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## HIGHLIGHTS

- The use of drug eluting stents is gaining ground in interventional cardiology
- In this sense, a comparative assessment of available agents is imperative, for informed decision making
- A mixed treatment comparison was utilised to compare bare metal, 1<sup>st</sup> and 2<sup>nd</sup> generation drug eluting stents
- We assessed stents on terms of Target Vessel Revascularization, Thrombosis, Myocardial Infarction and Cardiac death
- Everolimus, resolute and biolimus carry the highest probabilities of being superior for all endpoints.

**TITLE PAGE**

**A mixed treatment comparison for short- and long-term outcomes of  
bare metal and drug eluting coronary stents**

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## **Abstract**

**Background** The increasing use of drug eluting stents in interventional cardiology calls for assessment of their efficacy and safety, both among drug eluting and bare-metal stents, in the context of rational decision making.

**Methods** We searched for papers that compared any of the sirolimus eluting stents, paclitaxel eluting stents, drug eluting stent, biodegradable stent, everolimus eluting stents, zotarolimus resolute eluting stent, biolimus eluting stent, bare metal Stent and zotarolimus eluting stents. The search was contacted through Medline, the Cochrane database, Embase, TCTMD, ClinicalTrials.gov, Clinical Trial Results, CardioSource, abstracts and presentations from major cardiovascular meetings. We also searched for further articles cited by selected papers. Further, important conferences and relevant proceedings and abstracts, such as the American Heart Association, American College of Cardiology, Transcatheter Cardiovascular Therapeutics, Society of Cardiovascular Angiography and Intervention, European Society of Cardiology, and Euro-PCR, were also searched. Inclusion criteria were : Randomised Controlled Trials (RCT), size of study ( $\geq 100$  patients), duration more than 6 months and definition of reported endpoints (Target Vessel Revascularization, Thrombosis, Myocardial Infarction and Cardiac death). Analysis of the data was performed for short term (less than a year) and long term (more than a year). A mixed treatment comparison approach was utilized for the data analysis.

## **Conclusions**

Based on the rankings of each treatment, a distinct difference between 2<sup>nd</sup> and 1<sup>st</sup> generation stents was identified . We can conclude that everolimus, resolute and biolimus carry the highest probabilities of being superior for all endpoints.

## HIGHLIGHTS

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## 1. Introduction

The introduction of percutaneous transluminal coronary angioplasty (PTCA) in 1977 marked a new era in operational cardiology. A landmark year for operational cardiology was 1986, during which the introduction of the first stent in clinical practice by Puel and Sigwart [1], led to a fast uptake of this new technology . By 1999, stenting composed 84.2% of all Percutaneous Coronary Interventions (PCI) performed[2] .

Although Bare Metal Stents (BMS) demonstrated a clear benefit, by reducing occurrence of acute mechanical complication of angioplasty and restenosis rates[3], stent thrombosis and late term restenosis still emerged as major challenges [4]. Neointimal hyperplasia, which on a cellular level is a reactive excessive growth of tissue around the stent, is exacerbated by BMS. Along with optimization of antiplatelet therapy and introduction of more potent agents, Drug Eluting Stents (DES) were developed in order to tackle the cellular reaction, by the sustained release of an antiproliferative (cytotoxic or cytostatic) substance from their surface, in order to limit cell growth. In 2003, sirolimus and paclitaxel eluting stents were introduced to clinical practice, demonstrating reduced need for revascularization and reduced angiographic late lumen loss compared to BMS[5], without proving significant superiority in mortality and myocardial infarction rates[6]. However, the most alarming finding was their relation to an increased late thrombosis rate[7-10]. Formation of atheromatic plaques may occur earlier, and more frequently, with drug-eluting compared to bare-metal stents, [11] resulting in high rates of early and late stent thrombosis after discontinuation of dual antiplatelet therapy, thus leading to ongoing susceptibility for thrombosis after the first

year. Moreover, inflammation of the arterial wall, poor endothelialization and delayed healing aggravated the risk for late thrombosis [12].

Capitalizing on the significant superior effect of first generation DES on target vessel revascularisation (TVR) [13], a new (second generation) category of DES with innovative materials and antiproliferative agents were developed to cope with this issue. Second generation DES have been established as the cornerstone in PCI in patients presenting with coronary artery disease[14]. The majority of these agents were approved in non inferiority trials, compared to first generation DES or BMS[15].

Evidence based decision making in health requires the use of high quality Randomized Controlled Trials (RCT) that compare directly two (2) or more interventions and are undoubtedly the cornerstone of informed decision making in health [16]. Nevertheless, the design of RCT is usually compared either to a placebo or an obsolete technology. Rarely does an RCT include all potential comparative products, primarily due to the high cost incurred, the regulatory impediments, as well as strategic decisions

This creates a gap in the assessment process, which can be bridged with pioneering statistical methods, thus enabling the comparison of different treatments which form a connected treatment network but may not have been directly compared in trials [17-18]. In light of the above, we compare the safety and effectiveness profile between drug eluting stents and bare stents, using Mixed Treatment Comparisons (MTC, also known as network meta-analysis or multiple treatment meta-analysis). MTC contribute further to the body of evidence by estimating the relative effects for treatments not directly compared, and by pooling both direct and indirect evidence, where available,



to strengthen inferences. MTC are an extension of the standard (two-treatment) meta-analysis to comparisons of more than two treatments forming a connected network of evidence (such as eg Fig 1), where all treatments and studies included are relevant to the decision[17-19].

The current paper adheres to ISPOR-AMCP-NPC Good Practice Task Force Report for Indirect Treatment Comparison/Network Meta-Analysis Studies[20].

We included 6 DES, 5 coated with mammalian Target of Rapamycin Inhibitors as coating agent – Zotarolimus, Everolimus, Sirolimus, Biolimus and zotarolimus resolute – and one antimitotic agent, paclitaxel. This study advances further literature, since previous reports did not include comparisons between *all* commercially available stents [21-22], including BMS.

## **2. Literature review**

We adopted the PRIMA [23] (Preferred Reporting Items for Systematic Reviews and Meta- Analyses) statement for reporting systematic reviews and metanalysis in healthcare. We used the MESH terms:“drug eluting stent”, “bare metal Stent”, and also the INN of the drug used in the durable polymer stent (“sirolimus eluting stents”, “paclitaxel eluting stents”, “drug eluting stent” , “Endeavor zotarolimus stent”, “ biodegradable stent” “everolimus eluting stents”, “zotarolimus resolute etuling stent”, “biolimus eluting stent” and “zotarolimus eluting stents”). The search lasted until the end of May, 2013.

We searched Medline, the Cochrane database, Embase, TCTMD, ClinicalTrials.gov, Clinical Trial Results, CardioSource, abstracts and presentations from major cardiovascular meetings. We also searched for

further articles cited by selected papers. Further, important conferences and relevant proceedings and abstracts, such as the American Heart Association, American College of Cardiology, Transcatheter Cardiovascular Therapeutics, Society of Cardiovascular Angiography and Intervention, European Society of Cardiology, and Euro-PCR, were also searched.

Lastly, we contacted authors, in cases of unclear data or in cases where clarification on study design was required.

### **2.1. Selection of data**

Two (2) researchers (P.P and M.T.) independently critically assessed selected papers and there was a crossover of assessment: Any disagreements were resolved by consensus. Authors and manufacturers were contacted in case of discrepancy. 64 trials were included for short term studies and 42 for long term studies (table 1).

#### **Table 1.**

We used GRADE [24] criteria for assessment of evidence and also the Cochrane collaboration bias [25] tool. We defined several criteria for trial inclusion criteria as following:

- Randomised Controlled Trials (RCT).
- Size of study (  $\geq$  100 patients)
- Duration more than 6 months.
- Definition of reported endpoints (TVR, THROMBOSIS, MI and Cardiac death )

### **2.2. Data extraction**

Due to several concerns regarding the short and long term safety of stents, along with a clear division of short and long term effects of stents, we created 2 sub-analysis: Long-term (more than a year) and short term (less than a year- including studies that lasted 1 year). Endpoints were divided into efficacy and safety outcomes. The efficacy outcome was target-vessel revascularization (TVR) and the safety outcomes were cardiac death, myocardial infarction (MI), which includes fatal and non-fatal non-Q-wave or Q-wave myocardial infarction, and stent thrombosis. Stent thrombosis was evaluated according to the Academic Research Consortium (ARC) criteria [26] and we included definite, possible, and probable and secondary thrombosis as well (i.e. after a repeated TVR).

### **3. Statistical Methods**

We used mixed treatment comparison (MTC) methods to create a comparative efficacy network of treatments which are relevant for medical decisions. This approach has two major advantages:

- It allows estimation of relative treatment effects among products not clinically tested against each other, without breaking randomisation.
- Inclusion of direct and indirect comparisons can reduce uncertainty and is the most efficient use of all relevant evidence.

A MTC meta-analysis was conducted to simultaneously compare the 7 stents. The model used assumes the number of events (Cardiac Death, Thrombosis, TVR or MI), out of the total number of patients in each arm of each included

trial follows a binomial likelihood with a certain probability of event which is modelled on the logit scale.[19]

Relative treatment effects are reported as posterior median odds ratios (OR) and 95% Credible Intervals (CrI). We also present the probability of each treatment being ranked as 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, etc. most effective for each outcome.

The models were implemented using the freely available software Winbugs, version 1.4.3 [27] with code modified from Dias et al [28].

Both fixed and random effect models (where sufficient data was available) accounting for the correlations induced between trial-specific effects in multi-arm trials were considered on the basis of model fit. Studies with zero or 100% events in all arms were excluded from the analysis, because these studies provide no evidence on relative effects.

Goodness of fit was measured using the posterior mean of the residual deviance, the degree of between study heterogeneity, and the Deviance Information Criterion (DIC). In a well-fitting model the posterior mean residual deviance should be close to the number of data points.[19,29] Heterogeneity was reported as the posterior median between trial standard deviation with its 95% Credible Interval. Differences of  $\geq 5$  points for residual deviance and DIC were considered meaningful. Model fit was further assessed by inspecting individual data points' contributions to the residual deviance[19].

For the selected model (fixed or random effects), inconsistency was assessed using the node-split method [30] implemented in R [31] through the gemtc package[32]. Comparisons of the direct and indirect evidence were made, and the probability of a difference quantified through a Bayesian p-value. The P-values need to be interpreted with caution given the multiple direct vs indirect

comparisons being carried out, and the direction and strength of direct and indirect evidence as well as model fit and between-study heterogeneity were also examined to determine whether there was evidence of inconsistency [30]

### **3.1. Priors**

We used vague normal priors with mean zero and variance 10,000 for all trial baselines and relative effect parameters. In random effects models, the between-study heterogeneity was given a minimally informative prior, Uniform between zero and five.

Model convergence was assessed through visual inspection of trace plots and through Brooks-Gelman-Rubin plots. Convergence was achieved after 40,000 burn-in iterations and we conducted at least a further 80,000 iterations (on three chains) to ensure stability and accuracy of results.

## **4. Results**

In total the MTC analyses included 106 trials: 42 reporting long term outcomes with 48375 enrolees and 64 reporting short term outcomes with 56709 enrolees. Treatment networks for each outcome are presented in Figure 1 where the width of the edges is proportional to the number of studies making that comparison and the size of the bubbles is proportional to the number of patients randomised to that treatment.

### **FIGURE 1**

#### **4.1. Model choice**

The Random Effects (RE) model was preferred for short term TVR, and the Fixed Effects (FE) model was preferred for thrombosis, MI and cardiac death for short term outcomes. In the long term assessment, the FE model was

preferred for cardiac death and TVR, and the RE was chosen for MI and thrombosis.

#### **4.2. Target Vessel Revascularisation**

All DES included in our analysis reduced TVR compared to BMS, and all have demonstrated effectiveness both in long and short term with 95% credible intervals that exclude “no effect”.

**Long term:** In the long term biolimus carries the highest probability (60%) of being the best agent, everolimus carries a 28.5% and Zotarolimus a 10% (table 2). Odds ratio between everolimus and biolimus is 1.08 (95% Credible Interval, CrI: 0.72-1.56)(table3).

**Short Term :** Regarding short term TVR effectiveness, everolimus is the 3<sup>rd</sup> most potent agent, resolute zotarolimus carries a 70% probability of being the most effective, and biolimus 10% (table 4). The odds ratio of resolute zotarolimus compared to biolimus is 0.79 (CI:0.39-1.42) and of everolimus compared to resolute is 0.83 (0.46-1.35) (table 5).

#### **4.3. Thrombosis**

**Long term:** In the long term, results suggest that everolimus may be superior to BMS (table 3). Everolimus appears to be the safest stent, although with only a 27% probability of being the best, while resolute zotarolimus and biolimus demonstrate comparative probability of being the safest stent (25% and 24.5%, respectively) (table 2).

**Short Term :** In the short term everolimus is superior to BMS, paclitaxel and sirolimus (table 5). Everolimus carries a dominating probability of being the

most potent in reducing the probability of thrombosis (81%) whilst resolute is the second with a much smaller probability (12%)( table 4).

#### **4.4. Cardiac Death**

For cardiac death, another safety endpoint, there were no differences among agents in the short and in the long term (tables 3,5).

**Long term:** Zotarolimus resolute appears to be the more potent, with a 47% probability of being the best in the long term(table 2) whilst Biolimus has 18.7% probability of being the best stent.

**Short Term :** Zotarolimus resolute also carries the highest probability (66 %) of being the best in the short term (table 4).

**TABLE 2**

**TABLE 3**

**TABLE 4**

**TABLE 5**

#### **4.5. Myocardial Infarction**

MI which includes fatal and non-fatal non-Q-wave or Q-wave myocardial infarction.

##### **Short Term:**

Everolimus, zotarolimus, resolute and sirolimus demonstrate short term statistically significantly potency compared to BMS (odds ratio BMS-Sirolimus 0.74 CI: 0.6-0.90, BMS –everolimus 0.62 CI: 0.48-0.79, BMS: zotarolimus 0.75 CI: 0.54-0.96, BMS-resolute 0.63 CI:0.45-0.85), while biolimus

demonstrated a trend to statistically significant CI: 0.58-1.04. (table 5). Zotarolimus resolute demonstrated the highest probability of being the most potent (46%) while everolimus ranks second (39%) (table 4). Although superiority remains in the long term as well, results are not statistically significant except the borderline superiority of zotarolimus to paclitaxel (odds ratio CI:0.55-0.99)(table 4). Nevertheless, biolimus has a 45 % of being the best, with zotarolimus second 22% and resolute third with 13 % (table 2)(Figure 2).

## **FIGURE 2**

### **4.6. Inconsistency Checks**

Results of inconsistency checks are presented in Appendix 1.

For TVR short term there was some evidence of disagreement between direct and indirect evidence in the comparison of everolimus with resolute zotarolimus. The P-value for inconsistency was 0.03, with direct evidence suggesting no effect whilst indirect evidence favoured zotarolimus resolute (Appendix 1).

For MI short term there was some evidence of disagreement between direct and indirect evidence for the comparison of biolimus with sirolimus, with direct evidence favouring sirolimus whilst indirect evidence showed no effect (P-value=0.02). No meaningful disagreement was identified for thrombosis or cardiac death in the short term analyses.

For the long term inconsistency check, no meaningful disagreement was identified for the TVR or cardiac death. For MI we identified possible disagreement between direct and indirect evidence for comparisons of treatments sirolimus with biolimus and everolimus with biolimus. These two



contrasts are both involved in the loop (sirolimus, everolimus, biolimus) and P-value for agreement of direct and indirect evidence is 0.03 in both cases – indicating some inconsistency. For thrombosis there was some evidence of inconsistency in the comparison of Paclitaxel with everolimus with direct evidence suggesting a large effect favouring everolimus.

