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# Quantifying human decomposition in an indoor setting and implications for postmortem interval estimation

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## Highlights

- Assesses the Total Body Score (TBS) for quantification of indoor human decomposition.
- Evaluates the impact of season, absence or presence of insects, and desiccation.
- Discusses the accuracy and precision of postmortem interval estimates based on TBS.
- Identifies limitations and possible improvements of postmortem interval estimation.

**Abstract:** This study's objective is to obtain accuracy and precision in estimating the post-mortem interval (PMI) for decomposing human remains discovered in indoor settings. Data were collected prospectively from 140 forensic cases with a known date of death, scored according to the Total Body Score (TBS) scale at the post-mortem examination.

In our model setting, it is estimated that, in cases with or without the presence of blowfly larvae, approximately 45% or 66% respectively, of the variance in TBS can be derived from accumulated degree-days (ADD). The precision in estimating ADD/PMI from TBS is, in our setting, moderate to low. However, dividing the cases into defined subgroups suggests the possibility to increase the precision of the model. Our findings also suggest a significant seasonal difference with concomitant influence on TBS in the complete data set, possibly initiated by the presence of insect activity mainly during summer. PMI may be underestimated in cases with presence of desiccation. Likewise, there is a need for evaluating the effect of insect activity, to avoid overestimating the PMI. Our data sample indicates that the scoring method might need to be slightly modified to better reflect indoor decomposition, especially in cases with insect infestations or/and extensive desiccation. When applying TBS in an indoor setting, the model requires distinct inclusion criteria and a defined population.

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