Cervical cancers exhibit substantial intra- and inter-tumour heterogeneities in blood flow prior to treatment, reflecting similar variability in vascularisation. When clinically relevant hyperthermia is applied as an adjuvant to established treatment modalities, blood flow may change in non-predictable directions, extents and durations, indicating subsequent variability in heat dissipation and in flow-associated parameters of the tumour microenvironment. Before heating, locally advanced cervical cancers are mostly hypoxic, acidic, exhibit substrate and energy deprivation and show lactate accumulation, which is spatially and temporally heterogeneous. Additionally a relatively homogeneous interstitial hypertension is observed. Most probably, metabolic parameters of the hostile microenvironment are able to greatly modulate the thermosensitivity of cancer cells. Adequate information concerning changes upon heat treatment is not available so far. Due to this lack of proven data for cervical cancers upon heat treatment, clinical studies are urgently needed in order to judge the possible impact of blood flow and the above-mentioned microenvironmental parameters.