

MC759: Perinatal Epidemiology
Fall 2007
Boston University School of Public Health

Faculty:

Mary Barger CNM, MPH

Phone: 617-638-4659

Email: mbarger@bu.edu

Prerequisites: MPH Epidemiology course; MPH Biostatistics course recommended

Credits: 4

Course Description

Issues related to the perinatal period from the framework of epidemiologic methods will be examined in this course through critical review of epidemiologic studies and exploration of design issues for this population. The course will focus on issues and topics from conception through the neonatal period. Related reproductive health issues such as infertility and menopause are covered in EP759, Reproductive Epidemiology, and will not be covered.

Students will be introduced to pregnancy biology and fetal development to serve as a foundation in understanding how perinatal outcomes may be affected by certain risk factors. We will explore the strengths and weaknesses of data sources commonly used in perinatal studies. Basic epidemiologic methods will be reviewed and then, the class will explore more in-depth methodological issues related to perinatal research.

Some of the specific contemporary perinatal issues discussed will be issues related to new understandings of the role of prenatal nutrition in outcomes, prematurity within the context of racism and neighborhood factors, changing interventions during labor and the impact on perinatal trends and statistics, and the use of newborn screening beyond common metabolic disease. These issues will be described within the context of focusing on different aspects of study design such as exposure assessment, outcome measurement, appropriate analytic techniques, and the translation of results into clinical or public health practice.

Besides obtaining a more in-depth understanding of analytic issues related to perinatal research, students will develop skills in critically reading the perinatal epidemiologic literature. They will also obtain experience to designing a study on a perinatal issue of interest through developing a research proposal using NIH guidelines and writing a 2-page abstract using guidelines for the MCH Epidemiology Conference.

Course Objectives

At the end of this course, the student will be able to:

1. Design a study and write a research proposal study on a perinatal related topic
2. Write a 2-page research abstract
3. Critically analyze different types of published perinatal research
4. Calculate sample size needed for a particular research study
5. Become familiar with current issues in perinatal epidemiology
6. Analyze the strengths and weaknesses of commonly used data sources in perinatal epidemiology
7. Describe the basics of fetal development and pregnancy physiology
8. Describe the distribution, determinants, populations at risk and potential interventions for key perinatal issues.
9. Understand basic epidemiologic methods and problems relevant to perinatal epidemiology
10. Apply public health screening principles to current perinatal issues.
11. Discuss the public health significance for major perinatal problems, e.g. prematurity, infant mortality, and understand the role of epidemiology in developing prevention strategies.

Class Format and Expectations

The class will consist of a mix of lecture, in-class exercises, and seminar discussion. Students will practice their presentation skills by presenting their study design on the final class.

The expectation is that **students will come prepared to discuss the assigned readings**, be active participants, and be prepared to ask questions about what they do not understand. Please note that I do call on students in class to answer questions, even if they have not raised their hand. I tend to call on people who have not participated recently, to give them a chance to offer a contribution to the discussion. If you are not prepared, please say so and I will move on to the next person, as my intention is not to embarrass you. Participation will be graded for each class using the following:

Grade	Description
0	Unexcused absence (2 excused absences will be allowed if I receive your request by e-mail before class starts—an excused absence will count as a “1”)
1	Present but did not contribute much or show evidence of preparation
2	Actively participated; comments or questions showed evidence of preparation and analytical thinking

Students who are absent will be expected to complete and turn in any in-class exercises they have missed within a reasonable timeframe depending on the absence. Written assignments are due as indicated unless prior arrangement has been made with me 48 hours prior to the due date.

Course Requirements and Grading

Class participation including last class presentation	15%
Written study critiques (3 - each worth 10%)	30%
Written research proposal	40%
Research abstract	15%

Academic Misconduct

Trust between teacher and student is essential to a successful learning environment. Cheating and plagiarism represent not only a serious violation of academic ethics, they also represent a breach of that essential trust.

All students are expected to adhere to the "Standards of Academic Honesty and Disciplinary Procedures of the Boston University School of Public Health." As summarized in the BUSPH Student Handbook, academic misconduct includes the following violations:

- cheating on exams;
- plagiarism*
- submitting the same work in more than one course without written explicit consent of all instructors;
- misrepresentation or falsification of data
- allowing another student to represent your work as his or her own.

