



Society of
Cardiovascular
Anesthesiologists

Survey of Anticoagulation Practices for Cardiopulmonary Bypass

Background Information

Thank you for your interest and participation in our research study to explore current anticoagulation practices. We aim to describe the current state of anticoagulation practices for cardiopulmonary bypass and to explore attitudes on heparin resistance.

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This survey has been approved by the SCA Research Committee and is being administered under the oversight of the Emory University Institutional Review Board. Funding to support this study has been made possible through a research grant from Grifols.

Thank you for your time.



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Demographics - Region

* 1. In what region of the world do you practice Cardiac Anesthesiology?

- ☐ United States of America
- ☐ Canada
- ☐ Mexico / South America
- ☐ Europe
- ☐ Asia
- ☐ Australia/New Zealand
- ☐ I do not actively practice Cardiac Anesthesiology
- ☐ Other (please specify)



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USA Demographics - State

* 2. In which state is your primary hospital (i.e. where you do the majority of your clinical work) located?



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Demographics - Practice Type

* 3. At your primary hospital, do you routinely have Anesthesiology residents participating in cardiac surgical cases?

☐ Yes

☐ No

* 4. How many cardiac surgical procedures utilizing cardiopulmonary bypass (CPB) are performed each year at your primary hospital?

☐ <100 cases annually

☐ 100 - 250 cases annually

☐ 251 - 500 cases annually

☐ 501 - 1000 cases annually

☐ >1000 cases annually

* 5. Do you care for mainly adult or pediatric patients undergoing procedures utilizing cardiopulmonary bypass?

☐ The majority of my patients are adults

☐ About 50% of my patients are adults and 50% are pediatric patients (16 years old or younger)

☐ The majority of my patients are considered pediatric patients (16 years old or younger)



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Heparin Administration Dose

* 6. How do you determine the dose of heparin to administer prior to **initiating** CPB?

- ☐ Empiric weight based (i.e. units/kg)
- ☐ Dose-response calculation (i.e. Hepcon or sensitivity index calculation)
- ☐ Fixed dose (e.g. everyone gets 25,000 units)

7. Prior to **initiating** CPB, what is your typical bolus dose of heparin given to the patient?

- | | |
|--|------------------------------------|
| <input type="radio"/> 200 units/kg | <input type="radio"/> 400 units/kg |
| <input type="radio"/> 250 units/kg | <input type="radio"/> 450 units/kg |
| <input type="radio"/> 300 units/kg | <input type="radio"/> 500 units/kg |
| <input type="radio"/> 350 units/kg | |
| <input type="radio"/> Other. Please enter a value in units/kg: | |



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Heparin Monitoring & Maintenance

* 8. What method do you use to determine an adequate degree of anticoagulation for **initiation** of CPB?

- ☐ Target an activated clotting time (ACT)
- ☐ Target a heparin concentration level via point-of-care device (e.g. Hepcon)
- ☐ Target a heparin concentration level via laboratory testing (e.g. anti-Xa level)
- ☐ Target BOTH an ACT and a heparin level
- ☐ None of the above

* 9. What is your **TARGET ACT** prior to **initiation** of CPB?

- ☐ <300 seconds
- ☐ 300 seconds
- ☐ 350 seconds
- ☐ 400 seconds
- ☐ Other (between 100 - 999 seconds)
- ☐ 450 seconds
- ☐ 480 seconds
- ☐ 500 seconds
- ☐ I do not use an ACT target to initiate CPB

10. How do you maintain anticoagulation **during** CPB (i.e. after CPB is already initiated)?

- ☐ Administer additional heparin to maintain a target ACT
- ☐ Administer additional heparin to maintain a target heparin level
- ☐ Administer empiric bolus heparin doses after a period of time
- ☐ Administer heparin infusion during CPB
- ☐ Additional heparin is not given while on CPB (only initial bolus dose is given)

* 11. What is the **MINIMUM** ACT you would tolerate **during** CPB? (this can be the same as your TARGET ACT, but does not have to be)

☐ <300 seconds

☐ 300 seconds

☐ 350 seconds

☐ 400 seconds

☐ Other (between 100 - 999 seconds)

☐ 450 seconds

☐ 480 seconds

☐ 500 seconds

☐ I do not utilize ACTs



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Heparin Resistance

* 12. In attempting to achieve the desired degree of anticoagulation for **initiation** of CPB, after what dose of heparin would you diagnose the patient with clinically significant decreased heparin responsiveness (i.e. "heparin resistance")?

