Peer Review File

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Response to the Reviewer A's comments

Reviewer A:

	Comments	Responses
C1	- The authors mentioned they used STROBE to report the cohort, but did not mention when the index date was, and what the definition of exposed and control group was. The authors divided the population into three groups: nonstatins, LMDS, and HDS. In the analyses, the authors compared both the LMDS and HDS groups to the nonstatin group. However, in the results, the conclusion also stated "The benefit of LMDS therapy was better than HDS	Thank you for bringing this matter to our attention. We appreciate your comment. We have carefully reviewed the STROBE guideline and made appropriate adjustments to our study to ensure adherence to the guideline. Specifically, we have clearly stated the recruitment and follow-up period of the study population in both the Abstract and Method sections. In addition, we have revised the definitions of the exposed and control groups to reflect that the exposed group consisted of patients receiving statin therapy after stroke onset, while the control group consisted of patients receiving nonstatin therapy. Moreover, we stratified the exposed group into high-dose statins (HDS) and low-to-moderate-dose statins (LMDS), as defined by prior research. We subsequently performed multiple logistic regression analyses as shown in Table 2. The variable "statins" in Table 2 represents nonstatin therapy in comparison to statin therapy, while the "Statin dose"

Comments		Responses
therapy in this cohort." while I did not see a comparison between the LMDS group and the HDS group in the analyses. What were the index date and the definition of the exposed and the control group in this cohort? How did the authors reach the conclusion that LMDS is better than HDS?	after multiple logistic regrethe HDS group in the statir (Table 2). As you suggested, we fur comparison with the HDS group in the HDS group in the statir (Table 2). Therefore, we have revised rigor and academic sounding is associated with favorable of HT compared to non-stabetween LMDS and HDS	subgroups of statin use. licated that statin therapy was superior to nonstatin therapy ession analysis. And the LMDS group had a higher OR than a therapy group (OR=3.68, p=0.0309 vs OR=3.45, p=0.0402) rther encoded the LMDS as a dummy variable to enable group, and we also found that the likelihood of 3-month good emparatively lower in the HDS group than the LMDS group. did not reach statistical significance (OR=0.94, <i>p</i> =0.8411) d our conclusion to clarify our research aim and improve its less. The revised conclusion reads as follows: "LMDS therapy is impacts on 3-month functional outcomes and a reduced risk atin therapy, while no significant differences were observed therapy in our study." We hope that these revisions have recision of our research, and we thank you for your valuable
	Before	After

	Comments	Responses			
		"This retrospective cohort study included AIS patients who were admitted within 7 days after symptom onset and did not receive reperfusion therapies."	AIS patients who were admitted within 7 days after symptom onset and received conventional medication treatment alone	References: Abstract: Page 2 line 8-11	
		"The high-dose statins (HDS) were defined as atorvastatin, fluvastatin, lovastatin, simvastatin, and pravastatin >20 mg per day, and rosuvastatin at a dose >10 mg per day. (14) Lower doses were defined as LMDS."	who received statin treatment after admission, while the control group was composed of patients who did not receive statin treatment after stroke onset. For the exposed group, the high-dose statin (HDS) was defined as atorvastatin, fluvastatin, lovastatin, simvastatin, and pravastatin >20 mg per day, and rosuvastatin at a dose >10	References: Methods: Page 6-7, line 65-70	
C2	- The follow-up was conducted on day 90 after admission. However, there were inconsistencies in using the period of		rtant comment. We have taken into consideration of wided a more comprehensive description of	• •	

	Comments		Responses				
	follow-up whether it was in days or in		Before	After			
	months which could be different. The		"The primary outcome	"The mRS at 3 months was assessed through	References:		
	mean or median of the duration of follow-		was defined as an mRS	a face-to-face interview or via telephone	Methods:		
	up was not reported.		score at 3 months during	follow-up with the patients, their relatives, or	Page 7, line		
			clinical follow-up by	their general practitioners by a certified	83-86		
			telephone or mail."	neurologist who was blinded to the clinical			
				information. The follow-up period was 3			
				months after the onset of stroke, with a			
				window period of seven days."			
C3	- The subjects were included when they	R3	We appreciate the reviewer for bringing up this issue. The 7-day cut-off for patient				
	were admitted to the hospital within 7		inclusion in stroke studies is a commonly used time frame in stroke research because it				
	days from stroke onset. Was there a		is generally accepted as a reasonable time frame for studying the acute phase of stroke.				
	reason behind the cut-off of seven days?			cut-off is that patients who are admitted to the h	-		
				more likely to receive timely and appropriate tre			
			•	nes (1). Several studies have used the 7-day cut-	-		
				(2)(3). For instance, the Japan Stroke Data Bank	_		
				hospital-based, multicenter, prospective registry			
			to determine secular changes in initial neurological severity and short-term functional				
			outcomes of patients with acute stroke by sex, including AIS patients who registered				
			within 7 days after symptom onset (4). Consistent with previous studies, we included				
			AIS patients who register	ed within 7 days of stroke onset in the present s	tudy.		

