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## Testimony

### S.B. No. 152 (COMM) An Act Concerning The Establishment Of The Connecticut Umbilical Cord Blood Collection Board.

#### The Need for Public Umbilical Cord Blood Banks:

Stem cells derived from umbilical cord blood offer many advantages over donor-derived adult bone marrow stem cells in the treatment of malignancies and various genetic conditions requiring bone marrow transplantation. Advantages include higher rates of bone marrow engraftment and reduced Graft-versus-host (GVH) disease even if there are one or two HLA loci mismatches (1,2). This latter phenomenon may reflect the relative immunological immaturity and higher proportion of stem cells in umbilical cord blood vs. adult bone marrow (3,4). Preliminary results have been sufficiently reassuring to spur the federal government to encourage formation of public umbilical cord stem cell banks. The C. W. Bill Young Cell Transplantation Program, authorized by the Stem Cell Therapeutic and Research Act of 2005, created the National Cord Blood Inventory (NCBI) whose goal is to collect and store 150,000 cord blood units.

If populated by units donated from an ethnically and racially diverse population, these public banks could provide all the HLA-matched stem cells needed by the U.S. population to meet its stem cell transplantation needs. Moreover, minority group members, who are currently seriously underrepresented in unrelated marrow donor registries, would preferentially benefit from such a national program (5). Another potential use for banked umbilical cord blood stem cells is as a non-controversial source of totipotential embryonic-like stem cells for the treatment of Parkinson's disease, Alzheimer's, diabetes, etc.

While all of these factors strongly support the establishment of public umbilical blood banks, very few pregnant women in Connecticut currently have an opportunity to donate their baby's umbilical cord blood to such a public bank. In the vast majority of cases this blood is discarded as medical waste. Alternatively, more affluent parents may choose to pay to have their infant's cord blood stored in private cord blood bank. However, it is a rare that a child will benefit from having their own umbilical cord blood banked by their parents. Virtually all the non-malignant disorders amenable to allogeneic transplantation (*e.g.*, Sickle Cell Anemia, Thalassemia Major, and Fanconi's Anemia) are genetic in origin and, thus, not suitable to autologous (self-derived) stem cell transplants. Conversely, many childhood cancers (*e.g.*, acute lymphoblastic leukemia and Hodgkin's disease)

demonstrate high cure rates with conventional therapy and/or are better treated with allogeneic (donor-derived) rather than autologous umbilical cord stem cells since the mild GVH disease induced by the former has beneficial anti-cancer cell effects (6). Moreover, in the case of childhood leukemias and lymphomas, the wisdom of autologous transplantation of the same hematopoietic stem cells that have a likely genetic predisposition to undergo malignant transformation seems suspect.

The economics of private cord banking are also suspect. It has been estimated that only 74 of 200,000 or 0.04% children will be born with a life-threatening genetic disorder or develop a cancer potentially amenable to autologous umbilical cord blood stem cell transplants (5). When the potential use of this blood in a sibling is included, the likelihood of use remains far less than 1%. Another economic factor that weighs against private umbilical cord blood banking is cost. Even if one feels that a less than 1% chance of needing banked cells justifies storage, the costs are substantial: up to \$1500-2000 for initial processing and \$100-150 per year for storage.

Thus, the weight of current evidence overwhelmingly supports the establishment of government supported public umbilical cord blood banking.

## References

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