Department of Health and Human Services

Centers for Disease Control and Prevention

Report to Congress

on

The Development of a National Action Plan for the Prevention, Detection and Management of Infertility

HOUSE APPROPRIATIONS COMMITTEE
SENATE APPROPRIATIONS COMMITTEE

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Introduction

In its report on the fiscal year (FY) 2010 budget for the Department of Health and Human Services, the House Appropriations Committee stated the following:

> *The Committee has included funding within Safe Motherhood/Infant Health for the development of a national public health plan for the prevention, detection, and management of infertility. The development of this plan is critical to the efforts of more than two million women who battle this medical condition across the U.S. The Committee supports the goal of CDC's national plan to identify public health priorities and encourages the integration of existing programs and initiatives regarding infertility, as well as creation of new programs as deemed necessary. The Committee requests that CDC report on the development of this plan to the Committees on Appropriations of the House of Representatives and the Senate no later than April 1, 2010.* (House Report 111-220, page 86)

In the report accompanying the Departments of Transportation and Housing and Urban Development, and Related Agencies Appropriations Act, 2010, the Committees on Appropriations of the House of Representatives and the Senate stated the following:

> *As proposed by the House, the conference agreement includes sufficient funding within Safe Motherhood/Infant Health for the development of a national public health plan for the prevention, detection, and management of infertility…The conferees request that CDC report on the development of this plan to the Committees on Appropriations of the House of Representatives and the Senate no later than April 1, 2010*. (House Report 111-366, page 1021)

The following report has been prepared by the Centers for Disease Control and Prevention, Department of Health and Human Services, in response to these requests.

This report will describe our progress on the development of a national action plan for the prevention, detection and management of infertility, including the background, the stakeholders, the process and the timeline.

Background

Infertility is an emerging public health priority. In 2002, the National Survey of Family Growth (NSFG) found that two million couples in the United States were infertile (i.e., had not conceived during the previous 12 months despite trying) (1). An estimated 7.3 million, or 12% of American women aged 15-44 years had received infertility services (including counseling and diagnosis) in their lifetime. More than 1.1 million women sought medical help to get pregnant in the previous year (1). Although the focus of research and services has traditionally been on women, fertility impairments may be just as common among men (2). A total of 7.5% of all sexually experienced men reported a visit for help with having a child; 2.2% reported a visit in the past year, equivalent to 3.3-4.7 million men reporting a lifetime visit and 787,000-1.5 million reporting a visit during the previous year (3). Recent trends toward postponing age at first pregnancy have highlighted the natural limits of fertility and accelerated the development and

use of medical technology such as Assisted Reproductive Technology (ART) to overcome such limits (4). The proportion of first births to women aged 30 years and older has increased more than fourfold since 1975, from 5% to 24% in 2006. The absolute number of these births increased from more than 69,000 to approximately 405,000 during this period (5, 6).

The American Society for Reproductive Medicine (ASRM) regards infertility as a disease (7). Similar definitions are being considered by the European Society of Human Reproduction and Embryology (ESHRE), and by the International Committee Monitoring Assisted Reproductive Technologies (ICMART). A U.S. Supreme Court opinion agreed with a lower court statement that reproduction is a major life activity and confirmed that conditions that interfere with reproduction should be regarded as disabilities, as defined in the Americans with Disabilities Act (8).

Public health programs can modify preventable causes of infertility which include pelvic inflammatory disease (PID) caused by sexually transmitted diseases (STDs), exposure to environmental and occupational hazards, tobacco smoking, and obesity. The risk of PID can be greatly decreased by early detection and treatment of STDs and, in particular, chlamydia infection (9). Environmental and occupational hazards account for an unknown proportion of infertility, but are suspected causes of declining human sperm quality in industrialized countries (10). There is increasing evidence that lifestyle factors such as tobacco smoking and obesity, which can cause chronic disease and disability later in life, can also adversely affect fertility during the reproductive years (11, 12).

