

**MCH 710**  
**PERINATAL EPIDEMIOLOGY**  
(3 Credits)

**Department of Maternal and Child Health**  
**School of Public Health**  
**University of Alabama at Birmingham**

**Winter, 2001**  
**Monday/Wednesday**  
10:00 - 12:00 PM  
125 Ryals Building

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**Course Description:** This course provides an introduction to perinatal epidemiology and its application in the field of Maternal and Child Health. Specifically, this course is designed to:

1. introduce core topics within the perinatal epidemiology field;
2. cover current and emerging national perinatal epidemiology research efforts;
3. address ongoing problems with the measurement of key perinatal concepts and indicators of newborn maturity;
4. examine programmatic and policy initiatives that are focused on the improvement of pregnancy outcome and the prevention of infant mortality;
5. identify the major socio-demographic, economic, medical, nutritional and behavioral risk factors for a poor pregnancy outcome;
6. introduce available data bases used to monitor perinatal health status.

**Course Format:** Course sessions will involve lectures, groups discussions and small-group activities. Guest presenters will be used to address specific topics. Student presentations are also required.

**Course Objectives:** Upon completion of the course, the student will have increased their understanding of and knowledge in:

1. the core topics of inquiry of the perinatal epidemiology field;
2. the terminology and vocabulary used in perinatal health research;
3. the key measurement issues related to perinatal health status indicators;
4. the measurement limitations of indicators commonly employed to delineate newborn maturity;
5. programmatic and policy initiatives related to improving perinatal health status;
6. the major precursors of and risk factors for poor pregnancy outcome;
7. the available data bases typically employed in perinatal health status monitoring and research efforts.

**Course Evaluation:** Students will be evaluated on the basis of:

1. Oral presentations (20%) and written assignment (20%)
2. Participation in class discussions and exercises (20%)
3. Exams: Mid-term on 2/9 (20%) and final take-home due 3/13 (20%)

**Readings:** Required readings will be identified for each session. These readings will be on reserve in the library of the Department of Maternal and Child Health.

**Text Books:** 1 - Wilcox LS, Marks JS, eds. From Data to Action. Atlanta: Centers for Disease Control, 1994.

2 - Alexander GR (Guest Editor). Prenatal and Neonatal Medicine 1998; 3(1): 1-184.

## **Course Outline:**

### **- Course Introduction**

Course Description  
Course Format  
Course Objectives  
Evaluation Criteria  
Readings  
Course Outline  
Class Roll  
Assignments & Exercises

## **Lecture Topics:**

### **- Infant Mortality**

Readings: Alexander GR, Petersen DJ: Threats to Accurate Interpretation of Secondary Data. In: Kotch JB, editor. *Maternal and Child Health: Programs, Problems, and Policy in Public Health*. Maryland: Aspen Publishers, Inc; 1997. p. 395-403, 421-422.

Kirby R. Neonatal and postneonatal mortality: Useful constructs or outdated concepts? *J Perinatol* 1993; 13(6): 433-41.

Kleinman JC. Infant mortality. *Healthy People 2000, Statistical Notes*. National Center for Health Statistics; 1991; 1(2): 1-8.

Singh GK, Yu SM. Infant mortality in the United States: Trends, differentials, and projections, 1950 through 2010. *Am J Publ Hlth* 1995; 85: 957-964.

Sowards KA. What is the leading cause of infant mortality? A note on the interpretation of official statistics. *Am J Public Hlth* 1999; 89(11): 1752-4.

Healthier Mothers and Babies: Achievements in Public Health, 1900-1999. *MMWR* 1999; 48(38): 849-859.

Wilcox LS, Marks JS, eds. *From Data to Action*. Atlanta: Centers for Disease Control, 1994, pp 9-22, 231-262.

## **- Birth Weight**

- Readings: Wilcox LS, Marks JS, eds. From Data to Action. Atlanta: Centers for Disease Control, 1994, pp 185-202.
- Gable C. A Compendium of Public Health Data Sources. Am J Epidemiol 1990; 131(3): 381-394.
- Silverman WA. Nomenclature for duration of gestation, birth weight and intrauterine growth. Pediatrics 1967; 39: 935-939.
- Eisner V, Brazie JV, Pratt MW, et al. The risk of low birth weight. Am J Public Hlth 1979; 69(9): 887-93.
- Brunskill AJ. Some sources of error in the coding of birth weight. Am J Public Hlth 1990; 80: 72-73.
- Paneth N. The problem of low birth weight. Future of Children 1995; 5(1): 19-34.