## **5. Discussion**

85% of all inserted stents in Cyprus are DES, an approach similar to other countries[33]. Therefore, assessing safety and effectiveness of stents, apart from a health issue, will have a significant impact on relevant budgets [34].

In recently published meta-analyses of randomized controlled trials (RCTs) comparing BMS to DES, DES reduce restenoses and the need for revascularization procedures, but not overall mortality or the incidence of myocardial infarction [21-22]. In our MTC, we examined the safety and the efficacy of BMS, first and second generation DES, including biodegradable and durable polymer stent.

We can conclude that there is a notable variability among safety and effectiveness of DES. Even among second generation DES, there does not appear to be a class effect. Our analyses suggest that Everolimus is the safest, which is in line with other findings [21-22].

The Thrombosis mechanism associated with DES is a complex process and the Polymer coating of DES may aggravate thrombogenicity compared to BMS [35]. Thrombosis, as a significant safety endpoint, has been amidst a longstanding area of controversy.

Everolimus demonstrated superior safety, which can also be attributed to its biodegradable polymer. In our analysis, thrombosis rates tend to favour

second generation stents, as compared to both first generation and BMS. Thrombosis still remains a multifactorial issue with many variables, including the kinetics of drug release, the type of polymer, and strut thickness, have an impact on thrombosis rates. The FDA responded to these concerns by amending the guidelines related to antiplatelet duration in patients after stent placement [36]. Still, the optimal use of antiplatelet therapy is not defined, and thrombosis with DES, as well BMS, remain an adverse event that may occur. In the era of BMS stents, thrombosis after the first month was very rare [37]. Several authors highlight the long term risk for thrombosis with DES[38]. The addition of antiproliferative agent interacts between the coagulation process and the stent[39]. As a result, rapamycin inhibition of the mammalian target of rapamycin increases both the thrombin- and tumor necrosis factor- $\alpha$ -induced endothelial tissue factor expression [40]. Consequently, many authors [41-42] underline the need for longer use of antiplatelet therapy, which increases both cost and risk for adverse events.

Biolimus, proved to be the most potent, with regards to TVR reduction in the long term, however, other meta-analyses did not include it[20-21]. All DES were superior to BMS in reducing TVR, but there is variability in the size of the effect, Zotarolimus is the only second generation DES that did not demonstrate superiority compared to BMS and 1<sup>st</sup> generation stents. Nevertheless, since resolute zotarolimus was superior to BMS, this difference may be due to the release curve of the resolute zotarolimus, which further substantiates the hypothesis that other variables , beyond eluting stent, may influence the outcome.

From a health policy perspective, the hardest challenge is the combination and ranking of all four endpoints, especially TVR risk against thrombosis. TVR has a prevalence of 15% of patients involved in the analysis. In the majority of cases, it is angiographically driven by strict study protocol, without clinical symptoms, and consequently, associated with a low risk of death. On the other hand, even though thrombosis is rare, it is related to a 90% risk of death or MI [43]. Stone et al reported incidence rates for target lesion revascularization of 7.8% with SES vs 23.6% with BMS ( $p < 0.001$ ) and 10.1% with PES vs 20.0% with BMS ( $p < 0.001$ ) after a four year study[44]. The corresponding rates for thrombosis were only 1.2% with SES versus 0.6 with BMS ( $p = 0.20$ ) and 1.3% with PES versus 0.9% with BMS ( $p = 0.30$ )[44].

Other authors did not find a statistically significant difference in primary safety endpoints (MI and death) between DES and BMS, which was another finding of our study. Nevertheless, DES were proved to be superior to BMS, with biolimus and resolute being the most potent in reducing MI and cardiac death rates.

Overall, our findings indicate that DES and BMS demonstrated similar rates of cardiac death and MI. DES are also statistically superior in TVR reduction compared to BMS, while biolimus and everolimus are superior compared to other stents. Moreover, DES are not associated with an increased rate of thrombosis. DAPT (antiplatelet therapeutic regime of aspirin plus platelet P2Y<sub>12</sub> receptor blocker) offers significant benefit in preventing stent thrombosis. Without DAPT, the period of high risk for stent thrombosis is longer with DES than BMS, due to a delay in neointimal coverage. Therefore, bare-metal stents are often used in patients with a history of bleeding, needing early non-

cardiac surgery, requiring anticoagulation in addition to dual antiplatelet therapy, or those who are non-compliant with their treatments.

We also point out that adoption of DES has exceeded the clinical evidence, mainly due to their high and early uptake and the off-label use. Relief of symptoms and a desire to avoid extensive procedures may be the most important factors to patients. Moreover, the concurrent angiography and placement of stents seems rational for many patients. There is a perception among patients that PCI prevents heart attacks[45], while several authors underline that stenting was the only therapeutic option offered to patients. Stent implantation has become the cornerstone therapeutic approach in coronary artery disease[46] while CABG rates are declining worldwide. Although the scope of this report is to compare DES with BMS, we deem fit to comment on CABG. CABG, which denotes the surgically bypass of blocked arteries by using grafts from internal mammary arteries or saphenous arteries, is the benchmark procedure in cases such as failed PCI and significant left main coronary disease. CABG has demonstrated increased life expectancy in multi vessel disease and diffused diseases; however, the benefit is long term (after 5 years)[47] and comes along with certain risks, such as increased recovery period and susceptibility to infections. Utilisation of stents, is steadily increasing in stable patients with Coronary disease [48]. Along with stent evolution, medical therapy has also improved dramatically over this period. The Clinical Outcomes Utilizing Revascularization and Aggressive Drug Evaluation (COURAGE) trial, compared an initial strategy of aggressive medical therapy versus PCI with BMS in patients with stable CAD and found no statistically significant survival difference, although greater symptom relief

was associated with PCI[49] .Thus, the decision to perform a PCI in patients with stable angina is based on its effectiveness in relieving symptoms, preventing recurrent angina, and reducing repeat procedure.

Therefore, stents - both DES and BMS- must also be assessed in the broader context with other available interventions, both pharmaceutical and medical.

An implication of using MTCs is that, unlike the process for regulatory approval, the results of one company's trial may influence the estimated relative effectiveness of another company's product, even in cases where the other product is not used as a trial comparator.

## **6. Conclusion**

Taking everything into account, the MTC method is a particularly important methodological development in technology appraisal because it potentially offers a potent answer to synthesis, in contexts where individual or pair-wise meta-analyses of trials do not provide coherent estimates of all the effectiveness parameters, as is often required to inform associated economic decision models. MTC methods are perhaps the most important development in evidence synthesis in recent years and their potential for use in technology assessment is considerable.

This MTC provides one of the most comprehensive comparisons in DES and BMS, including 56709 patients in the short term analysis, plus 48375 patients in the long term.

Based on the rankings of each treatment, a distinct difference between 2<sup>nd</sup> and 1<sup>st</sup> generation stents was identified . We can conclude that everolimus, resolute and biolimus carry the highest probabilities of being superior for all endpoints.

Table 6

Study	Year	Comparative Arms	Sex	Age
BASKET [50]	2005	SES (n=264), PES (n=281), BMS (n=281)	Male (79%) Male (79%)	Age (years) 64±11 Age (years) 64±12
CATOS[51]	2012	ZES (n=80 ) SES (n=80),	Male (65%) Male (76%)	Age (years) 62.7±12.3 Age (years) 63.0±11.7
C-SIRIUS[52]	2004	SES(n = 50), BMS(n =50)	Male (70 %) Male (68%)	Age (years) 60.3 ±10.6, Age (years) 60.7± 9.1,
CHEVALIER [53]	2007	BES (n=85),PES (n=35)	Male (69 %) Male (66%)	Age (years) 65±11, Age (years) 63±11
COMFORTABLE AMI[54]	2012	BES (n = 575) BMS(n = 582),	Male (80.5%), Male (78.2%)	Age ,(years) 60.7± 11.6, Age, (years), 60.4 ± 11.9
COMPARE [55]	2010	EES(n=897), PES (n=903)	Male (69%), Male (72%)	Age (years)62.9 ± 15.7, Age (years) 63.6±17.2
COMPARE II[56]	2013	BES(n=1795) EES(n=912)	Male (74. 4%), Male(74.3%)	Age (years) 63± 11.1, Age (years) 62.7± 11.0
DEBATER[57]	2012	SES (n =424) BMS (n = 446 Abciximab(n = 439) , No Abciximab (n = 434)	Male (78%), Male (75%), Male (76%) Male (78%)	Age(years) 60±11 Age (years) 61±11 Age (years) 60±10 , Age, (years)60±12
DESSERT[58]	2008	SES(n = 75) BMS (n = 75)	Male(63%), Male(49%)	Age (years) 71 ±9 Age (years) 69±9,
DIABEDES[59]	2007	SES(n = 76) PES(n =77)	Male (84%) Male (74%),	Age (years) 66 ±8, Age (years) 65 ±10
DIABETES[60]	2005	SES (n = 80) BMS (n = 80)	Male (70%) Male (81%)	Age (years) 65.9±9 6 Age (years) 7.2±10
DIAS DE LA LIERA[61]	2007	BMS (n = 54), SES (n = 60)	Male (78.3%) , Male (80.0)	Age, (years) 65 ±13 64
DIBRA[62]	2005	BMS(N=125), SES(N=125),	Male (64%), Male (68%)	Age (years) 68.3±9.6 Age (years) 67.7±10.2
E-SIRIUS[63]	2003	SES (n=175), BMS (n=177),	Men (70%), Men 126	Age (years) 62·0 ±11·4, age (years)62·6±10·3,

ENDEAVOR II[64]	2006	EES(n=598), BMS (n=599)	(71%), Male (77%), Male (75%)	Age(years)61.6±10.5, Age (years) ,61.9±10.5
ENDEAVOR III[65]	2006	ZES(n=323), SES (n=113)	Male (65.3 %) Male (81.4 %)	Age (years) 61.42 ±10.58, Age (years) 61.73 ±11.59
ENDEAVOR IV [66]	2010	ZES (n =773) PES (n =775),	Men (66.9%) Men (68.5%)	Age, (years) 63.5± 11.1 Age( years )63.6 ± 11.0
ESSENCE DIABETES[67]	2013	EES(n=149) SES(n=151)	Men (52.3%) ,Men (65.6%)	Age (years) 63.2±8.3, Age (years) 63.5±8.1
EXCELLENT[68]	2011	EES (n = 1,079), SES (n = 364)	Male (65.2%) Male (62.6%)	Age (years) 62.5 ±10.1 Age (years) 63.4 ±9.9
Erglis[69]	2007	BMS (n =50) ), PES (n = 53)	Male (82%) Male (85%)	Age (years) 62.56 ±11.45, Age(years) 61.08± 10.28,
HORIZON AMI STONE [70]	2009	PES(N = 2257) BMS (N = 749)	Male . (77.0%), Male (76.0%)	Age (years) 59.9 Age (years) 59.3
LEE [71]	2008	SES(n = 200), PES (n =200)	Men (61.0%) Men(55.0%)	Age (years) 61.1± 8.9 , Age (years), 60.7 ±8.8
EUROSTAR[72]	2011	PES (n=152) BMS (n=151)	Male (74.3%), Male (68.9%)	Age (years) 64.9±9.2, Age (years) 66.2±9.4
EXAMINATION [73]	2012	EES (n=751 BMS (n=747)	Male (82%) Male (84%),	Age (years), 60±8 Age (years), 61±6
ISAR LEFT MAIN[74]	2009	PES (n = 302) SES (n = 305)	Male (23%), Male (38%)	Age, (years) 68.8± 10.1 Age, (years) 69.3 ± 9.34,
JUWANA [75]	2009	SES(n = 196) PES(n=201)	Men (69%), Men(74%)	Age (years) 61± 11,
KIM [76]	2008	SES (n = 85), PES (n = 84)	Male (71.8%), Male (76.2%)	Age (years) 62.9 ± 8.0 , Age (years) 61.5 ± 8.9

LEADERS[77]	2008	BES (n=857) SES(n=850)	Men (75%), Men (74%)	Age (years) 64.6 ±10.8, Age (years) 64.5 ±10.7
LONG DES II[78]	2006	SES (n=250) PES(n=250)	Male (67.2%) Male (61.2%)	Age (years)61.4 Age (years) 60.7
LONG DES III[79]	2011	EES (n = 224) SES(n =226)	Male (73.7%), Male(65.9%)	Age, (years) 62.9 Age, (years) 63.0
LONG DES IV[80]	2012	RESOLUTE- ZES (n= 250) SES (n=250 )	Male , (73.6%) Male, (72.4%)	Age (years)62.8±9.7, Age,(years)62.7±9.8,
LIPSIA[81]	2011	SES(n= 120) PES(n= 116)	Male (69%), Male (68%)	Age(years) ,67.0±9.5 Age (years), 67.3±9.1,
MISSION [82]	2008	SES (n = 158) BMS (n = 152)	Male (69%), Male (68%)	Age (years) 59.2 Age (years) 59.1
MULTISTRATEGY[83]	2008	Abciximab Plus BMS(n = 186) Abciximab Plus (n = 186) Tirofiban Plus BMS (n = 186) Tirofiban Plus SES(n = 186)	Male (73.1%), Male (72.6%), Male (79.5%), Male (78.5%)	Age, (years) 63.9 ±11.7, Age, (years) 62.7± 11.2 Age, (years) ,65.4 ±12.1 Age,(years),63.4±12,
Natsuaki [84]	2013	BES (n=1617) EES (n=1618)	Male (77%), Male (77%)	Age (years) 69.1±9.8, Age (years) 69.3±9.8,
PACHE MEHILI [85]	2005	PES (n= 250) BMS(n = 250)	Men (78%) Men (78%)	Age (years) , 67.4±16.4 Age, (years) 66.7 ± 14.8
PAINT[86]	2009	PES (n =111) BMS(n = 57) SES(n = 106)	Men (61.3 %) Men (67.0%) Men (66.7%),	Age, (years) 60.1 ± 10.2 Age, (years)59.7 ±10.6, Age, (years)58.5 ± 9.6
PROSIT[87]	2008	SES (n= 154) PES (n = 154)	Male (76.0%) Male(76.6%)	Age (years) 60 .6 ±11 Age(years),60 .6 ±12
NOBORI[88]	2011	BES(n =194) SES(n =132)	Male (71.6%), Male (72.0%)	Age (years) 67.1 ± 10.3 Age (years)67.7 ± 9.3,



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PAN[89]	2012	SES(n = 145) EES(n = 148)	Male (79%) Male (82%),	Age (years) 63 ± 10 Age (years) 63 ± 11
RAVEL[90]	2002	SES (n=120) BMS (n=118)	Male (70%), Male (81%)	Age (years) 61.8±10.7, Age (years) 59.7±10.1,
REALITY[91]	2006	SES(n = 684) PES(n = 669)	Men (72.0%) , Men (74.1%)	Age (years) 62.6 ±10.5, Age (years) 62.6 ± 10.0,
REMEDEE[92]	2 0 1 3	SES(n = 124) PES(n=59)	Men (71.8%), Men(71.2%)	Age (years) 64.20 ±9.48 Age (years) 64.05 ± 10.49
RESET[93]	2013	SES (n=1600) EES (n=1597 )	Male (12.17%), Men(76%)	Age(years) 68.9±9.7, Age (years) 69.3±9.6,
RESOLUTE[94]	2 0 1 3	RESOLUTE ZES(n=198) PES(n = 202)	Male (77.8%), Male (80.7% )	Age, (years) 59.7±9.9, Age, (years)59.6±10.6,
SEPARHAM [95]	2011	BES (n=100) EES (n=100)	Male (66%) Male (64%)	Age, (yrs)60.60±9.1, Age, (yrs) 62.38±10.2
SESAMI [96]	2007	SES (n = 160) BMS (n = 160)	Male (80%), Male (80%),	Age (years) 63±20, Age (years) 62 ±16
SEZE[97]	2012	ZES (n=60) SES (n=61)	Male (81.6%) Male ( 80.3%)	Age (years) 59.8±13.3 Age (years) 62.0±11.5
SERRYUS[98]	2010	ZES (N = 1152) EES (N = 1140)	Male (76.7%), Male (77.2%),	Age ( years) 64.2±10.8 Age( years) 64.4±10.9
SORT OUT IV[99]	2012	SES n=1384 EES n=1390	Men (75.5%), Men (72.4%).	Age (years) 64.1± 10.8, Age(years) 63.5 ±13.2,
SORT OUT V [100]	2013	BES(n=1229) SES(n=1239)	Men (74.6%), Men (75.1%)	Age (years) 65.0 ±10.6, Age (years) 65.2 ±10.3,

