Intravascular Imaging Guidance for PCI:

A "Real-Time" Updated Network Meta-analysis

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on behalf of

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Background

- Prior meta-analyses of intravascular imaging (IVI) guidance vs. angiography guidance of PCI procedures have generally shown reductions in MACE with IVI guidance, although none have shown a reduction in all-cause death or all MI, and few prior studies included OCT guidance

- At the 2023 ESC annual scientific sessions, two new major RCTs of OCT-guided vs. angiography-guided PCI have been presented, the international ILUMIEN IV trial in high-risk pts and complex lesions (n=2487) and the EU-based OCTOBER trial in bifurcation lesions (n=1201)

- The ILUMIEN IV and OCTOBER investigators have collaborated to prepare an updated “real-time” network meta-analysis to examine the effects of IVI guidance vs. angiography guidance and OCT vs. IVUS vs. angiography guidance in patients undergoing PCI

Methods 1

- **PRISMA guidance** was followed for systematic reviews and network meta-analyses and this study has been registered with **PROSPERO**
- **A systematic search** was performed for all RCTs of OCT-guided and IVUS-guided PCI
- **The longest available follow-up duration** was used for each trial; outcomes are expressed as relative risks (RR) with 95% confidence intervals (CI)
- **Direct evidence** was generated from 2-stage meta-analysis (prioritizing random effects > fixed effects)
- **Network meta-analysis** was performed to generate **indirect data** and **overall treatment effects** - specified as the **primary analysis** for this study

Methods 2

- **Pre-specified primary analysis:** IVI-guided PCI (OCT-guided or IVUS-guided or both) vs. angiography-guided PCI
- **Pre-specified secondary analyses:** IVUS-guided vs. angiography-guided PCI, OCT-guided vs. angiography-guided PCI, and OCT-guided vs. IVUS-guided PCI
- **Primary outcome measure was TLF** (cardiac death, TV-MI or ID/CD TLR)
- **Secondary outcomes:** TLF components, all-cause death, all MI, ID/CD TVR, definite or probable stent thrombosis
- **Rules for component outcomes:**
  - If cardiac (or CV) death unavailable, use all-cause death
  - If TV-MI unavailable, use all MI
  - If TLR unavailable, use TVR
  - If definite or probable ST unavailable, use definite ST

Summary of Included Studies

20 randomized trials

(publication years 2010 – 2023)

12,428 randomized patients

(range 85 – 2487 pts per trial)