*Sometimes students don't realize that by "loosely borrowing" words from a printed or on-line document or working with a classmate, they may be engaging in plagiarism. See the MCH Department MPH Concentrator's Guide for examples of "loosely borrowing" from others.

Any charge of academic misconduct will be brought to the attention of the Associate Dean, Leonard Glantz, who will review all such cases and decide upon an appropriate action. *A student who is found guilty of academic misconduct may be subject to disciplinary action, up to and including dismissal from the School.* Academic misconduct in any form will result in a final grade of F for the course. Associate Dean Glantz can be reached at 638-4640. Full Copies of the entire Academic Misconduct policy may be obtained at the SPH Office for Student Services, Talbot-206C.

Important Note About the Readings

In order to limit the cost to students of the readings, I have elected to have you obtain your class readings electronically. I have provided as many direct electronic links as possible and they have been checked as of the August 20th.

Where there is no direct link you will see - **(BUSM Library ovid)**; this indicates you should access this reading through the BUSM library ovid site. The most efficient way to locate the article is use the 'author' tab, type in the last name and initials of the first author and limit your search to the year of the citation. You will an Ovid password available through the library and access in the library or with a VPN connection.

I will double check links to readings 1-2 weeks prior to the scheduled class. Any changes to links or readings will be posted under 'Course Document' in Courseinfo by class number e.g., Class 2.

Outline for Study Design Assignment

This outline is based on the National Institutes of Health grant proposal instructions. The page numbers are a general guideline on how much is expected in each section. The final product should not exceed 18 double-spaced pages (1" margins; 12 pt font)

A. Specific Aims

List the broad, long-term objectives of the study and describe concisely what the research is intended to accomplish and any hypotheses to be tested. (One page)

B. Background and Significance

Briefly sketch the background of the proposed research, critically evaluate existing knowledge, and specifically identify the gaps that this project is intended to fill. State concisely the importance of the research described in this application by relating the specific aims to the broad long-term objectives and to health relevance. (Two to three pages)

C. Research Design and Methods

Describe in detail the research design and the procedures to be used to accomplish the specific aims of the project. Include the means by which the study population will be identified, how the exposure(s) and outcome(s) will be measured, and how the collected data will be analyzed and interpreted. Give supporting evidence for the sample size of your study population. Discuss the potential difficulties of the proposed procedures and alternative approaches to achieve the aims. Provide a tentative time table for the investigation. (At least five pages)

D. Human Subjects

Describe the plans for recruitment of subjects and the consent procedures to be followed, including the circumstances under which consent will be sought and obtained, who will seek it, and the nature of the information provided to prospective subjects. Describe any potential risks to study subjects (physical, psychological, social, legal, or other) and assess their likelihood and seriousness. Describe the procedures for protecting against or minimizing any potential risks, including risks to confidentiality. Discuss why the risks to the subjects are reasonable in relation to the anticipated benefits to subjects and in relation to the importance of the knowledge that may reasonably be expected to result. (One to two pages)

E. Limitations of the Study

Discuss potential sources of selection bias, information bias, and confounding. Also discuss the limitations to generalizability. (Two pages)

F. Literature Cited

List the literature citations in this section and refer to them in the text using Vancouver or AMA format. References to these formats are available from the BUSPH Writing Resources section or this course's External Links section. (One to two pages)

**Abstract Requirements for
the Maternal and Child Health Epidemiology Conference
Adapted for MC759 Assignment**

Abstract is limited to 350 words (excluding title, author, affiliation)

[Note: for this exercise, students may use up to 500 words]

Begin Abstract with:

- I. Title, author/s and affiliation (single spaced) – do not use abbreviations; presenting author should be underlined

- II. Abstract structure with the following sub-headings – left-justified and bolded (double-spaced):
 1. **BACKGROUND:** statement of the public health issue that is addressed by your study; what is known and what is not known

 2. **STUDY QUESTION:** One sentence stating your study question(s)

 3. **METHODS:** concise description of study design, data sources, analysis methods including study limitations

 4. **RESULTS:** key findings from data analysis and limitations. *[NOTE: you probably will not have data here. Report how your findings will be reported]*

 5. **CONCLUSIONS:** summary statement of key findings

 6. **PUBLIC HEALTH IMPLICATIONS:** statement of potential uses of this study for science, policy, programs, public or provider education.

Guide for Critiquing Studies

Each critique should not exceed 4 double-spaced pages.

