INDICATION BIAS IN THE ANALYSIS OF SURVIVAL DATA

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Indication bias occurs in pharmacoepidemiological studies when the indication for a medication confounds the association between the drug and outcome of interest. Nonsteroidal anti-inflammatory drugs may be prescribed to reduce both acute and chronic pain (sometimes associated with inflammation). Evidence shows that chronic inflammation may promote atherosclerotic disease; recent discoveries indicate that acute infections are associated with a transient increased risk of cardiovascular events. A comparison of two similar drugs that have different prescription duration patterns (short intended durations (IDs) for acute pain and long IDs for chronic pain) may yield a significant difference in a survival analysis if no adjustment is made for ID. We ran simulations to generate data on two groups of hypothetical subjects who were prescribed the same drug for either acute or chronic pain. We varied the ID, the proportion of subjects with one of the indications from each group and the hazard functions corresponding to each indication. We compared the crude hazard ratio (HR) to the HR adjusted for ID. Long IDs were set at 30 days and short IDs randomly sampled from a β (5,10) and multiplied by 30 to take values $\in$ [1,29]. Preliminary results show that in a majority (>60%) of cases, significant HRs became nonsignificant once adjusted for ID. Further simulations are underway to determine which proportions of short/long IDs and which probabilities of events yield similar results.