Infertility is an area where health disparities are large. African American women have a twofold increase in the odds of reporting a history of infertility (13). Financial barriers, however, limit access to diagnosis, evaluation and treatment. (14) The public is becoming more aware and concerned about the efficacy, safety and cost-effectiveness of infertility treatment. Although infertility treatment, including ART, is generally safe, adverse outcomes have been described both in women undergoing ART and in infants born from these procedures (15). Multiple-gestation pregnancies are much more common after infertility treatment than after natural conception and increase the risk for maternal complications (16, 17). Multiple-birth infants are at increased risk for low birth weight, preterm delivery, infant death, and disability among survivors (16-21). For infertile women who have a good prognostic profile (i.e., a high expected probability of success with ART), the simplest and most effective strategy for reducing the risk of adverse ART outcomes is elective single embryo transfer (SET) (4). The public health community needs to make a concerted effort to respond to the challenge of infertility.

CDC response to infertility as a public health issue

CDC, as the leading public health agency of the federal government, has long been concerned with infertility, its causes and prevention. CDC conducts:

- Surveillance to monitor the prevalence of infertility and the use, efficacy and safety of infertility services and treatment;
- Research on the infectious, environmental and occupational causes of infertility, on the links between the treatment of chronic diseases and infertility, and on the links

between infertility treatment and birth defects, developmental disabilities and other birth outcomes; and
- Public health programs for the primary and secondary prevention of infertility, especially in the area of sexually transmitted diseases and reproductive tract infections.

The Division of Reproductive Health (DRH), National Center for Chronic Disease and Public Health Promotion, employs Safe Motherhood resources to maintain the National ART Surveillance System (NASS) and conduct research on the adverse health outcomes of ART. NASS data has been used to publish 13 editions of the ART Success Rates Report, as well as several Morbidity and Mortality Weekly Reports and peer-reviewed manuscripts. The Success Rates report is used extensively by providers to monitor trends in ART treatment and by consumers to assist with their decisions about ART treatment. NASS data and related publications have contributed to a better understanding of infertility and ART, as well as the association between ART treatment and adverse pregnancy outcomes, including preterm delivery and low birth weight.

In 2007, DRH began to coordinate an agency-wide ad hoc working group (Infertility Working Group) to improve communication and collaboration inside CDC on infertility activities and plans for infertility prevention. The group found that considerable gaps and opportunities remain in public health surveillance, research, communications, programs and policy development. This assessment led to the publication of a white paper by the group in 2008, in order to highlight infertility prevention, detection and management (4). This document served as a background piece for a Symposium on Infertility as a Public Health Issue which the group hosted at CDC in Atlanta, GA on September 14-15, 2008. Stakeholders (Appendix A) from federal agencies, professional and consumer organizations, academia, the health care community and industry were brought together to exchange information about infertility causes, consequences and potential interventions. The key questions posed during the symposium were:

1. On the basis of what we already know, what can be done now?
2. What are the most important gaps in our knowledge where we need to put resources into gathering new information?
3. What organizations could best address the advancement of these issues?
4. Can your organization play a role in the advancement of these issues?

The symposium was organized as a series of presentations on key topics, followed by a full day of discussions addressing the key questions above. Participants provided feedback regarding what might be needed to develop a comprehensive public health approach to infertility prevention, detection and management and by doing so, create opportunities to exchange ideas and promote collective development of an action plan. At the conclusion of the meeting, participants requested that the Infertility Working Group outline a national action plan on infertility based on material presented and group discussions, at the symposium.

Process for developing the National Action Plan outline

Over the past year, the CDC collated comments from individual representatives of other federal agencies and external stakeholders (Appendix A) and drafted a 42-page document titled "Outline of a National Action Plan for the Prevention, Detection and Management of Infertility". The outline will serve as a template for the development of the plan.