I. Collection of Data

1. What was the context of the study?
2. What were the objectives of the study?
3. What was the primary exposure of interest? Was this accurately measured?
4. What was the primary outcome of interest? Was this accurately measured?
5. What type of study was conducted?
6. Describe the source of the study population, the process of subject selection, sample size, and ratio of population of interest to comparison subjects.
7. Selection bias: Could there have been bias in the selection of the study subjects? How likely was this bias?
8. Information bias: Could there have been bias in the collection of information? How likely was this bias?
9. Confounding: What provisions were made to minimize the influence of confounding factors prior to analysis of the data? Were these sufficient?

II. Analysis of Data

1. Confounding: What methods were used to control confounding bias during data analysis? Were these sufficient?
2. What measure(s) of association was reported in this study? Was this the most appropriate measure to use?
 1. What measure(s) of statistical stability was reported in this study?

III. Discussion

1. Are the author's conclusions supported by the data?
2. Were the study objectives met?

MC579: Perinatal Epidemiology Course Schedule
As of 9-4-07

Date	Topic	Assignments
Sept 4	Class 1: Introduction Review of Epidemiologic Measures	
Sept 11	Class 2: Vital statistics data and fetal development and physiology of pregnancy	
Sept 18	Class 3: Methodological issues in perinatal research	
Sept 25	Class 4: Exposures and birth defects	Critique of Chambers article due
Oct 2	Class 5: Nutrition and pregnancy	
Oct 9	NO CLASS	
Oct 16	Class 6: Prematurity and growth restriction	Study design 1-pg description due
Oct 23	Class 7: Infant mortality – are racial disparities due to SES, racism, or something else?	
Oct 30	Class 8: Prenatal care to improve birth outcomes	Critique of Ickovics article due
Nov 6	Class 9: Intrapartum management issues	
Nov 13	Class 10: Maternal morbidity	Critique of Gundelman article due
Nov 20	Class 11: Measuring maternal mortality	Draft of study proposal due
Nov 27	Class 12: Cesarean vs vaginal birth Guest: Eugene Declercq PhD	
Dec 4	Class 13: Newborn screening	Final Proposals due
Dec 11	Class 14: Breastfeeding and HIV-infected mothers Guest: Katherine Semrau DSc(c)	Abstracts due
Dec 18	Student presentations	

Class 1: Introduction and Review of Epidemiologic Measures and basic study designs

Objectives

1. Understand the scope and requirements of the class
2. Calculate measures of disease frequency and measures of association
3. Interpret measures of association and confidence intervals
4. Discuss the characteristics of major study designs

Readings:

Review relevant chapters regarding objectives 2-5 from a basic epidemiology text such as: Ashengrau A, Seage GR. Essentials of Epidemiology in Public Health. Boston: Jones and Bartlett. Chapters 2, 3, 7, 8, 9

Class 2: Sources of perinatal data and fetal development and physiology of pregnancy

Objectives

1. Describe critical periods of fetal development and major organ systems
2. Identify the major physiologic changes in pregnancy
3. Describe hormones essential for pregnancy support and involved in the initiation of labor
4. Identify strengths and weaknesses of major sources of data in perinatal research, e.g. vital statistics and hospital discharge data.
5. Broadly discuss annual births in the United States and distribution according to gestational age and birthweight.
6. Describe the overall rate of infant mortality and by race/ethnicity and causes.

Readings:

Adams M. Validity of birth certificate data for the outcome of the previous pregnancy, Georgia 1980-1995. *Am J Epidemiol* 2001; 154(10):883-8. (BUSM Library ovid)

Callaghan WM, MacDorman MF, Rasmussen SA, et al. The contribution of preterm birth to infant mortality rates in the United States. *Pediatrics* 2006; 118:1566-1573.

<http://pediatrics.aappublications.org/cgi/reprint/118/4/1566>

Hamilton BE, Minino AM, Martin JA, et al. Annual Summary of Vital Statistics: 2005. *Pediatrics* 2007; 119(2):345-60. <http://pediatrics.aappublications.org/cgi/content/abstract/119/2/345>

Lydon-Rochelle MT, Holt VL, Cardena V, et. Al. The reporting of pre-existing maternal medical conditions and complications of pregnancy on birth certificates and in hospital discharge data. *Am J Obstet Gynecol* 2005; 193:125-34. (BUSM Library ovid)

Lydon-Rochelle MT, Holt VL, Nelson JC, et al. Accuracy of reporting maternal in-hospital diagnoses and intrapartum procedures in Washington State linked birth records.

