

Regulation of assisted reproductive technologies in the United States

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Key Words: IVF, ART, SART, ASRM, regulation, standards, ethics, United States

There is a widely perceived notion that assisted reproductive technology (ART) is not regulated in the United States. This current perception has developed for a number of reasons.

In the United States, ART has been characterized by the absence of a socialized health-care system, lack of centralized government or financial oversight, and the proliferation of a large number of clinics to meet market demand. Although some of these clinics are based in universities, which are operated under state oversight, and some are in private academic centers, many function as private medical practices. Second, there is no statutory national body, such as the Reproductive Technology Accreditation Committee (RTAC) in Australia, or the Human Fertilization and Embryology Authority (HFEA) in England, to oversee these programs (1).

Third, highly publicized incidents of illegal, immoral, irresponsible, and unethical behavior have occurred in the United States in the past few years. Extensive media exposure of physicians using their own semen for patient insemination, theft of patient eggs, proposals for human cloning, the use of stem cells for research, exorbitant sums of money paid to egg donors, and septuplet and octuplet births have received wide media attention. As a result, the perception is that these events represent the norm, rather than anomalous incidents.

Fourth, the rapid pace of scientific advances in ART has led to the use of new techniques such as cryopreservation of eggs, intracytoplasmic sperm injection (ICSI), embryo hatching, sex selection, cytoplasmic transfer, and preimplantation genetic diagnosis in patients before

large, well-designed clinical trials have confirmed their safety and efficacy. This has led to criticisms of experimenting on humans in an irresponsible fashion. Furthermore, the political climate surrounding abortion—and, by extension, embryo research, stem cells, and somatic cell nuclear transfer—has, until now, resulted in a vacuum of governmental involvement in ART research.

Finally, the media has perpetuated the current perception of an uncontrolled industry.

Yet, despite its shortcomings, the current regulatory status of ART in the United States is far from *laissez faire*. Perspective is needed on the issues related to current and potential regulation of ART in the United States. Professional societies and individuals involved with ART have worked with federal and state governments and with professional and other organizations to develop an improved process that should ensure higher quality care, protect the public interest, and create public confidence in ART services.

CURRENT REGULATIONS

Mandatory General Medical Regulations Affecting ART

The federal government has several mandatory regulations affecting medicine in general, which also affect the clinical practice of ART. These include the Clinical Laboratory Improvement Amendments of 1988 (CLIA 88), which mandate, among many other requirements, certain standards for andrology laboratories and also cover those that provide ART services. Strict compliance with standards and on-site inspections are required. The Centers

Received January 11, 2002; revised and accepted April 17, 2002.
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0015-0282/02/\$22.00
PII S0015-0282(02)04199-7

for Medicare and Medicaid Services (CMS), formerly Health Care Financing Administration (HCFA), is responsible for approving diagnostic and procedural coding terminology and the resource-based relative value studies (RBRVS) units that determine reimbursement for ART procedures. The Food and Drug Administration (FDA) also has numerous regulations affecting the use of the pharmaceutical products used in ART.

On the state level, a license to practice medicine is required to practice ART, and inappropriate activities in ART clinics can and have been investigated by state licensing bodies. Most ART practitioners are certified by the American Board of Obstetrics and Gynecology, and many by the Reproductive Endocrinology Subspecialty Board. However, neither is required to practice ART. Facilities in which ART is practiced, such as hospitals, operating rooms, and procedure rooms, are also strictly licensed and inspected.

At the university level, regulations for clinical research and ethics are in place to protect patients, physicians, and the institutions. Locally, county medical societies, hospitals, and health maintenance organizations (HMOs) usually oversee the practice of medicine and deal with the clinical, financial, and ethical issues brought to them by patients, physicians, or others.

Mandatory Clinical ART-Specific Regulations

The most visible and important ART-specific regulation that has been developed in the United States is the Fertility Clinic Success Rate and Certification Act of 1992 (FCSRCA), sponsored by congressman Ron Wyden (2). This law requires that "each ART program shall annually report to the Secretary through the Centers for Disease Control and Prevention (CDC) pregnancy success rates achieved by such program through each assisted reproductive technology and the identity of each embryo laboratory used by such program, and whether the laboratory is certified or has applied for such certification." The law calls for the Secretary to consult with appropriate consumer and professional organizations in developing definitions. It also calls for the CDC "to develop a model program for the certification of embryo laboratories . . . to be carried out by the States. In developing the certification program, the Secretary may not establish any regulation, standard or requirement which has the effect of exercising supervision or control over the practice of medicine in ART programs."

The law also calls for the Secretary, through the CDC, to promulgate criteria and procedures for the approval of accreditation organizations to inspect and certify embryo laboratories. The Secretary will also evaluate annually the performance of each accreditation organization. States, or accrediting organizations that issue a certification to an embryo laboratory, also have the right to revoke or suspend the license. The FCSRCA also requires the CDC to publish annually and distribute to the states and to the public the

statistics on pregnancy success rates, the programs that have failed to report, and the status of the embryo laboratory's certification. The Secretary may require the payment of fees for the purpose of, and in an amount sufficient to cover the cost of, administering the FRSRCA.

