

Medical Device Regulation in the United States and the European Union: A Comparative Study

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I. INTRODUCTION

Medical devices and drugs comprise the basic armamentarium in medical science. Diagnostic equipment, such as stethoscopes and X-ray machines, help physicians hear and see better. Rehabilitative devices, such as dental prostheses and artificial limbs, restore lost functions and add to the quality of life. Life-maintaining equipment, such as heart-lung machines and ventilators, perform vital functions for the invalid. The number of medical devices in circulation is enormous. In 1998, the projected dollar volume of medical device production in the United States was \$69 billion.¹ In the same year, sales of medical devices were estimated to be \$61 billion.²

Medical devices are intended primarily to promote and maintain patient health. In this context, patient safety and device effectiveness are the prime concerns. Patient safety has become increasingly significant in light of the growing number and complexity of marketed medical devices. In most highly developed countries, medical device marketing is subject to regulatory requirements to ensure their safety, and in many cases, their performance or efficacy. The U.S. regulatory system for medical devices has drawn international respect for many years. Recently, attention also has been focused on the European Union (EU) system of medical device regulation, which follows the U.S. system in some respects, but is different in several others.

The first portion of this paper reviews the U.S. and the EU medical device classification systems and the requirements applicable to each class. Next, the medical device regulations in the United States and the EU are compared and contrasted as they relate to their goals, implementation, and outcome. It will become evident that the two systems have differences and similarities in their goals and implementation, however, the data currently available does not allow a clear analysis of the systems' outcome. Due to the differences in the regulatory systems in the United States and the EU, medical device manufacturers must meet both sets of requirements for their products to be marketed in the United States and the EU. In the last section, the ongoing international efforts toward harmonization of regulatory requirements between the United States and the EU is discussed. Harmonization could alleviate medical device manufacturers' duplicative efforts in meeting the two sets of requirements.

II. MEDICAL DEVICE CLASSIFICATION SYSTEMS

A. *The U.S. System*

Both the U.S. and EU systems classify medical devices pursuant to their inherent risks and accordingly assign different regulatory control mechanisms to each class.

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¹ Health Industry Manufacturers Association, *U.S. Medical Technology Industry Fact Sheet* (visited Jan. 5, 1999) <www.himanet.com/publicdocs/98factsheet.htm>.

² *Id.*

Under the three-tiered U.S. classification system, Class I devices possess the lowest risk—e.g., a surgical bandage. General controls sufficiently provide reasonable assurance of Class I devices' safety and effectiveness.³ The current "general controls" applicable to Class I, as well as to Class II and III devices, include: 1) prohibitions against adulteration and misbranding; 2) requirements governing labeling, registration, listing, manufacturing;⁴ 3) postmarket surveillance;⁵ and 4) user facility and manufacturer reporting requirements.⁶ General controls also include remedies such as long-standing seizure,⁷ injunction,⁸ criminal prosecution, and administrative detention authority,⁹ as well as the banned device provisions,¹⁰ repair-replace-refund authority,¹¹ Food and Drug Administration (FDA)-ordered recalls,¹² and civil penalties.¹³ All Class I devices, except those intended for "a use which is of substantial importance in preventing impairment of human health," or which present "a potential unreasonable risk of illness or injury," are exempted from 510(k) premarket notification.¹⁴

Class II devices pose medium risks. They cannot be classified as Class I because general controls were insufficient "to provide reasonable assurance of the safety and effectiveness of the device. . . ."¹⁵ A Class II device—such as an intravascular catheter—is subject to general and special controls to ensure its safety and effectiveness.¹⁶ Special controls may include performance standards, patient registries, postmarket surveillance, guidelines, and recommendations.¹⁷ Most Class II devices are subject to the 510(k) premarket notification—the process to verify the substantial equivalence of a product to a predicate device in terms of its safety and effectiveness. Clinical data may be necessary to verify the substantial equivalence of a 510(k) device.¹⁸ Class II devices that are exempted from premarket notification continue to be subject to all other general controls.¹⁹

A Class III medical device is one for which general and special controls are insufficient for the assurance of its safety and effectiveness. A Class III device is used to support and sustain human life, or is of substantial importance to prevent the impair-

³ 21 U.S.C. § 360(c) (1994).

⁴ 61 Fed. Reg. 52,602 (Oct. 7, 1996) (codified at 21 C.F.R. pt. 820 (1996)).

⁵ 21 U.S.C. § 360(f); Medical Device Recall Authority, 21 C.F.R. pt. 810 (1998).

⁶ Food and Drug Administration Modernization Act of 1997 (FDAMA), Pub. L. No. 105-115, 111 Stat. 2296; 60 Fed. Reg. 63,578 (Dec. 11, 1995).

⁷ 21 U.S.C. § 334.

⁸ *Id.* § 332; Medical Device Corrections and Removals, 21 C.F.R. pt. 806.

⁹ 21 C.F.R. pt. 5.10.

¹⁰ 21 U.S.C. § 360(f); Banned Devices, 21 C.F.R. pt. 895.

¹¹ 21 C.F.R. pt. 5.55.

¹² 21 U.S.C. § 360(f).

¹³ *Id.*; 21 C.F.R. pt. 17.

¹⁴ 63 Fed. Reg. 63,222 (Nov. 12, 1998). A premarket notification or premarket notification submission commonly is known as a 510(k). Excluding 510(k)-exempt Class I and II devices, all post-amendment devices are classified automatically into Class III and require premarket approval unless or until FDA approves the petition for reclassification of a device into Class I or II, or FDA finds a post-amendment device substantially equivalent to a legally marketed device that does not itself require premarket approval. Medical Device Amendments of 1976, Pub. L. No. 94-295, 90 Stat. 539 (codified in scattered sections of 21 U.S.C. (1994)). The Medical Device Amendment provided that a device that was "not introduced or delivered for introduction into interstate commerce . . . before the date of the enactment of the Act" was classified automatically in Class III unless it is substantially equivalent to either an existing device or a post-enactment Class I or Class II device.

¹⁵ 21 U.S.C. § 360(c).

¹⁶ *Id.*

¹⁷ *Id.* § 360(d). By issuing guidance documents that reference voluntary standards, FDA avoided the onerous process required for promulgation of mandatory standards.

¹⁸ *Id.* § 360(j).

¹⁹ 63 Fed. Reg. at 59,222.

ment of human health²⁰—a prosthetic heart valve is such a device. A device “not introduced or delivered for introduction into interstate commerce . . . before the date of the enactment of the [Medical Device Amendments of 1976]” automatically is classified in Class III unless it is substantially equivalent to either an existing device, or a post-enactment Class I or Class II device.²¹ An automatically classified Class III device remains in the class until the Secretary of Health and Human Services approves a petition for reclassification into a Class I or Class II device.²² Premarket approval (PMA) also is applicable to these “new” Class III devices.²³ PMA is necessary for the marketing of Class III devices and entails the submission and review of detailed data pertaining to the individual device to verify its safety and effectiveness.

As FDA completes the calling for PMAs of pre-amendment Class III devices, and finishes the down-classification of those pre-amendment Class III devices²⁴ suitable to be regulated as Class I or Class II devices, it is envisioned that the premarket notification process no longer will be available for any Class III devices.²⁵ Manufacturers of selected Class II and Class III devices also are subject to device tracking and postmarket surveillance if the measures are deemed necessary for the assurance of public safety.²⁶

B. *The EU System*

The EU employs a four-tiered classification system based on the degree of risk associated with the device usage, the amount of time that the device is in contact with the human body, and the degree of invasiveness of the device.²⁷ Class I medical devices and most in vitro diagnostic (IVD) medical devices pose low risks associated with their use.²⁸ Manufacturers of these devices may declare conformity to the marketing requirements without a need to involve a notified body (NB) in this declaration, however, they must maintain a prescribed set of technical documentation available for inspection.²⁹ The marketing of a Class IIa device entails the additional requirement of the verification of conformity by an NB at the production stage.³⁰ Class IIb and III devices are high-risk devices. Conformity assessment and NB verification are deemed necessary at both the design and production stages. In addition, the NB’s approval of a design dossier must precede the marketing of Class III devices, active implantable medical devices, and selected IVD medical devices.³¹ Unlike the U.S. third-party system, where FDA receives the third-party report and makes the final decision as to the

²⁰ 21 U.S.C. § 360(c).

²¹ *Id.* § 360.

²² *Id.*

²³ *Id.* § 360(e).

²⁴ *See, e.g.*, 64 Fed. Reg. 12,774 (Mar. 15, 1999).

²⁵ CENTER FOR DEVICES & RADIOLOGICAL HEALTH, FOOD & DRUG ADMIN., *The New 510(k) Paradigm—Alternative Approaches to Demonstrating Substantial Equivalence in Premarket Notifications—Final Guidance 3* (last modified Mar. 8, 1998); CENTER FOR DEVICES & RADIOLOGICAL HEALTH, FOOD & DRUG ADMIN., *Reengineering—Year 1 Accomplishments & Future Plans* 286 (last modified Apr. 17, 1998) <www.fda.gov/cdrh/reenging/otannrep.html> [hereinafter *Reengineering Accomplishments*].

²⁶ 21 U.S.C. §§ 360(i), (l).

²⁷ Council Directive 93/42/EEC, 1993 O.J. (L 169) 3.

²⁸ *Id.* art. 9; Council Directive 98/79/EC, art. 9, 1998 O.J. (L 331).

²⁹ Council Directive 93/42/EEC on Medical Devices, Annex VII, 1993 O.J. (L 169); Council Directive 98/79/EC In Vitro Diagnostic Medical Devices, Annex III, 1998 O.J. (L 331); Class I devices that must be marketed in a sterile condition or perform measurement functions are subject to additional limited Quality Assurance System requirements. Council Directive 93/42/EEC, Annex VII.5, 1993 O.J. (L 169).

³⁰ Council Directive 98/79/EC, art. 9, 1998 O.J. (L 331).

³¹ *Id.*

device's marketability, no government authority reviews the determination of the NB that the device conforms to the applicable EU directive.