Paediatr Perinat Epidemiol 2005; 19:460-71. <http://www.blackwell-synergy.com/doi/abs/10.1111/j.1365-3016.2005.00682.x>

Class 3: Methodological Issues in Perinatal Epidemiology

Objectives

1. Explain issues in measuring incidence versus prevalence for some perinatal issues
2. Discuss issues related to defining outcomes and how different definitions will affect understanding of issues
3. Analyze the strengths and limitations in commonly used study designs in examining perinatal issues.
4. Practice critiquing a published study using the course outline.

Readings:

Ashengrau A, Seage GR. Essentials of Epidemiology in Public Health. Boston: Jones and Bartlett. Chapter 14; pgs 348-360.

Joseph KS. Theory of obstetrics: an epidemiologic framework for justifying medically indicated early delivery. *BMC Pregnancy and Childbirth* 2007; 7:4. doi:10.1186/1471-2393-7-4. (13 pages) <http://www.pubmedcentral.nih.gov/picrender.fcgi?artid=1851971&blobtype=pdf>

Kramer MS, Liu S, Luo Z, Yuan H, Platt RW, Joseph KS, et al. Analysis of perinatal mortality and its components: time for a change? *Am J Epidemiol* 2002; 156:493-7. (BUSM Library ovid)

Savitz DA, Hertz-Picciotto I, Poole C, Olshan AF. Epidemiologic measures of the course and outcome of pregnancy. *Epidemiologic Reviews* 2002; 24:91-101. (BUSM Library ovid)

Misra DP, Trabert B. Vaginal douching and risk of preterm birth among African American women. *Am J Obstet Gynecol* 2007; 196:140e1-140.e8.

<http://www.pubmedcentral.nih.gov/picrender.fcgi?artid=1847648&blobtype=pdf>

(This article will be critiqued in class)

Class 4: Exposures and birth defects

Objectives

1. Discuss how to assess if a factor is a confounder.
2. Describe issues related to measuring common exposures in pregnancy
3. Describe basic principles of teratogenicity
4. Analyze a published case-control study.
5. Discuss potential biases in birth defect studies and commonly used methods to assess bias in a study.

Readings:

Ashengrau A, Seage GR. Essentials of Epidemiology in Public Health. Boston: Jones and Bartlett. Chapter 11: Confounding (pgs 281-88) or equivalent epidemiologic text

Hernan MA, Hernandez-Diaz S, Werler MM, Mitchell AA. Causal knowledge as a prerequisite for confounding evaluation: an application to birth defects epidemiology. *Am J Epidemiol* 2002; 155(2):176-84. <http://aje.oxfordjournals.org/cgi/reprint/155/2/176.pdf>

Hertz-Picciotto I, Pastore LM, Beaumont JJ. Timing and patterns of exposures during pregnancy and their implications for study methods. *Am J Epi* 1996; 143:597-607.

<http://aje.oxfordjournals.org/cgi/reprint/143/6/597>

Missmer SA, Suarez L, Felkner M, Wang E, Merrill AH, Rothman KJ, Hendricks KA. Exposure to fumonisins and the occurrence of neural tube defects along the Texas-Mexico border. *Environ Health Perspect* 2006; 114(2):237-41.

<http://www.ehponline.org/members/2005/8221/8221.pdf>

Rothman KJ, Moore LL, Singer MR, et al. Teratogenicity of high vitamin A intake.

New Eng J Med 1995; 333:1369-73. <http://content.nejm.org/cgi/reprint/333/21/1369.pdf>

Chambers CD, Hernandez-Diaz S, Van Marter LJ, et al. Selective serotonin-reuptake inhibitors and risk of persistent pulmonary hypertension of the newborn. *New Eng J Med* 2006; 354:579-

87. <http://content.nejm.org/cgi/reprint/354/6/579.pdf>

Class 5: Nutrition in Pregnancy

Objectives

1. Discuss the evidence for the role nutrition in pregnancy plays in fetal/neonatal health and maternal health
2. Describe briefly the physiologic the role of obesity in perinatal outcomes.
3. Interpret recent perinatal outcome data and discusses possible confounding by nutritional status, especially increased body mass index.
4. Describe how to assess for effect measure modification
5. Calculate sample size and power using web-based tools

Readings

Ashengrau A, Seage GR. Essentials of Epidemiology in Public Health. Boston: Jones and Bartlett. Chapter 13: Effect Measure Modification. Pgs 334-45. (or equivalent epidemiologic text)

Kannan D, Misra DP, Dvonch JT, Krishnakumar A. Exposures to airborne particulate matter and adverse perinatal outcomes: a biologically plausible mechanistic framework for exploring potential effect modification by nutrition. *Env Health Persp* 2006; 114(11):1636-42.