The overall goal of the plan is to promote and preserve the ability of Americans to conceive, and the ability of American women to carry a pregnancy to term and deliver a healthy child. Specific objectives are:

- To reduce the burden of infertility and sub-fecundity in the U.S. by:
  - Removing or reducing environmental threats to fertility;
  - Promoting behaviors that maintain fertility;
  - Promoting prevention, early detection and treatment of infections and other medical conditions that lead to infertility;
- To improve access to the diagnosis and treatment of infertility;
- To improve the efficacy and safety of infertility treatment; and
- To improve the quality of life of Americans who live with infertility.

Success of the plan will depend on a broad range of stakeholders who can set priorities and identify resources, with CDC facilitating this effort as one of the stakeholders. The plan will require a coordinated approach in order to define target groups and develop appropriate guidelines, evidence-based practices and evaluation plans. Policy makers, program planners and consumer groups need to be involved to assure implementation of best practices, and public-private partnerships will need to be established. Information from a number of sources has been integrated to create the outline of the plan. The outline includes information presented and discussed at the Symposium, as well as follow-up conversations and correspondence, and includes areas that stakeholders, thought important to consider for a National Action Plan on infertility. The present version of the outline incorporates changes made to accommodate stakeholder comments received on or before November 30, 2009 and is currently proceeding through clearance at CDC. Working groups consisting of stakeholder volunteers will be formed to address specific components of the outline and will complete the development of the plan. These groups will address infertility surveillance, public health research, male infertility, environmental and occupational causes, infectious causes, fertility preservation, policy, and other topics as needed and requested by the stakeholders. These groups will be facilitated by CDC staff and coordinated by a steering committee comprising the chairs of each group. The groups and the steering committee will be self-governing, choose their own members, and will not be controlled by the CDC. The working groups will modify or expand the outline, if needed, and add recommendations for public health action steps that should be taken to achieve the objectives of the plan. The Plan is not specifically intended to provide direct advice to the CDC or other agencies of the Executive Branch.

The following is the proposed timeline for developing the Plan.

Timeline FY 2010: National Action Plan

Oct 2009 Compiled feedback from stakeholders regarding the National Action Plan on for the Prevention, Detection and Management of Infertility outline and on the organization of the working groups (completed).

Dec 2009 Submitted outline into CDC clearance (pending).

Jan 2010 Solicited stakeholders and Infertility Working Group members to chair working groups (in progress).

April 2010 Form steering committee and working groups. Hold planning conference calls (in progress).

Sept 2010 Working groups develop proposed action steps for steering committee.

FY 2011 Tasks

Fall 2010 Working groups review steering committee comments and incorporate finalized steps into draft National Action Plan.

A website on infertility has also been established: www.cdc.gov/reproductivehealth/infertility where the following are posted:

- Information for consumers on infertility
- A link to the white paper
- Links to CDC partner organizations who address infertility

Once the outline for the National Action Plan is cleared at CDC, it will also be posted on this website and visitors will be able to provide comments on the document.

The National Action Plan

Although CDC staff compiled the outline and will be actively engaged in the development of the Plan, it is important to clarify that the Plan does not necessarily represent the agency's official position, but rather the view of a broad coalition of stakeholders, of which CDC is a member. CDC will continue to work with fellow stakeholders to complete the development of the Plan. Depending on the interest of the stakeholders and on the resources available, periodic assessments will be made on progress toward the objectives stated in the Plan as well as re-evaluations of priorities for public health action in the area of infertility.

The actions recommended in the Plan will be grouped into the same five categories employed to organize the outline (these categories are similar to those used to organize the Public Health Action Plan to Prevent Heart Disease and Stroke (22)):

1. Evaluating Impact: Monitoring the Burden and Measuring Progress
2. Advancing the Knowledge Base: Primary, Secondary and Tertiary Prevention Research

3. Advancing Policy: Defining the Issues and Finding the Needed Solutions
4. Strengthening Capacity: Transforming the Organization and Structure of Public Health Agencies and Partnerships
5. Taking Action: Putting Present Knowledge to Work

Evaluating Impact is the surveillance portion of the Plan. This section will address the surveillance systems and methods needed to monitor disease incidence and prevalence, risk factors for infertility, infertility-related services, and service utilization and cost effectiveness.