Similar to the U.S. system, Member States of the EU have the authority to restrict the circulation of products not in compliance with the directives. The restriction may apply to a device placed on the market based on the NB's determination of compliance that are found later not to be in compliance with an EU Member State's laws applying the EU directive. The European Commission and ultimately the European Court of Justice review a Member State's ban of a product with unreasonable risks of injury to persons, or property damage.³² A similar form of judicial review for all devices is present in the U.S. system.³³

III. THE OLD AND NEW SYSTEMS

Differences in the length of history possessed by the United States and EU medical device regulatory systems are apparent immediately. The U.S. federal medical device regulation began with the enactment of the Federal Food, Drug, and Cosmetic Act (FDCA) in 1938.³⁴ The medical device provisions went through major revisions in 1976,³⁵ 1990,³⁶ and 1997.³⁷ Numerous congressional hearings, committee reports, General Accounting Office (GAO) reports, FDA internal reports, and other administrative reports were dedicated to medical devices.³⁸

In contrast, the EU medical device regulatory system was introduced in the 1900s. Industry and FDA's critics quickly accepted this "new" system because of its efficiency in medical device approval.³⁹ In the same time frame that many U.S. manufacturers were moving their capital, resources, and facilities to Europe for what was perceived as a friendlier launching pad for their products, many also were urging the United States to adopt features of the European system.⁴⁰ The issue gathered enough attention for the Senate Committee responsible for enacting FDA-related legislation to ask the GAO to investigate the feasibility of this measure. In 1995, the GAO reported that the EU system had been in effect only for a few years and that the data

³² *Id.* art. 8.

³³ Medical Device Amendments of 1976, Pub. L. No. 94-295, 90 Stat. at 539.

³⁴ Pub. L. No. 75-717, 52 Stat. 1040 (codified as amended at 21 U.S.C. §§ 301-393).

³⁵ Medical Device Amendments of 1976, Pub. L. No. 94-295, 90 Stat. at 539.

³⁶ Safe Medical Devices Act, Pub. L. No. 101-629, 104 Stat. 4511 (1990).

³⁷ FDAMA of 1997, Pub. L. No. 105-115, 111 Stat. at 2296.

³⁸ *See, e.g.*, STAFF OF HOUSE SUBCOMM. ON OVERSIGHT & INVESTIGATIONS OF THE HOUSE COMM. ON ENERGY & COMMERCE, 98TH CONG., REPORT ON MEDICAL DEVICE REGULATION: THE FDA'S NEGLECTED CHILD 17 (Comm. Print 1983); STAFF OF SUBCOMM. ON OVERSIGHT & INVESTIGATIONS, HOUSE COMM. ON ENERGY & COMMERCE, 103D CONG., LESS THAN THE SUM OF ITS PARTS: REFORMS NEEDED IN THE ORGANIZATION, MANAGEMENT, AND RESOURCES OF THE FOOD & DRUG ADMINISTRATION'S CENTER FOR DEVICES & RADIOLOGICAL HEALTH (Comm. Print 1993); GENERAL ACCOUNTING OFFICE, REPORT TO THE CHAIRMAN, SENATE COMM. ON GOVERNMENTAL AFFAIRS, GAO/PEMD-87-1, MEDICAL DEVICES—EARLY WARNING OF PROBLEMS IS HAMPERED BY SEVERE UNDERREPORTING 33 (1986); GENERAL ACCOUNTING OFFICE, REPORT TO THE CHAIRMAN, SUBCOMM. ON HEALTH & THE ENVIRONMENT, HOUSE COMM. ON ENERGY AND COMMERCE, GAO/PEMD-88-14, MEDICAL DEVICES—FDA'S 510(K) OPERATIONS COULD BE IMPROVED 18 (1988); D. BRUCE BURLINGTON, *FDA CDRH Annual Report Fiscal Year 1998* (visited Mar. 1, 1999) <www.fda.gov/cdrh/annual/fy98rpt.html>; PRESIDENT WILLIAM CLINTON & VICE PRESIDENT ALBERT GORE, NATIONAL PERFORMANCE REVIEW: REINVENTING DRUG & MEDICAL DEVICE REGULATIONS 18 (1995).

³⁹ *Revitalizing New Product Development from Clinical Trials Through FDA Review: Hearings on FDA Reform Before the Senate Comm. On Labor and Human Resources*, 104th Cong. 209 (1996) (statement of Maurice F. Freeman, Medical Technology Consultants Europe Ltd.) [hereinafter *Revitalizing Hearings*].

⁴⁰ *See* The Wilkerson Group, Inc., *Forces Reshaping the Performance and Contribution of the U.S. Medical Device Industry* (1995) (unpublished manuscript, on file with the Health Industry Manufacturers Association).

available was inconclusive as to whether the EU system would be a valuable model for FDA.⁴¹ Furthermore, the GAO suggested that the ability of the EU system in ensuring product safety and an efficient review process would be evident only after additional years of implementation.⁴²

In the defense of the EU system, at least one witness before the Senate Committee objected to the assertion that the EU system had not been tested extensively.⁴³ Mr. Freeman claimed that the EU system of medical device regulation reflects a consensus among the Member States in the form of a uniform system incorporating the features from various former national requirements.⁴⁴ For example, the United Kingdom (UK) used the quality system as a way of quality control for many years. The UK also followed a voluntary medical device good manufacturing practice (GMP), known as the Manufacturers Registration Scheme, for more than fifteen years.⁴⁵ Countries such as France and Germany had used design validation and type testing as the mechanism of medical device approval.⁴⁶ The utilization of private bodies for product reviews also was not novel. Many of the NBs in the EU certified products according to previous national requirements.⁴⁷ Some of the familiar certifying marks issued by these companies include the British Standards Institute Kite marking, the NF (French Standardization) Mark, and the GS (*Gepriüfte Sicherheit*) Mark.⁴⁸ Thus, Mr. Freeman argued that the EU system should be viewed as the harmonization of many established systems rather than an untested “new” system.⁴⁹ Regardless of whether the U.S. system is an old system that is evolving, or the EU system is a new system that has not endured the test of time, appreciable and subtle differences exist between them.

IV. MISSION OF THE REGULATORY SCHEMES

The foremost difference between the U.S. and the EU systems is their missions. Until the enactment of the Food and Drug Administration Modernization Act (FDAMA), FDA’s principal mission in regulating food, drug, and medical devices was protecting public health.⁵⁰ Consistent with today’s social and economic climate, FDAMA added other goals for FDA. For example, FDAMA prescribed that reviewing products in a prompt and efficient manner would help ensure public health protection.⁵¹ To lessen the administrative burden, FDA should collaborate with other countries in harmonizing regulatory requirements and achieving reciprocal agreements.⁵²

⁴¹ U.S. GENERAL ACCOUNTING OFFICE, REPORT TO THE SENATE COMM. ON LABOR & HUMAN RESOURCES, MEDICAL DEVICE REGULATION—TOO EARLY TO ASSESS EUROPEAN SYSTEM’S VALUE AS MODEL FOR FDA, GAO/HEHS-96-65 2 (1996) [hereinafter GAO/HEHS-96-65].

⁴² *Id.*

⁴³ *Revitalizing Hearings*, *supra* note 39, at 209.

⁴⁴ *Id.*

⁴⁵ *Id.*

⁴⁶ See generally GAO/HEHS-96-65, *supra* note 41, at 11, 32. The independent reviewer performs a type-examination to test representative samples of a device to determine if it meets certain standards.

⁴⁷ Council Directive 93/42/EEC, art. 16, 1993 O.J. (L 169); Council Directive 98/79/EC, art. 15, 1998 O.J. (L 331); Council Directive 90/385/EEC, art. 11, 1990 O.J. (L 189). NBs are entities that Member States have notified the Commission and other Member States as possessing the technical ability to assess manufacturers’ quality systems and/or review medical devices for certification.

⁴⁸ *Revitalizing Hearings*, *supra* note 39, at 210.

⁴⁹ *Id.*

⁵⁰ See generally Theresa J. Pulley Radwan, *Meeting the Objectives of the MDA: Implied Preemption of State Tort Claims by the Medical Device Amendments*, 10 J.L. & HEALTH 343, 349 (1996); Harvard Law Review Association, *FDA Reform and the European Medicines Evaluation Agency*, 108 HARV. L. REV. 2009, 2016 (1995).

⁵¹ FDAMA of 1997, Pub. L. No. 105-115, 111 Stat. at 2369 (codified as amended at 21 U.S.C. § 393).

⁵² *Id.*

Furthermore, FDA should consult with the stakeholders and the public in accomplishing this mission.⁵³ Despite the prescriptive tone of the new mission statement, the principal focus of FDA remains unequivocally public health protection. These revisions direct how public health protection should be carried out.

In contrast, the EU system of medical device regulation underlines the importance of the "Internal Market" as much as public health protection. All three Medical Device Directives contain introductory language that emphasizes the importance of ensuring the smooth operation of the single "Internal Market" at the outset. In carrying out the Directives, EU Member States must meet all the established laws, rules, and guidelines to promote the free movement of people, goods, capital, and resources across their boundaries. Public health protection is an important goal in juxtaposition with the goal to achieve and maintain the "Internal Market." The emphasis on achieving internal consistency in regulatory systems is understood best when considered with the impact of an unharmonized European approach—in such a situation fifteen separate laws may apply.⁵⁴

The idea of a trade-related mission within a regulatory framework established for public health protection was not something that any U.S. lawmaker envisioned a quarter of a century ago.⁵⁵ Apart from the overall objective of the single "Internal Market" in forming a unified economic, political, or military front, some of the methods used to achieve the "Internal Market" did have merit in promoting regulatory efficiency. For example, the promotion of the development and use of voluntary standards, and the utilization of private bodies for certification earmark two important features essential in achieving the "Internal Market" goal.

Similar to their European counterparts, FDA experts have been involved in standard-setting activities for many years. Moreover, FDA currently is implementing a pilot program utilizing third-parties in reviewing products. FDA's recent efforts in international cooperation and harmonization,⁵⁶ goals also embodied in the new FDA mission statement included in FDAMA, are attempts to resolve differences in national regulations, achieve mutual agreement in product approval regulation and, in general, to minimize regulatory barriers to the medical products trade. Although the U.S. regulatory system does not explicitly promote "free trade" as a mission, FDA does maintain a strong presence in trade-related policies through its significant involvement in international harmonization of regulatory requirements.⁵⁷

V. UTILIZATION OF THIRD-PARTIES

FDA is the regulatory agency that promulgates and administers medical device regulations. The utilization of private third parties is limited to their role in the preliminary assessment of low- and medium-risk devices.⁵⁸ FDA gives the manufacturers

⁵³ *Id.*

⁵⁴ Council Directive 90/385/EEC, 1990 O.J. (L 189) 1; Council Directive 93/42/EEC, 1993 O.J. (L 169) 1; Council Directive 98/79/EC, 1998 O.J. (L 331) 1; *see also* KATHLEEN HASTINGS, FOOD & DRUG ADMIN., OFFICE OF POLICY/INTERNATIONAL POLICY, REGULATING MEDICAL DEVICES: A COMPARISON OF U.S. AND FOREIGN SYSTEMS AND ADVANTAGE OF THE U.S. SYSTEM OVER OTHERS 8 (1996).

