95)	Infinite	0.8 (0.6-1.0)	Infinite	
Lahmer et al., 2021** [3]	Observational Prospective Modified AspICU (see the original	Proven/putative 11/32 (34)								Critically ill patients with severe COVID-19 pneumonia

	publication for details)								
0.5 OD			36 (NA-NA)	100 (NA-NA)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)
Levesque et al., 2019* [4]	Observational Retrospective AspICU criteria [5]	Proven/putative IPA vs. colonization 12/42 (29)							Cirrhotic patients hospitalized in ICU
Positive (no cut-off reported)			83 (52-98)	87 (69-96)	71 (42-92)	93 (76-99)	6.3 (2.4-16.1)	0.2 (0.1-0.7)	32.5 (NA-NA)
Prattes et al., 2021* [6]	Observational Prospective ECMM/ISHAM criteria for CAPA [2]	Proven/probable/po ssible CAPA 109/592 (18)							ICU patients with COVID- 19
0.5 OD			19 (11-29)	99 (97-100)	94 (71-100)	73 (68-79)	36.1 (4.9-268.1)	0.8 (0.7-0.9)	44.3 (NA-NA)

Yu et al., 2019*** [7]	Observational Prospective EORTC/MSG 2008 [8]	Proven/probable vs. possible 78/184 (42)								Nonneutropenic ICU patients with at least possible IPA
0.5 OD			83 (73-91)	47 (38-57)	51 (42-60)	81 (70-90)	1.6 (1.3-1.9)	0.4 (0.2-0.6)	4.5 (NA-NA)	
0.87 OD			64 (NA-NA)	81 (NA-NA)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)	
1.0 OD			55 (43-66)	82 (74-89)	67 (54-78)	73 (65-81)	3.1 (2.0-4.8)	0.6 (0.4-0.7)	5.7 (NA-NA)	

Diagnostic performance of BALF GM

Study	Design	Type of IPA #	Sensitivity %	Specificity %	PPV %	NPV %	LR+	LR-	DOR	Population
GM cut-off	Timeline	IPA prevalence ##	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	
	Reference	N/total (%)								
Janssen et al., 2021* [1]	Observational Prospective ECMM/ISHAM criteria for CAPA [2]	Proven/probable/po ssible CAPA Discovery cohort 42/279 (15) Validation cohort 21/209 (10)								ICU patients with COVID- 19

1.0 OD (Discovery cohort)	78 (62-89)	100 (97-100)	100 (89-100)	93 (88-97)	Infinite	0.2 (0.1-0.4)	Infinite
1.0 OD (Validation cohort)	62 (38-82)	100 (96-100)	100 (75-100)	93 (86-97)	Infinite	0.4 (0.2-0.7)	Infinite

Jenks et al., 2019*** [9]	Observational Prospective Modified AspICU (see the original publication for details)	Proven/putative 26/82 (32)						Mixed wards (ICU, other). Non-hematological patients
0.5 OD	92 (75-99)	73 (60-84)	62 (45-77)	95 (84-99)	3.5 (2.2-5.4)	0.1 (0.0-0.4)	32.8 (NA-NA)	
1.0 OD	85 (65-96)	88 (76-95)	76 (56-90)	92 (82-98)	6.8 (3.3-13.8)	0.2 (0.1-0.4)	38.5 (NA-NA)	
Lahmer et al., 2021** [3]	Observational Prospective	Proven/putative 11/32 (34)						Critically ill patients with severe COVID-19 pneumonia

	Modified AspICU (see the original publication for details)								
1.0 OD			95 (NA-NA)	87 (NA-NA)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)
Mikulska et al., 2022*** [10]	Observational Retrospective ECMM/ISHAM criteria for CAPA [2]	Proven/probable CAPA 15/59 (25)							ICU patients with COVID-19
1.0 OD			93 (68-100)	100 (92-100)	100 (77-100)	98 (88-100)	Infinite	0.1 (0.0-0.4)	Infinite
Prattes et al., 2021* [6]	Observational Prospective ECMM/ISHAM criteria for CAPA [2]	Proven/probable/possible CAPA 109/592 (18)							ICU patients with COVID-19
1.0 OD			77 (67-86)	98 (94-99)	94 (86-98)	90 (84-94)	32.8 (12.4-86.9)	0.2 (0.2-0.4)	139.8 (NA-NA)