The next component of the Plan, Advancing the Knowledge Base, will include research into the primary prevention of infertility, i.e., research into the causes of infertility and intervention research; research into the secondary prevention of infertility, i.e., research into early detection and treatment, and research into the tertiary prevention of infertility, i.e., research to reduce the risk of adverse effects of treatment and other longer term consequences of infertility.

Advancing Policy, the third essential component, will include analyses and recommendations for the development of treatment guidelines, public education and communication strategies, and for the translation of research results into practice. Also addressed in this section will be health disparities and cost of treatment, as well as insurance issues and healthcare financing.

The Strengthening Capacity component will emphasize improving and expanding data collection and service delivery systems as well as engaging stakeholders and creating partnerships to improve dissemination of knowledge and promote access to care, including preventive services.

Finally, the Taking Action component will highlight the most urgent action steps from all sections of the plan, or the “what we can do now based on what we already know” portion of the plan.

We hope that with the guidance provided by the National Action Plan, the efforts of the stakeholders within and outside government will be better focused and coordinated, and will be more effective in decreasing the burden placed by infertility on the public’s health.

References

1. Chandra A, Martinez GM, Mosher WD, Abma JC, Jones J. Fertility, family planning, and reproductive health of U.S. women: data from the 2002 National Survey of Family Growth. Vital Health Stat 23 2005;1–160.

2. Martinez GM, Chandra A, Abma JC, Jones J, Mosher WD. Fertility, contraception and fatherhood: data on men and women from cycle 6 (2002) of the 2002 National Survey of Family Growth. Vital Health Stat 23 2006;(26):1–142.

3. Anderson JE, Farr SL, Jamieson DJ, Warner L, Macaluso M. Infertility services reported by men in the United States: national survey data. 1: Fertil Steril. 2008 Apr 24. [Epub ahead of print] PMID: 18439586 [PubMed]

4. Macaluso M, Wright-Schnapp TJ, Chandra A, Johnson R, Satterwhite CL, Pulver A, Berman SM, Wang RY, Farr SL, Pollack LA. A public health focus on infertility prevention, detection, and management. Fertil Steril. 2008 Nov 5. [Epub ahead of print] PMID: 18992879 [PubMed].

5. Ventura SJ. Trends and variations in first births to older women, United States, 1970-86. Vital Health Stat 21 1989;(47):1–27.

6. Hamilton BE, Martin JA, Ventura SJ. Births: preliminary data for 2006. Natl Vital Stat Rep 2007;56:18.

7. American Society for Reproductive Medicine. Definition of ‘‘infertility’’. Fertil Steril 2006;86:S228.

8. Bragdon v. Abbott, 524 U.S. 624 (1998).

9. Scholes D, Stergachis A, Heidrich FE, Andrilla H, Holmes KK, Stamm WE. Prevention of pelvic inflammatory disease by screening for cervical chlamydial infection. N Engl J Med 1996;334: 1362–6.

10. Swan SH, Elkin EP, Fenster L. The question of declining sperm density revisited: an analysis of 101 studies published 1934-1996. Environ Health Perspect 2000;108:961-6.

11. Augood C, Duckitt K, Templeton AA. Smoking and female infertility: a systematic review and meta-analysis. Hum Reprod 1998;13:1532-9.

12. Nestler JE, Clore JN, Blackard WG. The central role of obesity (hyperinsulinemia) in the pathogenesis of the polycystic ovary syndrome. Am J Obstet Gynecol 1989;161:1095-7.

13. Wellons MF, Lewis CE, Schwartz SM, et al. Racial differences in self-reported infertility and risk factors for infertility in a cohort of black and white women: The CARDIA Women's Study. Fertil Steril 2008.

