INSIGHTS FROM DRUG DEVELOPMENT: SURVEYING CHALLENGES AND OUTCOMES FOR LARGE-VOLUME SUBCUTANEOUS DRUGS

Poster 507

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INTRODUCTION

- With multiple well-known, large-volume subcutaneous (SC) drugs with and without permeation enhancers approved or in trials, understanding how administration volume impacts drug development is critical.
- While patients generally prefer SC over IV administration, SC adoption is often limited by the false perception that delivery volumes must be ≤3 mL without a permeation enhancer (PE).
- This misconception hampers drug discovery and stifles innovation.

OBJECTIVE

To investigate decision-making processes regarding large-volume SC drug candidates.

METHODS

A 23-item online survey was conducted with a sample of experts from functional areas likely to involved in the decision-making process, including R&D, CMC, portfolio/pipeline strategy, NPP, and combination products, from November 20 to 26, 2024. Survey questions explored perceptions of SC volume thresholds, factors influencing the deprioritization of drug candidates, the potential of large-volume delivery solutions, and how organizations track and revisit deprioritized candidates.

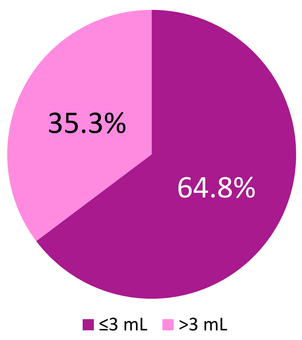
RESULTS

Survey Respondents

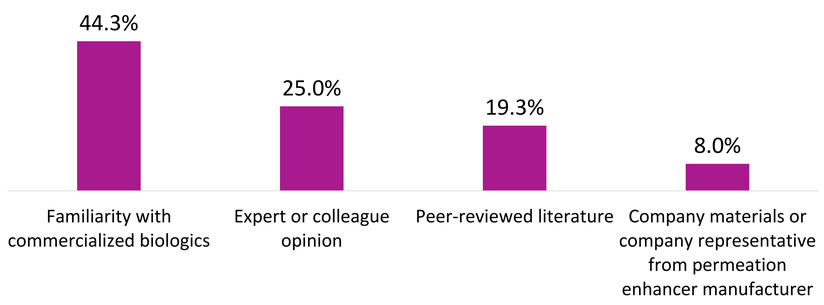
Characteristic	Participants (n=88)
Geographic location, n (%)	
US	46 (52.3)
Europe	34 (38.6)
Asia	8 (9.1)
Median number of SC drugs worked on, median (IQR)	5 (7)
Professional role, n (%)	
Senior/mid-level management	41 (46.6)
Technical expert involved in strategic decision-making	24 (27.3)
Executive/senior leadership	23 (26.1)
Company type, n (%)	
Large-cap pharma	24 (27.3)
Mid-cap pharma	27 (30.7)
Small-cap pharma	17 (19.3)
Micro-cap pharma	5 (5.7)
Contract research organization or independent CMC consultant	11 (17.0)
Specialization, n (%)	
CMC	23 (26.1)
R&D	21 (23.9)
NPP	15 (17.0)
Pipeline or portfolio strategy	16 (18.2)
Combination products	13 (14.8)

Understanding of SC Volume Capacity

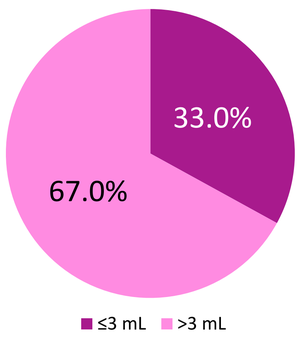
Perceived SC *Bolus* Volume Limit Without PE



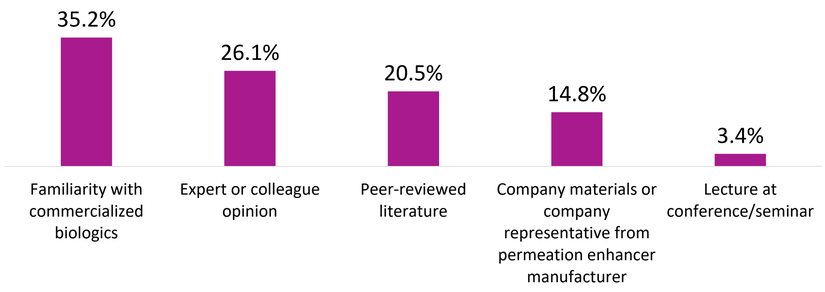
Basis for Perceived SC *Bolus* Volume Limit Without PE



