

Improving Newborn Car Seat Safety Before Hospital Discharge

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Abstract

Background: A significant cause of infant and childhood injuries and mortality is motor vehicle accidents. Assessment and remediation studies have determined there are many common errors parents make regarding positioning of a newborn in a car safety seat (CSS). A multi-phased project was undertaken to determined CSS misuse rates at baseline and after implementing a newborn CSS positioning educational strategy among parent/newborn dyads at a large urban 60-bed postpartum unit. The study also investigated the efficacy of an alternative means of education.

Method: A 12 registered nurse trained quality improvement team using a 7-point checklist based on the *American Academy of Pediatrics Positioning Recommendations*, conducted dyad assessments at baseline and phase I (N=192). In phase I, a step-by-step CSS positioning educational pamphlet was added to mothers’ discharge teaching. In phase II, a CSS positioning YouTube demonstration video was introduced to 14 maternal-child nurses. Phase II data collection metrics included website viewing and educational tool evaluation of the CSS parental video.

Results: At baseline CSS 7-point criteria was met by few (n=20; 20.8%) dyads with most dyads (n=76) demonstrating one or more positioning errors. Shoulder-strap misalignment was the highest criteria missed. After education, CSS criteria was met by 67 (69.8%) dyads. For phase II, all of the nurse evaluators considered both tools useful and would welcome both types of CSS education on the unit.

Conclusion: CSS positioning education at the point of care supports parent safety behaviors.

Research Questions

- 1) Does passive car seat safety perinatal education increase the frequency of parents correctly using a car safety seat during first time use?
- 2) Would maternal-child health nurses consider a car seat safety video, accessed through a mobile application, to be a useful CSS parental educational tool?

Background

The research was done for three reasons:

1. Hands-on demonstrations are not hospital policy.
2. A certified Child Passenger Safety Technician is not employed by the hospital.
3. The institution’s safety seat discharge language does not include any positioning instructions.

Phase I

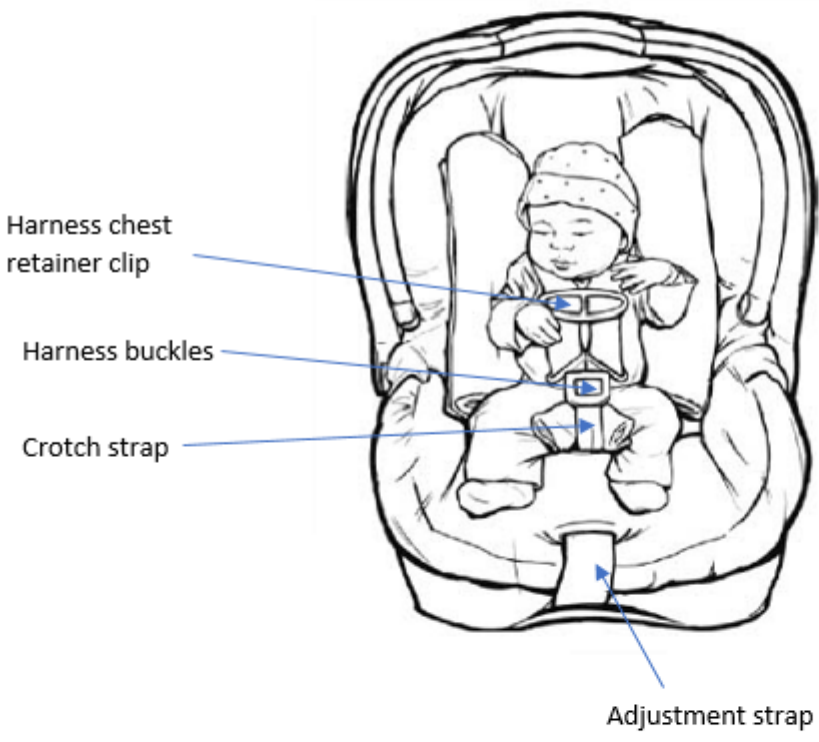
Ready-to-Use Educational Handout

A step-by-step CSS positioning educational pamphlet was added to mothers’ discharge teaching. The 7 correct positioning points include:

1. Harnesses straps at or below baby’s shoulder level and not twisted.
2. Harness chest clip and crotch chest clips buckled.
3. Chest clip positioned at the center of the chest, even with baby's armpits.
4. Straps tightened appropriately (unable to be pinched).
5. If necessary, ONE tightly rolled washcloth between the crotch strap and/or ONE tightly rolled receiving blanket on sides of baby- to create a more secure fit.
6. Aftermarket products are not used
7. Car seat not expired.

How to Position Your Newborn in a Rear-Facing Car Safety Seat

1. Place the harnesses straps of your baby's car safety seat in slots that are at or below your baby's shoulder level and make sure not to twist the straps.
2. Place the straps over your baby's shoulders then buckle the harness straps into the harness buckles.
3. Buckle the harness chest clip.
4. The straps then need to be tightened by pulling the adjustment strap that hangs down from the front of the car seat.
5. The harness straps are tightened appropriately when you are unable to pinch excess harness strap in any area.
6. The harness chest clip should lie flat against your baby's chest at the nipple line level and only one finger should fit between the clip and your baby.



