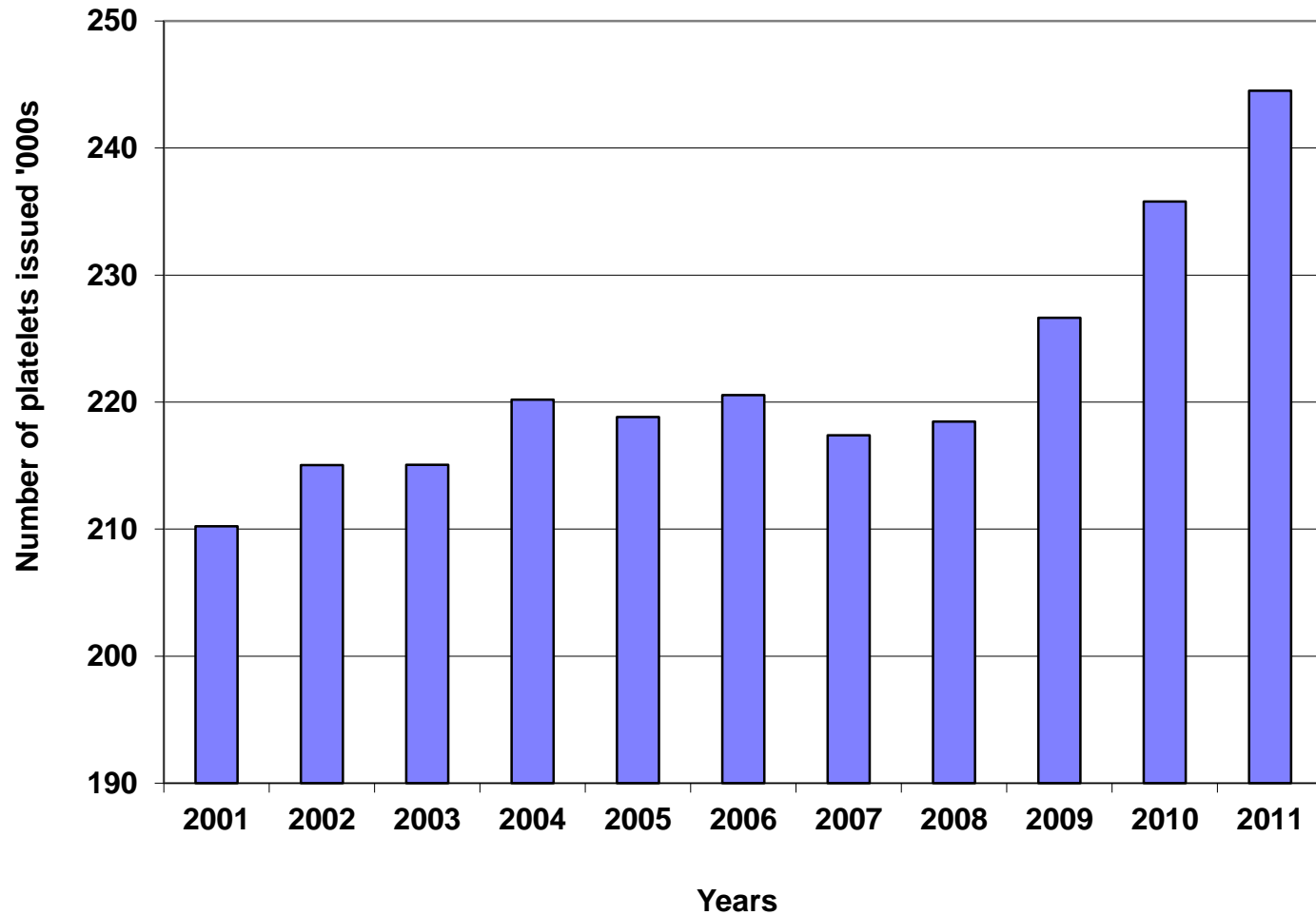


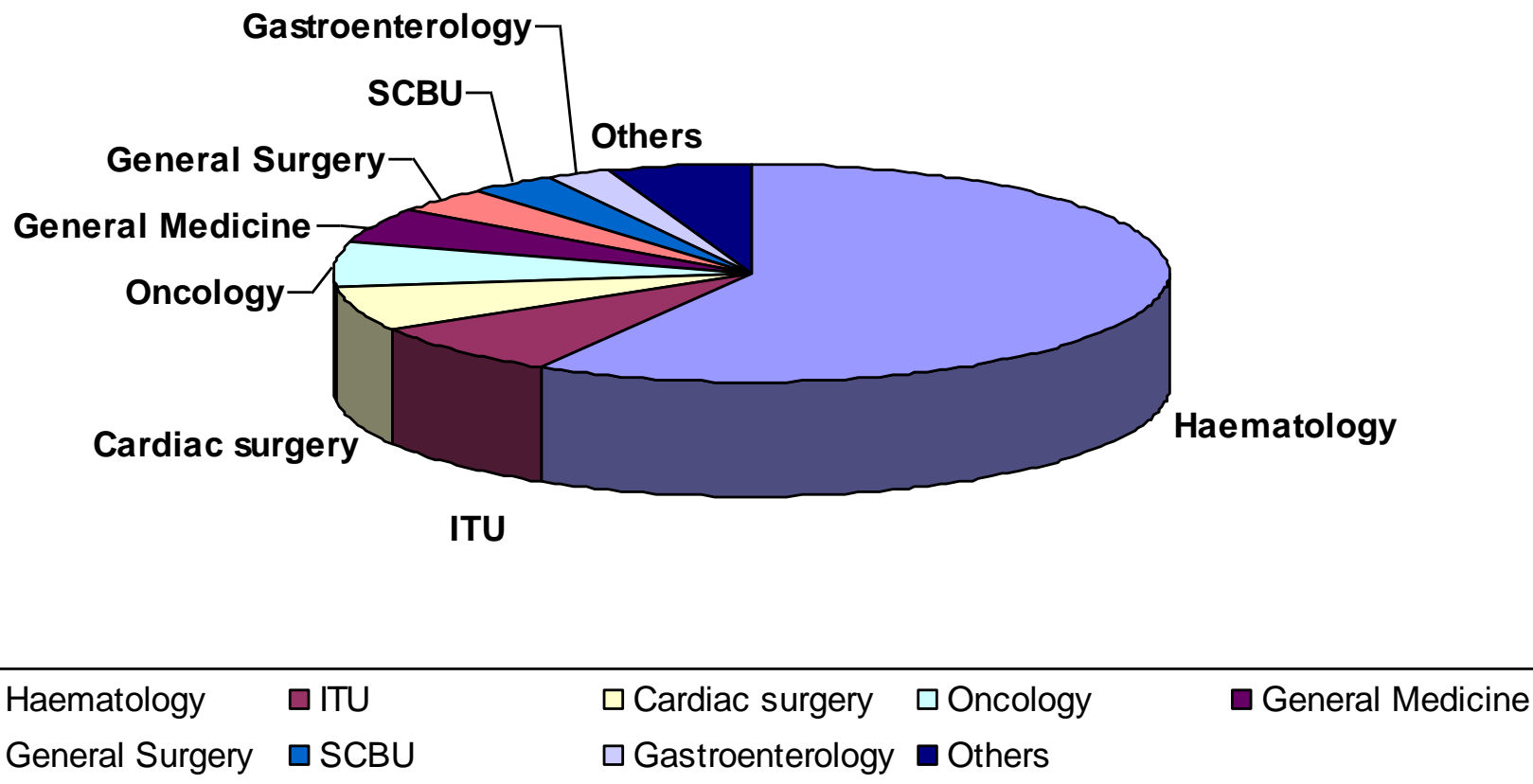
# Using platelets in Haematology Patients New Studies

Lise Estcourt  
Research Registrar Oxford NHSBT

# Platelet usage increasing (data from England & N. Wales)



# Haematology patients use majority of platelet transfusions issued



Data from North West of England and Wales Audit of platelet use and wastage.

Pendry & Davies 2011. Blood and Transplant Matters. 17-19.

