OPPORTUNITIES IN CLINICAL AND PUBLIC HEALTH PRACTICE TO IMPROVE BIRTH OUTCOMES

SACIM Subcommittee on Clinical and Public Health Practice

September 25, 2006

STATEMENT OF THE PROBLEM

Over the past several decades, marked improvements in birth outcomes have been achieved in the United States. More recently, however, improvements in birth outcomes have slowed, and, finally, a number of outcomes have begun to deteriorate. During this entire period, marked disparities in birth outcomes between rich and poor and among racial and ethnic groups have persisted, and even widened in some instances. These poorer birth outcomes and disparities in outcomes have occurred despite substantial improvements in access to prenatal care.

To a substantial degree, improvements in birth outcomes in recent decades have been attributed to improvements in neonatal intensive care, which have improved birthweight-specific mortality and morbidity rates for decades. For many years, these birthweight-specific improvements have overridden static and now deteriorating prematurity and low birthweight prevalences. The evidence of recent years suggests that the capacity of neonatal intensive care interventions to continue to improve birth outcomes appears to be quite limited.

As substantial progress in our ability to "rescue" profoundly ill infants has slowed, it is clear that strategies focused on reducing the prevalence of premature births, low birthweight births, birth defects and other causes of profound illness in infants (eg. maternal chronic disease, smoking, obesity/diet/fitness, use of teratogens) must come to the forefront. By their very nature, these problems must be addressed before the beginning of pregnancy, in many instances years before pregnancy. We need to begin to address many of these issues in childhood and adolescence. It is also clear that addressing these problems will benefit not only women intending to become pregnant, but all women. Our strategies should include population-based initiatives as well as indicated interventions for children, teens and women who have specific needs.

CORE RECOMMENDATIONS

1. The Secretary of DHHS will promote and disseminate throughout the department the lifespan paradigm for infant mortality prevention, with an emphasis on preconceptional care for women of childbearing age.

The infant mortality prevention paradigm of the past focused predominantly on interventions of a medical nature that occur during the nine months of pregnancy. That paradigm is too narrow to address the issue of birth outcomes in the 21st century. The Committee supports a new paradigm, one that proposes that optimal birth outcomes will not be achieved until we effectively promote the health of women across the lifespan, from childhood through the childbearing years. As ACOG states: "Optimizing a woman's health before and between pregnancies is an ongoing process that requires the full participation of all segments of the health care system." The Committee proposes that birth outcomes are a result of medical, but also social and economic determinants,

and that our strategies to improve birth outcomes need to address all of these factors. These strategies must be community-based and culturally competent.

SACIM recognizes and welcomes the great interest that a variety of stakeholders have shown with respect to the promotion of preconceptional care, including the first national summit on preconceptional care, held in June 2005.
Agencies within DHHS that play a role, or have the potential to play a role, in reducing infant mortality will utilize the lifespan paradigm in their strategic planning processes and in the resource allocation decisions they make. In particular, all public health programs should be informed by the lifespan paradigm and the impact of social determinants of health.

The Committee finds that there are two major barriers to achieving further reductions in infant mortality. First, there are areas where evidence-based practices exist, but they are not fully disseminated or completely adopted. Second, there are a variety of areas where further research is needed to refine existing strategies or identify significant new strategies. The Committee addresses the first barrier in recommendation 2 and the second barrier in recommendation 3, below:

2. The Secretary will convene a State-of-the-Evidence Conference to identify interventions for which there is clear evidence that they effectively reduce infant mortality. Conference participants should represent a wide range of stakeholders, public and private. Participants will also be charged to identify opportunities and barriers relating to full implementation of these evidence-based strategies and to identify successful approaches that are community-based and culturally competent.

Examples of evidence-based strategies which are incompletely implemented include evidence-based prenatal smoking cessation initiatives, use of 17 hydroxyprogesterone for the prevention of recurrent preterm birth, infant sleep positioning, preconceptional diabetes control, prevention and treatment of periodontal disease and reductions in higher order multiple births.

Agencies within DHHS that play a role, or have the potential to play a role, in reducing infant mortality will support the strategies identified in the State-of-the-Evidence Conference in their strategic planning processes and in the resource allocation decisions they make.

3. The Secretary will appoint an interagency group that will identify and prioritize a research agenda to identify interventions that will effectively reduce infant mortality.

Examples of areas where additional research is critically needed include identifying the causes of preterm birth, the impact of stress on birth outcomes and birth outcome disparities, childhood determinants of birth outcomes, intergenerational impacts on birth outcomes, and the optimal periodicity and content of prenatal care.