	Comments	Responses
C4	- In the results, the authors presented independent risk factors for the functional outcome. However, the study's purpose was 'to evaluate the effect of different statin doses on the prognosis of AIS patients without reperfusion therapy." Therefore there was a difference between the study's purpose and the results. By the method of analysis, it became unclear whether the authors wanted to investigate factors influencing the functional outcome, which includes statin doses, or to investigate the association between statin doses and the functional outcome of AIS patients.	Thank you for your insightful comment. We sincerely apologize for the confusion generated by the previous version of our manuscript. According to your suggestions, we have made the necessary revisions to ensure that our aims and results are presented with utmost clarity. We hope that this revised version will meet with your approval. Firstly, we conducted an assessment of additional factors that could potentially impact the outcomes, aiming to mitigate any potential confounding effects. We adjusted for these confounding factors in the multivariate analysis, so we can investigate whether various influencing factors had an interaction effect with statin use (Figure 2). Secondly, as demonstrated in the manuscript, our primary objective was to assess the efficacy and safety of LMDS in AIS patients who were receiving conventional medication therapy only. However, during our retrospective collection of clinical data, we discovered that 38.84% of AIS patients who were on conventional medication therapy had also received HDS treatment. It would have been biased and failed to represent the real-world clinical practice if we had excluded these patients from our
	Why do the authors need to present the risk factors influencing the functional outcome? If the focus was the association between statin doses and the outcomes then why the nonstatin group was also included and why the LMDS group was not compared to the HDS group?	study. Therefore, we included them in our analysis as well. As regard to the comparation between LMDS and HDS in statistical analysis according to encoding LMDS as a dummy variable, we found that the HDS group had a lower likelihood of a favorable functional outcome at 3 months than the LMDS group and a higher risk of HT occurrence (OR=0.94 and OR=1.19, respectively). However, those differences were not statistically significant (<i>p</i> =0.8411 and <i>p</i> =0.7093, respectively). Therefore, we revised those relevant sentences in the conclusion and results section accordingly. We appreciate you for pointing out the issue. We hope that these clarifications have shed more light on our study and the results we

Comments	Responses						
	obtained. Thank you once aga	in for your invaluable feedback.					
	Before	Before After					
	"Our findings provide	"Our findings provide evidence for the	References:				
	evidence for the benefit and	benefit and safety of LMDS therapy in	Abstract:				
	safety of LMDS therapy	AIS patients with medication treatment	page 3, line				
	37 in AIS patients with	alone. LMDS therapy is associated with	24-29				
	medication treatment alone.	favorable impacts on 3-month functional					
	LMDS therapy appears to	outcomes and a reduced risk of HT					
	have a greater effect on 3	compared to non-statin therapy, while no					
	months functional outcomes	significant differences were observed					
	and a lower risk of HT	between LMDS and HDS therapy in our					
	compared to HDS therapy in	study. Further studies with prospective					
	our study."	design and larger sample sizes are					
		necessary to validate our results."					
	"The benefit of LMDS	"Additionally, we encoded LMDS as a	References:				
	therapy was better than that	1	Results:				
	of HDS therapy in this		page 11, line				
	cohort."	found that the HDS group had a reduced	164-168				
		likelihood of achieving favorable					
		functional outcomes at 3-month when					
		compared to the LMDS group. However,					

	Comments		Responses		
			this difference was not statistically significant (OR=0.94, p=0.8411) (Table S1)."		
			- "After encoding LMDS as a dummy variable, it was observed that the likelihood of HT occurrence was comparatively higher in the HDS group than the LMDS group. However, this difference did not reach statistical significance (OR=1.19, p=0.7093) (Table S1)."		
C5	- In the discussions, it was stated "The American College of Cardiology/American Heart Association 2013 guideline has recommended using high- and moderate-intensity statins. However, since there was a racial difference in the plasma LDL reduction response and the risk of statin toxicity (Asian have higher blood statin level) between Asian and Caucasian, LMDS is commonly prescribed among Chinese patients except for those with a very high risk of ASCVD."	R5	Thank you for your valuable suggestion, which has helped to improve the quality of our research. We have incorporated your suggestions in our revised manuscript to ensure clarity and precision. Firstly, while high-intensity and high-dose statins use has increased globally over the past decade, in developing countries like China, high-dose and high-intensity statin use is still lower than in western and developed countries (5, 6). And some clinicians may not be familiar with the revised recommendations. For instance, in a survey conducted among 513 medical providers, 34% were unfamiliar with the 2013 protocols. Therefore, doctors may not always follow guideline recommendations when prescribing statins, resulting in low-moderate dose statins being typically prescribed in daily clinical practice (7), especially in Asia countries such as China and Japan (8, 9). Secondly, we considered that the use of statin dosage as a criterion may more		

Comments		Responses	
It seemed it was insinuated that the intensity of statins and the dose of statins were the same things while they were not. The authors defined LMDS and HDS using a study conducted by Marazzi et al. on the post-percutaneous coronary intervention population, not stroke. The authors stated "The HDS were defined as atorvastatin, fluvastatin, lovastatin, simvastatin, and pravastatin >20 mg per day, and rosuvastatin at a dose >10 mg per day. Lower doses were defined as LMDS." However, ACC/AHA defines only atorvastatin >= 40 mg and rosuvastatin >= 20 mg as high-intensity statins. Therefore, in this study, some percentage of patients in the HDS group	primary target of therapy, and lipid-lowering targets. However the achievement of these targeretrospective study, we were Therefore, using the term "stat Based on these consideration criterion to be more precision cardiovascular diseases. (8, 10 We acknowledge that the interhave caused confusion. To add consistent terminology through the appreciate you bringing this	rchangeability of the terms "dosage" and "idress this potential confusion, we have take hout our revised manuscript. is issue to our attention, if we focus on stationents and evaluate lipid level at follow-up ad lipid-lowering targets.	ally along with the follow-up on Similarly, as a many patients. The etely accurate. The dosage as a many studies in the sity may be a care to use the intensity, we
also used moderate-intensity statins.	Before	After	
Why did the authors define statins based on the dose and not based on the intensity? How this would influence the conclusion or the impact of the study?	-	"Moreover, based on recently updated lipid management guidelines from China (31), LDL levels remain the primary target for lipid intervention. However, it is difficult to collect detailed information	Discussion: Page 15, line

Comments			Responses		
				on the adherence to statin therapy and whether these patients achieved their lipid-lowering targets in real clinical practice, especially in retrospective studies. Given the urgency of lipid management, prospective cohort studies are necessary to investigate the effect of different statin dosages on lipid-lowering efficacy and adherence to statin therapy in future studies."	
C6	- The authors mentioned that the subjects studied were "AIS patients with medication treatment alone" while in earlier parts they were 'AIS patients without reperfusion therapy." Why did the authors Error! Filename not specified use the term 'medication treatment alone' when fibrinolytic agents such as alteplase were also a medication that can be used as a method of reperfusion? Please be consistent.		caused. We would like to a reperfusion therapy. We		

Comments	Responses	
	"However, the "However, the correlation between the	References:
	correlation between the LMDS use and prognosis has not been	Abstract:
	LMDS use and evaluated in AIS patients with conventional	Page 2,
	prognosis has not been medication treatment alone."	line3-5
	evaluated in AIS	
	patients without	
	reperfusion	
	therapies."	
	"(3) the patients did not "(3) received conventional medication	References:
	receive reperfusion treatment alone without reperfusion therapies	Methods:
	therapies;" such as intravenous thrombolysis (IVT) or	Page 6,
	endovascular treatment (EVT);"	line46-47

References:

- 1. Cappellari M, Turcato G, Forlivesi S, et al. Introduction of direct oral anticoagulant within 7 days of stroke onset: a nomogram to predict the probability of 3-month modified Rankin Scale score > 2. J Thromb Thrombolysis. 2018 Oct;46(3):292–8.
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- 5. Liu Y, Lv X, Xie N, et al. Time trends analysis of statin prescription prevalence, therapy initiation, dose intensity, and utilization from the hospital information system of Jinshan Hospital, Shanghai (2012-2018). BMC Cardiovasc Disord. 2020;20(1):1–13.
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- 7. Joint Committee on the Chinese Guidelines for Lipid Management. Zhonghua Xin Xue Guan Bing Za Zhi. 2023;51(3):221-255.
- 8. Taguchi I, Iimuro S, Iwata H, et al. High-Dose Versus Low-Dose Pitavastatin in Japanese Patients With Stable Coronary Artery Disease (REAL-CAD): A Randomized Superiority Trial. Circulation. 2018 May;137(19):1997–2009.
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- 10. Matyori A, Brown CP, Ali A, Sherbeny F. Statins Utilization Trends and Expenditures in the US Before and After the Implementation of the 2013 ACC/AHA Guidelines. Saudi Pharm J. 2023.
- 11. Greca E, Kacimi O, Poudel S, et al. Immunomodulatory effect of different statin regimens on regulatory T-cells in patients with acute coronary syndrome: a systematic review and network meta-analysis of randomized clinical trials. Eur Hear journal Cardiovasc Pharmacother. 2023 Feb;9(2):122–8.
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Response to the Reviewer B's comments

Reviewer B:

	Comments			Responses	
C1	- "Owing to the dose-effect difference to statins between Asians and Caucasians, low-to-moderate-dose statins (LMDS) are more commonly used among Asian patients in clinical practice" – This aspect seems to be really important to justify the importance of the study. Therefore, I suggest the authors provide more	R1	statin dose-effect betwoof our study. Based or information on the di	valuable comment. We agree that emphasizing the ween Asians and Caucasians is crucial to highlight the your suggestion, we have revised the article by including fferences in statin use patterns between Asians and on. We hope that these revisions adequately address your comment. After	ne significance luding detailed Caucasians in
	information about why they state that there is a difference in the statin use pattern among Asians and Caucasians.		"Owing to the dose-effect difference to statins between Asians and Caucasians, low-to-moderate-dose statins (LMDS) are more commonly used among Asian patients in clinical practice."	"Since Asians are more responsive to the lipid-lowering effects of statins than non-Asians which may be contributed by differences in dosage effects, drug metabolism, body size, and dietary habits, low-to-moderate-dose statin (LMDS) are more commonly prescribed among ASCVD patients in daily clinical practice, particularly in Asia."	References: Introduction: Page 4, line 13-17

	Comments		Responses			
C2	- Do the authors know if there is a study investigating a potential benefit of LMDS in cases of cardiovascular diseases (not cerebrovascular diseases) in the Chinese population? Data from these studies could also be interesting to be mentioned in the "Introduction".	R2	and relevance of ou	constructive suggestion, which have greatly enhance research. We have included more information above the Asian patients with cardiovascular diseases in the After "Evidence has demonstrated that the efficacy of LMDS for cardiovascular disease (CVD) patients in Asian, such as GOALLS study, STATT study, and RAEL-CAD study (9, 13-15)"	out the use of	
C3	- What was the mean follow-up period?	R3		ing up such an important point. We have taken into ion and have provided a more detailed and precise: After "The mRS at 3 months was assessed through a face-to-face interview or via telephone follow-up with the patients, their relatives, or their general practitioners by a certified neurologist who was blinded to the clinical information. The follow-up period was 3 months after the onset of stroke, with a window period of seven days."		

Comments		Responses		
C4	- Did the authors consider using survival analysis as well?	R4	Thank you for your thoughtful comment. As you pointed out, survival analysis is an important statistical method that is typically used to model the relationship between an outcome and predictors by analyzing time-to-event outcomes and estimating the probability of experiencing an event over time, such as death or the occurrence of a disease. Unfortunately, in our cohort study, we had a cut-off follow-up period and did not record the precise time until the occurrence of the event of interest. Therefore, we chose to use logistic regression analysis instead of Cox regression analysis. Nonetheless, your suggestion is highly valuable, and it emphasizes the importance of accounting for censored data in further research. We will keep this in mind in our future studies to enhance the quality of our analysis. Thank you once again for your insightful comment.	
C5	- The authors assess the "haemorrhagic transformation" at 3 months. How did the authors differ cases of HT from new haemorrhagic stroke?	R5	Thank you for your comment. In our study, we differentiated cases of hemorrhagic transformation from new hemorrhagic stroke based on the following criteria: Hemorrhagic transformation: defined as the development of new or worsening hemorrhage within an existing infarcted area on follow-up imaging, with a corresponding clinical presentation (1-3). New hemorrhagic stroke: defined as the development of a new hemorrhagic lesion on follow-up imaging with a corresponding clinical presentation (4, 5). We have added this clarification to the Methods section of our manuscript to ensure that this information is clear to readers. Thank you for bringing this to our attention. Before After	