- ☐ 300 units/kg ☐ 700 units/kg
- ☐ 400 units/kg ☐ 800 units/kg
- ☐ 500 units/kg ☐ I do not diagnose heparin resistance
- ☐ 600 units/kg
- ☐ Other. Please enter a whole number for the dose of heparin (units/kg) at which you diagnose heparin resistance.

* 13. In approximately what percentage of cardiac surgical procedures utilizing CPB do you encounter clinically significant decreased heparin responsiveness?

- ☐ <1% ☐ 21-30%
- ☐ 1-10% ☐ 31-40%
- ☐ 11-20% ☐ >40%

* 14. What is the threshold dose of heparin you will administer to a patient for CPB after which you would administer some other type of therapy for anticoagulation?

- ☐ 300 units/kg ☐ 600 units/kg
- ☐ 400 units/kg ☐ 700 units/kg
- ☐ 500 units/kg ☐ 800 units/kg
- ☐ Other. Please enter a whole number for your maximum dose of heparin in units/kg:

15. Assuming the desired level of anticoagulation is not achieved using heparin alone, what is your priority for the following therapies?

	1st action taken	2nd action taken	3rd action taken	4th action taken	I do NOT do this
Administer fresh frozen plasma (FFP)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administer antithrombin concentrate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administer an additional anticoagulant (e.g. direct thrombin inhibitor or anti-platelet agent)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Initiate CPB despite sub-therapeutic anticoagulation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Use of Antithrombin Concentrate

* 16. Do you agree with the 2011 STS/SCA Blood Conservation recommendation regarding the use of antithrombin concentrate to treat patients with heparin resistance?

- ☐ Yes
- ☐ Yes, but not as a Class I recommendation
- ☐ No
- ☐ I am not familiar with this recommendation

* 17. When you encounter heparin resistance, how often do you administer antithrombin concentrate?

- | | |
|--|--|
| <input type="radio"/> Always | <input type="radio"/> Sometimes (20-49% of the time) |
| <input type="radio"/> Very often (75% or more of the time) | <input type="radio"/> Rarely (<20% of the time) |
| <input type="radio"/> Often (50-75% of the time) | <input type="radio"/> Never |

18. If you do not use antithrombin concentrate in cases of heparin resistance, what is the **PRIMARY** reason?

- ☐ The cost is too high
- ☐ I prefer to give fresh frozen plasma (FFP)
- ☐ I did not know antithrombin concentrate was a first line recommendation
- ☐ I am unfamiliar with antithrombin concentrate
- ☐ Antithrombin concentrate is not on my hospital's formulary
- ☐ Not applicable since I use antithrombin concentrate

19. In what patient populations do you utilize antithrombin concentrate?

(check all that apply - may leave blank if antithrombin concentrate is not used)

- ☐ Patients with acquired antithrombin deficiency ("heparin resistance") presenting for cardiac surgery
- ☐ Patients with acquired antithrombin deficiency ("heparin resistance") presenting for non-cardiac surgery
- ☐ Patients with congenital antithrombin deficiency presenting for any type of surgery
- ☐ Patients on extra-corporeal membrane oxygenation (ECMO)
- ☐ Post-operative patients with inadequate anticoagulation



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Survey Completion

Thank you for completing this survey. If you would like to enter a drawing for one of five paid SCA memberships, or one of ten \$125 Apple giftcards, please enter your E-mail address below.

20. If I win, please notify me at this E-mail address: