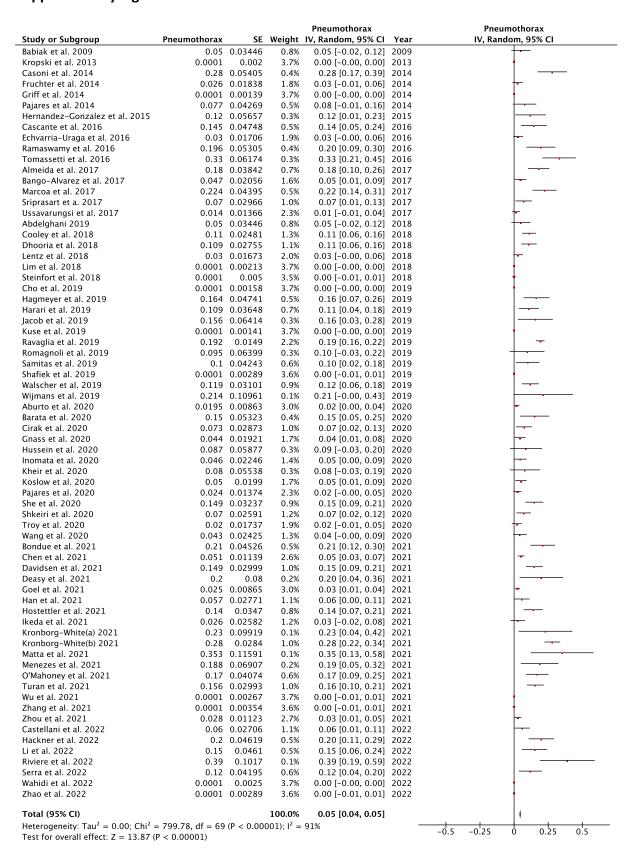
Supplementary Figure 1: Diagnostic Yield

tudy or Subgroup	Diagnostic Vield	c r	Waiah*	Diagnostic Yield	Voor	Diagnostic Yield
tudy or Subgroup abiak et al. 2009	Diagnostic Yield 0.95	0.03404	1.7%	1V, Random, 95% CI 0.95 [0.88, 1.02]	Year 2009	IV, Random, 95% CI
ropski et al. 2013	0.8	0.03404	0.8%	0.80 [0.64, 0.96]		
asoni et al. 2014		0.05142	1.3%	0.76 [0.66, 0.86]	2014	
ruchter et al. 2014		0.01872	2.1%	0.97 [0.94, 1.01]	2014	
riff et al. 2014		0.05678	1.2%	0.79 [0.68, 0.90]		
ajares et al. 2014	0.513	0.08004	0.8%	0.51 [0.36, 0.67]		
lernandez-Gonzalez et al. 2015	0.79	0.0709	1.0%	0.79 [0.65, 0.93]	2015	
ascante et al. 2016	0.873	0.0449	1.5%	0.87 [0.78, 0.96]	2016	_
chvarria-Uraga et al. 2016	0.976	0.014	2.2%	0.98 [0.95, 1.00]	2016	
amaswamy et al. 2016	0.66	0.0633	1.1%	0.66 [0.54, 0.78]	2016	
omassetti et al. 2016		0.02915	1.9%	0.95 [0.89, 1.01]		
Ilmeida et al. 2017		0.03842	1.6%	0.82 [0.74, 0.90]		
ango-Alvarez et al. 2017		0.03075	1.8%	0.89 [0.83, 0.95]	2017	_
Marcoa et al. 2017		0.04663	1.4%	0.73 [0.64, 0.82]		
riprasart et a. 2017		0.03805	1.6%	0.88 [0.80, 0.95]		
Issavarungsi et al. 2017	0.514	0.0581	1.2%	0.51 [0.40, 0.63]	2017	
Abdelghani 2019		0.04165	1.5%	0.93 [0.84, 1.01]		
Cooley et al. 2018		0.03668	1.7%	0.69 [0.62, 0.76]		
Ohooria et al. 2018		0.03656	1.7%	0.78 [0.71, 0.85]	2018	
entz et al. 2018		0.04868 0.10607	1.4%	0.44 [0.34, 0.54]		
im et al. 2018 teinfort et al. 2018	0.9999	0.005	0.5%	0.45 [0.24, 0.66]		
Cho et al. 2019		0.003	2.3% 1.2%	1.00 [0.99, 1.01] 0.85 [0.74, 0.96]		
lagmeyer et al. 2019		0.05646	1.1%	0.61 [0.49, 0.73]		<u> </u>
larari et al. 2019		0.08243	1.6%	0.88 [0.81, 0.95]		_
acob et al. 2019		0.04628	1.4%	0.93 [0.84, 1.02]		_
use et al. 2019	0.76	0.0604	1.1%	0.76 [0.64, 0.88]		
avaglia et al. 2019		0.01615	2.2%	0.88 [0.85, 0.91]		-
omagnoli et al. 2019		0.10592	0.6%	0.38 [0.17, 0.59]		
amitas et al. 2019		0.05657	1.2%	0.80 [0.69, 0.91]		
hafiek et al. 2019		0.10767	0.5%	0.83 [0.62, 1.04]		
Valscher et al. 2019		0.04232	1.5%	0.73 [0.65, 0.82]	2019	-
Vijmans et al. 2019	0.83	0.10039	0.6%	0.83 [0.63, 1.03]		
burto et al. 2020	0.802	0.02486	2.0%	0.80 [0.75, 0.85]	2020	-
arata et al. 2020	0.956	0.03057	1.8%	0.96 [0.90, 1.02]	2020	
Cirak et al. 2020	0.915	0.0308	1.8%	0.92 [0.85, 0.98]	2020	
inass et al. 2020	0.79	0.03815	1.6%	0.79 [0.72, 0.86]	2020	-
lussein et al. 2020	0.956	0.04277	1.5%	0.96 [0.87, 1.04]	2020	
nomata et al. 2020		0.03698	1.7%	0.86 [0.79, 0.93]	2020	_
heir et al. 2020		0.10065	0.6%	0.42 [0.22, 0.61]		
oslow et al. 2020		0.04542	1.5%	0.55 [0.46, 0.64]		
ajares et al. 2020		0.04469	1.5%	0.55 [0.46, 0.64]	2020	
he et al. 2020		0.04303	1.5%	0.66 [0.58, 0.75]	2020	
hkeiri et al. 2020		0.05061	1.3%	0.54 [0.44, 0.64]		
roy et al. 2020		0.03721	1.7%	0.90 [0.83, 0.97]	2020	
Vang et al. 2020		0.05547	1.2%	0.69 [0.58, 0.79]	2020	
ondue et al. 2021		0.04073 0.02507	1.6% 2.0%	0.84 [0.76, 0.92]		
Chen et al. 2021 Davidsen et al. 2021		0.02307		0.63 [0.58, 0.67]	2021	
Deasy et al. 2021		0.06499	1.7% 1.0%	0.75 [0.68, 0.82] 0.88 [0.75, 1.01]		
ioel et al. 2021		0.00499	2.0%	0.82 [0.77, 0.86]		_
lan et al. 2021		0.05262	1.3%	0.74 [0.63, 0.84]		
lostettler et al. 2021	0.88	0.0325	1.8%	0.88 [0.82, 0.94]		_
keda et al. 2021		0.07701	0.9%	0.66 [0.51, 0.81]		
ronborg-White(a) 2021		0.08416	0.8%	0.85 [0.69, 1.01]		
ronborg-White(b) 2021	0.72	0.0284	1.9%	0.72 [0.66, 0.78]		-
Matta et al. 2021		0.07882	0.8%	0.88 [0.73, 1.03]		
Menezes et al. 2021		0.08398	0.8%	0.66 [0.49, 0.82]		_
O'Mahoney et al. 2021	0.72	0.0487	1.4%	0.72 [0.62, 0.82]		
uran et al. 2021	0.666	0.0389	1.6%	0.67 [0.59, 0.74]		
/u et al. 2021		0.00267	2.3%	1.00 [0.99, 1.01]		
hang et al. 2021		0.15309	0.3%	0.25 [-0.05, 0.55]		+
hou et al. 2021	0.861	0.02354	2.0%	0.86 [0.81, 0.91]		_
Castellani et al. 2022	0.95	0.02484	2.0%	0.95 [0.90, 1.00]		
lackner et al. 2022	0.9999	0.00116	2.3%	1.00 [1.00, 1.00]	2022	
i et al. 2022	0.85	0.0461	1.4%	0.85 [0.76, 0.94]	2022	_
iviere et al. 2022	0.826	0.07905	0.8%	0.83 [0.67, 0.98]		
erra et al. 2022		0.05348	1.3%	0.78 [0.68, 0.88]		<u> </u>
Vahidi et al. 2022		0.09748	0.6%	0.81 [0.62, 1.00]		
hao et al. 2022	0.9999	0.00289	2.3%	1.00 [0.99, 1.01]	2022	
otal (95% CI)			100	0.01/0=======		
			100.0%	0.81 [0.79, 0.83]		I

Supplementary Figure 2: Incidence of Pneumothorax



Supplementary Figure 3: Moderate-severe Bleeding

				Moderate to Severe Bleeding	Moderate to Severe Bleeding
Study or Subgroup	Moderate to Severe Bleeding	SE	Weight	IV, Random, 95% CI	IV, Random, 95% CI
Abdelghani 2019	0.051	0.03479	2.1%	0.05 [-0.02, 0.12]	 -
Almeida et al. 2017	0.03	0.01706	2.6%	0.03 [-0.00, 0.06]	-
Bango-Alvarez et al. 2017	0.16	0.03561	2.1%	0.16 [0.09, 0.23]	
Barata et al. 2020	0.022	0.02187	2.5%	0.02 [-0.02, 0.06]	 -
Bondue et al. 2021	0.358	0.05327	1.5%	0.36 [0.25, 0.46]	
Cascante et al. 2016	0.036	0.02512	2.4%	0.04 [-0.01, 0.09]	 -
Castellani et al. 2022	0.03	0.01944	2.6%	0.03 [-0.01, 0.07]	-
Chen et al. 2021	0.576	0.02559	2.4%	0.58 [0.53, 0.63]	-
Cho et al. 2019	0.1	0.04743	1.7%	0.10 [0.01, 0.19]	
Cirak et al. 2020	0.195	0.04375	1.8%	0.20 [0.11, 0.28]	-
Cooley et al. 2018	0.038	0.01516	2.7%	0.04 [0.01, 0.07]	-
Davidsen et al. 2021	0.163	0.03111	2.2%	0.16 [0.10, 0.22]	
Deasy et al. 2021	0.24	0.08542	0.9%	0.24 [0.07, 0.41]	
Dhooria et al. 2018	0.055	0.02015	2.5%	0.06 [0.02, 0.09]	-
Echvarria-Uraga et al. 2016	0.13	0.03363	2.1%	0.13 [0.06, 0.20]	-
Fruchter et al. 2014	0.04	0.02263	2.5%	0.04 [-0.00, 0.08]	-
Goel et al. 2021	0.037	0.01046	2.8%	0.04 [0.02, 0.06]	-
Hackner et al. 2022	0.293	0.05256	1.5%	0.29 [0.19, 0.40]	
Hagmeyer et al. 2019		0.05514	1.5%	0.25 [0.14, 0.35]	
Hernandez-Gonzalez et al. 2015	0.21	0.0709	1.1%	0.21 [0.07, 0.35]	
Hussein et al. 2020		0.04277	1.8%	0.04 [-0.04, 0.13]	
Ikeda et al. 2021		0.05917	1.4%	0.16 [0.04, 0.27]	
Inomata et al. 2020		0.04154	1.9%	0.18 [0.10, 0.27]	
Jacob et al. 2019		0.03064	2.2%	0.03 [-0.03, 0.09]	
Kheir et al. 2020		0.06751	1.2%	0.13 [-0.01, 0.26]	
Kronborg-White(a) 2021		0.11747	0.5%	0.46 [0.23, 0.69]	
Kronborg-White(b) 2021	0.22	0.0262	2.4%	0.22 [0.17, 0.27]	-
Kropski et al. 2013	0.0001	0.002	2.9%	0.00 [-0.00, 0.00]	
Li et al. 2022		0.03562	2.1%	0.08 [0.01, 0.15]	
Lim et al. 2018		0.03302	0.8%	0.27 [0.09, 0.46]	
Marcoa et al. 2017		0.02424	2.4%	0.06 [0.01, 0.10]	_
Matta et al. 2021	0.06	0.0576	1.4%	0.06 [-0.05, 0.17]	
Menezes et al. 2021		0.0370	2.1%	0.04 [-0.03, 0.10]	
O'Mahoney et al. 2021		0.03293	1.9%	0.18 [0.10, 0.26]	
Pajares et al. 2014		0.04107	1.0%	0.56 [0.41, 0.72]	
		0.07941			
Pajares et al. 2020			2.4%	0.07 [0.03, 0.12]	
Ravaglia et al. 2019		0.01044	2.8%	0.08 [0.06, 0.10]	<u>L'</u>
Riviere et al. 2022		0.04754	1.7%	0.06 [-0.04, 0.15]	<u> </u>
Samitas et al. 2019	0.24	0.0604	1.3%	0.24 [0.12, 0.36]	
Serra et al. 2022		0.04849	1.7%	0.17 [0.07, 0.27]	
Shafiek et al. 2019		0.07964	1.0%	0.08 [-0.07, 0.24]	
She et al. 2020		0.03077	2.2%	0.13 [0.07, 0.19]	
Shkeiri et al. 2020		0.04031	1.9%	0.20 [0.12, 0.28]	
Steinfort et al. 2018	0.0001	0.005	2.8%	0.00 [-0.01, 0.01]	
Troy et al. 2020		0.05138	1.6%	0.22 [0.12, 0.32]	—
Turan et al. 2021		0.02765	2.3%	0.13 [0.07, 0.18]	
Ussavarungsi et al. 2017		0.03805	2.0%	0.12 [0.05, 0.20]	-
Wahidi et al. 2022	0.0001		2.8%	0.00 [-0.00, 0.00]	
Walscher et al. 2019		0.04319	1.8%	0.28 [0.20, 0.37]	
Wijmans et al. 2019		0.09356	0.8%	0.14 [-0.04, 0.33]	
Zhang et al. 2021		0.11693	0.5%	0.13 [-0.10, 0.35]	
Zhao et al. 2022		0.10767	0.6%	0.17 [-0.04, 0.38]	
Zhou et al. 2021	0.097	0.02014	2.5%	0.10 [0.06, 0.14]	_
Total (95% CI)			100.0%	0.12 [0.11, 0.14]	
Heterogeneity: Tau ² = 0.00; Chi ² : Test for overall effect: 7 = 12 94 (.); I ² = 95%	ó		-1 -0.5 0 0.5 1

