USP Aerosols Expert Committee: Responsibilities and Activities

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Introduction

The USP has a long history reaching back to the early nineteenth century. Its role in setting standards and specifications on pharmaceutical products led the country in pursuit of high quality unadulterated products at a time when there was no formal government regulation. In recent history the USP has legal status as purveyor of standards, specifications and methods that continue to fulfill the demands for quality products in a highly regulated environment.

Aerosols Expert Committee

The Aerosols Expert Committee (AEC) is a relatively new committee at the USP having only completed one full five year cycle of review prior to the present (2005-2010) cycle. Prior to 2000 an aerosol panel considered the needs of pharmaceutical aerosol products. Presently there are eight members of the (AEC) including the Chair. The members represent government, industry and academia and also other nations. The committee meets biannually at the USP headquarters in Rockville.

The Committee

- Tony Hickey (Chair)
- Paul Curry (Vice Chair)
- Harris Cummings
- Bo Olsson
- Guirag Poochikian
- John Simon
- Charlie Thiel
- Caroline Vanneste
- Kahkashan Zaidi (USP Staff)

Tony Hickey, UNC-CH

Paul Curry, Solvay

Harris Cummings, Pearl Therapeutics

Bo Olsson, AstraZeneca

Guirag Poochikian, FDA Retired

John Simons, 3M

Charlie Thiel, 3M Retired

Caroline Vanneste, Health Canada

Kahkashan Zaidi, USP

Expectations of Committee

As an established institution the USP has very clear processes and procedures which require that the members of the committee set their personal or employers' interests aside and present their views on the science and technology associated with specific products. Interested parties may attend AEC meetings as observers but are requested to let the staff know of their intentions ahead of time for logistical reasons.

Committee Activities

The major responsibilities of the committee are to maintain existing monographs and general chapters (GC) and to develop new ones as products come to market. The dominant themes in recent years have been GC <601> on aerosol test methods and a small number of monographs on excipients/propellants.

The AEC meets twice a year for discussion and vote on items that are near completion. This meeting is open for observers. The meeting is announced one month before it occurs and action items proceeding from the meeting are available from the USP

General Chapters:

<601> AEROSOLS, NASAL SPRAYS, METERED-DOSE INHALERS, AND DRY POWDER INHALERS
<1151> PHARMACEUTICAL DOSAGE FORMS

Templates:

Metered Dose Inhalers
Nasal Sprays

Monographs:
Ethanol for Inhalation
Lactose for Inhalation
Levalbuterol Hydrochloride
Levalbuterol Inhalation Solution
Formoterol Fumarate
Tetrafluoroethane (Propellant 134a)

International Activities:

In addition to several members of the AEC having an international perspective there are both informal and formal interactions with members of other pharmacopeial groups. A stimulus to revision article on nebulizer performance tests and consultation on nasal product performance tests have arisen from interactions with the European Pharmacopeia. More formal responses to requests for harmonization come through the Pharmacopeial Discussion Group

Inhalation Advisory Panel

At times the committee will organize workshops or appoint panels (one of each has occurred in the last two years) to allow other experts to participate in discussion of specific issues.

USP Taxonomy

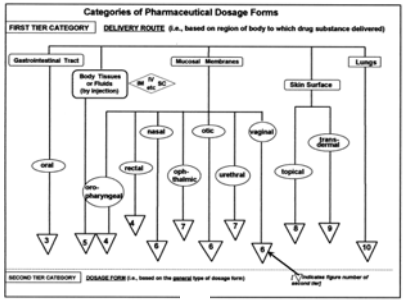

Figure 1: Illustrates Tier 1, Routes of Administration

According to the USP taxonomy once the routes of administration (Tier 1, Fig 1) and dosage forms (Tier 2) have been identified, the focus for the key performance tests (Tier 3) and their validation are important elements requiring consideration by the AEC. In response to this observation and Inhalation Advisory Panel was established to assist in considering the performance tests. The brief of the advisory panel is:

In accordance with Chapter VII, Section 6 of the Bylaws of the United States Pharmacopeial Convention (USP), the Chairperson of the Council of Experts forms with this charge an Advisory Panel–Performance Tests-Inhalation. The purpose of this Advisory Panel will be to discuss the USP Performance test with the goal of revision of one or more General Chapters in the *United States Pharmacopeia*.
The USP Performance Test is a specific (not universal) test in the list of tests, procedures, and acceptance criteria that comprise the dosage form specification. In this context, it is a key test that assesses product performance. In most instances, it is a quality control test that should be tied logically to a sound regulatory judgment of bioavailability and bioequivalence. With an appropriate in-vitro in-vivo correlation (IVIVC), it can also more directly assess bioavailability and bioequivalence. The Performance Test usually involves: a) equipment and media with calibrators that are used by the analyst to perform the test and b) a hypothesis driven study design and analysis approach that allows an accept/reject decision. Adaptation of this general approach is needed for a specific dosage form. In this context, USP prepares General Chapters that speak across many monographs, while the monographs themselves provide the specific dosage form adaptation.

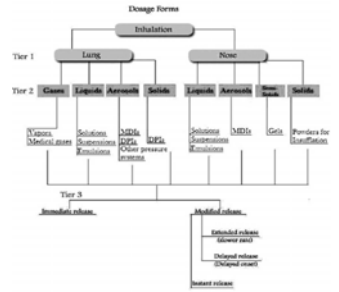

Figure 2: USP Taxonomy expanding Tier 2, dosage forms and Tier 3, performance tests

Publications

Thought provoking papers are published as stimuli articles in the Pharmaceutical Forum as are draft monographs and general chapters. Following publication comments are welcomed as these documents move to final incorporation in the USP. The intent is to obtain broad opinion. Finally, contact is maintained with other Pharmacopeial and regulatory bodies with the intent of facilitating harmonization.

Two stimuli to revision articles have been published in the Pharmacopeial Forum in recent years

Preparations for Nebulization: Characterization (PF 32(4) [July-August 2006], pp.1348-1352)
2. The Inhalation Ad Hoc Advisory Panel for the *USP* Performance Tests of Inhalation Dosage Forms (PF 34(4) [July-August 2008], pp.1068-1072)

Summary

The Aerosol Expert Committee of the USP consists of eight members of which two are from countries other than the United States

The AEC is active in consideration of performance tests, monographs and stimuli articles related to the inhalation and nasal aerosol products.

The work is conducted in an international context and in the background of the recently developed USP taxonomy. This structures considerations into three tiers: (1) route of administration; (2) dosage form and; (3) performance tests.

Occasionally items are considered sufficiently important to conduct a workshop or appoint an advisory panel. The inhalation advisory panel is currently considering performance tests.