Appendix A

ASHP Guidelines on Compounding Sterile Preparations

Purpose

The compounding of medications is a fundamental part of pharmacy practice. All compounding personnel, mainly pharmacists and pharmacy technicians, are responsible for compounding and dispensing sterile products and preparations of correct ingredient identity, purity (freedom from physical contaminants, such as precipitates,[1] and chemical contaminants), strength (including stability[2] and compatibility), and sterility and for dispensing them in appropriate containers that are labeled accurately and appropriately for the end user. In contemporary health care organizations, patients receive compounded sterile preparations (CSPs) that are stored for extended periods before use. It has long been recognized that extended storage of CSPs may allow for the growth of a pathological bioburden of microorganisms[3] and that patient morbidity and mortality can result from contaminated or incorrectly compounded sterile preparations.[4–9] When quality monitoring is inadequate, personnel responsible for sterile compounding may not know that inaccurate or contaminated products are dispensed.[10–13]

These guidelines are intended to help compounding personnel prepare CSPs of high quality and reduce the potential for harm to patients and consequences for compounding personnel. The recommendations in these guidelines are based on published data, when available; on expert opinion and procedures used in similar industries; and on applicable regulations and standards. These guidelines are a revision of the 2000 *ASHP Guidelines on Quality Assurance of Pharmacy-Prepared Sterile Products*,[14] with the goals of providing more current recommendations and harmonizing the ASHP guidelines with *United States Pharmacopeia* (*USP*) chapter 797, Pharmaceutical Compounding—Sterile Preparations.[15] To help achieve that harmonization, these guidelines employ the definitions and terminology of *USP* chapter 797 rather than those of the previous guidelines.

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Many health care settings also use CSPs prepared by compounding pharmacies. Although these guidelines may be useful in assessing the quality of CSPs prepared by compounding pharmacies, more information on the topic of outsourcing sterile compounding services is available in the *ASHP Guidelines on Outsourcing Sterile Compounding Services*.[16]

Finally, while these guidelines are generally applicable to all personnel who prepare CSPs and all facilities in which CSPs are prepared, pharmacists and other health care professionals responsible for the preparation, selection, and use of CSPs are urged to use professional judgment in interpreting and applying these guidelines to their specific circumstances. Users of these guidelines are cautioned that the information provided is current as of publication and are urged to consult current editions of original sources (e.g., laws, regulations, and applicable standards, including USP compendial standards) to ensure patient safety as well as legal and regulatory compliance.

Legal and Regulatory Considerations

Significant legal and regulatory changes have taken place since publication of the previous ASHP guidelines (**Figure 1**).

At the time of its publication, section 503A of the U.S. Food and Drug Administration Modernization Act (FDAMA) served to define the limits of legitimate compounding.[18] When section 503A of FDAMA was ruled unconstitutional in 2001, the delineation between compounding and manufacturing reverted to earlier regulations based on the Federal Food, Drug, and Cosmetics Act.[19] Under those regulations, compounding is considered part of the practice of pharmacy and in most states, is governed by state law and regulation. Manufacturing is regulated by the federal government through

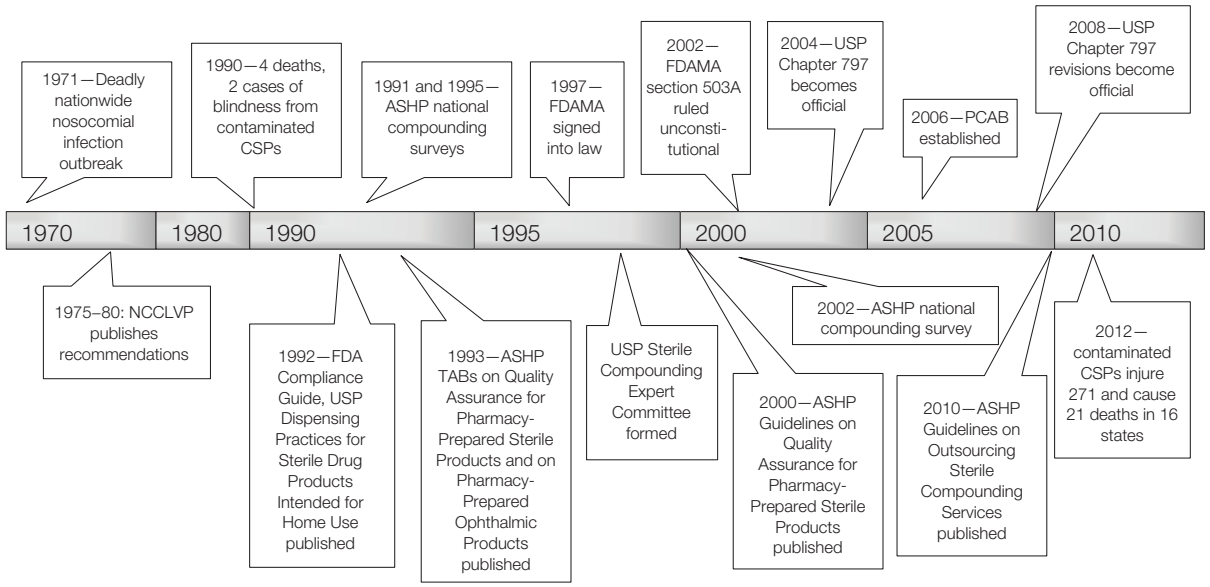

Figure 1. Evolution of Sterile Compounding Standards, 1970—2010. Adapted from *The ASHP Discussion Guide on USP Chapter <797> for Compounding Sterile Preparations*.[17] NCCLVP, National Coordinating Committee on Large Volume Parenterals; CSPs, compounded sterile preparations; USP, United States Pharmacopeia; TAB, technical assistance bulletin; FDAMA, Food and Drug Administration Modernization Act; PCAB, Pharmacy Compounding Accreditation Board.