# Majority of platelet transfusions are prophylactic

Reason for Transfusion	Audited episodes in each category	Appropriate	Indeterminate	Outside guidelines
Prophylactic	69%	60%	6%	34%
Pre -procedure	15%	64%	13%	23%
Therapeutic	13%	84%	12%	5%
Unclear	3%	0%	100%	0%

# Current Issues in Prophylactic Platelet Transfusion Studies

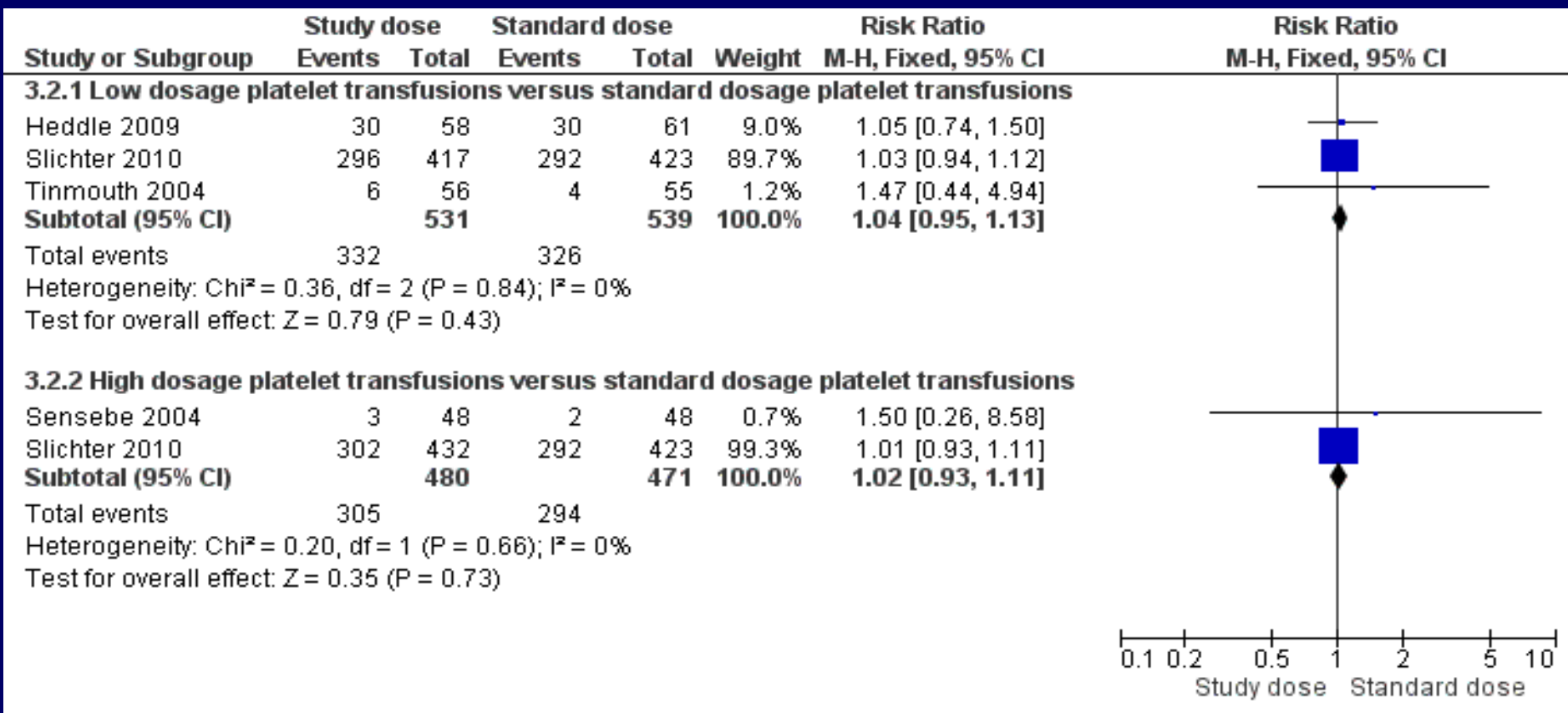
- Platelet dose
- Platelet threshold
- Therapeutic versus prophylactic
- Type of platelet component