Test for overall effect: Z = 12.94 (P < 0.00001)

Supplementary Figure 4: Diagnostic Yield by GA vs sedation

tudy or Subgroup	Diagnostic Yield	ÇF	Weight	Diagnostic Yield IV, Random, 95% CI	Year	Diagnostic Yield IV, Random, 95% CI
.1.1 Sedation	Diagnostic Field	3E	weight	iv, Kandom, 95% Cl	redf	iv, Kanuom, 95% Cl
	0.0	0.00	1.00/	0.00 [0.04 0.00]	2012	
ropski et al. 2013	0.8	0.08	1.0%	0.80 [0.64, 0.96]		
ruchter et al. 2014		0.01872	2.2%	0.97 [0.94, 1.01]		
asoni et al. 2014		0.05142	1.5%	0.76 [0.66, 0.86]		
riff et al. 2014	0.787	0.05678	1.4%	0.79 [0.68, 0.90]	2014	
jares et al. 2014	0.513	0.08004	1.0%	0.51 [0.36, 0.67]	2014	
imaswamy et al. 2016	0.66	0.0633	1.3%	0.66 [0.54, 0.78]		
omassetti et al. 2016		0.02915	2.0%	0.95 [0.89, 1.01]		
			1.4%			
ssavarungsi et al. 2017	0.514	0.0581		0.51 [0.40, 0.63]		· · · · · · · · · · · · · · · · · · ·
ngo-Alvarez et al. 2017		0.03075	2.0%	0.89 [0.83, 0.95]		
ntz et al. 2018	0.44	0.04868	1.6%	0.44 [0.34, 0.54]	2018	
n et al. 2018	0.45	0.10607	0.7%	0.45 [0.24, 0.66]	2018	
nooria et al. 2018	0.781	0.03656	1.9%	0.78 [0.71, 0.85]	2018	
vaglia et al. 2019		0.01615	2.3%	0.88 [0.85, 0.91]		
omagnoli et al. 2019		0.10592	0.7%	0.38 [0.17, 0.59]		
						_
rari et al. 2019		0.03803	1.8%	0.88 [0.81, 0.95]		
ise et al. 2019	0.76	0.0604	1.3%	0.76 [0.64, 0.88]		
mitas et al. 2019	0.8	0.05657	1.4%	0.80 [0.69, 0.91]	2019	
jmans et al. 2019	0.83	0.10039	0.8%	0.83 [0.63, 1.03]	2019	
rak et al. 2020	0.915	0.0308	2.0%	0.92 [0.85, 0.98]	2020	
nass et al. 2020		0.03815	1.8%	0.79 [0.72, 0.86]		<u> </u>
oslow et al. 2020		0.04542	1.7%	0.55 [0.46, 0.64]		
		0.04542				
ang et al. 2020			1.4%	0.69 [0.58, 0.79]		
Mahoney et al. 2021	0.72	0.0487	1.6%	0.72 [0.62, 0.82]		-
easy et al. 2021		0.06499	1.3%	0.88 [0.75, 1.01]		_
ostettler et al. 2021	0.88	0.0325	1.9%	0.88 [0.82, 0.94]	2021	-
eda et al. 2021	0.657	0.07701	1.1%	0.66 [0.51, 0.81]	2021	
ıbtotal (95% CI)			39.1%	0.75 [0.69, 0.80]		•
eterogeneity: Tau ² = 0.02; Chi ²	= 307.16, df = 25 (F	o.0000	(1) ; $I^2 = 9$			
st for overall effect: Z = 26.25	(P < 0.00001)					
1.2 GA						
biak et al. 2009	0.95	0.03404	1.9%	0.95 [0.88, 1.02]	2009	
ernandez-Gonzalez et al. 2015	0.79	0.0709	1.2%	0.79 [0.65, 0.93]		
scante et al. 2016	0.873	0.0449	1.7%	0.87 [0.78, 0.96]		_
hvarria-Uraga et al. 2016	0.976	0.014	2.3%	0.98 [0.95, 1.00]		
meida et al. 2017		0.03842	1.8%	0.82 [0.74, 0.90]		
arcoa et al. 2017	0.733	0.04663	1.6%	0.73 [0.64, 0.82]	2017	
iprasart et a. 2017	0.878	0.03805	1.8%	0.88 [0.80, 0.95]	2017	-
odelghani 2019	0.925	0.04165	1.7%	0.93 [0.84, 1.01]	2018	
poley et al. 2018	0.69	0.03668	1.9%	0.69 [0.62, 0.76]	2018	
einfort et al. 2018	0.9999	0.005	2.4%	1.00 [0.99, 1.01]		
		0.06245				
agmeyer et al. 2019			1.3%	0.61 [0.49, 0.73]		
cob et al. 2019		0.04628	1.6%	0.93 [0.84, 1.02]		
afiek et al. 2019	0.833	0.10767	0.7%	0.83 [0.62, 1.04]		
alscher et al. 2019	0.734	0.04232	1.7%	0.73 [0.65, 0.82]	2019	
e et al. 2020	0.661	0.04303	1.7%	0.66 [0.58, 0.75]	2020	
keiri et al. 2020		0.05061	1.5%	0.54 [0.44, 0.64]		
oy et al. 2020		0.03721	1.8%	0.90 [0.83, 0.97]		
rata et al. 2020		0.03057	2.0%	0.96 [0.90, 1.02]		
omata et al. 2020		0.03698	1.8%	0.86 [0.79, 0.93]		_
eir et al. 2020	0.417	0.10065	0.8%	0.42 [0.22, 0.61]	2020	_ - · -
jares et al. 2020	0.548	0.04469	1.7%	0.55 [0.46, 0.64]	2020	
ang et al. 2021		0.15309	0.4%	0.25 [-0.05, 0.55]		+
ou et al. 2021		0.02354	2.1%	0.86 [0.81, 0.91]		-
ndue et al. 2021		0.04073	1.8%	0.84 [0.76, 0.92]		
ividsen et al. 2021		0.03637	1.9%	0.75 [0.68, 0.82]		
pel et al. 2021		0.02146	2.2%	0.82 [0.77, 0.86]		
an et al. 2021		0.05262	1.5%	0.74 [0.63, 0.84]		
onborg-White(a) 2021	0.85	0.08416	1.0%	0.85 [0.69, 1.01]	2021	
onborg-White(b) 2021	0.72	0.0284	2.0%	0.72 [0.66, 0.78]		-
atta et al. 2021		0.07882	1.0%	0.88 [0.73, 1.03]		_
ran et al. 2021	0.666	0.0389	1.8%	0.67 [0.59, 0.74]		
						· .
ao et al. 2022		0.00289	2.4%	1.00 [0.99, 1.01]		
stellani et al. 2022		0.02484	2.1%	0.95 [0.90, 1.00]		
ickner et al. 2022	0.9999	0.00116	2.4%	1.00 [1.00, 1.00]	2022	
et al. 2022	0.85	0.0461	1.6%	0.85 [0.76, 0.94]	2022	-
viere et al. 2022		0.07905	1.0%	0.83 [0.67, 0.98]		
ahidi et al. 2022		0.09748	0.8%	0.81 [0.62, 1.00]		
btotal (95% CI)			60.9%	0.83 [0.81, 0.85]		
eterogeneity: Tau ² = 0.00; Chi ² est for overall effect: Z = 72.99		P < 0.0000	$(1); I^2 = 9$	6%		
			100.001	0.00 [0.70 0.07]		
otal (95% CI)			100.0%	0.80 [0.78, 0.82]		· · · · · · · · · · · · · · · · · · ·
	= 1681.70. df = 62	(P < 0.000)	$(001); I^2 = 1$	96%	-1	-0.5 0 0.5
eterogeneity: Tau ² = 0.00; Chi ²						

Supplementary Figure 5: Diagnostic Yield by ILD MDT prior to cryobiopsy vs no MDT

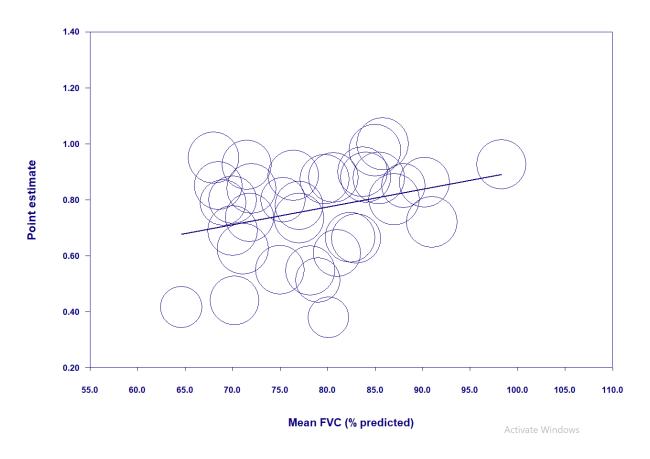
0.973	0.01872	2.1%	0.97 [0.94, 1.01]	2014	
		1.3%			-
0.79	0.0709	1.0%			_
0.873	0.0449	1.5%	0.87 [0.78, 0.96]	2016	
0.976	0.014	2.2%	0.98 [0.95, 1.00]	2016	
0.948	0.02915	1.9%	0.95 [0.89, 1.01]	2016	
0.733	0.04663	1.4%			_
0.878	0.03805	1.6%	0.88 [0.80, 0.95]	2017	
					_
0.926	0.04628	1.4%	0.93 [0.84, 1.02]	2019	
0.38	0.10592	0.6%	0.38 [0.17, 0.59]	2019	
0.85	0.05646	1.2%	0.85 [0.74, 0.96]	2019	
0.88	0.03803	1.6%	0.88 [0.81, 0.95]	2019	
0.8	0.05657	1.2%	0.80 [0.69, 0.91]	2019	-
					_
					-
					_
		1.3%			
0.956	0.03057	1.8%	0.96 [0.90, 1.02]	2020	
0.72	0.0284	1.9%			_
		0.8%			
					_
					_
0.88	0.0325	1.8%	0.88 [0.82, 0.94]	2021	
0.657	0.07701	0.9%	0.66 [0.51, 0.81]	2021	
0.85	0.08416	0.8%	0.85 [0.69, 1.01]	2021	-
0.666	0.0389	1.6%	0.67 [0.59, 0.74]	2021	
0.9999	0.00267	2.3%	1.00 [0.99, 1.01]	2021	
					_
					_
0.55	0.02 10 1			LULL	
	P < 0.000	$(01); I^2 =$	97%		
0.95	0.03404	1.7%	0.95 [0.88. 1.02]	2009	
					_
					<u> </u>
					_
					_
		2.2%			
		1.1%	0.61 [0.49, 0.73]	2019	<u> </u>
0.548	0.04469	1.5%	0.55 [0.46, 0.64]	2020	
0.661	0.04303	1.5%	0.66 [0.58, 0.75]	2020	_
0.686	0.05547	1.2%			-
		2.0%			
0.85	0.0461	1.4%			
0.78	0.05348	1.3%	0.78 [0.68, 0.88]	2022	-
		2.3%			
		34.1%	0.76 [0.72, 0.81]		
	< 0.0000				
r < 0.00001)					
= 2001.95, df = 69 (100.0%	0.81 [0.79, 0.83]		
_	0.76 0.79 0.873 0.976 0.948 0.733 0.878 0.828 0.887 0.44 0.925 0.699 0.781 0.926 0.38 0.85 0.88 0.83 0.83 0.83 0.734 0.99 0.802 0.915 0.417 0.54 0.956 0.72 0.656 0.802 0.915 0.417 0.54 0.956 0.72 0.656 0.88 0.81 0.89 0.899 0.9999 0.9999 0.9999 0.9999 0.9999 0.9999 0.9999 0.826 0.813 0.737 0.88 0.657 0.85 0.666 0.9999 0.9999 0.9999 0.9999 0.826 0.813 0.787 0.666 0.514 0.45 0.9999 0.76 0.877 0.61 0.548 0.661 0.686 0.799 0.996 0.877 0.661 0.548 0.651 0.6548 0.661 0.686 0.799 0.9999 0.790 0.955 0.888 0.772 0.25 0.888 0.772 0.25 0.8861 0.855 0.788 0.9999	0.76 0.05142 0.79 0.0709 0.873 0.0449 0.976 0.014 0.948 0.02915 0.733 0.04663 0.878 0.03805 0.82 0.03842 0.887 0.03075 0.44 0.04868 0.925 0.04165 0.69 0.03668 0.781 0.03656 0.926 0.04628 0.38 0.10592 0.85 0.05646 0.88 0.3803 0.8 0.05657 0.833 0.100767 0.83 0.100767 0.83 0.10039 0.734 0.04232 0.9 0.03721 0.802 0.02486 0.915 0.0308 0.417 0.10065 0.54 0.05061 0.956 0.0367 0.72 0.0284 0.656 0.0839 0.84 0.04073 0.625 0.02507 0.752 0.03637 0.78 0.05262 0.88 0.0349 0.816 0.02146 0.737 0.05262 0.88 0.0349 0.816 0.02146 0.737 0.05262 0.88 0.0349 0.816 0.02146 0.737 0.05262 0.88 0.0325 0.657 0.07701 0.85 0.08416 0.666 0.0633 0.514 0.05061 0.9999 0.0016 0.826 0.07905 0.813 0.09748 0.95 0.02484 = 1270.41, df = 44 (P < 0.00064 0.877 0.01615 0.61 0.06245 0.548 0.0467 0.9999 0.0016 0.826 0.07905 0.813 0.09748 0.95 0.02484 = 1270.41, df = 44 (P < 0.00064 0.877 0.01615 0.61 0.06245 0.548 0.04469 0.661 0.0633 0.514 0.0581 0.45 0.10607 0.9999 0.0016 0.826 0.07905 0.861 0.02354 0.879 0.03885 0.0461 0.04373 0.886 0.05348 0.9999 0.00289 = 717.09, df = 24 (P < 0.000689 0.09999 0.00289	0.76 0.05142 1.3% 0.79 0.0709 1.0% 0.873 0.0449 1.5% 0.976 0.014 2.2% 0.948 0.02915 1.9% 0.733 0.04663 1.4% 0.878 0.03805 1.6% 0.82 0.03842 1.6% 0.887 0.03075 1.8% 0.44 0.04868 1.4% 0.925 0.04665 1.7% 0.781 0.03656 1.7% 0.926 0.04628 1.4% 0.38 0.10592 0.6% 0.85 0.05646 1.2% 0.88 0.05657 1.2% 0.83 0.10039 0.66% 0.734 0.04232 1.5% 0.99 0.03721 1.7% 0.802 0.02486 2.0% 0.915 0.0308 1.8% 0.915 0.0308 1.8% 0.915 0.0308 1.8% 0.915 0.0308 1.8% 0.915 0.0308 1.8% 0.956 0.03057 1.8% 0.72 0.0284 1.9% 0.656 0.08398 0.8% 0.84 0.04073 1.6% 0.625 0.02507 2.0% 0.752 0.03637 1.7% 0.888 0.06499 1.0% 0.816 0.02146 2.0% 0.737 0.05262 1.3% 0.88 0.0325 1.8% 0.666 0.0389 1.6% 0.695 0.02046 0.8% 0.656 0.0389 1.6% 0.699 0.00116 2.3% 0.886 0.03057 1.8% 0.666 0.0389 1.6% 0.699 0.0016 2.3% 0.886 0.03057 1.8% 0.666 0.0389 1.6% 0.656 0.0389 1.6% 0.656 0.0389 1.6% 0.656 0.0389 1.6% 0.656 0.0389 1.6% 0.999 0.00016 2.3% 0.896 0.03057 0.8% 0.816 0.02146 0.20% 0.737 0.05262 1.3% 0.88 0.0325 1.8% 0.666 0.0389 1.6% 0.999 0.00016 2.3% 0.896 0.03057 0.8% 0.666 0.0389 1.6% 0.999 0.00016 2.3% 0.9999 0.00016 2.3% 0.896 0.0567 0.07701 0.9% 0.856 0.0461 0.0% 0.999 0.00016 2.3% 0.9999 0.00016	0.76	0.76 0.05142 1.3% 0.76 [0.66, 0.86] 2014 0.79 0.079 1.0% 0.79 0.075 0.93 2015 0.873 0.0449 1.5% 0.87 [0.78, 0.95] 2016 0.976 0.014 2.2% 0.98 [0.95, 1.00] 2016 0.948 0.02915 1.9% 0.95 [0.89, 1.01] 2016 0.733 0.04663 1.4% 0.73 [0.64, 0.82] 2017 0.82 0.03842 1.6% 0.82 [0.74, 0.90] 2017 0.82 0.03842 1.6% 0.82 [0.74, 0.90] 2017 0.82 0.03845 1.6% 0.82 [0.74, 0.90] 2017 0.44 0.04868 1.4% 0.44 [0.34, 0.54] 2018 0.925 0.04165 1.5% 0.93 [0.84, 1.01] 2018 0.69 0.03668 1.7% 0.69 [0.62, 0.76] 2018 0.781 0.03656 1.7% 0.78 [0.71, 0.85] 2018 0.925 0.04165 1.5% 0.69 [0.62, 0.76] 2018 0.781 0.03656 1.7% 0.69 [0.62, 0.76] 2018 0.83 0.03603 1.6% 0.88 [0.81, 0.95] 2019 0.88 0.03603 1.6% 0.88 [0.81, 0.95] 2019 0.88 0.03803 1.6% 0.88 [0.81, 0.95] 2019 0.83 0.10592 0.6% 0.38 [0.17, 0.59] 2019 0.83 0.10767 0.5% 0.83 [0.62, 1.04] 2019 0.83 0.10767 0.5% 0.83 [0.62, 1.04] 2019 0.83 0.10767 0.5% 0.83 [0.62, 1.04] 2019 0.83 0.10767 0.5% 0.83 [0.62, 1.04] 2019 0.83 0.10767 0.5% 0.83 [0.62, 1.04] 2019 0.9 0.3721 1.7% 0.90 [0.83, 0.97] 2020 0.802 0.02486 2.0% 0.80 [0.75, 0.82] 2020 0.915 0.0308 1.8% 0.92 [0.85, 0.98] 2020 0.915 0.0308 1.8% 0.92 [0.85, 0.98] 2020 0.915 0.0308 1.8% 0.92 [0.85, 0.98] 2020 0.956 0.03067 1.8% 0.96 [0.90, 0.92] 2021 0.656 0.0399 8.089 9.0072 [0.66 0.78] 2021 0.656 0.0399 8.089 9.08% 0.88 [0.76, 0.92] 2021 0.84 0.04073 1.6% 0.88 [0.76, 0.92] 2021 0.88 0.04099 1.0% 0.88 [0.77, 0.86] 2021 0.056 0.03067 1.8% 0.86 [0.77, 0.86] 2021 0.056 0.03067 1.8% 0.88 [0.77, 0.86] 2021 0.056 0.03067 1.8% 0.88 [0.76, 0.92] 2021 0.056 0.03067 1.8% 0.88 [0.76, 0.92] 2021 0.056 0.03067 1.8% 0.88 [0.76, 0.92] 2021 0.056 0.03067 1.8% 0.88 [0.76, 0.92] 2021 0.056 0.03067 1.8% 0.88 [0.82, 0.94] 2021 0.056 0.03067 1.8% 0.88 [0.80, 0.92] 2021 0.056 0.03067 1.8% 0.88 [0.80, 0.92] 2021 0.056 0.03067 1.8% 0.88 [0.80, 0.92] 2021 0.056 0.03067 1.8% 0.99 0.005 2.08 0.08 0.08 0.08 0.08 0.08 0.08 0.08

Supplementary Figure 6: Diagnostic Yield by 2.4mm vs 1.9mm Size Cryoprobe

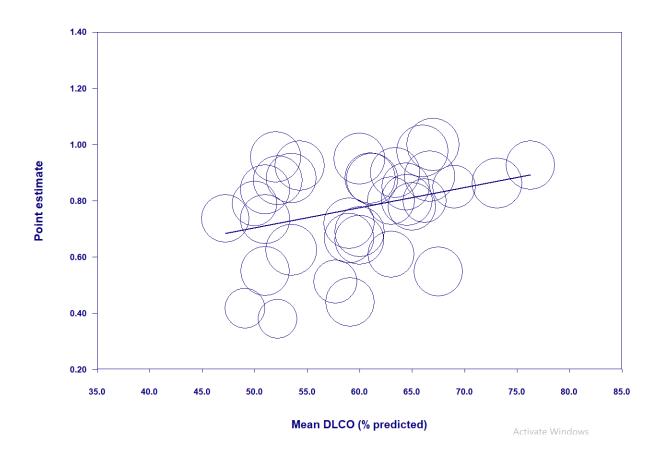
			-	Diagnostic Yield		Diagnostic Yield
Study or Subgroup	Diagnostic Yield	SE	Weight	IV, Random, 95% CI	Year	IV, Random, 95% CI
12.1.1 1.9mm probe						
Kropski et al. 2013	0.8	0.08	1.3%	0.80 [0.64, 0.96]	2013	
Griff et al. 2014	0.787	0.05678	1.9%	0.79 [0.68, 0.90]	2014	
Hernandez-Gonzalez et al. 20	15 0.79	0.0709	1.5%	0.79 [0.65, 0.93]	2015	
Ussavarungsi et al. 2017	0.514	0.0581	1.9%	0.51 [0.40, 0.63]	2017	
Bango-Alvarez et al. 2017		0.03075	3.0%	0.89 [0.83, 0.95]		-
Lentz et al. 2018		0.04868	2.2%	0.44 [0.34, 0.54]		
Steinfort et al. 2018	0.9999	0.005	3.8%	1.00 [0.99, 1.01]		
Abdelghani 2019		0.04165	2.5%	0.93 [0.84, 1.01]		_
Lim et al. 2018		0.10607	0.9%	0.45 [0.24, 0.66]		
Dhooria et al. 2018		0.03656	2.7%	0.78 [0.71, 0.85]		
Cho et al. 2019		0.05646	1.9%	0.85 [0.74, 0.96]		
Hagmeyer et al. 2019		0.06245	1.7%	0.61 [0.49, 0.73]		
Harari et al. 2019		0.03803	2.6%	0.88 [0.81, 0.95]		<u> </u>
Kuse et al. 2019	0.76	0.0604	1.8%	0.76 [0.64, 0.88]		
Samitas et al. 2019		0.05657	1.9%	0.80 [0.69, 0.91]		
Gnass et al. 2020		0.03815	2.6%	0.79 [0.72, 0.86]		
Kheir et al. 2020		0.10065	0.9%	0.42 [0.22, 0.61]		
			2.3%			
Koslow et al. 2020		0.04542		0.55 [0.46, 0.64]		
Wang et al. 2020		0.05547	2.0%	0.69 [0.58, 0.79]		
Goel et al. 2021		0.02146	3.3%	0.82 [0.77, 0.86]		. T
Han et al. 2021		0.05262	2.1%	0.74 [0.63, 0.84]		
Turan et al. 2021	0.666	0.0389	2.6%	0.67 [0.59, 0.74]		
Wu et al. 2021		0.00267	3.8%	1.00 [0.99, 1.01]		
Zhang et al. 2021		0.15309	0.5%	0.25 [-0.05, 0.55]		
Wahidi et al. 2022 Subtotal (95% CI)	0.813	0.09748	1.0% 52.9%	0.81 [0.62, 1.00] 0.75 [0.71, 0.79]	2022	
12.1.2 2.4mm probe Babiak et al. 2009	0.05	0.03404	2.8%	0.95 [0.88, 1.02]	2000	_
Casoni et al. 2014		0.03404	2.8%	0.76 [0.66, 0.86]		
Fruchter et al. 2014		0.03142	3.4%	0.97 [0.94, 1.01]		
Pajares et al. 2014		0.01872	1.3%	0.51 [0.36, 0.67]		
•						
Cascante et al. 2016	0.873 0.976	0.0449	2.4%	0.87 [0.78, 0.96]		
Echvarria-Uraga et al. 2016	0.976	0.014	3.6%	0.98 [0.95, 1.00]		
Ramaswamy et al. 2016		0.0633	1.7%	0.66 [0.54, 0.78]		
Almeida et al. 2017		0.03842	2.6%	0.82 [0.74, 0.90]		
Marcoa et al. 2017		0.04663	2.3%	0.73 [0.64, 0.82]		
Shafiek et al. 2019		0.10767	0.8%	0.83 [0.62, 1.04]		
Barata et al. 2020		0.03057	3.0%	0.96 [0.90, 1.02]		
Cirak et al. 2020	0.915	0.0308	3.0%	0.92 [0.85, 0.98]		
Hussein et al. 2020		0.04277	2.5%	0.96 [0.87, 1.04]		
Pajares et al. 2020		0.04469	2.4%	0.55 [0.46, 0.64]		
Shkeiri et al. 2020		0.05061	2.1%	0.54 [0.44, 0.64]		
Deasy et al. 2021		0.06499	1.7%	0.88 [0.75, 1.01]		
O'Mahoney et al. 2021	0.72	0.0487	2.2%	0.72 [0.62, 0.82]		
Hackner et al. 2022		0.00116	3.8%	1.00 [1.00, 1.00]		
Riviere et al. 2022		0.07905	1.3%	0.83 [0.67, 0.98]		
Serra et al. 2022	0.78	0.05348	2.0%	0.78 [0.68, 0.88]	2022	
C 1 1 (0 E0/ CI)	hi ² = 410.02 df = 10.0	o < 0.0000	47.1% (1); $I^2 = 95$	0.82 [0.77, 0.87] 5%		•
Subtotal (95% CI) Heterogeneity: $Tau^2 = 0.01$; C						
Heterogeneity: Tau ² = 0.01; C Test for overall effect: Z = 30.				_		
Heterogeneity: Tau ² = 0.01; C Test for overall effect: Z = 30. Total (95% CI)	19 (P < 0.00001)		100.0%	0.80 [0.78, 0.82]		•
Heterogeneity: Tau ² = 0.01; C Test for overall effect: Z = 30.	19 (P < 0.00001)	(P < 0.000			<u> </u>	-0.5 0 0.5