## **- Gestational Age**

- Readings: Wilcox LS, Marks JS, eds. From Data to Action. Atlanta: Centers for Disease Control, 1994, pp 179-183
- Alexander GR, Allen MC. Conceptualization, Measurement and Use of Gestational Age: I. Clinical and Public Health Practice. J Perinatol 1996; 16(2): 53-59.
- Treloar AE, Behn BG, Cowan DW. Analysis of the gestational interval. Am J Obstet Gynecol 1967; 34-45.
- Dubowitz LMS, Dubowitz V, Goldberg C. Clinical assessment of gestational age in the newborn infant. J Pediatr 1970; 77: 1-10.
- Berkowitz GS, Papiernik E. Epidemiology of preterm birth. Epidemiol Review 1993; 15(2): 414-443.

## - Pathways to Prematurity

- Readings: Goldenberg RL, Iams JD, Mercer BM, et al. The preterm prediction study: The value of new and standard risk factors in predicting early and all spontaneous preterm birth. *AJPH* 1998; 88(2): 233-238.
- Goldenberg RL, Andrews WW, Hauth JC. Markers of preterm birth. *Prenatal Neonatal Med* 1998; 3: 43-46.
- Goldenberg RL, Rouse DJ. Prevention of preterm birth. *NEJM* 1998; 339(5): 313-320.
- Holtzman C, Paneth N, Fisher R, et al. Rethinking the concept of risk factors for preterm delivery: Antecedents, markers and mediators. *Prenatal Neonatal Med* 1998; 3: 47-52.

## - Fetal Growth

- Readings: Lubchenco LO, Hansman C, Dressler M, Boyd E. Intrauterine growth as estimated from liveborn birth-weight data at 24 to 42 weeks of gestation. *Pediatrics* 1963; 32: 793-800.
- Villar J, Belizan JM. The timing factor in the pathophysiology of the intrauterine growth retardation syndrome. *Obstet Gynecol Surv* 1982; 37: 499-506.
- Kramer MS. Intrauterine growth and gestational duration determinants. *Pediatrics* 1987; 80: 502-11.
- Alexander GR, Himes JH, Kaufman R, Mor J, Kogan M. A U.S. National Reference for Fetal Growth. *Obstet Gynecol* 1996; 87(2): 163-168.
- Rasmussen KM. Causes of intrauterine growth restriction. *Prenatal Care* 1999, Cambridge University Press.
- Wilcox LS, Marks JS, eds. *From Data to Action*. Atlanta: Centers for Disease Control, 1994, pp 163-178.

## - Nutritional Risk Factors

- Readings: Abrams BF, Berman CA. Nutrition during pregnancy and lactation. Primary Care 1993; 20: 583-597.
- Abrams BF. Preventing low birth weight: Does WIC work? Ann NY Acad Sci 1993; 678: 308-316.
- Keppel KG, Taffel. Pregnancy-related weight gain and retention: Implications of the 1990 Institute of Medicine guidelines. Am J Publ Hlth 1993; 83: 1100-1103.
- de Onis M, Villar J, Gulmezoglu AM. Nutritional interventions to prevent intrauterine growth retardation: Evidence from randomized control trials. Europ J Clin Nutrition 1998; 52: S1, S83-S93.
- Villar J, Gulmezoglu AM, de Onis M. Nutritional and antimicrobial intervention to prevent preterm births: An overview of randomized control trials. Obstet Gynecol Surv 1998; 53(9): 575-85.
- Wilcox LS, Marks JS, eds. From Data to Action. Atlanta: Centers for Disease Control, 1994, pp 119-129.
- Centers for Disease Control. Recommendations for the use of folic acid to reduce the number of cases of spina bifida and other neural tube defects. MMWR 1992; 41: 1-7.