IVUS: 13 randomized arms, 3120 pts

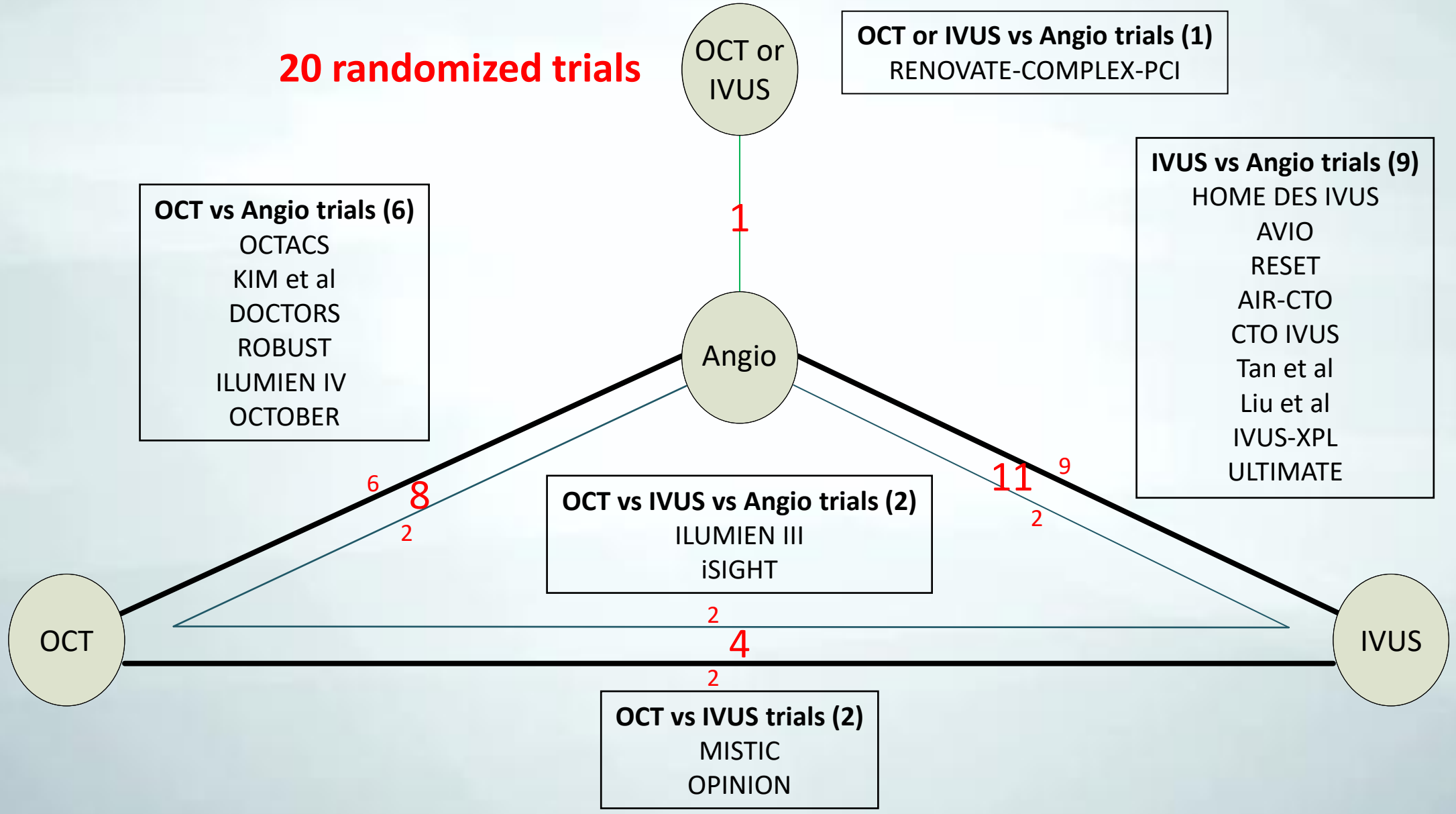
OCT: 10 randomized arms, 2826 pts

OCT or IVUS: 1 randomized arm, 1092 pts

Angiography: 18 randomized arms, 5390 pts

Longest FU: Range 6 – 60 months (weighted mean 26.4 mo)

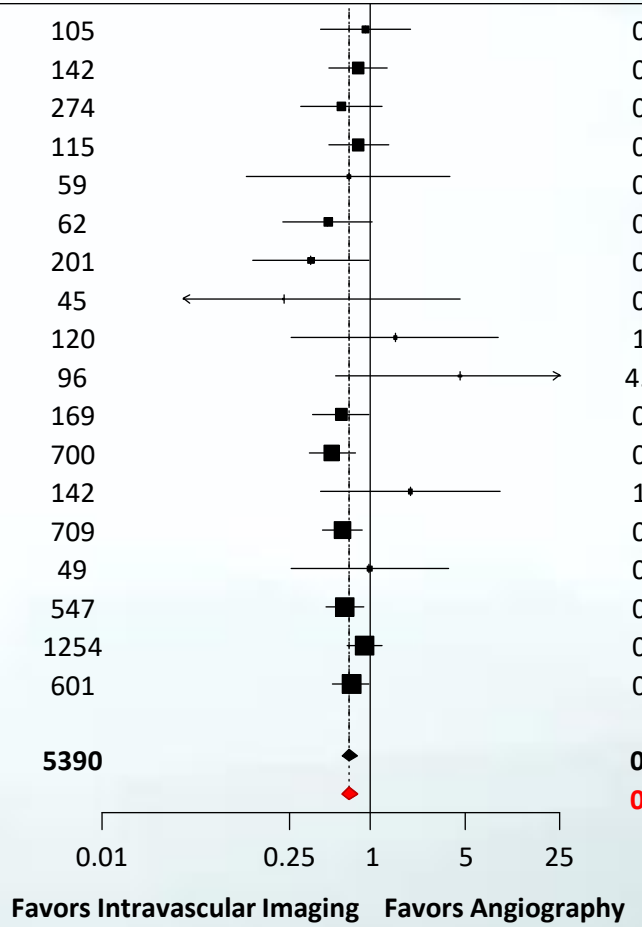
Nodal Map of Direct Relationships



TLF (Direct Evidence): IV Imaging (OCT or IVUS) vs. Angio

18 trials, 11,502 patients, 963 events

Trial and Year	Intravascular Imaging Events	Intravascular Imaging N	Angiography Events	Angiography N	Relative Risk (RR)	RR [95% CI]	Weight (Random)	Weight (Fixed)
HOME DES IVUS, 2010	11	105	12	105		0.92 [0.42, 1.98]	2.5%	2.1%
AVIO, 2013	23	142	29	142		0.79 [0.48, 1.30]	6.1%	5.1%
RESET, 2013	12	269	20	274		0.61 [0.30, 1.23]	3.1%	3.5%
AIR-CTO, 2015	21	115	26	115		0.81 [0.48, 1.35]	5.7%	4.6%
Kim et al, 2015	2	58	3	59		0.68 [0.12, 3.91]	0.5%	0.5%
Tan et al, 2015	8	61	17	62		0.48 [0.22, 1.03]	2.6%	3.0%
CTO-IVUS, 2015	5	201	14	201		0.36 [0.13, 0.97]	1.5%	2.5%
OCTACS, 2015	0	40	2	45		0.22 [0.01, 4.54]	0.2%	0.3%
DOCTORS, 2016	3	120	2	120		1.50 [0.26, 8.82]	0.5%	0.4%
ROBUST, 2018	5	105	1	96		4.57 [0.54, 38.43]	0.3%	0.2%
Liu et al, 2019	22	167	37	169		0.60 [0.37, 0.97]	6.5%	6.5%
IVUS-XPL, 2020	36	700	70	700		0.51 [0.35, 0.76]	10.0%	12.4%
ILUMIEN III, 2021	8	289	2	142		1.97 [0.42, 9.13]	0.6%	0.5%
ULTIMATE, 2021	47	714	76	709		0.61 [0.43, 0.87]	12.4%	13.5%
iSIGHT, 2021	6	101	3	49		0.97 [0.25, 3.72]	0.8%	0.7%
RENOVATE-COMPLEX-PCI, 2023	76	1092	60	547		0.63 [0.46, 0.88]	14.5%	14.2%
ILUMIEN IV, 2023	76	1233	86	1254		0.90 [0.67, 1.21]	16.9%	15.1%
OCTOBER, 2023	59	600	83	601		0.71 [0.52, 0.97]	15.3%	14.7%
Fixed-Effect Model	**420**	**6112**	**543**	**5390**		**0.69 [0.61, 0.78]**	--	**100.0%**
Random-Effect Model (primary analysis)						**0.69 [0.61, 0.78]**	**100.0%**	--



