List of corrections for ME3
Mar. 21, 2016

1. Page 8, line 10 in the 3rd paragraph, "B=0 and C=0" should be "B=0 and E=0".

2. Page 11, Table 2-1 caption: “Fig. 2-1” should be “Fig. 2-2”.

3. Page 12, 1st full paragraph, lines 1-2: “it is evident” should be “it would appear”.

4. Page 12, 1st full paragraph, line 3, “B = 1 increases” should be “B = 1 appears to increase”.

5. Page 12, 1st full paragraph, line 7, “are” should be “appear”.

6. Page 12, 1st full paragraph, line 8, “has” should be “appears to have”.

7. Page 12, 1st full paragraph, last 3 lines: “the fact that A, B, and E have no association with one another in either population, and their index levels (A = 1, B = 1 and E = 1) and reference levels (A = 0, B = 0, and E = 0) are each present or have occurred in exactly half of each population.” should be “the fact that B and E are not associated in either population, as is evident from the prevalence of E=1 being 50% for those with B=1 and for those with B=0. The effect of E, but not of B, is estimable from Tables 2-2 and 2-3. The effect of B is not estimable because it is confounded by A, but we will ignore that here. The topic of confounding is introduced in Chapter 4.

8. Page 12, 2nd full paragraph, lines 5-6: “(When A = 0 and B = 1, E = 1 completes all three sufficient causes in Figure 2–2; it thus does not increase anyone’s risk, although” should be “(When A=0 and B=1, the first of the three sufficient causes in Figure 2-2 is already completed. With E=1 the second and third are also completed, but as the risk is already 1, E=1 does not increase anyone’s risk, though”.

9. Page 12, 3rd full paragraph, line 5, delete sentence that begins “This dependence ….”

10. Page 12, 3rd full paragraph, line 7, “Nevertheless, a factor will appear to have” should be “A factor will have”.

11. Page 12, 3rd full paragraph, next to last line, ”will appear to have a weak” should be “will have a weak”.

12. Page 12, 5th line from bottom of page, delete phrase “given the ubiquity of U₁”.

13. Page 16, 2nd full paragraph, last sentence, change “The latter possibility illustrates an important general point: Component causes that do not change with time, as opposed to events, all have induction times of zero.” to the following: “In general, conditions and events can be component causes and two or more component causes can have the same
induction time, including zero."

14. Page 16, 4th full paragraph, line 7, change “cause that acts” to “causes that act”.

15. Page 24, line 8: "1988b" should be “1998b"

16. Page 35, 1st equation: “poplation” should be “population”

17. Page 37, line 4, move the right parenthesis from after the word "allowed." to after the word "dying." at the end of line 5.

18. Page 48, second equation (line 5): the D should have a bar over it.

19. Page 61, line 5, second expression in first equation: 
   \[(I_1/\Delta t)/(I_0/\Delta t)\] should be \[(I_1\Delta t)/(I_0\Delta t).\]

20. Page 68, line 5, equation should be
   \[ID_s = \Sigma T_k I_k/\Sigma T_k - \Sigma T_k I_k^*/\Sigma T_k = \Sigma (T_k I_k - T_k I_k^*)/\Sigma T_k\]

21. Page 74, eq. 5-9, the denominator of the left-hand side, “\[R_{01}(1-R_{01})\]” should be “\[R_{01}/(1-R_{01})\]”.

22. Page 76, paragraph 3, fourth sentence: "For type 10, each factor causes the disease if and only if the other factor is absent; thus each factor blocks the effect of the other." should be  "For type 10, each factor causes the disease if the other factor is absent but prevents the disease if the other factor is present."

23. Page 76, line 3 from bottom: "(D = 0 or 1)" should be "(Y = 0 or 1)".

24. Page 77, second line from bottom: "equation 5-10" should be "the equation immediately following 5-11".

25. Page 81, line 9 from top: "Z=1 and X=0" should be "Z=1 and Z=0".

26. Page 82, line 22 from top: "sufficient-cause model" should be "potential-outcome model".

27. Page 83, third line after equation: "0.001(10,000)=20" should be "0.001(10,000)=10".

28. Page 104, first full paragraph, line 10: “Chapter 8” should be “Chapter 9”.

29. Page 135, first sentence under "Berksonian Bias": delete "(although not in the context of a case-control study)".

30. Page 136, third full paragraph, line 1: change “lumberjack” to “longshoreman".
31. Page 139, lines 8-9: Replace "is predictable in direction, namely, toward the null value (Newell, 1962; Keys and Kihlberg, 1963; Gullen et al., 1968; Copeland et al., 1977)." with "is predictable in direction, namely, toward or beyond the null value (Newell, 1962; Gullen et al., 1968; Copeland et al., 1977)."

