Cancer patients are frequently followed up longitudinally with computed tomography (CT), which involves radiation hazards, and the optimal follow-up schedules are often unknown. We developed a method that adjusts the timing of CT scans with the hazard of cancer recurrence in time.

The model was used to find the optimal points in time for performing each CT scan by minimizing the expected time between the observed date of tumour recurrence and the model-predicted date of recurrence for six prototype patients treated for 36 months with adjuvant imatinib.

Shape of the individual hazard function depends on the surgery time covariates and time dependent covariates.

The numbers of CT scans can be reduced approximately 30% during the first six years of follow-up since initiation of treatment compared with the current follow-up recommendations without jeopardizing early detection of recurrence. The method may be applicable to the follow-up of other types of human cancer to facilitate early detection of recurrence or to reduce the radiation hazards associated with CT scans.

REFERENCES

