Improving Placental Banking

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ABOUT THE MCW TISSUE BANK

The Medical College of Wisconsin (MCW) Tissue Bank's mission is to capitalize and centralize collection of discard tissue, blood, and associated clinical information for intended future use in research by MCW faculty. The bank also provides support services for MCW investigators with studies involving human specimens.

The Maternal Research Placenta and Cord Blood Bank (MRPCB Bank) is operated within the MCW Tissue Bank. Participants consent for an individual pregnancy to donate their placenta, cord blood, and a maternal peripheral blood draw to the MRPCB Bank for research purposes. These specimens are linked to the participant's clinical medical record.

Currently the MRPCB Bank includes:

- 1,862 consented pregnancies
- 7,138 placenta samples and 2,336 umbilical cord samples from 1,161 pregnancies
- 8,210 cord blood aliquots from 666 pregnancies
- 1,075 peripheral blood fraction aliquots from 139 pregnancies
- 1,251 banked specimens have been distributed to 11 requestors

INTRODUCTION

Reproductive biobanks that store placenta, cord blood, maternal blood, and other pregnancy related specimens for research are an integral part of facilitating the work of the Human Placenta Project, which seeks to understand placental development and function. Biobanking human specimens is important in the era of personalized medicine, yet creating a new bank is challenging. The Medical College of Wisconsin (MCW) Tissue Bank began the Maternal Research Placenta & Cord Blood (MRPCB) Bank in 2014. A major obstacle to our bank was achieving appropriate specimen collection in a timely fashion. Therefore, we sought to improve specimen collection and optimize timing of banking specimens.

MATERIALS & METHODS

We began our quality improvement project by identifying that trends in collection rates had declined as our number of participants increased. MCW Tissue Bank staff logged the collection progress and worked closely with the Department of OB/GYN leaders to facilitate collection accountability. We arranged meetings with relevant stakeholders to map out current processes and identify failures in collection. We then determined new processes which included a new order set that streamlined the identification of MRPCB Bank participants and utilization of the pneumatic tube system for collected placentas. We also arranged physician, nursing, and laboratory staff education sessions before implementation of the new system. We made a goal of 80% collection and kept Labor & Delivery teams aware of successful collection rates at two week intervals. We tracked the collection progress to ensure our protocol implementation was effective. After six months of the new system, statistical analyses were performed using SPSS (PASW Statistics 18) to compare successful collection before and after the intervention.

RESULTS

In the six months before implementation of the new system, the mean monthly collection of consented placentas was 58.52% (SD 23.54) compared to 86.77% (SD 6.95) after, which was a significant improvement (p=0.002, Figure 1). Monthly collection before the system change demonstrated that a wide range of specimens were not being collected compared to after the protocol change and education were implemented (Figure 2) when successful collection increased.

CONCLUSION

Involving relevant stakeholders in the improvement of a placental banking program resulted in significant improvement in sample acquisition. Tracking successful placental collection and providing stakeholders with quantifiable progress numbers helped achieve placenta collection improvements and will continue to improve overall Bank success.

Figure 1: Mean Collection During 6 Months Before and After Process Change and Education

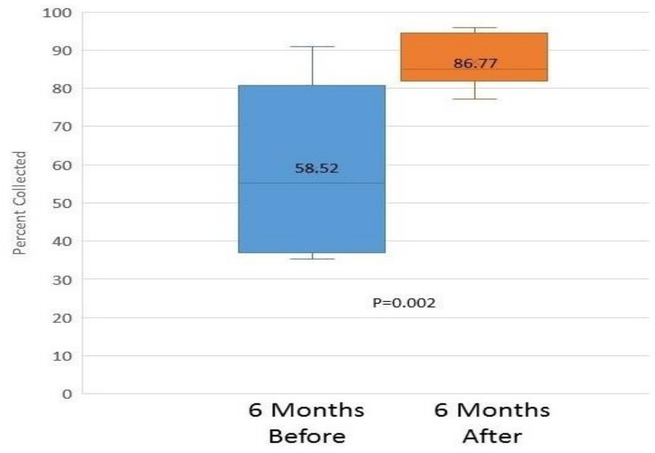

Figure 2: Monthly Placental Collection Before and After Process Change and Education

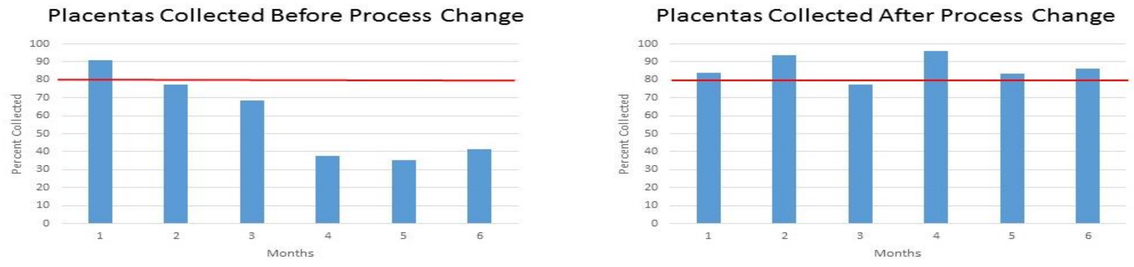

Figure 3: Delivery to Procurement Time Before and After Process Change and Education

MCW Tissue Bank staff: Janelle Lang-Piette, Mary Rau, Mónica Thom, Allia Nelson, Jason Kirkpatrick, Mollie Patton, Ellen A. Schneider, Allison Dawson

LESSONS LEARNED

One overriding lesson learned about consenting, collection, and growth is the fundamental importance of effective education. Ongoing data collection about consent and specimen collection gave us the information needed to make informed training decisions. Sharing success rates and failures with our teams provided important encouragement. To do this, we had to communicate closely with staff at every level from sonographers to technicians to providers to managers. We continue to gather data on how well the program is succeeding at consent and specimen collection and we use this information to motivate our stakeholders as well as further refine both our ongoing educational efforts and growth initiatives.

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