

# Clustering in Hospitals Among Newborns with Neonatal Abstinence Syndrome(NAS)

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# What is neonatal abstinence syndrome?

- Neonatal Abstinence Syndrome (NAS) is a group of conditions exhibited by infants exposed to opioids in utero (Sanlorenzo, Stark & Patrick, 2018).



Source: <https://www.medindia.net/patients/patientinfo/neonatal-abstinence-syndrome.htm>

# Significance

- The NAS prevalence has increased five-fold over the last two decades (Sanlorenzo, Stark & Patrick, 2018).
- At least one newborn with NAS is born every 15 minutes in the US (Reddy, Davis, Ren & Greene, 2017).
- Newborns with neonatal abstinence syndrome (NAS) have complex physiologic and behavioral needs (Milliren et al, 2018).
- Caring for NAS newborns is complicated (Milliren et al, 2018).

## Aim

- To determine the extent of clustering and inequality of care of NAS newborns across hospitals in the United States.

# Methods

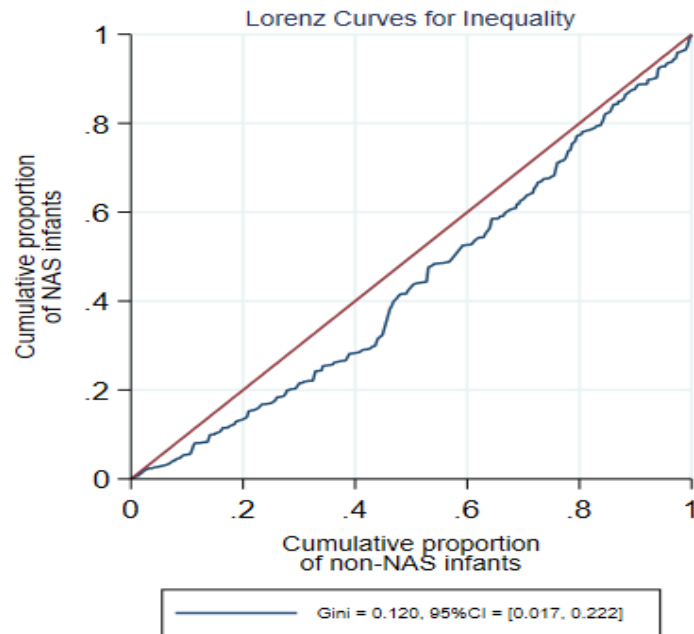
- Data sources: Annual inpatient discharge abstracts, nurse surveys from RN4CAST-US and the American Hospital Association annual survey.
- 266 hospitals in California, Florida, New Jersey, and Pennsylvania.
- The sample: Both NAS and non-NAS newborns.
- Newborns presumed to have iatrogenic NAS were classified as non-NAS newborns.

# Methods

- NAS newborns were compared to non-NAS newborns.
- We used Lorenz curves to determine clustering and inequality.
- We assessed hospital quality and safety using nurse survey data.



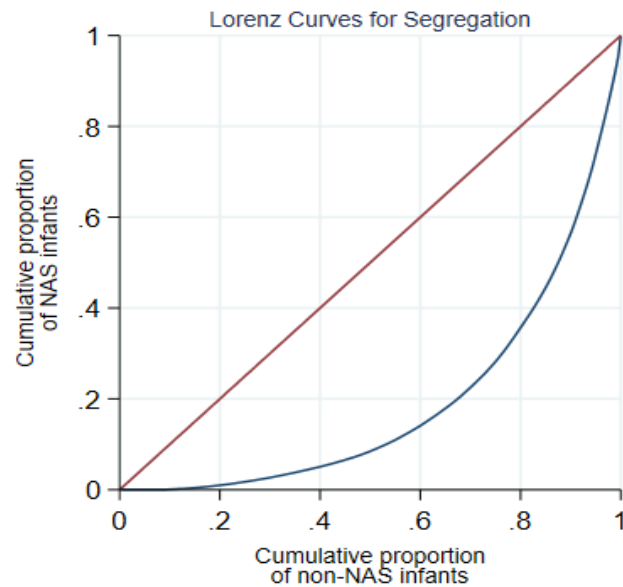
# Results



Notes: Sample of 659,403 newborns in 266 hospitals

The inequality index for NAS newborns when compared with non-NAS newborns was 0.12 (95% CI, 0.01 to 0.23), where perfect equality equals 0.00 and perfect inequality equals 1.00.

# Results



Notes: Sample of 659,403 newborns  
in 266 hospitals

The hospital clustering index for NAS newborns was 0.62 (95% CI, 0.56 to 0.68), where no clustering equals 0.00 and complete clustering equals 1.00.



# Conclusion

- NAS newborns are clustered in poorer quality hospitals than other newborns.
- Healthcare professionals and policy makers should pay attention on where these newborns receive care in order to improve their outcomes.
- Future research exploring
  - the impact of nursing care on NAS newborn outcomes
  - modifiable organizational characteristics of the hospitals where NAS newborns are clustered.

# Lessons

- Literature search/review
- Became more knowledgeable about neonatal abstinence syndrome (NAS) and opioid epidemic
- Experience with Manuscript submissions

# Acknowledgments

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