## - Prenatal Care

- Readings: Gortmaker SL. The Effects of Prenatal Care Upon the Health of the Newborn. Am J Publ Hlth 1979; 69(7): 653-660.
- Kogan MD, Alexander GR, Kotelchuck M, Nagey D. Relation of the Content of Prenatal Care to the Risk of Low Birth Weight. JAMA 1994; 271(17): 1340-1345.
- Kogan MD, Alexander GR, Kotelchuck M, Nagey D, Jack BW. Comparing Mothers' Reports on the Content of Prenatal Care Received with Recommended National Guidelines for Care. Publ Hlth Reports 1994; 109: 637-646.
- Alexander GR, Korenbrot C. The Role of Prenatal Care in Preventing Low Birth Weight. Future of Children 1995; 5(1): 103-120.
- Alexander GR, Kotelchuck M. Quantifying the adequacy of prenatal care: A comparison of indices. Public Health Reports 1996; 111(5): 408-418.

D'Ascoli PT, Alexander GR, Petersen DJ, Kogan MD. Parental factors influencing patterns of prenatal care utilization. Journal of Perinatology 1997; 17(4): 283-287.

Kogan MD, Martin J, Alexander GR, Kotelchuck M, Ventura S, Frigoletto F. The changing pattern of prenatal care utilization in the U.S., 1981-1995: A comparison of prenatal care indices. Journal of the American Medical Association (JAMA) 1998; 279(20): 1623-1628.

Wilcox LS, Marks JS, eds. From Data to Action. Atlanta: Centers for Disease Control, 1994, pp 105-118.

### **- Racial Differences in Perinatal Outcomes**

Readings: Cooper R, David R. The biological concept of race and its application to public health and epidemiology. J Hlth Politics Policy Law 1986; 11(1): 97-116.

Kleinman JC, Kessel SS. Racial differences in low birth weight. Trends and risk factors. New Engl J Med 1987; 317(12): 749-753.

Shiono PH, Klebanoff MA, Graubard BI, Berendes HW, Rhoads GG. Birth weight among women of different ethnic groups. JAMA 1986; 255: 48-52.

Wise, PH, Kotelchuck, M, Wilson, MS, Mills, M. Racial and socioeconomic disparities in childhood mortality in Boston. New Engl J Med 1985; 313(6): 360-6.

Wilcox A, Russell I. Why small black infants have a lower mortality rate than small white infants: The case for population-specific standards of birth weight. J Pediatr 1990; 116(1): 7-10.

Emanuel I, Hale CB, Berg CJ. Poor Birth Outcomes of American Black Women: An Alternative Explanation. J Pub Hlth Policy 1989; Autumn: 299-308.

Schoendorf KC, Hogue CJ, Kleinman, Rowley D. Mortality among infants of Black as compared with White college-educated parents. New Engl J Med 1992; 326: 1522-1526.

Shiono PH, Rauh VA, Park M, Lederman SA, Zuskar D. Ethnic differences in birth weight: The role of lifestyle and other factors. Am J Public Health 1997; 87(5): 787-793.

## **- Infant Mortality Review**

Readings: McCloskey L, Plough AL, Power KL, Higgins CA, Cruz AN, Brown ER. A community-wide infant mortality review: Findings and implications. Public Hlth Reports 1999; 114: 165-177.

## **- Strategies for Reducing Infant Mortality**

Readings: Strobino D, O-Campo P, Schoendorf KC. A strategic framework for infant mortality reduction: Implications for "Healthy Start." Milbank Quarterly 1995; 73(4): 507-33.

Kempe A, Wise PH, Barkan SE, Sappenfield WM, et al. Clinical determinants of the racial disparity in very low birth weight. NEJM 1992; 327(14): 969-973.

Kaufman JS, Cooper RS. Seeking causal explanation in social epidemiology. Am J Epidemiol 1999; 150(2): 113-120.

Fiscella K. Racial disparities in preterm births: The role of urogenital infections. Public Health Reports 1996; 111(2): 104-113.

## **Reproductive Health (Contraception, abortion, STDs, maternal mortality & morbidity)**

Readings: Wilcox LS, Marks JS, eds. From Data to Action. Atlanta: Centers for Disease Control, 1994, pp 29-48, 129-158.

