ESC European Society of Cardiology

European Heart Journal Open (2025) **5**, oeaf045
https://doi.org/10.1093/ehjopen/oeaf045

ORIGINAL ARTICLE
Interventional cardiology and cardiac surgery

Practice patterns and percutaneous coronary intervention outcomes: a comparison between Sweden and the US

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Received 19 January 2025; revised 26 March 2025; accepted 15 April 2025; online publish-ahead-of-print 18 April 2025

Handling Editor: Salvatore De Rosa

Aims

Comparisons of international practice patterns and their impact on percutaneous coronary intervention (PCI) outcomes are lacking. We compared temporal PCI trends between Sweden and a large university hospital system in the US.

Methods and results

Data within the Swedish Coronary Angiography and Angioplasty Registry (SCAAR) and the University of California San Diego Health internal National Cardiovascular Data Registry (NCDR) CathPCI Registry were used to identify patients who underwent PCI from 2007 to 2021. Baseline characteristics and practice patterns were assessed using all patients (275 021 Swedish cohort, 9883 US cohort). Mortality was analysed using a random-effects Cox model, restricted to patients treated at university hospitals and excluding those with cardiac arrest or cardiogenic shock (108 136 Swedish cohort, 9592 US cohort). The Swedish cohort was older, had a greater proportion of men, and was more likely to smoke (all $P < 0.001$). The US cohort had a higher body mass index and was more likely to have diabetes, hyperlipidaemia, prior PCI, congestive heart failure, and peripheral arterial disease (all $P < 0.001$). Sweden had lower rates of PCI for stable angina and lower use of mechanical circulatory support (all $P < 0.001$). More STEMI patients were treated with only heparin as anticoagulation in Sweden, even in the contemporary era. There was earlier adoption and increased utilization of ticagrelor and radial access in Sweden, while there was earlier use of drug-eluting stents in the US. Fractional flow reserve was used more frequently in Sweden. There was no difference in adjusted all-cause mortality 1 year post-PCI for any indication between university hospitals in Sweden and the US (hazard ratio [HR] 1.09; 95% CI 0.86–1.37; $P = 0.48$), and this finding was consistent across subgroups.

Conclusion

Despite significant differences in patient populations and practice variations, we found no difference in post-PCI mortality between university hospitals in Sweden and the US.

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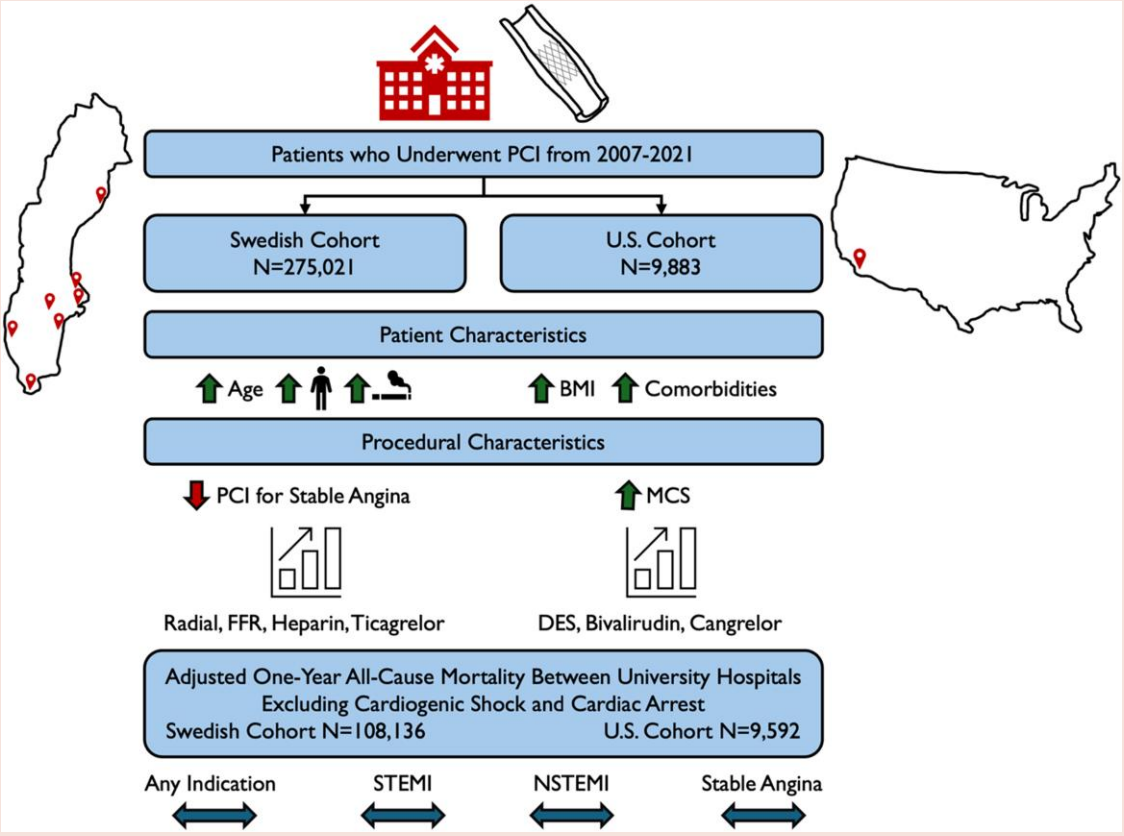
Graphical abstract



Keywords International practice patterns • PCI outcomes

Introduction

With the aging population and growing prevalence of coronary artery disease, percutaneous coronary intervention (PCI) remains the most common cardiovascular procedure.[1] There are limited studies comparing international PCI practice patterns in unselected cohorts and their impact on patient outcomes.[2–7] Only a few of these studies evaluated long-term PCI trends and post-discharge outcomes.[5,7] Comparing international PCI practice patterns can offer valuable insights to optimize healthcare delivery, determine barriers to implementation, and identify best practices to improve patient outcomes.