⁵⁵ Letter from Linda R. Horton, Director, International Policy, Food & Drug Administration, to author (Feb. 24, 1999).

⁵⁶ *See, e.g.*, Medical Devices; Current Good Manufacturing Practices (CGMP) Final Rule; Quality System Regulation, Part VII. 61 Fed. Reg. 52,602 (Oct. 7, 1996) (codified at 21 C.F.R. parts 808, 812, 820); *Agreement on Mutual Recognition Between the United States of America and the European Community* (visited Jan. 30, 1999) <www.europa.eu.int> [hereinafter *US/EU MRA*].

⁵⁷ OFFICE OF POLICY, FOOD & DRUG ADMIN., A STATUS REPORT ON INTERNATIONAL HARMONIZATION OF REGULATORY REQUIREMENTS AND STANDARDS 1 (1998).

⁵⁸ 61 Fed. Reg. at 14,789; 63 Fed. Reg. at 58,746.

the option of engaging qualified third-parties in the 510(k) submissions of applicable devices.⁵⁹ The third-party reports directly to FDA on its findings and recommendations concerning the substantial equivalence of the device in question. FDA maintains the final authority in clearing the 510(k) application prior to product marketing. FDA's guidance document on third party review also contains a detailed set of rules to minimize conflicts of interest.⁶⁰ To date, the use of third-parties in the U.S. regulatory review process is relatively small. Thus, in the United States, FDA, as the government agent for U.S. "Internal Market," controls and administers all phases of premarket approval, quality system requirements, and postmarket vigilance.⁶¹

In contrast to the U.S. system, the EU system has, as its cornerstone, the utilization of NBs, which mostly are private entities. Together with the European Commission and the Member State authorities, the more than fifty NBs have divided the responsibilities of regulating medical devices in the EU. The Commission oversees the implementation of the three Medical Device Directives. The EU's major goal is to ensure the "ever-closer union" of the European people.⁶² Consistent with the regulatory goal of eliminating trade barriers, the administration of medical device directives is conducted through the Commission's Office of the Directorate General for Industry (DG III). Specifically, medical devices are handled by Unite D/2 of Directorate D, the Directorate for capital goods industries under DG III. Unite D/2 also is responsible for reviewing pressure vessels, metrology, and toys.⁶³ Among the duties of the Commission are oversight of compliance by the Member States with the directives in the interest of free trade, the harmonized standards provisions, the maintenance of a current list of NBs, and the administration of postmarket programs.

The fifteen Member States of the EU, through their competent authorities, ensure the harmonized provisions under the Directives are carried out.⁶⁴ They also are responsible for the approval and notification of NBs, maintenance of the device and manufacturer registry, and the enforcement of the vigilance procedures and particular health monitoring measures, including the removal of unsafe products.⁶⁵ Each Member State maintains its autonomy in managing its public health funding or sickness insurance scheme.⁶⁶

As discussed above, NBs play a substantial role in the premarket certification and the postmarket regulatory control of medical devices. With the exception of Class I medical devices and the majority of IVD medical devices,⁶⁷ NBs are required to provide certification of all medical devices. The certification process includes type-examination, conformity assessment and verification of quality systems, surveillance to ensure ongoing compliance, and approval of design dossiers for high-risk devices.⁶⁸

⁵⁹ 21 U.S.C. § 360.

⁶⁰ 63 Fed. Reg. at 58,746.

⁶¹ See generally CENTER FOR DEVICES & RADIOLOGICAL HEALTH, FOOD & DRUG ADMIN., AN INTRODUCTION TO MEDICAL DEVICE REGULATION 1 (HHS Publication 92-4222, 1992); CENTER FOR DEVICES & RADIOLOGICAL HEALTH, FOOD & DRUG ADMIN., REGULATION OF MEDICAL DEVICES: BACKGROUND INFORMATION FOR INTERNATIONAL OFFICIALS 1 (1999).

⁶² See generally Delegation of the European Commission to the United States, European Union, *The European Commission 1995-2000* (last modified Dec. 22, 1998) <www.europa.eu.int/abc-en.htm>.

⁶³ Directorate General III, The European Commission, *Who's Who in DG III?* (last modified Dec. 22, 1998) <www.europa.eu.int/comm/dg03/organ_en.htm>.

⁶⁴ Linda R. Horton, *Medical Device Regulation in the European Union*, 50 FOOD & DRUG L.J. 467 (1995) (stating that the competent authority of a Member State is usually its Health Ministry).

⁶⁵ Council Directive 98/79/EC, 1998 O.J. (L 331) 1.

⁶⁶ *Id.*

⁶⁷ *Id.* art. 9.

⁶⁸ *Id.* art. 15.6.

Furthermore, NBs, in conjunction with competent authorities, are the enforcers of the postmarket regulatory control.⁶⁹ The NBs may restrict or withdraw a certificate issued to a manufacturer not in compliance with the requirements of the Directives.⁷⁰

European NBs have more authority than U.S. third-parties. Currently, NB utilization is an integral component of the EU system, while the role of U.S. third-parties is limited to the premarket review of Class I and selected Class II devices, to the extent required by manufacturers, with FDA making the final decisions.

FDA's caution in approaching the use of third-parties is well-founded. Third-parties are asked to perform a public health function, at the same time that they have an economic interest in protecting their relationship with manufacturers who contracted with them. For years, FDA was the sole body safeguarding the public health of U.S. citizens in their consumption and use of food, drugs, and medical devices. FDA as a government body, does not possess a financial interest in any manufacturer whose product is under FDA's regulation, and its rules forbid employee conflicts of interest. There is no doubt that private third-parties may possess the necessary resources and expertise in conducting the review of selected products, but it is difficult to see how a single European NB or a U.S. third-party could amass the expertise found in FDA's Office of Device Evaluations. FDA's utilization of a third-party program enables its internal staff to focus on matters of higher public health impact. Third-parties, however, must compete with each other for business offered by manufacturers. This creates a complicated role for these private parties. On the one hand, they must serve their public health role by conducting scientific review of the contracted products and recommending to FDA their impartial opinion. On the other hand, they must maintain a relationship with the manufacturers who contracted with them for review so that they stay in the product review business. Due to the business relationship between manufacturers and third-parties, there is concern that some manufacturers will shop for the third-party that will be inclined to give their products a more favorable review.

The concerns about the impartiality of third-parties and forum shopping by the manufacturers are precisely why there are rules governing these issues. Qualified third-parties must have established and implemented policies to prevent any individual or organizational conflicts of interest. FDA suggests what interests would disqualify an entity from participation, including: 1) the ownership, operation, or control of the third-party by a manufacturer or distributor; 2) the ownership or other financial interest of the manufacturer or distributor by the third party; and 3) the provision of consultative services to or the participation in the preparation of the 510(k) for the manufacturer or distributor by the third-party.⁷¹ The conditions are applicable to the third-party as well as its personnel. A fee structure based on the recommendation of the third-party also is considered a potential conflict.⁷² Finally, FDA also retains the right to inspect the third-party's fee schedule and invoices for conducting the reviews.⁷³

In its pilot third-party program, FDA advised the industry and potential review bodies of three factors that indicate forum shopping by a manufacturer. Forum shopping is suspected: when a manufacturer obtains reviews from more than one third-party; when a manufacturer contacts the same third-party for review more than ten times in a year; or when the sum of fees paid to the third-party exceeds \$50,000 in one year.⁷⁴ In the FDAMA Accredited Person Program, however, FDA did not include the forum-shopping provisions; rather, it implemented the conflict of interest rules.⁷⁵

⁶⁹ *Id.*

⁷⁰ *Id.*

⁷¹ 61 Fed. Reg. at 14,789, 14,794.

⁷² *Id.*

⁷³ *Id.* at 14,795.

⁷⁴ *Id.* at 14,794.

⁷⁵ 21 U.S.C. § 360(m).

The EU conflict of interest rules in the selection of NBs are less comprehensive than the U.S. rules. To qualify as an NB, its Director, and its assessment and verification staff, “shall not be the designer, manufacturer, supplier, installer or user of the devices which they inspect. . . .”⁷⁶ They must not engage directly in “the design, manufacture, marketing or maintenance of the devices.”⁷⁷ Competent authorities in the Member State governments also must guarantee the impartiality of the inspection staff. The remuneration must not be dependent on the result or number of inspections.⁷⁸ Other European conflict of interest standards that NBs and their personnel must comply with are general in nature.⁷⁹

Likewise, the U.S. guidance document prohibits the involvement of the third-parties or any of its personnel in design, manufacturing, and distribution of devices under their review.⁸⁰ The EU rule is more liberal in that it prohibits only the Director and the assessment and verification staff from such involvement. Consultative staffs are not prohibited from advising manufacturers who engaged the NB for assessment and verification. Although the UK’s competent authority revealed that one of the conditions for the approval of an NB is the separation of its consultative function from its assessment and verification functions, an EU official said that the issue still needs to be addressed by the Commission.⁸¹

The generality of EU conflict of interest rules concerns U.S. officials in the implementation of third-party programs under the Mutual Recognition Agreement reached between the United States and the EU.⁸² The proposed guidance on the Mutual Recognition Agreement applied the U.S. conflict of interest rules to European NBs.⁸³

VI. STANDARDS FOR EVALUATING MEDICAL DEVICES FOR COMMERCIAL DISTRIBUTION

Another important way in which U.S. and EU medical device regulations differ is the standard used to determine whether a device should be approved for commercial distribution.⁸⁴ With the exception of the premarket notification process, which only examines the substantial equivalence of a medical device to previously marketed devices, the U.S. system requires the verification of the reasonable safety and effectiveness of a device before commercial distribution of the device may begin. The EU system assesses the safety and the performance of the device according to the manufacturer’s intended purpose of use.