Supplementary Figure 7: Diagnostic Yield vs Mean Forced Vital Capacity

Regression of Point estimate on Mean FVC (% predicted)



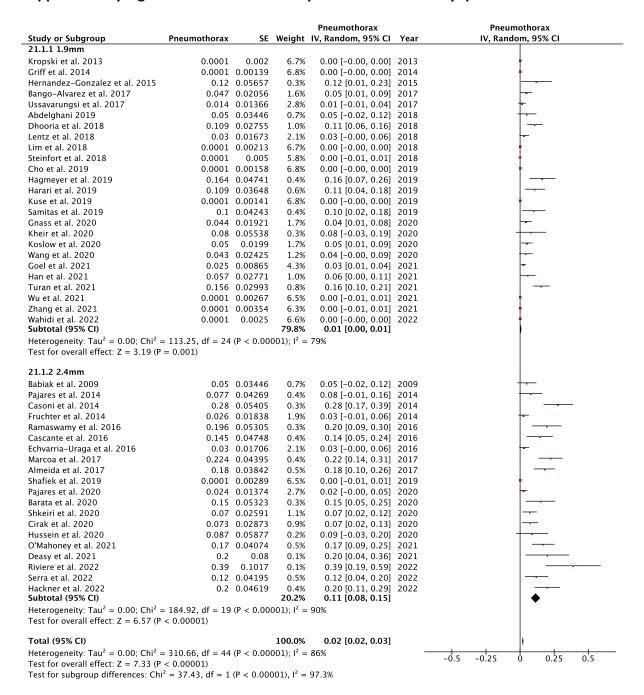
Supplementary Figure 8: Diagnostic Yield vs Mean Diffusion Capacity for Carbon Monoxide Regression of Point estimate on Mean DLCO (% predicted)



Supplementary Figure 9: Diagnostic Yield by Single Lobe vs One or More Lobes Diagnostic Yield Diagnostic Yield Diagnostic Yield

Study or Subgroup Oscillation by Depart Department Part Oscillation Oscill		51 2 10 g. 10 cu 1		,	Diagnostic Yield			tic Yield
Bashak eri al 2009	Study or Subgroup	Diagnostic Yield	SE	Weight	IV, Random, 95% CI	Year	IV, Rando	m, 95% CI
Casoni et al. 2014		0.95	0.03404	0.0%	0 95 [0 88 1 02]	2009		
Planes et al. 2016 Conference 1.2016 Confer								
Cisscanter et al. 2016 Cisscanter et al. 2017 Cisscanter et al. 2017 Cisscanter et al. 2018 Cisscanter et al. 2019 Cisscanter et al. 2018 Cisscanter et al. 2019 Cisscanter et al. 201	Griff et al. 2014			0.0%	0.79 [0.68, 0.90]	2014		
Edwarfu-Flusge et al. 2016	3							
Ramaswarry et al. 2016								
Tomascell et al. 2016								
Amende et al. 2017 Amende et al. 2017 Amende et al. 2019 Oscioley et al. 2018 Oscioley et al. 2019 Oscioley et al. 2018 Oscioley et al. 2019 Oscio								
Abdelghain 2019								
Cooley et al. 2018								
Cho et al. 2019	Cooley et al. 2018	0.69	0.03668	0.0%	0.69 [0.62, 0.76]	2018		
Hagmeyer et al. 2019								
Hararier al. 2019 0.88 0.03803 0.00 0.00 0.88 [0.31, 0.95] 2019 Kause et al. 2019 0.76 0.0604 0.00 0.00 0.08 [0.31, 0.95] 2019 Samitas et al. 2019 0.83 0.05567 2.90 0.050 [0.54, 0.91] 2019 Samitas et al. 2019 0.83 0.05567 2.90 0.050 [0.54, 0.91] 2019 Wijmans et al. 2019 0.83 0.05567 2.90 0.050 [0.54, 0.91] 2019 Wijmans et al. 2020 0.956 0.00380 0.00 0.000 0.00 0.00 0.00 0.00								
Kuse et al. 2019 0.8 0.05657 2.9% Samidas et al. 2019 0.8 0.05557 2.9% Samidas et al. 2019 0.8 0.05557 2.9% 0.8 0.8 0.10,070 7 0.0% 0.8 0.10,050,001 2019 0.8 0.2 0.10,003 0.0% 0.8 0.2 0.00,003 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	<i>5</i> ,							
Samitas et al. 2019								
Shaffek et al. 2019								
Wijmane et al. 2019 Aburot et al. 2020 0.830 0.02486 3.9% 0.800 0.75, 0.855 2020								
Cirak et al. 2020 0.79 0.3815 0.398 0.09 0.22 (0.55, 0.38) 2020 Cirak et al. 2020 0.79 0.0815 1.37 0.79 0.07 0.08 0.79 0.022 0.05 0.0827 0.08 0.0820 0.086 0.07 0.081 0.082 0								
Gnass et al. 2020	Aburto et al. 2020	0.802	0.02486	3.9%	0.80 [0.75, 0.85]	2020		-
Hussein et al. 2020								
Inomata et al. 2020								
Kheir et al. 2020 0.417 0.10065 0.0% 0.42 [0.22, 0.61] 2020 Koslow et al. 2020 0.55 0.04542 0.0% 0.55 [0.46, 0.64] 2020 Pajares et al. 2020 0.548 0.04669 0.0% 0.55 [0.46, 0.64] 2020 Wang et al. 2020 0.686 0.05547 0.0% 0.56 [0.44, 0.64] 2020 Wang et al. 2021 0.88 0.04073 0.0% 0.58 [0.46, 0.64] 2020 Chen et al. 2021 0.625 0.02507 0.0% 0.56 [0.68, 0.76, 0.92] 2021 Chen et al. 2021 0.685 0.06547 0.0% 0.56 [0.68, 0.76, 0.92] 2021 Deavy et al. 2021 0.88 0.0699 0.0% 0.75 [0.68, 0.82] 2021 Deavy et al. 2021 0.88 0.021469 0.0% 0.0% 0.08 [0.75, 0.92] 2021 Deavy et al. 2021 0.88 0.021469 0.0% 0.0% 0.08 [0.75, 0.92] 2021 Hostetier et al. 2021 0.88 0.021469 0.0% 0.0% 0.08 [0.75, 0.92] 2021 Hostetier et al. 2021 0.88 0.02146 0.0% 0.0% 0.08 [0.75, 0.94] 2021 Kronborg-White(a) 2021 0.85 0.0839 0.0% 0.88 [0.82, 0.94] 2021 Kronborg-White(a) 2021 0.85 0.0839 0.0% 0.88 [0.87, 1.08] 2021 Turan et al. 2021 0.596 0.0839 0.0% 0.88 [0.75, 1.08] 2021 Turan et al. 2021 0.590 0.0256 0.0% 0.88 [0.75, 0.77] 2021 Zhang et al. 2021 0.590 0.0257 0.0% 0.06 [0.97, 0.97, 0.97] 2021 Zhang et al. 2021 0.590 0.0258 0.0% 0.88 [0.75, 0.77] 2021 Zhang et al. 2021 0.590 0.0258 0.0% 0.88 [0.78, 0.97] 2021 Zhang et al. 2021 0.590 0.0258 0.0% 0.88 [0.78, 0.97] 2021 Zhang et al. 2021 0.590 0.0258 0.0% 0.88 [0.88, 0.97] 2021 Ward et al. 2021 0.590 0.0258 0.0% 0.88 [0.88, 0.97] 2021 Zhang et al. 2021 0.590 0.0258 0.0058 0.00 0.0058								
Koslow et al. 2020								
Pajarse et al. 2020 O.548 0.04469 0.0% 0.55 [0.44, 0.64] 2020 Wang et al. 2020 0.58 0.05661 0.0% 0.55 [0.44, 0.64] 2020 Wang et al. 2021 0.08 0.05687 0.0% 0.56 [0.58, 0.79] 2020 Chen et al. 2021 0.625 0.02507 0.0% 0.0% 0.58 [0.75, 0.01] 2021 Chen et al. 2021 0.88 0.06499 0.0% 0.58 [0.75, 0.01] 2021 Deasy et al. 2021 0.88 0.06499 0.0% 0.58 [0.75, 0.01] 2021 Chen et al. 2021 0.816 0.02146 0.00 0.0 0.58 [0.75, 0.01] 2021 Chen et al. 2021 0.816 0.02146 0.00 0.0 0.52 [0.77, 0.86] 2021 Han et al. 2021 0.88 0.06499 0.0% 0.58 [0.75, 0.01] 2021 Chen et al. 2021 0.88 0.06290 0.0% 0.05 [0.58, 0.79] 2021 Han et al. 2021 0.88 0.0525 0.0% 0.05 [0.58, 0.79] 2021 Ched et al. 2021 0.88 0.0325 0.0% 0.05 [0.58, 0.79] 2021 Ched et al. 2021 0.88 0.0325 0.0% 0.05 [0.58, 0.79] 2021 Ched et al. 2021 0.88 0.0325 0.08 16 [0.02146] 0.00 0.05 [0.58, 0.79] 2021 Ched et al. 2021 0.88 0.0325 0.08 16 [0.00] 0.05 [0.58, 0.79] 2021 Ched et al. 2021 0.88 0.0325 0.08 16 [0.00] 0.05 [0.59, 0.10] 2021 Chatta et al. 2021 0.88 0.07882 0.0% 0.05 [0.59, 0.10] 2021 Chatta et al. 2021 0.89 0.00289 0.00 0.00 0.05 [0.59, 0.10] 2021 Chang et al. 2021 0.89 0.00289 0.00289 0.00 0.05 [0.50, 0.55] 2021 Ched et al. 2021 0.89 0.00289 0.00								
Shkeir et al. 2020								
Bondue et al. 2021	-							
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3.1.2 Single or multiple lobe biopsy Kropski et al. 2013					0.74 [0.67, 0.82]			•
S.1.2 Single or multiple lobe biopsy Kropski et al. 2013 0.8 0.08 2.2% 0.80 [0.64, 0.96] 2013 Fruchter et al. 2014 0.973 0.01872 4.0% 0.977 [0.94, 1.01] 2014 Hermandez-Gonzalez et al. 2015 0.79 0.0709 2.5% 0.79 [0.65, 0.93] 2015 Bango-Alvarez et al. 2017 0.887 0.03075 3.7% 0.89 [0.83, 0.95] 2017 Marcoa et al. 2017 0.878 0.030075 3.7% 0.89 [0.83, 0.95] 2017 Marcoa et al. 2017 0.878 0.038075 3.5% 0.88 [0.80, 0.95] 2017 Marcoa et al. 2017 0.878 0.038075 3.5% 0.88 [0.80, 0.95] 2017 Marcoa et al. 2017 0.514 0.0581 2.9% 0.51 [0.40, 0.63] 2017 Marcoa et al. 2018 0.781 0.03656 3.6% 0.78 0.78 0.79 0.79 0.79 2018 Marcoa et al. 2018 0.44 0.04868 3.2% 0.44 (0.34, 0.54] 2018 Marcoa et al. 2018 0.999 0.005 4.2% 1.00 (0.99, 1.01] 2018 Marcoa et al. 2019 0.734 0.04232 3.4% 0.73 (0.56, 0.82) 2019 Marcoa et al. 2019 0.926 0.04628 3.2% 0.93 0.84 1.02 2019 Marcoa et al. 2019 0.926 0.04628 3.2% 0.93 0.84 1.02 2019 Marcoa et al. 2019 0.936 0.03057 3.7% 0.96 0.990 0.20 2019 Marcoa et al. 2019 0.956 0.03057 3.7% 0.96 0.990 0.20 2019 Marcoa et al. 2019 0.956 0.03057 3.7% 0.96 0.990 0.02 2020 Marcoa et al. 2020 0.96 0.04303 3.4% 0.66 0.56 0.58 2020 Marcoa et al. 2020 0.96 0.04303 3.4% 0.66 0.56 0.58 0.93 2021 Marcoa et al. 2020 0.956 0.03057 3.7% 0.90 0.83 0.97 2020 Marcoa et al. 2021 0.656 0.08398 2.1% 0.66 0.056 0.58 0.20 2021 Marcoa et al. 2022 0.95 0.0484 3.8% 0.72 0.066 0.04903 2022 Marcoa et al. 2022 0.95 0.0484 3.9% 0.95 0.90 0.010 2022 Marcoa et al. 2022 0.85 0.0461 3.3% 0.85 0.76 0.94 2022 Marcoa et al. 2022 0.85 0.0461 3.3% 0.85 0.76 0.94 2022 Marcoa et al. 2022 0.85 0.0461 3.3% 0.85 0.76 0.94 2022 Marcoa et al. 2022 0.85 0			0.0006);	$I^2 = 75\%$				
Fruchter et al. 2013	Test for overall effect. $Z = 19.71$	(F < 0.00001)						
Fruchter et al. 2014	3.1.2 Single or multiple lobe bio	psy						
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Dhooria et al. 2018								
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Walscher et al. 2019		0.44	0.04868	3.2%	0.44 [0.34, 0.54]	2018		-
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O'Mahoney et al. 2021 Castellani et al. 2022 0.95 0.02484 3.9% 0.95 [0.90, 1.00] 2022 Hackner et al. 2022 0.999 0.00116 4.2% 1.00 [1.00, 1.00] 2022 Li et al. 2022 0.85 0.0461 3.3% 0.85 0.76 0.94] 2022 Wahidi et al. 2022 0.813 0.09748 1.8% 0.81 0.62, 1.00] 2022 Wahidi et al. 2022 3.85 0.81 0.813 0.89748 1.8% 0.81 0.62, 1.00] 2022 Subtotal (95% CI) 80.5% 0.81 [0.78, 0.85] Heterogeneity: Tau² = 0.01; Chi² = 677.81, df = 24 (P < 0.00001); l² = 96% Test for overall effect: Z = 45.32 (P < 0.00001) Total (95% CI) 100.0% 0.80 0.80 0.76, 0.83 4 Heterogeneity: Tau² = 0.01; Chi² = 872.12, df = 31 (P < 0.00001); l² = 96% Test for overall effect: Z = 45.87 (P < 0.00001)								_
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Test for overall effect: Z = 45.32 (P < 0.00001) Total (95% CI) Heterogeneity: Tau² = 0.01; Chi² = 872.12, df = 31 (P < 0.00001); I² = 96% Test for overall effect: Z = 45.87 (P < 0.00001)								◆
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Heterogeneity: $Tau^2 = 0.01$; $Chi^2 = 872.12$, $df = 31$ (P < 0.00001); $I^2 = 96\%$ Test for overall effect: $Z = 45.87$ (P < 0.00001)	rest for overall effect: $Z = 45.32$ (r < 0.00001)						
Test for overall effect: $Z = 45.87 (P < 0.00001)$								♦
Test for overall effect: $Z = 45.87 (P < 0.00001)$			P < 0.0000	(1) ; $I^2 = 90$	6%	-1	-0.5	0.5
rest for subgroup differences: $CnI^- = 3.07$, at = 1 ($P = 0.08$), $I^+ = 67.4\%$			0.000 23	67.40/		-		. 0.3 1
	rest for subgroup differences: Ch	ı = 3.∪/, aī = 1 (P	= v.vs), l²	= o7.4%				