The Swedish and US healthcare systems differ significantly. Sweden operates under a social democratic model, prioritizing equitable access to care for all citizens through a centralized, publicly funded system with automated enrolment. While voluntary health insurance programs exist to expedite access, basic healthcare is universally available. In contrast, the US employs a mixed model, combining public programs including Medicare and Medicaid with a predominantly private, employer-provided insurance system. Enrolment is voluntary, and a substantial portion of the population remains uninsured, despite the passage of the Affordable Care Act.[8,9]

The average life expectancy is higher in Sweden compared with the US with a lower burden of comorbidities despite the US spending more on healthcare per capita.[8,9] Compared to the US, the time to elective PCI is longer in Sweden due to an emphasis on treating the sickest patients first.[10] Sweden has governmental systems for rapid implementation of new technologies and mandated participation in the national PCI registry.[11–13] The impact of these differences in healthcare delivery on patient outcomes after PCI has not been studied. Comparative studies may inform policymaking to improve systems of care.

Whether differences in European and US societal guidelines affect real-world practice is also unknown. One study suggests that hospital status and geographic factors influence practice patterns more than published guidelines over a 2-year period, but there are no long-term studies.[14] We thus compared patient characteristics, procedural characteristics, and 1-year all-cause mortality among a large cohort of patients who underwent PCI in Sweden and a university hospital system in the US for any indication from 2007 to 2021.

Methods

Data source

The University of California San Diego Health (UCSD) internal National Cardiovascular Data Registry (NCDR) CathPCI Registry was used to obtain data on patients who underwent PCI from January 2007 to December 2021

at UCSD. UCSD is an academic tertiary and quaternary referral hospital system that serves as a primary PCI and ST-elevation myocardial infarction (STEMI) receiving centre. The NCDR CathPCI Registry contains comprehensive data on patients who underwent PCI at participating hospitals in the US.[15,16] All-cause mortality 1-year post-PCI was obtained from the UCSD electronic medical record confirmed by the California Department of Public Health vital records and merged with the UCSD internal NCDR CathPCI Registry using unique patient medical record numbers.

The Swedish Coronary Angiography and Angioplasty Registry (SCAAR) was used to obtain data on patients who underwent PCI in Sweden from January 2007 to December 2021. Swedish Coronary Angiography and Angioplasty Registry is a population-based mandated registry that includes coronary angiography and PCI procedures performed at all 29 hospitals in Sweden that provide PCI.[13] Swedish university hospitals included in this study were Skåne University Hospital, Linköping University Hospital, Karolinska University Hospital, Sahlgrenska University Hospital, Örebro University Hospital, Norrland University Hospital, and Uppsala University Hospital. For the mortality analysis, we included only PCI procedures performed at university hospitals in Sweden for direct comparison.

Percutaneous coronary intervention procedures were performed by attending interventional cardiologists with or without interventional cardiology fellows. The Institutional Review Board of the University of California, San Diego approved the study (#806572).

Patient selection

A total of 275 021 patients in the Swedish cohort and 9883 patients in the US cohort who underwent PCI for any indication from January 2007 to December 2021 were included in baseline demographics and PCI practice pattern trends. The mortality analysis was restricted to 108 136 patients treated at university hospitals in Sweden and 9592 patients treated at a university hospital system in the US after excluding 2484 patients in the Swedish cohort and 291 patients in the US cohort who had cardiac arrest or cardiogenic shock. This study followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guidelines.

Statistical methods

Categorical data are presented as counts with percentages and continuous data are presented as mean and inter-quartile range or standard deviation depending on the distribution of the variable. Independent samples *T*-test and χ^2 tests were used as appropriate to compare patient characteristics and procedural characteristics between groups. Mortality was evaluated with time-to-event analysis using Kaplan–Meier curves with log-rank statistic to assess all-cause mortality 1 year post-PCI. For both unadjusted and adjusted mortality analyses, a random-effects Cox proportional hazards regression model, with PCI centre as a random effect, was used. Wald χ^2 testing was used to assess the goodness-of-fit. Univariable random-effects Cox proportional hazards regression model was used to estimate unadjusted hazard ratios for all-cause mortality. Adjusted mortality analysis was conducted with a multivariable random-effects Cox proportional hazards regression model adjusting for age, sex, smoking status, renal failure, hypertension (HTN), hyperlipidaemia (HLD), diabetes (DM), congestive heart failure (CHF), peripheral arterial disease (PAD), prior stroke, prior myocardial infarction (MI), prior coronary artery bypass graft surgery (CABG), and prior PCI. Analyses were performed using IBM SPSS Statistics for MacOS, version 29 (IBM Corp., Armonk, NY, USA) and Stata for MacOS, version 18 (StataCorp LLC.), a 2-sided *P* value <0.05 was considered statistically significant.

Results

Patient characteristics

Patient characteristics are shown in *Table 1*. The Swedish cohort was older and had a greater proportion of men and current or former smokers. The US cohort had a higher body mass index and a greater burden of comorbidities including DM, HTN, HLD, stroke, CHF, PAD, and renal failure. The US cohort also had a greater proportion of patients with a history of prior MI or PCI.