The current status of this law is as follows. The law has been enacted and over 95% of ART programs in the country annually report their results to the CDC through the Society for Assisted Reproductive Technology (SART), which has a contract with the CDC to collect these data. Those few programs that elect not to report have their names listed as "non-reporters" in the CDC publication. In 1997, for the first time, the 1995 results were posted on the Internet. Results for 1996 through 1999 are also posted. Also, in 1997 on-site validation inspections were initiated by SART, sometimes with CDC observers, to ensure the accuracy of the data that were reported through SART to the CDC. Thirty clinics of the approximately 370 in the United States had an on-site validation inspection. Programs are selected for a validation inspection based on those with highest and lowest success rates, as well as randomly. (Further comment on the FRSRCA will be made later in this paper.)

In addition to the FCSRCA, the National Institutes of Health (NIH) has multiple regulations governing research in reproductive medicine. These laws are also frequently considered in non-NIH funded research. The federal and state governments have also passed laws regarding certain aspects of ART. For example, federal law and several state laws prohibit cloning a human; compensating a gestational carrier is prohibited in Michigan; and cryopreservation is limited in Louisiana. New York State requires licensure of ART laboratories, and California requires a provisional license (3, 4).

At the university level, many state universities have laws specifically preventing the use of, or research in, certain ART technologies, and ethical oversight by appropriate committees is mandatory for any reproductive research.

Mandatory Nonmedical Regulation of Clinical ART

The Federal Trade Commission (FTC) has regulations regarding truth in advertising and marketing. A number of ART programs in the United States have been investigated by the FTC for making claims about their pregnancy success rates that could not be substantiated by their clinical data. For example, when clinics advertise their success rates, the FTC has required that they must disclose the numerator and the denominator used in their calculations when such advertised rates are not based on initiated cycles and live births. The FTC has the authority to, and has in the past, publicized these transgressions and issued cease and desist orders. They also can impose punitive sanctions such as fines. Working conditions for clinic employees are regulated by the Occupational Safety and Hazard Act (OSHA), which has numerous strict requirements regulating employees in all medical

practices, including ART. These regulations can and are enforced by on-site inspections.

State regulations also require a license for business, which includes ART clinics. In local communities, cities and towns require commercial licenses, have building codes for facilities, and have other regulations that affect ART clinics.

Other mandatory nonmedical regulations include insurance company, HMO, and other healthcare organization requirements. In early 1999, Tufts Health Plan in Boston deselected three of nine ART providers based on criteria Tufts Health Plan had set, which included number of physicians, percentage of reproductive endocrinologists, and success rates. Physicians must also follow federal and state laws the same as nonphysicians.

Another most interesting development was the finding by the United States Supreme Court in the case *Bragdon v. Abbott* in June 1998, interdicta, that infertility is a major life activity as defined by the Americans with Disabilities Act (ADA). The short and long-term impact of this finding is as yet unknown, but class action lawsuits based on this finding are in process. The Equal Employment Opportunity Commission (EEOC) also found in a New York case that failure to provide infertility benefits is discriminatory, although the finding in this case was changed on appeal. National ramifications of these legal and regulatory cases are still being determined in subsequent cases.

Mandatory Laboratory Regulations

As noted above, andrology laboratories are covered under CLIA 88, and when these same laboratories also perform portions of the ART procedure, that portion falls under CLIA 88. The Centers for Medicare and Medicaid Services (CMS) also develops the diagnostic, procedural, and billing codes on a national basis for laboratories. Other national organizations that regulate ART laboratories include the Joint Commission on Accreditation of Healthcare Organizations (JCAHO). This commission has the authority and does inspect some ART laboratories that are located in hospitals.

Some states also have mandatory regulations involving ART laboratories. New York State inspects laboratories, and California ART laboratories currently are provisionally licensed under the California Tissue Bank Licensure Laws (3, 4).

ART Research Regulations

The history of ART research regulations in the United States has been political and complex. Prior to 1993, federal policy required review and approval of research involving ART by an ethical advisory board (EAB), which had been established in 1975 to oversee research in reproduction. In 1979, the EAB released a report supporting ART research. However, because of the politics surrounding abortion, a chair for the committee could not be agreed upon; thus, the EAB was disbanded in 1980. From 1980 to 1993 federal policy required review and approval of ART research by a

board that did not exist. As a result, no research was approved for federal funding.

Recognizing this problem, the federal government established the Human Embryo Research Panel, which in 1993 recommended that some research be acceptable (for example, embryo research up to 14 days) and that other research not be acceptable (for example, cloning). President Clinton immediately tabled this report for further study. Following review, in 1994 a limited approach was taken to the report and a law was passed with a provision not to support "the creation of human embryos for research purposes." Following further study, in 1996 President Clinton signed a "continuing resolution" that banned federal funding for human embryo research. However, in 1999 the NIH initiated requests for proposals (RFP) for reproductive research that could involve embryos; however, embryos could not be created for the research and had to be obtained in the course of clinical care. Such research has to meet very rigorous NIH research guidelines, but represents increasing recognition of the potential widespread benefits of research in this area. In July 2001, President George W. Bush promulgated regulations under which stem cell research could receive federal funding in the United States.

Mandatory Regulation of Somatic Cell Nuclear Transfer

Somatic cell nuclear transfer (SCNT) has more commonly been termed "cloning" by the media. Since Dolly the cloned sheep came on the international scene in 1997, several controversial bills have been introduced but not passed regarding SCNT. At the height of the controversy over Dolly, Congress came very close to passing restrictive legislation regarding SCNT, but this was forestalled by giving the FDA authority to oversee such programs. In 2001, the House of Representatives approved a ban of both reproductive SCNT ("cloning" of a person) as well as therapeutic SCNT (the production of cells and tissue for the purpose of research and treatment of diseases). The Senate did not pass the bill, so no legislation has yet to result. Senate legislation of this issue has come forward in 2002, but the outcome of the various proposals is currently unknown.