32. Page 145, lines 1-2: Replace "Independent nondifferential misclassification of a dichotomous confounding variable will reduce the degree to which the confounder can be controlled, and thus causes a bias in the direction of the" with "Independent nondifferential misclassification of a dichotomous confounding variable will ordinarily reduce the degree to which the confounder can be controlled, thus causing a bias in the direction of the"

33. Page 149, line 3 of first full paragraph: Insert this sentence before “For example”: Sources of systematic errors also abound.

34. Page 151, third line from bottom: “different” should be “the same”.

35. Page 152, 5th full paragraph, lines 2 and 3: "(assumption 1) or the statistical model (assumption 2)" should be "(assumption a) or the statistical model (assumption b)".


37. Page 165, in the likelihood function below the third line of text, all three occurrences of "86(IR)" should be replaced by "186(IR)".

38. Page 167, line 8: “probability intervals” should be “probability intervals and probabilities”.

39. Page 172, table 11-1, the 1-yr risk for unexposed women should be "0.0001" rather than "0.001".

40. Page 172, table 11-2, title of table, change “Table 10-1” to “Table 11-1”.

41. Page 173, table 11-3, title of table, change “Table 10-1” to “Table 11-1”.

42. Page 173, table 11-4, title of table, change “Table 10-1” to “Table 11-1”.

43. Page 175, first line of fourth paragraph under "Matching in Case-Control Studies": "If the matching factor is not associated with the exposure, then matching will not influence the exposure distribution of the controls…" should be "If the matching factor is not associated with the exposure in the source of the controls, then matching will not influence the exposure distribution of the controls…"
44. Page 185, the last sentence of section headed “Causation and Association,” should read as follows: “We will first discuss collider bias, because it arises frequently in epidemiology.”

45. Page 190, last line of first paragraph under section heading: “for the relation” should be “for the causal relation”

46. Page 207, 5th line from bottom of text: "but it is a collider" should be "but it makes $Y_1$ a collider".

47. Page 229, line 8 from bottom up: “If $\hat{x}_{ml}, N\pi,$” should be “If $N\hat{x}_{ml}, N\pi,$”

48. Page 242, line 3 from top: “estimation, see Chapter 13).” should be “estimation, see Chapter 13), with variance estimate $A/T^2.$”

49. Page 244, equation for $E$, in the denominator “47,047” should be “47,027”

50. Page 244, equation for $V$, in the denominator “47,047” should be “47,027”

51. Page 245, line following "...whereas the Wald limits for IR will be adequate if both", the $T_0$ in the numerator of the second expression should be $T_1$.

52. Page 249, line 23: "or to -1 if" should be "or the lower limit should be set to -1 if"

53. Page 254, line 6 (final line of 3-line equation at top of page): Insert minus sign following the 1 after the second equals sign.

54. Page 254, line 7: “lower” should be “upper”.

55. Page 254, line 9: $P_{lower}$ should be $P_{upper}$.

56. Page 254, line 10: $P_{upper}$ should be $P_{lower}$.

57. Page 256, second paragraph under "two study groups", second line, “modem” should be “modern”

58. Page 257, 12th line from the bottom, “N_l” (subscript letter ‘l’) should be “N_1” (subscript number “1”).

59. Page 261, in the equation, 0.0188 should be 0.188.

60. Page 263, line 6 under the first heading: “Greenland et al., 2000” should be “Greenland et al., 2000a”.
61. Page 268, second sentence of final paragraph, “Intermediate calculations are given in Table 15-3.” should be “Intermediate calculations (using formula 15-8) are given in Table 15-3.”

62. Page 268, final equation calculating the variance of the standardized rate difference for Table 15-2: The second "=" should be "+" and the ensuing "+" should be "=" (the plus sign and second equals sign should be transposed).