7. Aftermarket products such as headrest inserts are not permitted. You may use one that was part of your manufactured car seat.
8. If necessary, place ONE tightly rolled washcloth between the crotch strap and your baby to create a more secure fit.
9. If necessary, place ONE tightly rolled receiving blanket on the sides of your baby to create a more secure fit.

Adapted from: American Academy of Paediatrics (2019).

Phase I Results

Ready-to-Use Educational Handout

- Of the 192 dyads, at baseline the CSS 7-point criteria was met by few (n=20; 20.8%) dyads with most dyads (n=76) demonstrating one or more positioning errors.
- Shoulder-strap misalignment was the highest criteria missed. After education, CSS criteria was met by 67 (69.8%) dyads.

Phase II

Handout to Locate Online Resource

Phase II expanded parent education strategies to include the use of a point of care user-friendly CSS social media resource video. The handout resource contained a hyperlink as well as a QR code, which could both be used to access a YouTube website that contains video and audio of a Registered Nurse explaining how to appropriately place an infant into a CSS. The video covers all 7 correct usage points and was viewed and evaluated by 14 mother-baby nurses..

Video Rubric Used by Nurse Evaluators

Evaluation Rubric for Car Seat Safety Video Project			
Performance Level	Needs Improvement	Satisfactory	Excellent
Documentation	There is no documentation. 0 points	Most of the elements taken from car seat handout are documented; however, some documentation may be inaccurate or missing. 1-3 points	All elements from the car seat handout are accurately documented. 4-5 points
Subject Content	Subject knowledge is not evident. Information is confusing, inaccurate, or flawed. 0-9 points	Subject knowledge is evident in much of the video. Most information is clear, appropriate, and correct. 10-20 points	Subject knowledge is evident throughout the video. All information is clear, appropriate and correct. 21-30 points
Video content and organization	The video lacks a central theme, clear point of view, and logical sequence of information. Much of the information is irrelevant to the overall message. 0-2 points	Information is connected to a theme. Details are logical and information is relevant throughout most of the video. 3-5 points	Video includes a clear statement of purpose. Events and messages are presented in a logical order, with relevant information that supports the video's main ideas. 6-10 points
Introduction	The introduction does not orient the viewer to what will follow. 0-1 points	The introduction is clear and coherent and evokes moderate interest/response from the viewer. 2-3 points	The introduction is motivating, and hooks the viewer from the beginning. 4-5 points
Mechanics	The text and audio have 4 or more grammar or spelling errors. 0-2 points	The text and audio have 1-3 grammar or spelling errors. 3-4 points	The text and audio have no grammar or spelling errors. 5 points
Production	Video is of poor quality and is unedited. There are no transitions added or transitions are used so frequently that they detract from the video. There are no graphics. 0-10 points	Tape is edited. A variety of transitions are used and most transitions help tell the story. Most of video has good pacing and timing. Graphics are used appropriately. 11-15 points	Tape is edited. Video runs smoothly from shot to shot. A variety of transitions are used to assist in communicating the main idea. Shots and scenes work well together. Graphics explain and reinforce key points in the video. 16-20 points
Teaching Usability	I consider the video content lacking and would not use it at this point in teaching my patients about car seat safety. 0-10 points	I consider the video content good and an acceptable in teaching patients about car seat safety. 11- 19 points	I consider the video content accurate and most useful in teaching patients about car seat safety. 20-25 points
Total			

1. When teaching or counseling parents, if given the option of using the car seat handout or car seat video: (circle one response)
 - a. I would prefer to use the handout
 - b. I would prefer to use the video
 - c. I would use either one equally and let the parent decide which method they wanted

Phase II Outcomes

Of the seven video performance criteria, all had some nurses that gave the highest evaluation possible. The nurses’ considerations of use were very positive, with the lowest, out of a possible 100 total score, being 92. Two nurses gave a score of 100. All of the nurses chose to implement both teaching methods and thus allow the parents decide which method they prefer to use to self-educate themselves.

Discussion

Meeting the Triple Aim

Sustained implementation of teaching aids would improve patients’ experiences of care, especially when it comes to the quality and satisfaction of care they receive regarding car seat safety education. Additionally, sustained implementation would also mean the facility would be improving the health and wellbeing of the tiniest patients, newborns. Finally, the economic benefits of the proposed child safety seat misuse reduction education tactics could mean the mean injury cost of injured children in child seats could be reduced.

Conclusion

Providing sound and accurate car seat education is the responsibility of healthcare providers because their main duty is health promotion. Although the two methods of education are passive, they are informative and exclaim that practicing healthy car safety seat behaviors should start with the very first use. The findings suggest hospital personnel providing resources and support before discharge can aid in preventing unnecessary infant injuries or death throughout the lifespan. However, further studies are needed that would evaluate the CSS misuse rates when providing education by pamphlet versus video.

References

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