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SPIRIT III STONE [101]	2008	EES (n=669) PES (n=332)	Men (70.1%), Men (10.2%)	Age, (years) 63.2±10.5, Age (years) 62.8 ±10.2,
SPIRIT IV [102]	2013	EES (n = 2458) PES (n = 1229 )	Male (67.7%), Male (67.8%)	Age (years) 63.3±10.5 Age (years) 63.3±10.2
SPIRIT V [103]		EES(n = 218) PES(n = 106)	Male (70 %) Male (67% )	Age (years) 65 ± 10 Age (years) 66 ± 9,
STEALTH[104]	2005	BES (n=80) BMS (n=40)	Male (48%), Male (33%)	Age (years) , 62.2 ± 10.1 Age (years) , 61.1 ± 9.4,
ZEST AMI [105]	2009	ZES n=( 108) SES (n = 110) PES (n =110)	Male (77.8%) Male (86.4%) Male (82.7%)	Age, (years) 61.9 ± 11.0, Age (years), 57.8 ± 11.3 Age (years) , 59.3 ± 11.2
TAXI [106]	2005	PES (n = 100) SES(n = 102)	Male(83%) Male (79%),	Age (years) 63 ± 10 Age (years) 65± 10
TAXUS VI[107]	2005	PES (n = 577) , BMS (n = 579)	Male (70.2%), Male (68.7%)	Age (years) 62.9 ± 11.2, Age, (years) 62.8 ±10.8,
TAXUS[108]	2005	PES (n=219) BMS(n=227),	Male, (76.3%) Male, (76.2%)	Age (years) 61.8±9.7, Age (years) 63.4±9.9,
TYPHHON [109]	2006	SES(N = 355) BMS(N = 357)	Male (78.6%), Male (78.2%),	Age (years) 58.0, Age (years) 60.5,
TWENTE[110]	2012	RESOLUTE ZES (n =697), EES (n=694)	Men (72.5%), Men (72.6%)	Age (years) 64.2 ± 10.8 , Age (years) 63.9± 10.9, Age (years) 64.5 ± 10.7
XAMI[111]	2012,	EES (n=404) SES (n = 221)	Male (73.0%) Male (75.1%)	Age (years) 61.2 ± 11.3, Age (years) 62.0± 11.4

ZEST[112]	2010	ZES (n=883) SES (n =878) PES (n=884)	Male (66.4%), Male (67.3%), Male (65.8%)	Age, (years) 61.7± 9.3, Age, (years) 61.9 ±9.6 Age, (years) 62.0 ± 9.6,
ZOMAXX[113]	2011	ZES(n=557) PES(n=542),	Male ( 69%), Male ( 69%)	Age (years) 63±10 Age (years) 63±11
BASKET PROVE KAISER [114]	2013	EES (n=774) SES (n=775) BMS (n=774)	Male(76%) Male(74%) Male(77%)	Age(years) 66±11 Age (years)66±11 Age (years) 67±11
Byrne[115]	2010	SES (n = 335), ZES (n = 339).	Male (77.3%) Male (75.5%)	Age (years ) 66.6±11.1 Age (years)67.2 ±10.9
COMPARE[116]	2011	EES (n = 897) PES (n = 903)	Male(69%) Male (72%)	Age (years)62.9 ± 15.7, Age (years) 63.6±17.2
DES DIABETES[117]	2011	SRL( n=200) PES(n =200)	Male (61%) Male (55%)	Age (years) 61.1±8.9 Age (years)60.7± 8.8,
ENDEAVOR II FIVE YEARS[118]	2010	ZES(n= 598), BMS(n =599)	Male(77.2%) Male (75.4%)	Age, (years) 61.6±10.5 Age, (years) 61.9±10.5
ENDEAVOR III 5 YEARS [119]	2011	ZES (n = 323), SES (n=113)	Male(65.3% ) Male(81.4%)	Age (years), 61.42±10.58 Age (years), 61.73±11.59 ,
ENDEAVOR IV[120]	2013	ZES(n= 773) PES(n= 775)	Male(66.9%) Male(68.5%)	Age, (years) )63.5±11.1 Age, (years) )63.6±11.0
GISSOC [121]	2010	BMS(n = 78) SES(n = 74)	Male (87.1%), Male (78.3%)	Age (years) 63.9±9.8, Age

				(years)63.9± 9.6, Age (years) 65.9± 8.0, Age (years) 64.5± 8.9,
HONG[122]	2010	SES (n =85) PES (n =84)	Male (71.8%) Male (76.2%)	
HORIZON AMI[123]	2011	Heparin plus a GPI(n=1802), Bivalirudin monotherapy(n =1800) PES(n=2257), BMS(n=749)	Male (76%) Male (77%), Male (76%)	Age (years) 60.7± 17.2 Age (years) 59.8±17.6 Age (years) 59.9±17, Age (years) 59.3±17.4
ISAR LEFT MAIN [124]	2009	PES (n = 302) SES (n = 305)	Male(75%) Male(80%)	Age, (years) 68.8 ± 10.1 Age (years) 69.3 ±9.34
Klaus [125]	2011	BES (n = 857), SES (n = 850),	Male (75%) Male (74.6%)	Age, (years) 64.6±10.8 Age, (years) 64.5±10.7
KOMER[126]	2011	ZES (n=205) SES (n=204) PES (n=202)	Male(76%) Male(81%) Male(79%)	Age, (years) 60±13 Age (years), 59±12, Age(years) ,60±13, Age (years) 64.6 ±10.8, Age (years) 64.5 ±10.7
Leaders [127]	2011	BES(n= 857) , SES(n= 850)	Men (75%), Men (74%)	
LATE [128]	2011	SES (n=503), PES(n= 509)	Male(76%), Male(78%)	Age (years) 62±11 Age (years) 62±12
MISSION [129]	2012	SES (n=158) BMS (n=152)	Men (74.7%) Male(80.9%)	Age (yrs) 59.2±11.2 Age (yrs) 59.1±11.6
NAPLES DIABETES [130]	2011	SES (n=76) PES (n=75), EES (n=75)	Male (57%), Male (59%) , Male (56%)	Age, (years) 64±8, Age, (years) 64±10 Age, (years) 65±8,
MULTISTRATEGY [131]	2013	SRL(n= 370) BMS(n=372)	Male (73.1%) Male (72.6%)	Age (years)63.9 ±11.7 Age (years)

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				62.7 ± 11.2 Age (years) 65.4 ± 12.1 Age (years) 63.4 ±12
PAINT [132]	2012	PES (n=111) SES (n=106) BMS(n=57)	Male(61.3 %) Male(67.0%) Male(66.7%)	Age, (years) 60.1±10.2 Age (years) 59.7±10.6 Age (years) 58.5±9.6
PASEO [133]	2009	BMS (n = 90 ) PES (n =90)	Male(71.1% ) Male(68.9%)	Age, (years) 62± 17, Age (years) 63± 15
PASSION [134]	2011	PES(n= 310) BMS (n = 309)	Male(73.9%) Male(78%)	Age, (years) 61±12, Age, (years) 61±13
PRISON[135]	2012	BMS(n=100)  SES (n=100)	Male (76%) Male(83%)	Age (years) 59.3±10.2 Age (years) 59.6±10.6
PROTECT [136]	2012	EES (n=4357) SES (n=4352)	Male(77%) Male (76%)	Age (years) 62·3 ±10·6, Age (years) 62·1± 10·7
PROSIT [137]	2011	SES (n = 154) PES (n = 154)	Male(76%) Male(76.6%)	Age (years), 60 .6 ±11, Age (years), 60. 6 ±12
PURICEL [138]	2013	ERL(n= 200) BES(n= 200)	Male(75.5%) Male( 73%)	Age (years ) 65.9±11.2 Age (years) 64.9±10.
RAVEL [139]	2007	SES(n= 120) BMS (n=118)	Male(70%/ ) Male(81%)	Age (years) 61.8±10.7 Age (years) 59.7±10.1
RESOLUTE[140]	2011	RESOLUTE - ZES(N=1140)  EES(N=1152)	Male(76.7%) Male(77.2%)	Age (years) 64·4 ± 10·9, Age (years) 64·2 ± 10·8

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SCOPRIUS[141]	2012	SES (n = 95) BMS (n = 95)	Male(66%) Male(62%)	Age (years) 66 ± 9, Age (years) 66 ± 10
SEASIDE [142]	2011	SES (n= 75) ERL (n= 75)	Male(75%) Male(85%)	Age, (years) 64±10
SESAMI[143]	2011	SES( n=155 ) BMS (n=155)	Male(82%) Male(81%)	Age, (years) 63±15, Age (years) 63± 19
SIRTAX [144]	2008	SES(n= 503) PES (n = 509 )	Males (69.4%) Male(72.0%) Male (79.8%)	Age (years) 62 ± 10
SORT OUT III 18 MONTHS [145]	2010	ZES (n = 1,162) SES (n =1,170)	Male(73% ) Male(74%)	Age(years), 64.3± 10.7 Age (years), 64.3± 10.8
SORT OUT III[146]	2012	ZES (n = 1,162) SES (n = 1,170)	Male(73% ) Male(74%)	Age, (years) 64.3± 10.7, Age (years) 64.3±10.8
SORT OUT IV [147]	2012	EES (n=1390), SES (n=1384),	Male(75.9% ) Male(75.2% )	Age years , 64.2 ±10.9, Age years, 64.0±10.8
SPIRIT II 3 YEARS [148]	2009	EES (n = 223) PES (n = 77)	Male(71%) Male(79%)	Age (years) 62±10, Age (years) 62±9
TAXI LATE [149]	2007	SES(n= 100) PES (n= 102)	Male(77%), Male(83%)	Age (years), 65. 6±10, Age (years) ,63. 6± 10
TAXUS [150]	2011	BMS (n=1397) PES (n=1400)	Age (81,7%) Age (71.5%)	Age (years), 62.2±10.7 Age (years), 62.8±11.0
TAXUS IV[151]	2009	BMS (n=643) PES (n = 651)	Male (72.2%) Male(71.7%)	Age (years) 62.1±11.0 Age (years)

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TAXUS VI[152]	2009	BMS (n=233 ) PES(n =217)	Male (70.2%), Male (68.7%)	62.8±11.2 Age (years) 62.9 ± 11.2, Age, (years) 62.8 ±10.8,
TWENTE[153]	2013	Resolute- ZES (n= 697) EES(n= 694)	Men (72.5%) Men (72.6%)	Age (years) 63.9 ± 10.9, Age (years) 64.5 ± 10.7
Typhoon[154]	2011	SES (n=355) BMS (n=357)	Male (77.7%) Male(78.6%)	Age, (years) 59.3±13.2 Age, (years) 59.2±11.7,
ZOMAXX[155]	2013	ZES (n=199) PES (n=197)	Male (75%) Male(77%)	Age (years) 63 ± 10 Age (years) 63 ± 11

- [1] Ruygrok P. Intracoronary Stenting From Concept to Custom. *Circulation* (1996); 94: 882-890
- [2] Serruys PW, Kutryk MJB, Ong ATL. Coronary-artery stents. *N Engl J Med* 2006;354:483-95.
- [3] Moliterno DJ. Healing Achilles—sirolimus versus paclitaxel. *N Engl J Med* 2005;353:724-6
- [4] Arjomand H, Turi Z, McCormick D, et al. Percutaneous coronary intervention: historical perspectives, current status, and future direction. *Am Heart J* 2003;146:787-96
- [5] Greenhalgh J, Hockenhull J, Rao N, Dundar Y, Dickson RC, Bagust A. Drug-eluting stents versus bare metal stents for angina or acute coronary syndromes. *Cochrane Database Syst Rev* 2010;5:D4587.
- [6] Stettler C, Wandel S, Allemann S, et al. Outcomes associated with drug-eluting and bare-metal stents: a collaborative network meta-analysis. *Lancet* 2007;370(9591): 937–48.
- [7] Camenzind E, Steg PG, Wijns W. Stent thrombosis late after implantation of first-generation drug-eluting stents: a cause for concern. *Circulation* 2007;115:1440—55
- [8] Nordmann A, Briel M, Bucher H. Mortality in randomized controlled trials comparing drug-eluting vs. bare metal stents in coronary artery disease: a meta-analysis. *Eur Heart J* 2006; 27: 2784–814.
- [9] Pfisterer M, Brunner-La Rocca HP, Buser PT, et al. Late clinical events after clopidogrel discontinuation may limit the benefit of drug-eluting stents: an observational study of drug-eluting versus bare-metal stents. *J Am Coll Cardiol* 2006; 48: 2584–91
- [10] McFadden EP, Stabile E, Regar E, Cheneau E, Ong AT, Kinnaird T, Suddath WO, Weissman NJ, Torguson R, Kent KM, Pichard AD, Satler LF, Waksman R, Serruys PW. Late thrombosis in drug-eluting coronary stents after discontinuation of antiplatelet therapy. *Lancet*. 2004;364: 1519–1521.
- [11] Nakazawa G, Otsuka F, Nakano M, et al. The pathology of

- neointimal hyperplasia in human coronary implants. Bare-metal and drug-eluting stents. *J Am Coll Cardiol* 2011; **57**: 1314–22.
- [12] Finn AV, Nakazawa G, Joner M, et al. Vascular responses to drug eluting stents: importance of delayed healing. *Arterioscler Thromb Vasc Biol* 2007;27:1500–10.
- [13] Kirtane AJ, Gupta A, Iyengar S, et al. Safety and efficacy of drug-eluting and bare metal stents: comprehensive meta-analysis of randomized trials and observational studies. *Circulation* 2009;119:3198–206.
- [14] Tu JV, Bowen J, Chiu M, et al. Effectiveness and safety of drug eluting stents in Ontario. *N. Engl J Med* 357: 1393-402
- [15] Bo Xu, et al. Zotarolimus-Eluting and Paclitaxel-Eluting Stents in an All-Comer Population in China. *Am Coll Cardiol Intv.* 2013;6(7):664-670.
- [16] Bangalore S, Kumar S, Kjeldsen E et al. Antihypertensive drugs and risk of cancer: network meta-analyses and trial sequential analysis of 324168 participants from randomized trials. *Lancet Oncol* 2011;12:65-82. PMID:21123111
- [17] Dias S., Welton N, Sutton A J, Ades AE, Evidence Synthesis for Decision Making 1 Introduction *Med Decis Making.* 2013 July; 33(5): 597–606. doi: [10.1177/0272989X13487604](https://doi.org/10.1177/0272989X13487604)
- [18] Ref Lu G, Ades A. Combination of direct and indirect evidence in mixed treatment comparisons. *Stat Med.* 2004;23:3105-3124.
- [19] Dias s., Sutton A., Ades A.E., Welton N., Evidence Synthesis for Decision Making 2: A Generalized Linear Modeling Framework for Pairwise and Network Meta-analysis of Randomized Controlled Trials *Med Decis Making* 2013 JUL;33:607–617
- [20] Jansen P, Indirect Treatment Comparison/Network Meta-Analysis Study Questionnaire to Assess Relevance and Credibility to Inform Health Care Decision Making: An ISPOR-AMCP-NPC Good Practice Task Force Report *Value in Health* 17(2014)157 – 173
- [21] Navarese E. et al Safety and efficacy outcomes of first and second generation durable drug eluting stents and biodegradable polymer biolimus eluting stents in clinical practice: comprehensive network meta-analysis *BMJ* 2013;347
- [22] Bangalore S, Kumar S, Fusaro M, Amoroso N, Attubato MJ, Feit F, Bhatt DL, Slater J. Short- and long-term outcomes with drug-eluting and bare-metal coronary stents: a mixed-treatment comparison analysis of 117 762 patient-years of follow-up from randomized trials *Circulation.* 2012 Jun 12;125(23):2873-91. doi: 10.1161/CIRCULATIONAHA.112.097014. Epub 2012 May 14.
- [23] Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). *Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement.* *J Clin Epidemiol* 2009; doi:10.1016/j.jclinepi.2009.06.005
- [24] Guyatt GH, Oxman AD, Vist G, Kunz R, Brozek J, Alonso-Coello P, Montori V, Akl EA, Djulbegovic B, Falck-Ytter Y, Norris SL, Williams JW Jr, Atkins D, Meerpohl J, Schünemann HJ GRADE guidelines 4: rating the quality of evidence - risk of bias. *J Clin Epidemiol.* 2011 Jan 20
- [25] Higgins J, Green S, eds. *Cochrane Handbook for Systematic Reviews of Interventions.* Oxford, United Kingdom: Cochrane Collaboration; 2008
- [26] Cutlip DE, Windecker S, Mehran R, et al. Clinical end points in coronary stent trials: a case for standardized definitions. *Circulation* 2007; 115: 2344–51.



