

Expert consensus on the definition of methamphetamine-associated pulmonary arterial hypertension (Meth-APAH) and associated treatment considerations

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Background

- Methamphetamine use can result in methamphetamine-associated pulmonary arterial hypertension (Meth-APAH). Compared with idiopathic PAH (IPAH), Meth-APAH may have a worse clinical course.¹
- Meth-APAH is a growing concern due to the exponential increase in methamphetamine use across the United States (US).^{2,3}
- Furthermore, patients with Meth-APAH have typically been associated with lower socioeconomic status (SES), education levels, income, and employment rates than IPAH.⁴ Despite the growing prevalence of Meth-APAH and methamphetamine use, the approach to treating patients with Meth-APAH is varied. A systematic approach is required as Meth-APAH becomes more widespread.

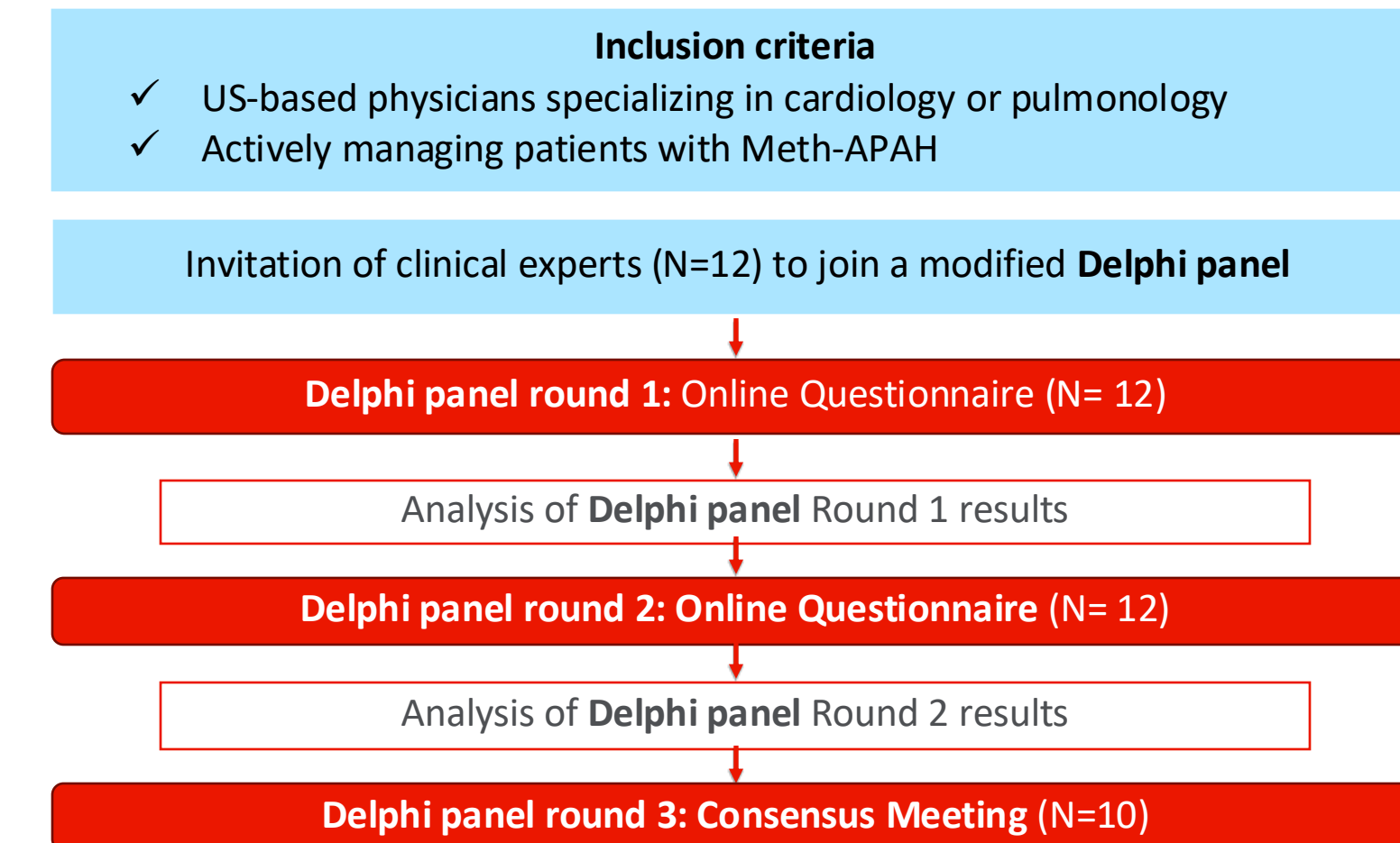
Objective

To collate, clarify, and develop a consensus of expert clinical opinion on the definition and classification of Meth-APAH and the impact of methamphetamine use on treatment considerations.

Methods

- A modified Delphi panel involving two survey rounds followed by a final consensus meeting was conducted with clinical experts.

FIGURE 1: Modified Delphi panel process



- A nine-point Likert scale (from 1 [strongly disagree] to 9 [strongly agree]) was used to rate consensus.

Presented at: CHEST 2024 Annual Meeting

Results

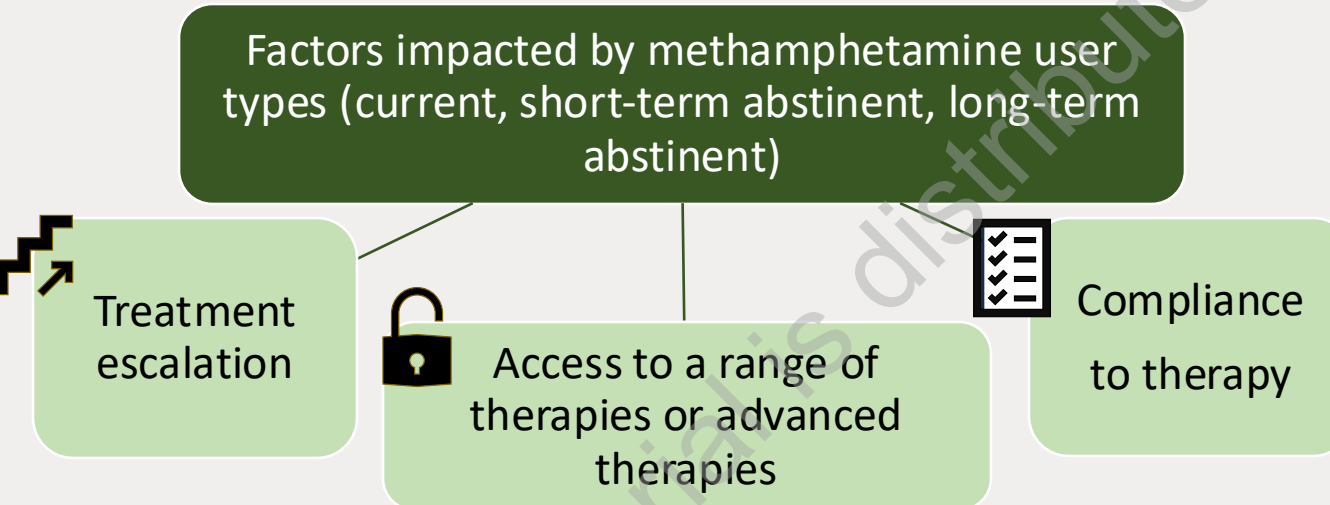
Panelist characteristics

Criteria	N
US-based physicians	12
Mean number of patients with PAH in a 3-month period	~50
Specialty area	
Cardiology	1
Pulmonology	11
Type of practice	
Center of Comprehensive Care	6
Academic Medical Center	5
Private practice	1

Definition and characteristics of Meth-APAH

- The panel discussed whether Meth-APAH can be defined as: WHO Group 1 PAH in a patient with history of methamphetamine use, however, a consensus in agreement was not reached.
- Panelists felt that additional details needed to be incorporated, e.g. the definition of Meth-APAH should specify duration, dosage, and/or frequency of methamphetamine use. However, parameters for these vary due to the heterogeneity of the patient population.
- The panel further explained that the definition of Meth-APAH should incorporate the exclusion of other etiologies.

- A consensus was reached that Meth-APAH can occur in any age group, but it is most often seen among those aged 21–60 years.
- While most patients with Meth-APAH were reported to have a lower SES, Meth-APAH can occur in patients of any SES.



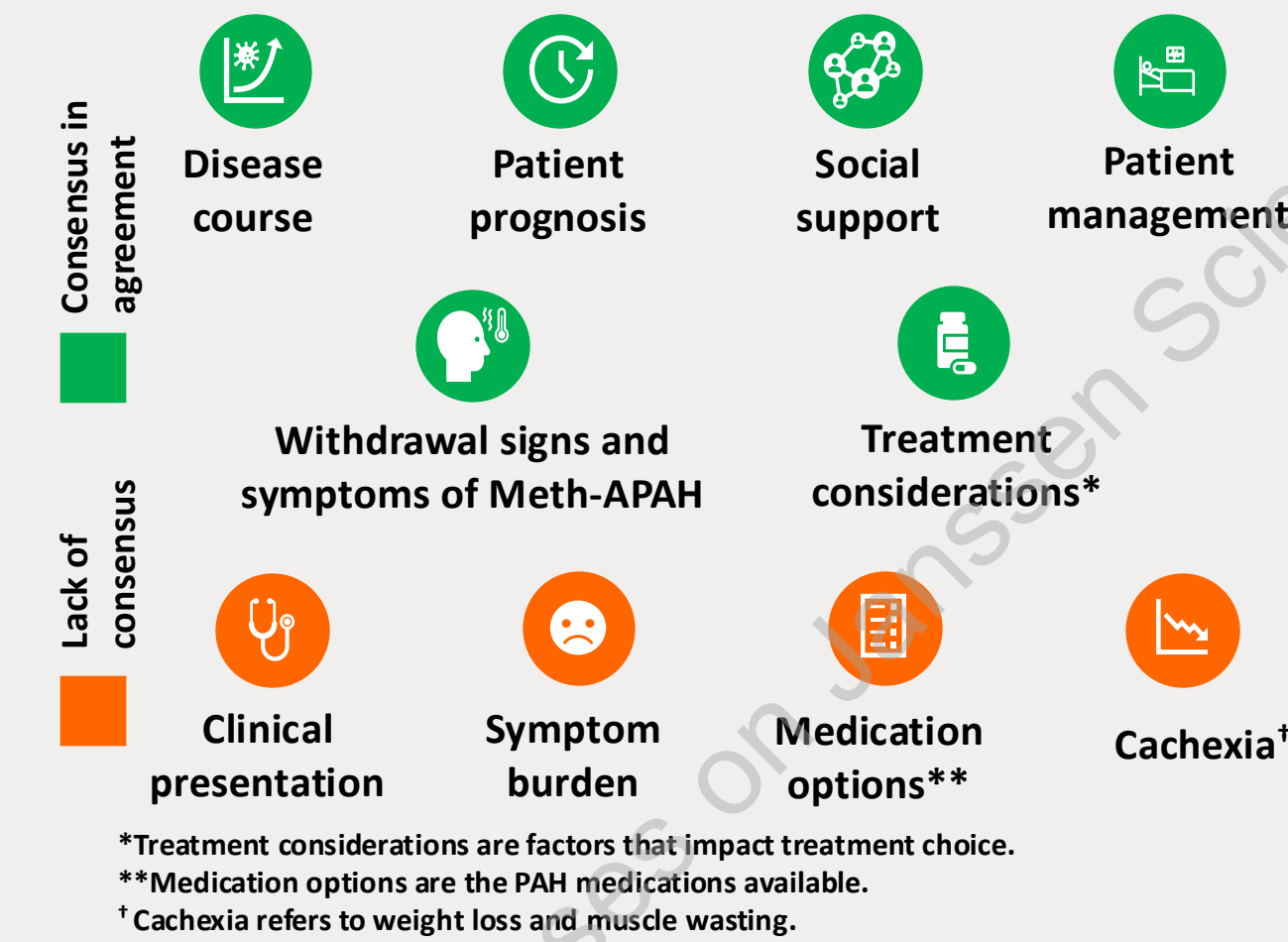
- The timeframes that define methamphetamine user types are not well established and lack precision.

References:

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²Drew S, Singh M, Smith C, Stokes L, Balasubramanian V. Pulmonary Hypertension: Prevalence and Incidence Amongst Methamphetamine Users (PH-Prime Study). CHEST Annual Meeting 2017.
³Zhao SX, Kwong C, Swaminathan A, Gohil A, Crawford MH. Clinical Characteristics and Outcome of Methamphetamine-Associated Pulmonary Arterial Hypertension and Dilated Cardiomyopathy. JACC Heart Failure 2018, 6(3).
⁴Kolaitis NA, Zamanian RT, de Jesus Perez VA, et al. Clinical Differences and Outcomes between Methamphetamine-associated and Idiopathic Pulmonary Arterial Hypertension in the Pulmonary Hypertension Association Registry. Ann Am Thorac Soc 2021;18(4):613-22 doi: 10.1513/AnnalsATS.202007-774OC [published Online First: 2020/10/17].

Meth-APAH vs. IPAH

- The panel agreed that Meth-PAH and IPAH were different in several key domains but could not come to agreement about differences in others:



Identifying patients with Meth-APAH

- Physicians reached a consensus in agreement that:

Screening and follow-up assessments may be affected by methamphetamine use, but should be conducted whenever possible, regardless of methamphetamine use, due to higher likelihood of poor follow-up of these patients.

All patients presenting with PAH should be screened for Meth-APAH regardless of the regional prevalence of methamphetamine use.

“There are a number of patients who, because they don’t meet the traditional “biased” definition of what a [methamphetamine] user looks like, are not being screened and therefore those patients are not being identified.” - US Physician

Barriers to identifying patients with Meth-APAH

- Access to transportation
- Comorbidities
- Patient engagement with care
- Socioeconomic status
- Lack of stable housing
- (Lack of) familial and caregiver support
- Clinician familiarity with Meth-APAH

Treatment implications and barriers for patients with Meth-APAH

A consensus in agreement was reached that:

Panelists would treat a patient with Meth-APAH who is actively using methamphetamine, adjusting drug choices and route of administration as needed.

There are no Meth-APAH-specific barriers to double combination therapies (e.g., endothelin receptor antagonists and phosphodiesterase 5 inhibitors)

“[Am I] going to go for a combination therapy [only] if they are abstinent? My answer would be no, I am still going to treat [active users of methamphetamine] with combination therapy.” - US Physician

Disease-, treatment-, and patient-related factors that affect treatment choice in Meth-APAH:

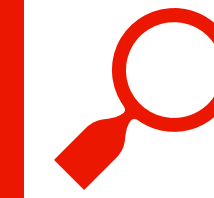
Disease-related	
✓ Comorbidities	✓ Symptom severity at diagnosis
✓ Presence of right-side heart failure	✓ Vasoreactivity response
✓ REVEAL risk score	✓ Congenital heart disease
✓ Risk assessment/stratification	✓ Human immunodeficiency virus
Treatment-related	
✓ Clinical trial results	✓ Route of administration
✓ Frequency of dosing	✓ Side effect profile
✓ Treatment approach (i.e., monotherapy/combination therapy)	✓ Geographical location (i.e., geographical access to care)
Patient-related	
✓ Treatment compliance	✓ Treatment adherence history
✓ Methamphetamine use status	✓ Participation in a substance abuse program
✓ Patient compliance with healthcare team instructions	✓ Stable housing/employment
✓ Ability to communicate/interact with the healthcare team	✓ Mental health/psychiatric conditions
✓ Social/caregiver support	

Meth-APAH in clinical trials

- The panel agreed that patients with Meth-APAH should be included in:



Key takeaway



This is the first systematic approach to setting standards for, and defining, diagnosing and treating this unique patient population for which there is no standardized guidance.

The characterization of Meth-APAH is expected to aid in the quicker identification and individualized management of patients with Meth-APAH to improve clinical outcomes as well as raising awareness.

Conclusions



The heterogeneity of Meth-APAH and the wider PAH patient population causes difficulty in defining and characterizing this under-recognized PAH subtype. Methamphetamine user types impact disease-, treatment-, and patient-related factors.



The definition of Meth-APAH should consider factors such as duration, frequency, and/or dose of methamphetamine use and the exclusion of other etiologies.



All patients presenting with PAH should be screened for Meth-APAH regardless of regional prevalence of methamphetamine use.



Patients with Meth-APAH can be treated according to the same guidelines recommended for patients with IPAH.



Patients with Meth-APAH should consistently be included as part of clinical trials to generate information regarding treatment and disease management within this patient population.

Disclosures

PL has received support for attending meetings and/or travel, and received support for data access, analysis and writing from Janssen/Actelion Pharmaceuticals PL has also received grants from NIH/NHLBI, Bayer Pharmaceuticals (PHAB Award) Mentor, and the Cystic Fibrosis Foundation Therapeutic Development Network, and consulting fees from Sumitomo Pharma. PL has participated on a Data Safety Monitoring Board or Advisory Board for NHLBI and in a leadership or fiduciary role for Team PHenomenal Hope and the Pulmonary Hypertension Association Registry. DL, AA, GD and MS are employees of Actelion Pharmaceuticals US, Inc., a Johnson & Johnson company. MS, DB, RP, AE, LP and HS are employees of Adelphi Values PROVE, who were contracted by Johnson & Johnson Innovative Medicine to conduct this research.

Pulmonary Hypertension



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