Yu et al., 2019*** [7]	Observational Prospective EORTC/MSG 2008 [8]	Proven/probable vs. possible 78/184 (42)							Nonneutropenic ICU patients with at least possible IPA
0.5 OD		79 (69-88)	60 (51-69)	57 (47-66)	82 (72-89)	2.0 (1.6-2.6)	0.3 (0.2-0.5)	5.6 (NA-NA)	
0.8 OD		76 (65-85)	86 (78-91)	78 (67-86)	84 (76-90)	5.3 (3.3-8.3)	0.3 (0.2-0.4)	18.4 (NA-NA)	
0.86 OD		74 (NA-NA)	88 (NA-NA)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)	
1.0 OD		58 (46-69)	95 (89-98)	88 (66-96)	77 (70-84)	11.4 (5.0-25.3)	0.5 (0.3-0.6)	25.5 (NA-NA)	
1.5 OD		26 (16-37)	100 (97-100)	100 (83-100)	67 (60-74)	Infinite	0.7 (0.7-0.9)	Infinite	
2.0 OD		14 (7-24)	100 (97-100)	100 (72-100)	64 (56-71)	Infinite	0.9 (0.8-0.9)	Infinite	
2.94 OD (Corrected by urea dilution)		86 (NA-NA)	94 (NA-NA)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)	

3.0 OD	5 (1-13)	100 (97-100)	100 (40-100)	61 (54-68)	Infinite	1.0 (0.9-1.0)	Infinite
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Diagnostic performance of TA GM

Study	Design	Type of IPA #	Sensitivity % (95% CI)	Specificity % (95% CI)	PPV % (95% CI)	NPV % (95% CI)	LR+ (95% CI)	LR- (95% CI)	DOR (95% CI)	Population
GM cut-off	Timeline	IPA prevalence ## N/total (%)								
	Reference									
Roman-Montes et al., 2021** [11]	Observational Retrospective Modified AspICU (see the original publication for details)	Proven/putative 14/144 (10)								ICU patients with COVID-19
2.0 OD			57 (29-82)	82 (74-88)	25 (16-37)	95 (91-97)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)	

BALF, bronchoalveolar lavage fluid; CAPA, coronavirus disease 2019-associated pulmonary aspergillosis; CI, confidence intervals; DOR, diagnostic odds ratio; ECMM, European Confederation of Medical Mycology; EORTC/MSG, European Organization for Research and Treatment of Cancer/Invasive Fungal Infections Cooperative Group and the National Institute of Allergy and Infectious Diseases Mycoses Study Group; GM, galactomannan; ICU, intensive care unit; IPA, invasive pulmonary aspergillosis; ISHAM, International Society for Human and Animal Mycology; NA, not available; LR-, negative likelihood ratio; LR+, positive likelihood ratio; NPV, negative predictive value; OD, optical density; PPV, positive predictive value; TA, tracheal aspirate.

* Diagnostic performance parameters and 95% CI calculated for the present systematic review from data included in the original publication.

** Diagnostic performance parameters and 95% CI directly available in the original publication are presented.

*** Diagnostic performance parameters and 95% CI partly available in the original publication and partly calculated for this systematic review from data included in the original publication.

Type of IA defining the reference positivity (e.g., proven/probable = proven and probable classified as IPA vs. possible and other patients classified as non-IPA, proven/probable/possible = proven and probable and possible classified as IPA vs. other patients classified as non-IPA)

Number of IPA patients according to the reference positivity (see #)/Number of IPA patients plus non-IPA patients.