The analysis of medical device safety essentially is identical under the two systems. Under the U.S. system, the safety of a device must be assured reasonably. FDA weighs the benefit provided by a device against the risk of harm associated with its use.⁸⁵ The EU system also accepts reasonable risks associated with the use of a medical

⁷⁶ Council Directive 98/79/EC, Annex IX, 1998 O.J. (L 331).

⁷⁷ *Id.*

⁷⁸ *Id.*

⁷⁹ GAO/HEHS-96-65, *supra* note 41, at 15.

⁸⁰ 61 Fed. Reg. at 14,794.

⁸¹ GAO/HEHS-96-65, *supra* note 41, at 15.

⁸² *US/EU MRA*, *supra* note 56; LINDA R. HORTON, MICHELLE HOYTE & NAOMI KAWIN, FUNDAMENTALS OF LAW AND REGULATION—INTERNATIONAL HARMONIZATION OF MEDICAL DEVICE REGULATION 555, 601 (FDLI 1997) [hereinafter HORTON, HOYTE & KAWIN].

⁸³ CENTER FOR DEVICES & RADIOLOGICAL HEALTH, U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES, GUIDANCE FOR STAFF, INDUSTRY, AND THIRD PARTIES: THIRD PARTY PROGRAMS UNDER THE SECTORAL ANNEX ON MEDICAL DEVICES TO THE AGREEMENT ON MUTUAL RECOGNITION BETWEEN THE UNITED STATES OF AMERICA & THE EUROPEAN COMMUNITY (MRA)—GUIDANCE, 1 (1999).

⁸⁴ *See generally* GAO/HEHS-96-65, *supra* note 41, at 7; HASTINGS, *supra* note 54, at 8.

⁸⁵ *See, e.g.*, CLINTON, *supra* note 38, at 27.

device. The risk analysis allows balancing risks against potential benefits in the context of maintaining “a high level of protection of health and safety.”⁸⁶

Under the U.S. system, a marketed device must be assured of its effectiveness. In examining a device for PMA, the device does not need to be more effective than existing devices,⁸⁷ but its effectiveness must be demonstrated through at least one well-controlled clinical study.⁸⁸ The comparison of device effectiveness is attempted only when a high-risk device is in question, for example, one that is designed to treat a life-threatening or severely debilitating disease or condition, or a contagious illness with serious public health consequences.⁸⁹ The examination of a device’s effectiveness is taken in the context of the device’s intended purpose.⁹⁰

Unlike the U.S. system, the EU system does not require the demonstration of a device’s clinical effectiveness as a precondition to marketing. A showing that the device performs to the manufacturer’s intended purpose will suffice.⁹¹ Additionally, a device’s characteristics and performances are evaluated to determine whether deterioration through normal usage will compromise the clinical condition or the safety of the patients.⁹² The verification of device “performance” is narrower in scope and inclusive in the U.S. standard of device “effectiveness.” An example used by the GAO illustrates this point — the marketing of an excimer laser in the United States requires the demonstration of the laser’s abilities to both excise cornea tissue, and to correct visual anomalies.⁹³ Under the EU system, the ability of the laser to correct visual anomalies needs verification only if the manufacturer claims such a function. Otherwise, all the manufacturer needs to show to obtain approval for marketing the laser is its capability to remove tissue. The laser’s clinical indication then falls under the discretion of the qualified health professional.⁹⁴

VII. SCOPE AND EMPHASIS OF REGULATORY CONTROL

A. *Premarket Review and Quality System Compliance*

Whether it is a Class I device presenting minimal risks, or a Class III device used in the support of human life, the U.S. system reviews the application of each device individually. On the other hand, the EU system allows the commercial distribution of a line of medical devices produced by the same manufacturer if the manufacturer is in compliance with the full quality assurance system. Devices with the highest risk, however, necessitate the submission and approval of a design dossier as an additional requirement.⁹⁵

⁸⁶ Council Directive 93/42/EEC, Annex I.1, 1993 O.J. (L 169); Council Directive 98/79/EC, 1998 O.J. (Annex I.A.1) (L 331); *see also* Council Directive 90/385/EEC, Annex 1.1.5, 1990 O.J. (L 189); *see generally* Harvard Law Review Association, *supra* note 50, at 2025 (Cultural differences may contribute to a difference in regulatory schemes. The comment suggests that cultural attitude toward risk accounts for societal values placed on regulatory mechanisms. An example illustrates that Americans view risks differently from other cultures. A previous study revealed that British scientists and government policy makers recognized risk only when there existed “persuasive evidence of actual harm.” In the U.S., risk must be acknowledged even if there was no direct proof of harm to the public. Equally important in shaping a regulatory scheme is the cultural attitude toward morality. The comment uses the European abortion drug RU-486 as an example to illustrate the differences in attitude that European and U.S. regulatory agencies had toward the drug’s approval.).

⁸⁷ CLINTON, *supra* note 38, at 27.

⁸⁸ 21 U.S.C. § 360(c).

⁸⁹ GAO/HEHS-96-65, *supra* note 41, at 8.

⁹⁰ CLINTON, *supra* note 38, at 27.

⁹¹ Council Directive 98/79/EC, Annex I.A.3-5, 1998 O.J. (L 331).

⁹² *Id.*

⁹³ GAO/HEHS-96-65, *supra* note 41, at 8.

⁹⁴ *Id.*

⁹⁵ *See generally* GAO/HEHS-96-65, *supra* note 41, at 13.

All device applications submitted to FDA are individual. A manufacturer cannot copy a competitor's device and expect FDA to use that competitor's proprietary data to approve the copy. The scope of FDA review depends on the classification of the device. Most Class I devices are subject to the least vigorous review, which is administrative in nature. "Reserve" Class I devices and nonexempt Class II devices are subject to 510(k) premarket notifications.⁹⁶ The review staff triages 510(k) submissions into tiers according to the risk level of the device.⁹⁷ Tier 1 510(k) devices are the simplest. The verification of substantial equivalence for these devices consists of administrative review with emphasis on the labeling requirement. Tier 2 devices are moderately complex. In addition to the administrative review, these devices are reviewed scientifically, typically by one lead reviewer.⁹⁸ Tier 3 devices are the most complex among the 510(k) devices. The scientific review of Tier 3 devices frequently involves review of clinical data and is conducted comprehensively by a team of experts.⁹⁹ The scientific panel involvement also is necessary for PMA applications of Class III devices and some PMA supplemental applications. Taking into account the panel's recommendation on whether the device is safe and effective, FDA approves or denies an application. The interaction between the applicant, generally a manufacturer, and the scientific panel is expanded further under the new model medical device development process (MDDP) for investigational devices for which PMAs are submitted. MDDP encourages early collaboration between the manufacturer and the scientific panel during the development stage of the device and the preparatory stage of application submission.¹⁰⁰ Prior to the submission of the application, the parties meet to discuss and agree on the specific goals and requirements necessary for the product approval.¹⁰¹

In addition to requiring review of all device applications on an individual basis, the U.S. system also requires device manufacturers to comply with general regulatory controls under the current GMP regulations and reporting requirements.¹⁰² Since 1996, FDA's GMP regulations have encompassed many design and manufacturing quality assurance systems—features that also are found in the European Committee for Standardization.¹⁰³

In the United States, compliance with GMP requirements is essential for the manufacturer to continue production and marketing of its products. Meeting the GMP requirement does not release the manufacturer from fulfilling the obligation of submitting applications for individual products. In contrast, the EU system relies significantly on the quality assurance system for both the approval of medical devices for

⁹⁶ 63 Fed. Reg. at 63,222. FDAMA created an exemption from premarket notification for Class I devices except those "reserve devices" intended for "a use which is of substantial importance in preventing impairment of human health," or that present "a potential unreasonable risk of illness or injury." A proposed rule on the exemption of Class I devices from 510(k) premarket notification was announced November 1998.

⁹⁷ CENTER FOR DEVICES & RADIOLOGICAL HEALTH, FOOD & DRUG ADMIN., *Medical Device Regulatory Program Re-engineering* (last modified Mar. 19, 1997) <www.fda.gov/cdrh/rengmdrp.html>; *Reengineering Accomplishments*, *supra* note 25.

⁹⁸ *Id.*

⁹⁹ *Id.*

¹⁰⁰ CENTER FOR DEVICES & RADIOLOGICAL HEALTH, FOOD & DRUG ADMIN., *New Model Medical Device Development Process — Guidance for Industry* (last modified July 21, 1998) <www.fda.gov/cdrh/pmat/newmod.html>.

¹⁰¹ *Id.*

¹⁰² 61 Fed. Reg. at 52,602.

¹⁰³ EN 46000 applies to all medical devices in the EU. The EN 46000 standard was adopted from the International Standards Organization ISO-9000 series of Quality System standards that have worldwide industrial acceptance. Horton, *supra* note 64, at 472.

marketing, and the monitoring of the manufacturer's operations. The EU system, however, does not separate the requirement and procedures regarding the marketing of a product from those pertaining to the manufacturer facility and operations as distinctly as the U.S. system does. Compliance with a subset of, or the entire quality assurance system, is part of the product certification requirements.

The EU Declaration of Conformity procedures necessary for most Class I medical devices and IVD medical devices contain some basic quality assurance requirements.¹⁰⁴ Manufacturers are obligated to document their compliance and make these documents available for audits by NBs. NBs may certify both Class IIa and IIb medical devices following the conformity assessment and verification of the manufacturer's full quality assurance system if the device manufacturers select this route for certification. Examination of an individual product is not necessary under this route because of the presumption that the quality of all products resulting from a certified quality assurance system is guaranteed.¹⁰⁵

B. *Individual Product Examination*

Individual product examination is necessary only if Class IIa and IIb manufacturers select the Type Examination Review. Under the Type Examination Review, the NB examines the production phase of the manufacturer's quality assurance system and reviews a prototype of the device.¹⁰⁶ Review of the device type includes the testing, or the request for device testing, to verify its safety and performance according to the intended purposes.

Individual device examination is mandatory for devices with high risks. Devices such as Class III medical devices, active implantable devices, and high risk IVD medical devices are subject to all the procedures applied to Class II devices. In addition, prior to the marketing of such a device, the manufacturer must submit an application for the design of the product to the NB.¹⁰⁷ In examining the design, manufacture, and performance of the individual device, the NB may request further testing or data from the manufacturer to assess conformity with the requirements.¹⁰⁸

In summary, under the U.S. system, all manufacturers are required to follow the same set of Quality System regulations, while in the EU, the quality assurance system is applied to the extent necessary to regulate a medical device with a particular risk potential level. For the purpose of ascertaining the eligibility for marketing of a medical device, the U.S. system mandates the review of each individual application, while the EU system allows the manufacturer to choose between a combination of a type-examination with a limited quality assurance system or the full quality assurance system. Mandatory individual device review under the EU system is necessary only for the devices with the highest risk potential.