<http://www.ehponline.org/members/2006/9081/9081.pdf>

Khoury J, Henriksen T, Christophersen B, Tonstad S. Effect of a cholesterol-lowering diet on maternal cord, and neonatal lipids, and pregnancy outcome: a randomized clinical trial. *Am J Obstet Gynecol* 2005; 193: 1292-301. (BUSM Library ovid)

Watkins ML, Rasmussen SA, Honein MA, et al. Maternal obesity and risk for birth defects.

Pediatrics 2003; 111(5):1152-8. <http://pediatrics.aappublications.org/cgi/reprint/111/5/S1/1152>

Villamor E, Cnattingius S. Interpregnancy weight change and risk of adverse pregnancy outcomes: a population-based study. *Lancet* 2006; 368:1164-70. (BUSM Library ovid)

Class 6: Prematurity and fetal growth restriction – causes and prevention strategies

Objectives

1. Review the postulated pathways for preterm birth and the evidence for each component.
2. Describe the trends in prematurity and contributing factors that may account for recent changes.

3. Discuss issues related to measuring prematurity as an outcome.
4. Compare and contrast the public health strategies for prevention of prematurity versus fetal growth restriction.
5. Analyze studies of infection treatment as a strategy to prevent preterm labor.
6. Describe basic research study requirements of institutional review boards.

Readings

Ananth CV, Joseph J, Oyelese Y, et al. Trends in preterm birth and perinatal mortality among singletons: United States, 1989 through 2000. *Am J Obstet Gynecol* 2005; 105(5, pt 1):1084-91. <http://www.greenjournal.org/cgi/reprint/105/5/1084>

Hertz-Picciotto. Is it time to abandon adjustment for birth weight in studies of infant mortality? *Paediatr Perinat Epidemiol* 2003; 17:114-6. <http://www.blackwell-synergy.com/doi/pdf/10.1046/j.1365-3016.2003.00483.x?cookieSet=1>

Hillier SL, Nugent RP, Eshenbach DA, et al. Association between bacterial vaginosis and preterm delivery of a low-birthweight infant. *New Eng J Med* 1995; 333:1737-42. <https://content.nejm.org/cgi/reprint/333/26/1737.pdf>

Kiss H, Petricevic, Husslein P. Prospective randomized controlled trial of an infection screening programme to reduce the rate of preterm delivery. *BMJ* 2004; 329(7462):371-5. <http://www.bmj.com/cgi/reprint/329/7462/371>

Shennan A, Crenshaw S, Briley A, et al. A randomized controlled trial of metronidazole for the prevention of preterm birth in women positive for cervicovaginal fetal fibronectin: the PREMETS study. *BJOG* 2006; 113:65-74. <http://www.blackwell-synergy.com/doi/full/10.1111/j.1471-0528.2005.00788.x>

Class 7: Infant mortality: are racial disparities due to SES, racism, or something else?

Objectives

1. Describe intricacies / issues/ problems with using SES – proxy measure for what? Is it a confounder?
2. Discuss the challenges in measuring social constructs in epidemiology
3. Describe the conceptual framework of “perinatal periods of risks (PPOR)”
4. Demonstrate how communities can use PPOR to prioritize their infant mortality prevention programs.

Readings

Perinatal Periods of Risk: from data to action; National Healthy Start Association Meeting, 4/30/2003– available on the class Courseinfo web site.