Table 1 Patient characteristics

Variable	UCSD *n* = 9883	SCAAR *n* = 275 021	*P*-value
Age	66 (58–75)	69 (61–76)	<0.001
Body mass index	28.9 (24.9–31.8)	26.9 (24.5–29.9)	<0.001
Sex			
Male	7096 (71.8%)	202771 (73.7%)	<0.001
Female	2784 (28.2%)	72250 (26.3%)	
Current or ex-smoker	3265 (33.0%)	152271 (55.4%)	<0.001
Past medical history			
Diabetes	4439 (44.9%)	60966 (22.3%)	<0.001
Hypertension	8460 (85.6%)	175965 (64.0%)	<0.001
Hyperlipidaemia	8305 (84.0%)	149057 (54.9%)	<0.001
History of MI	3108 (31.4%)	80327 (29.2%)	<0.001
History of PCI	4183 (42.3%)	84032 (30.6%)	<0.001
Stroke	1258 (12.7%)	18207 (6.6%)	<0.001
CHF	2519 (25.5%)	23717 (8.6%)	<0.001
PAD	1195 (12.1%)	13636 (5.0%)	<0.001
Renal failure	564 (5.7%)	10385 (3.8%)	<0.001

Values are mean and inter-quartile range for continuous variables and number and per cent of patients for categorical variables.
MI, myocardial infarction; PCI, percutaneous coronary intervention; CHF, congestive heart failure; PAD, peripheral arterial disease.

Procedural characteristics

Procedural characteristics are shown in *Table 2*. Sweden had a lower proportion of PCI for stable ischaemic heart disease (22.0 vs. 43.3%, $P < 0.001$) and a higher proportion of PCI for STEMI (26.5 vs. 12.9%, $P < 0.001$) and non-ST-elevation myocardial infarction (NSTEMI) (45.8 vs. 35.3%, $P < 0.001$) compared with the US. Radial access was used more frequently in Sweden (70.5 vs. 37.8%, $P < 0.001$) compared with the US. Most patients in Sweden and the US had non-left main, one vessel disease. There was greater use of mechanical circulatory support (MCS) in the US compared with Sweden (5.5 vs. 0.6%, $P < 0.001$), most frequently intra-aortic balloon pump followed by microaxial flow pump. Patients received lower contrast volume in Sweden (145 mL inter-quartile range 108–195 vs. 194 mL inter-quartile range 130–240 $P < 0.001$) compared with the US.

There was greater use of ticagrelor, unfractionated heparin, and fondaparinux within 24 h of PCI in Sweden. There was greater use of clopidogrel, ticlopidine, cangrelor, bivalirudin, and glycoprotein IIb/IIIa inhibitors (GPI) within 24 h of PCI in the US patients were more likely to have received thrombolytics prior to PCI in the US compared with Sweden.

Comparative trend of medication use within 24 h of ST-elevation myocardial infarction

Most STEMI patients in Sweden were treated with heparin as the primary procedural anticoagulant even in the contemporary era, though

Table 2 Procedural characteristics

Variable	UCSD $n = 9883$	Sweden $n = 275\,021$	*P*-value
PCI indication			<0.001
Stable ischaemic heart disease	4275 (43.3%)	60533 (22.0%)	
NSTEMI	3487 (35.3%)	125949 (45.8%)	
STEMI	1274 (12.9%)	72879 (26.5%)	
Atypical chest pain	208 (2.1%)	1458 (0.5%)	
Other indication	639 (6.5%)	14202 (5.16%)	
Vascular approach			<0.001
Femoral	6128 (62.0%)	69834 (25.4%)	
Radial	3735 (37.8%)	193671 (70.5%)	
Combined/other	20 (0.2%)	11351 (4.1%)	
Angiographic findings			<0.001
1VD not LM	7794 (78.9%)	132002 (48.0%)	
2VD not LM	1041 (10.5%)	79805 (29.0%)	
3VD not LM	95 (1.0%)	45811 (16.7%)	
LM + 1VD	136 (1.4%)	3108 (1.1%)	
LM + 2VD	49 (0.5%)	4782 (1.7%)	
LM + 3VD	8 (0.1%)	8307 (3.0%)	
LM	90 (0.9%)	996 (0.4%)	
Medications <24 h prior and during PCI			
Clopidogrel/Ticlopidine	7102 (71.9%)	139065 (50.6%)	<0.001
Prasugrel	755 (7.6%)	6291 (2.3%)	<0.001
Ticagrelor	1922 (19.4%)	129013 (46.9%)	<0.001
Cangrelor	568 (5.7%)	3769 (1.4%)	<0.001
Aspirin	9585 (97.0%)	270538 (98.4%)	<0.001
Heparin	6427 (65.0%)	192670 (70.1%)	<0.001
Dalteparin/LMWH	400 (4.0%)	3748 (1.4%)	<0.001
Fondaparinux	6 (0.1%)	56333 (20.5%)	<0.001
Bivalirudin	6197 (62.7%)	43644 (15.9%)	<0.001
GPI	1140 (11.5%)	24347 (8.9%)	<0.001
Thrombolytic	245 (2.5%)	2792 (1.0%)	<0.001
Contrast volume (ml)	194 (130–240)	145 (108–195)	<0.001
Mechanical circulatory support			<0.001
None	9340 (94.5%)	273488 (99.4%)	
IABP	383 (3.9%)	1349 (0.5%)	
Microaxial flow pump	96 (1.0%)	45 (0.0%)	
ECMO	9 (0.1%)	22 (0.0%)	
Other	55 (0.6%)	117 (0.0%)	

Values are mean and inter-quartile range for continuous variables and number and percent of patients for categorical variables.
PCI, percutaneous coronary intervention; NSTEMI, non-ST-elevation myocardial infarction; STEMI, ST-elevation myocardial infarction; VD, vessel disease; LM, left main; LMWH, low-molecular weight heparin; GPI, glycoprotein IIb/IIIa inhibitor; IABP, intra-aortic balloon pump; ECMO, extra-corporeal membrane oxygenation.

bivalirudin use was greater in Sweden compared with the US until 2015 (*Figure 1*). Between 2016 and 2021, bivalirudin was used more frequently in the US. There was greater use of GPI in the US compared with Sweden with a steady decline from 2007 (89.1%) to 2015 (40.2%) and rare use thereafter. Glycoprotein IIb/IIIa inhibitor use similarly declined in Sweden but was still used in up to 10% of cases annually from 2016 to 2021. There was greater use of combination therapy with GPI and bivalirudin in the US compared with Sweden. Cangrelor was implemented 2 years earlier in Sweden with overall lower rates of use compared with the US.