In the interim, the FDA has claimed authority, and has instructed all ART laboratories that FDA permission to perform any type of SCNT is required through the submission of a New Drug Application (NDA). At this time no NDAs have been approved and there is strong indication that the FDA will not give approval for any type of SCNT research. This requirement does not necessarily prevent private entities from performing such research, but federal legislation potentially could.

Mandatory Regulation of Genetics Testing and Treatment

Regulation of genetics is rapidly becoming an integral aspect of regulation of ART. The federal Department of Health and Human Services (DHHS) has oversight authority

of genetic tests through the Centers for Disease Control (CDC), Food and Drug Administration (FDA), Centers for Medicare and Medicaid Services (CMS) and Office for Human Research Protection (OHRP). The Clinical Laboratories Improvement Act (CLIA) provides laboratory oversight. The National Institutes of Health (NIH) and other agencies support genetics research activities.

The Secretary's Advisory Committee on Genetic Testing (SACGT) made recommendations in 2000 regarding criteria to assess genetic tests, classification of tests into scrutiny levels, data collection, confidentiality, oversight mechanisms, institution review boards, informed consent, transition of genetic tests to clinical use, orphan diseases, social and ethical concerns, current genetic tests, and regulation enforcement (<http://www4.od.nih.gov/oba/sacgt.htm>). The Health Care Portability and Accountability Act of 1996 restricts use of genetic test data by health insurers; and Equal Opportunity Commission guidelines prohibit employment discrimination based on genetic tests. Additionally, there is a prohibition on human embryo research (Public Health Service Act (42 U.S.C. 289g(b)).

State health agencies have an oversight role in genetic testing including licensure of personnel and facilities and quality assurance activities under the CLIA program. Some states have additional regulations.

Mandatory Regulation of ART Human Subject Research

The federal government has numerous regulations regarding research involving human subjects that apply regardless of the funding source. Institutional review board (IRB) approval is needed if human research projects are federally funded or will be submitted to the FDA. Written consent of the research participants is always required. The Department of Health and Human Services (DHHS) requires review and approval of research involving human subjects prior to funding by federal agencies. Additionally, university institutional oversight requires that regulations be adhered to and that IRB approval be obtained for research projects.

PROFESSIONAL ACCOMPLISHMENTS THAT HAVE ENHANCED OVERSIGHT OF ART

CAP/ASRM Laboratory Accreditation Program

Numerous initiatives have been taken by professional societies associated with ART in the United States. The American Society for Reproductive Medicine (ASRM) was founded in 1944 and has been actively involved in research, education, and setting standards for practice in reproductive medicine, including ART. Founded in 1987, SART is an affiliate society of the ASRM; it published 1989 clinic-specific success rates on a voluntary basis, and has continued annual publication since then. Both SART and ASRM

worked with congressman Wyden to support the FCSRCA, which passed in 1992 (2). With the College of American Pathologists, SART and ASRM also developed the CAP/ASRM Reproductive Laboratory Accreditation Programs (RLAP) (5).

The RLAP includes strict standards collaboratively developed by professionals in the field in 1992, and on-site laboratory inspections by CAP/ASRM/RLAP inspectors. Over 200 SART clinics have now been accredited on a voluntary basis by this national accrediting body. As a result of changes in SART bylaws, in December 1998 accreditation became mandatory for all SART programs; programs must apply for accreditation to CAP/ASRM, JCAHO, or the state of New York. Those IVF clinics that do not become accredited or do not apply for accreditation lose their membership in SART. At this time essentially all SART clinics have completed accreditation or are in the process of completing accreditation.

American Association of Bioanalysts

The American Association of Bioanalysts (AAB) has a proficiency testing service that is approved by CLIA. The AAB also supports CLIA coverage of embryology laboratories, and has a grandfather provision for embryology laboratory directors who do not have doctoral degrees.

Professional Society Guidelines and Practice Standards

The ASRM and SART have collaboratively developed professional society guidelines and practice standards, shown in Table 1 (6).

The American College of Obstetricians and Gynecologists (ACOG) has also developed technical bulletins and practice opinions on ART procedures (Table 2) (7).

Professional Society Ethical Guidelines

Recognizing the social context in which ART must be practiced, ASRM, SART, and ACOG have not confined their concerns regarding ART just to the clinical and laboratory practice of medicine. Considerable time, effort, and expertise have been devoted to developing ethical guideline initiatives that have created standards for self-regulation. Because most practitioners follow these guidelines, they have been important in directing the ethical practice of ART (Table 3) (6, 7).

Recommendations are that preimplantation genetic diagnosis (PGD) to prevent transmission of serious genetic disease, including by sex selection, is ethically acceptable, sex selection during IVF for nonmedical reasons should not be encouraged, initiation of IVF with preimplantation genetic diagnosis solely for the purpose of sex selection should be discouraged, and further studies of the consequences of sex selection are needed. The use of somatic cell nuclear transfer for reproduction or producing a "clone" is strongly opposed, whereas the use of SCNT for therapeutic purposes is supported under rigorous research guidelines and oversight.

