

QUALITY OF LONG-TERM CRYOPRESERVED UMBILICAL CORD BLOOD UNITS IN A CORD BLOOD BANK IN SOUTHERN BRAZIL

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Introduction/objective: Umbilical cord blood (UCB) is an important source of hematopoietic stem/progenitor cells (HSPCs) for transplantation and the quality of cryopreserved samples is essential for ensuring future engraftment success. Several critical factors, including cryopreservation, storage, and thawing processes, can significantly affect the quality of these cell products. To address these concerns, accreditation organizations recommend establishing an HSPC stability program with specific parameters for assessing viable cell recovery and functional potency. In this study, we present the results of quality analyses for UCB samples that have been cryopreserved for up to 15 years at a private cord blood bank in southern Brazil (Hemocord Biotecnologia). **Methods:** This study was approved by the Human Research Ethics Committee of the University of Vale do Rio dos Sinos (n°6.185.705), and all donors provided informed consent. A total of 48 UCB units collected, cryopreserved, and stored in one of four nitrogen tanks at the company between 2005 and 2020 were included in this analysis. The viability of CD34 cells was determined using flow cytometry with 7-AAD staining. Additionally, functional assays were conducted using colony-forming unit (CFU) assays in methylcellulose. Outsourced services conducted all analyses. Results are reported as mean $\pm$ standard error. **Results:** We evaluated the cell viability in an average of three samples per year between 2005-2020. CFU analysis was conducted on 7 samples from 2005-2010, 9 from 2011-2015, and 6 from 2016-2020. The mean total nucleated cell (TNC) count per unit was $8.42 \times 10^8 \pm 0.7 \times 10^8$, with 37.5% of samples having final cell counts exceeding 900 million. After thawing, the average CD34+ cell concentration was $5.0 \times 10^6 \pm 0.8 \times 10^6$, with a mean viability of $95.1\% \pm 0.8\%$. While the lowest value was 76.2%, 40/48 samples had viability of CD34+ cells above 90%. CFU assays demonstrated colony growth in 47/48 samples. The mean total CFU per unit was $33.0 \times 10^5 \pm 5.9 \times 10^5$ (range: 1.0×10^5 to 113.0×10^5). All samples showed CFU of granulocyte/macrophage (CFU-GM) ($10.9 \times 10^5 \pm 2.1 \times 10^5$) and erythroid burst-forming units (BFU-E) ($21.9 \times 10^5 \pm 4.8 \times 10^5$), while 37/48 samples had granulocyte, erythrocyte, macrophage, and megakaryocyte (CFU-GEMM) growth ($1.6 \times 10^4 \pm 4.8 \times 10^3$). **Discussion:** CD34+ cell viability and CFU growth in analyzed samples met the criteria set by the Foundation for the Accreditation of Cellular Therapy (FACT), which recommends viable CD34+ cells $\geq 70\%$ post-thaw and CFU growth in UCB units intended for clinical use. Additionally, 37.5% of the analyzed samples met the rigorous criteria for TNC count, matching these results to American public cord blood banks. Recent studies have also highlighted the importance of the quantity and quality of viable cells in predicting successful engraftment outcomes. Thus, quantifying post-thaw viable CD34+ cells and CFU assays are valuable predictors of hematopoietic stem cell engraftment potential.

Conclusion: : Our results support previous studies demonstrating that the quality and potency of UCB units are preserved over the long term. These findings underscore the importance of maintaining rigorous quality control and maintenance in cryopreservation in cord blood banking to ensure the availability of high-quality samples for potential therapeutic use.

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ESTUDO COMPARATIVO ENTRE TESTE DE SOLUBILIDADE/TESTE DA MANCHA E ELETROFORESE DE HEMOGLOBINA NA TRIAGEM DE HEMOGLOBINA S EM DOADORES DE SANGUE

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Objetivo: Comparar o Teste de Solubilidade/Teste da Mancha com a Eletroforese de Hemoglobina na identificação de Hemoglobina S (Hb S) em doadores de sangue do HEMOGO. **Material e métodos:** As amostras testadas foram obtidas dos doadores de sangue no Hemocentro Coordenador Estadual de Goiás Prof. Nion Albernaz (HEMOGO), durante o período de 27/04/24 a 30/07/24. Estas foram submetidas à triagem para pesquisa de hemoglobina variante em sistema automatizado multiparâmetros (CAPILLARYS 2). As amostras identificadas com presença de hemoglobina variante, foram submetidas ao teste de solubilidade e à identificação da hemoglobina variante realizada por capilaridade, no equipamento CAPILLARYS 2. **Resultados:** No período foram avaliadas 20.344 amostras. O teste de triagem automatizado, através da técnica eletroforese capilar para HbA1c, detectou-se a presença de hemoglobina variante em 580 amostras (2,85%). A análise destas amostras, através da identificação da hemoglobina variante, demonstrou que 351 (60,6%) apresentaram Hemoglobina S (Hb S) presente, 135 (23,2%) foram identificadas como Hemoglobina C, 16 amostras (2,7%) identificadas como Hemoglobina E e 78 amostras (13,5%) foram detectadas outras hemoglobinas. O Teste da Mancha foi realizado nas 580 amostras, destas, 351 (60,6%) apresentaram resultados positivos. Após confirmação por eletroforese, evidenciamos a compatibilidade das técnicas em 100% das amostras analisadas. **Discussão:** Constatou-se que o traço falcêmico foi encontrado com frequência de 1,72% entre os doadores de sangue atendidos no período definido deste estudo. A compreensão da prevalência da Hb S em doadores de sangue é importante para delinear o melhor direcionamento do concentrado de hemácias (CH), para minimizar os riscos e priorizar a qualidade da transfusão, pois não é permitido a transfusão de CH em pacientes com hemoglobinopatias, acidose grave, recém-nascidos, transfusão intrauterina, procedimentos cirúrgicos com circulação extracorpórea e paciente apresentando hipotermia. **Conclusão:** Os resultados da identificação de Hb S por Eletroforese Capilar e Solubilidade/Teste da Mancha positivo foram 100% compatíveis. As duas técnicas mostraram-se