Comparative trend of P2Y12 inhibitor use in ST-elevation myocardial infarction, non-ST-elevation myocardial infarction, and stable angina

There was earlier adoption and increased utilization of ticagrelor in STEMI and NSTEMI patients in Sweden compared with the US, with >90% annual use in STEMI since 2016 (*Figures 2* and *3*). Ticagrelor use increased annually in the US and was used in 73.4% of STEMI patients and 49.1% of NSTEMI patients in 2021. There was greater use

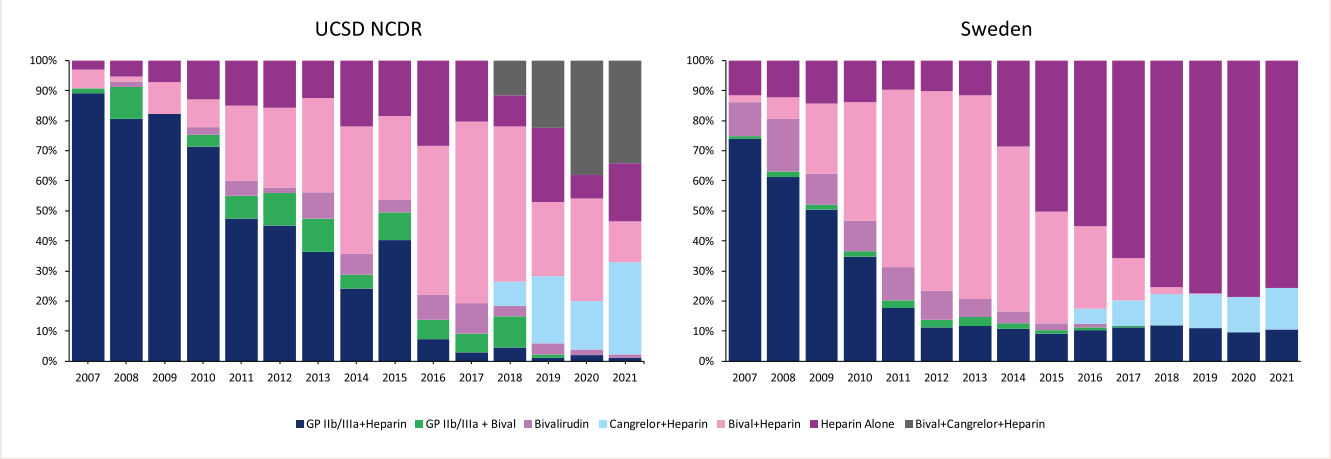


Figure 1 Trends in glycoprotein IIb/IIIa inhibitor, bivalirudin, cangrelor, and heparin use before or during percutaneous coronary intervention in ST-elevation myocardial infarction.

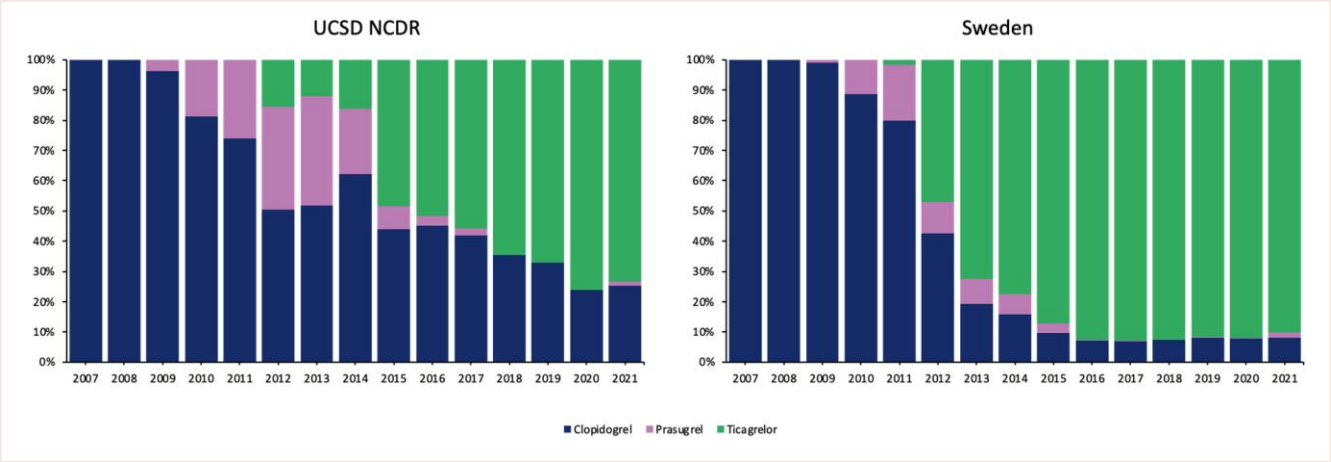


Figure 2 Trends in oral P2Y12 inhibitor use in ST-elevation myocardial infarction.

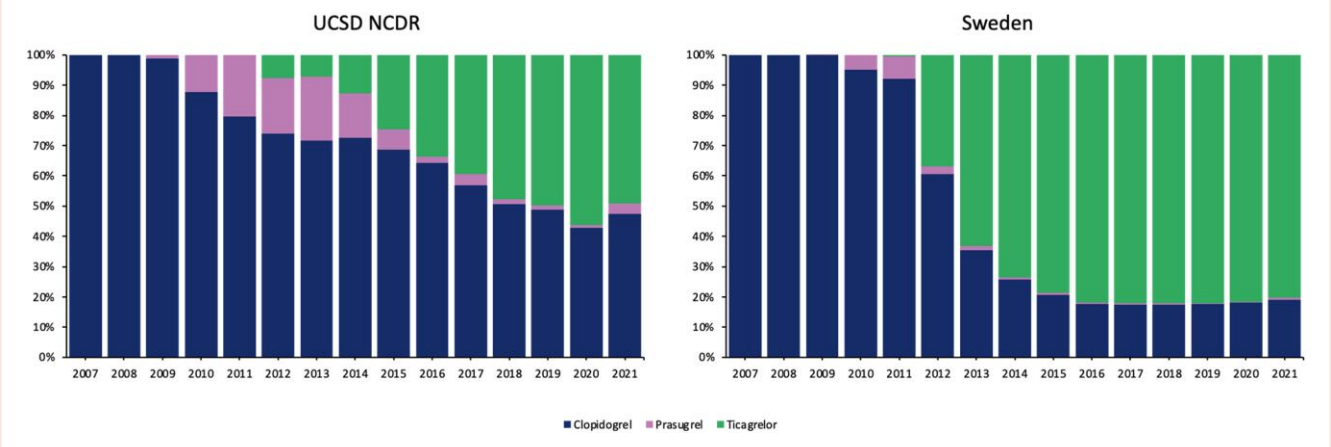


Figure 3 Trends in oral P2Y12 inhibitor use in non-ST-elevation myocardial infarction.

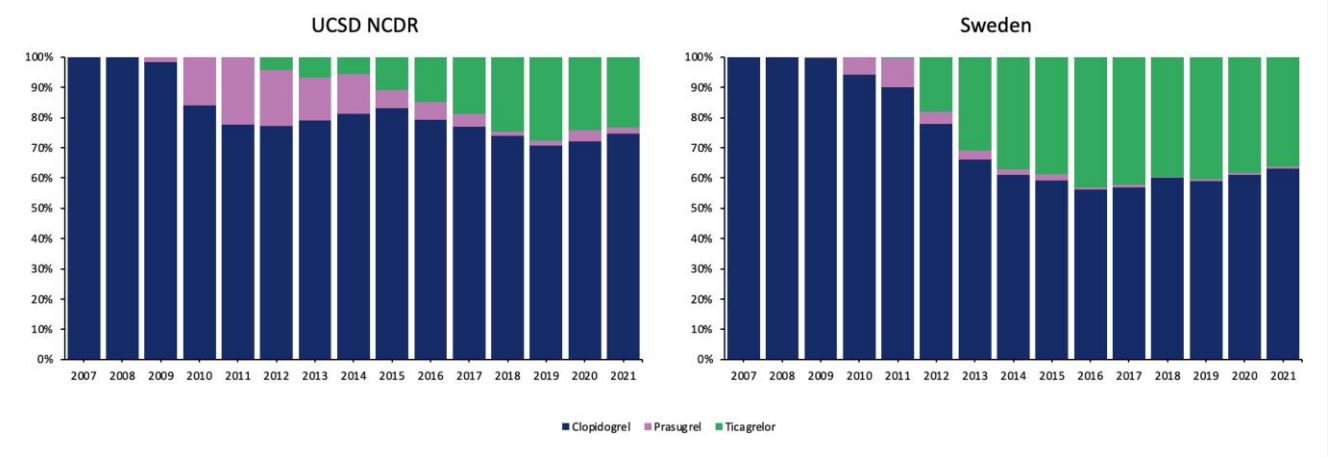


Figure 4 Trends in oral P2Y12 inhibitor use in stable angina.

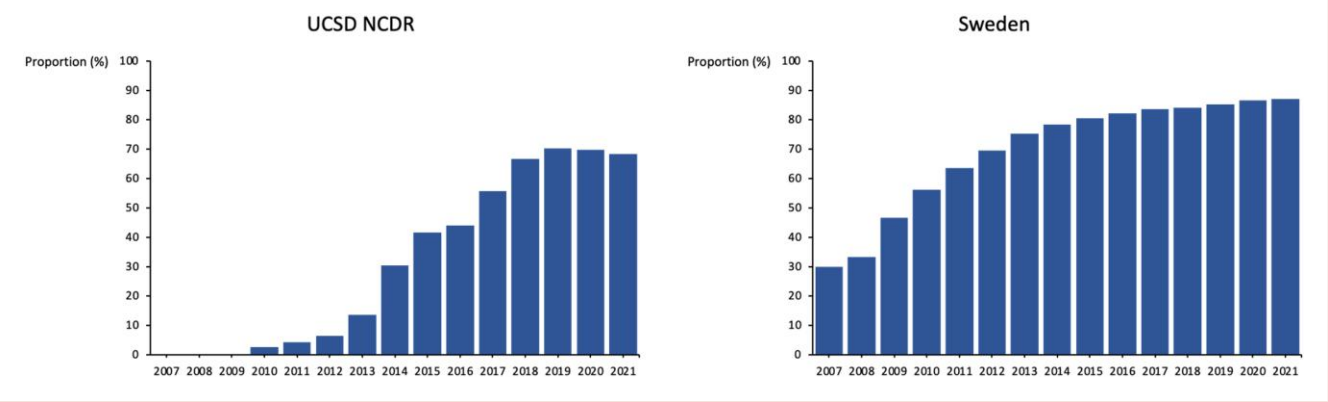


Figure 5 Trends in the use of radial access.

of prasugrel in STEMI patients in the US from 2009 to 2017 compared with Sweden, with rare use in both countries thereafter. Prasugrel was used less frequently in NSTEMI patients in both Sweden and the US, but there was greater use in the US. There was greater use of clopidogrel and prasugrel in stable angina patients in the US, while there was greater use of ticagrelor in stable angina patients in Sweden (*Figure 4*).

