H83 Utilizing Radio Frequency Identification Technology (RFID) to Automate Data Acquisition Between the Baltimore Office of the Chief Medical Examiner (OCME) and the Living Legacy Foundation Organ Procurement Organization (OPO)

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The goals of this presentation are to: (1) accurately and efficiently monitor individual cooling times of decedents at the OCME; (2) assist in the determination of transplantable tissue prior to recovery; and, (3) understand the critical time components that are needed to determine tissue donor suitability.

This presentation will impact the forensic science community by showing a way to automate cooling time data acquisition so that efficiency between OPO and OCME agencies increases and ultimately leads to an increase in tissue donors.

Time of death and cooling times are critical data needed to determine tissue donor suitability. According to the American Association of Tissue Banking (AATB), warm ischemic time shall not exceed 24 hours as long as the decedent was cooled within 12 hours of death. The time limit shall not exceed 15 hours if the decedent was not cooled within 12 hours of death.[1] The current system utilized between the Living Legacy Foundation (LLF) OPO and the OCME in Maryland requires OPO staff to call the OCME to obtain cooling times. Obtaining the crucial and time-sensitive information so as to assist the OPO in determining donor suitability is an additional time-consuming task levied on the forensic investigators and autopsy services personnel.

In 2011, the OCME opened their new facility in Baltimore, MD. In this new construction, the OCME incorporated Radio Frequency Identification Technology (RFID) to track medical case files with a potential expansion to track the location of decedents. In discussions with the OCME to improve current practices, the LLF inquired about the use of existing technologies to obtain accurate and timely access to cooling times. It was determined that the RFID readers located above the autopsy coolers might provide a way to automate this data capture.

In late 2015, the LLF met with the OCME leadership to propose a feasibility study to examine the use of RFID to track the movement of decedents in and out of the autopsy coolers. It was determined at that time that existing chart tracking software could be used to potentially import cooling time data into the OCME electronic intake screen. Over the next several months, the LLF trialed individually barcoded ID tags and performed a preliminary validation to determine the range and accuracy of the RFID antennae.

The next step included the actual tagging of decedents into the existing OCME database upon intake. Cooling time data was captured in "comma separated values" (csv) format, which is not a user-friendly format, and was difficult to interpret by LLF call center staff. With OCME information technology support, an additional table was added to the electronic intake screen that would import in and out cooling times on tagged decedents. A recent revision included a unique barcode field that automatically populates during the intake process to eliminate the possibility of entry error. The LLF created an Installation Qualification and Operation Qualification (IQ/OQ) document co-signed between the OCME and LLF that will be utilized in final validation and for auditing purposes.[2]

Final validation of this project began in August 2017 and will determine accuracy of data reading and import to the intake screen. A secondary goal is to test the system for failure and the ability to recognize and default to the previous process in the event of software outage. It is estimated that this new RFID data capture will have gone "live" by the 4th quarter of 2017. It is anticipated that by automating cooling time data acquisition, it will increase efficiency between both agencies and ultimately lead to an increase in tissue donors. By utilizing RFID, it is predicted that processes will be streamlined, donation will be optimized, and, more importantly, allow OCME staff to continue their daily duties uninterrupted.

Reference(s):

1. American Association of Tissue . 14th Ed., 2017, pg. 48 D5.400.
2. Living Legacy Foundation Installation/Operation Qualification. *Use of RFID to Obtain Cooling Intervals from the Maryland OCME.* VP2017-07; rev. 0.

Transplant, Cooling Time, RFID

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