- [27]<sup>W</sup>inBUGS User Manual Version 1.4, January 2003
- [28]Dias S, Welton NJ, Sutton AJ, Ades AE (2011) NICE DSU Technical Support Document 2: A Generalised Linear Modelling Framework for Pairwise and Network Meta-Analysis of Randomised Controlled Trials. (available at: <http://www.nicedsu.org.uk>, accessed on 05.09.2013).
- [29] Spiegelhalter et al
- [30] Dias, S., N. J. Welton, D. M. Caldwell and A. E. Ades (2010). "Checking Consistency in Mixed Treatment Comparison Meta-analysis." *Statistics In Medicine* 29: 932-944.
- [31] R Development Core Team (2010). R: A Language and Environment for Statistical Computing. Vienna, Austria, R Foundation for Statistical Computing: Windows
- [32] van Valkenhoef, G., G. Lu, B. De Brock, H. Hillege, A. E. Ades and N. J. Welton (2012). "Automating network meta-analysis." *Research Synthesis Methods* 3: 285-299.
- [33] Mukherjee D, Moliterno DJ. Effectiveness of drug-eluting stents in real-world patients. *JAMA*. 2008 Jan 30;299(4):454-5
- [34]Ligthart S, Vlemmix F, Dendukuri N, Brophy J. The cost-effectiveness of drug eluting stents: a systematic review. *CMAJ*. 2007 Jan 16;176(2):199-205.
- [35]Newsome LT, Kutcher MA, Royster RL. Coronary artery stents: Part I. Evolution of percutaneous coronary intervention. *Anesth Analg*. Aug 2008;107(2):552-569.
- [35]Kereiakes DJ, Choo JK, Young JJ, Broderick TM. Thrombosis and drug-eluting stents: a critical appraisal. *Rev Cardiovasc Med*. 2004; 5:9 –15.
- [36]FDA 2006 Food, Drug Administration. FDA Statement on Coronary Drug- Eluting Stents (September 14, 2006). <http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/psn/transcript.cfm?show=61>.
- [37] Bertrand ME, Rupprecht HJ, Urban P, Gershlick AH. Double-blind study of the safety of clopidogrel with and without a loading dose in combination with aspirin compared with ticlopidine in combination with aspirin after coronary stenting: the Clopidogrel Aspirin Stent International Cooperative Study (CLASSICS). *Circulation*. 2000;102:624–629.
- [38]Shuchman M. Trading restenosis for thrombosis? New questions about drug-eluting stents. *N Engl J Med*. Nov 9 2006;355(19):1949-1952.
- [39]Kastrati A, Schomig A. Drug-eluting stents is their future as bright as their past? *J Am Coll Cardiol*. 2007;50(2):146-8
- [40]Steffel J, Latini RA, Akhmedov A, Zimmermann D, Zimmerling P, Luscher TF, Tanner FC. Rapamycin, but not FK-506, increases endothelial tissue factor expression: implications for drug-eluting stent design. *Circulation*. 2005;112:2002–2011.
- [41]Garg P, Cohen DJ, Gaziano T, Mauri L. Balancing the risks of restenosis and stent thrombosis in bare-metal versus drug-eluting stents: results of a decision analytic model. *J Am Coll Cardiol* 2008; 51:1844-53.
- [42]Windecker S, Remondino A, Eberli FR, Juni P, Raber L, Wenaweser P, Togni M, Billinger M, Tuller D, Seiler C, Roffi M, Corti R, Sutsch G, Maier W, Luscher T, Hess OM, Egger M, Meier B. Sirolimus-eluting and paclitaxel-eluting stents for coronary revascularization. *N Engl J Med* 2005; 353:653-62.

- [43]Stone GW, Ellis SG, Colombo A, et al. Offsetting impact of thrombosis and restenosis on the occurrence of death and myocardial infarction after paclitaxel-eluting and bare metal stent implantation. *Circulation*. Jun 5 2007;115(22):2842-2847
- [44]Stone GW, Moses JW, Ellis SG, et al. Safety and efficacy of sirolimus- and paclitaxel eluting coronary stents. *N Engl J Med*. Mar 8 2007;356(10):998-1008.
- [45]Holmboe ES, Fiellin DA, Cusanelli E, Remetz M, Krumholz HM. Perceptions of benefit and risk of patients undergoing first-time elective percutaneous coronary revascularization. *J Gen Intern Med*. Sep 2000;15(9):632-637.
- [46]Serruys P, Unger F, Sousa J, Jatene A, Bonnier H, Schonberger J, et al. Comparison of coronary-artery bypass surgery and stenting for the treatment of multivessel disease. *N.Engl.J.Med*. 2001 Apr 12;344(15):1117-1124
- [47]Hoffman SN, TenBrook JA, Wolf MP, Pauker SG, Salem DN, Wong JB. A meta-analysis of randomized controlled trials comparing coronary artery bypass graft with percutaneous transluminal coronary angioplasty: one- to eight-year outcomes. *J Am Coll Cardiol* 2003;41:1293–304.
- [48]Katritsis DG, Ioannidis JP. Percutaneous coronary intervention versus conservative therapy in nonacute coronary artery disease: a meta-analysis. *Circulation*. Jun 7 2005;111(22):2906-2912.
- [49]Weintraub WS, Barnett P, Chen S, Hartigan P, Casperson P, O'Rourke R, Boden WE, Lewis C, Veledar E, Becker E, Culler S, Kolm P, Mahoney EM, Dunbar SB, Deaton C, O'Brien B, Goeree R, Blackhouse G, Nease R, Spertus J, Kaufman S, Teo K. Economics methods in the Clinical Outcomes Utilizing percutaneous coronary Revascularization and Aggressive Guideline-driven drug Evaluation (COURAGE) trial. *Am Heart J* 2006; 151:1180-5.
- [50]Kaiser Christoph et al, Incremental cost-effectiveness of drug-eluting stents compared with a third-generation bare-metal stent in a realworld setting: randomised Basel Stent Kosten Effektivitäts Trial (BASKET),
- [51]Park Hun-Jun et al, Randomized Comparison of the Efficacy and Safety of Zotarolimus-Eluting Stents vs. Sirolimus-Eluting Stents for Percutaneous Coronary Intervention in Chronic Total Occlusion, *Circulation Journal* Vol.76,
- [52]Schampaert Erick MD et al, The Canadian Study of the Sirolimus-Eluting Stent in the Treatment of Patients With Long De Novo Lesions in Small Native Coronary Arteries (C-SIRIUS), *The American College of Cardiology*, Vol. 43, No. 6, 2004,
- [53]Chevalier Bernard et al, Randomised comparison of Nobori, biolimus A9-eluting coronary stent with a Taxus, paclitaxel-eluting coronary stent in patients with stenosis in native coronary arteries: the Nobori 1 trial,
- [54]Lorenz Rãber, Effect of Biolimus-Eluting Stents With Biodegradable Polymer vs Bare-Metal Stents on Cardiovascular Events Among Patients With Acute Myocardial Infarction The COMFORTABLE AMI Randomized Trial *JAMA*, August 22/29, 2012—Vol 308, No. 8
- [55] Kedhi Elvin et al, Second-generation everolimus-eluting and paclitaxel-eluting stents in real-life practice (COMPARE): a randomised trial, [www.thelancet.com](http://www.thelancet.com) Vol 375 January 16, 2010,
- [56] Smits Pieter Cornelis et al, Abluminal biodegradable polymer biolimus-eluting stent versus durable polymer everolimus-eluting stent (COMPARE II): a randomised, controlled, non-inferiority trial, Vol 381 February 23, 2013,

- [57] Inge Wijnbergen, Comparison of Drug-Eluting and Bare-Metal Stents for Primary Percutaneous Coronary Intervention With or Without Abciximab in ST-Segment Elevation Myocardial Infarction DEBATER: The Eindhoven Reperfusion Study
- [58] Maresta Aleardo MDa et al, Comparison of Effectiveness and Safety of Sirolimus-Eluting Stents Versus Bare-Metal Stents in Patients With Diabetes Mellitus (from the Italian Multicenter Randomized DESSERT Study), Department of Cardiology , January 25, 2008,
- [59] Maeng Michael, PhD et al, Comparison of the Sirolimus-Eluting Versus Paclitaxel-Eluting Coronary Stent in Patients With Diabetes Mellitus: The Diabetes and Drug-Eluting Stent (DiabeDES) Randomized Angiography Trial, [www.AJConline.org](http://www.AJConline.org) 0002-9149/09,
- [60] Randomized Comparison of Sirolimus-Eluting Stent Versus Paclitaxel-Eluting Coronary (DIABETES) Trial Percutaneous Coronary Revascularization in Diabetic Patients : Circulation. 2005;112:2175-2183
- [61] Luis-S Diaz de la Llera Sirolimus-eluting stents compared with standard stents in the treatment of patients with primary angioplasty American Heart Journal  
July 2007 American Heart Journal Volume 154, Number 1
- [62] Dibra Alban M.D. et al, Paclitaxel-Eluting or Sirolimus-Eluting Stents to Prevent Restenosis in Diabetic Patients The New England Journal of Medicine august 18, 2005,
- [63] Schofer Joachi et al, , Sirolimus-eluting stents for treatment of patients with longatherosclerotic lesions in small coronary arteries: double-blind, randomised controlled trial (E-SIRIUS), THE LANCET • Vol 362 • October 4, 2003,
- [64] Fajadet Jean et al, Randomized, Double-Blind, Multicenter Study of the Endeavor Zotarolimus-Eluting Phosphorylcholine-Encapsulated Stent for Treatment of Native Coronary Artery Lesions : Clinical and Angiographic Results of the ENDEAVOR II Trial, Circulation is published by the American Heart Association August 14, 2006,
- [65] Kandzari E. David, MD, et al, Comparison of Zotarolimus-Eluting and Sirolimus-Eluting Stents in Patients With Native Coronary Artery Disease A Randomized Controlled Trial, Journal of the American College of Cardiology Vol. 48, No. 12, 2006,
- [66] Leon. B Martin. MD et al, A Randomized Comparison of the Endeavor Zotarolimus-Eluting Stent Versus the TAXUS Paclitaxel-Eluting Stent in De Novo Native Coronary Lesions 12-Month Outcomes From the ENDEAVOR IV Trial, Journal of the American College of Cardiology Vol. 55, No. 6, 2010,
- [67] Won-Jang Kim et al, Randomized Comparison of Everolimus-Eluting Stent Versus Sirolimus-Eluting Stent Implantation for De Novo Coronary Artery Disease in Patients With Diabetes Mellitus (ESSENCE-DIABETES) : Results From the ESSENCE-DIABETES Trial, <http://circ.ahajournals.org> , May 8, 2013,
- [68] Park, Kyung Woo MD ET AL, Everolimus-Eluting Versus Sirolimus-Eluting Stents in Patients Undergoing Percutaneous Coronary Intervention, Journal of the American College of Cardiology, Vol. 58, No. 18, 2011,
- [69] Erglis Andrejs, MD et al, A Randomized Comparison of Paclitaxel-Eluting Stents Versus Bare-Metal Stents for Treatment of Unprotected Left Main Coronary Artery Stenosis, Journal of the American College of Cardiology , Vol. 50, No. 6, 2007,
- [70] Stone W., Gregg M.D. et al, Paclitaxel-Eluting Stents versus Bare-Metal Stents in Acute Myocardial Infarction, The new england journal o f medicine, may 7, 2009,
- [71] Seung-Whan Lee A Randomized Comparison of

- Sirolimus- Versus Paclitaxel-Eluting Stent Implantation in Patients With Diabetes Mellitus *Journal of the American College of Cardiology* Vol. 52, No. 9, 2008
- [72] Silber Sigmund et al, Effect of paclitaxel elution from reservoirs with bioabsorbable polymer compared to a bare metal stent for the elective percutaneous treatment of de novo coronary stenosis: the EUROSTAR-II randomised clinical trial, *EuroIntervention* 2011,
- [73] Sabate Manel et al, Everolimus-eluting stent versus bare-metal stent in ST-segment elevation myocardial infarction (EXAMINATION): 1 year results of a randomised controlled trial, *Articles* Vol 380 October 27, 2012,
- [74] Mehilli Julinda MD et al, Paclitaxel- Versus Sirolimus-Eluting Stents for Unprotected Left Main Coronary Artery Disease, *Journal of the American College of Cardiology*, Vol. 53, No. 19, 2009
- [75] Juwana Yahya B MD et al, Comparison of *Rapamycin*- and *Paclitaxel*-Eluting Stents in Patients Undergoing Primary Percutaneous Coronary Intervention for ST-Elevation Myocardial Infarction, *www.AJConline.org* March 12, 2009,
- [76] HYUN KIM MOO M.D et al, Effect of Paclitaxel-Eluting Versus Sirolimus-Eluting Stents on Coronary Restenosis in Korean Diabetic Patients, *Journal of Interventional Cardiology* Vol. 21, No. 3, 2008,
- [77] Windecker Stephan et al, Biolimus-eluting stent with biodegradable polymer versus sirolimus-eluting stent with durable polymer for coronary revascularisation (LEADERS): a randomised non-inferiority trial Department of Cardiology, Bern University Hospital, September 1, 2008,
- [78] Kim Young-Hak et al, Sirolimus-Eluting Stent Versus Paclitaxel-Eluting Stent for Patients With Long Coronary Artery Disease, *Circulation* is published by the American Heart Association 2006
- [79] Park Duk-Woo, MD et al, Comparison of Everolimus- and Sirolimus-Eluting Stents in Patients With Long Coronary Artery Lesions A Randomized LONG-DES-III (Percutaneous Treatment of LONG Native Coronary Lesions With Drug-Eluting Stent-III) Trial, *jacc : cardiovascular intervention* 2 0 1 1 vol .4 ,no .10
- [80] Ahn Jung-Min et al, Comparison of Resolute Zotarolimus-Eluting Stents and Sirolimus-Eluting Stents in Patients With De Novo Long Coronary Artery Lesions : A Randomized LONG-DES IV Trial, *Journal of America Heart of Association*, October 9, 2012,
- [81] Desch, Steffen MD et al, Randomized Comparison of a Polymer-Free Sirolimus-Eluting Stent Versus a Polymer-Based Paclitaxel-Eluting Stent in Patients With Diabetes Mellitus, *jacc cardiovascular intervention* vol . 4 , no . 4 , 201)
- [82] Hoeven Bas L. van der MD et al, Sirolimus-Eluting Stents Versus Bare-Metal Stents in Patients With ST-Segment Elevation Myocardial Infarction: 9-Month Angiographic and Intravascular Ultrasound Results and 12-Month Clinical Outcome, *Journal of the American College of Cardiology* Vol. 51, No. 6, 2008
- [83] Valgimigli Marco, MD, PhD et al, Comparison of Angioplasty With Infusion of Tirofiban or Abciximab and With Implantation of Sirolimus-Eluting or Uncoated Stents for Acute Myocardial Infarction, *American Medical Association JAMA*, April 16, 2008—Vol 299, No. 15,
- [84] Natsuaki Masahiro M.D et al, Biodegradable Polymer Biolimus-eluting Stent versus Durable Polymer Everolimus-eluting Stent: a randomized, controlled, non-inferiority trial, *Journal of the American College of Cardiology* ,16 April 2013,