C. *Postmarket Regulatory Controls*

Both the U.S. and EU systems impose stringent postmarket regulatory programs—they entail mandatory reporting requirements, surveillance of selected high-risk products, and administrative enforcement actions. Although the systems generally are simi-

¹⁰⁴ Council Directive 98/79/EC, art. 9, 1998 O.J. (L 331).

¹⁰⁵ *Id.*

¹⁰⁶ *Id.*

¹⁰⁷ *Id.* Annex IV.4.

¹⁰⁸ *Id.*

lar, there are subtle differences. To ensure the safety of marketed products, both systems require manufacturers to report adverse events related to their products.¹⁰⁹ A manufacturer or importer in the United States is required to report to FDA information that reasonably suggests that a device “may have caused or contributed to a death or serious injury, or has malfunctioned and that such device . . . would be likely to cause or contribute to a death or serious injury if the malfunction were to recur. . . .”¹¹⁰ A manufacturer in the EU also is required to report adverse events to the competent authority, however, reportable events are limited to those related to a death.¹¹¹ The manufacturer is not obligated to report events related to serious injuries.¹¹² A Member State, on the other hand, is required to establish a centralized mechanism to collect and evaluate information related to the death or serious injury of a patient, user, or other persons.¹¹³ This collection and evaluation requirement also extends to information pertaining to the systematic recalls of devices causing and contributing to death or serious injury.¹¹⁴

User facilities in the United States are required to report adverse events to the manufacturer or FDA. The reporting criteria are identical to those for manufacturers and importers.¹¹⁵ Although U.S. device distributors maintain records of adverse events, mandatory distributor reporting no longer is required.¹¹⁶ Reporting by healthcare professionals is entirely voluntary.¹¹⁷ The three EU Directives on devices do not specify any particular reporting requirements for distributors, user facilities, or healthcare professionals. The only mandate is that Member States with mandatory reporting requirements ensure that the reported information is transmitted to the concerned manufacturers.¹¹⁸

The administrative mechanism for reporting adverse experiences is a national database. U.S. officials enter reported information into a system database for recording and analysis. Investigation is conducted on an individual basis. The seriousness of any administrative action that will be taken depends on the cause of the injury, its seriousness and frequency, and the manufacturer’s responses.¹¹⁹ Corrective actions can be warning letters, phone calls, inspections, product recalls, or seizures.¹²⁰ FDA’s decision to ban a device from circulation, although rarely invoked, is subject to judicial review.¹²¹

Similarly, EU Member States may restrict or withdraw the marketing of a device that could compromise the health or safety of a patient, user, or other persons, or that

¹⁰⁹ See generally Study Group 2, Global Harmonization Task Force, *Comparison of the Device Adverse Report Systems in USA, Europe, Canada, Australia, and Japan* (last modified June 29, 1999) <www.ghtf.org/sg2/inventoriesg2/sg2-n6r2.pdf> [hereinafter *Device Adverse Report Systems*].

¹¹⁰ 21 U.S.C. § 360(i).

¹¹¹ Council Directive 98/79/EC, Annex III.5, IV.3.1, VI.3VII.1, 1998 O.J. (L 331).

¹¹² *Id.*

¹¹³ *Id.* art. 10.1.

¹¹⁴ *Id.*

¹¹⁵ 21 U.S.C. § 360(i).

¹¹⁶ *Id.*

¹¹⁷ 58 Fed. Reg. 11,768 (Feb. 26, 1993); see also GENERAL ACCOUNTING OFFICE, REPORT TO CONGRESSIONAL COMMITTEES, GAO/HEHS-97-21, MEDICAL DEVICE REPORTING—IMPROVEMENTS NEEDED IN FDA’S SYSTEM FOR MONITORING PROBLEMS WITH APPROVED DEVICES 9 (1997).

¹¹⁸ Council Directive 93/42/EEC, art. 10.2, 1993 O.J. (L 169); Council Directive 98/79/EC, art. 11.2, 1998 O.J. (L 331).

¹¹⁹ GENERAL ACCOUNTING OFFICE, STATEMENT OF CHARLES A. BOWSER, COMPTROLLER GENERAL TO THE CHAIRMAN, SUBCOMM. ON HEALTH & THE ENVIRONMENT, HOUSE COMM. ON ENERGY & COMMERCE, GAO/T-PEMD-90-2, MEDICAL DEVICES — THE PUBLIC HEALTH AT RISK 42 (1989); *Device Adverse Report Systems*, *supra* note 109.

¹²⁰ *Id.*

¹²¹ 21 U.S.C. § 360(g).

involves a particular national public health concern. The Member State may acquire such information through mandatory reports or other resources. Each Member State must inform the Commission of this action, along with a justification. The Commission will review the matter with the parties involved and render its decision on withholding or reversing the action.¹²² NBs, although generally private authorities, also play an enforcement role. An NB may order the suspension, withdrawal, or otherwise restrict a certificate issued to a manufacturer if the manufacturer fails to conform with requirements of the applicable Member State law implementing the Directives.¹²³

Both systems have postmarket tracking surveillance programs for selected devices. The U.S. program on postmarket surveillance designates specific Class II and Class III devices for an observation period.¹²⁴ The device covered by such a requirement usually is a permanent implant of significant risk, a life-supporting or sustaining device, or a device with a potential serious risk to human health.¹²⁵ Furthermore, a device manufacturer in this category may be required to adopt a method of device tracking.¹²⁶ Under the EU system, the competent authority of the Member State that initiated the withdrawal or restriction on new product's marketing may continue to monitor a product's compliance.¹²⁷ Within two years after its initial action and on justified grounds, the Member State may request the manufacturer to submit postmarket experience reports about the product.¹²⁸

In summary, both the U.S. and EU systems have similar postmarket regulatory controls on medical devices. Under the U.S. system, FDA is the only medical device authority.¹²⁹ Its mandatory reporting requirements apply to manufacturers, importers, and user facilities. Reportable events are those related to death or serious injury. Reporting by health care professionals is performed on a voluntary basis. In comparison, under the EU system, both the competent authority and the NB can invoke their postmarket regulatory authority. Manufacturers are mandated to report adverse events related to deaths or any systematic recalls. Reporting by healthcare facilities and professionals is regulated under the national laws of Member States.

VIII. ASSESSMENT OF THE REGULATORY SYSTEMS IN MEETING THEIR GOALS

The regulatory system's success is measured by whether the system, when implemented, met its goals. Because the U.S. systems missions differ from those of the EU system, a direct comparison of the success is difficult. Nonetheless, an assessment of their performance in meeting the shared public health mission is possible and warranted. It also is relevant to examine the EU system in satisfying its "Internal Market" mission.

¹²² Council Directive 90/385/EEC, art. 7, 1990 O.J. (L 189); Council Directive 93/42/EEC, art. 8, 14, 1993 O.J. (L 169) *amended by* Council Directive 98/79/EC, art. 21.2(d), 1998 O.J. (L 331); Council Directive 98/79/EC, art. 8, 13, 1998 O.J. (L 331).

¹²³ Council Directive 98/79/EC, art. 15.6, 1998 O.J. (L 331), Council Directive 93/42/EEC, art. 14, 1993 O.J. (L 169), *amended by* Council Directive 98/79/EC, art. 21.2(d), 1998 O.J. (L 331).

¹²⁴ 21 U.S.C. § 360(l).

¹²⁵ *Id.* § 360(k).

¹²⁶ *Id.* § 360(i).

¹²⁷ Council Directive 98/79/EC, art. 11, 1998 O.J. (L 331).

¹²⁸ *Id.*

¹²⁹ The United States may adopt laws that conform to the medical device provisions of the FDCA; *see, e.g.*, FDCA § 521, 21 U.S.C. § 360(k). FDA also may commission state officials to enforce federal requirements under FDCA; *see, e.g.*, FDCA § 703, 21 U.S.C. § 373; Delegations from the Secretary, the Assistant Secretary for Health, and Public Health Service Officials, 21 C.F.R. pt. 5.10.

A. *Public Health Protection*

Public health protection is a common feature of both the U.S. and EU systems. The performance of a health regulatory system in achieving this public health goal can be evaluated by reviewing data generated from their mandatory reporting requirements and assessing the frequency and severity of serious adverse events based on population size. Unfortunately, this logical approach has been largely unsuccessful. For a meaningful comparison of the adverse event reporting data, there must be common criteria on the scope of reportable events, the relevance of the report, the parties mandated to report, and the time limit on reporting. Although the U.S. and EU adverse event reporting systems share some similarities, the data obtainable are not comparable due to the absence of common criteria. Thus, it is difficult to draw any conclusion regarding the superiority of one system over the other in meeting its public health mission.¹³⁰

FDA's attempt to seek an answer to the public health performance question by consulting an international database also failed.¹³¹ Emergency Care Research Institute (ECRI), a nonprofit organization in Pennsylvania that studies and reports in health care technology, gathers data on medical device problems, alerts, and recalls internationally. Subscribers to the database can access the information online or from a CD-ROM. The organization claims to have the world's most comprehensive database of medical device adverse reports. FDA's attempt to use the ECRI database to determine whether public health objectives were met was unsuccessful owing to the different purpose that ECRI serves. ECRI's data primarily dealt with the reliability and safety of medical devices, and was published for training, problem-solving, and purchasing purposes. ECRI was unable to offer a comparison of the data for public health purposes.¹³²

Comparative data may be available in the near future when the U.S. adverse event reporting and the EU vigilance reporting procedures are harmonized. The ongoing effort in international harmonization has resulted in the release of five draft documents on adverse event reporting available for comment.¹³³ It is envisioned that the harmonized system of reporting and surveillance requirements will provide data for more accurate evaluations. The dissemination of such information will improve the protection of public health and safety by alerting responsible parties to initiate preventive and corrective measures.¹³⁴

B. *Internal Market*

Achieving the "Internal Market" is the central mission of the European Commission.¹³⁵ Member States must incorporate the essential requirements of the EU law into their national law. No additional requirement that restricts the movement of people, service, capital, or resource is allowed in the national law. For each of the three Directives related to medical devices, Member States are given a transition period to apply their own law.¹³⁶

¹³⁰ HASTINGS, *supra* note 54, at 23.