Test for heterogeneity: $I^2 = 0\%$, $\chi^2 = 16.43$ (P=0.49)

Test for overall effect (Fixed): $z = -5.89$ (P<0.0001)

Test for overall effect (Random): $z = -5.87$ (P<0.0001)

RR 0.69, 95% CI 0.61-0.78

OPINION and MISTIC (OCT vs IVUS without an Angio arm) are not included

Cardiac Death (Direct Evidence): IV Imaging vs. Angio

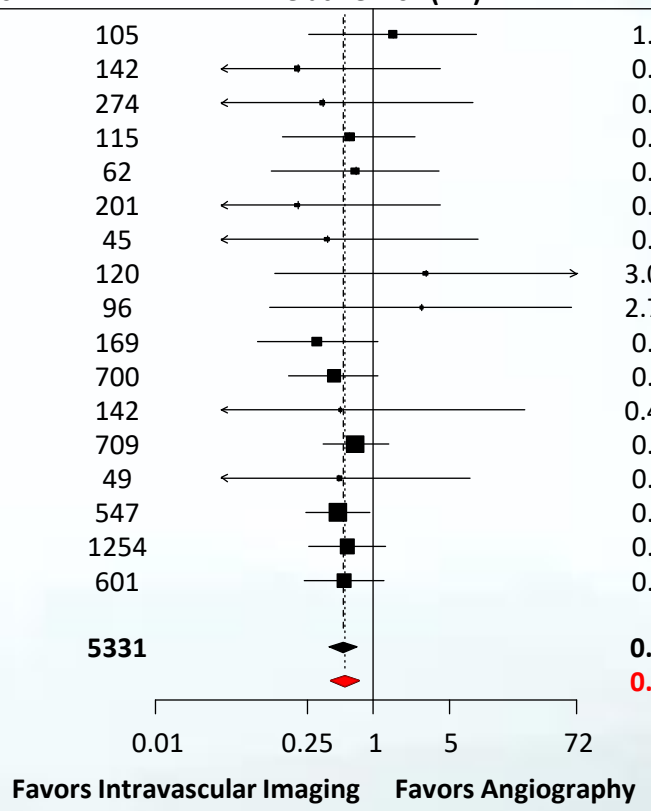
17 trials, 11,385 patients, 174 events

Trial and Year	Intravascular Imaging Events	Intravascular Imaging N	Angiography Events	Angiography N	RR [95% CI]	Weight (Random)	Weight (Fixed)
HOME DES IVUS, 2010	3	105	2	105	1.50 [0.26, 8.79]	3.0%	1.8%
AVIO, 2013	0	142	2	142	0.20 [0.01, 4.13]	1.0%	1.8%
RESET, 2013	0	269	1	274	0.34 [0.01, 8.30]	0.9%	0.9%
AIR-CTO, 2015	3	115	5	115	0.60 [0.15, 2.45]	4.7%	4.4%
Tan et al, 2015	2	61	3	62	0.68 [0.12, 3.91]	3.0%	2.6%
CTO-IVUS, 2015	0	201	2	201	0.20 [0.01, 4.14]	1.0%	1.8%
OCTACS, 2015	0	40	1	45	0.37 [0.02, 8.94]	0.9%	0.8%
DOCTORS, 2016	1	120	0	120	3.00 [0.12, 72.91]	0.9%	0.0%
ROBUST, 2018	1	105	0	96	2.74 [0.11, 66.56]	0.9%	0.0%
Liu et al, 2019	3	167	10	169	0.30 [0.09, 1.08]	5.7%	8.7%
IVUS-XPL, 2020	6	700	14	700	0.43 [0.17, 1.11]	10.2%	12.3%
ILUMIEN III, 2021	0	289	0	142	0.49 [0.01, 24.68]	0.6%	0.0%
ULTIMATE, 2021	13	714	19	709	0.68 [0.34, 1.37]	19.0%	16.8%
iSIGHT, 2021	1	101	1	49	0.49 [0.03, 7.59]	1.2%	1.2%
RENOVATE-COMPLEX-PCI, 2023	16	1092	17	547	0.47 [0.24, 0.93]	20.3%	19.9%
ILUMIEN IV, 2023	9	1233	16	1254	0.57 [0.25, 1.29]	14.0%	13.9%
OCTOBER, 2023	8	600	15	601	0.53 [0.23, 1.25]	12.8%	13.2%
Fixed-Effect Model	**66**	**6054**	**108**	**5331**	**0.53 [0.39, 0.72]**	--	**100.0%**
Random-Effect Model (primary analysis)					**0.54 [0.40, 0.74]**	**100.0%**	--

Test for heterogeneity: $I^2 = 0\%$, $\chi^2 = 6.07$ (P=0.99)

Test for overall effect (Fixed): $z = -4.07$ (P<0.0001)

Test for overall effect (Random): $z = -3.92$ (P<0.0001)



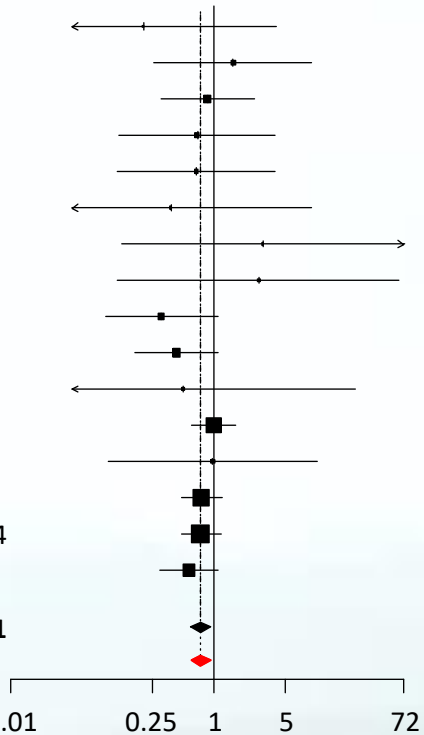
RR 0.54, 95% CI 0.40-0.74

All-cause Death (Direct Evidence): IV Imaging vs. Angio

17 trials, 11,385 patients, 318 events

Study and Year	Intravascular Imaging Events	Intravascular Imaging N	Angiography Events	Angiography N	RR [95% CI]	Weight (Random)	Weight (Fixed)
HOME DES IVUS, 2010	3	105	2	105	1.50 [0.26, 8.79]	1.6%	1.1%
AVIO, 2013	0	142	2	142	0.20 [0.01, 4.13]	0.5%	1.1%
RESET, 2013	3	269	2	274	1.53 [0.26, 9.07]	1.5%	1.1%
AIR-CTO, 2015	6	115	7	115	0.86 [0.30, 2.47]	4.3%	3.9%
Tan et al, 2015	2	61	3	62	0.68 [0.12, 3.91]	1.6%	1.7%
CTO-IVUS, 2015	2	201	3	201	0.67 [0.11, 3.95]	1.5%	1.7%
OCTACS, 2015	0	40	1	45	0.37 [0.02, 8.94]	0.5%	0.5%
DOCTORS, 2016	1	120	0	120	3.00 [0.12,72.91]	0.5%	0.0%
ROBUST, 2018	1	105	0	96	2.74 [0.11, 66.56]	0.5%	0.0%
Liu et al, 2019	3	167	10	169	0.30 [0.09, 1.08]	3.0%	5.5%
IVUS-XPL, 2020	6	700	14	700	0.43 [0.17, 1.11]	5.4%	7.8%
ILUMIEN III, 2021	0	289	0	142	0.49 [0.01, 24.68]	0.3%	0.0%
ULTIMATE, 2021	31	714	31	709	0.99 [0.61, 1.62]	20.5%	17.3%
iSIGHT, 2021	2	101	1	49	0.97 [0.09, 10.44]	0.9%	0.7%
RENOVATE-COMPLEX-PCI, 2023	42	1092	28	547	0.75 [0.47, 1.20]	22.3%	20.7%
ILUMIEN IV, 2023	32	1233	44	1254	0.74 [0.47, 1.16]	24.2%	24.2%
OCTOBER, 2023	13	600	23	601	0.57 [0.29, 1.11]	10.8%	12.8%
Fixed-Effect Model	**147**	**6054**	**171**	**5331**	**0.74 [0.59, 0.92]**	--	**100.0%**
Random-Effect Model (Primary Analysis)					**0.75 [0.60, 0.93]**	**100.0%**	--

Relative Risk (RR)



Test for heterogeneity: $I^2 = 0\%$, $\chi^2 = 8.90$ (P=0.92)

Test for overall effect (Fixed): $z = -2.75$ (P=0.006)

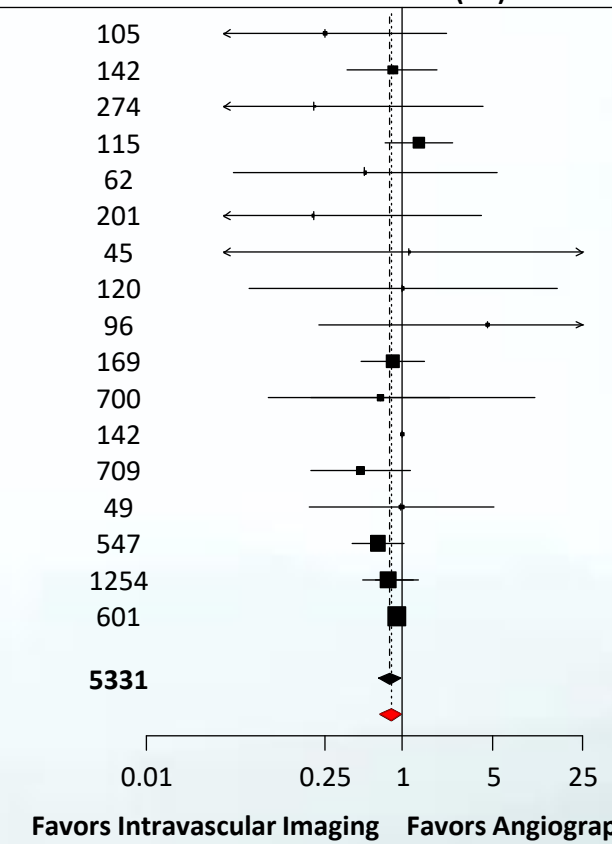
Test for overall effect (Random): $z = -2.61$ (P=0.009)

RR 0.75, 95% CI 0.60-0.93

TV-MI (Direct Evidence): IV Imaging vs. Angio

17 trials, 11,385 patients, 393 events

Trial and Year	Intravascular Imaging Events	Intravascular Imaging N	Angiography Events	Angiography N	RR [95% CI]	Weight (Random)	Weight (Fixed)
HOME DES IVUS, 2010	1	105	4	105	0.25 [0.03, 2.20]	0.8%	1.8%
AVIO, 2013	10	142	12	142	0.83 [0.37, 1.87]	5.8%	5.5%
RESET, 2013	0	269	2	274	0.20 [0.01, 4.22]	0.4%	0.9%
AIR-CTO, 2015	20	115	15	115	1.33 [0.72, 2.47]	9.8%	6.9%
Tan et al, 2015	1	61	2	62	0.51 [0.05, 5.46]	0.7%	0.9%
CTO-IVUS, 2015	0	201	2	201	0.20 [0.01, 4.14]	0.4%	0.9%
OCTACS, 2015	0	40	0	45	1.12 [0.02, 55.33]	0.2%	0.0%
DOCTORS, 2016	1	120	1	120	1.00 [0.06, 15.80]	0.5%	0.5%
ROBUST, 2018	2	105	0	96	4.57 [0.22, 94.07]	0.4%	0.0%
Liu et al, 2019	19	167	23	169	0.84 [0.47, 1.48]	11.6%	10.5%
IVUS-XPL, 2020	4	700	6	700	0.67 [0.19, 2.35]	2.4%	2.8%
ILUMIEN III, 2021	2	289	1	142	0.98 [0.09, 10.75]	0.7%	0.6%
ULTIMATE, 2021	7	714	15	709	0.46 [0.19, 1.13]	4.7%	6.9%
iSIGHT, 2021	4	101	2	49	0.97 [0.18, 5.12]	1.4%	1.2%
RENOVATE-COMPLEX-PCI, 2023	38	1092	30	547	0.63 [0.40, 1.01]	17.1%	18.4%
ILUMIEN IV, 2023	31	1233	41	1254	0.77 [0.49, 1.22]	17.7%	18.7%
OCTOBER, 2023	46	600	51	601	0.90 [0.62, 1.32]	25.6%	23.4%
Fixed-Effect Model	**186**	**6054**	**207**	**5331**	**0.79 [0.65, 0.96]**	--	**100.0%**
Random-Effect Model (primary analysis)					**0.80 [0.66, 0.97]**	**100.0%**	--



Test for heterogeneity: $I^2 = 0\%$, $\chi^2 = 9.81$ (P=0.88)

Test for overall effect (Fixed): $z = -2.42$ (P=0.02)

Test for overall effect (Random): $z = -2.25$ (P=0.02)

RR 0.80, 95% CI 0.66-0.97

All MI (Direct Evidence): IV Imaging vs. Angio

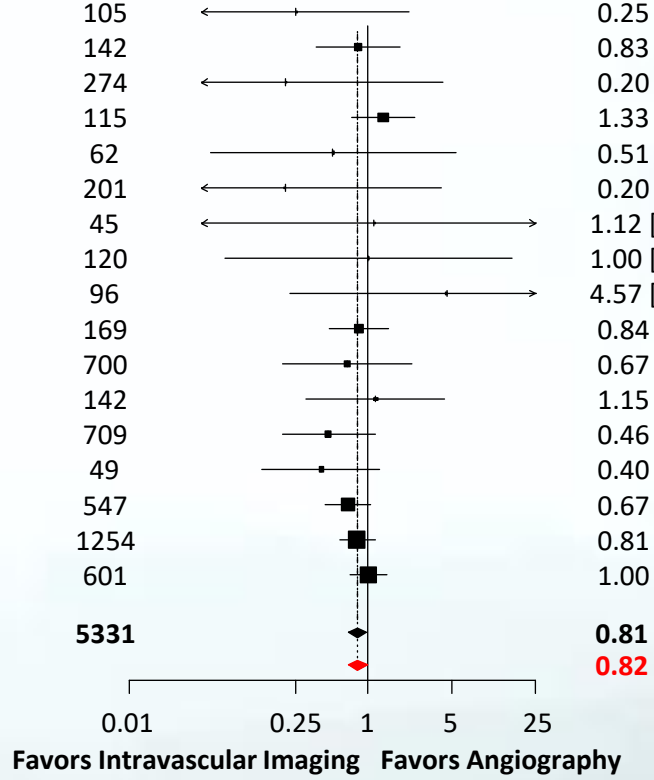
17 trials, 11,385 patients, 480 events

Trial and Year	Intravascular Imaging Events	Intravascular Imaging N	Angiography Events	Angiography N	RR [95% CI]	Weight (Random)	Weight (Fixed)
HOME DES IVUS, 2010	1	105	4	105	0.25 [0.03, 2.20]	0.6%	1.5%
AVIO, 2013	10	142	12	142	0.83 [0.37, 1.87]	4.7%	4.6%
RESET, 2013	0	269	2	274	0.20 [0.01, 4.22]	0.3%	0.8%
AIR-CTO, 2015	20	115	15	115	1.33 [0.72, 2.47]	8.0%	5.7%
Tan et al, 2015	1	61	2	62	0.51 [0.05, 5.46]	0.5%	0.8%
CTO-IVUS, 2015	0	201	2	201	0.20 [0.01, 4.14]	0.3%	0.8%
OCTACS, 2015	0	40	0	45	1.12 [0.02, 55.33]	0.2%	0.0%
DOCTORS, 2016	1	120	1	120	1.00 [0.06, 15.80]	0.4%	0.4%
ROBUST, 2018	2	105	0	96	4.57 [0.22, 94.07]	0.3%	0.0%
Liu et al, 2019	19	167	23	169	0.84 [0.47, 1.48]	9.4%	8.7%
IVUS-XPL, 2020	4	700	6	700	0.67 [0.19, 2.35]	1.9%	2.3%
ILUMIEN III, 2021	7	289	3	142	1.15 [0.30, 4.37]	1.7%	1.5%
ULTIMATE, 2021	7	714	15	709	0.46 [0.19, 1.13]	3.8%	5.7%
iSIGHT, 2021	5	101	6	49	0.40 [0.13, 1.26]	2.4%	3.1%
RENOVATE-COMPLEX-PCI, 2023	43	1092	32	547	0.67 [0.43, 1.05]	15.3%	16.3%
ILUMIEN IV, 2023	57	1233	72	1254	0.81 [0.57, 1.13]	26.6%	27.3%
OCTOBER, 2023	54	600	54	601	1.00 [0.70, 1.44]	23.5%	20.6%
Fixed-Effect Model	**231**	**6054**	**249**	**5331**	**0.81 [0.68, 0.97]**	--	**100.0%**
Random-Effect Model (primary analysis)					**0.82 [0.69, 0.98]**	**100.0%**	--

Test for heterogeneity: $I^2 = 0\%$, $\chi^2 = 11.99$ (P=0.74)

Test for overall effect (Fixed): $z = -2.34$ (P=0.02)

Test for overall effect (Random): $z = -2.18$ (P=0.03)



