

# NASG REMOVAL



Removing the NASG

**DISCLAIMER:** We highly recommend using the training materials as part of a hands-on training program led by an experienced trainer with NASG experience. Neither UCSF, nor any of their employees, makes any warranty, express or implied, including warranties of merchantability and fitness for a particular purpose, or assumes any responsibility for the accuracy, completeness or usefulness of any information from this website or from any websites referenced by this website. **Any use of this document is an agreement that you have read, understood and accept the terms above.**



## Removing the NASG

This unit is designed so that trainees recognize when the woman can safely have the NASG removed and for the trainees to practice NASG removal. It is important to emphasize that NASG removal should only begin when the patient has had <50mL blood loss per hour for two hours and her pulse and blood pressure have remained stable for two hours. Please use local or national guidelines to determine the standard definitions of stable pulse and blood pressure. Trainees should all have the opportunity to practice NASG removal and understand the Rule of 20, along with the importance of reapplying the garment, increasing the IV rate, and finding the source of bleeding if the woman does not remain stable.

It is rare that an NASG has to be replaced once removal has begun if: 1) the guidelines are followed about when to begin removal (after bleeding, pulse, and systolic BP are stable), 2) removal is done slowly, with 15 minute intervals between segments, and 3) the Rule of 20 is followed during removal.



## OBJECTIVES:

***By the end of this unit, trainees should be able to:***

- Identify when a patient has stabilized and is ready to begin the NASG removal process.
- Understand the correct order to remove segments and the importance of waiting 15 minutes between each segment.
- Recognize the “Rule of 20” and the need to rapidly close all segments if a patient has recurrent bleeding, her systolic blood pressure drops by 20mmHg, or her pulse rises by 20 BPM.



At the end of the Unit, you will find a section called [Materials for Practice](#) which includes a list of things you will need for the practical session with trainees. You may also want to have:

- At least one NASG for demonstration purposes
- [PowerPoint presentations](#) for this unit
- [NASG Removal Job Aid](#)
- A downloaded copy of [Saving Mother's Lives: The NASG Training Video](#)
- Copies of the [Checklists for Trainers and Trainees](#)
- A gurney, bed, large table, or flat surface to practice on
- Any other regular training materials you use

***Note: The following materials are written so that they may be given directly to trainees if the trainer wishes to give printed materials as trainee handouts.***

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## Removing the NASG

While anyone can be trained to apply the NASG, the NASG should only be removed by a skilled health care provider. Likewise, the NASG should only be removed at the facility level, where the woman's blood pressure and pulse can be closely monitored. Removing the NASG before a woman is stable or removing it in the wrong order can be dangerous for the patient, as she may rapidly revert to profound shock. The NASG should only be removed with the woman's IV line still running, in case her condition deteriorates during removal.

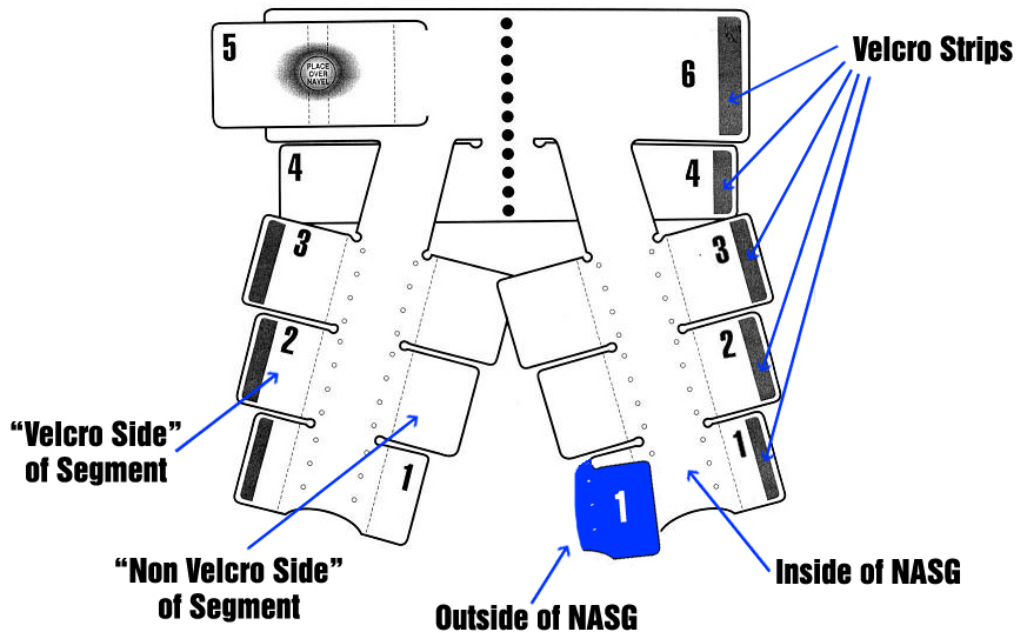
**NASG removal should begin only when the woman's condition has been stable for two hours.**

