

# Evaluating the Practice of Prescribing Beta-blockers in Compensated Cirrhosis by Gastroenterologists in the Asia Pacific Region

The indication for prescribing non-selective beta-blockers (NSBBs) in patients with portal hypertension has evolved in the past three decades. From their initial use to prevent variceal bleeding in those with high-risk varices, NSBBs are presently advocated in any patient with clinically significant portal hypertension (CSPH) based on Baveno-VII consensus and the seminal PREDESCI study.<sup>1,2</sup> However, the gold standard for detecting CSPH is hepatic venous pressure gradient (HVPG) measurement, which is seldom practiced pragmatically. While the non-invasive tests such as liver stiffness measurement (LSM) or its combination with platelet counts have been promoted as a surrogate for HVPG, it remains to be seen whether these tools are practiced in the real-world scenario for detecting and treating CSPH.<sup>3</sup> Therefore, we conducted a multinational online survey evaluating the practice and perceptions of prescribing NSBB in portal hypertension by gastroenterologists and hepatologists in the Asia Pacific region.

The survey consisted of 21 questions enquiring about the demographics, indication for beta-blocker prescription, use of endoscopy and non-invasive tools for deciding the use of beta-blockers, and their perceptions about the current recommendation of prescribing these drugs in CSPH. To ensure homogeneity, questions were explicitly asked about the management of compensated cirrhosis. The survey was shared on social media and via email of gastroenterologists and hepatologists practicing in the Asia-Pacific region. All the responses were stored in Google forms and analyzed using SPSS software version 26.

Out of 1500 gastroenterologists approached in the region, 328 gastroenterologists responded and completed the survey. Most of the respondents (77.7%) were working as consultant gastroenterology/hepatology, and 22.3% of the respondents were trainees in the field of gastroenterology/hepatology. Out of the respondents, most respondents (65.2%) were practicing in tertiary care academic centers, and around 11.6% were working as private practitioners in the field of gastroenterology/hepatology. About 60% of the total respondents were practicing hepatologists/gastroenterologists for more than five years, and

36% of respondents had been practicing for more than ten years (Table 1).

The practice of evaluating CSPH was not followed by 75% of respondents who used the presence of high-risk varices seen on endoscopy as an indication of prescribing NSBB. Only 4.3% of the respondents practiced routine HVPG measurement among their patients to detect CSPH. Majority of the respondents (53.4%) advocated screening endoscopy in patients with newly diagnosed liver disease irrespective of their LSM values while only 38.4% respondents used Baveno VI (LSM >20 kPa or platelet <150,000/mm<sup>3</sup>) and Expanded Baveno VI criteria (LSM >25 kPa or platelet <110,000/mm<sup>3</sup>) for deciding the need to screen for varices with endoscopy. Rest of them used to screen for varices if LSM was >10 kPa irrespective of the platelet counts (Figure 1).

197/328 (60.06%) responded HVPG measurement shall be used to detect CSPH, while collaterals on imaging could also suggest CSPH according to 206/328 (62.80%) respondents. LSM >20 KPa denotes CSPH according to 232/328 (70.73%) respondents, while platelets <150000/cu.mm could also be used to screen for CSPH according to 237/328 (72.25%) respondents. While 310/328 (94.5%) of respondents felt the presence of varices on endoscopy being definitive for CSPH (Figure 2).

The primary concern shown by the respondents in adapting PREDESCI methodology was the non-availability of HVPG in routine practice according to 199/328 (60.7%) respondents. 111/328 (33.84%) of respondents felt even non-availability of reliable non-invasive tests to detect CSPH is a limiting factor in clinical practice. Around 104/328 (31.7%) of respondents also showed concern that more data are required to start prescribing beta-blockers in all patients with CSPH (Figure 3).

When asked regarding the indication of prescribing NSBBs, 254/328 (77.43%) felt NSBBs shall be prescribed in all high-risk varices, while 143/328 (43.59%) felt NSBBs should be prescribed in patients with the presence of any varices. 68/328 (20.73%) told they prescribe NSBBs when LSM is >20 KPa, irrespective of variceal status while 49/328 (14.93%) prescribed NSBBs only after measuring HVPG with values suggestive of CSPH (Figure 4).

Regarding the preference of prescribed NSBB, 43.3% used propranolol while 56.7% used carvedilol in their clinical practice to treat patients of compensated cirrhosis. For treating high-risk varices in compensated cirrhosis, 66.8% felt both beta-blockers and endoscopic band ligation should be used. In comparison, 25.6% felt only beta-blockers should

*Abbreviations:* CSPH: Clinically significant portal hypertension; cACLD: compensated advanced chronic liver disease; HVPG: Hepatic venous pressure gradient; NSBBs: Non-selective beta-blockers; LSM: Liver stiffness measurement

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**Table 1** Demographic Details of the Gastroenterologists who Responded to Survey.