Comparative trends of percutaneous access site, fractional flow reserve, and drug-eluting stent

Radial access PCI was implemented earlier and used more often in Sweden compared with the US (*Figure 5*). In Sweden, transradial access rates exceeded 80% by 2015, following its adoption in 2007. In the US, transradial access rates reached 68.4% by 2021, with adoption increasing from 2010 onwards. Fractional flow reserve (FFR) and instantaneous wave-free ratio were implemented 2 years earlier in the US, but their use was more frequent in Sweden (*Figure 6*). Drug-eluting stent (DES) use increased from 2007 to 2021 in both countries, but there was greater DES use in the US compared with Sweden (*Figure 7*).

Unadjusted and adjusted all-cause mortality post-percutaneous coronary intervention

There was no difference in unadjusted 1-year all-cause mortality following PCI for any indication between university hospitals in Sweden and the US (hazard ratio [HR] 0.89; 95% CI 0.64–1.24; $P = 0.48$). After adjusting for age, sex, smoking status, renal failure, HTN, HLD, DM, CHF, PAD, prior stroke, prior MI, prior CABG, and prior PCI, there was similarly no difference in 1-year all-cause mortality following PCI for any indication between university hospitals in Sweden and the US (HR 1.07; 95% CI 0.87–1.33; $P = 0.53$) (*Figure 8A*).

In subgroup analysis, unadjusted 1-year all-cause mortality following PCI for STEMI was lower in the US compared with Sweden (HR 0.69; 95% CI 0.66–0.72; $P < 0.001$). However, there was no significant difference after adjustment (HR 0.95; 95% CI 0.89–1.01; $P = 0.12$) (*Figure 8B*). There was no difference in unadjusted (HR 1.18; 95% CI 0.86–1.60; $P = 0.30$) or adjusted (HR 1.06; 95% CI 0.75–1.50; $P = 0.73$) 1-year all-cause mortality following PCI for NSTEMI. Unadjusted 1-year all-cause mortality following PCI for stable angina was lower in Sweden compared with the US (HR 1.58; 95%

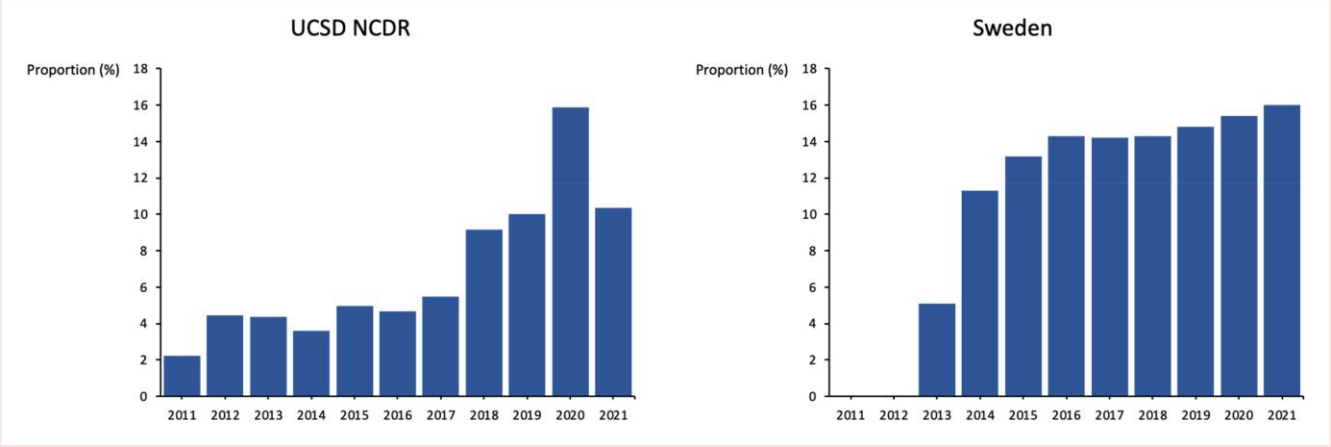


Figure 6 Trends in the use of fractional flow reserve/instantaneous wave-free ratio.