Supplementary table 2. Studies assessing the performance of laboratory tests other than galactomannan for the diagnosis of IPA in critically ill patients with existing definitions as reference

Diagnostic performance of respiratory cultures										
Study	Design	Type of IPA #	Sensitivity %	Specificity %	PPV %	NPV %	LR+	LR-	DOR	Population
Type of culture	Timeline	IPA prevalence ##	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	
	Reference	N/total (%)								
Janssen et al., 2021* [1]	Observational Prospective ECMM/ISHAM criteria for CAPA [2]	Proven/probable/possible CAPA Discovery cohort 42/279 (15) Validation cohort 21/209 (10)								ICU patients with COVID-19
BALF culture (Discovery cohort)			41 (26-58)	100 (97-100)	100 (80-100)	84 (77-89)	Infinite	0.6 (0.5-0.8)	Infinite	
BALF culture (Validation cohort)			52 (30-74)	100 (97-100)	100 (72-100)	92 (86-96)	Infinite	0.5 (0.3-0.8)	Infinite	
Jenks et al., 2019*** [9]	Observational Prospective Modified AspICU (see the original)	Proven/putative 26/82 (32)								Mixed wards (ICU, other). Non- hematological patients

	publication for details)								
BALF culture			35 (17-56)	95 (85-99)	75 (43-95)	76 (64-85)	6.5 (1.9-21.9)	0.7 (0.5-0.9)	9.4 (NA-NA)
Lahmer et al., 2021** [3]	Observational Prospective Modified AspICU (see the original publication for details)	Proven/putative 11/32 (34)							Critically ill patients with severe COVID-19 pneumonia
BALF culture			82 (NA-NA)	100 (NA-NA)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)
Prattes et al., 2021* [6]	Observational Prospective ECMM/ISHAM criteria for CAPA [2]	Proven/probable/possible CAPA 109/592 (18)							ICU patients with COVID-19
BALF culture			53 (42-64)	100 (98-100)	100 (92-100)	82 (76-87)	Infinite	0.5 (0.4-0.6)	Infinite

Diagnostic performance of serum BDG										
Study	Design	Type of IPA #	Sensitivity %	Specificity %	PPV %	NPV %	LR+	LR-	DOR	Population
BDG cut-off	Timeline	IPA prevalence ##	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	
	Reference	N/total (%)								
Janssen et al., 2021* [1]	Observational Prospective ECMM/ISHAM criteria for CAPA [2]	Proven/probable/possible CAPA 21/209 (10)								ICU patients with COVID-19
80 pg/ml			42 (20-67)	82 (75-88)	22 (10-38)	92 (87-96)	2.3 (1.3-4.3)	0.7 (0.5-1.0)	3.3 (NA-NA)	
Yu et al., 2019** [7]	Observational Prospective EORTC/MSG 2008 [8]	Proven/probable vs. possible 78/184 (42)								Nonneutropenic ICU patients with at least possible IPA
68.23 pg/ml			91 (NA-NA)	66 (NA-NA)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)	
Diagnostic performance of BALF LFD										

Study	Design	Type of IPA #	Sensitivity %	Specificity %	PPV %	NPV %	LR+	LR-	DOR	Population
	Timeline	IPA prevalence ##	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	
	Reference	N/total (%)								
Jenks et al., 2019** [9]	Observational	Proven/putative								Mixed wards (ICU, other). Non-hematological patients
	Prospective	26/82 (32)								
	Modified AspICU (see the original publication for details)									
Positive LFD (Read after 15 min)			58 (37-77)	75 (62-86)	52 (33-71)	79 (66-89)	2.3 (1.3-4.0)	0.6 (0.4-0.9)	4.1 (NA-NA)	
Positive LFD (Read after 25 min)			69 (48-86)	71 (58-83)	53 (35-70)	83 (70-93)	2.4 (1.5-3.9)	0.4 (0.2-0.8)	5.6 (NA-NA)	
Scharmann et al., 2020** [12]	Observational	Proven/putative (AspICU)								Mixed (mostly ICU, non-hematological patients)
	Prospective	27/154 (16)								
	AspICU [5]	Proven/putative (modified AspICU)								
	Modified AspICU (see the original publication for details)	111/175 (63)								
	EORTC/MSGERC 2020 [13]	Proven/probable (EORTC/MSGERC)	30/101 (30)							
Modified AspICU with	Proven/putative (modified Asp/ICU with									

GM \geq 1 as entry criterion GM \geq 1 as entry criterion)

56/177 (32)