TABLE 1**ASRM and SART guidelines and practice standards.**

- Minimum standards for IVF (1984)
- Minimum standards for GIFT (1988)
- Revised minimum standards for IVF, GIFT, and related procedures (1990)
- Guidelines for human embryology and andrology laboratories (1992)
- Guidelines for practice, including gamete donation (1993)
- Statement on intracytoplasmic sperm injection (1994)
- Guidelines for the provision of infertility services (1996)
- Elements to be considered in obtaining informed consent for ART (1997)
- Induction of ovarian follicle development and ovulation with exogenous gonadotropins (1998)
- Guidelines for number of embryos transferred (1998)
- Guidelines for gamete and embryo donation (1998)
- Revised minimum standards for in vitro fertilization, gamete intrafallopian transfer, and related procedures (1998)
- Position statement on nurses performing limited ultrasound in a gynecology/infertility setting (1997)
- Intravenous immunoglobulin (IVIG) and recurrent spontaneous pregnancy loss (1998)
- Guidelines on number of embryos to transfer (1999)
- Antiphospholipid antibodies do not affect IVF success (1999)
- Who is to report ART cycles (1999)
- Optimal evaluation of the infertile female (2000)
- The role of assisted hatching in IVF: a review of the literature (2000)
- Repetitive oocyte donation (2000)
- Does intracytoplasmic sperm injection (ICSI) carry inherent genetic risks? (2000)
- Blastocyst production and transfer in clinical assisted reproduction (2001)
- Salpingectomy for hydrosalpinx prior to IVF (2001)
- Preimplantation genetic diagnosis (2001)

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RECENT DEVELOPMENTS IN ART OVERSIGHT IN THE UNITED STATES

ASRM and SART Clinic-Specific Report and Validation Program

The past 4 years have seen a dramatic increase in the pace at which ASRM and SART have been working with other organizations, especially the CDC and RESOLVE, to enhance the collecting, analyzing, and publishing of clinic-

TABLE 2**ACOG technical bulletins and practice opinions.**

- Technical bulletin on infertility (1989)
- Technical bulletin on new reproductive technologies (1990)
- Technical bulletin male infertility (1990)
- Practice opinion on ZIFT (1993)
- Technical bulletin male infertility (1994)
- Practice opinion on use of frozen sperm (1994)

Adamson. Regulation of ART in the U.S. Fertil Steril 2002

specific success rates (8, 9). Through its registry committee, SART has completely reviewed and refined all of the variables that are collected for the annual report. In addition, a survey of SART members has been taken to help improve the data definition and collection process. Also, the turn-around time for publication of the report has been significantly reduced. Prospective reporting of data is already in place, with full compliance expected in the very near future.

In 1998 SART and ASRM, along with the CDC, developed an on-site validation program (6). Twenty-five programs were inspected in 1998 and 30 more programs were inspected in 1999, 2000, and 2001. These programs are selected based on the lowest and highest success rates in the country as well as a random selection of programs of varying size that do not fall into these categories. Careful review and evaluation of the on-site validation program is ongoing under the validation committee of SART.

Funding for publication and validation has been committed by the CDC. Approximately \$200,000 annually has been committed in the contract that SART has to collect and validate the data. At this time the funding covers primarily the validation program. The cost of collecting the data is almost entirely borne by SART and its member programs, and by extension their patients.

Both the CDC and SART have begun publishing results of clinical research based on the collected data. To ensure patient confidentiality, these data have been accorded the highest possible confidentiality status (known as 308D). Only the CDC and SART members have access to the data. For SART members to have such access, there are strict confidentiality and research requirements, the violation of some of which may result in civil and criminal penalties. Furthermore, all patients undergoing ART must agree to have their individual cycle data submitted through SART to the CDC.

Centers for Disease Control Model Program for Certification of Embryo Laboratories

In 1998 the CDC published their Proposed Model Program for the Certification of Embryo Laboratories as required by the FCSRCA (10). This model program was implemented by publication in the *Federal Register* in 1998 and has been distributed to all states in the hope and expectation that the states can use it to draft their own requirements. California is one state that currently is considering further regulation of ART and is reviewing the model program to assist in development of its legislation. It is also expected that this model program will be used on a national level to help determine guidelines for oversight of ART.

Food and Drug Administration (FDA) Regulation of Reproductive Tissue

The FDA has recently proposed regulations that will affect ART (11). The purpose of their proposal is "to establish a unified registration and product listing system for establishments that manufacture human cellular and tissue-

TABLE 3

Professional society ethical guidelines.

- ASRM and SART: Ethical considerations of the assisted reproductive technologies (1986, 1988, 1990, 1994, 1997)
 - 1994 report with complete statements on over 29 topics
 - 1997 report with statements on:
 - disposition of abandoned embryos
 - oocyte donation to postmenopausal women
 - embryo splitting for infertility treatment
 - the use of fetal oocytes in assisted reproduction
 - posthumous reproduction
 - ASRM and SART: Ethical issues with respect to specific ART practices including IVF, GIFT, ZIFT, gamete donation, surrogacy, cryopreservation of embryos, and research
- ASRM and SART: Guidelines addressing quality assurance and formation of public policy
 - Definition of "experimental" (1993)
 - Definition of "infertility" (1993)
- ACOG committee on ethics and opinions on IVF (1986), surrogacy (1990) and research on preimplantation embryos (1993)
- The National Advisory Board on Ethics in Reproduction (NABER) [Originally organized through the cooperative efforts of ACOG and ASRM in 1991, then became independently incorporated and funded and had broad representation before disbanding in 1998 because of lack of funding]:
 - Informed consent and the use of gametes and embryos for research (1997)
 - ASRM and SART: Shared-risk or refund programs in assisted reproduction (1998)
 - Guidelines for advertising by ART programs (1998, 1999)
 - Sex selection and preimplantation genetic diagnosis (1999)
 - Financial incentives in recruitment of oocyte donors (2000)
 - Human somatic cell nuclear transfer—cloning (2000)
 - Preconception gender selection for nonmedical reasons (2001)