- [85] Pache Jurgen et al, Drug-eluting stents compared with thin-strut bare stents for the reduction of restenosis: a prospective, randomized trial, *European Heart Journal* (2005) 26,
- [86] Pedro L A , et al, Randomized Evaluation of Two Drug-Eluting Stents With Identical Metallic Platform and Biodegradable Polymer But Different Agents (Paclitaxel or Sirolimus) Compared Against Bare Stents: 1-Year Results of the PAINT Trial , *Catheterization and Cardiovascular Interventions* 74:665–673 (2009)
- [87] Jae-Hwan Lee Prospective Randomized Comparison of Sirolimus- Versus Paclitaxel-Eluting Stents for the Treatment of Acute ST-Elevation Myocardial Infarction: PROSIT Trial *Catheterization and Cardiovascular Interventions* 72:25–32 (2008)
- [88] Kadota Kazushige et al, Randomized Comparison of the Nobori Biolimus A9-Eluting Stent With the Sirolimus-Eluting Stent in Patients With Stenosis in Native Coronary Arteries, *The Society for Cardiovascular Angiography and Interventions (SCAI)*, 31 May 2011,
- [89] Pan Manuel et al, Randomized Study Comparing Everolimus- and Sirolimus-Eluting Stents in Patients with Bifurcation Lesions Treated by Provisional Side-Branch Stenting, *Department of Cardiology* Published online 17 April 2012,
- [90] Morice Marie-Claude et al, a randomized comparison of a sirolimus-eluting stent with a standard stent for coronary revascularization, *the new england journal of medicine*, volume 346 june 6, 2002,
- [91] Morice Marie-Claude, MD et al, Sirolimus- vs Paclitaxel-Eluting Stents in De Novo Coronary Artery Lesions The REALITY Trial: A Randomized Controlled Trial, *American Medical Association JAMA*, February 22, 2006—Vol 295,
- [92] Haude Michael MD et al, Randomized Comparison of a Combination Sirolimus-Eluting Endothelial Progenitor Cell Capture Stent With a Paclitaxel-Eluting Stent, *JACC cardiovascular intervention* vol 6 , no. 4 , 2013,
- [93] Kimura Takeshi et al, Comparison of Everolimus-Eluting and Sirolimus-Eluting Coronary Stents : 1-Year Outcomes from the Randomized Evaluation of Sirolimus-Eluting Versus Everolimus-Eluting Stent Trial (RESET), *the American Heart Association*, April 30, 2013,
- [94] Xu Bo et al, Zotarolimus-Eluting and Paclitaxel-Eluting Stents in an All-Coroner Population in China, *The American college of cardiology foundation* o l . x x , n o . x , 2 0 1 3,
- [95] Separham Ahmad et al, The Twelve-Month Outcome of Biolimus Eluting Stent with Biodegradable Polymer Compared With an Everolimus Eluting Stent with Durable Polymer, *Journal of Cardiovascular and Thoracic Research* , 3(4), 113-116,
- [96] Menichelli Maurizio, MD et al, Randomized Trial of Sirolimus-Eluting Stent Versus Bare-Metal Stent in Acute Myocardial Infarction (SESAMI), *Journal of the American College of Cardiology* Vol. 49, No. 19, 2007
- [97] Chung, Woo-Young et al, A randomized, prospective, two-center comparison of sirolimus-eluting stent and zotarolimus-eluting stent in acute ST-elevation myocardial infarction: The SEZE trial, *Chinese Medical Journal* 2012;125(19):3373-3381,
- [98] Serruys W Patrick et al, Comparison of Zotarolimus-Eluting and Everolimus-Eluting Coronary Stents, *The New England Journal of Medicine*, July 8, 2010,

- [99]Jensen Lisette Okkels et al, Randomized Comparison of Everolimus-Eluting and Sirolimus-Eluting Stents in Patients Treated With Percutaneous Coronary Intervention : The Scandinavian Organization for Randomized Trials With Clinical Outcome IV (SORT OUT IV), American Heart Association 2012,
- [100] Christiansen Evald Haj et al, Biolimus-eluting biodegradable polymer-coated stent versus durable polymer-coated sirolimus-eluting stent in unselected patients receiving percutaneous coronary intervention (SORT OUT V): a randomised non-inferiority trial, Department of Cardiology, Lancet 2013; 381: 661–69, January 30, 2013,
- [101]Stone W Gregg. MD et al, Comparison of an Everolimus-Eluting Stent and a Paclitaxel-Eluting Stent in Patients With Coronary Artery Disease, American Medical Association, April 23/30, 2008—Vol 299, No. 16
- [102]Stone W Gregg. MD et al, Everolimus-Eluting versus Paclitaxel-Eluting Stents in Coronary Artery Disease, The New England Journal of Medicine, May 9, 2013,
- [103]Grube Eberhard MD et al, The SPIRIT V Diabetic Study: A randomized clinical evaluation of the XIENCE V everolimus-eluting stent vs the TAXUS Liberté paclitaxel-eluting stent in diabetic patients with de novo coronary artery lesions, American Heart Journal Volume 163,
- [104] Eberhard Grube MD et al, Six-month results of a randomized study to evaluate safety and efficacy of a Biolimus A9 eluting stent with a biodegradable polymer coating, Clinical research EuroIntervention - Volume 1 - Number 1 - May 2005,
- [105] Cheol Whan Lee Comparison of the Efficacy and Safety of Zotarolimus-, Sirolimus-, and Paclitaxel-Eluting Stents in Patients With ST-Elevation Myocardial Infarction American Journal of Cardiology Vol. 104, Issue 10, Pages 1370-1376
- [106]GoyJean-Jacques MD et al, A Prospective Randomized Comparison Between Paclitaxel and Sirolimus Stents in the Real World of Interventional Cardiology The TAXi Trial, Journal of the American College of Cardiology, Vol. 45, No. 2, 2005,
- [107] Stone W. Gregg, MD et al, Comparison of a Polymer-Based Paclitaxel-Eluting Stent With a Bare Metal Stent in Patients With Complex Coronary Artery Disease A Randomized Controlled Trial, American Medical Association, JAMA, September 14, 2005—Vol 294, No. 10
- [108]Dawkins D Keith et al, Clinical Efficacy of Polymer-Based Paclitaxel-Eluting Stents in the Treatment of Complex, Long Coronary Artery Lesions From a Multicenter, Randomized Trial : Support for the Use of Drug-Eluting Stents in Contemporary Clinical Practice, Journal of the American Heart Association, November 14, 2005,
- [109]Spaulding Christian M.D et al, Sirolimus-Eluting versus Uncoated Stents in Acute Myocardial Infarction, The new England journal of medicine september 14, 2006 vol. 355 no. 11,
- [110]Clemens von Birgelen, A Randomized Controlled Trial in Second-Generation Zotarolimus-Eluting Resolute Stents Versus Everolimus-Eluting Xience V Stents in Real-World Patients The TWENTE Trial Journal of American College of Cardiology Vol. 59, No. 15, 2012
- [111] Hofma Sjoerd H MD et al, Second-Generation Everolimus-Eluting Stents Versus First-Generation Sirolimus-Eluting Stents in Acute Myocardial Infarction, Journal of the American College of Cardiology, Vol. 60, No. 5, 2012,
- [112]Park Duk-Woo MD et al, Comparison of Zotarolimus-Eluting Stents With Sirolimus- and Paclitaxel-Eluting Stents for Coronary Revascularization, Journal of the American College of Cardiology Vol. 56, No. 15, 2010

- [113] Gray A William et al, A randomized, controlled, multi-center trial comparing the safety and efficacy of zotarolimus-eluting and paclitaxel-eluting stents in de novo lesions in coronary arteries: Final results of the ZoMaxx II trial, *International Journal of Cardiology* 157 (2012) 96–101, 11 June 2011
- [114] Christoph Kaiser et al, Drug-Eluting versus Bare-Metal Stents in Large Coronary Arteries, *The New England Journal of Medicine* Downloaded from [nejm.org](http://nejm.org) on April 30, 2013,
- [115] Byrne A. Robert, 2-year clinical and angiographic outcomes from a randomized trial of polymer-free dual drug-eluting stents versus polymer-based cypher and endeavor, drug-eluting stents, *Journal of the American College of Cardiology*, Vol. 55, No. 23, 2010
- [116] Pieter C. Smits, 2-Year Follow-Up of a Randomized Controlled Trial of Everolimus- and Paclitaxel-Eluting Stents for Coronary Revascularization in Daily Practice COMPARE (Comparison of the everolimus eluting XIENCE-V stent with the paclitaxel eluting TAXUS LIBERTE' stent in all-comers: a randomized open label trial) *Journal of the American College of Cardiology* Vol. 58, No. 1, 2011
- [117] Lee Seung-Whan et al, A Randomized Comparison of Sirolimus- Versus Paclitaxel-Eluting Stent Implantation in Patients With Diabetes Mellitus, *JACC: cardiovascular interventions*, vol. 4, no. 3, 2011,
- [118] Jean Fajadet, Long-term follow-up of the randomised controlled trial to evaluate the safety and efficacy of the zotarolimus-eluting driver coronary stent in de novo native coronary artery lesions: five year outcomes in the ENDEAVOR II study *EuroIntervention* 2010;6:562-567
- [119] Kandzari, E. David et al, Late-Term Clinical Outcomes With Zotarolimus- and Sirolimus-Eluting Stents, *JACC: cardiovascular interventions*, VOL. 4, NO. 5, 2011 (ISSN 1936-8798),
- [120] Kirtane J. Ajay et al, The "Final" 5-Year Follow-Up From the ENDEAVOR IV Trial Comparing a Zotarolimus-Eluting Stent With a Paclitaxel-Eluting Stent, *JACC: cardiovascular intervention* vol. 6, no. 4, 2013 )
- [121] Rubartelli Paolo, Comparison of sirolimus-eluting and bare metal stent for treatment of patients with total coronary occlusions: results of the GISSOC II-GISE multicentre randomized trial, *European Heart Journal* (2010) 31, 2014–2020,
- [122] Hong Soon Jun et al., Comparison of Three-Year Clinical Outcomes Between Sirolimus-Versus Paclitaxel-Eluting Stents in Diabetic Patients: Prospective Randomized Multicenter Trial, *Catheterization and Cardiovascular Interventions* 76:924–933 (2010),
- [123] Stone W Gregg et al., Heparin plus a glycoprotein IIb/IIIa inhibitor versus bivalirudin monotherapy and paclitaxel-eluting stents versus bare-metal stents in acute myocardial infarction (HORIZONS-AMI): final 3-year results from a multicentre, randomised controlled trial, *Lancet* 2011; 377: 2193–204
- [124] Julinda Mehilli, Paclitaxel- Versus Sirolimus-Eluting Stents for Unprotected Left Main Coronary Artery Disease *Journal of the American College of Cardiology* Vol. 53, No. 19, 2009
- [125] Klaus Volker et al. 2-Year Clinical Follow-Up From the Randomized Comparison of Biolimus-Eluting Stents With Biodegradable Polymer and Sirolimus-Eluting Stents With Durable Polymer in Routine Clinical Practice, *JACC: cardiovascular interventions*, vol. 4, no. 8, 2011 AUGUST

- [126] Woong Chol Kang Comparison of zotarolimus-eluting stents versus sirolimus-eluting stents versus paclitaxel-eluting stents for primary percutaneous coronary intervention in patients with ST-elevation myocardial infarction: results from the Korean Multicentre Endeavor (KOMER) acute myocardial infarction (AMI) trial *EuroIntervention* 2011;7:936-943
- [127]Stefanini G Giulio et al, Long-term clinical outcomes of biodegradable polymer biolimus-eluting stents versus durable polymer sirolimus-eluting stents in patients with coronary artery disease (LEADERS): 4 year follow-up of a randomised non-inferiority trial, *Lancet* Vol 378 December 3, 2011
- [128]RäberL , Paclitaxel-Eluting Stents for Coronary Revascularization LATE Trial  
Sirolimus-Eluting and Paclitaxel-Eluting Stents : Results of the Sirolimus-Eluting Versus  
Five-Year Clinical and Angiographic Outcomes of a Randomized Comparison *Circulation*. 2011;123:2819-2828
- [129]Helèn Boden Five-year clinical follow-up from the MISSION! Intervention  
Study: sirolimus-eluting stent versus bare metal stent implantation in patients with ST-segment elevation myocardial  
infarction, a randomised controlled trial *EuroIntervention* 2012;7:1021-1029
- [130]Briguori Carlo et al, Novel Approaches for Preventing or Limiting Events in Diabetic Patients (Naples-Diabetes)  
Trial A Randomized Comparison of 3 Drug-Eluting Stents in Diabetic Patients,*Circulation : Cardiovasc Interv*  
2011;4;121-129,
- [131]Marco Valgimigli Three-year follow-up of the MULTICentre evaluation of Single high-dose Bolus  
Tirofiban versus Abciximab with Sirolimus-eluting STent or Bare-Metal Stent in  
Acute Myocardial Infarction Study (MULTISTRATEGY) *International Journal of Cardiology* 165 (2013) 134–141
- [132] Lemos P A. Late clinical outcomes after implantation of drug-eluting stents coated with biodegradable  
polymers: 3-year follow-up of the PAINT randomised trial *Eurointervention* 2012;8:117-119
- [133]Lorenzo D E, The PASEO (PaclitAxel or Sirolimus-Eluting Stent Versus Bare Metal Stent in Primary  
Angioplasty) Randomized Trial *JACC : cardiovascular interventions* vol . 2 , no . 6 , 2009
- [134]Maarten A. Vink, 5-Year Follow-Up After Primary Percutaneous  
Coronary Intervention With a Paclitaxel-Eluting Stent Versus a Bare-Metal Stent in Acute  
ST-Segment Elevation Myocardial Infarction A Follow-Up Study of the PASSION (Paclitaxel-Eluting Versus  
Conventional Stent in Myocardial Infarction With ST-Segment Elevation) Trial *JACC : cardiovascular interventions* vol .  
4 , no . 1 , 2011
- [135] Ben J.L. Van den Branden Five-year clinical outcome after primary stenting of totally  
occluded native coronary arteries: a randomised comparison of bare metal stent implantation with sirolimus-eluting  
stent implantation for the treatment of total coronary occlusions (PRISON II study) *EuroIntervention* 2012;7:1189-  
1196
- [136]Camenzind et al. Stent thrombosis and major clinical events at 3 years after  
zotarolimus-eluting or sirolimus-eluting coronary stent implantation: a randomised, multicentre, open-label, controlled  
trial. *Lancet* Vol 380 October 20, 2012
- [137] Hyun-Sook Kim Long-term safety and efficacy of sirolimus- vs. paclitaxel-eluting stent implantation for acute  
ST-elevation myocardial infarction: 3-year follow-up of the PROSIT trial *International Journal of Cardiology* 147  
(2011) 253–257



- [138]Serban Purice,Long-term comparison of everolimus-eluting and biolimus-eluting stents EuroIntervention 2013; 8 March 2013
- [139]Marie-Claude Morice,Long-Term Clinical Outcomes With Sirolimus-Eluting Coronary Stents Five-Year Results of the RAVEL Trial Journal of the American College of Cardiology Vol. 50, No. 14, 2007
- [140]Sigmund Silber ,Unrestricted randomised use of two new generation drug-eluting coronary stents: 2-year patient-related versus stent-related outcomes from the RESOLUTE All Comers trial www.thelancet.com Vol 377 April 9, 2011
- [141] Jan-Malte Sinning,Five-year results of the Multicenter Randomized Controlled Open-Label Study of the CYPHER Sirolimus-Eluting Stent in the Treatment of Diabetic Patients with De Novo Native Coronary Artery Lesions (SCORPIUS) study: A German multicenter investigation on the effectiveness of sirolimus-eluting stents in diabetic patients American Heart Journal Volume 163, Number 3
- [142]Francesco Burzotta, Prospective Randomized Comparison of Sirolimus- or Everolimus-Eluting Stent to Treat Bifurcated Lesions by Provisional Approach jacc : cardiovascular interventions vol . 4 , no . 3 , 2011
- [143]Carmine Musto Long-term outcome of sirolimus-eluting vs bare-metal stent in the setting of acute myocardial infarction: 5-year results of the SESAMI trial International Journal of Cardiology xxx (2011) xxx–xxx
- [144] Michael Billinger Two-year clinical outcome after implantation of sirolimus-eluting and paclitaxel-eluting stents in diabetic patients
- [145] Rasmussen K et al ,Efficacy and safety of zotarolimus-eluting and sirolimus-eluting coronary stents in routine clinical care (SORT OUT III): a randomised controlled superiority trial Lancet Vol 375 March 27, 2010
- [146] Michael Maeng 3-Year Clinical Outcomes in the Randomized SORT OUT III Superiority Trial Comparing Zotarolimus- and Sirolimus-Eluting Coronary Stents jacc : cardiovascular interventions vol . 5 , no . 8 , 2012
- [147] Lisette Okkels Jensen Treated With Percutaneous Coronary Intervention : The Scandinavian Organization for Randomized Comparison of Everolimus-Eluting and Sirolimus-Eluting Stents in Patients, Randomized Trials With Clinical Outcome IV (SORT OUT IV) Circulation. 2012;125:1246-1255
- [148] Scot Garg, 3-Year Clinical Follow-Up of the XIENCE V Everolimus-Eluting Coronary Stent System in the Treatment of Patients With De Novo Coronary Artery Lesions The SPIRIT II Trial (Clinical Evaluation of the Xience V Everolimus Eluting Coronary Stent System in the Treatment of Patients with de novo Native Coronary Artery Lesions) JACC : CARDIOVASCULAR INTERVENTIONS VOL . 2 , NO . 1 2 , 2009
- [149] Berger A. Three-year Follow-up of the First Prospective Randomized Comparison Between Paclitaxel and Sirolimus Stents: The TAXI-LATE Trial Catheterization and Cardiovascular Interventions 70:163–166 (2007)
- [150]Gregg W. Stone ,Long-Term Safety and Efficacy of Paclitaxel-Eluting Stents Final 5-Year Analysis From the TAXUS Clinical Trial Program JACC : CARDIOVASCULAR INTERVENTIONS VOL . 4 , NO . 5 , 2011
- [151]Ellis S. ,Long-Term Safety and Efficacy With

Paclitaxel-Eluting Stents 5-Year Final Results of the TAXUS IV Clinical Trial (TAXUS IV-SR: Treatment of De Novo Coronary Disease Using a Single Paclitaxel-Eluting Stent) JACC : CARDIOVASCULAR INTERVENTIONS VOL . 2 , NO . 12 , 2009

[152]Eberhard Grube1TAXUS VI final 5-year results: a multicentre, randomised trial comparing polymer-based moderate-release paclitaxel-eluting stent with a bare metal stent for treatment of long, complex coronary artery lesions EuroInterv.2009;4 572-577

[153]Tandjung K, Sen H, Kai Lam M, Basalus MWZ, Louwerenburg J(H)W, Stoel MG, van Houwelingen KG, de Man FHAF, Linssen GCM, Saïd SAM, Nienhuis MB, Löwik MM, Verhorst PMJ, van der Palen J, von Birgelen C, Clinical Outcome Following Stringent Discontinuation of Dual Anti-Platelet Therapy After 12 Months in Real-World Patients Treated With Second-Generation Zotarolimus-Eluting Resolute and Everolimus-Eluting Xience V Stents: Two-Year Follow-up of the Randomized TWENTE Trial, Journal of the American College of Cardiology (2013), doi: 10.1016/ j.jacc.2013.04.005.

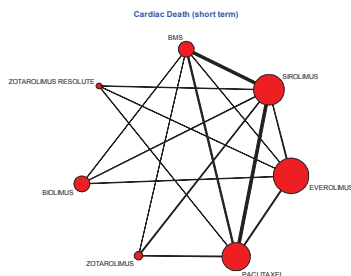
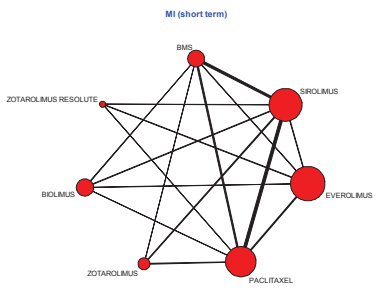
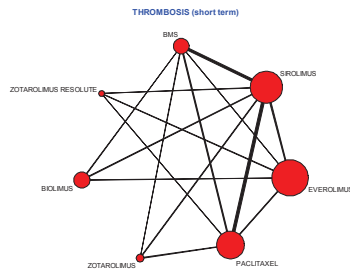
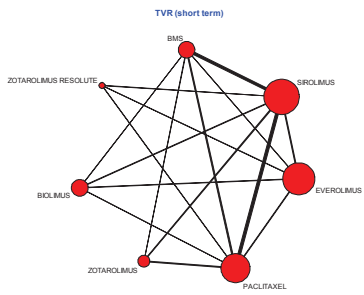
[154]Spaulding Christian et al, Four-Year Follow-Up of TYPHOON (Trial to Assess the Use of the CYPHer Sirolimus-Eluting Coronary Stent in Acute Myocardial Infarction Treated With Balloon Angioplasty), JACC : cardiovascular interventions vol . 4 , no . 1 , 2011,

[155]Bernard Chevalier,A Randomized, controlled, multi-center trial to evaluate the safety and efficacy of zotarolimus vs. paclitaxel-eluting stents in de novo occlusive lesions in coronary arteries: five-year results from the zomaxx i trial Catheterization and Cardiovascular Interventions2013 Dec 1;82(7):1039-47



Figure 1

### SHORT TERM CHECK



### LONG TERM CHECK

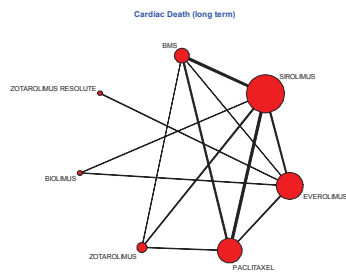
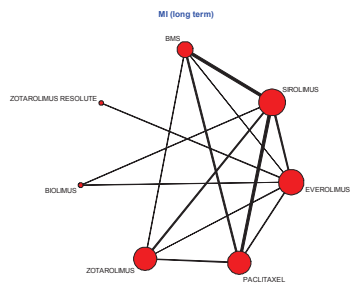
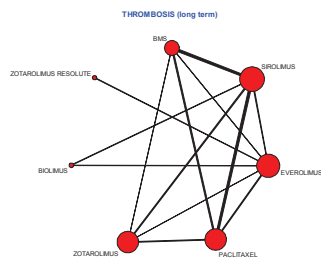
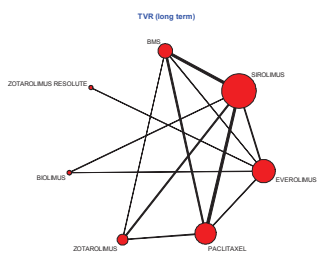
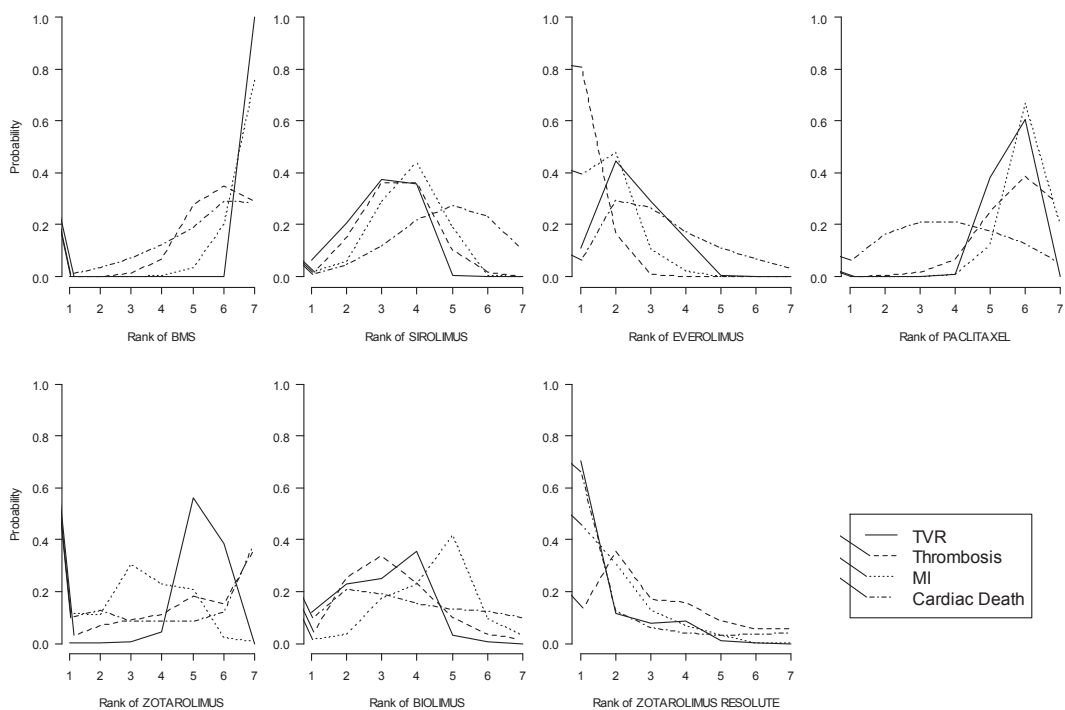
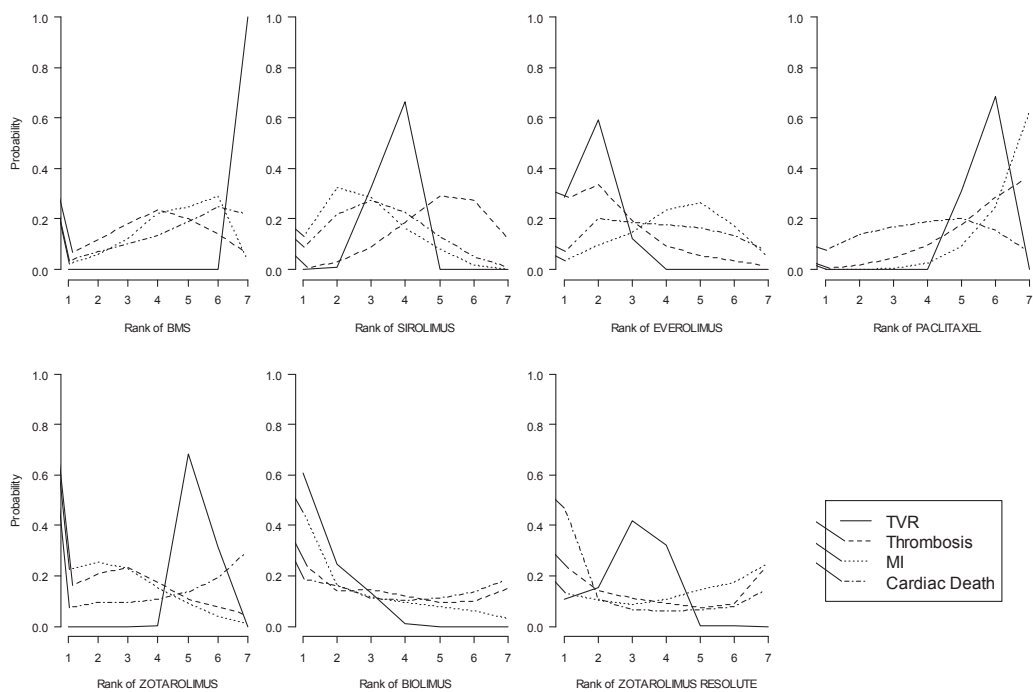


Figure 2

## Short term

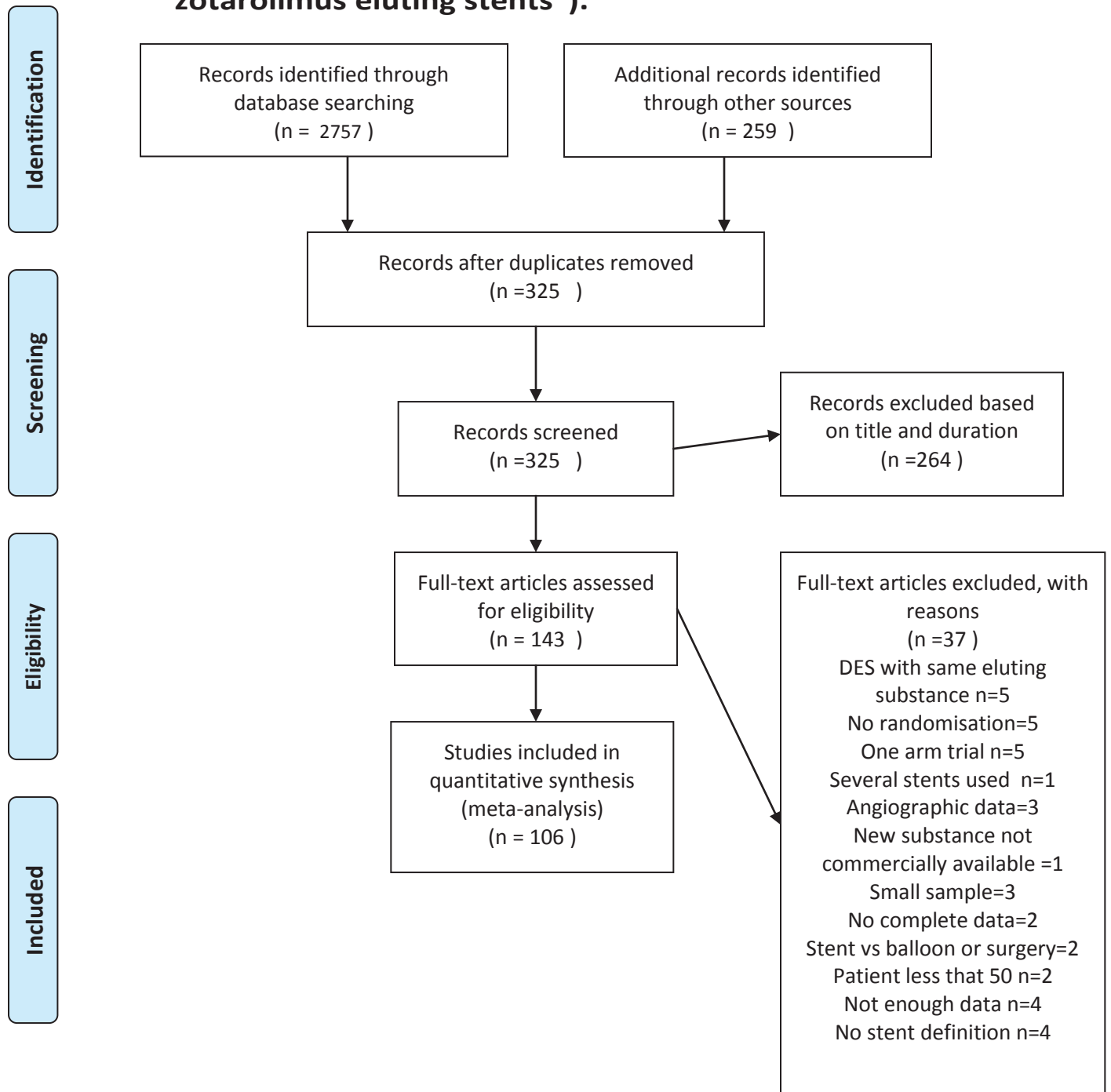


## Long Term





**PRISMA 2009 Flow (Mesh terms “sirolimus eluting stents”, “paclitaxel eluting stents”, “drug eluting stent”, “Endeavor zotarolimus stent”, “biodegradable stent”, “everolimus eluting stents”, “zotarolimus resolute eluting stent”, “biolimus eluting stent” and “zotarolimus eluting stents”).**



From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit [www.prisma-statement.org](http://www.prisma-statement.org).