Consideration should be given to other areas identified in the SACIM low birthweight report and recommendations (December 2001) and the report of the Interagency Work Group on Low Birthweight and SIDS submitted to the Secretary June 2005.

SACIM recognizes and welcomes the interest of groups such as the March of Dimes and the Institute of Medicine in improving birth outcomes. The interest of these important stakeholders gives us an important window of opportunity for collaboration and progress. SACIM supports the creation of multi-disciplinary research centers to address specific critical research areas as recommended by the IOM report on the prevention of preterm birth.

Agencies within DHHS that play a role, or have the potential to play a role, in reducing infant mortality will support the research agenda in their strategic planning processes and in the resource allocation decisions they make.

Finally, appropriate data are a prerequisite for accountability and for continuous improvement. In addition, we are all familiar with the principle "what gets measured gets done". These points lead to the Committee's fourth and final recommendation:

4. The Secretary will appoint an interagency group that will identify from existing indicator sets those core measures which are most critical for reducing infant mortality. The interagency group will identify a lead agency for each indicator, and agencies within DHHS will determine the roles each agency can play to improve outcomes in these shared critical indicators.

Examples of measures that could be included in a set of shared indicators include appropriate infant sleep positioning rates, unintended pregnancy rates, prenatal smoking cessation rates, and measures of appropriate 17 hydroxyprogesterone use.

Agencies within DHHS that play a role, or have the potential to play a role, in reducing infant mortality will "own" the indicators relevant to their mission, and be held accountable for progress in those indicators. In their strategic planning processes and in the resource allocation decisions they make, they will aim to "move" the indicators they "own."

Identification of this critical indicator set will allow the nation to chart our success or failure in implementing strategies demonstrated to lead to improved birth outcomes.

Agencies within DHHS will identify existing data sources that may be used to generate shared indicator information and will identify strategies to secure data to support the critical indicator set when existing data sources are inadequate.

CONCLUSIONS

While research is needed in a variety of areas to elucidate the most effective ways to reduce infant morbidity and mortality, it is clear that improved access to prenatal care is not, in and of itself, a sufficient strategy.

The subcommittee is firmly convinced that one key to improving birth outcomes is to recognize the critical importance of strategies that promote the wellbeing of women across the lifespan. Without denigrating in any way the importance of timely, evidence-based prenatal care, the subcommittee firmly believes that effectively promoting the health of girls and women is key to reversing the recent deterioration in birth outcomes and returning to the historical downward trends in infant mortality and morbidity.

In addition, the committee believes that a broad range of social determinants contribute to both the nation's overall high infant mortality rate and to the great disparities in birth outcomes that exist in the U.S. Many of these social determinants are not health system-specific, and cannot be successfully addressed by health-specific strategies. They require us as a society to address issues of racism, economic insecurity and educational opportunity. Success in addressing these issues will require the active engagement of leaders in all these fields.

For these reasons, the subcommittee proposes a paradigm shift in the way our society thinks about how to achieve good birth outcomes. In our current paradigm, we have thought of good birth outcomes as first and foremost a medical issue, to be addressed essentially by medical interventions. From a temporal standpoint, we have thought of good birth outcomes as substantially resulting from a set of strategies that do not begin until the first prenatal visit. The subcommittee proposes a new paradigm in which we expand both these axes. We believe that birth outcomes are a result of medical, but also social and economic determinants. As a result, in order to promote optimal birth outcomes, we need effective social and economic strategies, as well as effective medical strategies. Optimal birth outcomes will not be achieved until we effectively promote the health of women across the lifespan, from childhood through the childbearing years.

The subcommittee recognizes that paradigm shifts of this magnitude do not occur overnight. The perspective of the new paradigm the subcommittee is proposing can quickly lead to broad, visionary recommendations: goals such as an end to racism, economic security for all, universal health insurance. While it is true that these conditions would foster truly optimal birth outcomes, the subcommittee also believes that the paradigm we are proposing leads to a number of practical, implementable recommendations.

APPENDIX: SUPPLEMENTAL RECOMMENDATIONS

In the course of its deliberations, the subcommittee concluded that there are four main areas where opportunities to improve birth outcomes and reduce infant mortality exist. The subcommittee analyzed each of these four areas, and formulated within each area a number of supplemental recommendations that will be useful to the planners and participants in the "State of the Art" Conference recommended in recommendation 2 and to the interagency group charged with developing an infant mortality reduction research agenda (recommendation 3).