14. Peterson MM. Assisted reproductive technologies and equity of access issues. J

Med Ethics 2005;31:280-5.

15. Van Voorhis BJ. Outcomes from assisted reproductive technology. Obstet Gynecol 2006;107:183-200.

16. The ESHRE Capri Workshop Group. Multiple gestation pregnancy. Hum Reprod 2000;15:1856-64.

17. Senat MV, Ancel PY, Bouvier-Colle MH, Breart G. How does multiple pregnancy affect maternal mortality and morbidity? Clin Obstet Gynecol 1998;41:78-83.

18. Kiely JL. What is the population-based risk of preterm birth among twins and other multiples? Clin Obstet Gynecol 1998;41:3-11.

19. Klemetti R, Gissler M, Hemminki E. Comparison of perinatal health of children born from IVF in Finland in the early and late 1990s. Hum Reprod 2002;17:2192-8.

20. Dhont M, De Sutter P, Ruyssinck G, Martens G, Bekaert A. Perinatal outcome of pregnancies after assisted reproduction: a case-control study. Am J Obstet Gynecol 1999;181:688-95.

21. Pharoah PO. Risk of cerebral palsy in multiple pregnancies. Clin Perinatol 2006;33:301-13.

22. US Department of Health and Human Services. A Public Health Action Plan to Prevent Heart Disease and Stroke. Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention; 2003.

Appendix A

The below list contains organizations that participated in the symposium and review process or have expressed interest in working on the National Action Plan for the Detection, Prevention and Management of Infertility.

Aetna
Agency for Toxic Substances & Disease Registry (ASTDR)
Albert Einstein College of Medicine
American Academy of Family Physicians (AAFP)
American College of Obstetrics and Gynecology (ACOG)
American Sexually Transmitted Disease Association (ASTDA)
American Social Health Association (ASHA)
American Society of Andrology (ASA)
American Society for Reproductive Medicine (ASRM)
American Urological Association (AUA)
Association of Maternal and Child Health Programs (AMCHP)
Association of Reproductive Health Professionals (ARHP)
Blue Green Alliance
Boston University
Boston Women's Health Book Collective (BWHBC)
Brown University
California Department of Health Services
Centers for Disease Control and Prevention (CDC)
Collaborative on Health and the Environment (CHE)
Department of Defense (DOD)
Duke University
EMD Serono
Emory University
Environmental Protection Agency (EPA)
Family Health International (FHI)
Fertile Hope
Fertility Preservation Working Group (FPWG)
Fertility Solutions
Florida Department of Health
Food and Drug Administration (FDA)
Harvard School of Public Health
Health Resources & Services Administration (HRSA)
International Committee Monitoring Assisted Reproductive Technologies (ICMART)
Lance Armstrong Foundation
March of Dimes Foundation
Massachusetts Department of Public Health
McMaster University
Michigan Department of Community Health
National Academy of Sciences/Institutes of Medicine (NAS/IOM)
National Coalition for Oversight of Assisted Reproductive Technology (NCOART)
National Coalition of STD Directors (NCSTDD)
National Institutes of Health (NIH)
Northwestern University
Northwestern University Oncofertility Consortium
Office of Public Health and Science (OPHS)
Partnership for Prevention
Planned Parenthood Federation of America (PPFA)
Rachel's Well
Reproductive Health Technologies Project (RHTP)
RESOLVE: The National Infertility Association (RESOLVE)
Rollins School of Public Health at Emory University
Society for Gynecologic Investigation (SGI)
Society for the Study of Male Reproduction (SSMR)
State University of New York
The American Fertility Association (The AFA)
The Environmental Working Group (EWG)
University of Alabama at Birmingham
University of California at Irvine
University of California, Los Angeles
University of California, San Francisco
University of Connecticut
University of Illinois at Chicago
University of Kansas
University of North Carolina
University of Pittsburgh
University of Rochester
University of Washington
Vanderbilt University
Virginia Mason University
Walter Reed Army Medical Center