# Systematic Review of Prophylactic Platelet Transfusions

- Update of Cochrane Review
- 18 studies
  - 13 included in analysis
  - 3 completed not published
  - 1 actively recruiting & 1 not actively recruiting
- 3 main questions
  - Platelet Dose
  - Platelet Threshold
  - Prophylactic vs. Therapeutic-only Platelets

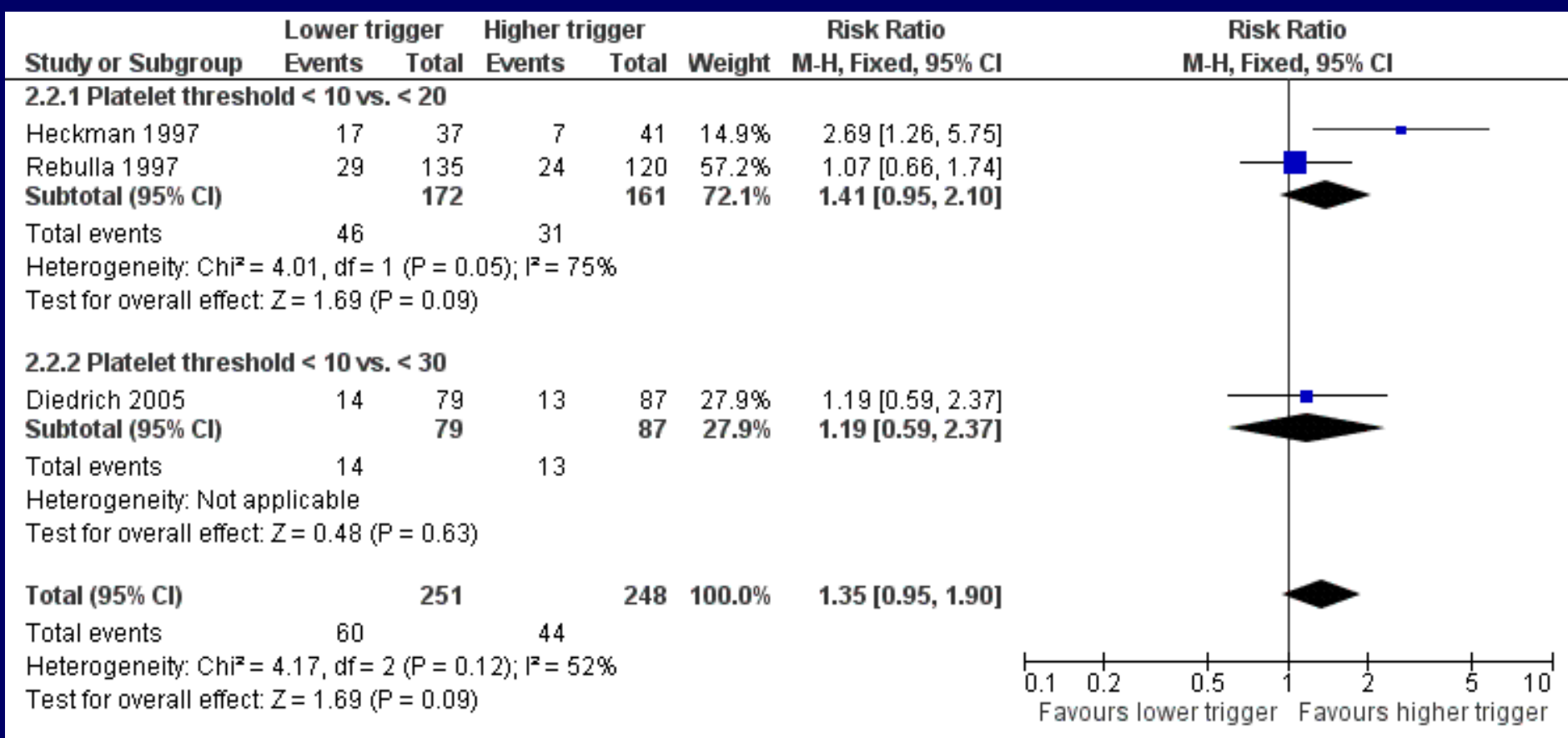
# Platelet Dose

## Number of Patients with bleeding of WHO grade 2 or above

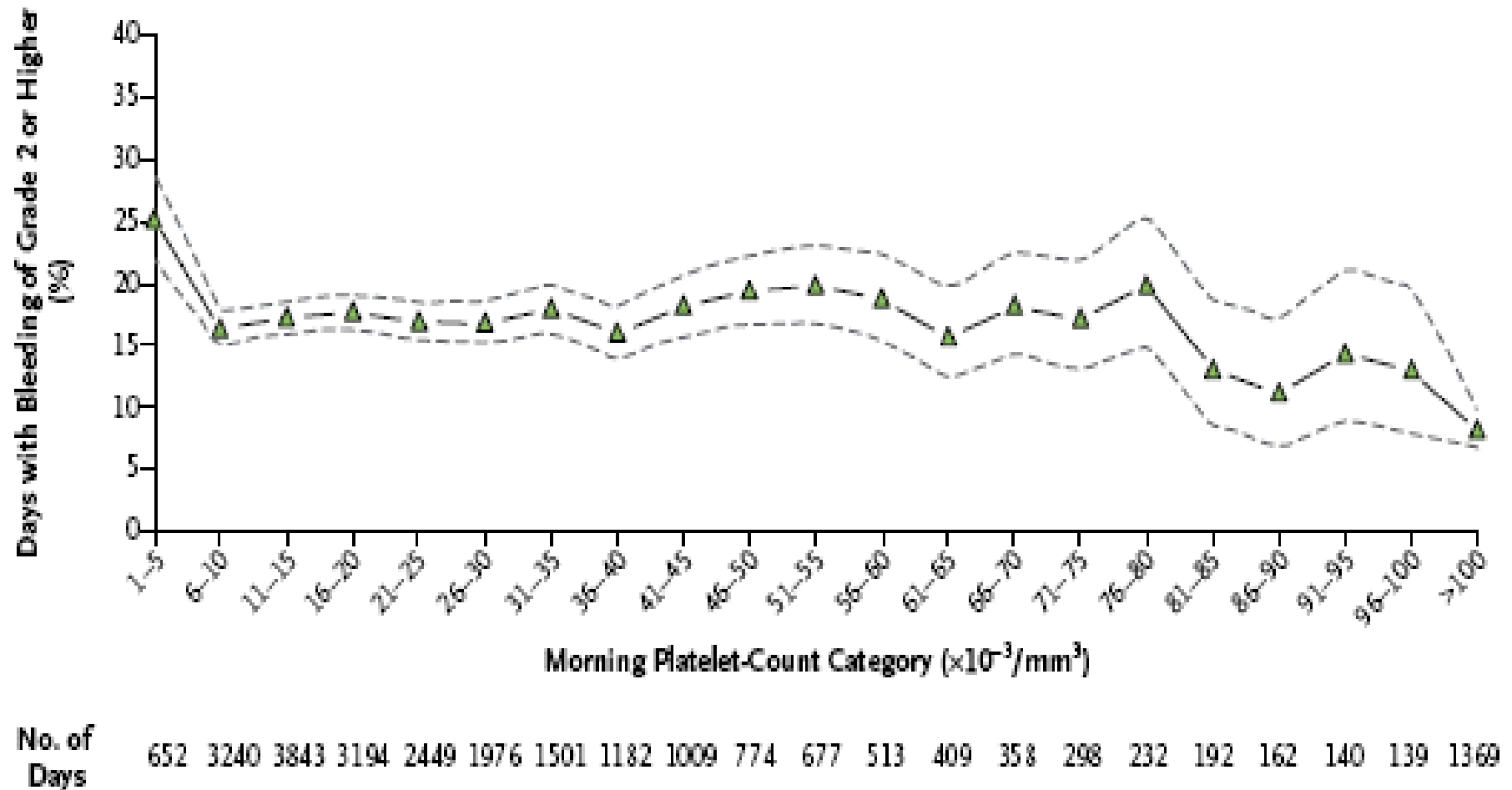


# Platelet Threshold

## Number of Patients