## **- Intendedness of Pregnancy**

Readings: Klerman LV. The Intendedness of Pregnancy: A Concept in Transition. Maternal and Child Health Journal 2000; 4(3): 155-162.

Moos MK, Petersen R, Meadows K, Melvin CL, Spitz AM. Pregnant Women's Perspectives on Intendedness of Pregnancy. Women's Health Issues 1997; 7(6):385-392.

Orr ST, Miller CA, James SA, Babone S. Unintended pregnancy and preterm birth. Paediatric and Perinatal Epidemiology 2000; 14:309-313.

## **- Occupational and Environmental Risk Factors**

Readings: Savitz DA, Koppelman LF. Occupational and environment influences on preterm birth. Prenatal and Neonatal Medicine 1998; 3: 25-8.

### **- Newborn Screening**

Readings: Clayton EW. Issues in state newborn screening programs. Pediatrics 1992; 90(4): 641-646.

McCabe ERB, Committee on Genetics. Newborn screening fact sheet. Pediatrics 1989; 83(3): 449-464.

Therrell BL, Pann SR, Davidson A, et al. U.S. newborn screening systems guidelines: Statement of the council of regional networks for genetic services. Screening 1992; 1: 135-147.

Wilcox LS, Marks JS, eds. From Data to Action. Atlanta: Centers for Disease Control, 1994, pp 203-230.

### **- Research on Twins and other MCH-related topics**

Readings: Kogan MD, Alexander GR, Teitelbaum MA, Jack BW, Kotelchuck M, Pappas G. The effect of gaps in health insurance on continuity of a regular source of care among preschool age children in the United states. JAMA 1995; 274: 1429-1435.

## **Perinatal Epidemiology**

### **Research Review Paper & Presentation**

This assignment includes both a written paper and an oral presentation. Your presentation will be based on your research review paper. Presentation dates will be assigned in class.

The **purpose** of this assignment is to provide the student with an opportunity to select a perinatal-related topic of interest for an in-depth literature review and synthesis.

Students may chose any perinatal-related topic of interest or select one from the attached list. Research, needs assessment, surveillance, data base development, program evaluation, policy analysis, and ethics topics are all equally acceptable. However, the topic area should have sufficient background literature to allow for a scholarly review and must have public health significance and MCH relevance. **Students are required to identify their topic, in writing, to me by January 31.**

**Your research paper is due the date of your oral presentation.**

The written narrative of your paper should not exceed 20, double-spaced pages and may be shorter. Do not use small fonts. Do carefully check your paper for spelling and grammatical errors. Papers that are difficult to read (visually or grammatically) tend to vex reviewers. This may result in a more critical assessment.

**A maximum of 15 minutes is allowed for your presentation and questions.** This breaks down into 12 minutes for presentation and 3 minutes for questions. Please practice your presentation so that you can present it within the time allowed. As running over your allotted time reduces the time available for another student, the 15 minute time schedule will be strictly enforced.

## **Perinatal Epidemiology**

### **Research Review Paper & Presentation**

The content of your research paper will vary by the topic. Nevertheless, a typical paper probably will contain some or all of the following:

- I. Introduction
  - A. Brief description of purpose/topic of report
  - B. Problem statement: Why is this topic important? How important?
  - C. Significance of the topic to public health
- II. Concise review of the literature
  - A. What major studies have been done? Briefly, what did they study, how, and what did they find? Do you agree with their conclusions?
  - B. What are the major indicator measurement issues?
  - C. What are the major study design/data base issues?
  - D. What major controversies and gaps in knowledge exist? What is known, not know, and still under debate?
  - E. Summary of the state of research/knowledge of the:
    - 1) Impact of interventions, programs or policies
    - 2) Strength of evidence suggesting a relationship between outcome variables and their proposed precursors.
- III. Conclusion
  - A. What specific needs for future research exist, including needs for future development in indicator measurement, new study populations or data sources, improved study designs, better control groups, additional control variables, etc?
  - B. Discussion of future policy and programmatic implications
  - C. Discussion of ethical issues.