Platelet transfusions for preterm neonates

Karin Fijn van Draat, (on behalf of Suzanne Fustolo-Gunnink)

Better safe than sorry?

Results

25 group: 19%

50 group: 26%

OR 1.57 (1.06 - 2.32)

Wait..**WHAT**?!?

Curley[1], Stanworth[1], Willoughby, Fustolo-Gunnink et al. NEJM 2018.

Sola-Visner et al. Transf Med Rev 2016.

Study limitations

- 39% tx prior to randomization (40% vs 43%)

- 18% bleeds prior to randomization (19% vs 18%)

- Postnatal age at randomization: 7-8 days (7.0 vs 8.4)

- Rectal bleeds

Study strenghts

- Only applicable randomized trial available

- Sensitivity analyses confirm primary analysis

- Confirms recent adult studies

- Confirms results systematic review

Combining subgroups?

Kent et al. BMJ 2018.

Subgroup analysis based on predicted risk

1: develop prediction model for baseline risk of outcome

2: calculate baseline risk of outcome for all neonates

3: rank neonates based on risk, create 4 risk groups

4: compare absolute risk <u>differences</u> within risk groups

Subgroup analysis based on predicted risk

Fustolo-Gunnink et al. Manuscript under review.
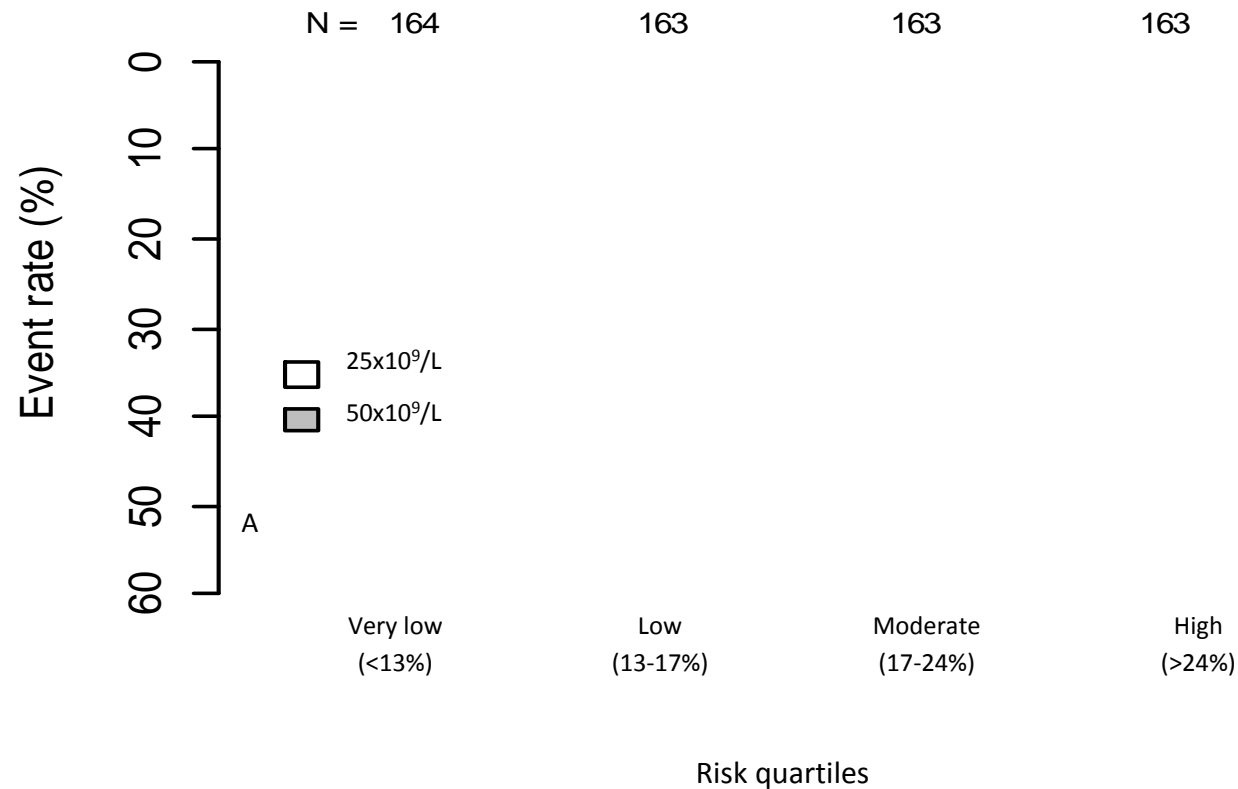
Pros, cons and implications

- Pros: outperforms conventional subgroup analysis

- Cons: c-index 0.63, simple model

- Implications: 25×10^9/L threshold for all preterm neonates

Fustolo-Gunnink et al. Manuscript under review.

No prophylaxis?

Prophylactic versus therapeutic

- No trials in neonates

- No large Dutch cohort

- MONET: Monotoring Outcome in NEonatal Thrombocytopenia.

Fustolo-Gunnink et al. Under review.

Study design MONET

GA <34, platelets $<50 \times 10^9/L$

Observational cohort

Major bleeding / mortality

2010 tm 2014

N=640

Fustolo-Gunnink et al. Under review.

