International Survey on Nimodipine Use in Aneurysmal Subarachnoid Hemorrhage

Capturing Global Practice Variations to Inform Future Research

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1. Introduction

Aneurysmal subarachnoid hemorrhage (aSAH) is a devastating condition where delayed cerebral ischemia (DCI) remains a major cause of morbidity and mortality. Nimodipine, a calcium channel blocker, has been the cornerstone of DCI prevention for decades, based on historical evidence. However, its real-world use—including indications, dosing, routes of administration, and monitoring practices—varies significantly across centers.

This variability likely stems from differences in:

- Patient presentations and risk profiles
- Local protocols and institutional guidelines
- Logistical constraints (e.g., drug availability, ICU resources)
- Clinical judgment and experience

Objective: To document these practice variations through a global survey of ICU clinicians managing aSAH patients. The insights gathered will:

- Highlight current trends in nimodipine use.
- Identify gaps or inconsistencies in practice.
- Inform the design of future observational or interventional trials to optimize nimodipine therapy in this critical setting.

2. Survey Overview

Scope

- ICU physicians managing aSAH patients
- Focuses on standard ICU management of aSAH patients.
- Covers 9 key sections, including:
    1. **Centre Characteristics** (e.g., ICU type, aSAH volume, nimodipine availability).
    2. **General Nimodipine Strategy** (e.g., routine use, patient selection).
    3. **Enteral Administration** (oral/gastric tube: dosing, timing, monitoring).
    4. **Intravenous Administration** (availability, indications, protocols, transition from enteral).

5. **Hypotension / Blood Pressure Management** (thresholds, interventions, nimodipine adjustments).
6. **Management of DCI with Nimodipine** (escalation strategies, combination therapies).
7. **Institutional Policies** (guidelines, multidisciplinary protocols).
8. **Challenges & Priorities** (barriers to optimal use, unmet needs).
9. **Additional Uses of Nimodipine** (off-label or emerging practices).

- **Exclusions**: Does not assess intra-arterial, intracisternal, or intraventricular nimodipine.

Time Commitment

- <15 minutes to complete.
- Responses should reflect the standard practice at your ICU.

3. Ethical and Logistical Details

Ethical Approval

- Approved by the Institutional Review Board of Clermont-Ferrand University Hospital, France (IRB-00013412).
- Study ID: 2026-CF673.
- Data Storage: All data will be stored securely at the academic center in Clermont-Ferrand under the responsibility of the investigators.

Confidentiality

- No mandatory email collection: email is optional and will only be used to:
  - Share survey results.
  - Inform future projects related to this topic.
- Anonymized data: Individual responses will not be identifiable in publications or presentations.

Industry Collaboration

- The survey was developed in collaboration with LXO Pharma, a European drug company that commercialize the original nimodipine drug (Nimotop®) in some parts of the world.
- LXO Pharma was involved in the survey design
- LXO Pharma will not be involved in data storage, analysis, or interpretation and will not have access to individual responses or stored data.

4. Timeline and Dissemination

- Survey Launch: May 7th 2026

- Duration: 60 days.
- 3 email reminders will be sent.
- Preliminary Results: Could be presented at the Euroneuro Meeting (Brussels, June 28–30, 2026).
- Final Results: Submitted to a peer-reviewed journal and shared with all participants who provide their email.

5. How to Participate

1. The survey will be distributed via email through the professional networks and membership lists of scientific societies, coordinated by the executive committee.
2. Access the Survey: https://forms.gle/hbuRWENcyso4QE9o9
3. Complete the Questionnaire: Answer based on respondent's ICU's standard practices.
4. Submit: Responses are automatically saved and submitted.
5. Three follow-up emails will be sent to non-responders at intervals to maximize participation.

6. Results analysis

Results will be aggregated and anonymized for presentations and publications. No individual or center will be identified.

The response rate will be calculated as the proportion of completed surveys relative to the total number of valid emails sent (Total emails sent minus bounced or invalid addresses).

Partial responses rate will be analyzed and reported. Strategies to improve response rates include personalized email invitations, reminders, and offering early access to survey results as an incentive.

Descriptive statistics will summarize demographic and center characteristics (e.g., median/mean for continuous variables, frequencies/percentages for categorical data). Group comparisons (e.g., by region, ICU type, or nimodipine strategy) will use Chi-square or Fisher's exact tests for categorical variables and Mann-Whitney U or Kruskal-Wallis tests for non-normally distributed continuous data. Multivariable logistic regression may identify independent predictors of specific practices, adjusting for confounders like center volume or country income level. Factor analysis or cluster analysis could explore patterns in practice variations, while thematic analysis will synthesize qualitative responses (e.g., challenges/priorities). All analyses will account for missing data and multiple testing. Statistical significance will be set at $p < 0.05$.

7. Steering Committee

This survey is led by an international team of neurocritical care clinicians:

Fabio Silvio Taccone (Belgium), Tonny Veenith (UK), Federico Bilotta (Italia), Vincent Degos (France), Hugues De Courson (France), Andrew Udy (Australia), Katja Wartenberg (Germany), Aurélie Thooft (Belgium), Randeep Mullhi (UK), Yoann Launey (France), Russell Chabanne (France)

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