

60th Medical Group (AMC), Travis AFB, CA
INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE (IACUC)
FINAL REPORT SUMMARY

(Please type all information. Use additional pages if necessary.)

PROTOCOL #: FDG20180002A

DATE: 16 Apr 2019

PROTOCOL TITLE: The Effects of Endovascular Perfusion Augmentation for Critical Care (EPACC) in a Porcine (*Sus scrofa*) Model of Sepsis.

PRINCIPAL INVESTIGATOR (PI) / TRAINING COORDINATOR (TC): Dr. Guillaume Hoareau

DEPARTMENT: SGSE

PHONE #: (215) 275-0395

INITIAL APPROVAL DATE: 16 Nov 17

LAST TRIENNIAL REVISION DATE: N/A

FUNDING SOURCE: Air Force Surgeon General's Office.

1. RECORD OF ANIMAL USAGE:

Animal Species:	Total # Approved	# Used this FY	Total # Used to Date
<i>Sus scrofa</i>	14	14	14

2. PROTOCOL TYPE / CHARACTERISTICS: (Check all applicable terms in EACH column)

- | | | |
|--|--|--|
| <input type="checkbox"/> Training: Live Animal | <input type="checkbox"/> Medical Readiness | <input type="checkbox"/> Prolonged Restraint |
| <input type="checkbox"/> Training: non-Live Animal | <input type="checkbox"/> Health Promotion | <input type="checkbox"/> Multiple Survival Surgery |
| <input type="checkbox"/> Research: Survival (chronic) | <input type="checkbox"/> Prevention | <input type="checkbox"/> Behavioral Study |
| <input checked="" type="checkbox"/> Research: non-Survival (acute) | <input type="checkbox"/> Utilization Mgt. | <input type="checkbox"/> Adjuvant Use |
| <input type="checkbox"/> Other () | <input checked="" type="checkbox"/> Other (Treatment) | <input type="checkbox"/> Biohazard |

3. PROTOCOL PAIN CATEGORY (USDA): (Check applicable) C D E

4. PROTOCOL STATUS:

***Request Protocol Closure:**

- Inactive, protocol never initiated
- Inactive, protocol initiated but has not/will not be completed
- Completed, all approved procedures/animal uses have been completed

5. Previous Amendments:

List all amendments made to the protocol. **IF none occurred, state NONE. Do not use N/A.**

For the Entire Study Chronologically

Amendment Number	Date of Approval	Summary of the Change
1	21 Feb 2018	Procedural
2	23 Apr 2018	Anesthetic/Analgesic/Antibiotic/Study agent
3	11 Jul 2018	Personnel

6. **FUNDING STATUS:** Funding allocated: \$25,410.00 Funds remaining: \$ 0.00

7. **PROTOCOL PERSONNEL CHANGES:**

Have there been any personnel/staffing changes (PI/CI/AI/TC/Instructor) since the last IACUC approval of protocol, or annual review? Yes No

If yes, complete the following sections (Additions/Deletions). For additions, indicate whether or not the IACUC has approved this addition.

ADDITIONS: (Include Name, Protocol function - PI/CI/AI/TC/Instructor, IACUC approval - Yes/No)

<u>NAME</u>	<u>PROTOCOL FUNCTION</u>	<u>IACUC APPROVAL</u>

DELETIONS: (Include Name, Protocol function - PI/CI/AI/TC/Instructor, Effective date of deletion)

<u>NAME</u>	<u>PROTOCOL FUNCTION</u>	<u>DATE OF DELETION</u>

8. **PROBLEMS / ADVERSE EVENTS:** Identify any problems or adverse events that have affected study progress. Itemize adverse events that have led to unanticipated animal illness, distress, injury, or death; and indicate whether or not these events were reported to the IACUC.

None.

9. **REDUCTION, REFINEMENT, OR REPLACEMENT OF ANIMAL USE:**

REPLACEMENT (ALTERNATIVES): Since the last IACUC approval, have alternatives to animal use become available that could be substituted in this protocol without adversely affecting study or training objectives?

None.

REFINEMENT: Since the last IACUC approval, have any study refinements been implemented to reduce the degree of pain or distress experienced by study animals, or have animals of lower phylogenetic status or sentience been identified as potential study/training models in this protocol?

None.

REDUCTION: Since the last IACUC approval, have any methods been identified to reduce the number of live animals used in this protocol?

None.

10. **PUBLICATIONS / PRESENTATIONS:**

None. Data generated from this study will be used to refine resuscitation algorithms built through our laboratory.

11. **PROTOCOL OBJECTIVES:** The objectives were met. We were able to generate a large comprehensive dataset used for determination of fluid responsiveness. Data will be used for further refinement of endovascular perfusion augmentation for critical care.


12. PROTOCOL OUTCOME SUMMARY: (Please provide, in "ABSTRACT" format, a summary of the protocol objectives, materials and methods, results - include tables/figures, and conclusions/applications.)

Objectives: To evaluate the effects of endovascular aortic occlusion in a porcine model of sepsis.

Materials and methods: Animals were anesthetized and instrumented. Sepsis was induced by an intravenous infusion of live *Pseudomonas aeruginosa* titrated to obtain a mean arterial pressure < 65 mmHg while avoiding pulmonary hypertension. When the target pressure was achieved some animals received endovascular aortic occlusion. Animals were resuscitated with isotonic crystalloids and vasopressors according to a prespecified algorithm.

Results: We observed a large variability in cardiovascular responses to the bacterial infusion with some animals suffering profound hypotension not responsive to resuscitation efforts while others remained stable with minimal support. Endovascular aortic occlusion yielded variable responses as well.

Conclusion: This sepsis model has cardiovascular effects that are variable between animals. Data acquired from the experiment will be used for future sepsis-related fluid responsiveness studies.


(PI / TG Signature)

5/18/19
(Date)

Attachment 1

Defense Technical Information Center (DTIC) Abstract Submission

This abstract requires a brief (no more than 200 words) factual summary of the most significant information in the following format: Objectives, Methods, Results, and Conclusion.

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Methods: Animals were anesthetized and instrumented. Sepsis was induced by an intravenous infusion of live *Pseudomonas aeruginosa* titrated to obtain a mean arterial pressure < 65 mmHg while avoiding pulmonary hypertension. When the target pressure was achieved some animals received endovascular aortic occlusion. Animals were resuscitated with isotonic crystalloids and vasopressors according to a prespecified algorithm.

Results: We observed a large variability in cardiovascular responses to the bacterial infusion with some animals suffering profound hypotension non-responsive to resuscitation efforts while others remained stable with minimal support. Endovascular aortic occlusion yielded variable responses as well.

Conclusion: This sepsis model has cardiovascular effects that are variable between animals. Data acquired from the experiment will be used for future sepsis-related fluid responsiveness studies.

Grant Number: _____

From: _____

****If you utilized an external grant, please provide Grant # and where the grant came from. Thank you.**