Positive LFD (AspICU)	89 (71-98)	55 (47-63)	27 (23-31)	96 (90-99)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)
Positive LFD (Modified AspICU)	69 (59-77)	67 (54-78)	78 (71-84)	55 (47-63)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)
Positive LFD (EORTC/MSGERC)	73 (54-88)	49 (37-61)	38 (31-46)	81 (70-89)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)
Positive LFD (Modified AspICU with GM \geq 1 as entry criterion)	61 (47-74)	47 (38-56)	35 (29-41)	72 (64-79)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)

Diagnostic performance of BALF GM-LFA

Study	Design	Type of IPA #	Sensitivity %	Specificity %	PPV %	NPV %	LR+	LR-	DOR	Population
GM-LFA cut-off	Timeline	IPA prevalence ##	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	
	Reference	N/total (%)								

Jenks et al., 2019*** [9]	Observational Prospective Modified AspICU (see the original publication for details)	Proven/putative 26/82 (32)							Mixed wards (ICU, other). Non- hematological patients
Positive (no cut-off reported)			65 (44-83)	68 (54-80)	49 (31-66)	81 (67-91)	2.0 (1.3-3.3)	0.5 (0.3-0.9)	4.0 (NA-NA)
Jenks et al., 2021*** [14]	Observational Retrospective Modified AspICU (see the original publication for details)	Proven/putative 44/153 (29)							Mixed wards (ICU, other). Non- hematological patients
0.5 OD			86 (73-95)	48 (38-57)	40 (30-51)	90 (79-96)	1.7 (1.3-2.1)	0.3 (0.1-0.6)	5.8 (NA-NA)
1.0 OD			80 (65-90)	75 (66-83)	56 (43-69)	90 (82-95)	3.2 (2.2-4.6)	0.3 (0.2-0.5)	11.8 (NA-NA)
1.5 OD			73 (57-85)	83 (75-90)	64 (49-77)	88 (81-94)	4.4 (2.8-7.0)	0.3 (0.2-0.5)	13.5 (NA-NA)

2.0 OD	70	84	65	88	4.5	0.4	12.9
	(55-83)	(76-91)	(49-78)	(80-93)	(2.8-7.3)	(0.2-0.6)	(NA-NA)

Scharmann et al., 2020** [12]	Observational Prospective AspICU [5] Modified AspICU (see the original publication for details) EORTC/MSGE RC 2020 [13] Modified AspICU with GM ≥ 1 as entry criterion	Proven/putative (AspICU) 27/154 (16) Proven/putative (modified AspICU) 111/175 (63) Proven/probable (EORTC/MSGERC) 30/101 (30) Proven/putative (modified Asp/ICU with GM ≥ 1 as entry criterion) 56/177 (32)						Mixed (mostly ICU, non-hematological patients)
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1.0 OD (AspICU)	93	46	25	97	NA	NA	NA
	(78-99)	(38-54)	(22-29)	(90-99)	(NA-NA)	(NA-NA)	(NA-NA)

1.0 OD (Modified AspICU)	85	73	84	75	NA	NA	NA
	(78-91)	(61-83)	(78-89)	(65-83)	(NA-NA)	(NA-NA)	(NA-NA)

1.0 OD (EORTC/MSGERC)	87	51	42	91	NA	NA	NA
	(70-96)	(39-62)	(35-48)	(79-96)	(NA-NA)	(NA-NA)	(NA-NA)

1.0 OD (Modified AspICU with GM \geq 1 as entry criterion)	80 (67-89)	45 (36-54)	40 (35-45)	83 (74-89)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)
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Diagnostic performance of TA GM-LFA

Study	Design	Type of IA #	Sensitivity %	Specificity %	PPV %	NPV %	LR+	LR-	DOR	Population
GM-LFA cut-off	Timeline	IA prevalence ##	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	
	Reference	N/total (%)								
Roman-Montes et al., 2021** [11]	Observational Retrospective Modified AspICU (see the original publication for details)	Proven/putative 14/144 (10)								ICU patients with COVID-19
2.0 OD			60 (26-88)	73 (63-81)	19 (11-30)	95 (89-97)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)	

Diagnostic performance of BALF PCR

Study	Design	Type of IPA #	Sensitivity %	Specificity %	PPV %	NPV %	LR+	LR-	DOR	Population
Type of PCR	Timeline	IPA prevalence ##	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	
	Reference	N/total (%)								

Janssen et al., 2021* [1]	Observational Prospective ECMM/ISHAM criteria for CAPA [2]	Proven/probable/possible CAPA Discovery cohort 42/279 (15) Validation cohort 21/209 (10)							ICU patients with COVID-19
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Positive PCR (Discovery cohort)	17 (7-32)	97 (92-99)	64 (31-89)	78 (71-84)	5.3 (1.6-17.3)	0.9 (0.7-1.0)	6.2 (NA-NA)
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Positive PCR (Validation cohort)	53 (27-79)	100 (93-100)	100 (73-100)	88 (76-95)	Infinite	0.5 (0.3-0.8)	Infinite
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Mikulska et al., 2022*** [10]	Observational Retrospective ECMM/ISHAM criteria for CAPA [2]	Proven/probable 15/59 (25)							ICU patients with COVID-19
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AsperGenius®	40 (16-68)	98 (88-100)	86 (42-100)	83 (70-92)	17.6 (2.3-134.6)	0.6 (0.4-0.9)	28.7 (NA-NA)
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Diagnostic performance of tests combinations

Study	Design	Type of IPA #	Sensitivity %	Specificity %	PPV %	NPV %	LR+	LR-	DOR	Population
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Type of tests (cut-off)	Timeline Reference [#]	IPA prevalence ^{##} N/total (%)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)
Giacobbe et al., 2022* [15]	Observational Prospective ECMM/ISHAM criteria for CAPA [2]	Proven/probable/possible CAPA 56/218 (26)							ICU patients with COVID-19
BALF GM (1.0 OD) and/or positive BALF culture			100 (94-100)	98 (94-99)	93 (84-98)	100 (98-100)	40.5 (15.4-106.6)	NA (NA-NA)	Infinite
BALF GM (1.0 OD) and positive BALF culture			50 (36-64)	100 (98-100)	100 (88-100)	85 (79-90)	Infinite	0.5 (0.4-0.7)	Infinite
Jenks et al., 2019*** [9]	Observational Prospective Modified AspICU (see the original publication for details)	Proven/putative 26/82 (32)							Mixed wards (ICU, other). Non- hematological patients
Positive BALF LFD (Read after 15 min)			77 (56-91)	64 (50-77)	50 (34-66)	86 (71-95)	2.2 (1.4-3.2)	0.4 (0.2-0.7)	6.0 (NA-NA)

and/or positive

BALF GM-LFA

Positive BALF LFD

(Read after 25 min)

and/or positive

BALF GM-LFA

81	61	49	87	2.1	0.3	6.5
(61-93)	(47-74)	(33-65)	(73-96)	(1.4-3.0)	(0.1-0.7)	(NA-NA)

Mikulska et al.,
2022*** [10]

Observational Proven/probable
Retrospective 15/59 (25)
ECMM/ISHAM
criteria for
CAPA [2]

ICU patients with
COVID-19

AsperGenius®

and/or BALF

GM (1.0 OD)

93	98	93	98	41.1	0.1	602.0
(68-100)	(88-100)	(68-100)	(88-100)	(5.9-286.4)	(0.0-0.5)	(NA-NA)

AsperGenius®

and BALF

GM (1.0 OD)

40	98	86	83	17.6	0.6	28.7
(16-68)	(88-100)	(42-100)	(70-92)	(2.3-134.6)	(0.4-0.9)	(NA-NA)

Roman-Montes et al.,
2021** [11]

Observational Proven/putative
Retrospective 14/144 (10)
Modified
AspICU (see

ICU patients with
COVID-19

the original
publication for
details)

BALF GM-LFA (2.0 OD) and/or BALF GM (2.0 OD)	81 (48-98)	63 (53-73)	20 (15-27)	97 (89-99)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)
BALF GM-LFA (2.0 OD) and BALF GM (2.0 OD)	40 (12-74)	85 (77-91)	22 (10-41)	93 (89-96)	NA (NA-NA)	NA (NA-NA)	NA (NA-NA)