¹³¹ *Id.* at 17.

¹³² *Id.*

¹³³ 63 Fed. Reg. at 46,227.

¹³⁴ Global Harmonization Task Force — Study Group 2: Medical Device Vigilance/Post-Market Surveillance, Food and Drug Administration, *Fifth and Final Draft of the Charge for SG2: 31 May 1996* (last modified May, 1999) <www.ghtf.org/sg2/inventorysg2/sg2-n16r5.pdf> [hereinafter *SG2*].

¹³⁵ Council Directive 98/79/EC, 1998 O.J. (L 331) 1.

¹³⁶ *Id.* art 22.

The Active Implantable Medical Devices Directive mandated all Member States to incorporate its requirements by January 1, 1993, and allowed a transitional period through December 1, 1994, for Member States to continue to apply their national law.¹³⁷ No Member State was able to meet the January 1, 1993 deadline.¹³⁸ The UK fell short of fully implementing the legislation, whereas Germany applied the Directive in its entirety to avoid the tedious task of transposing the Directive into its national law.¹³⁹ Most Member States were not able to designate their NBs on time.¹⁴⁰ The most notable example of the failure to transpose the Directive was Belgium. The Commission initiated action against Belgium because of its failure to implement the Directive three years after the deadline passed.¹⁴¹ The European Court of Justice ruled in the Commission's favor and ordered Belgium to pay the cost.¹⁴² Belgium argued that the draft Royal Decree to transpose the Directive had been viewed favorably by the *Conseil Supérieur d'Hygiène* and the tax inspector, but still required approval by the Belgian Council of State.¹⁴³ This defense was unsuccessful.

The adoption of law and promulgation of regulation according to the Directive on Medical Devices was to be completed by January 1, 1994.¹⁴⁴ Again, Belgium was unsuccessful in transposing the Medical Devices Directive into its national law before the time limit. In addition, Belgium failed to notify the Commission of its measures to transpose the Directive into its national law. The Commission brought an action against Belgium on September 9, 1996, and again Belgium attempted to defend based on the explanation that the draft Royal Decree was being finalized by a working party.¹⁴⁵ In March 1997, the Court of Justice found that Belgium had failed to fulfill its obligation to transpose the Directive.¹⁴⁶

Aside from the failure of a Member State to transpose the Directive into law, there also exists uncertainty as to how well a Member State has implemented a transposition. A written question was posted to the Commission on Italy's transposition of the Medical Devices Directive. The February 1998 letter stated that because Italy had not incorporated the Directive into its legislation, Italian dental technicians were put in serious hardship.¹⁴⁷ Without the directive transposed into law, no Italian device producer could apply the *Communauté Européenne* (CE) mark to its products to show conformity with EU requirements.¹⁴⁸ A Commission official clarified that Italy had transposed the Directive on February 24, 1997, into its national law, two and one-half years after the deadline.¹⁴⁹ The official also responded that the Commission would examine the conformity of the Italian transposition.¹⁵⁰

The most recently adopted Directive on IVD Medical Devices requires Member States to apply all provisions of the Directive by June 7, 2000.¹⁵¹ With the experience

¹³⁷ Council Directive 90/385/EEC, art. 16, 1990 O.J. (L 189).

¹³⁸ Horton, *supra* note 64, at 474.

¹³⁹ *Id.*

¹⁴⁰ *Id.*

¹⁴¹ Case 239/95, Commission v. Kingdom of Belgium, 1996 E.C.R. 1459.

¹⁴² *Id.*

¹⁴³ *Id.*

¹⁴⁴ Council Directive 93/42/EEC, art 22, 1993 O.J. (L 169).

¹⁴⁵ Case 294/96, Commission v. Kingdom of Belgium, 1997 E.C.R. 1781.

¹⁴⁶ *Id.*

¹⁴⁷ Written Question 391/88 by Leoluca Orlando to the Commission. Failure of the Italian Authorities to Incorporate Directive 93/42/EEC, 1998 O.J. (C304) 9.

¹⁴⁸ *Id.*

¹⁴⁹ *Id.*

¹⁵⁰ *Id.*

¹⁵¹ Council Directive 98/79/EC, art 22, 1998 O.J. (L 331) 15.

gained in transposing two Directives related to medical devices, most Member States probably will find the task less formidable.¹⁵²

When an individual Member State can not transpose the provisions of the Directives into its national law, it is unlikely that any medical device in that Member State can sell or distribute devices with the CE mark in other Member States. This raises an interesting question about the enforceability of the EU plan and the fact that it really rests on a cooperative attitude on the Member States' part. Arguably, the EU has not met its "Internal Market" goal yet. It is hoped that the failure or delay of some countries to transpose or implement the EU Medical Device Directives is only a temporary aberration in the movement of the EU toward unity.

IX. EFFICIENCY OF REVIEW

The recent administrative and legislative efforts to restructure the ways in which FDA regulates medical devices emphasize regulatory efficiency. Congress stresses regulatory efficiency enough to include this value in FDA's mission statement. A principal theme of FDA's mission is that it shall "promote the public health by promptly and efficiently reviewing clinical research and taking appropriate action on the marketing of regulated products in a timely manner."¹⁵³ Although the EU does not have efficiency of review as part of its mission, critics who favor the EU system over the U.S. system hail its efficiency.¹⁵⁴

The GAO's attempt to compare the efficiency of the two systems was not conclusive.¹⁵⁵ In its 1996 report, the GAO examined whether FDA should adopt features of the EU system of medical device regulation. When the report was prepared in 1995, the EU medical device regulation still was in its early stages of implementation while FDA was undergoing significant internal re-engineering to improve agency efficiency. Consequently, the GAO determined that it was too early to assess the merit of the EU system for the purpose of incorporating portions of its regulatory method into the U.S. system.¹⁵⁶

Some data released after the publication of the GAO report may reflect how efficient the U.S. system is. The Center for Devices and Radiological Health (CDRH) published data on review times in its 1999 annual report.¹⁵⁷ For the third year, CDRH closed the year without any backlogs of 510(k), PMA, or PMA supplement applications. The average total time for 510(k) applications was 102 days, down from 130 days in 1997.¹⁵⁸ The average review time for the 510(k) applications decreased from ninety-seven days in 1997 to eighty days in 1999, and the average PMA time was reduced by twenty-five percent — from 16.6 months in 1997 to 12.5 months in 1999.¹⁵⁹

¹⁵² Horton, *supra* note 55 (Possible exceptions are France and Germany that have, for many years, maintained approval systems for IUDs akin to pharmaceutical approval systems. France, in particular, had raised concerns about the better use of NBs for IVDs during consideration of the EU Directive).

¹⁵³ 21 U.S.C. § 393.

¹⁵⁴ *Revitalizing Hearings*, *supra* note 39 at 209 (statement of Maurice F. Freeman, Medical Technology Consultants Europe Ltd.).

¹⁵⁵ GAO/HEHS-96-65, *supra* note 41, at 18.

¹⁵⁶ *Id.*

¹⁵⁷ CENTER FOR DEVICES AND RADIOLOGICAL HEALTH, FOOD & DRUG ADMIN., FDA CDRH ANNUAL REPORT FISCAL YEAR 1999 [hereinafter REPORT 1999] <www.fda.gov/cdrh/annual/fy99rpt.pdf>.

¹⁵⁸ *Id.* at 1; BURLINGTON 1998, *supra* note 38, at 1.

¹⁵⁹ *Id.*

The EU system's efficiency was the focus of a report released by a EU medical device consultant in 1996.¹⁶⁰ The study sample surveyed seven of the most prominent NBs and several manufacturers concerning their experience with NB certification of Quality System and type-examinations. There was no approval delay for most Class I medical devices because these devices require only the manufacturer's Declaration of Conformity. The limited Quality Assurance System requirements applicable to sterile or metrological Class I devices required an estimated time of less than two months for an NB's assessment of conformity.¹⁶¹ The time necessary for an NB to assess and verify a manufacturer's conformity to the full Quality Assurance System was up from two months with a typical span of 120 days.¹⁶² Typically, an additional 120 days would be spent on type-examination if the manufacturer had selected this route. Design dossiers necessary for Class III medical devices typically added another eighty days to the process.¹⁶³ A casual comparison of the data from these reports suggests that the EU medical device approval time is shorter. Because different parties performed the gathering and analysis of the data, such a conclusion may be premature.

It is useful to examine the review time in the context of the review criteria. The U.S. criteria for approval to market a medical device are safety and effectiveness while EU adopts the narrower criteria of safety and intended performance.¹⁶⁴ This difference in criteria does not allow a fair comparison of regulatory efficiency. For example, a comparison may be misleading when it involves a country that does not have a mechanism to test and approve medical devices. In that situation, the country relies on the importer or manufacturer's submission that FDA has approved the device. FDA's criteria for device approval is used as a surrogate, therefore, it may appear on the surface that this country is very efficient in approval of the marketing of medical devices.¹⁶⁵

X. INTERNATIONAL EFFORT IN HARMONIZATION OF MEDICAL DEVICE REGULATIONS

There are inherent differences and similarities in the U.S. and EU systems of medical device regulation. The argument as to which is the better system is academic in light of the different missions that each system is designed to accomplish. In today's economic environment where businesses seek the most cost-effective way to operate, dissimilar and duplicative regulatory controls in different countries are obstacles to the flow of merchandise and capital. Scientific and medical technologies have been moving at a rapid pace in the last few decades. The efficient transfer of these technologies into consumer products can be realized only by balancing regulatory measures that protect the public with measures that enhance the technological transfer process. Over-regulation, in addition to serving little public purpose, strains scarce governmental resources.

The problem of satisfying dissimilar and duplicative medical device requirements among different nations may be solved by the application of uniform regulations globally. Complete harmonization is a formidable task that is not practical, considering

¹⁶⁰Gordon R. Higson, *Medical Device Approval Times in Europe*, THE COMPLETE EUROPEAN TRADE DIGEST 2 (Fall 1996).

¹⁶¹*Id.* at 4. Metrological devices measure functions.

¹⁶²*Id.*

¹⁶³*Id.*; Horton, *supra* note 55 (commenting that there are reports that NBs are becoming more stringent in their reviews, as more parts of the EU regulation programs are put in place, more device standards are issued, and auditors acquire experience).

