

# **The direct effects of stored blood products may worsen prognosis of cancer patients; shall we transfuse or not? An explanation of the adverse oncological consequences of blood product transfusion with a testable hypothesis driven experimental research protocol.**

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Francis and colleagues reported an association between blood transfusion and worsened cancer prognosis. Since then there has been much debate over whether there is in fact such an association. We propose a possible mechanism which could explain much of the conflicting clinical and experimental evidence, and which can be readily tested experimentally. It is suggested that the extracellular accumulation of bioactive factors in blood transfusion products can directly and indirectly cause tumour growth and hence a worsening of prognosis. This theory can be applied both in vitro and in vivo. Two separate UK studies have shown that perioperative blood transfusion is associated with worsened prognosis in head and neck squamous cell cancer patients. Furthermore, pilot experiments have shown that as blood ages, endothelial growth factors are leached from the metabolically compromised red cell. We believe that we have provided a rationale to explain the conflicting findings of research to date in this area. That red cells should store endothelial reparative growth factors would seem logical, as would the release of any factors as the metabolic processes of the anucleate red cell decline over time. As a result, leuco-depletion should be promoted and blood transfusion should be avoided if possible.