**A woman is considered stable if:**

1. Bleeding has decreased to <50mL/hour
2. Pulse is stable (your facility's protocols should specify if there is a specific threshold for pulse, for example pulse < 100 BPM)
3. Systolic blood pressure is stable (your facility's protocols should specify if there is a specific threshold for systolic blood pressure, for example SBP > 100 mmHg or > 90 mmHg)
4. The woman is conscious and aware



The NASG is opened from segment pair #1 up the woman's body to segment #6, starting with the ankles and ending with the abdomen. The leg segments are comprised of segment pairs: segment pair #1 around the ankles, segment pair #2 around the calves and segment pair #3 around the thighs. Each pair must be opened, followed by fifteen minutes of waiting for blood redistribution, before moving upward to open the next segment pair. For example, segment pair #1 must be opened from both ankles, followed by fifteen minutes of waiting, then taking blood pressure and pulse, before moving on to open segment pair #2 from both calves.



The NASG is removed from segment pair #1 up the woman's body to segment #6



## STEP 1

Take the woman's pulse and blood pressure immediately before opening the first segment pair.  
You must do this even if you have been monitoring vital signs.

Always wear gloves when removing the NASG, or handling a soiled NASG.



**Always wear gloves when removing the NASG or handling a soiled NASG**



**Take the woman's pulse and blood pressure immediately before opening the first segment pair**



## STEP 2

NASG removal always begins with the lowest segment (this is segment pair #1, unless segment pair #2 is placed on the ankles of a short woman).



**NASG removal always begins with the lowest segment**

## STEP 3

Wait 15 minutes before opening the next segment pair so that blood can redistribute. When 15 minutes have passed, take the woman's pulse and blood pressure again to make sure that she is still stable.

To check that her hemodynamic status has not become unstable we use the **“Rule of 20”**, which means that her pulse has not increased by more than 20 beats per minute and her systolic blood pressure has not decreased by more than 20 mmHg. If pulse and blood pressure remain stable, open the next segment pair (#2).





**If pulse and blood pressure remain stable, open the next segment pair**

## STEP 4

Wait another 15 minutes and recheck the pulse and blood pressure to be sure they have not changed by >20 beats per minute or >20 mmHg before opening the next segment pair (#3).

## STEP 5

Wait another 15 minutes and recheck the pulse and blood pressure to be sure they have not changed by >20 beats per minute of >20 mmHg before opening the next segment (#4).



**Wait 15 minutes and recheck the pulse and blood pressure to be sure they have not changed by >20 beats per minute of >20 mmHg before opening each segment**







The abdominal segment is the last segment to be opened

After it is completely removed, always put the used NASG into a biohazard waste container to take to the cleaning staff.



Always put the used NASG into a biohazard waste container



## CAUTION: RULE OF 20

If the pulse increases by 20 beats per minute  
OR the systolic blood pressure falls by  
20mmHg at any point during the removal  
process OR if there is an increase in vaginal  
bleeding:

- Quickly close all segments
- Consider the need for more IV fluid or blood transfusions
- Assume that the woman is still actively bleeding and determine the source of bleeding



## *Materials for Practice*

1. NASG (1 NASG for every 6 trainees)
2. Model or volunteer
3. Stopwatch or Clock or Cell Phone with Timer (to calculate pulse and to time intervals between opening segments)
4. Blood pressure cuff and stethoscope
5. Gloves
6. Checklist for trainer and trainees
7. NASG video (removal training is at the 8 minute 34 second mark (8:34) in the NASG Training video)
8. NASG Removal PowerPoint

### ***Number of Trainees:***

1. If using model: two trainees per model
2. If using live volunteer: three trainees (one will be the volunteer)

## **Checklists for Trainee and Trainer**

It is important for the trainees to practice the skills learned in each unit so that they become comfortable enough to use these skills in real life settings. To ensure that trainees have learned the key steps to NASG removal, they should practice using the following Trainee Checklist as a learning tool. After practicing application at least 3 times, they should demonstrate removing the NASG without using the Trainee Checklist, while the trainer or a peer observes and reviews their NASG removal with the Trainer Checklist.



## Trainee Checklist: Learning & Skills Self-Assessment

You can use this checklist while first learning, practicing, or doing drills by following each step. Practice on another health care worker or on a volunteer, but not on a pregnant woman. Once you feel you know how to remove the NASG, you can assess your skills by removing the NASG from a volunteer or model (without using the checklist), and then reviewing the removal by using the checklist to be sure you completed all the steps correctly and in the right order. Once you feel you have mastered the steps, have your trainer or a peer observe you and assess you with the Trainer Checklist.