**Table 2**

TABLE 2. LONG TERM PROBABILITY

AGENT	PROBABILITY BEST % REDUCING CARDIAC DEATH FIXED EFFECT	PROBABILITY BEST % REDUCING MI RANDOM EFFECT	PROBABILITY BEST % REDUCING TVR FIXED EFFECT	PROBABILITY BEST % REDUCING THROMBOSIS RANDOM EFFECT
BMS	3.6	2	0	6
SIROLIMUS	8.7	12	0	0.5
EVEROLIMUS	6.9	3	28.5	27.8
PACLITAXEL	7.2	0	0	0.5
ZOTAROLIMUS	7.4	22.4	0	15
BIOLIMUS	18.7	45	60.8	25
ZOTAROLIMUS RESOLUTE	47.37	13	10.5	24.5

**Table 3**

Table 3. Odds ratio Long Term

	Comparator	CARDIAC DEATH ODDS RATIO FE	95% CI	MI ODDS RATIO RE	95% CI	TVR ODDS RATIO FE	97.5% CI	THROMBOSIS ODDS RATIO RE	97.5% CI
BMS	SIROLIMUS	0.92	0.73-1.13	0.87	0.67-1.12	0.401*	0.35-0.45*	1.09	0.79-1.46
	EVEROLIMUS	0.94	0.71-1.22	0.99	0.69-1.46	0.33*	0.28-0.39*	0.86	0.52-1.34
	PACLITAXEL	0.95	0.78-1.15	1.20	0.94-1.53	0.61*	0.55-0.68*	1.17	0.84-1.58
	ZOTAROLIMUS	1.01	0.73-1.37	0.87	0.61-1.22	0.59*	0.50-0.70*	0.94	0.60-1.44
	BIOLIMUS	0.95	0.65-1.35	0.82	0.47-1.30	0.32*	0.25-0.40*	0.98	0.50-1.76
	RESOLUTE	0.88	0.50-1.42	1.07	0.56-1.93	0.38*	0.28-0.50*	1.03	0.42-2.14
SIROLIMUS	EVEROLIMUS	1.02	0.83-1.25	1.15	0.81-1.62	0.84*	0.74-0.95*	0.79	0.50-1.18
	PACLITAXEL	1.04	0.85-1.26	1.39	1.08-1.76	1.54	1.36-1.74*	1.08	0.79-1.42
	ZOTAROLIMUS	1.10	0.84-1.42	1.00	0.73-1.35	1.48	1.26-1.73*	0.86	0.58-1.26
	BIOLIMUS	1.04	0.76-1.38	0.94	0.57-1.40	0.80*	0.66-0.97*	0.89	0.49-1.51
	RESOLUTE	0.95	0.57-1.50	1.23	0.66-2.18	0.94	0.71-1.23	0.95	0.40-1.92
EVEROLIMUS	PACLITAXEL	1.02	0.79-1.30	1.24	0.84-1.69	1.84	1.56-2.15*	1.41	0.88-2.13
	ZOTAROLIMUS	1.08	0.77-1.48	0.89	0.59-1.24	1.77	1.45-2.14*	1.13	0.70-1.77
	BIOLIMUS	1.02	0.70-1.42	0.84	0.44-1.35	0.96	0.76-1.20	1.18	0.56-2.22
	RESOLUTE	0.93	0.58-1.40	1.07	0.63-1.68	1.12	0.87-1.42	1.20	0.59-2.19



PACLITAXEL									
	ZOTAROLIMUS	1.06	0.77-1.43	0.72	0.52-0.99*	0.96	0.81-1.13	0.81	0.54-1.20
	BIOLIMUS	1.00	0.69-1.40	0.68	0.39-1.07	0.52*	0.41-0.65*	0.84	0.43-1.51
	RESOLUTE	0.92	0.53-1.47	0.89	0.47-1.58	0.61*	0.45-0.81*	0.89	0.37-1.82
ZOTAROLIMUS									
	BIOLIMUS	0.95	0.62-1.39	0.96	0.52-1.54	0.54*	0.42-0.69*	1.072	0.51-1.96
	RESOLUTE	0.88	0.48-1.46	1.24	0.65-2.22	0.64*	0.46-0.86*	1.124	0.45-2.29
BIOLIMUS									
	RESOLUTE	0.94	0.51-1.58	1.37	0.64-2.80	1.18	0.83-1.63	1.147	0.39-2.6
Median estimate of heterogeneity (95% CrI)		NA		0.23	0.03-0.48	NA		0.27	0.03-0.53

\* evidence of a significant effect

**Table 4**

TABLE 4 SHORT TERM PROBABILITY

AGENT	PROBABILITY BEST % REDUCING CARDIAC DEATH FIXED EFFECTS	PROBABILITY BEST % REDUCING FIXED EFFECTS MI	PROBABILITY BEST % REDUCING TVR RANDOM EFFECTS	PROBABILITY BEST % REDUCING THROMBOSIS FIXED EFFECTS
				0
BMS	0.9	0	0	0
SIROLIMUS	0.98	1.5	6.1	0.5
EVEROLIMUS	5.9	39.2	11.1	82
PACLITAXEL	5.9	0	0	0
ZOTAROLIMUS	10	11.6	0	2.3
BIOLIMUS	9.4	1.3	12	2.5
ZOTAROLIMUS RESOLUTE	66.7	46	70	12

**Table 5**

Table 5. Odds Ratio Short Term

	Comparator	CARDIAC DEATH ODDS RATIO FIXED EFFECTS	97.5% CI	MI ODDS RATIO FIXED EFFECTS	97.5% CI	Comparator	TVR ODDS RATIO RANDOM EFFECTS	97.5% CI	THROMBOSIS ODDS RATIO FIXED EFFECTS	97.5% CI
BMS	SIROLIMUS	0.95	0.72-1.23	0.74*	0.60-0.90*	SIROLIMUS	0.28*	0.22-0.36*	0.79	0.57-1.08
	EVEROLIMUS	0.85	0.61-1.16	0.62*	0.48-0.79*	EVEROLIMUS	0.27*	0.18-0.36*	0.53	0.34-0.77*
	PACLITAXEL	0.9	0.66-1.20	0.92	0.75-1.12	PACLITAXEL	0.45*	0.34-0.58*	1.00	0.67-1.44
	ZOTAROLIMUS	1.03	0.55-1.75	0.73*	0.54-0.96*	ZOTAROLIMUS	0.44*	0.29-0.61*	0.99	0.48-1.82
	BIOLIMUS	0.89	0.60-1.27	0.79	0.58-1.04	BIOLIMUS	0.29*	0.18-0.42*	0.76	0.47-1.19
	RESOLUTE	0.69	0.35-1.22	0.63*	0.45-0.85*	RESOLUTE	0.22*	0.11-0.38*	0.71	0.32-1.36
SIROLIMUS	EVEROLIMUS	0.90	0.68-1.17	0.84	0.68-1.03	EVEROLIMUS	0.94	0.69-1.24	0.67	0.46-0.93*
	PACLITAXEL	0.94	0.72-1.22	1.24	1.05-1.47	PACLITAXEL	1.59*	1.27-1.97*	1.29	0.87-1.81
	ZOTAROLIMUS	1.08	0.59-1.81	0.98	0.75-1.25	ZOTAROLIMUS	1.53*	1.10-2.09*	1.27	0.61-2.27
	BIOLIMUS	0.94	0.66-1.29	1.06	0.83-1.35	BIOLIMUS	1.01	0.68-1.42	0.97	0.63-1.43
	RESOLUTE	0.73	0.38-1.26	0.85	0.62-1.12	RESOLUTE	0.78	0.41-1.32	0.90	0.42-1.65
EVEROLIMUS	PACLITAXEL	1.06	0.76-1.44	1.48*	1.20-1.8*	PACLITAXEL	1.71*	1.27-2.28*	1.94	1.28-2.81*
	ZOTAROLIMUS	1.22	0.64-2.11	1.17	0.85-1.55	ZOTAROLIMUS	1.65*	1.08-2.45*	1.92	0.90-3.56
	BIOLIMUS	1.05	0.73-1.46	1.26	0.99-1.60	BIOLIMUS	1.08	0.72-1.56	1.47	0.93-2.25
	RESOLUTE	0.81	0.45-1.33	1	0.80-1.23	RESOLUTE	0.83	0.46-1.35	1.34	0.69-2.35
PACLITAXEL	ZOTAROLIMUS	1.15	0.64-1.91	0.79*	0.61-1.00*	ZOTAROLIMUS	0.96	0.68-1.33	0.99	0.51-1.75
	BIOLIMUS	1.00	0.66-1.46	0.85	0.65-1.11	BIOLIMUS	0.63*	0.42-0.92*	0.77	0.46-1.25
	RESOLUTE	0.78	0.40-1.37	0.68	0.50-0.90*	RESOLUTE	0.49*	0.26-0.82*	0.71	0.33-1.35
ZOTAROLIMUS	BIOLIMUS	0.93	0.47-1.66	1.10	0.77-1.52	BIOLIMUS	0.67	0.40-1.04	0.85	0.38-1.7
	RESOLUTE	0.72	0.30-1.48	0.87	0.60-1.24	RESOLUTE	0.52*	0.25-0.93*	0.79	0.28-1.74
BIOLIMUS	RESOLUTE	0.79	0.39-1.41	0.80	0.57-1.09	RESOLUTE	0.79	0.39-1.42	0.95	0.42-1.83
Median estimate of heterogeneity		NA		NA			0.34	0.20-0.50	NA	

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( 95% Crl)

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\* Evidence of a significant effect

Table 6. Included Studies

Study	Year	Comparative Arms	Sex	Age
BASKET [50]	2005	SES (n=264), PES (n=281), BMS (n=281)	Male (79%) Male (79%)	Age (years) 64±11 Age (years) 64±12
CATOS[51]	2012	ZES (n=80 ) SES (n=80),	Male (65%) Male (76%)	Age (years) 62.7±12.3 Age (years) 63.0±11.7
C-SIRIUS[52]	2004	SES(n = 50), BMS(n =50)	Male (70 %) Male (68%)	Age (years) 60.3 ±10.6, Age (years) 60.7± 9.1,
CHEVALIER [53]	2007	BES (n=85),PES (n=35)	Male (69 %) Male (66%)	Age (years) 65±11, Age (years) 63±11
COMFORTABLE AMI[54]	2012	BES (n = 575) BMS(n = 582),	Male (80.5%), Male (78.2%)	Age ,(years) 60.7± 11.6, Age, (years), 60.4 ± 11.9
COMPARE [55]	2010	EES(n=897), PES (n=903)	Male (69%), Male (72%)	Age (years)62.9 ± 15.7, Age (years) 63.6±17.2
COMPARE II[56]	2013	BES(n=1795) EES(n=912)	Male (74. 4%), Male(74.3%)	Age (years) 63± 11.1, Age (years) 62.7± 11.0
DEBATER[57]	2012	SES (n =424) BMS (n = 446 Abciximab(n = 439) , No Abciximab (n = 434)	Male (78%), Male (75%), Male (76%) Male (78%)	Age(years) 60±11 Age (years) 61±11 Age (years) 60±10 , Age, (years)60±12
DESSERT[58]	2008	SES(n = 75) BMS (n = 75)	Male(63%), Male(49%)	Age (years) 71 ±9 Age (years) 69±9,
DIABEDES[59]	2007	SES(n = 76) PES(n =77)	Male (84%) Male (74%),	Age (years) 66 ±8, Age (years) 65 ±10
DIABETES[60]	2005	SES (n = 80) BMS (n = 80)	Male (70%) Male (81%)	Age (years) 65.9±9.6 Age (years) 7.2±10
DIAS DE LA LIERA[61]	2007	BMS (n = 54), SES (n = 60)	Male (78.3%) , Male (80.0)	Age, (years) 65 ±13 64
DIBRA[62]	2005	BMS(N=125), SES(N=125),	Male (64%), Male (68%)	Age (years) 68.3±9.6 Age (years) 67.7±10.2
E-SIRIUS[63]	2003	SES (n=175), BMS (n=177),	Men (70%), Men 126 (71%),	Age (years) 62.0 ±11.4, age (years)62.6±10.3,
ENDEAVOR II[64]	2006	EES(n=598),	Male (77%),	Age(years)61.6±10.5,

ENDEAVOR III[65]	2006	BMS (n=599) ZES(n=323), SES (n=113)	Male (75%) Male (65.3 %) Male (81.4 %)	Age (years) ,61.9±10.5 Age (years) 61.42 ±10.58, Age (years) 61.73 ±11.59
ENDEAVOR IV [66]	2010	ZES (n =773) PES (n =775),	Men (66.9%) Men (68.5%)	Age, (years) 63.5± 11.1 Age( years )63.6 ± 11.0
ESSENCE DIABETES[67]	2013	EES(n=149) SES(n=151)	Men (52.3%) ,Men (65.6%)	Age (years) 63.2±8.3, Age (years )63.5±8.1
EXCELLENT[68]	2011	EES (n = 1,079), SES (n = 364)	Male (65.2%) Male (62.6%)	Age (years) 62.5 ±10.1 Age (years) 63.4 ±9.9
Erglis[69]	2007	BMS (n =50) ), PES (n = 53)	Male (82%) Male (85%)	Age (years) 62.56 ±11.45, Age(years) 61.08± 10.28,
HORIZON AMI STONE [70]	2009	PES(N = 2257) BMS (N = 749)	Male . (77.0%), Male (76.0%)	Age (years) 59.9 Age (years) 59.3
LEE [71]	2008	SES(n = 200), PES (n =200)	Men (61.0%) Men(55.0%)	Age (years) 61.1± 8.9 , Age (years), 60.7 ±8.8
EUROSTAR[72]	2011	PES (n=152) BMS (n=151)	Male (74.3%), Male (68.9%)	Age (years) 64.9±9.2, Age (years) 66.2±9.4
EXAMINATION [73]	2012	EES (n=751 BMS (n=747)	Male (82%) Male (84%),	Age (years), 60±8 Age (years), 61±6
ISAR LEFT MAIN[74]	2009	PES (n = 302) SES (n = 305)	Male (23%), Male (38%)	Age, (years) 68.8± 10.1 Age, (years) 69.3 ± 9.34,
JUWANA [75]	2009	SES(n = 196) PES(n=201)	Men (69%), Men(74%)	Age (years) 61± 11,
KIM [76]	2008	SES (n = 85), PES (n = 84)	Male (71.8%), Male (76.2%)	Age (years) 62.9 ± 8.0 , Age (years) 61.5 ± 8.9
LEADERS[77]	2008	BES (n=857) SES(n=850)	Men (75%),	Age (years) 64.6 ±10.8, Age (years) 64.5 ±10.7