Adamson. Regulation of ART in the U.S. Fertil Steril 2002.

based products" (11). It is expected that all ART clinics will be registered with the FDA beginning in 2003. The FDA is also concerned with qualification of donors, especially with respect to infectious disease testing and suitability of donor screening. They are also concerned with the handling, storage, and identification of reproductive tissue. The FDA's other areas of interest are product factors, including transmission of communicable disease, the processing of cells and tissue, clinical safety and effectiveness, promotion and labeling, and establishment of registration and product listing.

The FDA has received final comments regarding these regulations from ASRM and SART, as well as the American Association of Tissue Banks and the public. They have completed regulations requiring registration of ART establishments, and are in the final process of completing regulations regarding the determination of donor suitability, good tissue practices, and requirements for compliance and inspections (12). Many of the comments received by the FDA have expressed concern over the potential impact of the proposed regulations on patient care, choice and cost, and duplication of oversight in ART laboratories.

Furthermore, the FDA has recently claimed authority over procedures involving transfer or potential transfer of genetic material in ART laboratories, including somatic cell nuclear transfer, cytoplasmic transfer, and coculture of embryos. The FDA is requiring submission and approval of an Investigational New Drug (IND) application prior to allow-

ing such research. Therefore, somatic cell nuclear transfer, both reproductive and therapeutic, is prohibited unless such approval is given, and currently no such approvals have been given. Six ART programs performing cytoplasmic transfer on a research basis have received individual letters instructing them not to continue such research. The FDA has also stated that lymphocyte immune therapy for recurrent pregnancy loss cannot be performed unless there is submission and approval of an IND application. Implementation of these and other potential regulations could have far-reaching impact in ART programs, so professional organizations are currently evaluating these initiatives carefully and formulating a response.

New York State Task Force

The New York State Task Force on Life and The Law reported in April 1998 on assisted reproductive technologies and analysis, and made recommendations for public policy (13). This task force was created by executive order in 1985 and charged with recommending policy on a host of issues raised by medical advances, including those in ART. For each issue the task force addresses, it recommends policy for the State of New York in the form of legislation, regulation, public education, or other measures. The recent report has raised considerable interest and public awareness about regulation of ART. The task force has received input from many professionals and the public concerning all aspects of ART, and will continue to refine its recommendations.

American Bar Association

The American Bar Association (ABA) Section of Family Law has a committee on laws of reproduction and genetic technology. In June 1998, this committee produced a working draft of a Model Assisted Reproductive Technologies Act. The National Conference of Commissioners on Uniform State Laws (NCUSL) proposed a Uniform Parentage Act (2000) to the ABA. This was rejected, but will be revised and resubmitted.

RESOLVE

RESOLVE is the national consumer organization dedicated to education, advocacy, and support of infertile people. RESOLVE's policy and public statements regarding oversight have been stated after careful consideration of their mission (14). RESOLVE sees the basic principles for oversight as including quality medical care, quality assurance of laboratory facilities and clinical practice, protection from undue risks throughout the treatment process, education, counseling, informed consent, maintenance of choice of options for treatment, quality research, enforcement of provider noncompliance sanctions, and consumer/patient involvement in the process. RESOLVE believes that oversight should include areas such as the interests of both patients and the resulting children, standards of practice, oversight of embryo laboratories, mandatory reporting, validation of reporting, regulation of emerging experimental treatment, reproductive tissue screening, advertising and marketing controls, third-party concerns, and commercial interests.

RESOLVE's biggest area of concern and caution involves equal access to care, especially with respect to insurance coverage, while retaining flexibility in patient decision making. RESOLVE is committed to the development of evidence-based decision making for patients as well. RESOLVE also is concerned about the financial and insurance aspects of treatment, and is interested in protecting the patients from further expensive regulatory mechanisms. The organization is focused on the problem of the uneasiness, ambivalence, and lack of awareness by the public regarding reproductive medicine. In the United States, there are ongoing serious issues regarding restricting the availability and use of ART services. Since 1999, another consumer interest group, the American Infertility Association (AIA) has also advocated on behalf of infertile people.

Summary of Professional Initiatives to Increase Oversight of ART in the United States

It can be seen that there are numerous governmental, professional, and lay organizations working toward enhanced oversight of ART in the United States. Both SART and ASRM are cooperating with all of these organizations, including the CDC, congress, the FDA, FTC, and NIH, and other nongovernmental interested parties such as RESOLVE, the American Medical Association, the Centers for Medicare and Medicaid Services, the American Bar Association,

the American College of Obstetricians and Gynecologists, and the New York State Task Force. Indeed, it would be difficult to identify another area of medicine that has proposed and implemented so much self-regulation, and that has developed as many oversight relationships with government and other professional and lay organizations.