TRAINEE CHECKLIST: NASG Removal	
Steps to NASG Removal	✓ if Done
1. Take the pulse and blood pressure immediately before opening the first segment pair.	
2. Open segment pair #1 (or segment pair #2 if the woman is short).	
3. Wait 15 minutes; take pulse and blood pressure.	
4. If pulse and blood pressure remain stable, open segment pair #2.	
5. Wait 15 minutes; take pulse and blood pressure.	
6. If pulse and blood pressure remain stable, open segment pair #3.	
7. Wait 15 minutes; take pulse and blood pressure.	
8. If pulse and blood pressure remain stable, open segment #4.	
9. Wait 15 minutes; take pulse and blood pressure.	
10. If pulse and blood pressure remain stable, open segments #5 and #6.	
11. If at any point during removal pulse or blood pressure change by 20, immediately close all NASG segments starting at the ankles.	
12. Place the used NASG in a biohazard container.	

*Review the checklist. If you left out two or more steps, or did them out of order, practice the NASG removal again.*



## Trainer Checklist: Skills Assessment



Use this checklist to assess the skill acquisition of the person you have trained. Tick “Yes” if the person did the step completely and in the right order. If there was anything incorrect, tick “No” and write what was incorrect in the comments box. Review with the trainee after completing the observations.

TRAINER CHECKLIST: NASG Removal			
Steps to NASG Removal	Yes	No	Comments
1. Takes the pulse and blood pressure immediately before opening the first segments.			
2. Opens segment pair #1 (or segment pair #2 if the woman is short).			
3. Waits 15 minutes; takes pulse and blood pressure.			
4. If pulse and blood pressure remain stable, opens segment pair #2.			
5. Waits 15 minutes; takes pulse and blood pressure.			
6. If pulse and blood pressure remain stable, opens segment pair #3.			
7. Waits 15 minutes; takes pulse and blood pressure.			
8. If pulse and blood pressure remain stable; opens segment #4.			
9. Waits 15 minutes; takes pulse and blood pressure.			
10. If pulse and blood pressure remain stable; opens segments #5 and #6.			
11. If at any point during removal, pulse or blood pressure change by 20, immediately closes all NASG segments starting at the ankles.			
12. Places the used NASG in a biohazard container.			



## Knowledge Assessment

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Trainees should be able to answer the following questions. See the next page for correct answers. Review any incorrect responses with trainees to ensure they have understood the material.

1. When should removal begin? (Tick all that apply.)
  - a. The woman has been bleeding <50mL per hour for two hours
  - b. The woman's pulse and BP are stable for two hours
  - c. The woman is conscious and aware for two hours
  - d. The woman has noted that she is uncomfortable and would like the NASG removed
2. Begin NASG removal by opening segment #6, the abdominal segment. **(True/False)**
3. After opening each segment or segment pair you should wait \_\_\_\_ minutes and check that her pulse and BP are still stable before opening the next segment. (Tick the correct answer.)
  - a. 10 minutes
  - b. 15 minutes
  - c. 30 minutes
  - d. 1 hour
4. According to the "Rule of 20", if a woman's pulse increases by 20 BPM or her BP decreases by 20 mmHg at any point during removal, you should: (Tick all that apply.)
  - a. Continue the removal process as normal
  - b. Quickly close all NASG segments
  - c. Consider the need for additional IV fluids or blood transfusions
  - d. Consider that the woman may still be actively bleeding and attempt to locate the source of bleeding
5. When the NASG is completely removed, it should be placed in a biohazard container. **(True/False)**



## Knowledge Answers

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1. When should removal begin? (Tick all that apply.)
  - a. The woman has been bleeding <50mL/hour for two hours
  - b. The woman's pulse and BP are stable for two hours
  - c. The woman is conscious and aware for two hours
  - d. The woman has noted that she is uncomfortable and would like the NASG removed

**Answer: a, b, and c are required for NASG removal. Removing the NASG due to the woman's discomfort before she has been stable for 2 hours could cause the woman to rapidly revert to shock.**
2. Begin NASG removal by opening segment #6, the abdominal segment. (True/False)

**Answer: False. NASG removal begins at the ankles with segment #1 (or #2 with short women).**
3. After opening each segment or segment pair you should wait \_\_\_\_ minutes and check that her pulse and BP are still stable before opening the next segment.
  - a. 10 minutes
  - b. 15 minutes
  - c. 30 minutes
  - d. 1 hour

**Answer: b. 15 minutes**
4. According to the "Rule of 20", if a woman's pulse increases by 20 BPM or systolic blood pressure decreases by 20 mmHg at any point during removal, you should: (Tick all that apply.)
  - a. Continue the removal process as normal
  - b. Quickly close all NASG segments
  - c. Consider the need for additional IV fluids or blood transfusions
  - d. Consider that the woman may still be actively bleeding and attempt to locate the source of bleeding

**Answer: b, c, and d all must be followed or considered when a woman's pulse or blood pressure change by 20.**
5. When the NASG is completely removed, it should be placed in a biohazard container. (True/False)

**Answer: True**