Consistent with the subcommittee's commitment to the "lifespan" paradigm, two of the areas represent lifespan categories: (1) recommendations relevant to women before pregnancy or between pregnancies and (2) pregnancy-related recommendations. The other two areas address key areas of practice: (3) recommendations that will improve public health practice and (4) recommendations that will promote excellence in clinical service provision.

Area 1: Pre-reproductive care/Preconception care

The two leading causes of infant mortality are congenital anomalies and low birth weight babies. The factors which lead to these problems are in place long before a woman finds out that she is pregnant. Increased access to prenatal care in the traditional sense has proved to be inadequate in ameliorating these problems. Therefore any attempt to reduce infant mortality must address improved education and healthcare for women prior to conception. Because close to half of all pregnancies are unintended, the health of all women of reproductive age impacts overall pregnancy outcomes.

Recommendations for improving preconception care should include the following strategies:

Education of all women of reproductive age about the importance of good nutrition and healthy lifestyles should be placed at high priority. Both low pre-pregnancy weight and obesity have been shown to be risk factors for adverse outcomes in pregnancy. Therefore lifestyle and dietary changes should focus on achieving a healthy weight. Because of the proven role of folic acid in reducing neural tube defects, all women should be advised to take folic acid supplements regardless of their pregnancy plans.

The importance of abstaining from tobacco, alcohol and illicit drugs should be stressed by health care providers to all women of reproductive age.

Aggressive efforts should be made to implement effective strategies for optimizing overall health in women in high risk groups. Optimal control of diabetes and hypertension and other chronic medical conditions prior to pregnancy would significantly reduce the incidence of low birth weight babies.

ACOG has recommended that obstetrician gynecologists and primary care providers help their patients to develop a reproductive plan for life. Studies have shown that an inter-pregnancy interval of less than 18 months is associated with an increased risk of prematurity and low birth weight babies. Strategies to encourage postpartum visits and interconceptional counseling should be implemented to encourage optimal intervals between pregnancies.
Priority should be given to reducing the number of unintended pregnancies through programs which promote abstinence and responsible family planning. This would include increased access to family planning services especially for low income women.

Health care professionals should be re-educated on the importance of integrating preconception counseling into routine "well-woman" care.

Despite efforts, we are missing the golden opportunity before and between pregnancies to improve pregnancy outcomes/perinatal health and enhance a woman's overall health.

The major components of preconception care should be: health promotion, risk assessment, and treatment/interventions, with the focus being risk reduction and healthy pregnancy outcomes.

Pregnancy outcomes are determined by multiple factors including: age, race, reproductive history, medical history, nutritional status, body mass index (BMI), occupational and environmental exposures, genetics, lifestyles, immunizations, medications, and access to healthcare.

The question becomes how to integrate this concept into a lifespan model to ultimately achieve improvements in perinatal health.

Childhood or pre-reproductive issues to address in this model include:

- Nutritional status: overexposure to unhealthy snacks, non-nutritional foods;
- Body mass index (BMI): sedentary routines found in schools and home, decline in physical education or physical activity;
- Lifestyles: decrease in academic performance, likelihood of being bullied, poor self image, psychological/social problems.

Recommendations:

- Investigate potential school-based programs that have addressed obesity
- Demonstration project that looks at changing the physical education programs curriculum in elementary, middle, junior high and high schools.
- Research and develop academic standards for health and nutrition classes
- Research and develop guidelines for food and beverage options at schools including vending machines

Adolescent/young adult preconception care issues to address in this model include:

- age

- race
- reproductive history
- medical history
- nutritional status
- body mass index (BMI)
- occupational and environmental exposures
- genetics
- healthy lifestyles
- immunizations
- medications
- social issues (stress, abuse/violence, quality of relationship)
- family planning (interconceptional health)

Recommendations:

- Research coverage issues from third party payors for routine preconception care
- Media and social marketing needs to educate both males and females in the importance of preconception health and the implications for poor birth outcomes
- Preconception care should be incorporated into school curricula, the workplace, premarital counseling, community settings and agencies using media to get the appropriate message to the general public.
- Identify evidenced-based practices in preconception care like: CDC 12 components of preconception care.
- Identify effective preconception strategies for high risk groups (diabetes, previous preterm birth, obesity, high blood pressure, etc)
- Incorporate preconception care as part of routine well women care of reproductive ages that aims at to ensure men and women enter their reproductive years in optimal health
- Identify optimal levels of folate fortification and what age it should be incorporated as a supplement with daily vitamins.
- Educate the public that preconception care is not just for the first time you become pregnant it needs to be synonymous with interconceptional care

Area 2: Pregnancy-Related Recommendations

1. Integrate existing evidence-based strategies for smoking cessation into all prenatal care.

>According to the March of Dimes, if no pregnant women smoked, infant mortality would decline by 10%; it is unlikely that any other single intervention would have as great an effect on infant mortality rates;
>Evidence-based smoking cessation interventions have been identified;
>Possible action step: identify strategies to provide reimbursement specific to smoking cessation services rather than bundling cessation services into general PNC.