eficazes na triagem da Hb S em doadores de sangue testados no HEMOGO. A escolha entre a técnica de solubilidade e Eletroforese de Hemoglobina depende da necessidade específica do diagnóstico e dos recursos disponíveis. O Teste da Mancha empregado para triagem na detecção de Hb S, no presente estudo, é mais rápido, tem maior estabilidade e durabilidade dos reagentes, não necessitando de grande investimento em treinamento de pessoal e demonstrou ser tão eficaz quanto à eletroforese capilar. O Teste da Mancha pode ser utilizado em locais onde técnicas automatizadas não estão implantadas, servindo como triagem para a presença de Hb S em doadores de sangue. Em contrapartida, a Eletroforese de Hemoglobina oferece maior sensibilidade, sendo essencial para diagnóstico do paciente.

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TO EVALUATE THE PERCEPTION OF NURSING PROFESSIONALS IN THE USE OF A MONITORING INSTRUMENT IN THE HEMOTHERAPY PROCESS IN AN ONCOLOGY HOSPITAL IN THE STATE OF SÃO PAULO

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Introduction: A specific instrument for monitoring the transfusion process was designed with the aim of managing, monitoring and tracking all stages of the transfusion process, in the Hemotherapy Service of the Cancer Institute of the State of São Paulo (ICESP) and improving the reliability of notification of transfusion reactions. The management of indicators through this instrument makes it possible to support decision-making and the reorganization of processes in real time, contributing to maintaining the standard of excellence and safety of hemotherapy care. Therefore, the objective of this study was to evaluate the perception of nursing professionals in the use of an instrument for managing the transfusion process in the Hemotherapy Service of (ICESP). **Methods:** Therefore, a prospective interventional study was conducted in which a questionnaire consisting of six questions was applied regarding the use of the instrument for recording the stages of the transfusion process. This study consisted of 200 participants, divided into five groups, according to the area of activity, being: hemotherapy (n = 40), ICU (n = 40), hematology (n = 40), day hospital (n = 40) and outpatient clinic (n = 40). The outpatient group was evaluated as a control in data analyses. **Results:** After applying the questionnaire, it was observed that regarding question 1 about Understanding the information in the instrument, all hemotherapy and ICU participants responded that they completely agreed with the presentation

of the content present in the instrument. Regarding the difficulty in filling out the instrument, of the groups evaluated, hemotherapy (75%), HD (65%), hematology (57.5%), outpatient clinics (37.5%), ICU (30%) responded that the instrument It is easy to fill out. For the majority of participants (70.5%) there is a positive impact on the time spent filling out the instrument. The hemotherapy (97.5%), ICU (62.5%), HD (90%) and outpatient (90%) groups fully agreed that the information contained in the instrument contributes to continuous improvement in transfusion therapy. In the fifth question in which the ease of the steps to be followed was evaluated, it was evidenced that for hemotherapy (82.5%), ICU (95%), HD (92.5%), hematology (90%) and outpatient clinic (80%), completing the instrument makes it easier to understand all the steps that must be followed. Finally, hemotherapy (82.5%), ICU (90%), HD (85%), Hematology (92.5%) and Outpatient Clinic (72.5%) are satisfied with using the instrument during the transfusion process. **Conclusion:** Based on the results obtained, it was observed that in the perception of professionals working in the hemotherapy service, the instrument helps in control, monitoring and traceability at all stages of the transfusion process.

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VALIDAÇÃO DO MONITORAMENTO DO TRANSPORTE DE INSUMOS CRÍTICOS DO ALMOXARIFADO CENTRAL PARA AS UNIDADES REGIONAIS DA FUNDAÇÃO HEMOMINAS

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Objetivos: A Fundação Hemominas é constituída por uma rede de 21 Unidades descentralizadas nas macrorregiões de Minas Gerais. Considerando a dimensão geográfica do estado, a distribuição de insumos partindo do Almojarifado Central em Contagem, região metropolitana de Belo Horizonte para as Unidades regionais percorre grandes distâncias. O objetivo deste trabalho foi revalidar o envio de materiais críticos transportados à temperatura ambiente, do Almojarifado Central para todas as Unidades da rede, pelo monitoramento das temperaturas de transporte, tempo de transporte e integridade da carga no ato do recebimento no destino final. **Materiais e métodos:** Foi feito o monitoramento dos envios de carga das rotas entre o Almojarifado Central e as Unidades regionais, colocando-se os sensores de temperatura sobre a carga e utilizando manta térmica sobre o sensor e carga, buscando obter dados mais fidedignos relacionados aos insumos transportados e a carga de insumos críticos foi montada em pallets específicos e organizados de acordo com a ordem de descarregamento conforme logística da rota programada entre o Almojarifado e as Unidades regionais. Foram distribuídos sobre a carga, 3 termômetros tipo data-logger, programados para registrar as temperaturas a cada 15 minutos. Como nova estratégia de transporte e monitoramento da temperatura, os pallets contendo os insumos críticos foram cobertos por uma