Propensity score

- Probability of receiving platelet transfusion

- >40 variables in model

- Time-dependent: probability calculated at 2 hours time-intervals during first week after onset thrombocytopenia

Fustolo-Gunnink et al. Under review.

Propensity score matched cohort analysis
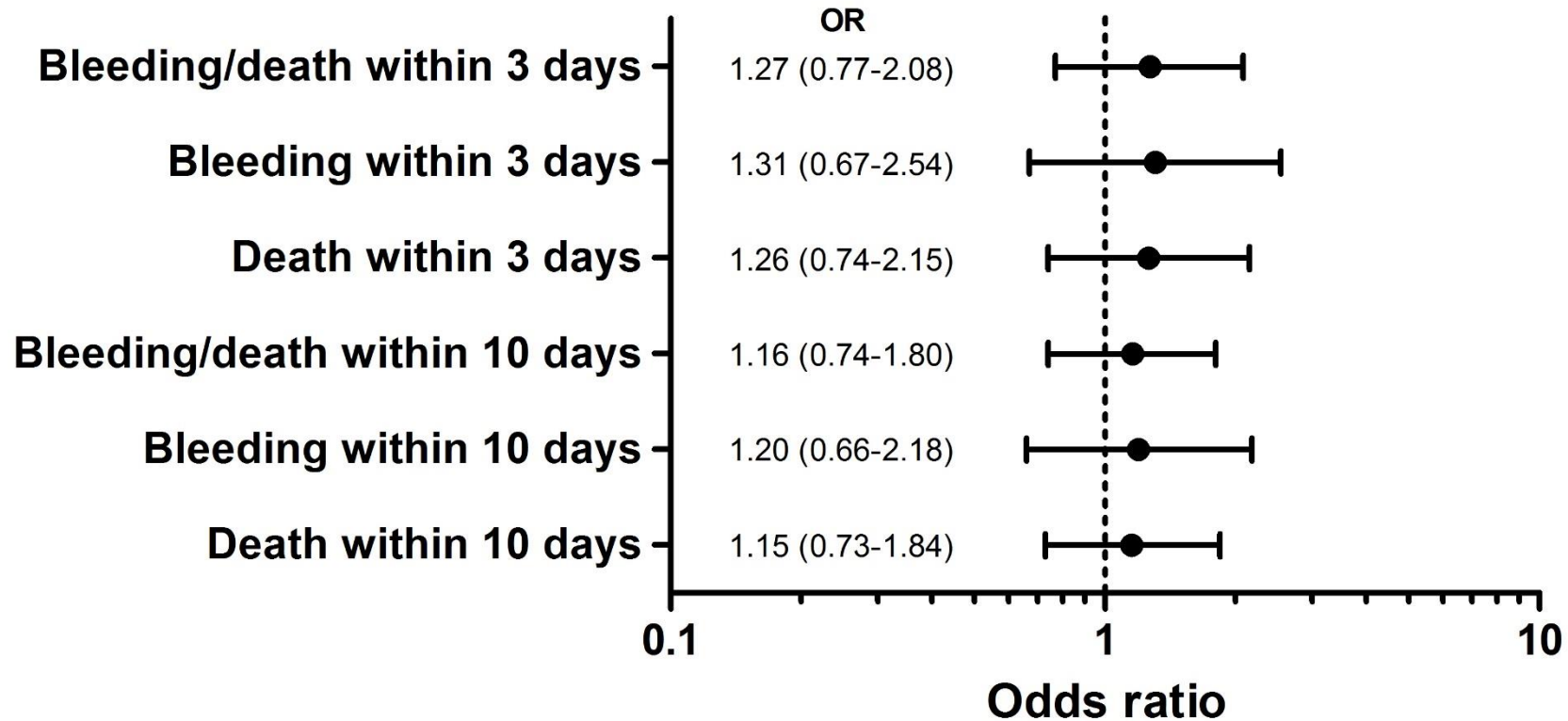
Groenwold RH. NVTG 2013.

Results

- 859 transfusions matched with 859 non-transfusion events

- >40 confounders well balanced between groups

- Logistic regression analysis for main outcome

Fustolo-Gunnink et al. Under review.

Results

Main outcome (n= 859 transfusions)

	OR
Bleeding/death within 3 days	1.27 (0.77-2.08)
Bleeding within 3 days	1.31 (0.67-2.54)
Death within 3 days	1.26 (0.74-2.15)
Bleeding/death within 10 days	1.16 (0.74-1.80)
Bleeding within 10 days	1.20 (0.66-2.18)
Death within 10 days	1.15 (0.73-1.84)

Odds ratio

Fustolo-Gunnink et al. Under review.

Pros, cons and implications

- Pros: best evidence available, corrected for many confounders
- Cons: unknown/unmeasured confounding still possible, absence of evidence ≠ evidence of absence.

- Implications: future trial with therapeutic transfusion arm?

Fustolo-Gunnink et al. Under review.

Take home messages

Don't underestimate platelets

~~Better safe than sorry~~

Transfuse at < 25x10^9/L

Thank you

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660 neonates, their parents and families