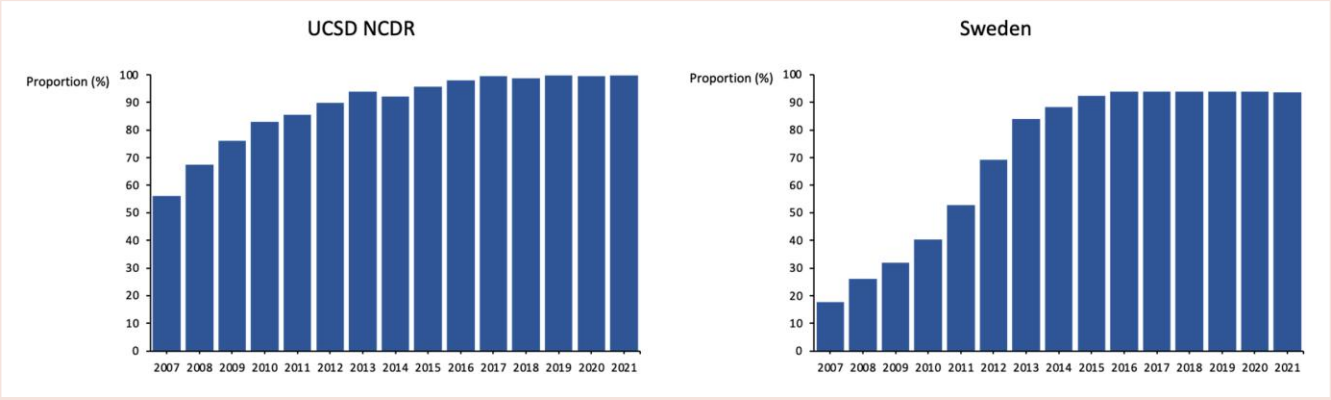


Figure 7 Trends in the use of drug-eluting stents.

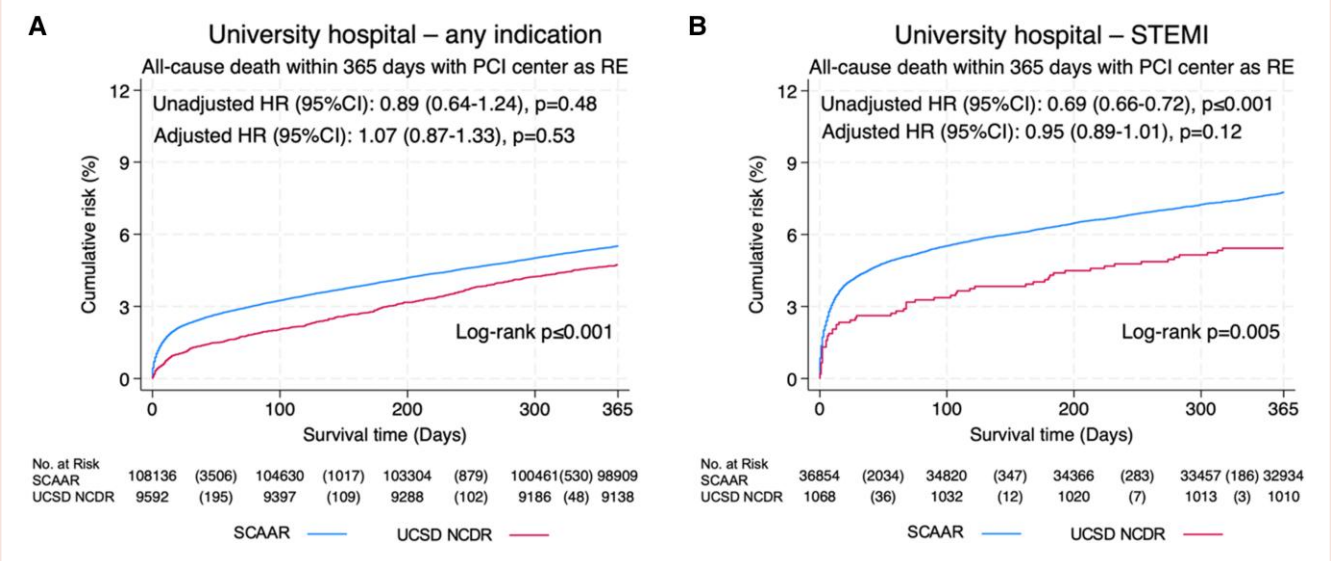


Figure 8 Kaplan–Meier curves for 1-year all-cause mortality for (*A*) any indication and (*B*) ST-elevation myocardial infarction.

CI 1.15–2.18; $P = 0.005$), but there was no significant difference after adjustment (HR 1.25; 95% CI 0.79–1.95; $P = 0.34$).

Discussion

In a large cohort of patients who underwent PCI in Sweden and a university hospital system in the US over a 15-year time frame, we found significant differences in patient populations and practice variations with no difference in post-PCI mortality between university hospitals. This study is the longest temporal comparison of PCI practice patterns between two countries.

Despite older age and higher smoking rates in Sweden, patients undergoing PCI in the US had a greater burden of comorbidities. This has been described previously and is likely a result of environmental and demographic differences.[6,8] Compared to Sweden, the US population is more ethnically and racially diverse. Sweden provides universal healthcare coverage to all citizens, whereas the US has a large uninsured population.[9] Lack of universal coverage can lead to delayed or inadequate access to care, potentially contributing to the higher comorbidity burden observed in US patients. The US also has the highest poverty rate among high-income countries further exacerbating health disparities.[8]

We observed lower PCI rates for stable ischaemic heart disease and significantly lower use of MCS in Sweden compared with the US. Sweden may have adopted clinical trial findings supporting medical management for stable ischaemic heart disease more readily than the US.[17,18] Variations in patient presentation, including symptom severity and frequency, between the two countries likely also influenced the decision of whether to perform PCI. The Swedish healthcare model emphasizes treating acutely ill patients first, resulting in longer time to elective PCI,[10] which likely also contributes to this finding. Sweden had strikingly lower rates of MCS use, which may be due to the uptake of findings from the pivotal negative intra-aortic balloon pump trial in acute MI-related cardiogenic shock.[19]

Radial access was implemented earlier and utilized more frequently in Sweden compared with the US. Sweden started using radial access in 2007, years before trials demonstrated lower vascular complications and lower mortality with radial access compared with femoral access.[20,21] Following these trials, the rates of radial access PCI increased in the US but never reached that of Sweden. This persistent difference can be attributed to the time required to develop proficiency in radial access techniques and the challenge of transitioning experienced operators from their femoral-based training. Fractional flow reserve was also used more frequently in Sweden despite being implemented 2 years later than in the US. FFR was added to the European Society of Cardiology (ESC) guidelines in 2010 after the benefit of FFR in patients with multi-vessel disease undergoing PCI was demonstrated.[22] The delayed implementation of FFR in Sweden may be due to barriers imposed by reimbursement structures and physician training. Despite this, the utilization of FFR in Sweden remains higher than in the US. In contrast, there was earlier adoption of DES in the US which may be due to cost constraints, reimbursement policies, and concerns about complications impacting DES adoption in Sweden.