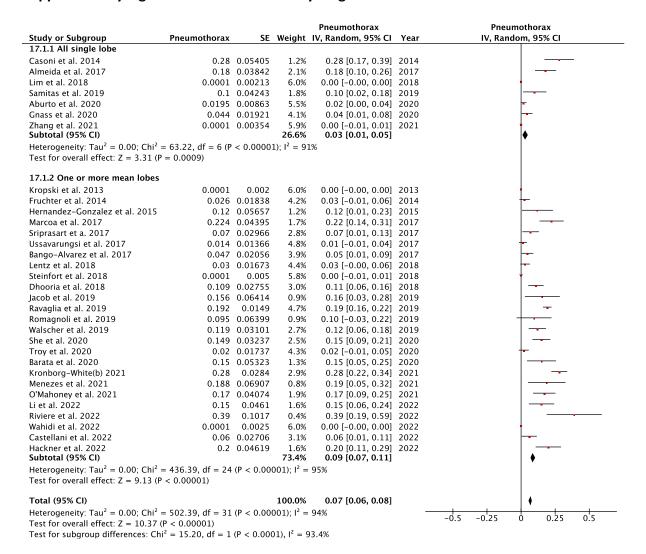
Supplementary Figure 10: Pneumothorax by 1.9mm vs 2.4mm Cryoprobe Size