BALF, bronchoalveolar lavage fluid; BDG, (1,3)- β -D-glucan; CAPA, coronavirus disease 2019-associated pulmonary aspergillosis; CI, confidence intervals; DOR, diagnostic odds ratio; ECMM, European Confederation of Medical Mycology; EORTC/MSG, European Organization for Research and Treatment of Cancer/Invasive Fungal Infections Cooperative Group and the National Institute of Allergy and Infectious Diseases Mycoses Study Group; GM, galactomannan; ICU, intensive care unit; IPA, invasive pulmonary aspergillosis; ISHAM, International Society for Human and Animal Mycology; LFA, lateral-flow assay; LFD, lateral-flow device; MSGERC, Mycoses Study Group Education and Research Consortium; NA, not available; LR-, negative likelihood ratio; LR+, positive likelihood ratio; NPV, negative predictive value; OD, optical density; PCR, polymerase chain reaction; PPV, positive predictive value; TA, tracheal aspirate.

* Diagnostic performance parameters and 95% CI calculated for the present systematic review from data included in the original publication.

** Diagnostic performance parameters and 95% CI directly available in the original publication are presented

*** Diagnostic performance parameters and 95% CI partly available in the original publication and partly calculated for this systematic review from data included in the original publication.

Type of IA defining the reference positivity (e.g., proven/probable = proven and probable classified as IPA vs. possible and other patients classified as non-IPA, proven/probable/possible = proven and probable and possible classified as IPA vs. other patients classified as non-IPA)

Number of IPA patients according to the reference positivity (see #)/Number of IPA patients plus non-IPA patients.

Supplementary table 3. Studies assessing the performance of radiology for the diagnosis of IPA in critically ill patients with existing definitions as reference

Study	Design	Type of IPA #	Sensitivity %	Specificity %	PPV %	NPV %	LR+	LR-	DOR	Population
CT sign/s	Timeline Reference	IPA prevalence (95% CI) ## N/total (%)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	(95% CI)	
Levesque et al., 2019* [4]	Observational Retrospective AspICU criteria [5]	Proven/putative IPA vs. colonization 17/60 (28)								Cirrhotic patients hospitalized in ICU
Infiltrates			65 (38-86)	70 (54-83)	46 (26-67)	83 (67-94)	2.1 (1.2-3.8)	0.5 (0.3-1.0)	4.2 (NA-NA)	
Consolidation			41 (18-67)	81 (67-92)	47 (21-73)	78 (63-89)	2.2 (1.0-5.2)	0.7 (0.5-1.1)	3.1 (NA-NA)	
Lung nodules			41 (18-67)	86 (72-95)	54 (25-81)	79 (64-89)	3.0 (1.2-7.5)	0.7 (0.5-1.0)	4.3 (NA-NA)	
Ground-glass opacities			12 (1-36)	98 (88-100)	67 (9-99)	74 (60-84)	5.1 (0.5-52.2)	0.9 (0.8-1.1)	5.6 (NA-NA)	

Cavitation (Only 1 in non-IA)	0 (0-20)	98 (88-100)	0 (0-97)	71 (58-82)	NA (NA-NA)	1.0 (1.0-1.1)	NA (NA-NA)
Halo sign (None reported)	0 (0-20)	100 (92-100)	NA (NA-NA)	72 (59-83)	NA (NA-NA)	1.0 (1.0-1.0)	NA (NA-NA)
Pleural effusion	59 (33-82)	60 (44-75)	37 (19-58)	79 (61-91)	1.5 (0.9-2.6)	0.7 (0.4-1.3)	2.2 (NA-NA)

CI, confidence intervals; CT, computerized tomography; DOR, diagnostic odds ratio; ICU, intensive care unit; IPA, invasive pulmonary aspergillosis; LR-, negative likelihood ratio; LR+, positive likelihood ratio; NA, not available; NPV, negative predictive value; PPV, positive predictive value.

* Diagnostic performance parameters and 95% CI calculated for the present systematic review from data included in the original publication.

Type of IPA defining the reference positivity (e.g., proven/probable = proven and probable classified as IPA vs. possible and other patients classified as non-IPA, proven/probable/possible = proven and probable and possible classified as IPA vs. other patients classified as non-IPA)

Number of IPA patients according to the reference positivity (see #)/Number of IPA patients plus non-IPA patients.

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