Collins JW, David RJ, Handler A, et. al. Very low birthweight in African American infants: the role of maternal exposure to interpersonal racial discrimination. *Am J Public Health* 2004; 94:2132-8. <http://www.ajph.org/cgi/reprint/94/12/2132>

Cullhane JF. Neighborhood context and reproductive health. *Am J Obstet Gynecol* 2005;192:S22-9. (BUSM Library ovid)

Galobardes B, Shaw M, Lawlor DA, et al. Indicators of socioeconomic position (part 1). *J Epidemiol Community Health* 2006; 60:7-12. <http://jech.bmj.com/cgi/reprint/60/1/7>

Kaufman JS, Cooper RS, McGee DL. Socioeconomic status and health in Blacks and Whites: the problem of residual confounding and the resiliency of race. *Epidemiol* 1997;8(6):621-8. *Available in hardcopy in the library.* (See Courseinfo site)

Kramer MS, Goulet L, Lydon J, et al. Socio-economic disparities in preterm birth: causal pathways and mechanisms. *Paediatr Perinat epidemiol* 2001; 15(S2):104-23. <http://www.blackwell-synergy.com/doi/pdf/10.1046/j.1365-3016.2001.00012.x>

Rosenberg L, Palmer JR, Wise LA, et al Perceptions of racial discrimination and the risk of preterm birth. *Epidemiol* 2002; 13:646-52. *Available in hardcopy in the library.* (See Courseinfo site)

Class 8: Prenatal care to improve birth outcomes

Objectives

1. Describe the strengths and limitations of the sources used to assess prenatal care as an exposure.
2. Critically discuss measurement issues associated with using prenatal care as an exposure variable.
3. Describe how misclassification of prenatal care affects interpretation of prenatal care as an intervention strategy.
4. Discuss how epidemiologic methods can be applied to health services questions.

Readings

Haas JS, Fuentes-Afflick E, Stewart A, et al. Prepregnancy health status and the risk of preterm delivery. *Arch Pediatr Adolesc Med* 2006; 159:58-63. <http://archpedi.ama-assn.org/cgi/reprint/159/1/89.pdf>

Ickovics JR, Kershaw TS, Westdahl C, et al. Group prenatal care and perinatal outcomes. *Obstet Gynecol* 2007; 110(2, pt1:330-9) (See Courseinfo site)

Kogan MD, Martin JA, Alexander GR, Kotelchuck M, et al. The changing pattern of prenatal care utilization in the United States, 1981-1995, using different prenatal care indices. *JAMA* 1998; 279(20):1623-8. <http://jama.ama-assn.org/cgi/reprint/279/20/1623>

Marquis MS, Long SH. The role of public insurance and the public health delivery system in improving birth outcomes for low-income pregnant women. *Medical Care* 2002; 11:1048-59. (BUSM Library ovid)

Grady MA, Bloom KC. Pregnancy outcomes of adolescents enrolled in a CenteringPregnancy Program. *J Midwif Womens Health* 2004; 49(5):41220. http://www.medscape.com/viewarticle/489499_5

Class 9: Intrapartum management issues

Objectives

1. Be familiar with major intrapartum management strategies and their effect on neonatal and maternal outcomes.
2. Discuss methodological and ethical issues related to doing randomized controlled trials on women in labor.
3. Compare and contrast findings on effects of epidurals in labor using three different design/analytic methods.
4. Describes the process and criteria used for meta-analyses published in the Cochrane Systematic Reviews.
5. Interpret findings from a Cochrane systematic Review

Readings

Jackson DJ, Lang JM, Swartz WH, et al. Outcomes, safety, and resource utilization in a collaborative care birth center program compared with traditional physician-based perinatal care. *Am J Pub Health* 2003; 93(6):999-1006.

<http://www.pubmedcentral.nih.gov/picrender.fcgi?artid=1447883&blobtype=pdf>

Barros FC, Victora CG, Barros AJD, et al. The challenge of reducing neonatal mortality in middle-income countries: findings from three Brazilian birth cohorts in 1982, 1993, and 2004. *Lancet* 2005; 363:847-54. (BUSM Library ovid)

Ramin SM, Gambling DR, Lucas MJ, et al. Randomized trial of epidural versus intravenous analgesia during labor. *Obstet Gynecol* 1995; 86:783-9.

<http://www.greenjournal.org/cgi/reprint/86/5/783>

Anim-Somuah M, Smyth R, Howell C. Epidural versus non-epidural or no analgesia in labour. *Cochrane Database of Systematic Reviews* 2005; Issue 4. *Search through OVID*

Lieberman E, Lang JM, Cohen A, et al. Association of epidural analgesia with cesarean delivery in nulliparas. *Obstet Gynecol* 1996; 88(6):993-1000.