Supplementary Figure 11: Pneumothorax by Post-Procedure Imaging

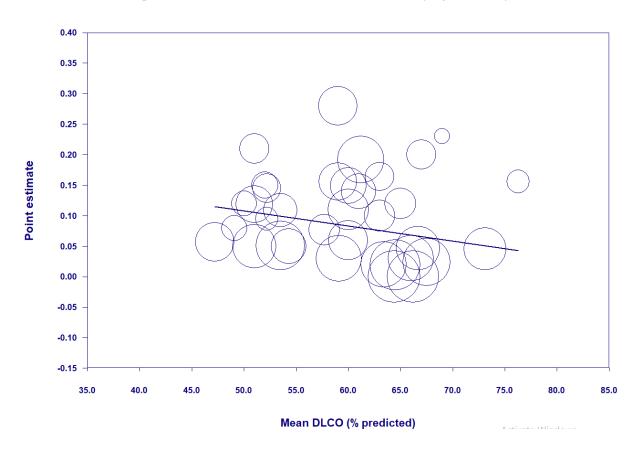
Study or Subgroup 20.1.1 Post-procedure imaging Babiak et al. 2009	Pneumothorax	SF	Weight	Pneumothorax IV, Random, 95% CI	Vear	Pneumothorax IV, Random, 95% CI
	. neumotilorax	36	Teignt	, Kanaom, 55/6 Cl	. cui	. v, Randon, 33/0 Cl
Babiak Et al. 2003	0.05	0.03446	0.8%	0.05 [-0.02, 0.12]	2009	
Casoni et al. 2014		0.05405	0.4%	0.28 [0.17, 0.39]		
ruchter et al. 2014	0.026	0.01838	1.8%	0.03 [-0.01, 0.06]	2014	 -
Hernandez-Gonzalez et al. 2015	0.12	0.05657	0.3%	0.12 [0.01, 0.23]	2015	
Cascante et al. 2016	0.145	0.04748	0.5%	0.14 [0.05, 0.24]	2016	
Ramaswamy et al. 2016	0.196	0.05305	0.4%	0.20 [0.09, 0.30]	2016	
Almeida et al. 2017	0.18	0.03842	0.7%	0.18 [0.10, 0.26]	2017	
Bango-Alvarez et al. 2017	0.047	0.02056	1.6%	0.05 [0.01, 0.09]	2017	-
Marcoa et al. 2017	0.224	0.04395	0.5%	0.22 [0.14, 0.31]	2017	_
Griprasart et a. 2017	0.07	0.02966	1.0%	0.07 [0.01, 0.13]		
Abdelghani 2019	0.05	0.03446	0.8%	0.05 [-0.02, 0.12]		
Cooley et al. 2018	0.11	0.02481	1.3%	0.11 [0.06, 0.16]	2018	
im et al. 2018		0.00213	3.7%	0.00 [-0.00, 0.00]	2018	†
Steinfort et al. 2018	0.0001	0.005	3.5%	0.00 [-0.01, 0.01]		†
Harari et al. 2019		0.03648	0.7%	0.11 [0.04, 0.18]		
acob et al. 2019		0.06414	0.3%	0.16 [0.03, 0.28]		
Kuse et al. 2019		0.00141	3.7%	0.00 [-0.00, 0.00]		†
Ravaglia et al. 2019	0.192		2.2%	0.19 [0.16, 0.22]		
Samitas et al. 2019		0.04243	0.6%	0.10 [0.02, 0.18]		
Shafiek et al. 2019		0.00289	3.6%	0.00 [-0.01, 0.01]		<u>†</u>
Valscher et al. 2019		0.03101	0.9%	0.12 [0.06, 0.18]		
Barata et al. 2020		0.05323	0.4%	0.15 [0.05, 0.25]		
Cirak et al. 2020		0.02873	1.0%	0.07 [0.02, 0.13]		
Gnass et al. 2020		0.01921	1.7%	0.04 [0.01, 0.08]		-
Hussein et al. 2020		0.05877	0.3%	0.09 [-0.03, 0.20]		
ajares et al. 2020		0.01374	2.3%	0.02 [-0.00, 0.05]		 -
Shkeiri et al. 2020		0.02591	1.2%	0.07 [0.02, 0.12]		
Γroy et al. 2020		0.01737	1.9%	0.02 [-0.01, 0.05]		 -
Davidsen et al. 2021		0.02999	1.0%	0.15 [0.09, 0.21]		
Deasy et al. 2021	0.2	0.08	0.2%	0.20 [0.04, 0.36]		
Goel et al. 2021		0.00865	3.0%	0.03 [0.01, 0.04]		*
Hostettler et al. 2021	0.14	0.0347	0.8%	0.14 [0.07, 0.21]	2021	
(ronborg-White(a) 2021	0.23	0.09919	0.1%	0.23 [0.04, 0.42]	2021	
(ronborg-White(b) 2021	0.28	0.0284	1.0%	0.28 [0.22, 0.34]	2021	-
Matta et al. 2021	0.353	0.11591	0.1%	0.35 [0.13, 0.58]	2021	
Menezes et al. 2021	0.188	0.06907	0.2%	0.19 [0.05, 0.32]	2021	_
D'Mahoney et al. 2021	0.17	0.04074	0.6%	0.17 [0.09, 0.25]	2021	
Гuran et al. 2021	0.156	0.02993	1.0%	0.16 [0.10, 0.21]	2021	
Zhang et al. 2021	0.0001	0.00354	3.6%	0.00 [-0.01, 0.01]	2021	†
Zhou et al. 2021	0.028	0.01123	2.7%	0.03 [0.01, 0.05]	2021	<u> </u>
Castellani et al. 2022	0.06	0.02706	1.1%	0.06 [0.01, 0.11]	2022	-
Hackner et al. 2022	0.2	0.04619	0.5%	0.20 [0.11, 0.29]	2022	
i et al. 2022	0.15	0.0461	0.5%	0.15 [0.06, 0.24]	2022	
Zhao et al. 2022	0.0001	0.00289	3.6%	0.00 [-0.01, 0.01]	2022	† .
			57.9%	0.07 [0.06, 0.08]		•
Subtotal (95% CI)				0.20/		
Heterogeneity: Tau ² = 0.00; Chi ² =		(P < 0.000)	$(001); I^2 =$	95%		
		(P < 0.000	001); I ² =	93%		
Heterogeneity: Tau ² = 0.00; Chi ² =		(P < 0.000)01); I ² =	95%		
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 0.00$		0.002	3.7%	0.00 [-0.00, 0.00]	2013	
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 0.00$; Chi ² = Fest for overall effect: $Z = 12.50$ (20.1.2 No imaging	P < 0.00001) 0.0001					
Heterogeneity: Tau ² = 0.00; Chi ² = Fest for overall effect: Z = 12.50 (20.1.2 No imaging Kropski et al. 2013	P < 0.00001) 0.0001 0.0001	0.002	3.7%	0.00 [-0.00, 0.00]	2014	
Heterogeneity: Tau ² = 0.00; Chi ² = Fest for overall effect: Z = 12.50 (20.1.2 No imaging Kropski et al. 2013 Griff et al. 2014	P < 0.00001) 0.0001 0.0001 0.077	0.002 0.00139	3.7% 3.7%	0.00 [-0.00, 0.00] 0.00 [-0.00, 0.00]	2014 2014	-
Heterogeneity: Tau ² = 0.00; Chi ² = 12.50 (Fest for overall effect: Z = 12.50 (20.1.2 No imaging Cropski et al. 2013 Criff et al. 2014 Pajares et al. 2014 Echvarria-Uraga et al. 2016	P < 0.00001) 0.0001 0.0001 0.077 0.03	0.002 0.00139 0.04269	3.7% 3.7% 0.5%	0.00 [-0.00, 0.00] 0.00 [-0.00, 0.00] 0.08 [-0.01, 0.16]	2014 2014 2016	
Heterogeneity: Tau ² = 0.00; Chi ² = Fest for overall effect: Z = 12.50 (20.1.2 No imaging Kropski et al. 2013 Griff et al. 2014 Pajares et al. 2014 Ectivarria-Uraga et al. 2016 Fomassetti et al. 2016 Jssavarungsi et al. 2017	P < 0.00001) 0.0001 0.0001 0.077 0.03 0.33	0.002 0.00139 0.04269 0.01706	3.7% 3.7% 0.5% 1.9%	0.00 [-0.00, 0.00] 0.00 [-0.00, 0.00] 0.08 [-0.01, 0.16] 0.03 [-0.00, 0.06]	2014 2014 2016 2016	
Heterogeneity: Tau ² = 0.00; Chi ² = Fest for overall effect: Z = 12.50 (20.1.2 No imaging Kropski et al. 2013 Griff et al. 2014 Vajares et al. 2014 Ichvarria-Uraga et al. 2016 Fomassetti et al. 2016	P < 0.00001) 0.0001 0.077 0.03 0.33 0.014	0.002 0.00139 0.04269 0.01706 0.06174	3.7% 3.7% 0.5% 1.9% 0.3%	0.00 [-0.00, 0.00] 0.00 [-0.00, 0.00] 0.08 [-0.01, 0.16] 0.03 [-0.00, 0.06] 0.33 [0.21, 0.45]	2014 2014 2016 2016 2017	
Heterogeneity: Tau ² = 0.00; Chi ² = Fest for overall effect: Z = 12.50 (20.1.2 No imaging Kropski et al. 2013 Griff et al. 2014 Pajares et al. 2014 Ectivarria-Uraga et al. 2016 Fomassetti et al. 2016 Jssavarungsi et al. 2017	P < 0.00001) 0.0001 0.0001 0.077 0.03 0.33 0.014 0.109	0.002 0.00139 0.04269 0.01706 0.06174 0.01366	3.7% 3.7% 0.5% 1.9% 0.3% 2.3%	0.00 [-0.00, 0.00] 0.00 [-0.00, 0.00] 0.08 [-0.01, 0.16] 0.03 [-0.00, 0.06] 0.33 [0.21, 0.45] 0.01 [-0.01, 0.04]	2014 2014 2016 2016 2017 2018	
Heterogeneity: Tau ² = 0.00; Chi ² = Fest for overall effect: Z = 12.50 (20.1.2 No imaging Kropski et al. 2013 Griff et al. 2014 Pajares et al. 2014 Chvarria-Uraga et al. 2016 Josavarungsi et al. 2017 Ohooria et al. 2018	P < 0.00001) 0.0001 0.0001 0.077 0.03 0.33 0.014 0.109 0.03 0.164	0.002 0.00139 0.04269 0.01706 0.06174 0.01366 0.02755 0.01673 0.04741	3.7% 3.7% 0.5% 1.9% 0.3% 2.3% 1.1%	0.00 [-0.00, 0.00] 0.00 [-0.00, 0.00] 0.08 [-0.01, 0.16] 0.03 [-0.00, 0.06] 0.33 [0.21, 0.45] 0.01 [-0.01, 0.04] 0.11 [0.06, 0.16]	2014 2014 2016 2016 2017 2018 2018	
Heterogeneity: Tau ² = 0.00; Chi ² = fest for overall effect: Z = 12.50 (20.1.2 No imaging Gropski et al. 2013 Griff et al. 2014 Cajares et al. 2014 Cajares et al. 2014 Cajares et al. 2016 Gromassetti et al. 2016 Jossavarungsi et al. 2017 Ohooria et al. 2018 Lentz et al. 2018	P < 0.00001) 0.0001 0.0001 0.077 0.03 0.33 0.014 0.109 0.03 0.164	0.002 0.00139 0.04269 0.01706 0.06174 0.01366 0.02755 0.01673	3.7% 3.7% 0.5% 1.9% 0.3% 2.3% 1.1% 2.0%	0.00 [-0.00, 0.00] 0.00 [-0.00, 0.00] 0.08 [-0.01, 0.16] 0.03 [-0.00, 0.06] 0.33 [0.21, 0.45] 0.01 [-0.01, 0.04] 0.11 [0.06, 0.16] 0.03 [-0.00, 0.06]	2014 2014 2016 2016 2017 2018 2018 2019	
Heterogeneity: Tau ² = 0.00; Chi ² = Test for overall effect: Z = 12.50 (20.1.2 No imaging Kropski et al. 2013 Griff et al. 2014 Grigares et al. 2014 Gromassetti et al. 2016 Gromassetti et al. 2016 Josavarungsi et al. 2017 Dhooria et al. 2018 Lentz et al. 2018 Hagmeyer et al. 2019	P < 0.00001) 0.0001 0.0001 0.077 0.03 0.33 0.014 0.109 0.03 0.164 0.095	0.002 0.00139 0.04269 0.01706 0.06174 0.01366 0.02755 0.01673 0.04741	3.7% 3.7% 0.5% 1.9% 0.3% 2.3% 1.1% 2.0% 0.5%	0.00 [-0.00, 0.00] 0.00 [-0.00, 0.00] 0.08 [-0.01, 0.16] 0.03 [-0.00, 0.06] 0.33 [0.21, 0.45] 0.01 [-0.01, 0.04] 0.11 [0.06, 0.16] 0.03 [-0.00, 0.06] 0.16 [0.07, 0.26]	2014 2014 2016 2016 2017 2018 2018 2019 2019	
Heterogeneity: Tau ² = 0.00; Chi ² = Test for overall effect: Z = 12.50 (20.1.2 No imaging Kropski et al. 2013 Griff et al. 2014 Pajares et al. 2014 Comassetti et al. 2016 Josavarungsi et al. 2017 Dhooria et al. 2018 Hentz et al. 2018 Hentz et al. 2019 Romagnoli et al. 2019 Wijmans et al. 2019 Wijmans et al. 2019 Cho et al. 2019 Cho et al. 2019	P < 0.00001) 0.0001 0.0001 0.077 0.03 0.33 0.014 0.109 0.03 0.164 0.095 0.214 0.0001	0.002 0.00139 0.04269 0.01706 0.06174 0.01366 0.02755 0.01673 0.04741 0.06399 0.10961 0.00158	3.7% 3.7% 0.5% 1.9% 0.3% 2.3% 1.1% 2.0% 0.5% 0.3%	0.00 [-0.00, 0.00] 0.00 [-0.00, 0.00] 0.08 [-0.01, 0.16] 0.03 [-0.00, 0.06] 0.33 [0.21, 0.45] 0.01 [-0.01, 0.04] 0.11 [0.06, 0.16] 0.03 [-0.00, 0.06] 0.16 [0.07, 0.26] 0.10 [-0.03, 0.22] 0.21 [-0.00, 0.43] 0.00 [-0.00, 0.00]	2014 2014 2016 2016 2017 2018 2018 2019 2019 2019 2019	
Heterogeneity: Tau ² = 0.00; Chi ² = 1est for overall effect: Z = 12.50 (20.1.2 No imaging Kropski et al. 2013 Griff et al. 2014 Pajares et al. 2014 Echvarria-Uraga et al. 2016 Fomassetti et al. 2016 Jesavarungsi et al. 2017 Dhooria et al. 2018 Hentz et al. 2018 Heagmeyer et al. 2019 Romagnoli et al. 2019 Vijmans et al. 2019	P < 0.00001) 0.0001 0.0001 0.077 0.03 0.33 0.014 0.109 0.03 0.164 0.095 0.214 0.0001 0.046	0.002 0.00139 0.04269 0.01706 0.06174 0.01366 0.02755 0.01673 0.04741 0.06399 0.10961 0.00158 0.002246	3.7% 3.7% 0.5% 1.9% 0.3% 2.3% 1.1% 2.0% 0.5% 0.1% 3.7% 1.4%	0.00 [-0.00, 0.00] 0.00 [-0.00, 0.00] 0.08 [-0.01, 0.16] 0.03 [-0.00, 0.06] 0.33 [0.21, 0.45] 0.01 [-0.01, 0.04] 0.11 [0.06, 0.16] 0.03 [-0.00, 0.06] 0.16 [0.07, 0.26] 0.10 [-0.03, 0.22] 0.21 [-0.00, 0.43] 0.00 [-0.00, 0.00]	2014 2014 2016 2016 2017 2018 2018 2019 2019 2019 2019 2020	
Heterogeneity: Tau ² = 0.00; Chi ² = Test for overall effect: Z = 12.50 (20.1.2 No imaging Kropski et al. 2013 Griff et al. 2014 Grigares et al. 2014 Gromassetti et al. 2016 Gromassetti et al. 2016 Josavarungsi et al. 2017 Dhooria et al. 2018 Hentz et al. 2018 Hagmeyer et al. 2019 Komagnoli et al. 2019 Vijmans et al. 2019 Cho et al. 2019 Chomata et al. 2020 Kheir et al. 2020	P < 0.00001) 0.0001 0.0001 0.077 0.03 0.33 0.014 0.109 0.03 0.164 0.095 0.214 0.0001 0.046	0.002 0.00139 0.04269 0.01706 0.06174 0.01366 0.02755 0.01673 0.04741 0.06399 0.10961 0.00158 0.00246 0.02246	3.7% 3.7% 0.5% 1.9% 0.3% 2.3% 1.1% 2.0% 0.5% 0.1% 3.7%	0.00 [-0.00, 0.00] 0.00 [-0.00, 0.00] 0.08 [-0.01, 0.16] 0.03 [-0.00, 0.06] 0.33 [0.21, 0.45] 0.01 [-0.01, 0.04] 0.11 [0.06, 0.16] 0.03 [-0.00, 0.06] 0.16 [0.07, 0.26] 0.10 [-0.03, 0.22] 0.21 [-0.00, 0.43] 0.00 [-0.00, 0.00] 0.05 [0.00, 0.09] 0.08 [-0.03, 0.19]	2014 2014 2016 2016 2017 2018 2018 2019 2019 2019 2019 2020	
