

## Application of information technology may increase the efficacy of Confidential Unit Exclusion (CUE) in blood donors

Mehrdad Jalalian<sup>1</sup>, Hamidreza Mahboobi<sup>2</sup>

<sup>1</sup>. M.D., Editor In-chief, Electronic Physician, Mashhad, Iran

<sup>2</sup>. General Physician, Infectious & Tropical Disease Research Center, Hormozgan University of Medical Sciences (HUMS), BandarAbbas, Iran

### Corresponding Author:

Dr. Mehrdad Jalalian, Electronic Physician Journal, Mashhad, Iran, E-Mail: mehrdad.medic@gmail.com

### Abstract:

Confidential Unit Exclusion (CUE) refers to a procedure by which a blood donor designates confidentially whether his or her blood might not be safe for transfusion. It applies to situations in which an individual who is not eligible for blood donation in terms of blood safety feel pressured by others to donate his or her blood. A potential problem in the CUE system is misunderstanding of the procedure and its significance by blood donors as well as the lack of their confidence regarding the confidentiality of their private information. Since the Information and Communication Technology (ICT) provides a secure and confidential atmosphere, it is expected the application of ICT have a positive impact on the efficacy of CUE system.

**Keywords:** Confidentiality; Blood donors; Blood safety

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### 1. Introduction

One of the most significant current discussions in blood donation safety is Confidential Unit Exclusion (CUE). The term CUE has come to be used to refer to a procedure by which a blood donor designates confidentially whether his or her blood might not be safe for transfusion (1). It applies to situations in which an individual who is not eligible for blood donation in terms of blood safety feel pressured by others to donate his or her blood (1, 2). In these situations, the blood donor may feel too shy if the physician at the blood donation center rejects the blood donation because of his or her unsafe sex experiences or other high risk behaviors regarding blood safety. Thus, the blood donor claims to be safe enough to donate blood when he or she really is not. In the CUE system, the donor gives the blood and all tests on the donated blood are done, but the blood unit will not be transfused to patients (1). This system was introduced by many blood centers following an additional FDA recommendation in 1986 to prevent the transfusion of blood from an unsafe donor (1, 3).

The CUE process should be explained carefully to the donor. However; a potential problem in the CUE system is misunderstanding of the procedure and its significance by blood donors. Several studies that included follow-up interviews or analyzed the feedbacks on CUE showed that a majority of blood donors who chose the CUE option did so as a result of misunderstanding either the mechanics or appropriate use of the system (4-9). The weakness we addressed for the CUE still can threaten the appropriate application of CUE as a result of practical constraints of the system. To encourage the appropriate use of CUE, confidentiality and donor education prior to blood donation are essential. In cases in which the donors misunderstand the CUE process, we should give them a reinstatement opportunity through secure and confidential communication. An educational brochure describing the CUE system to the donors after their blood donation may result in their reinstatement. The donor then may call the blood center back a short time after donation and make a reinstatement on CUE options (2). Such donors may contact the blood donation center by using an automated call-back system that works by donor Identification number or through a

Web-based application connected to the donor database. Thus, the donor may have an opportunity to reinstate by employing a confidential Internet communication, e-mail, automated mobile SMS, or call-back system, not in a face-to-face method.

## 2. Hypotheses

The application of Internet and mobile systems are some of the preferred methods of communication among blood donors (10-12). Through the application of information and communication technology (ICT), donors are expected to believe that their information or answer to CUE options will be kept confidential. However, it is not exactly clear that ICT will have a positive impact on blood safety through its application on the CUE system. This hypothesis needs to be examined in a controlled interventional study to assess the effect of ICT on a CUE system. The hypotheses to be tested are:

- **H1:** A positive relation exists between the application of ICT and reinstatement rate among those blood donors who choose the CUE option.
- **H2:** The application of different methods of ICT (e.g., SMS, web-based, e-mail, and automated phone call-back system) has different effects on the reinstatement rate among those blood donors who choose the CUE option.

## 3. Evaluation of the hypotheses

The appropriate design for evaluating the stated hypotheses is a prospective cohort study. Employing a longitudinal follow-up study will help both describe the occurrence of the outcome over time as well as analyze the association between predictors and the outcome. In this study, both exposed and unexposed groups should be recruited from the blood donor population. The exposure and outcome variables in such a study are the adoption of an ICT-based CUE system and the reinstatement rate, respectively. In the first hypothesis, the exposure is defined using a yes/no exposure while the second hypothesis requires defining the different types of exposure (e.g., SMS communication, automated phone call-back, e-mail, and web-based communication).

The first hypothesis compares the appropriateness of donors' choice of the CUE option in traditional and ICT-based CUE systems. A comparative within-group analysis is also appropriate for examining the hypothesis regarding differences in the impact of various methods of communication in an ICT-based CUE system. It is important to be careful of the effect of factors such as age, gender, education level, Internet access, and other covariates at both levels of study design and data analysis.

The problem with most cohort studies is the bailout phenomenon or the lack of follow-up. In this study, the only aspect that needs to be followed up on and recorded is the reinstatement of donors, which will be done automatically by the ICT facilities. Another advantage of this study is that it measures the objective variables rather than subjective variables, which means the measurement of variables is more reliable and there is no need to include blinding in the methodology.

## 4. Expected results

Communication with blood donors via ICT facilities provides more confidentiality; therefore, it is expected to identify a considerable increase in the reinstatement of donors who choose the CUE option in the modern method.

### Conflict of Interest:

There is no conflict of interest to be declared.

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