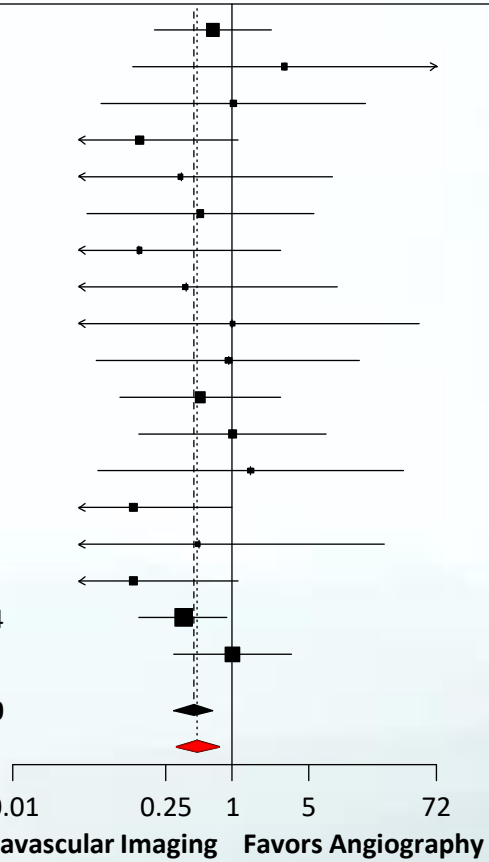
RR 0.82, 95% CI 0.69-0.98

Stent Thrombosis (Direct Evidence): IV Imaging vs. Angio

18 trials, 11,502 patients, 89 events

Trial and Year	Intravascular Imaging Events	Intravascular Imaging N	Angiography Events	Angiography N	RR [95% CI]	Weight (Random)	Weight (Fixed)
HOME DES IVUS, 2010	4	105	6	105	0.67 [0.19, 2.29]	13.5%	9.0%
AVIO, 2013	1	142	0	142	3.00 [0.12, 73.02]	2.0%	0.7%
RESET, 2013	1	269	1	274	1.02 [0.06, 16.20]	2.7%	1.5%
AIR-CTO, 2015	1	115	7	115	0.14 [0.02, 1.14]	4.8%	10.5%
Kim et al, 2015	0	58	1	59	0.34 [0.01, 8.15]	2.0%	2.2%
Tan et al, 2015	1	61	2	62	0.51 [0.05, 5.46]	3.7%	3.0%
CTO-IVUS, 2015	0	201	3	201	0.14 [0.01, 2.75]	2.4%	5.2%
OCTACS, 2015	0	40	1	45	0.37 [0.02, 8.94]	2.1%	2.1%
DOCTORS, 2016	0	120	0	120	1.00 [0.02, 49.99]	1.4%	0.7%
ROBUST, 2018	1	105	1	96	0.91 [0.06, 14.42]	2.7%	1.6%
Liu et al, 2019	2	167	4	169	0.51 [0.09, 2.73]	7.3%	5.9%
IVUS-XPL, 2020	2	700	2	700	1.00 [0.14, 7.08]	5.4%	3.0%
ILUMIEN III, 2021	1	289	0	142	1.48 [0.06, 36.02]	2.0%	1.0%
ULTIMATE, 2021	1	714	8	709	0.12 [0.02, 0.99]	4.8%	12.0%
iSIGHT, 2021	0	101	0	49	0.49 [0.01, 24.22]	1.4%	1.0%
RENOVATE-COMPLEX-PCI, 2023	1	1092	4	547	0.13 [0.01, 1.12]	4.3%	8.0%
ILUMIEN IV, 2023	6	1233	17	1254	0.36 [0.14, 0.91]	24.0%	25.2%
OCTOBER, 2023	5	600	5	601	1.00 [0.29, 3.44]	13.6%	7.5%
Fixed-Effect Model	**27**	**6112**	**62**	**5390**	**0.44 [0.29, 0.68]**	--	**100.0%**
Random-Effect Model (primary analysis)					**0.48 [0.31, 0.76]**	**100.0%**	--

Relative Risk (RR)



Test for heterogeneity: $I^2 = 0\%$, $\chi^2 = 10.18$ (P=0.90)

Test for overall effect (Fixed): $z = -3.75$ (P=0.0002)

Test for overall effect (Random): $z = -3.14$ (P=0.002)

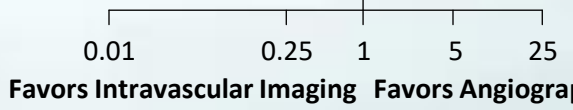
RR 0.48, 95% CI 0.31-0.76

TLR (Direct Evidence): IV Imaging vs. Angio

17 trials, 11,417 patients, 497 events

Trial and Year	Intravascular Imaging Events	Intravascular Imaging N	Angiography Events	Angiography N	RR [95% CI]	Weight (Random)	Weight (Fixed)
HOME DES IVUS, 2010	6	105	6	105	1.00 [0.33, 3.00]	2.6%	2.1%
AVIO, 2013	13	142	17	142	0.76 [0.39, 1.51]	6.6%	5.9%
RESET, 2013	12	269	18	274	0.68 [0.33, 1.38]	6.1%	6.2%
AIR-CTO, 2015	8	115	12	115	0.67 [0.28, 1.57]	4.2%	4.2%
Kim et al, 2015	2	58	2	59	1.02 [0.15, 6.98]	0.8%	0.7%
Tan et al, 2015	5	61	12	62	0.42 [0.16, 1.13]	3.2%	4.1%
CTO-IVUS, 2015	5	201	8	201	0.62 [0.21, 1.88]	2.5%	2.8%
DOCTORS, 2016	1	120	2	120	0.50 [0.05, 5.44]	0.5%	0.7%
ROBUST, 2018	3	105	1	96	2.74 [0.29, 25.92]	0.6%	0.4%
Liu et al, 2019	2	167	5	169	0.40 [0.08, 2.06]	1.2%	1.7%
IVUS-XPL, 2020	31	700	55	700	0.56 [0.37, 0.86]	16.9%	19.0%
ILUMIEN III, 2021	6	289	2	142	1.47 [0.30, 7.21]	1.2%	0.9%
ULTIMATE, 2021	27	714	45	709	0.60 [0.37, 0.95]	14.2%	15.6%
iSIGHT, 2021	1	101	0	49	1.46 [0.06, 35.27]	0.3%	0.0%
RENOVATE-COMPLEX-PCI, 2023	24	1092	20	547	0.60 [0.34, 1.08]	9.0%	9.2%
ILUMIEN IV, 2023	53	1233	51	1254	1.06 [0.73, 1.54]	21.8%	17.5%
OCTOBER, 2023	16	600	26	601	0.62 [0.33, 1.14]	8.2%	9.0%
Fixed-Effect Model	**215**	**6072**	**282**	**5345**	**0.71 [0.60, 0.84]**	--	**100.0%**
Random-Effect Model (primary analysis)					**0.71 [0.59, 0.85]**	**100.0%**	--

Relative Risk (RR)



Test for heterogeneity: $I^2 = 0\%$, $\chi^2 = 11.12$ (P=0.80)

Test for overall effect (Fixed): $z = -3.86$ (P=0.0001)

Test for overall effect (Random): $z = -3.84$ (P=0.0001)

RR 0.71, 95% CI 0.59-0.85

Network Evidence: All Outcomes

IVI-guided (OCT or IVUS) PCI vs Angiography-guided PCI

Outcome	N trials	N pts	N events	Direct estimate	% evidence	Indirect estimate	% evidence	Network estimate
TLF	18	11,502	963	0.69 [0.61, 0.78]	100	-	-	**0.69 [0.61, 0.78]**
- Cardiac death	17	11,385	174	0.54 [0.40, 0.74]	100	-	-	**0.54 [0.40, 0.74]**
- TV-MI	17	11,385	393	0.80 [0.66, 0.97]	100	-	-	**0.80 [0.66, 0.97]**
- ID/CD TLR	17	11,417	497	0.71 [0.59, 0.85]	100	-	-	**0.71 [0.59, 0.85]**
Stent thrombosis	17	11,385	89	0.48 [0.31, 0.76]	100	-	-	**0.48 [0.31, 0.76]**
All-cause death	17	11,385	318	0.75 [0.60, 0.93]	100	-	-	**0.75 [0.60, 0.93]**
All MI	17	11,385	480	0.82 [0.69, 0.98]	100	-	-	**0.82 [0.69, 0.98]**
ID/CD TVR	17	11,417	589	0.71 [0.61, 0.84]	100	-	-	**0.71 [0.61, 0.84]**