<http://www.greenjournal.org/cgi/reprint/88/6/993>

Class 10: Maternal Morbidity

Objectives

1. Discuss the potential use of longitudinally linked datasets in studying perinatal research, particularly maternal morbidities.
2. Recognize key methodological issues in studying “near miss” maternal morbidity.
3. Compare and contrast two approaches to defining severe maternal morbidity (Brace and Geller)
3. Identify key elements needed in effectively communicating perinatal statistics and findings to the community of providers and consumers.

Readings:

Guendelman S, Thornton D, Gould J, et al. Social disparities in maternal morbidity during labor and delivery between Mexican-born and US-born White Californians, 1996-1998. *Am J Pub Health* 2005; 95(12):2218-24. (BUSM Library ovid)

Brace V, Penney G, Hall M. Quantifying severe maternal mortality: a Scottish population study. *BJOG* 2004; 111:481-4.

Berg CJ, Harper MA, Atkinson SM, et al. Preventability of pregnancy-related deaths. *Obstet Gynecol* 2005; 106(6): 1228-34. <http://www.greenjournal.org/cgi/reprint/106/6/1228.pdf>

Geller SE, Rosenberg D, Cox S, et. Al. A coring system identified near-miss maternal morbidity during pregnancy. *J Clin Epidemiol* 2004; 57:716-20.

Schiff MA, Holt VA. Pregnancy outcomes following hospitalization for motor vehicle crashes in Washington State from 1989 to 2001. *Am J Epidemiol* 2005; 161(6):503-10. <http://aje.oxfordjournals.org/cgi/reprint/161/6/503>

Massachusetts Department of Public Health. *Pregnancy-Associated Injury Deaths: violence, substance abuse and motor vehicle collisions. 1990-1999.* May, 2002. (14 pages) <http://www.mass.gov/dph/bfch/mcfh/safemoms.htm>

Class 11: Measuring maternal mortality

Objectives

1. Describe the incidence of maternal mortality in the U.S. and the range in developing countries and the major causes.
2. Discuss the issues and proposed alternatives to measuring maternal mortality both in the United States and in developing countries.

Readings

Bartlett LA, Mawji A, Whitehead S, et al. Where giving birth is a forecast of death: maternal mortality in four districts of Afghanistan, 1999-2002. *Lancet* 2005; 365(5):864-70. http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6T1B-4FN13T0-14&_user=489277&_coverDate=03%2F11%2F2005&_rdoc=1&_fmt=&_orig=search&_sort=d&view=c&_acct=C000022679&_version=1&_urlVersion=0&_userid=489277&md5=73c99616d6f11b61f4e07563cb80d2f0

Deneux-Tharoux C, Carmona E, Bouvier-Colle M-H. Postpartum maternal mortality and cesarean delivery. *Obstet Gynecol* 2006; 108(3, pt 1):541-8. <http://www.greenjournal.org/cgi/reprint/108/3/541.pdf>

Horon IL. Underreporting of maternal deaths on death certificates and the magnitude of the problem of maternal mortality. *Am J Pub Health* 2005; 95(3):476-82. <http://www.ajph.org/cgi/reprint/95/3/478>

Hill K, El Arifeen S, Koenig M, et al. How should we measure maternal mortality in the developing world? A comparison of household deaths and sibling history approaches. *Bull World Health Organ* 2006; 84(3):173-180. <http://www.who.int/bulletin/volumes/84/3/173.pdf>

Stanton C, Hobcraft J, Hill K, et al Every death counts: measurement of maternal mortality via a census. *Bull World Health Organ* 2001; 79:657-64. [http://www.who.int/bulletin/archives/79\(7\)657.pdf](http://www.who.int/bulletin/archives/79(7)657.pdf)

Class 12: Cesarean versus vaginal birth

Objectives

1. Describe the trend in rates of cesareans and vaginal birth after cesarean over the last 20 years.
2. Identify the known risks and benefits of cesarean and vaginal births.
3. Discuss the issues and controversies related to using data from epidemiologic studies to inform the debate on cesareans including the use of absolute versus relative measures of effect.

