***Module overview***

“In the paradigmatic cohort study, the investigator defines two or more groups of people that are free of disease and that differ according to the extent of their exposure to a potential cause of disease. These groups are referred to as the study cohorts. When two groups are studied, one is usually thought of as the exposed or index cohort—those individuals who have experienced the putative causal event or condition—and the other is then thought of as the unexposed, or reference cohort. There may be more than just two cohorts, but each cohort would represent a group with a different level or type of exposure. For example, an occupational cohort study of chemical workers might comprise cohorts of workers in a plant who work in different departments of the plant, with each cohort being exposed to a different set of chemicals. The investigator measures the incidence times and rates of disease in each of the study cohorts, and compares these occurrence measures.

Many cohort studies begin with but a single cohort that is heterogeneous with respect to exposure history. Comparisons of disease experience are made within the cohort across subgroups defined by one or more exposures. Examples include studies of cohorts defined from membership lists of administrative or social units, such as cohorts of doctors or nurses, or cohorts defined from employment records, such as cohorts of factory workers.”

* Rothman K, Greenland S, & Lash T. Modern Epidemiology (p. 94-95).

***Module topics / Key Concepts***

* Discussion of bias in cohort studies
* Discussion of appropriate measures of disease occurrence and measures of association
* Review of survival analysis techniques
* Measures of incidence
  + Be able to calculate and interpret cumulative incidence based on the life-table approach.
  + Be able to calculate and interpret cumulative incidence based on the Kaplan-Meier approach.

***Required videos***

Please view the following presentations **before** our next in-class lab session:

* Cohort Studies II (Lee, 2020): [Video](https://uthvideo.uth.tmc.edu/Panopto/Pages/Viewer.aspx?id=cbf511b2-2e5c-4efe-9367-ab1100ebd7e2) | [PowerPoint](https://www.dropbox.com/s/i4f5425ri5wk7xi/Cohort%20Studies%20II.pptx?dl=0)
* Survival Analysis Using an Example Dataset (Lee, 2020): [Video](https://www.dropbox.com/s/vx66lp4q78w7e7v/Survival%20Analysis%20Using%20an%20Example%20Dataset.mp4?dl=0) | [PowerPoint](https://www.dropbox.com/s/z2hfyrcokbpfvwn/Survival%20Analysis%20Using%20an%20Example%20Dataset.pptx?dl=0)

***Required Readings***

Please read the following textbook chapters and articles **before** Monday, April 27th, 2020:

* Szklo, M., & Nieto, F. J. (2019). *Epidemiology: Beyond the Basics*. Burlington: Jones & Bartlett Learning.
  + Chapter 2. Section 2.2, pages 52-80
  + Chapter 3. Section 3.2, pages 87-103
  + Szklo & Nieto: Chapter 4, part 4.1 - 4.4.1 (p.127-153)
  + Szklo & Nieto: Chapter 7, part 7.4.4 (p.299-302)
* Pearl J., & Mackenzie D. (2018). *The Book of Why: The New Science of Cause and Effect*. Basic Books.
  + Chapter 7. Beyond Adjustment: The Conquest of Mount Intervention

***Optional supplemental material***

* [Mamdani M, Sykora K, Li P, et al. Reader’s guide to critical appraisal of cohort studies: 2. Assessing potential for confounding. *BMJ*. 2005;330(7497):960-962. doi:10.1136/bmj.330.7497.960](https://www.dropbox.com/s/l6th17e76ue9zap/Mamdani%20et%20al.%202005%20-%20Reader%27s%20guide%20to%20critical%20appraisal%20of%20cohort%20studies%20-%202.%20Assessing%20potential%20for%20confounding.pdf?dl=0)
* [Normand S-LT, Sykora K, Li P, Mamdani M, Rochon PA, Anderson GM. Readers guide to critical appraisal of cohort studies: 3. Analytical strategies to reduce confounding. *BMJ*. 2005;330(7498):1021-1023. doi:10.1136/bmj.330.7498.1021](https://www.dropbox.com/s/p9i2c6y45otwlvt/Normand%20et%20al.%202005%20-%20Readers%20guide%20to%20critical%20appraisal%20of%20cohort%20studies%20-%203.%20Analytical%20strategies%20to%20reduce%20confounding.pdf?dl=0)
* [Bewick V, Cheek L, Ball J. Statistics review 12: survival analysis. *Crit Care*. 2004;8(5):389-394. doi:10.1186/cc2955](https://www.dropbox.com/s/mmd6rxqifg6eac2/Bewick%20et%20al.%202004%20-%20Statistics%20review%2012%20-%20survival%20analysis.pdf?dl=0)
* [Dudley WN, Wickham R, Coombs N. An introduction to survival statistics: Kaplan-Meier analysis. *Journal of the advanced practitioner in oncology*. 2016;7(1):91.](https://www.dropbox.com/s/wlvkdglvcysbmjt/Dudley%20et%20al.%202016%20-%20An%20introduction%20to%20survival%20statistics%20-%20Kaplan-Meier%20analysis.pdf?dl=0) <https://www.ncbi.nlm.nih.gov/pmc/articles/pmc5045282/>[.](https://www.dropbox.com/s/wlvkdglvcysbmjt/Dudley%20et%20al.%202016%20-%20An%20introduction%20to%20survival%20statistics%20-%20Kaplan-Meier%20analysis.pdf?dl=0)

***Assignments***

1. Check on learning quiz
2. Lab
3. Module quiz