¹⁶⁴See generally, GAO/HEHS—96-65, *supra* note 41, at 7; HASTINGS, *supra* note 54, at 8.

¹⁶⁵See HORTON, HOYTE & KAWIN, *supra* note 82, at 599.

the different cultural, social, and economic backgrounds that exist in the world. At this point, not all the laws in the fifteen nations within the EU have transposed the requirements of the Medical Devices Directives, a task dwarfed by unifying medical device regulations internationally. Alternatively, nations can acknowledge each other's difference in the regulatory process, and agree on the common grounds essential for each nation to carry out its trade and public health missions. A heightened level of cooperation can be achieved by the mutual recognition and acceptance of product evaluation reports. Such ideals are the goals of the EU and nations such as the United States, Canada, Australia, and Japan.¹⁶⁶

A. *Mutual Recognition Agreement*

The Mutual Recognition Agreement (MRA) is regarded as an advanced form of agreement in harmonizing two or more nations' regulations. Each nation recognizes the integrity of the others' regulatory system in ensuring the products' quality to the extent that the nation can forego some of its regulatory control on a product certified by its partner. This implies that the parties of an MRA depend on each other's conformity assessment system or the exchange of results gathered by the conformity assessment bodies.¹⁶⁷

The United States' efforts in reaching MRAs with other nations are spearheaded by the U.S. Trade Representative. FDA also has been involved in such international activities on pharmaceutical products and medical devices for many years.¹⁶⁸ The Safe Medical Device Act of 1990 called for the establishment of the Office of International Relations to promote, inter alia, the mutual recognition of GMP regulations with foreign countries to facilitate international commerce in the sale and distribution of devices.¹⁶⁹ FDAMA specifically authorized FDA to reach MRAs with other nations and to promote activities toward global harmonization of medical device regulations.¹⁷⁰

FDA's effort in harmonizing the GMP requirements began with a series of notice and comment rulemaking proceedings conducted by the Device Good Manufacturing Practice Advisory Committee.¹⁷¹ This culminated in the publication of the revised GMP final rule in October 1996.¹⁷² The revised rule changed its title from GMP regulation to "Quality System" regulation. With FDA playing a key role in the global harmonization effort, the revised regulations became harmonized better with various international quality assurance standards to provide a full quality system analysis from the design stage to servicing controls.¹⁷³

On a broader scale, the United States and the EU concluded an agreement on mutual recognition in June 1997.¹⁷⁴ The EU also agreed on mutual recognition with Canada in June 1997,¹⁷⁵ and with Australia and New Zealand in October 1998.¹⁷⁶ The

¹⁶⁶ See, e.g., Global Harmonization Task Force, General Information (visited Feb. 10, 2000) <www.ghmf.org>. EU and these nations are members of the Global Harmonization Task Force, an organization instrumental in promoting internal harmonization of regulatory controls.

¹⁶⁷ HORTON, HOYTE & KAWIN, *supra* note 82, at 582.

¹⁶⁸ *Id.*

¹⁶⁹ Pub.L. No. 101-629, § 15, 104 Stat. at 4525 (codified as amended at 21 U.S.C. § 360).

¹⁷⁰ Pub.L. No. 105-115, § 410, 111 Stat. at 2372 (codified as amended at 21 U.S.C. § 360 j(f)(1)(B)).

¹⁷¹ 56 Fed. Reg. 15,626 (Apr. 17, 1991); 55 Fed. Reg. 24,544 (June 15, 1990); 55 Fed. Reg. 49,644 (Nov. 30, 1990); 58 Fed. Reg. 61,952 (Nov. 23, 1993); 60 Fed. Reg. 37,856 (July 24, 1995); 60 Fed. Reg. 37,856 (Aug. 23, 1995); 60 Fed. Reg. 44,036 (Aug. 24, 1995).

¹⁷² 61 Fed. Reg. at 52,602 (codified at 21 C.F.R. pts. 808, 812, 820).

¹⁷³ *Id.* at 52,605.

¹⁷⁴ *US/EU MRA*, *supra* note 56.

¹⁷⁵ *Id.*

¹⁷⁶ Directorate General I, The European Commission, *Conclusion of Agreements Between the European Community and Australia, and the European Community and New Zealand on Mutual Recognition in Relation to Conformity Assessment 1* (1998) (visited Jan. 1, 1999) <www.europa.eu.int/comm/dg01/0510mra.htm>.

U.S./EU MRA contains general provisions with applicability to all products under the agreements. The Sectoral Annex on Medical Devices covers the exchange or endorsement of reports from conformity assessment bodies (CABs) of the United States and the EU in a few areas. The coverage includes the surveillance/post-market and initial/pre-approval inspection reports and the premarket 510(k) product evaluation reports under the U.S. system, and the quality system evaluation report, EU type-examination, and verification reports under the EU system.¹⁷⁷

Following the conclusion of the agreement, the United States and the EU submitted the agreement's text to their respective authorities for approval and implementation. FDA published a proposed rule in April 1998¹⁷⁸ and issued the final rule in November 1998 to implement the MRA.¹⁷⁹ The final rule codified the general provisions and the contents of the Sectoral Annex on Medical Devices.¹⁸⁰

The purpose of the U.S./EU MRA is to specify conditions under which each party accepts or recognizes the results of conformity assessment carried out by the other party's conformity assessment bodies.¹⁸¹ The mutual recognition affords certified products to gain equal access within the territories of the parties. Consultation between the parties will be held if a barrier to access arises. If the consultation fails to resolve the issue, the party alleging the denial of access may terminate the agreement within ninety days of such consultation.¹⁸²

Under the Sectoral Annex on Medical Device, results on the regulatory measures initiated under three individual components of the U.S./EU medical device regulatory systems are recognized mutually. First, for all medical devices regulated under the respective laws, the U.S. surveillance/postmarket and initial/pre-approval inspection reports will be exchanged with the EU quality system evaluation reports. Second, for U.S. Class I and listed Class II-Tier 2 medical devices, 510(k) product evaluation reports will be exchanged with EU type-testing reports. Third, for all medical devices regulated under the respective laws, the U.S. and EU postmarket vigilance reports will be exchangeable.¹⁸³

Included in the MRA is a confidence building transitional period during the initiation of the agreement. For a period of three years, the United States and the EU will assess the mechanisms' sufficiency to determine the equivalence of each other's CABs in conducting quality system analysis, product evaluations, and other reviews.¹⁸⁴ Qualified CABs must meet the criteria for technical competency and independence set forth in the regulation.¹⁸⁵ At the end of the transitional period, the United States and EU jointly will determine the equivalence of the CABs and develop a list of them. The determination will be made on the basis of the CABs proficiency in completing an adequate number of conformity assessments.¹⁸⁶ The parties also will determine the expansion of product coverage to include, to the extent feasible, all those Class II devices eligible under an FDA-accredited third-party review program. The agreement does not anticipate the coverage of any U.S. Class II-Tier 3 or any Class III devices under either system without the explicit joint decision by the parties.¹⁸⁷ The parties enter the operational period thereafter.¹⁸⁸

¹⁷⁷ *US/EU MRA*, *supra* note 56, at Sectoral Annex on Medical Devices — ch. 1 art.2.1.

¹⁷⁸ 63 Fed. Reg. at 17,744.

¹⁷⁹ *Id.* at 60,121 (to be codified at 21 C.F.R. pt. 26).

¹⁸⁰ *Id.* at 60,139 (to be codified at 21 C.F.R. pt. 26).

¹⁸¹ 63 Fed. Reg. at 60,161 (to be codified at 21 C.F.R. pt. 26.61); *US/EU MRA*, *supra* note 56, art 2.

¹⁸² *Id.*

¹⁸³ 63 Fed. Reg. at 60,146 (to be codified at 21 C.F.R. pt. 26.33).

¹⁸⁴ *Id.*

¹⁸⁵ *Id.*

¹⁸⁶ *Id.* at 60,146 (to be codified at 21 C.F.R. pt. 26.39).

¹⁸⁷ *Id.*

¹⁸⁸ *Id.* at 60,148.

The MRA is a significant step that the United States and the EU will undertake to achieve global harmonization of requirements for medical devices. This continued commitment to harmonization is outlined explicitly in a MRA provision that obligates the parties to continue their participation in the Global Harmonization Task Force and to utilize the results from such activities.¹⁸⁹

B. *Memoranda of Understanding*

In addition to MRAs, FDA utilizes memoranda of understanding (MOUs) to communicate and harmonize with foreign governments in its regulatory goals and measures. The trilateral MOU signed in 1995 by officials from the United States, Canada, and Mexico is an example of such an agreement.¹⁹⁰ The policy guide on International Memoranda of Understanding, published in 1995, contains the policy for initiating, developing, and monitoring MOUs between FDA and foreign governments.¹⁹¹ MOUs are agreements primarily designed to meet three goals: 1) to facilitate FDA in ensuring that the regulated products are safe and effective; 2) to permit FDA to utilize its resources effectively and efficiently; and 3) to enhance the communications between FDA and foreign governments on the regulated products.¹⁹²

MOUs may be used in a variety of circumstances. For example, if there exists sufficient similarity between FDA and a foreign regulatory authority in a particular regulatory program, FDA may enter into a MOU with that foreign regulatory authority for the mutual assessment of the comparability of each country's program. If FDA and foreign programs prove to offer a comparable level of public protection, then a MOU may be developed for the mutual acceptance of data and information. This mutual acceptance of the regulatory program can be expanded to the mutual acceptance of the regulatory system on a particular product. If FDA's regulatory system on a product is identical or similar to that of a foreign system, to the extent that the required level of protection is met, an agreement between the countries may be made to decrease the frequency of sampling and inspection of imports from the other country. Another form of MOU addresses products exported to the United States with inherent or consistent safety or quality concerns. Such an MOU establishes and communicates with foreign governments appropriate measures to ensure the safety and quality of exported products. The foreign government ensures that such measures are met when it certifies its exported products. The certification may be displayed as a mark on the product or its container, or appear on entry documents or other papers. The aim of these import/export MOU certifications is to reduce the sampling and inspection rates that FDA may have to undertake otherwise.¹⁹³

In developing MOUs with foreign governments, FDA must seek to ensure that the foreign programs or activities under consideration for mutual acceptance provide the same level of protection as FDA counterparts.¹⁹⁴ FDA may conduct on-site review or other measures to ascertain that the foreign government has necessary authorities, procedures, standards, and infrastructure to support the MOUs. Such auditing is necessary on an ongoing basis to establish that they continue to exist. MOUs typically are entered into for a five-year period.¹⁹⁵ During this time, an evaluation of the modification, continuation, or cancellation of the MOUs should be made.