Heterogeneity: Tau ² = 0.00; Chi ² = fest for overall effect: Z = 12.50 (20.1.2 No imaging Gropski et al. 2013 Griff et al. 2014 Pajares et al. 2014 Comarsetti et al. 2016 Comassetti et al. 2016 Comassetti et al. 2017 Comboria et al. 2018 Lentz et al. 2018 Lentz et al. 2018 Comagnoli et al. 2019 Comagnoli et al. 2019 Comagnoli et al. 2019 Comagnoli et al. 2019 Comata et al. 2019 Comata et al. 2019 Comata et al. 2019 Comata et al. 2019	P < 0.00001) 0.0001 0.0001 0.077 0.03 0.33 0.014 0.109 0.03 0.164 0.095 0.214 0.0001 0.046	0.002 0.00139 0.04269 0.01706 0.06174 0.01366 0.02755 0.01673 0.04741 0.06399 0.10961 0.00158 0.002246	3.7% 3.7% 0.5% 1.9% 0.3% 2.3% 1.1% 2.0% 0.5% 0.1% 3.7% 1.4%	0.00 [-0.00, 0.00] 0.00 [-0.00, 0.00] 0.08 [-0.01, 0.16] 0.03 [-0.00, 0.06] 0.03 [0.21, 0.45] 0.01 [-0.01, 0.04] 0.11 [0.06, 0.16] 0.03 [-0.00, 0.06] 0.16 [0.07, 0.26] 0.10 [-0.03, 0.22] 0.21 [-0.00, 0.43] 0.00 [-0.00, 0.00] 0.05 [0.00, 0.09] 0.08 [-0.03, 0.19] 0.05 [0.01, 0.09]	2014 2014 2016 2016 2017 2018 2018 2019 2019 2019 2019 2020 2020	
Heterogeneity: Tau ² = 0.00; Chi ² = Test for overall effect: Z = 12.50 (20.1.2 No imaging Kropski et al. 2013 Griff et al. 2014 Pajares et al. 2014 Comassetti et al. 2016 Comassetti et al. 2016 Comassetti et al. 2017 Chooria et al. 2018 Hentz et al. 2018 Heagmeyer et al. 2019 Romagnoli et al. 2019 Wijmans et al. 2019 Cho et al. 2019 Inomata et al. 2020 Koslow et al. 2020 Koslow et al. 2020 Cheir et al. 2020 Cho et al. 2020 Cho et al. 2020 Chole et al. 2020	P < 0.00001) 0.0001 0.0001 0.077 0.03 0.33 0.014 0.109 0.03 0.164 0.095 0.214 0.0001 0.046 0.08 0.05 0.149	0.002 0.00139 0.04269 0.01706 0.06174 0.02755 0.01673 0.04741 0.06399 0.10961 0.00158 0.02246 0.0538 0.0199 0.03237	3.7% 3.7% 0.5% 1.9% 0.3% 1.1% 2.0% 0.5% 0.3% 0.1% 3.7% 1.4% 0.3%	0.00 [-0.00, 0.00] 0.00 [-0.00, 0.00] 0.08 [-0.01, 0.16] 0.03 [-0.00, 0.06] 0.03 [-0.00, 0.04] 0.11 [0.06, 0.16] 0.03 [-0.00, 0.06] 0.16 [0.07, 0.26] 0.10 [-0.03, 0.22] 0.21 [-0.00, 0.43] 0.00 [-0.00, 0.00] 0.05 [0.00, 0.09] 0.08 [-0.03, 0.19] 0.05 [0.01, 0.09] 0.15 [0.01, 0.09]	2014 2014 2016 2016 2017 2018 2018 2019 2019 2019 2020 2020 2020 2020	
Heterogeneity: Tau ² = 0.00; Chi ² = 1est for overall effect: Z = 12.50 (20.1.2 No imaging Gropski et al. 2013 Griff et al. 2014 Equation (20.1.2 Gropski et al. 2014 Equation (20.1.2 Gropski et al. 2014 Equation (20.1.2 Gropski et al. 2016 Gromassetti et al. 2016 Gromassetti et al. 2016 Gromassetti et al. 2016 Gromassetti et al. 2018 Equation (20.1.2 Gropski et al. 2019 Gropski et al. 2020 Cheir et al. 2020 Groslow et al. 2020 Groslow et al. 2020 Groslow et al. 2020 Groslow et al. 2020 Gropski et al. 2020 Groslow et al	P < 0.00001) 0.0001 0.0001 0.077 0.03 0.33 0.014 0.109 0.03 0.164 0.095 0.214 0.0001 0.046 0.08 0.05 0.149 0.043	0.002 0.00139 0.04269 0.01706 0.06174 0.02755 0.01673 0.04741 0.06399 0.10961 0.00158 0.02246 0.05538 0.0199 0.03237	3.7% 3.7% 0.5% 1.9% 0.3% 2.3% 1.1% 0.5% 0.3% 0.1% 3.7%	0.00 [-0.00, 0.00] 0.00 [-0.00, 0.00] 0.08 [-0.01, 0.16] 0.03 [-0.00, 0.06] 0.03 [0.21, 0.45] 0.01 [-0.01, 0.04] 0.11 [0.06, 0.16] 0.03 [-0.00, 0.06] 0.16 [0.07, 0.26] 0.10 [-0.03, 0.22] 0.21 [-0.00, 0.43] 0.00 [-0.00, 0.00] 0.05 [0.00, 0.09] 0.08 [-0.03, 0.19] 0.05 [0.01, 0.09]	2014 2014 2016 2016 2017 2018 2018 2019 2019 2019 2020 2020 2020 2020	
Heterogeneity: Tau ² = 0.00; Chi ² = Test for overall effect: Z = 12.50 (20.1.2 No imaging Kropski et al. 2013 Griff et al. 2014 Pajares et al. 2014 Comassetti et al. 2016 Comassetti et al. 2016 Comassetti et al. 2017 Chooria et al. 2018 Hentz et al. 2018 Heagmeyer et al. 2019 Romagnoli et al. 2019 Wijmans et al. 2019 Cho et al. 2019 Inomata et al. 2020 Koslow et al. 2020 Koslow et al. 2020 Cheir et al. 2020 Cho et al. 2020 Cho et al. 2020 Chole et al. 2020	P < 0.00001) 0.0001 0.0001 0.077 0.03 0.33 0.014 0.109 0.03 0.164 0.095 0.214 0.0001 0.046 0.08 0.05 0.149 0.043	0.002 0.00139 0.04269 0.01706 0.06174 0.02755 0.01673 0.04741 0.06399 0.10961 0.00158 0.02246 0.0538 0.0199 0.03237	3.7% 3.7% 0.5% 1.9% 0.3% 1.1% 2.0% 0.5% 0.3% 0.1% 3.7% 1.4% 0.3%	0.00 [-0.00, 0.00] 0.00 [-0.00, 0.00] 0.08 [-0.01, 0.16] 0.03 [-0.00, 0.06] 0.03 [-0.00, 0.04] 0.11 [0.06, 0.16] 0.03 [-0.00, 0.06] 0.16 [0.07, 0.26] 0.10 [-0.03, 0.22] 0.21 [-0.00, 0.43] 0.00 [-0.00, 0.00] 0.05 [0.00, 0.09] 0.08 [-0.03, 0.19] 0.05 [0.01, 0.09] 0.15 [0.01, 0.09]	2014 2014 2016 2016 2017 2018 2018 2019 2019 2019 2020 2020 2020 2020 2020	
Heterogeneity: Tau ² = 0.00; Chi ² = Test for overall effect: Z = 12.50 (20.1.2 No imaging Kropski et al. 2013 Griff et al. 2014 Pajares et al. 2014 Pajares et al. 2016 Pomassetti et al. 2016 Pomassetti et al. 2017 Phooria et al. 2018 Hentz et al. 2018 Hentz et al. 2019 Romagnoli et al. 2019 Romagnoli et al. 2019 Cho et al. 2019 Cho et al. 2020 Koslow et al. 2020 Koslow et al. 2020 Vang et al. 2020 Vang et al. 2020	P < 0.00001) 0.0001 0.0001 0.077 0.03 0.33 0.014 0.109 0.03 0.164 0.095 0.214 0.0001 0.046 0.08 0.05 0.149 0.043 0.0195 0.057	0.002 0.00139 0.04269 0.01706 0.06174 0.01366 0.02755 0.01673 0.04741 0.06399 0.10961 0.00158 0.00158 0.01538 0.0199 0.03237 0.0246 0.03237	3.7% 3.7% 0.5% 1.9% 0.3% 2.3% 1.1% 2.0% 0.5% 0.3% 1.4% 0.3% 1.7% 1.4% 0.3% 1.7%	0.00 [-0.00, 0.00] 0.00 [-0.00, 0.00] 0.08 [-0.01, 0.16] 0.03 [-0.00, 0.06] 0.33 [0.21, 0.45] 0.01 [-0.01, 0.04] 0.11 [0.06, 0.16] 0.03 [-0.00, 0.06] 0.16 [0.07, 0.26] 0.10 [-0.03, 0.22] 0.21 [-0.00, 0.43] 0.00 [-0.00, 0.00] 0.05 [0.00, 0.09] 0.08 [-0.03, 0.19] 0.05 [0.01, 0.09] 0.15 [0.09, 0.21] 0.04 [-0.00, 0.09] 0.02 [0.00, 0.04] 0.06 [0.00, 0.11]	2014 2014 2016 2016 2017 2018 2019 2019 2019 2019 2020 2020 2020 2020	
Heterogeneity: Tau ² = 0.00; Chi ² = Test for overall effect: Z = 12.50 (20.1.2 No imaging Kropski et al. 2013 Griff et al. 2014 Pajares et al. 2014 Comassetti et al. 2016 Comassetti et al. 2017 Comoria et al. 2018 Lentz et al. 2018 Lentz et al. 2018 Lentz et al. 2019 Romagnoli et al. 2019 Companyoni et al. 2020 Coslow et al. 2020 Coslow et al. 2020 Coslow et al. 2020 Coslow al. 2020 Coslow al. 2020 Coslow al. 2020 Coslow et al. 2020	P < 0.00001) 0.0001 0.0001 0.077 0.03 0.33 0.014 0.109 0.03 0.164 0.095 0.214 0.0001 0.046 0.08 0.05 0.149 0.043 0.0195 0.057 0.026	0.002 0.00139 0.04269 0.01706 0.01366 0.02755 0.01673 0.04741 0.06399 0.10961 0.00158 0.02246 0.05399 0.03237 0.02425 0.00863 0.02771 0.02582	3.7% 3.7% 0.5% 1.9% 0.3% 2.3% 0.5% 0.3% 0.1% 1.4% 0.3% 1.7% 0.3% 1.7%	0.00 [-0.00, 0.00] 0.00 [-0.00, 0.00] 0.08 [-0.01, 0.16] 0.03 [-0.00, 0.06] 0.33 [0.21, 0.45] 0.01 [-0.01, 0.04] 0.11 [0.06, 0.16] 0.03 [-0.00, 0.06] 0.16 [0.07, 0.26] 0.10 [-0.03, 0.22] 0.21 [-0.00, 0.00] 0.05 [0.00, 0.09] 0.08 [-0.03, 0.19] 0.05 [0.01, 0.09] 0.15 [0.09, 0.21] 0.04 [-0.00, 0.09] 0.02 [0.00, 0.04] 0.06 [0.00, 0.11] 0.03 [-0.02, 0.08]	2014 2014 2016 2016 2017 2018 2019 2019 2019 2019 2020 2020 2020 2020	
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Heterogeneity: Tau ² = 0.00; Chi ² = Test for overall effect: Z = 12.50 (20.1.2 No imaging Kropski et al. 2013 Griff et al. 2014 Pajares et al. 2014 Convaria-Uraga et al. 2016 Consassetti et al. 2016 Consassetti et al. 2017 Conoria et al. 2018 Lentz et al. 2018 Lentz et al. 2018 Lentz et al. 2019 Conmagnoli et al. 2019 Wijmans et al. 2019 Wijmans et al. 2019 Cho et al. 2019 Cho et al. 2020 Cheir et al. 2020 Cheir et al. 2020 Chan et al. 2020 Chan et al. 2020 Chan et al. 2021 Chen et al. 2022 Chan et al. 2022 Chan et al. 2022 Chan et al. 2021 Chen et al. 2021 Chen et al. 2021 Chen et al. 2022 Chan et al. 2020 Chan et al. 20	P < 0.00001) 0.0001 0.0001 0.077 0.03 0.33 0.014 0.109 0.03 0.164 0.095 0.214 0.0001 0.046 0.08 0.05 0.149 0.043 0.0195 0.057 0.026 0.0001 0.21 0.051 0.39 0.12 0.0001	0.002 0.00139 0.04269 0.01706 0.06174 0.02755 0.01673 0.04741 0.06399 0.10961 0.00158 0.02246 0.05538 0.0199 0.03237 0.02425 0.03237 0.02425 0.00863 0.02771 0.02582 0.00267 0.00267 0.00139 0.1017 0.0179 0.0025	3.7% 3.7% 0.5% 1.9% 0.3% 2.3% 1.1% 2.0% 0.5% 0.1% 0.3% 1.4% 0.3% 1.7% 0.9% 3.0% 1.1% 3.0% 1.1% 3.0% 1.1% 3.0% 1.1% 3.0%	0.00 [-0.00, 0.00] 0.00 [-0.00, 0.00] 0.08 [-0.01, 0.16] 0.03 [-0.00, 0.06] 0.33 [0.21, 0.45] 0.01 [-0.01, 0.04] 0.11 [0.06, 0.16] 0.03 [-0.00, 0.06] 0.16 [0.07, 0.26] 0.10 [-0.03, 0.22] 0.21 [-0.00, 0.43] 0.00 [-0.00, 0.09] 0.05 [0.01, 0.09] 0.15 [0.01, 0.09] 0.15 [0.00, 0.21] 0.04 [-0.00, 0.01] 0.05 [0.01, 0.09] 0.05 [0.01, 0.09] 0.05 [0.01, 0.09] 0.05 [0.01, 0.09] 0.05 [0.01, 0.09] 0.05 [0.00, 0.01] 0.01 [-0.00, 0.04] 0.06 [0.00, 0.11] 0.03 [-0.02, 0.08] 0.00 [-0.01, 0.01] 0.21 [0.12, 0.30] 0.05 [0.03, 0.07] 0.39 [0.19, 0.59] 0.12 [0.04, 0.20] 0.00 [-0.00, 0.00] 0.00 [-0.00, 0.00]	2014 2014 2016 2016 2017 2018 2019 2019 2019 2020 2020 2020 2020 2020	
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Heterogeneity: Tau ² = 0.00; Chi ² = Test for overall effect: Z = 12.50 (20.1.2 No imaging Kropski et al. 2013 Griff et al. 2014 Pajares et al. 2014 Convaria-Uraga et al. 2016 Consassetti et al. 2016 Consassetti et al. 2017 Conoria et al. 2018 Lentz et al. 2018 Lentz et al. 2018 Lentz et al. 2019 Conmagnoli et al. 2019 Wijmans et al. 2019 Wijmans et al. 2019 Cho et al. 2019 Cho et al. 2020 Cheir et al. 2020 Cheir et al. 2020 Chan et al. 2020 Chan et al. 2020 Chan et al. 2021 Chen et al. 2022 Chan et al. 2022 Chan et al. 2022 Chan et al. 2021 Chen et al. 2021 Chen et al. 2021 Chen et al. 2022 Chan et al. 2020 Chan et al. 20	P < 0.00001) 0.0001 0.0001 0.077 0.03 0.33 0.014 0.109 0.03 0.164 0.095 0.214 0.0001 0.046 0.08 0.05 0.149 0.043 0.0195 0.057 0.026 0.0001 0.21 0.051 0.39 0.12 0.0001	0.002 0.00139 0.04269 0.01706 0.06174 0.01366 0.02755 0.01673 0.04741 0.06399 0.10961 0.00158 0.02246 0.05538 0.0199 0.03237 0.02425 0.00863 0.02771 0.02582 0.00267 0.04526 0.01139 0.1017 0.04195 0.00495 0.0025	3.7% 3.7% 0.5% 1.9% 0.3% 2.3% 1.1% 2.0% 0.5% 0.3% 1.4% 0.3% 1.7% 1.4% 0.3% 1.7% 1.4% 0.5% 2.6% 0.1% 3.7% 1.2% 0.5% 2.6% 0.1% 1.1%	0.00 [-0.00, 0.00] 0.00 [-0.00, 0.00] 0.08 [-0.01, 0.16] 0.03 [-0.00, 0.06] 0.33 [0.21, 0.45] 0.01 [-0.01, 0.04] 0.11 [0.06, 0.16] 0.03 [-0.00, 0.06] 0.16 [0.07, 0.26] 0.10 [-0.03, 0.22] 0.21 [-0.00, 0.43] 0.00 [-0.00, 0.00] 0.05 [0.00, 0.09] 0.05 [0.01, 0.09] 0.05 [0.01, 0.09] 0.05 [0.01, 0.09] 0.05 [0.00, 0.01] 0.04 [-0.00, 0.01] 0.05 [0.00, 0.01] 0.05 [0.01, 0.03] 0.05 [0.01, 0.03] 0.05 [0.01, 0.03] 0.05 [0.01, 0.01] 0.21 [0.12, 0.30] 0.05 [0.03, 0.07] 0.39 [0.19, 0.59] 0.12 [0.04, 0.20] 0.00 [-0.00, 0.00] 0.02 [0.02, 0.03] 86%	2014 2014 2016 2016 2017 2018 2019 2019 2019 2020 2020 2020 2020 2020	5 -0.25 0 0.25 0.5

