# Revenge of the Hay-Hole: Effects of Distribution of Hay-Hole Covers

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## BACKGROUND

- Many Pennsylvania barns have openings in the second floor used to drop feed to ground level
- Our previous study led to the creation of the Anabaptist Youth Trauma Prevention Consortium with subsequent distribution of 231 hay-hole covers throughout 8 counties in South Central, Pennsylvania
- We conducted a follow-up analysis to determine the effect of hay hole cover distribution and incidence of hay hole falls resulting in traumatic injuries
- **We hypothesized that there would be a decreased incidence of hay hole falls in this area following cover distribution**

## METHODS

- 10 year (2011-2021) retrospective study at our Level I Trauma Center
- All patients with hay-hole falls were included
- Data was stratified by phase: Before Cover Implementation (BC): 1/2011-12/2016 and After Cover Implementation (AC): 1/2017-12/2021
- Demographic, clinical, and outcome variables were compared those with hay-hole falls in the BC and AC phases

| Characteristics | Before Cover Implementation (BC) n (%) | After Cover Implementation (AC) n (%) | P value |
|---|---|---|---|
| Incidence of Hay Hole Falls [a] | 32 (0.25%) | 17 (0.11%) | p<0.001 |
| Age, mean (SD) | 11.5 ± 2.8 | 22.4 ± 6.2 | p=0.035 |
| Male Gender | 25 (78.13%) | 15 (88.24%) | p=0.384 |
| Mortality | 1 (3.13%) | 0 (0.00%) | p=0.461 |
| Head Bleed | 8 (25.0%) | 4 (23.53%) | p=0.909 |
| Transfer Out | 17 (53.13%) | 8 (47.06%) | p=0.686 |
| Concussion | 16 (50.0%) | 10 (58.82%) | p=0.556 |
| Loss of Consciousness | 19 (59.38%) | 11 (64.71%) | p=0.715 |
| Facial Fracture | 4 (12.50%) | 2 (11.76%) | p=0.940 |
| Skull Fracture | 10 (31.25%) | 5 (29.41%) | p=0.894 |
| Lower Extremity Fracture | 2 (6.25%) | 1 (5.88%) | p=0.959 |
| Upper Extremity Fracture | 2 (6.25%) | 2 (11.76%) | p=0.502 |
| Spinal Fracture | 3 (9.38%) | 2 (11.76%) | p=0.793 |

**Table 2.** Characteristics of Hay-Hole Fall Patients Before and After Cover Implementation. [a] % based on total number of trauma patients admitted during the study time frames. (SD- standard deviation)

**Table 1.** Hay Hole Cover

## RESULTS

- 49 patients included in the study
- 84% of these patients were members of the Anabaptist Community
- Observed a 47% decrease in the number of HHF
- Increase in average age of patients with HHF

## CONCLUSIONS

- Appears that the distribution of hay-hole covers led to a significant decrease in the incidence of hay-hole falls in this area.
- The average age of patients with HHF increased in the AC phase suggesting the effectiveness of the covers for the pediatric population in particular.
- Further investigation is needed to elucidate the long-term impact of hay-hole cover distribution and could be used to guide future interventions, such as another round of cover distribution or improvements in the cover design for long-term use.

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