¹⁸⁹ *Id.* at 60,147.

¹⁹⁰ See HORTON, HOYTE & KAWIN, *supra* note 82, at 585.

¹⁹¹ 60 Fed. Reg. at 31,485.

¹⁹² *Id.*

¹⁹³ *Id.*

¹⁹⁴ *Id.* at 31, 486.

¹⁹⁵ *Id.*

The utilization of MOUs facilitates the communication between FDA and foreign governments on technological, scientific, and regulatory information. It is a method to promote the understanding between other countries' safety and quality requirements on regulated products. In addition, the implementation of harmonized requirements or export/import certification programs may save FDA's resource expenditures on inspection and sampling imported products.

C. Global Harmonization Task Force

The Global Harmonization Task Force (GHTF) was established in 1992 with the goal of promoting the harmonization of regulatory practices on medical devices internationally.¹⁹⁶ GHTF is comprised of government officials and industrial representatives from North America, Europe, Asia, and Australia.¹⁹⁷ Several countries and bodies participate as observers, namely Argentina, Brazil, China, Poland, South Korea, the International Standards Organization, the European Committee for Standardization, and the World Health Organization.¹⁹⁸ Officers of FDA are the key players in representing the United States in GHTF.

Four study groups operate under GHTF: 1) Study Group 1 (SG1) on Regulatory Systems; 2) Study Group 2 (SG2) on Postmarket Vigilance; 3) Study Group 3 (SG3) on Quality Systems; and 4) Study Group 4 (SG4) on Auditing.¹⁹⁹ The main Task Force convenes once every year or two to select officers to represent GHTF and its groups, to assign tasks, to receive progress reports from its groups, and to permit its members and observers to present important developments in medical device regulatory policies in their respective countries or organizations.²⁰⁰

Study Group 1, formed in January 1993, originally was asked to study the difference among various regulatory systems. In 1995, SG1 was assigned to organize and promote the harmonization of premarket requirements on medical devices.²⁰¹ It recently announced the availability for comment on a final draft guidance document²⁰² entitled "Essential Principles of Safety and Performance of Medical Device on a Global Basis."²⁰³ This guidance document suggests a set of principles that should have common applicability to medical devices on a worldwide basis. The principles are not intended to replace nation-specific requirements or higher standards already in existence, but may serve as guidance for nations in developing regulations on the PMA of medical devices.²⁰⁴

Formed in 1995, SG2 was given the duty to study the mechanisms of and recommend the harmonization for medical device adverse event reporting requirements, postmarket surveillance and other vigilance measures, and to publicize relevant information.²⁰⁵ SG2 published draft copies of five guidance documents in August 1998,²⁰⁶

¹⁹⁶ See HORTON, HOYTE & KAWIN, *supra* note 82, at 587; Global Harmonization Task Force Homepage (visited Mar. 1, 1999) <www.ghrf.org>.

¹⁹⁷ *Id.*

¹⁹⁸ *Id.*

¹⁹⁹ *Id.*

²⁰⁰ *Id.*

²⁰¹ Global Harmonization Task Force, History of GHTF (visited Feb. 10, 2000) <www.ghrf.org>.

²⁰² 63 Fed. Reg. at 57,697.

²⁰³ Study Group 1, Global Harmonization Task Force, *Essential Principles of Safety and Performance of Medical Devices — Final Working Draft 1* (1998) (visited Jan. 1, 1999) <www.fda.gov/ohrms/dockets/98fr/980878gd.pdf>.

²⁰⁴ 63 Fed. Reg. at 57,697.

²⁰⁵ SG2, *supra* note 134, at 1.

²⁰⁶ 63 Fed. Reg. at 46,227.

these included SG2's mission, goals, and activities,²⁰⁷ a comparison of the adverse event reporting systems of a few major countries and EU,²⁰⁸ a guidance document for manufacturers to report adverse events,²⁰⁹ a harmonized proposal for national competent authorities to handle data obtained from their vigilance systems in regards to public alert and information-sharing with other countries,²¹⁰ and a proposed form for such information sharing.²¹¹ In addition, SG2 issued a few guidance documents on vigilance reporting in June 1999.²¹²

SG3 brought together the harmonized quality system requirements in the United States, Canada, Japan, and the EU.²¹³ In July 1998, SG3 announced the release of a draft document on a harmonized system of process validation for manufacturer.²¹⁴ The document is designed to give manufacturers a better understanding of the quality system requirement pertaining to process validation, the process validation methods, and their applications in product design and corrective activities.²¹⁵ Two other guidance documents on quality system design and manufacturing were released in 1999.²¹⁶

Study Group 4 is involved in the regulatory auditing of quality systems. Its past activities include the agreement in principle to allow national health authorities to access their audit results that are updated on a regular basis and procedural issues to implement a harmonized system of regulatory auditing.²¹⁷

The harmonization effort shared by the international community is significant in many ways. First, it creates a forum for open dialogue among nations that have a different perspective on or a varying degree of experience in medical device regulation. The mere exchange of information benefits all participants in understanding each other's goals and priorities in establishing a national regulatory system. Second, the work product of the harmonization effort, namely the recommendations and proposals for implementation of various harmonized modules of regulatory control on medical devices, lay the basic framework that national authorities and the international community should refer to when establishing or revising national measures to regulate medical devices. Also important is the effect of harmonization in eliminating duplicative regulatory controls. The conclusion of MRAs between two countries that have sufficient confidence in each other's regulatory mechanisms exemplifies a col-

²⁰⁷ SG2, *supra* note 134, at 1.

²⁰⁸ *Device Adverse Report Systems*, *supra* note 109, at 1.

²⁰⁹ Study Group 2, Global Harmonization Task Force, *Adverse Event Reporting Guideline for the Medical Device Manufacturer or its Authorized Representative*, GHTF-FD: 99-7 1 (1999) (last modified May, 1999) <www.ghtf.org/sg2/inventorysg2/sg2-n21r8.pdf>.

²¹⁰ Study Group 2, Global Harmonization Task Force, *Guidance on How to Handle Information Concerning Vigilance Reporting Related to Medical Devices*, GHTF-FD: 99-7 1 (1999) (visited Feb. 24, 2000) <www.ghtf.org/sg2/inventorysg2/sg2-n8r4.pdf>.

²¹¹ Study Group 2, Global Harmonization Task Force, *Global Medical Devices Vigilance Report*, GHTF-FD: 99-5 1 (1999) (last modified June 29, 1999) <www.ghtf.org/sg2/inventorysg2/sg2-n9r5.pdf>.

²¹² Global Harmonization Task Force, Study Group 2, *Minimum Data Set for Manufacturer Reports to Competent Authority*, GHTF-FD: 99-3 1 (1999) (visited Feb. 10, 2000) <www.ghtf.org/sg2/inventorysg2/sg2-n7r1.pdf>.

²¹³ See HORTON, HOYTE & KAWIN, *supra* note 82, at 587.

²¹⁴ 63 Fed. Reg. at 38,411.

²¹⁵ Study Group 3, Global Harmonization Task Force, *Draft Process Validation Guidance for Medical Device Manufacturers*, SG3-N99010 1 (1999) (visited Feb. 24, 2000) <www.ghtf.org/sg3/inventorysg3/processval.pdf>.

²¹⁶ Study Group 3, Global Harmonization Task Force, *Guidance on Quality Systems for the Design & Manufacturing of Medical Devices*, SG3-N99-8 1 (1999) (visited Feb. 24, 2000) <www.ghtf.org/sg3/inventorysg3/gqualitysys.pdf>; Study Group 3, Global Harmonization Task Force, *Design Control Guidance for Medical Device Manufacturers*, SG3-N99-9 1 (1999) (visited Feb. 24, 2000) <www.ghtf.org/sg3/inventorysg3/descontrolguid.pdf>.

²¹⁷ See HORTON, HOYTE & KAWIN, *supra* note 82, at 589.

laborative effort in eliminating unnecessary bureaucracy. In the countries recognizing each other's results in conformity assessment procedures, manufacturers do not have to undergo duplicative regulatory procedures to enter the markets of these countries. Under this more efficient and cost-effective regulatory regime, medical devices will reach the market in a more timely fashion, governments will conserve more resources in regulation, and these developments ultimately will benefit patients.

XI. CONCLUSION

Fundamental differences in the missions and standard for product market authorizations exist between U.S. and EU medical device regulatory systems. Both the United States and the EU share "product safety" as a mission, although the regulatory procedures they use to fulfill the mission are different. The ability of both regulatory systems to help to protect public health is well recognized, however, a direct comparison of the systems' effectiveness is not feasible until comparable data are available through a harmonized postmarket vigilance and adverse incident reporting systems.²¹⁸

Significantly, EU uses NBs in conducting conformity assessment and verification procedures, whereas the United States traditionally has utilized governmental officials to implement its medical device regulations. The United States, primarily through FDA, approaches the use of third-party reviewers cautiously because of concerns that conflicts of interest may arise when private business entities also engage in public safety functions. In light of this, FDA maintains the final authority in making medical device approval decisions.

The harmonization of regulatory requirements among Member States is the main objective of the EU to reach the goal of the "Internal Market." The EU is moving toward an "Internal Market" of medical devices. Developing a regulatory system for medical devices based on a global perspective is necessary with the globalization of trade and communications. Both the United States and the EU have put significant emphasis and resources behind the harmonization of regulatory controls between themselves and with other countries. The future of harmonization in medical device regulations between the United States and the EU remains bright.²¹⁹

With the advancement of medical science progressing at an exponential rate, significantly more medical devices of increasing complexity will reach the market. Both the U.S. and the EU regulatory systems account for this trend by implementing measures to maintain or improve their regulatory effectiveness and efficiency. In a world with constantly changing social and economic climates, future revisions in the current medical device regulations are anticipated. What will remain intact are the three time-tested basic medical device regulatory frameworks shared by the United States and the EU: quality system requirements, premarket approval, and postmarket control.

²¹⁸ It can be argued that the harmonized postmarket vigilance and adverse incident reporting system may show only the differences between the two systems in the number of reports submitted, and among the reports, the number of those that each authority has interpreted to meet the agreed criteria.

²¹⁹ See generally HORTON, HOYTE & KAWIN, *supra* note 82, at 600-02.