Network Evidence: All Outcomes
OCT-guided PCI vs IVUS-guided PCI

Outcome	N trials	N pts	N events	Direct estimate	% evidence	Indirect estimate	% evidence	Network estimate
TLF	4	1316	48	0.89 [0.51, 1.57]	19	1.32 [1.00, 1.73]	81	**1.22 [0.96, 1.56]**
- Cardiac death	4	1316	3	1.32 [0.25, 6.98]	15	1.12 [0.56, 2.27]	85	**1.15 [0.60, 2.20]**
- TV-MI	4	1316	14	0.97 [0.34, 2.79]	14	1.06 [0.69, 1.64]	86	**1.05 [0.70, 1.57]**
- ID/CD TLR	4	1316	34	0.78 [0.39, 1.52]	25	1.51 [1.02, 2.22]	75	**1.28 [0.91, 1.79]**
Stent thrombosis	4	1316	4	0.93 [0.19, 4.51]	26	1.15 [0.45, 2.96]	74	**1.09 [0.48, 2.45]**
All-cause death	4	1316	12	1.26 [0.44, 3.62]	19	0.91 [0.55,1.50]	81	**0.97 [0.61, 1.52]**
All MI	4	1316	21	1.26 [0.52, 3.02]	17	1.12 [0.75, 1.67]	83	**1.14 [0.79, 1.64]**
ID/CD TVR	4	1316	60	1.10 [0.67, 1.80]	34	1.52 [1.07, 2.17]	66	**1.36 [1.02, 1.82]**

TLF (Network Evidence): Bayesian vs. Frequentist Estimates

	Frequentist RR (95% CI)	Bayesian RR (95% CrI)
IVI (OCT or IVUS) vs. Angio		
Direct estimate (18 trials)	0.68 (0.56, 0.84)	0.69 (0.61, 0.79)
Indirect estimate	-	-
Network estimate	0.68 (0.56, 0.84)	0.69 (0.61, 0.79)
IVUS vs. Angio		
Direct estimate (11 trials)	0.63 (0.53, 0.75)	0.62 (0.53, 0.75)
Indirect estimate	0.92 (0.48, 1.76)	1.00 (0.46, 1.95)
Network estimate	0.65 (0.55, 0.77)	0.65 (0.55, 0.77)
OCT vs. Angio		
Direct estimate (8 trials)	0.83 (0.68, 1.02)	0.85 (0.68, 1.06)
Indirect estimate	0.50 (0.27, 0.96)	0.54 (0.27, 1.13)
Network estimate	0.79 (0.65, 0.97)	0.79 (0.65, 0.99)
OCT vs. IVUS		
Direct estimate (4 trials)	0.89 (0.51, 1.57)	0.92 (0.52, 1.69)
Indirect estimate	1.32 (1.00, 1.73)	1.33 (0.98, 1.80)
Network estimate	1.22 (0.96, 1.56)	1.23 (0.93, 1.60)

Limitations

- The limitations of all meta-analyses apply, acknowledging inter-study differences in study design, patient characteristics, geography, operators, technique, collected data, endpoint definitions, and follow-up duration
- The evidence is very robust for all IVI-guided PCI vs angiography-guided PCI, especially for the composite TLF outcome
- Given the fewer numbers of trials and events, the data are less determinative for some of the the pairwise comparisons and non-composite outcomes
  - In particular, prior to this congress, OCT vs. IVUS guidance of PCI had been directly compared in only 4 RCTs (1316 pts)
  - Most of the network evidence for this comparison was therefore “indirect”
  - As the largest completed OCT-guided vs IVUS-guided PCI trial, the just presented OCTIVUS trial will have a major effect on these estimates

Conclusions

The present network meta-analysis from 20 RCTs in 12,428 pts with follow-up ranging from 6-60 months demonstrates that:

- Compared with angiography-guided PCI, IVI-guided PCI with OCT or IVUS reduces **TLF by 31%,** driven by 46%, 20%, and 29% reductions in cardiac death, TV-MI, and ID/CD TLR respectively
- IVI-guided PCI also reduces **stent thrombosis by 52%,** all MI by 18%, and **all-cause death by 25%**
- Outcomes were similar for OCT-guided PCI and IVUS-guided PCI

Implications for Patient Care and Future Research

- **The routine use of OCT or IVUS to guide most PCI procedures will substantially improve patient event-free survival, enhancing both the long-term safety and effectiveness of the procedure**
- Additional investigation is required to determine:
  - Which lesion types most benefit from IVI guidance
  - The optimal technique and procedural objectives for OCT-guided and IVUS-guided stent implantation
  - Whether there are subtle differences in outcomes between OCT and IVUS guidance of PCI procedures