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			Men (74%)	
LONG DES II[78]	2006	SES (n=250) PES(n=250)	Male (67.2%) Male (61.2%)	Age (years)61.4 Age (years) 60.7
LONG DES III[79]	2 0 1 1	EES (n = 224) SES(n =226)	Male (73.7%), Male(65.9%)	Age, (years) 62.9 Age, (years) 63.0
LONG DES IV[80]	2012	RESOLUTE- ZES (n= 250) SES (n=250 )	Male , (73.6%) Male, (72.4%)	Age (years)62.8±9.7, Age,(years)62.7±9.8,
LIPSIA[81]	2 0 1 1	SES(n= 120) PES(n= 116)	Male (69%), Male (68%)	Age(years) ,67.0±9.5 Age (years), 67.3±9.1,
MISSION [82]	2008	SES (n = 158) BMS (n = 152)	Male (69%), Male (68%)	Age (years) 59.2 Age (years) 59.1
MULTISTRATEGY[83]	2008	Abciximab Plus BMS(n = 186) Abciximab Plus (n = 186) Tirofiban Plus BMS (n = 186) Tirofiban Plus SES(n = 186)	Male (73.1%), Male (72.6%), Male (79.5%), Male (78.5%)	Age, (years) 63.9 ±11.7, Age, (years) 62.7± 11.2 Age, (years) ,65.4 ±12.1 Age,(years),63.4±12,
Natsuaki [84]	2013	BES (n=1617) EES (n=1618)	Male (77%), Male (77%)	Age (years) 69.1±9.8, Age (years) 69.3±9.8,
PACHE MEHILI [85]	2005	PES (n= 250) BMS(n = 250)	Men (78%) Men (78%)	Age (years) , 67.4±16.4 Age, (years) 66.7 ± 14.8
PAINT[86]	2009	PES (n =111) BMS(n = 57) SES(n = 106)	Men (61.3 %) Men (67.0%) Men (66.7%),	Age, (years) 60.1 ± 10.2 Age, (years)59.7 ±10.6, Age, (years)58.5 ± 9.6
PROSIT[87]	2008	SES (n= 154) PES (n = 154)	Male (76.0%) Male(76.6%)	Age (years) 60 .6 ±11 Age(years),60 .6 ±12
NOBORI[88]	2011	BES(n =194) SES(n =132)	Male (71.6%), Male (72.0%)	Age (years) 67.1 ± 10.3 Age (years)67.7 ± 9.3,

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PAN[89]	2012	SES(n = 145) EES(n = 148)	Male (79%) Male (82%),	Age (years) 63 ± 10 Age (years) 63 ± 11
RAVEL[90]	2002	SES (n=120) BMS (n=118)	Male (70%), Male (81%)	Age (years) 61.8±10.7, Age (years) 59.7±10.1,
REALITY[91]	2006	SES(n = 684) PES(n = 669)	Men (72.0%) , Men (74.1%)	Age (years) 62.6 ±10.5, Age (years) 62.6 ± 10.0,
REMEDEE[92]	2 0 1 3	SES(n = 124) PES(n=59)	Men (71.8%), Men(71.2%)	Age (years) 64.20 ±9.48 Age (years) 64.05 ± 10.49
RESET[93]	2013	SES (n=1600) EES (n=1597 )	Male (12.17%), Men(76%)	Age(years) 68.9±9.7, Age (years) 69.3±9.6,
RESOLUTE[94]	2 0 1 3	RESOLUTE ZES(n=198) PES(n = 202)	Male (77.8%), Male (80.7% )	Age, (years) 59.7±9.9, Age, (years)59.6±10.6,
SEPARHAM [95]	2011	BES (n=100) EES (n=100)	Male (66%) Male (64%)	Age, (yrs)60.60±9.1, Age, (yrs) 62.38±10.2
SESAMI [96]	2007	SES (n = 160) BMS (n = 160)	Male (80%), Male (80%),	Age (years) 63±20, Age (years) 62 ±16
SEZE[97]	2012	ZES (n=60) SES (n=61)	Male (81.6%) Male (80.3%)	Age (years) 59.8±13.3 Age (years) 62.0±11.5
SERRYUS[98]	2010	ZES (N = 1152) EES (N = 1140)	Male (76.7%), Male (77.2%),	Age ( years) 64.2±10.8 Age( years) 64.4±10.9
SORT OUT IV[99]	2012	SES n=1384 EES n=1390	Men (75.5%), Men (72.4%).	Age (years) 64.1± 10.8, Age(years) 63.5 ±13.2,
SORT OUT V [100]	2013	BES(n=1229) SES(n=1239)	Men (74.6%), Men (75.1%)	Age (years) 65.0 ±10.6, Age (years) 65.2 ±10.3,

SPIRIT III STONE [101]	2008	EES (n=669) PES (n=332)	Men (70.1%), Men (10.2%)	Age, (years) 63.2±10.5, Age (years) 62.8 ±10.2,
SPIRIT IV [102]	2013	EES (n = 2458) PES (n = 1229 )	Male (67.7%), Male (67.8%)	Age (years) 63.3±10.5 Age (years) 63.3±10.2
SPIRIT V [103]		EES(n = 218) PES(n = 106)	Male (70 %) Male (67% )	Age (years) 65 ± 10 Age (years) 66 ± 9,
STEALTH[104]	2005	BES (n=80) BMS (n=40)	Male (48%), Male (33%)	Age (years) , 62.2 ± 10.1 Age (years) , 61.1 ± 9.4,
ZEST AMI [105]	2009	ZES n=( 108) SES (n = 110) PES (n =110)	Male (77.8%) Male (86.4%) Male (82.7%)	Age, (years) 61.9 ± 11.0, Age (years), 57.8 ± 11.3 Age (years) , 59.3 ± 11.2
TAXI [106]	2005	PES (n = 100) SES(n = 102)	Male(83%) Male (79%),	Age (years) 63 ± 10 Age (years) 65± 10
TAXUS VI[107]	2005	PES (n = 577) , BMS (n = 579)	Male (70.2%), Male (68.7%)	Age (years) 62.9 ± 11.2, Age, (years) 62.8 ±10.8,
TAXUS[108]	2005	PES (n=219) BMS(n=227),	Male, (76.3%) Male, (76.2%)	Age (years) 61.8±9.7, Age (years) 63.4±9.9,
TYPHHON [109]	2006	SES(N = 355) BMS(N = 357)	Male (78.6%), Male (78.2%),	Age (years) 58.0, Age (years) 60.5,
TWENTE[110]	2012	RESOLUTE ZES (n =697), EES (n=694)	Men (72.5%), Men (72.6%)	Age (years) 64.2 ± 10.8 , Age (years) 63.9± 10.9, Age (years) 64.5 ± 10.7
XAMI[111]	2012,	EES (n=404) SES (n = 221)	Male (73.0%) Male (75.1%)	Age (years) 61.2 ± 11.3, Age (years) 62.0± 11.4

ZEST[112]	2010	ZES (n=883) SES (n =878) PES (n=884)	Male (66.4%), Male (67.3%), Male (65.8%)	Age, (years) 61.7± 9.3, Age, (years) 61.9 ±9.6 Age, (years) 62.0 ± 9.6,
ZOMAXX[113]	2011	ZES(n=557) PES(n=542),	Male ( 69%), Male ( 69%)	Age (years) 63±10 Age (years) 63±11
BASKET PROVE KAISER [114]	2013	EES (n=774) SES (n=775) BMS (n=774)	Male(76%)Mal e(74%) Male(77%)	Age(years) 66±11 Age (years)66±1 1 Age (years) 67±11
Byrne[115]	2010	SES (n = 335), ZES (n = 339).	Male (77.3%) Male (75.5%)	Age (years ) 66.6±11.1 Age (years)67.2 ±10.9
COMPARE[116]	2011	EES (n = 897) PES (n = 903)	Male(69%) Male (72%)	Age (years)62.9 ± 15.7, Age (years) 63.6±17.2
DES DIABETES[117]	2011	SRL( n=200) PES(n =200)	Male (61%) Male (55%)	Age (years) 61.1±8.9 Age (years)60.7± 8.8,
ENDEAVOR II FIVE YEARS[118]	2010	ZES(n= 598), BMS(n =599)	Male(77.2%) Male (75.4%)	Age, (years) 61.6±10.5 Age, (years) 61.9±10.5
ENDEAVOR III 5 YEARS [119]	2011	ZES (n = 323), SES (n=113)	Male(65.3% ) Male(81.4%)	Age (years), 61.42±10.58 Age (years), 61.73±11.59 ,
ENDEAVOR IV[120]	2013	ZES(n= 773) PES(n= 775)	Male(66.9%) Male(68.5%)	Age, (years )63.5±11.1 Age, (years )63.6±11.0
GISSOC [121]	2010	BMS(n = 78) SES(n = 74)	Male (87.1%), Male (78.3%)	Age (years) 63.9±9.8, Age

				(years)63.9± 9.6, Age (years) 65.9± 8.0, Age (years) 64.5± 8.9,
HONG[122]	2010	SES (n =85) PES (n =84)	Male (71.8%) Male (76.2%)	
HORIZON AMI[123]	2011	Heparin plus a GPI(n=1802), Bivalirudin monotherapy(n =1800) PES(n=2257), BMS(n=749)	Male (76%) Male (77%), Male (76%)	Age (years) 60.7± 17.2 Age (years) 59.8±17.6 Age (years) 59.9±17, Age (years) 59.3±17.4
ISAR LEFT MAIN [124]	2009	PES (n = 302) SES (n = 305)	Male(75%) Male(80%)	Age, (years) 68.8 ± 10.1 Age (years) 69.3 ±9.34
Klaus [125]	2011	BES (n = 857), SES (n = 850),	Male (75%) Male (74.6%)	Age, (years) 64.6±10.8 Age, (years) 64.5±10.7
KOMER[126]	2011	ZES (n=205) SES (n=204) PES (n=202)	Male(76%) Male(81%) Male(79%)	Age, (years) 60±13 Age (years), 59±12, Age(years) ,60±13, Age (years) 64.6 ±10.8, Age (years) 64.5 ±10.7
Leaders [127]	2011	BES(n= 857) , SES(n= 850)	Men (75%), Men (74%)	Age (years) 64.6 ±10.8, Age (years) 64.5 ±10.7
LATE [128]	2011	SES (n=503), PES(n= 509)	Male(76%), Male(78%)	Age (years) 62±11 Age (years) 62±12
MISSION [129]	2012	SES (n=158) BMS (n=152)	Men (74.7%) Male(80.9%)	Age (yrs) 59.2±11.2 Age (yrs) 59.1±11.6
NAPLES DIABETES [130]	2011	SES (n=76) PES (n=75), EES (n=75)	Male (57%), Male (59%) , Male (56%)	Age, (years) 64±8, Age, (years) 64±10 Age, (years) 65±8,
MULTISTRATEGY [131]	2013	SRL(n= 370) BMS(n=372)	Male (73.1%) Male (72.6%)	Age (years)63.9 ±11.7 Age (years)

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				62.7 ± 11.2 Age (years) 65.4 ± 12.1 Age (years) 63.4 ±12
PAINT [132]	2012	PES (n=111) SES (n=106) BMS(n=57)	Male(61.3 %) Male(67.0%) Male(66.7%)	Age, (years) 60.1±10.2 Age (years) 59.7±10.6 Age (years) 58.5±9.6
PASEO [133]	2009	BMS (n = 90 ) PES (n =90)	Male(71.1% ) Male(68.9%)	Age, (years) 62± 17, Age (years) 63± 15
PASSION [134]	2011	PES(n= 310) BMS (n = 309)	Male(73.9%) Male(78%)	Age, (years) 61±12, Age, (years) 61±13
PRISON[135]	2012	BMS(n=100)  SES (n=100)	Male (76%) Male(83%)	Age (years) 59.3±10.2 Age (years) 59.6±10.6
PROTECT [136]	2012	EES (n=4357) SES (n=4352)	Male(77%) Male (76%)	Age (years) 62·3 ±10·6, Age (years) 62·1± 10·7
PROSIT [137]	2011	SES (n = 154) PES (n = 154)	Male(76%) Male(76.6%)	Age (years), 60 .6 ±11, Age (years), 60. 6 ±12
PURICEL [138]	2013	ERL(n= 200) BES(n= 200)	Male(75.5%) Male( 73%)	Age (years ) 65.9±11.2 Age (years) 64.9±10.
RAVEL [139]	2007	SES(n= 120) BMS (n=118)	Male(70%/ ) Male(81%)	Age (years) 61.8±10.7 Age (years) 59.7±10.1
RESOLUTE[140]	2011	RESOLUTE - ZES(N=1140)  EES(N=1152)	Male(76.7%) Male(77.2%)	Age (years) 64·4 ± 10·9, Age (years) 64·2 ± 10·8

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SCOPRIUS[141]	2012	SES (n = 95) BMS (n = 95)	Male(66%) Male(62%)	Age (years) 66 ± 9, Age (years) 66 ± 10
SEASIDE [142]	2011	SES (n= 75) ERL (n= 75)	Male(75%) Male(85%)	Age, (years) 64±10
SESAMI[143]	2011	SES( n=155 ) BMS (n=155)	Male(82%) Male(81%)	Age, (years) 63±15, Age (years) 63± 19
SIRTAX [144]	2008	SES(n= 503) PES (n = 509 )	Males (69.4%) Male(72.0%) Male (79.8%)	Age (years) 62 ± 10
SORT OUT III 18 MONTHS [145]	2010	ZES (n = 1,162) SES (n =1,170)	Male(73% ) Male(74%)	Age(years), 64.3± 10.7 Age (years), 64.3± 10.8
SORT OUT III[146]	2012	ZES (n = 1,162) SES (n = 1,170)	Male(73% ) Male(74%)	Age, (years) 64.3± 10.7, Age (years) 64.3±10.8
SORT OUT IV [147]	2012	EES (n=1390), SES (n=1384),	Male(75.9% ) Male(75.2% )	Age years , 64.2 ±10.9, Age years, 64.0±10.8
SPIRIT II 3 YEARS [148]	2009	EES (n = 223) PES (n = 77)	Male(71%) Male(79%)	Age (years) 62±10, Age (years) 62±9
TAXI LATE [149]	2007	SES(n= 100) PES (n= 102)	Male(77%), Male(83%)	Age (years), 65. 6±10, Age (years) ,63. 6± 10
TAXUS [150]	2011	BMS (n=1397) PES (n=1400)	Age (81,7%) Age (71.5%)	Age (years), 62.2±10.7 Age (years), 62.8±11.0
TAXUS IV[151]	2009	BMS (n=643) PES (n = 651)	Male (72.2%) Male(71.7%)	Age (years) 62.1±11.0 Age (years)

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TAXUS VI[152]	2009	BMS (n=233 ) PES(n =217)	Male (70.2%), Male (68.7%)	62.8±11.2 Age (years) 62.9 ± 11.2, Age, (years) 62.8 ±10.8,
TWENTE[153]	2013	Resolute- ZES (n= 697) EES(n= 694)	Men (72.5%) Men (72.6%)	Age (years) 63.9 ± 10.9, Age (years) 64.5 ± 10.7
Typhoon[154]	2011	SES (n=355) BMS (n=357)	Male (77.7%) Male(78.6%)	Age, (years) 59.3±13.2 Age, (years) 59.2±11.7,
ZOMAXX[155]	2013	ZES (n=199) PES (n=197)	Male (75%) Male(77%)	Age (years) 63 ± 10 Age (years) 63 ± 11