2. Optimize the use of hydroxyprogesterone to reduce the prevalence of preterm births.
    >Optimize dissemination in practice of progesterone use for current indications to prevent preterm birth;
    >Support research into additional indications for progesterone use.

3. Ensure risk-appropriate prenatal care.
    >Ensure that women with chronic diseases receive optimal care for those conditions (ie. access to appropriate specialists, facilities, therapies, etc.).

4. Ensure risk-appropriate intrapartum care.
    >Analyze barriers to ensuring that very low birthweight infants are born at tertiary centers.

5. Identify more effectively evidence-based practices in care during the prenatal period.

6. Analyze the periodicity, timing, number and content of prenatal care visits.
    >The current model of prenatal care provided in the United States evolved in early years of the last century, in response to a very different spectrum of perinatal morbidity and mortality. Other countries use very different prenatal care schedules. This area may present an opportunity to improve care without increasing costs.

7. Analyze and/or support data-driven clinical continual quality improvement initiatives to improve perinatal care.

8. Identify and integrate effective wraparound services into prenatal care.

9. Promote oral health.
    >There is substantial evidence that women with periodontal disease are at high risk for preterm delivery.

10. Identify and support more effective strategies to promote correct infant sleep positioning.

11. Identify and implement effective strategies to reduce the prevalence of higher order multiple births.

Area 3: Improvements in Public Health Practice

- Public Health Practice begins with data. The epidemiology of pregnancy has changed and continues to change. New knowledge is increasing our understanding of how pregnancy has changed. Data bases such as birth certificates, PRAMS, WIC, CMS data on Medicaid financed births in U.S. and international data bases like Finland data on childhood growth and adult outcomes provide information not available in the past, e.g., impact of stress, chronic disease, obesity, age, pregnancy intendedness, marital status, violence, smoking,

alcohol, nutrition, sedentary lifestyle, racial/ethnic cultural issues, multiple births, built environments, toxic exposures, developmental origins of health and disease.

- We must find ways to integrate this new knowledge, this new understanding into what we do. (clinically and public health)
- The public health practice of limiting birth outcomes to MCH must change to involve all of public health. For example, we must go beyond family planning and MCH to involve colleagues in chronic disease prevention, health promotion, environmental health, nutrition and physical activity to improve women's overall health prior to conception.

- Public health practice must be organized around a "new" paradigm, as the old paradigm does not work with current realities of what impacts pregnancy outcomes. Old paradigm – 9 month focus; new paradigm – lifespan focus.

- How does this happen? First, look at the data. Accept new epidemiology of pregnancy. Second, translate data into knowledge that informs action. Third, educate the leadership in state and local health departments so they can support program staff to think and act more broadly on improving women's health prior to conception.

- Improve the data sources we have and build in periodic evaluations of them.

- Outreach to the provider community must also occur. (Primary care, pediatrics, OB-GYN)

- Public health has a role in educating and advocating for broader public health policy and practice.

- Short term examples of some public health practices that need to change
    - Many public health departments have school age programs that impact the health of both boys and girls through 12th grade.

    - With the changes in epidemiology of pregnancy (decrease in teen pregnancy rates, improved access to contraception) public health must begin to identify effective strategies post high school (colleges and universities).

- One strategy that appears to be highly effective in changing public health practice is an Institute of Medicine (IOM) study. The IOM "purple book" on the content of prenatal care was the "Bible" of the "old paradigm". Perhaps it is time for the federal government to commission IOM to do a 21st century look at taking a lifespan approach to pregnancy: update guidelines and update approaches that are broader. Include what we are learning about social determinants and pregnancy outcomes.

Area 4: Promoting Excellence in Clinical Service Provision

Statement of the problem
Although evidence-based practices to improve birth outcomes (smoking cessation intervention and folic acid supplementation) have been identified and others currently being evaluated (preconceptional diabetes control and obesity reduction) show promise of doing the same, such practices have not been adequately implemented in clinical practice. In addition, there are an inordinate number of patients whose acceptance of the implementation is less than ideal. The reasons for these occurrences are numerous and multifactorial, and they must be identified and remediated if significant improvement in birth outcomes is to be made.