63. Page 270, first line, “HOMGENITY” should be “HOMOGENEITY”.

64. Page 274, 2nd formula (for IDMH): the "30,445" in the denominator should not be squared (it is correct in the 3rd formula, for the variance).

65. Page 275, formula 15-22, “N01” in the numerator should be “N0i”.

66. Page 281, seventh line from the bottom (equations for $\hat{N}^*_i$ and $\hat{N}^*_0$) should have asterisk superscripts for each A and B term to the right of the equals sign:

$$\hat{N}^*_i = A^*_i + B^*_i \quad \hat{N}^*_0 = A^*_0 + B^*_0$$

67. Page 282, formula following 15-30: the first term should be $1/A_{1+}$ rather than $1/A_1$.

68. Page 288, 2nd full paragraph, second from last line: $X_{\text{score}}$ should be $\chi_{\text{score}}$.

69. Page 290, line 4 below 16-10: “tk ≥ tend” should be “tk ≤ tend”

70. Page 295, formula 16-20, the expression “$p(RR-1) - I$” should be “$p(RR-1) + I$”.

71. Page 297, 3rd paragraph, first line, change “Like the risk ratio from which it is derived,” to “Like risk ratios and rate ratios,“.

72. Page 297, 3rd paragraph, line 7: change "attributable and etiologic fractions" to "rate fraction and etiologic fraction".

73. Page 298: In the expression for IC-hat (3rd equation), the last minus sign should be a plus sign.

74. Page 300, line 1: "homogeneity of the risk, rate, or odds ratio implies heterogeneity (and hence nonadditivity) of the risk differences" should be “homogeneity of the risk, rate, or (with few exceptions) odds ratio implies heterogeneity (and hence nonadditivity) of the risk differences”.

75. Page 305, paragraph 2, line 7: replace "example, one may replace each cell count with an average of that count and the count expected" with "example, we may replace each count with a weighted average of the count and its expectation".
76. Page 308, Table 17-4, last column: Entry 7 should be 1.13; entry 10 should be 1.09.

77. Page 315: Person-time formula for \( V \), replace “\( E_i M_{1i} V_i \)” with “\( \Sigma_i M_{1i} V_i \)”.

78. Page 315: The sum in the count formula for \( V_i \) should be over \( j \) (not \( i \)).

79. Page 315, computations at bottom of page: There is a series of small numeric discrepancies between what is printed and what should appear. The correct numeric values are \( S = 2693.67 \), \( E = 2870.12 \), \( E^2/M_1^2 = 5.8814 \), and \( V = 2815.94 \).

80. Page 316, first line: replace “\( \chi_{\text{trend}} = (2694.3 - 5.8828)/2814.6^{1/2} = -3.33 \)” with “\( \chi_{\text{trend}} = (2693.67 - 2870.12)/2815.94^{1/2} = -3.33 \)”.

81. Page 316, second line: replace “\( \chi_{\text{trend}} = -3.69 \)” with “\( \chi_{\text{trend}} = -3.67 \)”.

82. Page 340, line 8 from bottom: at start of line, 427 should be 854.

83. Page 356, denominator of first formula: “\( F_{n1} \)” should be “\( F_{p1} \)” and “\( F_{p0} \)” should be “\( F_{n0} \)”.

84. Page 360, 3rd line above heading "A Matrix Adjustment Method": change "when a common method," to "when the same method,",

85. Page 363, start of line 6: “OR_{DZX}” should be “OR_{DX}”

86. Page 363, sentence just above section heading (“Multiple-Bias Analyses”), “which equals the product of the true (population) odds of \( Z=1 \) versus \( Z=0 \) and the ratio of selection probabilities when \( Z=1 \) versus \( Z=0 \)” should be replaced with "which equals the sample odds of \( Z=1 \) versus \( Z=0 \) divided by the ratio of selection probabilities when \( Z=1 \) versus \( Z=0 \)"

87. Page 367, figure legend (f): “solid curve (——), normal prior” should be “dashed curve (— —), normal prior” and “dashed curve (— —), trapezoidal prior” should be “solid curve (——), trapezoidal prior”.