RECENT INITIATIVES BY SART TO INCREASE OVERSIGHT

In the last 3 years, SART has increased significantly its requirements for membership. To become and stay a member of SART, a clinic must report its results according to the FCSRCA, agree to on-site validation of reported success rates, and have laboratory accreditation that involves on-site laboratory inspection. In 1998, SART also made it a requirement for all medical directors of embryology laboratories to be Board-certified reproductive endocrinologists or active-status reproductive endocrinologists. Clinics must also adhere to the ethical, practice, laboratory, and advertising guidelines published by ASRM and SART. Membership can be, and has been, revoked for failure to comply with the above requirements.

On-site inspections of compliance with the SART guidelines were initiated in 2000 for randomly selected programs. Indeed, in the last year several programs have been instructed to modify their advertising and marketing practices to keep them in compliance with SART guidelines. A much more rigorous approach has also been taken to reporting deadlines and to identifying and reporting nonresponding clinics. As noted above, SART has also initiated a consultation program for clinics with low pregnancy rates so that they can be assisted in improving their success rates. As of 2002, participation in this program will be mandatory for clinics with pregnancy rates below statistically calculated standards, if clinics are to maintain their membership in SART. Additionally, SART has expanded its membership to laboratory, nursing, and mental health professionals on an individual basis so that it can better represent all those involved in ART. Over 95% of United States IVF programs belong to SART.

PROPOSED OVERSIGHT OF ART IN THE UNITED STATES

National Coalition for Oversight of the Assisted Reproductive Technologies

In November 1995, the ASRM and SART joined in calling for an independent authority for oversight of ART programs and expressed a willingness to assist in development of such an oversight body. In 1997 SART established the National Coalition for Oversight of the Assisted Reproductive Technologies (NCOART) initially as a subcommittee of SART. In 1998 ASRM and SART participated in a national conference sponsored by the CDC, RESOLVE, and

NABER: "Approaches to ART Oversight: What's Best in the U.S.?"(1). This conference brought together interested U.S. professionals, government experts, and consumers, as well as others from around the world, to discuss approaches to ART oversight in the United States.

The oversight committee had, as its initial mission statement, "to serve as an interdisciplinary advisory body that, on an ongoing basis, fosters quality assurance of ART services for the consumer, provider, and public at large by monitoring and evaluating reporting and use of ART success rates." Initial voting members of the oversight committee included SART with one clinical and one laboratory representative, ASRM, and RESOLVE. Liaison members are the CDC, FDA, FTC, and any other designated participatory governmental agency. Working group members include the American Association of Tissue Banks (AATB), the ABA, and the American Infertility Association (AIA). Initially, the oversight committee functioned as a committee of SART. Subsequently the committee was renamed the National Coalition for Oversight of Assisted Reproductive Technologies (NCO-ART), with the chair of the committee rotating every two years between SART and RESOLVE. Each participating organization funds its own representatives' expenses, and SART underwrites the meeting expenses and provides administrative support. This committee meets twice annually and has made significant progress in identifying issues, making recommendations, and following up on issues.

The committee is not a regulatory body. Rather, it functions as a clearinghouse for issues and can make recommendations that can be implemented, if desired, by the individual organizations belonging to NCOART according to their own jurisdiction, deliberations, and conclusions. The goal of NCO-ART is to be a proactive agent for promoting systemic change:

1. To foster communication/dialogue about ART
2. To serve as a leader in identifying and examining issues in ART
3. To encourage appropriate groups to address areas of concern
4. To assist in review of outcomes to implement change intended to improve quality of care (15)

This review documents the significant regulation and oversight of ART procedures in the United States. However, there are many diverse overseeing authorities and organizations with the resultant numerous inconsistencies and omissions. Given this situation, NCOART is a forum for continuing discussion regarding provision of ART in the United States, including the development of further regulation.

Questions and Answers Regarding ART Oversight in the United States

The models used in other countries, such as United Kingdom, Australia, France, and Canada, were extensively presented and reviewed at the February 1998 conference sponsored by the CDC, RESOLVE, and NABER (1). Information

gleaned from that meeting has been used by all organizations in their considerations of further development of oversight. At that conference several questions were asked regarding the best approaches to ART oversight in the United States. The answers to these questions have been used by SART in determining the course it will recommend for the future. These questions are addressed below.

The first question asked was "What are the critical gaps in approaches to ART oversight in the United States?" The answers were a lack of sanctions in the current system, problems with lack of funding for embryo research, incomplete and nonuniform documentation and reporting, inadequate quality assurance requirements, incomplete and non-uniform informed consent, lack of mandatory availability of counseling, lack of consumer input, inadequate donor screening and standards, lack of insurance, and lack of mandatory universal standards or a code of practice. It was felt, however, that these gaps could be rectified by initiatives in the United States. Indeed, many of these issues are in the process of being addressed by changes already completed or being considered in the regulatory process.

A second question asked was "How could new technical issues and new issues be addressed by additional oversight?" The answers included an oversight committee, SART research committee, local institutional review boards, national funding, nongovernmental committees, and improved guidelines for research innovations and standards of care.

Another concern, as always, was "How should the increased oversight be financed?" It was felt that a number of possibilities existed, including through insurance coverage, through a combination of public and private funding, or a combination of patients, infertility centers, and insurance and the public.

Another question was "Does the current system protect the consumers, and if not, what should be done?" It was generally concluded that the current approach to ART oversight in the United States is inadequate. Solutions require the mandatory availability of counseling, a mandatory code of practice, meaningful sanctions, improved information and informed consent for patients, mandatory laboratory oversight, mandatory record keeping and reporting, more consumer input, improved donor recruiting and screening standards, improved criteria for research, and improved insurance coverage.

Another concern raised was "Does the current system protect providers, and if not, what could be done?" It was also concluded that the current system had inadequate protection for providers and that it is important to identify a recognized body that can set standards, provide better coverage and cooperation from insurance companies, provide medical-legal protection for physicians practicing ART, better availability of research institutional review boards, and a code of practice to protect against unreasonable requests.

The question was asked, "Is there fair and equitable access to ART in the United States, and if not, what were the barriers to access?" It was felt that there is not fair and equitable access because of individual financial constraints and insurance companies' failure to provide adequate coverage for ART, exacerbated by the lack of education and information regarding ART; lack of counseling especially with respect to moral, religious, and cultural views; misperceptions and uninformed social attitudes that are negative toward ART; media sensationalization of ART, both good and bad; state mandates; lack of oversight of vendors in the industry; the Employee Retirement Income Security Act (ERISA), which places limitations on health insurance liability for employers; nonaccommodating employers and provider attitudes; and geography, race, and quality of care.

Given the wide international experience in ART, the question was asked "Is there an international model or attributes of one that could be adopted in the United States?" It was concluded by all that the U.S. situation is unique, and that none of the international models are entirely adaptable to this country. However, in general, those at the meeting felt that accreditation was superior to licensing, that oversight should show a flexibility of language so that the oversight authority will not be unduly constrained as future unknown developments occur, and that there should be significant consumer participation. It was felt that legislation should be avoided when possible because of its tendency to restrict future choice, that consistency of documentation and publication should be striven for, and that adequate financing of ART is necessary.

Another question is "Are there are other forms of oversight in the United States that might be applied to ART?" Suggestions included UNOS, which oversees organ transplant in the United States, the FDA, the SART oversight committee, the New York State Cardiovascular Surgery Oversight, the Recombinant DNA National Committee, insurance companies, international standard-setting bodies, a registry for third-party donors, and the FTC. However, it was felt that none of these organizational models would be able to provide, by themselves, the appropriate oversight of ART in the United States.

Advantages and Disadvantages of Oversight

A great deal of experience has been gained in the United States by many professionals, government agencies, and other organizations regarding oversight of ART. It is not clear at this time what the final model in the United States will be, although some of the basic structures have been put in place, as described above. There are certain advantages and disadvantages of oversight, and it is hoped that as we move forward, we will be able to recognize these in developing the optimal system for the United States.

The advantages of oversight are that it establishes national standards, recognizes the uniqueness of ART, pro-

motes high-quality patient care, ensures minimum standards of care, improves research, and protects patients' interests. Other advantages are that it provides a forum for national debate and participation, permits ethics statements that can be mandated by law, allows precedence in other fields to be used, increases society's confidence in and acceptance of ART, and potentially can increase insurance funding for ART.

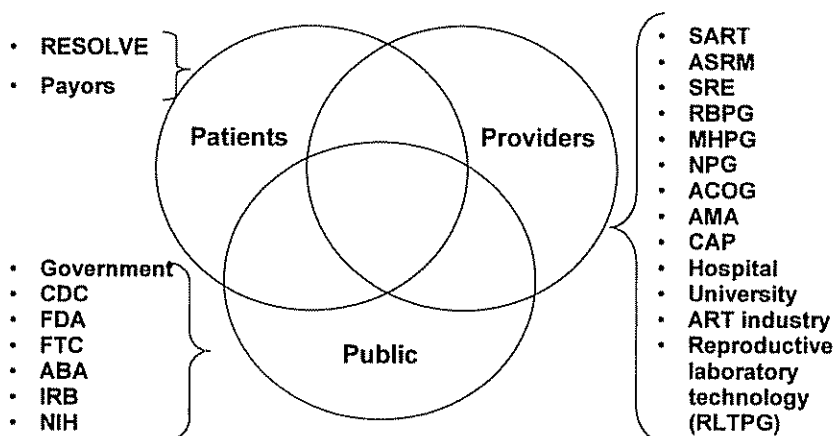
Nevertheless, all oversight also carries with it disadvantages, as have been clearly recognized by practitioners from other countries, such as United Kingdom, France, Australia, and Canada (1). Oversight requires funding and requires mechanisms of enforcement as well as the support of overseers, clinics, and patients. Oversight may fail to solve problems. It does not prevent psychopathic, sociopathic, or illegal behavior. It complicates legal issues of intent and due process, vis-à-vis criminal behavior versus inadvertent error in the practice of medicine. Furthermore, there is serious concern that oversight could interfere in the practice of medicine. This may be by intent, as with the current restrictions on embryo research, or may be unintentional, as with the Fertility Clinic Success Rate Certification Act whose clinic-specific success rate reporting requirements has caused some clinics to attempt to maximize their reported success rates by altering their practice of medicine. Oversight can also interfere in patients' rights; for example, AB-2209 in California required mandatory screening and places limitations on care based on a patient's history of infectious disease. Oversight can discriminate against some patients, increase costs to all patients, and politicize medical and personal issues.

The Hierarchy of Interest

Given this very complex situation of numerous interested government, professional, and lay organizations and individuals, and given the advantages and disadvantages of oversight, what is the best way to proceed? First, it is important to emphasize that SART and ASRM are committed to the concept of oversight of ART. We are, however, also committed to the concept of appropriate oversight and do not want the United States to implement an oversight program that is reactionary, ill conceived, and not suited to the best long-term interests of all the interested parties in the infertility industry. There are different parties involved in oversight, including patients, providers, and the public. The patients are represented by payers and RESOLVE, the public by the government, CDC, FDA, FTC, ABA, IRBs, and the NIH. Providers have numerous representatives including SART, ASRM, Society of Reproductive Endocrinologists (SRE), Reproductive Biologists Professional Group (RBPG), Mental Health Professional Group (MHPG), Nurses Professional Group (NPG), American College of Obstetricians and Gynecologists (ACOG), American Medical Association (AMA), College of American Pathologists (CAP), Reproductive Laboratories Technology Professional

FIGURE 1

Different parties interested in oversight of ART.



Adamson. Regulation of ART in the U.S. Fertil Steril 2002

Group (RLTPG), American Association of Bioanalysts (AAB), and hospital, university, and industry groups, some of which are represented by the Biotechnology Industry Organization (BIO). There is considerable overlap of interest among all of these groups, and yet clearly each has its own constituency, mission, and interests (Fig. 1).

To develop a successful oversight authority in the United States, it is essential that a partnership of patients, providers, and the public be developed. Such oversight needs to be independent from any one interested party and have the authority for mandatory enforcement. It is critical that any mandates be flexible enough to accommodate rapid changes in technology, medical needs, and social perspectives. Standards of care need to be set and a few specific regulations developed. Oversight should be financed by all three interested parties, while avoiding polarizing political and moral agendas.

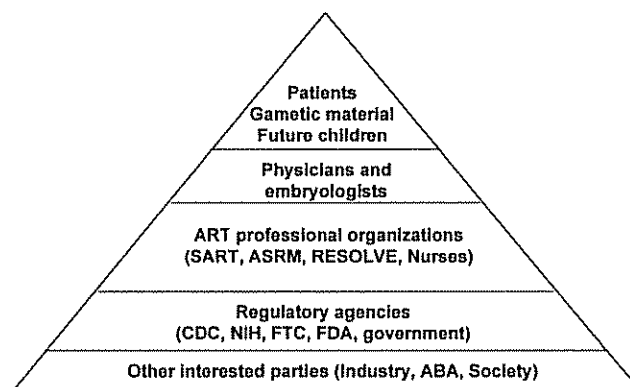
Current proposals for mandates for an oversight authority that are supported by SART include mandatory compliance, meaningful sanctions, uniformity in reporting, on-site inspection and validation, and development of practice standards, research standards, education standards, and counseling standards, as well as access to insurance coverage and research funding, and a limitation of regulation. Once established, any oversight authority must establish its own priorities: are they to meet consumer needs, allay public fears, protect embryos and future children, or control physicians and research? SART and others will continue to evaluate, discuss, and make proposals for government, professional, and public consideration.

In all of these considerations, the hierarchy of interest should be taken into account (Fig. 2). Simply stated, this

means that those who have the greatest interest in the outcomes of ART should have the greatest influence in the oversight authority. At the top of the hierarchy of interest are the patients, and with them their gametic material and future children. In all discussions and consideration, focus should be on providing the highest possible quality and value care for this group. Interests and considerations of others involved in ART should be secondary. It can be argued that physicians, embryologists, and other scientists who have developed this industry, who currently provide care and will provide the research and new technology of the future, have the secondary level of interest, as it is their primary focus professionally in life. Their interests should be second only

FIGURE 2

Hierarchy of interest.



Adamson. Regulation of ART in the U.S. Fertil Steril 2002

to those of the patients. Third in the hierarchy of interest come professional organizations involved in ART, such as SART, ASRM, RESOLVE, embryologists' organizations, nurses, and mental health professionals. They also have a large and focused commitment to this field.

Fourth, regulatory agencies, such as the CDC, FTC, FDA, NIH, and other federal agencies, have an important role to play in the development of oversight. However, ART is only a small area of their interest and expertise, and generally their control over the industry should be more limited than those higher in the hierarchy of interest. Finally, there are obviously other interested parties representing society. These include groups such as the ABA, industry organizations, and the general public. Their input to oversight is extremely important, but the values and mission of those who do not have a direct interest in the outcome of ART should carry less influence in the final development of oversight than those higher in the hierarchy of interest who are much more directly affected. Nevertheless, society has an overriding interest in some aspects of reproductive technology, such as reproductive somatic cell nuclear transfer, where it is legitimate for legislation to set the social and legal standards.

CONCLUSION

In conclusion, significant progress has been made in the United States in developing oversight. Reproductive technology is a complex and rapidly changing clinical, scientific, and ethical field of human endeavor. It involves highly visible and emotional issues. We live in a heterogeneous society in which there is a multiplicity of views on each and every issue. We will be successful in the United States only by ensuring that all those with an interest in oversight have a meaningful role in its development. It is important that the

hierarchy of interest be taken into account, allowing those with the greatest stake in ART to help develop oversight, which thus ensures the maximum rewards to those most affected by infertility and other reproductive issues.

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