Perceived SC *Infusion* Volume Limit Without PE



Basis for Perceived SC *Infusion* Volume Limit Without PE

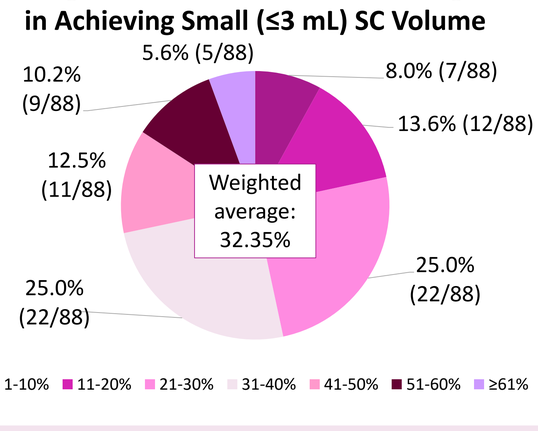


Volume, Viscosity, and Concentration Limits at which Development Becomes a Concern for SC Biologic Drugs

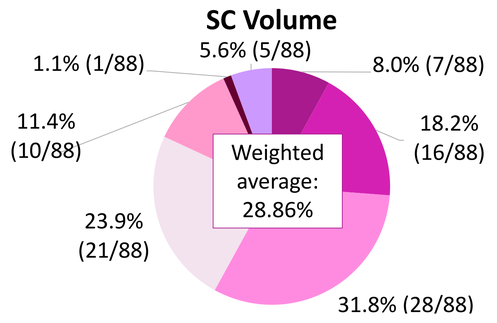
Characteristic (Unit)	Weighted Average	Mode
Volume (mL)	5.67	4-6
Viscosity (cP)	16.56	19-22
Concentration (mg/mL)	147.01	101-125

Large-Volume R&D Assets Development: Lay of the Land

Drugs *ABANDONED* Due to Challenges in Achieving Small (≤3 mL) SC Volume

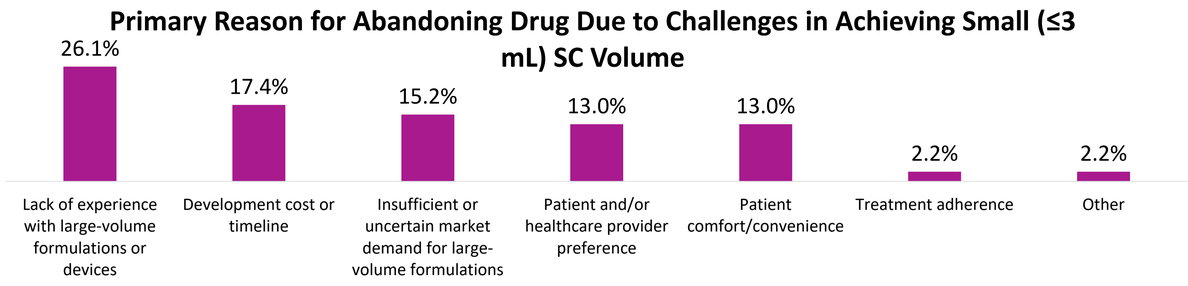


Drugs *DEPRIORITIZED* Due to Challenges in Achieving Small (≤3 mL) SC Volume



90.9% of participants had been directly involved in a mean of 4.08 projects where a drug was deprioritized or abandoned due to challenges in achieving small volumes (≤3 mL) for SC administration.

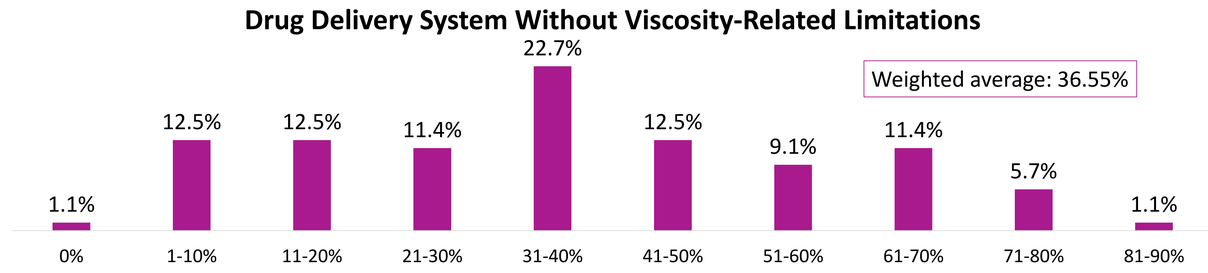
Primary Reason for Abandoning Drug Due to Challenges in Achieving Small (≤3 mL) SC Volume



