

---

**BALAKUMAR SWAMINATHAN**, University of Western Ontario

*Ascertainment Corrected Penetrance Estimate for Bivariate Event Time Outcomes using Frailty Model*

In the analysis of complex diseases, affecteds may experience successive events as a consequence of a primary event. We aim to quantify the dependence between sequential event times and estimate the age dependent penetrance. Shared gamma frailty model with Weibull baseline is used and adjusted for family based study design. Using 12 Lynch Syndrome families from Newfoundland, penetrance of first colorectal cancer by age 70 was 99% for male mutated gene carriers and 86% for female carriers. Penetrance to develop a second colorectal cancer in 5 years following first event was 20% for male carriers and 11% for female carriers.