We observed several differences in periprocedural medications administered in Sweden and the US. Differences in European and American societal guidelines[23] and the uptake of landmark trials may explain these findings. Glycoprotein IIb/IIIa inhibitors, bivalirudin, and cangrelor were used more frequently in the US compared with Sweden. Glycoprotein IIb/IIIa inhibitors were Food and Drug Administration (FDA) approved before the era of dual antiplatelet therapy, potent P2Y12 inhibitors, and DES for reducing mortality and thrombotic events at the expense of bleeding complications.[24,25] Over the years, the indications for GPI became limited to thrombotic complications or bail-out situations as reflected in societal guidelines with minimal use of GPI in both countries after 2016. Bivalirudin was FDA approved for reducing major bleeding and net adverse clinical events compared with heparin plus GPI[26] and continues to be used in the US. In contrast, heparin was used in most contemporary PCI cases in Sweden after no benefit was found with bivalirudin compared with heparin in patients undergoing mostly radial access PCI with potent P2Y12 inhibitors.[27] Cangrelor became available in 2016 in Sweden, 1 year after it was approved by the FDA for reducing periprocedural ischaemic events.[28,29] Cangrelor became available in 2018 in the US and is used more frequently than in Sweden.

As for P2Y12 inhibitors, ticagrelor was used more often for acute coronary syndrome (ACS) in Sweden compared with the US after it was demonstrated to reduce cardiovascular mortality compared with clopidogrel.[30] Since the trial and sponsor were Sweden-based, this may reflect greater familiarity and impact of the trial findings locally. The 2015 ESC Guidelines recommended potent P2Y12 inhibition in ACS whereas the 2014 ACC/AHA guidelines recommended either ticagrelor or clopidogrel.[23] Coverage for ticagrelor in the US was neither immediate nor universal following FDA approval, with significant variations observed between private and government-funded plans, likely contributing to differences in utilization.[31] More patients in the US may require concomitant anticoagulation for atrial arrhythmias preventing the use of ticagrelor, which may also explain this finding. Prasugrel use was overall lower in Sweden, especially after no ischaemic benefit was found with prasugrel pre-treatment with a higher bleeding risk.[32]

Despite significant practice variations in two different patient populations, we found no difference in post-PCI all-cause mortality within 1 year between university hospitals in Sweden and a university hospital system in the US. This remained true for any PCI indication and subgroups including STEMI, NSTEMI, and stable angina after adjusting for baseline patient characteristics. These findings are consistent with a previous study that compared patients in Gothenburg and Minneapolis over 2 years and found no difference in adjusted post-PCI mortality.[7] In the STEMI context, the extent and timing of multi-vessel revascularization was not captured in our data. This variability in revascularization strategy could have influenced mortality and is a topic for future study.[33]

Ultimately, periprocedural management decisions are operator dependent, shaped by national practice patterns and informed by clinical trials. While the US and Sweden employ distinct PCI strategies, the goal of optimizing patient outcomes is at the forefront as reflected by similarly low post-PCI mortality rates. Percutaneous coronary intervention techniques and pharmacotherapy have evolved with regional nuances, yet patient outcomes remain remarkably consistent, suggesting that universal standardization of care may not be essential.

Limitations

This study has several limitations. The retrospective design, utilizing registry data with non-adjudicated clinical events, introduces potential bias. Comparing all Swedish hospitals to a single US university hospital system limits generalizability to broader US practice. To minimize confounding and enable a more direct comparison, the mortality analysis was restricted to university hospital systems in Sweden. However, this approach limits the generalizability of our results. Temporal bias may be present due to the extended study period and evolving clinical practices. The use of two distinct samples, while central to the comparative analysis, introduces inherent heterogeneity that statistical adjustments may not fully mitigate. Data on revascularization strategies for multi-vessel disease were unavailable, and the absence of accurate intracoronary imaging data in the US cohort precluded comparative analysis. Furthermore, major adverse cardiovascular events, bleeding complications, and hospital readmissions were not assessed. Finally, while this study provides insights into practice pattern differences

between Swedish and US university hospitals, causal relationships cannot be established.

Conclusions

In this study, we found significant differences in patient populations and practice variations between Sweden and a university hospital system in the US but no difference in post-PCI mortality.

Lead author biography

Dr Revathy Sampath-Kumar is a third-year cardiology fellow at the University of California San Diego, pursuing specialized training in interventional cardiology. Her background in biomedical engineering led her to medicine, driven by a dedication to patient care. She has been recognized for excellence in clinical cardiology, research, and leadership. Dr Sampath-Kumar actively conducts clinical research in the field of interventional cardiology, in collaboration with Lund University, Sweden.

Data availability

The data underlying this article cannot be shared publicly due to ethical/privacy reasons.

Ethical approval

Due to the use of de-identified data, this study did not require individual patient consent, in accordance with institutional review board guidelines.

Acknowledgements

This research was presented in PowerPoint form by R.S.-K. at Transcatheter Cardiovascular Therapeutics in Washington, DC on 29 October 2024.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflict of interest: None declared.

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