Clinician implementation of evidence-based and other recommended obstetric practices
There are four major reasons for clinician reluctance or inability to implement evidence-based and other recommended obstetric practices. They are the following:

- Lack of incentives such as recognition and reimbursement
- Lack of resources
- Time commitment
- Levels of awareness or understanding

Clinician incentives include professional recognition and appropriate reimbursement. Professional recognition of clinician excellence is provided by organizations such as the American College of Obstetricians and Gynecologists (ACOG), and the American Academy of Family Practice (AAFP) and their corresponding Boards. The American Medical Association (AMA) also has recognition awards. The second incentive is appropriate reimbursement for resources and time commitment which will be elaborated below.

Many clinicians lack patient educational resource materials (written, verbal, audiovisual, and consultative). This makes it difficult and time consuming for them to adequately inform and impress the patient about recommended practices and their significance.

The time commitment involved in informing patients concerning evidence-based and other promising practices and their implementation is considerable. This also infringes on the time of office personnel. Both of these factors play a large role in the office or clinic operational expenses which of course is directly related to the level of incentives mentioned above.

Clinician lack of awareness or understanding is thought to be the least likely factor to interfere with clinician implementation of evidence-based and other recommended obstetric practices. All clinicians have mandatory requirements for continuing medical education (CME) that are linked to licensing, malpractice insurance eligibility, hospital privileges, and specialty board certification or recertification. These CME requirements plus solicited or unsolicited information from professional organizations, public health (local, state, and national) notifications, pharmaceutical and medical device companies,

news media, and patient requests make it unlikely that a clinician will miss any significant evidence-based obstetric recommendations.

Patient acceptance of evidence-based and other recommended obstetric practices

There are two major reasons for lack of patient acceptance of evidence-based and other recommended obstetric practices. They are the following:

- Lack of awareness or understanding
- Lack of availability due to no or inadequate patient medical supervision which, for a large part, may be due to inadequate patient income or funding for services.

Patient lack of awareness or understanding has many facets ranging from communication difficulties to cultural biases, but one thing is certain. When the prospective mother clearly understands the importance of the recommendation to her unborn child, she will in almost all cases follow that recommendation if it is made reasonably accessible. This was clearly illustrated in the positive response of pregnant women who were suspected of having AIDS when they opted for testing and the subsequent disease carrier identification state, if such testing would allow for treatment that would prevent the disease in their expected children.

Once awareness and understanding are attained, a more difficult problem arises in making available the practices that are recommended. Once again, the reasons for unavailability are multi-factorial ranging from geographic location to funding but the major factor is the latter.

Recommendations

In order to overcome the above described barriers to implementation of evidence-based and other recommended obstetric practices, the following recommendations are made. They are listed in the same format and order as described above.

Clinician implementation of evidence-based and other recommended obstetric practices

Lack of incentives such as recognition and reimbursement

Actions

- Provide recognition thru professional organizations
- Relate to
  - Certification
  - Licensing
  - Malpractice insurance

Lack of resources

Actions

- Make available appropriate educational and consultative resources
- Assure adequate reimbursement

Time commitment

Actions

- Provide necessary “efficiency” materials and training to clinician and his or her office personnel

- Reimburse for time spent

Lack of awareness or understanding

Actions

- Publicize thru professional organizations, governmental agencies, medical media. Stress significance particularly the relationship to successful outcomes and possible malpractice issues.

Patient Acceptance of evidence-based and other recommended obstetric practices

Lack of awareness or understanding

Actions

- Publicize thru media particularly TV, radio, and lay publications
- Publicize thru local public and private health facilities, schools, and workplaces
- Engage non-governmental organizations (March of Dimes, etc.)

Lack of availability due to:

Absent or minimal health care

Actions

- Neighborhood clinics
- Mobile units
- Utilize schools, churches, and social organizations

Inadequate Funding

Action

- Request federal, state and foundation funding.

The above action steps require prioritization based upon evaluation by individuals or agencies with knowledge and expertise in these areas. Those implemented will also require a program of careful monitoring and timely evaluation of effectiveness. Feedback from such evaluations will be used to modify the actions for increased effectiveness. This may require additional research activity.

GLOSSARY

DHHS Department of Health and Human Services

ACOG American College of Obstetricians and Gynecologists

SIDS Sudden Infant death Syndrome

CDC Centers for Disease Control and Prevention

PNC prenatal care

PRAMS Pregnancy Risk Assessment Monitoring System

WIC Women, Infants and Children

CMS Centers for Medicaid and Medicare

MCH Maternal and Child Health