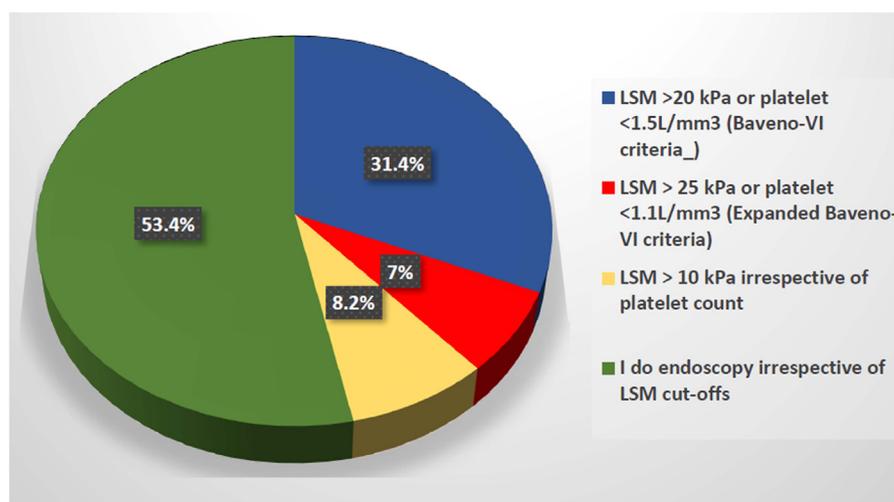
	Number	Percentage (%)
Level of experience (n = 328)		
Trainee	73	22.3
Practicing Consultant	255	77.7
Years of experience in gastroenterology (n = 328)		
Less than 5 years	131	39.9
5–10 years	79	24.1
More than 10 years	118	36
Area of practice (n = 328)		
Academic Institute and hospital	214	65.2
Private tertiary care hospital	62	18.9
Private practice	38	11.6
Public tertiary care hospital	14	4.3
Country of origin (n = 311)		
India	266	85.5
Singapore	22	7.07
Pakistan	3	0.9
Nepal	3	0.9
Thailand	2	0.7
Sri Lanka	2	0.7
Bangladesh	3	0.9
China	2	0.7
Korea	1	0.3
Dubai	1	0.3
Philippines	1	0.3
Australia	2	0.7
United Kingdom	1	0.3
Indonesia	1	0.3
Malaysia	1	0.3

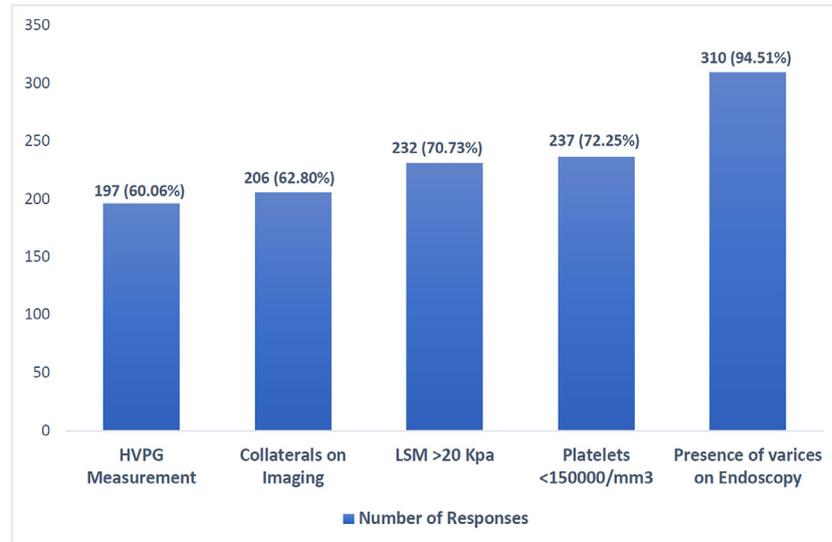
be used, and the rest, 7.6%, felt only band ligation to be the modality for high-risk varices treatment in such patients.

The above survey assessed the real-world scenario of prescribing NSBBs in this cohort of patients among the practicing gastroenterologists/hepatologists in Asia-Pacific region. It was seen that most of the respondents rely more on endoscopy findings than on either invasive tools like HVPG or on non-invasive tools for initiating NSBBs. Many respondents felt non-invasive measures like liver stiffness and platelet counts may be used as surrogate markers to assess CSPH but the availability and reliability of LSM is an issue in the region, creating hurdle in implementing in routine practice. Also, a major concern of many was lack of data from our region regarding the usefulness of NSBBs in this group of patients with cirrhosis. While Baveno-VII consensus has outlined a rule of 5 based on liver stiffness for defining CSPH and initiating NSBB, the lack of reliable alternative to HVPG measurement and reliance on LSM to guide treatment decision emerged as a major reason to not to practice this recommendation.