with bleeding of WHO grade 2 or above



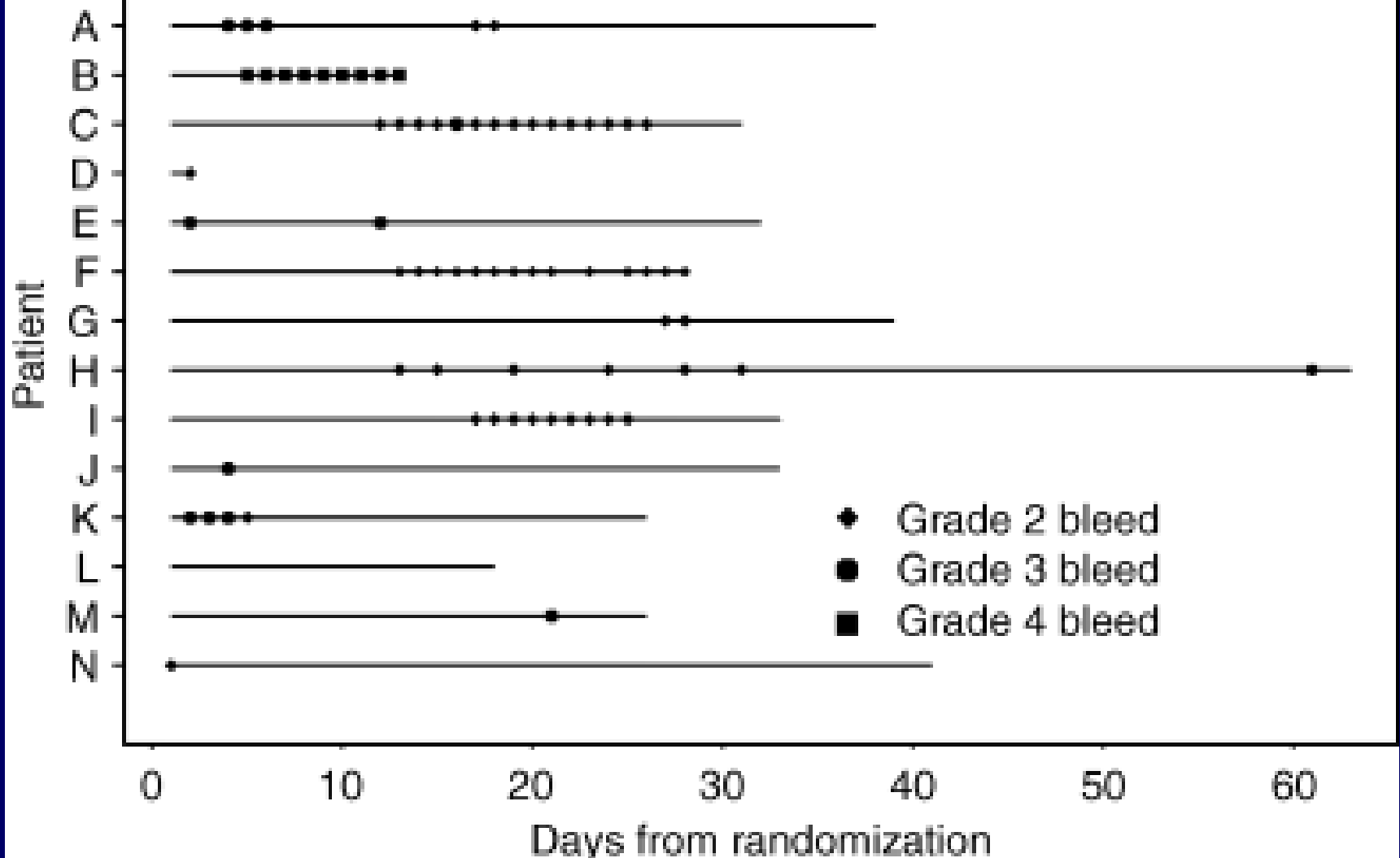
# Morning platelet count is a poor predictor of bleeding risk



Dose of prophylactic platelet transfusions and prevention of hemorrhage. Slichter *et al.* *NEJM* 2010;362:600-613