Readings

Lydon-Rochelle M, Holt VL, Easterling TR, Martin DP. Risk of uterine rupture during labor among women with a prior cesarean delivery. *New Eng J Med* 2001; 345(1):3-8. <http://content.nejm.org/cgi/reprint/345/1/3.pdf>

Greene, MF. Vaginal delivery after cesarean section: is the risk acceptable?[editorial]. *New Eng J Med* 2001; 345(1):54-5. <http://content.nejm.org/cgi/reprint/345/1/54.pdf>

Macones GA, Peipert J, Nelson DB, et. al. Maternal complications with vaginal birth after cesarean delivery : a multicenter study. *Am J Obstet Gynecol* 2005; 193:1656-62. (BUSM Library ovid)

MacDroman M, Declercq E, Menacker F, Malloy MH. Infant and neonatal mortality for primary cesarean and vaginal births to women with “no indicated risk,” United States, 1998-2001 birth cohorts. *Birth* 2006; 33(3):175-182. <http://www.blackwell-synergy.com/doi/pdf/10.1111/j.1523-536X.2006.00102.x>

Sommer A. How public health policy is created: scientific process and political reality. *Am J Epidemiol* 2001; 154(12, suppl):S4-6. <http://aje.oxfordjournals.org/cgi/reprint/154/12/S4.pdf>

Weiss J, Nannini A, Bartlett L, et al. Use of hospital discharge data to monitor uterine rupture – Massachusetts, 1990-1997. *MMWR Morb Mortal Wkly Rep* 2000; 49:245-8. http://findarticles.com/p/articles/mi_m0906/is_12_49/ai_61600836

Class 13: Newborn Screening

Objectives

2. Discuss the basic principles of screening programs
3. Identify the commonly used newborn screening tests.
4. Calculate the positive predictive value and false positive rate for commonly used newborn screening tests and discuss the clinical and public health implications.
4. Debate the pros and cons of a public health recommendation for universal cystic fibrosis screening at birth.

Readings

Review screening chapter from a basic epidemiology text e.g. Chapter 16 in Aschengrau/Seage text (pgs 402-428)

Comeau AM, Parad R, Gerstle R, et al. Challenges in implementing a successful newborn cystic fibrosis screening program. *J Pediatr* 2005; 147:S89-93. (BUSM Library ovid)

Farrell PM, Lai HJ, Li Z, et al Evidence of improved outcomes with early diagnosis of cystic fibrosis through neonatal screening: enough is enough! J Pediatr 2005; 147:830-6. (BUSM Library ovid)

Lai HJ, Cheng Y, Farrell PM. The survival advantage of patients with cystic fibrosis diagnosed through neonatal screening: evidence from the United States Cystic Fibrosis Foundation registry data. J Pediatr 2005; 147:S57-63. (BUSM Library ovid)

Therrell BL, Lloyd-Puryear MA, Mann MY. Understanding newborn screening system issues with emphasis on cystic fibrosis screening. J Pediatr 2005; 147:S6-10. (BUSM Library ovid)

Class 14: Breastfeeding and HIV-infected Mothers

Objectives

1. Describe issues related to measuring exposure in breastfeeding studies.
2. Identify commonly cited short-term and long-term benefits of breastfeeding.
3. Critically analyze the design for studying the effect of breastfeeding on infant health among HIV-infected mothers.

Readings

Coovadia HM, Rollins NC, Little K, et al. Mother-to-child transmission of HIV-1 infection during exclusive breastfeeding in the first 6 months of life: an intervention cohort study. Lancet 2007; 369:1107-16. (BUSM Library ovid)

Doherty T, Chopra M, Nkonki L, et al. A longitudinal qualitative study of infant-feeding decision making and practices among HIV-positive women in South Africa. J Nutr 2006; 136:2421-26. <http://jn.nutrition.org/cgi/reprint/136/9/2421>.

Thea DM, Vwalika C, Kasonde R, et. al. Issues in the design of a clinical trial with a behavioral intervention – the Zambian exclusive breast-feeding study. Controlled Clinical Trials 2004; 25:353-65.

Thior I, Lockman S, Smeaton LM, et al. Breastfeeding plus infant zidovudine prophylaxis for 6 months vs formula feeding plus infant zidovudine for 1 month to reduce mother-to-child HIV transmission in Botswana. A randomized trial: the Mashai Study. JAMA 2006; 296(7):794-805. <http://jama.ama-assn.org/cgi/reprint/296/7/794>

Class 15: Student Presentations

Objectives

1. Design clear and readable slides of their proposed study.
2. Clearly present an epidemiologic study in a 10 minute session
3. Demonstrate understanding of presented studies through relevant comments and pertinent questions to presenters.

Readings:

Review slide presentation on Courseinfo: “Making Effective Slide Presentations”.