88. Page 375, delete the last sentence of the fifth paragraph and replace with: “The magnitude could be bounded by the (absurd) extremes in which either all 71 missing cases were exposed and all 787 missing controls were unexposed, which yields a bias factor of \( 45(945)/((45+71)(945+787)) = 0.21 \), or all 71 missing cases were unexposed and all 787 missing controls were exposed, which yields a bias factor of \( ((94+71)(257+787))/94(257) = 7.1 \)”.

89. Page 379, line 3 of second paragraph after the bullets: the first capital Y in the line should be italicized.
90. Page 387, in the equation under paragraph 2:
“\(E_w(Y=y | X=x) = E(Y = y | \text{Set}(X=x))\)” should be “\(E_w(Y | X=x) = E(Y | \text{Set}(X=x))\)”.

91. Page 390, 4th paragraph, 2nd sentence: "regress and" should be "regressand".

92. Page 413, 2nd line under the heading "POLYTOPOUS LOGISTIC MODELS":
“\(y_0, \ldots, y_1\)” should be “\(y_0, \ldots, y_I\)”.


94. Page 429, two lines under "Model Sensitivity Analysis": "described in the following," should be "described in this chapter".

95. Page 431, line after first equation: "the observed case-control ratio by the overall disease rate" should be "the observed case-control ratio divided by the overall disease rate"

96. Page 433, second line of final paragraph: 21-5 should be 20-5.


98. Page 435, line 3 of first full paragraph: 21-4 should be 21-6.

99. Page 445, 2nd equation: Denominator of right-hand side should include \(\Pr(X>0)\).

100. Page 446, formula after “uses the regression weight”: Denominator of formula should include \(\Pr(X>0)\).

101. Page 447, line 1: “\(Y\) and \(X\)” should be “\(Z\) and \(X\)”.

102. Page 447, 7 lines above subheading “EXPOSURE SCORES”: “(Miettinen, 1976b; Pike et al., 1979)” should be “(Cornfield, 1971; Miettinen, 1976b; Pike et al., 1979)”.

103. Page 448, paragraph 5, line 7: semicolon before “where” should be a comma.

104. Page 449, paragraph 5, line 4: Replace “suppose just one covariate” by “suppose the covariate”


106. Page 521, Table 25-2: The number of exposed cases in group 2 should be 30 (not 20, as shown). The number of unexposed cases in group 2 should be 20 (not 10, as shown).

107. Page 572, Table 28-7, 4th line of footnote, replace “\((63\times4)\)” with “\((84\times10)\)”
108. Page 644, footnote to the table 32-2, ":(a+b)/n" should be "(a+c)/n".

109. Page 653, line 8 from bottom: "Senn, 2002" should be "Senn, 2000"


117. Page 701, line 9 (under Gullen): "53:1956-1965" should be "83:914-918.”

118. Page 703, in the reference for Hoening JM et al., “Hoening” should be “Hoenig”


120. Page 705: In the reference to Kang and Shafer, the material following the title should read "(with discussion). *Stat Sci* 2007;22:523-580.”


Page 717: The reference “Poole C: Exceptions to the rule about nondifferential misclassification (abstract). Am J Epidemiol 1985;122:508.” should be moved up to be the first reference listed under “Poole C”.

Page 717: The pair of citations by Popper KR should appear as follows:


Page 722, first reference (Schouten et al.): the title of the paper should read “Risk ratio and rate ratio estimation in case-cohort designs: hypertension and cardiovascular mortality.”


Page 722: Insert "Senn S. Power is indeed irrelevant in interpreting completed studies. *BMJ* 2002;325:1304."

135. Page 750, under "Power of statistical test, 153-154": insert sub-entry "in data analysis, 160".

136. Page 752, bottom of column 1: "Rate fraction" should be moved to next column to follow "Rate difference".

137. Add the following references to the reference list (these are all cited in chapter 31).


Kowaleski, J. *State definitions and reporting requirements for live births, fetal deaths and induced terminations of pregnancy*. Hyattsville, Maryland, National Center for Health Statistics 1997 revision.


Lee WC. Genetic association studies of adult-onset diseases using case-spouse and case-offspring


Williamson, JM, Datta S, Satten GA. Marginal analysis of clustered data when cluster size is informative. *Biometrics* 2003;59:36–42.