Comments			Responses			
			-	"We defined hemorrhagic transformation (HT) as any degree of hyperdensity within the area of low attenuation in follow-up CT scans within 7 days of admission. The classification of HT was based on the European Cooperative Acute Stroke Study (ECASS) criteria, which divide HT into four subtypes."	References: Method: Page 6, line 60-63	
C6	- Are there any current guidelines in China that may have guided the doctors in the decision of prescribing (or not) LMDS or HDS?	R6	Thank you for your comment. In China, the clinical use of LMWH or HDS for the treatment of venous atherosclerotic cardiovascular disease (ASCVD) is guided by the Chinese Guidelines for Lipid Management, which were last updated in March 2023 (6). These guidelines provide recommendations for the use of LMWH or HDS based on the risk of ASCVD. The new guidelines cover lipid management through the life cycle, from children to the elderly, and aim to improve lipid management in China in all aspects for better prevention and treatment of ASCVD by guiding clinical practice. In our study, we followed these guidelines and made the decision to prescribe LMWH or HDS based on the patient's individual clinical condition and the risk-benefit ratio. We have added this information to our manuscript to clarify this point. Thank you for your valuable comment.			
			Before -	"Moreover, based on recently updated lipid management guidelines from China (31), LDL levels remain the predominant target for lipid intervention. Nevertheless, obtaining comprehensive information regarding to the	References: Discussion: Page 15, line 245-252	

Comments		Responses			
				adherence to statin therapy and the attainment of	
				lipid-lowering targets among patients in real	
				clinical practice, particularly in retrospective	
				studies, can be challenging. Given the urgency of	
			lipid management, prospective cohort studies are		
			necessary to investigate the effect of different		
				statin dosages on lipid-lowering efficacy and	
				adherence to statin therapy in future studies."	
C7	- Did the authors monitor adverse effects	R7	We are thankful for your thoughtful and thorough review. As our study was		
	related to statins?		retrospective, the individual follow-up information was obtained from our registry		
			study, and it was difficult to gather information on statin-related adverse effects through		
			face-to-face interview	ws or telephone calls with patients, their relatives, o	r their general
			practitioners during follow-up. Due to the substantial amount of missing data on advers		
			effects related to statins, we did not analyze them to ensure the accuracy and statistical		
			power of our analysis. We have made an essential correction to the limitations section		
			of our manuscript to	address this matter and hope that it meets your expec	tations. Thank
			you once again.		
			Before After		
			-	"Finally, due to the absence of data regarding the	References:
				incidence of statin side effects and adherence to	Discussion:
				statin therapy at follow-up (46), our evaluation of	Page 16, line
				potential differences in these outcomes between	280-283
				the LMDS group and the HDS group was	
				impeded."	

Comments			Responses				
C8	- The authors discussed that there was a greater benefit of LMDS therapy than HDS therapy. One of the reasons is the difference between Asians and Caucasians	R8	Thank you for your comment, it has greatly enriched our discussion. Your comment has been extremely helpful to us. We have carefully reviewed the article by Dante Morales et al. as you suggested, and have incorporated the necessary discussions in the revised version of our manuscript.				
	regarding the plasma exposure to statins. In line with this finding, the authors should mention that the lipid profile may also be associated the stroke outcomes and may be used to guide decision of which statin to prescribe (the authors must cite doi: 10.1080/01616412.2021.1967677).		Before "Firstly, as previously reported, Asians nearly had a greater plasma exposure to statins than Caucasians."	"Firstly, as previously reported, Asians had nearly greater plasma exposure to statins than Caucasians (27). Due to the increased sensitivity of Asians to statins, previous studies have found that lower statin doses could achieve the lowering-LDL-C treatment targets than non-Asians (9)." References: Discussion: Page 14, line 231-234			
C9	- Did the authors assess the adherence and withdrawal of the statin therapy? If not, they should acknowledge it as a limitation as previous studies have already demonstrated it may influence the stroke outcomes (the authors must cite doi: 10.1007/s10072-020-04790-y)	R9	incorporated the limit	"Lastly, a prior literature reported a lower rate of adherence in the HDS group in stable coronary artery disease patients than in the LDS group, thereby possibly nullifying some of the effect of HDS relative to LDS therapy (13). This could			

Comments		Responses			
				in the lower proportion of favorable 3 months in the HDS group observed	
			incidence of statin therap potential dif	to the absence of data regarding the statin side effects and adherence to y at follow-up (46), our evaluation of ferences in these outcomes between group and the HDS group was	Discussion:

References:

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- 2. Chen G, Wang A, Zhao X, et al. Frequency and risk factors of spontaneous hemorrhagic transformation following ischemic stroke on the initial brain CT or MRI: Data from the China National Stroke Registry (CNSR). Neurol Res. 2016;38(6):538–44.

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- 6. Joint Committee on the Chinese Guidelines for Lipid Management. Zhonghua Xin Xue Guan Bing Za Zhi. 2023;51(3):221-255.