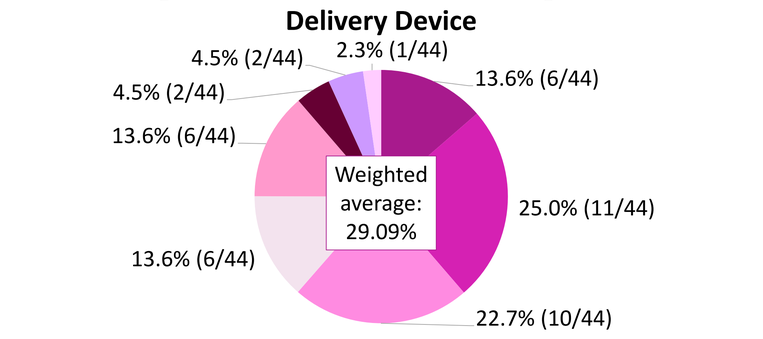
63.6% of participants reported that **large-volume drugs are only pursued if they offer distinct clinical benefits or address a high unmet need** regardless of competition from small-volume or oral options.

Large-Volume R&D Assets Development: Missed Opportunities

Drugs Deprioritized or Abandoned Due to Challenges With Viscosity Limits for SC Administration That Would Be Well-Suited for Further Development with a Drug Delivery System Without Viscosity-Related Limitations



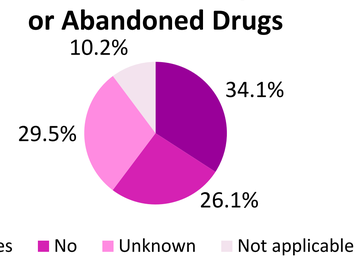
Drugs Deprioritized or Abandoned Due to Challenges in Achieving Small SC Volumes That Could Have Had Their Dosing Intervals Extended With a Large-Volume Delivery Device



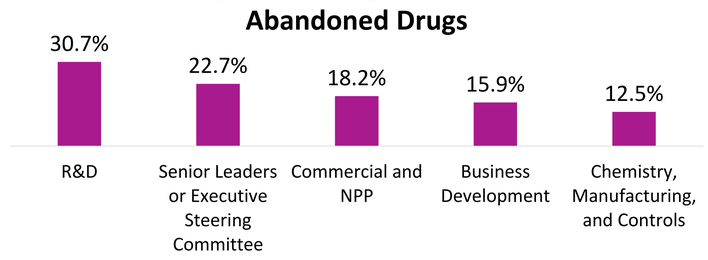
Participants rated the **commercial potential of drugs that were deprioritized or abandoned due to challenges with large volumes for SC administration a mean of 2.98** on a scale of 1 (low potential) to 4 (high potential).

Revival of Deprioritized or Abandoned Large-Volume R&D Assets

Organization Maintains an Archive/Database of Deprioritized or Abandoned Drugs



Department Typically Leading Decision-Making for Reviving Deprioritized or Abandoned Drugs



Participants rated the **openness of their organization to revisit and potentially resurrect drugs that were deprioritized or abandoned a mean of 3.34** on a scale of 1 (not at all open) to 4 (extremely open).

CONCLUSIONS

- Collectively, these findings underscore how long-standing misconceptions regarding large-volume SC administration stifle innovation.
- Promising drug candidates have been prematurely abandoned or deprioritized due to these misconceptions and participants indicate that there is organizational willingness to revisit them if suitable large-volume delivery solutions emerge.
- The limited understanding of SC volume thresholds as a bolus versus an infusion drives hesitancy toward large-volume SC delivery so more education is needed on dispelling myths surrounding large-volume SC delivery
- OBDSs accommodate higher volumes, concentrations, and viscosities, offering a viable path forward by enabling the re-evaluation of previously shelved assets and expanding the therapeutic possibilities for patients in need.

Abbreviations: CMC, Chemistry, Manufacturing, and Controls; cP, centipoise; CRO, contract research organization; IQR, interquartile range; IV, intravenous; mg, milligrams; mL, milliliters; NPP, new product planning; OBDS, on-body delivery system; PE, permeation enhancer; R&D, Research and Development; SC, subcutaneous.

*If you have questions about this poster, please email Omar Rahman at orahman@enableinjections.com.
Prepared with writing and editorial assistance from Terri Levine, MSc, PhD, CMPP.

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