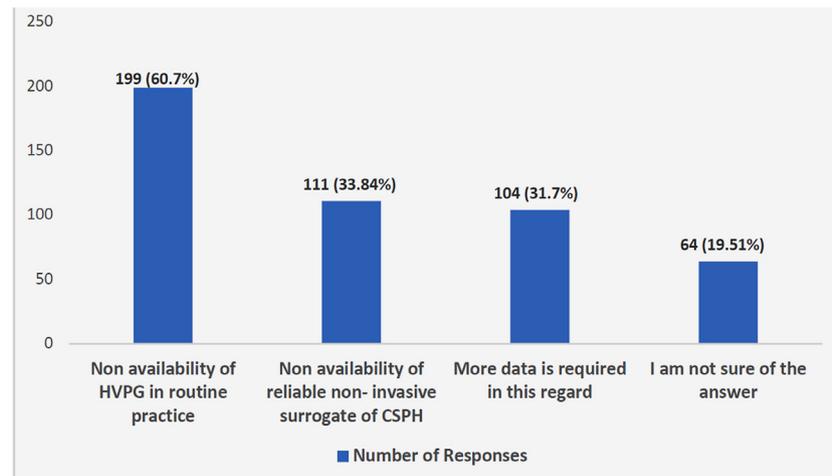
The survey had its inherent limitations. This survey assessment was done prior to publication of Baveno-VII consensus. Hence, the change in practice may not have been reflected in this survey. Despite approaching 1500 gastroenterologists, only 328 gastroenterologists responded, thus limiting the generalizability of the findings. Overall, this survey clearly outlines the heterogeneity in the practice of prescribing NSBBs in this part of the world.

This survey also identified important knowledge gaps on the role of variceal screening in compensated advanced chronic liver disease and the optimal modalities for primary prophylaxis of variceal bleeding.<sup>4</sup> But, lack of validation and objective reliability assessment of the questionnaire remains a limitation of this survey. Also, given that cirrhosis is the leading cause of liver-related death, accounting for 630,843 death in 2015 alone in Asia Pacific region,<sup>5</sup> the findings of this survey become important especially when future

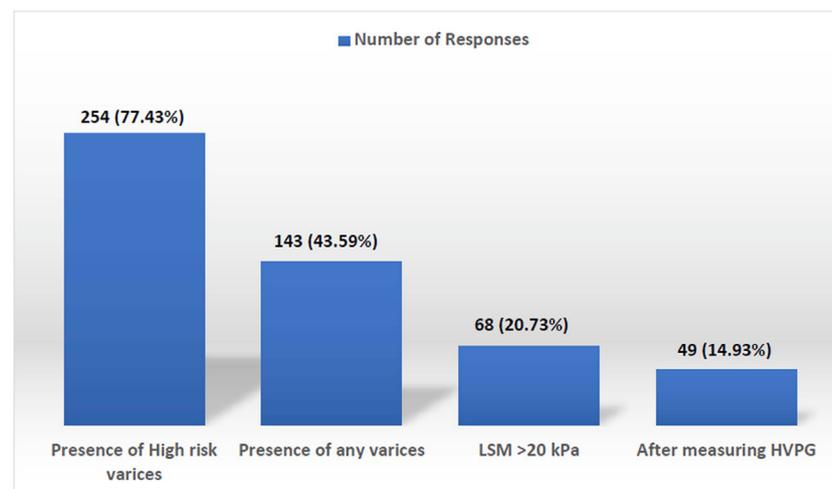
**Figure 1** How do you decide need for endoscopy in these patients?



**Figure 2** Which among these tools can be used to screen CSPH?\* (Multiple options could be ticked).



**Figure 3** What according to you are the barriers in adapting the results of PREDESCI trial in your region?\* (Multiple answers could be ticked).



**Figure 4** Among which of these indications, you currently prescribe beta-blockers in patients with compensated cirrhosis with portal hypertension?\* (Multiple options could be ticked).

region-specific guidelines will be laid in regard to the management of portal hypertension in this cohort. Also, while non-invasive tools have been shown to detect CSPH in retrospective data, their prospective validation needs to be seen. Similarly, the use of these tools to guide the decision for initiating beta-blocker to prevent decompensation needs more evidence.

## CREDIT AUTHORSHIP CONTRIBUTION STATEMENT

**Randeep Rana:** Preparation of questionnaire, data collection, and writing of the draft.

**Sanchit Sharma:** Preparation of questionnaire, data collection, and writing of the draft.

**Syed Ahmed:** Preparation of questionnaire and data collection.

**Anany Gupta:** Preparation of questionnaire and data collection.

**Wong Yu Jun:** Data collection.

**Deepak Gunjan:** Preparation of questionnaire and revision of the draft.

**Anoop Saraya:** Preparation of questionnaire, writing, and critical revision of the draft.

## CONFLICTS OF INTEREST

None.

## DISCLOSURES

None.

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