Supplementary Figure 12: Pneumothorax by Single vs One or More Lobes



Supplementary Figure 13: Pneumothorax by Mean Diffusion Capacity for Carbon Monoxide

Regression of Point estimate on Mean DLCO (% predicted)

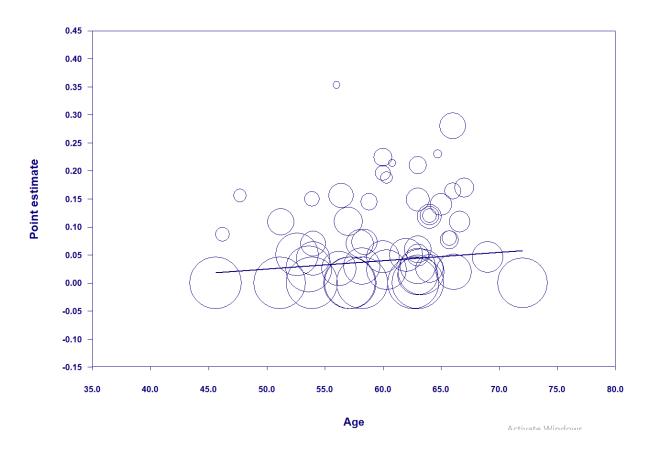


Supplementary Figure 14: Pneumothorax by General Anaesthesia vs Sedation

Study or Subgroup	Pneumothorax	SE	Weight	Pneumothorax IV, Random, 95% CI	Year	Pneumothorax IV, Random, 95% CI
9.1.1 GA		0.03:::		0.051.000.000	2005	
Babiak et al. 2009		0.03446	0.9%	0.05 [-0.02, 0.12]		
Hernandez-Gonzalez et al. 2015		0.05657	0.4%	0.12 [0.01, 0.23]		
Cascante et al. 2016		0.04748 0.01706	0.5% 2.2%	0.14 [0.05, 0.24] 0.03 [-0.00, 0.06]		
Echvarria–Uraga et al. 2016 Almeida et al. 2017		0.01700	0.8%	0.18 [0.10, 0.26]		
Marcoa et al. 2017		0.03842	0.6%	0.18 [0.10, 0.20]		
Sriprasart et a. 2017		0.02966	1.2%	0.07 [0.01, 0.13]		
Abdelghani 2019		0.03446	0.9%	0.05 [-0.02, 0.12]		
Cooley et al. 2018		0.02481	1.5%	0.11 [0.06, 0.16]		-
Steinfort et al. 2018	0.0001	0.005	3.7%	0.00 [-0.01, 0.01]		
Hagmeyer et al. 2019	0.164	0.04741	0.5%	0.16 [0.07, 0.26]		_
acob et al. 2019		0.06414	0.3%	0.16 [0.03, 0.28]		
Shafiek et al. 2019	0.0001	0.00289	3.9%	0.00 [-0.01, 0.01]	2019	•
Walscher et al. 2019	0.119	0.03101	1.1%	0.12 [0.06, 0.18]	2019	
Barata et al. 2020	0.15	0.05323	0.4%	0.15 [0.05, 0.25]	2020	
nomata et al. 2020	0.046	0.02246	1.7%	0.05 [0.00, 0.09]	2020	-
Cheir et al. 2020	0.08	0.05538	0.4%	0.08 [-0.03, 0.19]	2020	+
Pajares et al. 2020	0.024	0.01374	2.6%	0.02 [-0.00, 0.05]	2020	 -
She et al. 2020		0.03237	1.0%	0.15 [0.09, 0.21]		
Shkeiri et al. 2020		0.02591	1.4%	0.07 [0.02, 0.12]		-
Froy et al. 2020		0.01737	2.2%	0.02 [-0.01, 0.05]		<u> </u>
Bondue et al. 2021		0.04526	0.6%	0.21 [0.12, 0.30]		
Davidsen et al. 2021		0.02999	1.1%	0.15 [0.09, 0.21]		-
Goel et al. 2021		0.00865	3.3%	0.03 [0.01, 0.04]		*
Han et al. 2021		0.02771	1.3%	0.06 [0.00, 0.11]		
(ronborg-White(a) 2021		0.09919	0.1%	0.23 [0.04, 0.42]		
(ronborg-White(b) 2021	0.28	0.0284 0.11591	1.2% 0.1%	0.28 [0.22, 0.34] 0.35 [0.13, 0.58]		
Matta et al. 2021 Furan et al. 2021		0.02993				
Nu et al. 2021		0.02993	1.1% 3.9%	0.16 [0.10, 0.21] 0.00 [-0.01, 0.01]		
Zhang et al. 2021		0.00267	3.8%	0.00 [-0.01, 0.01]		
Zhou et al. 2021		0.00334	2.9%	0.03 [0.01, 0.05]		_
Castellani et al. 2022		0.02706	1.3%	0.06 [0.01, 0.11]		<u> </u>
Hackner et al. 2022		0.04619	0.6%	0.20 [0.11, 0.29]		
_i et al. 2022	0.15	0.0461	0.6%	0.15 [0.06, 0.24]		
Riviere et al. 2022	0.39	0.1017	0.1%	0.39 [0.19, 0.59]		
Wahidi et al. 2022	0.0001		3.9%	0.00 [-0.00, 0.00]		
Zhao et al. 2022		0.00289	3.9%	0.00 [-0.01, 0.01]		•
Heterogeneity: Tau ² = 0.00; Chi ² : Test for overall effect: Z = 10.59 ((F < 0.00)	001), 1 =	91%		
19.1.2 Sedation						
Kropski et al. 2013	0.0001	0.002	3.9%	0.00 [-0.00, 0.00]		†
Casoni et al. 2014		0.05405	0.4%	0.28 [0.17, 0.39]		
Fruchter et al. 2014		0.01838	2.0%	0.03 [-0.01, 0.06]		
Griff et al. 2014		0.00139	3.9%	0.00 [-0.00, 0.00]		
Pajares et al. 2014		0.04269	0.7%	0.08 [-0.01, 0.16]		
Ramaswamy et al. 2016		0.05305	0.5%	0.20 [0.09, 0.30]		
Fomassetti et al. 2016		0.06174 0.02056	0.3%	0.33 [0.21, 0.45]		
Bango-Alvarez et al. 2017			1.8% 2.6%	0.05 [0.01, 0.09]		Ţ.
Jssavarungsi et al. 2017 Dhooria et al. 2018		0.01366 0.02755	1.3%	0.01 [-0.01, 0.04] 0.11 [0.06, 0.16]		ĺ <u> </u>
entz et al. 2018.		0.02733	2.2%	0.03 [-0.00, 0.06]		
im et al. 2018		0.01073	3.9%	0.03 [-0.00, 0.00]		
Harari et al. 2019		0.03648	0.8%	0.11 [0.04, 0.18]		
(use et al. 2019		0.03048	3.9%	0.00 [-0.00, 0.00]		.
Ravaglia et al. 2019		0.0149	2.5%	0.19 [0.16, 0.22]		-
Romagnoli et al. 2019		0.06399	0.3%	0.10 [-0.03, 0.22]		+
Samitas et al. 2019		0.04243	0.7%	0.10 [0.02, 0.18]		
Vijmans et al. 2019		0.10961	0.1%	0.21 [-0.00, 0.43]		
Cirak et al. 2020		0.02873	1.2%	0.07 [0.02, 0.13]		
Gnass et al. 2020		0.01921	2.0%	0.04 [0.01, 0.08]		 -
Coslow et al. 2020	0.05	0.0199	1.9%	0.05 [0.01, 0.09]		
Vang et al. 2020	0.043	0.02425	1.5%	0.04 [-0.00, 0.09]	2020	 -
Deasy et al. 2021	0.2	0.08	0.2%	0.20 [0.04, 0.36]	2021	
lostettler et al. 2021	0.14	0.0347	0.9%	0.14 [0.07, 0.21]		—
		0.02582	1.4%	0.03 [-0.02, 0.08]		+
	0.17	0.04074	0.7%	0.17 [0.09, 0.25]	2021	,
keda et al. 2021 O'Mahoney et al. 2021	0.17		41 00/	0.05 [0.04, 0.06]		♦
keda et al. 2021 D'Mahoney et al. 2021 Gubtotal (95% CI) Heterogeneity: Tau² = 0.00; Chi²:	= 343.36, df = 25	(P < 0.00	41.8% 001); $I^2 =$			ľ
keda et al. 2021	= 343.36, df = 25	(P < 0.00				
keda et al. 2021 D'Mahoney et al. 2021 Subtotal (95% CI) Heterogeneity: Tau ² = 0.00; Chi ² Fest for overall effect: Z = 8.64 (P	= 343.36, df = 25	(P < 0.00	001); I ² =	93%		<u> </u>
keda et al. 2021 D'Mahoney et al. 2021 Gubtotal (95% CI) Heterogeneity: Tau² = 0.00; Chi²:	= 343.36, df = 25 2 < 0.00001)		001); I ² =	93% 0.05 [0.04, 0.06]	_	-0.5 -0.25 0 0.25 0.5

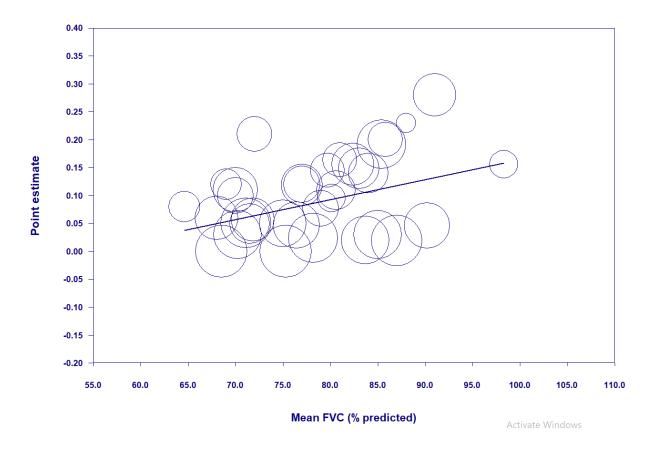
Supplementary Figure 15: Pneumothorax by Age

Regression of Point estimate on Age

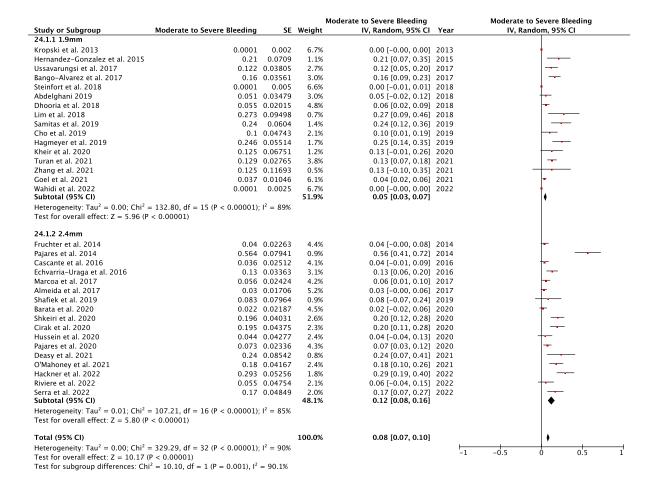


Supplementary Figure 16: Pneumothorax by Mean Forced Vital Capacity

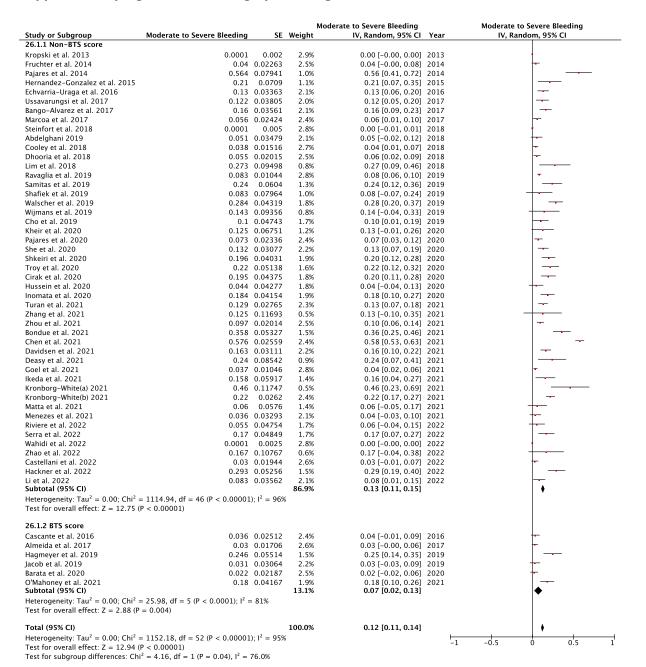
Regression of Point estimate on Mean FVC (% predicted)



Supplementary Figure 17: Bleeding by Probe Size



Supplementary Figure 18: Bleeding by Bleeding Score



Supplementary Figure 19: Severe Bleeding