# Variability in frequency and severity of bleeding between patients

Cook *et al.* Transfusion 2004;44:1135-42



# Consequences

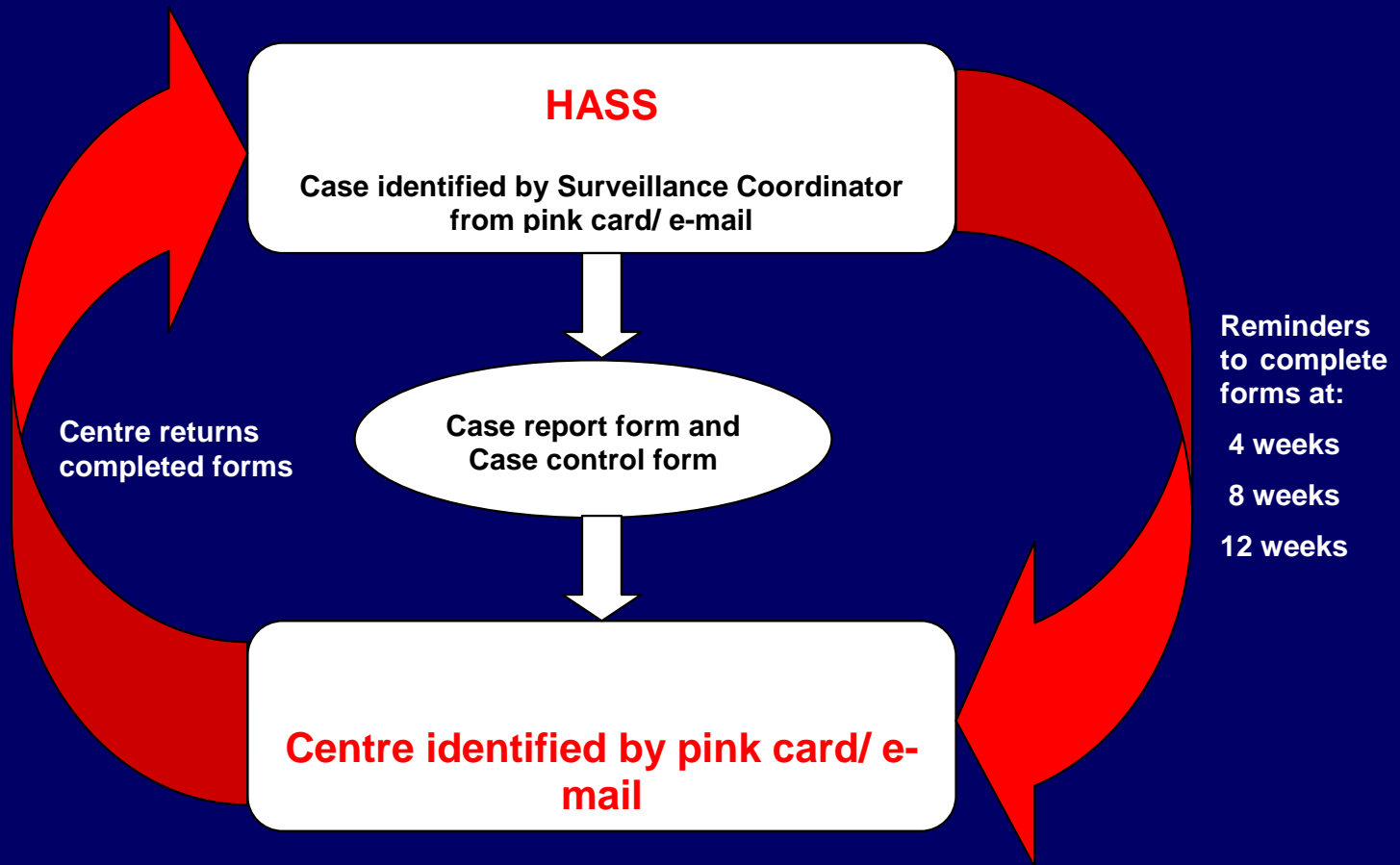
- Exposing patients at low risk of bleeding to unnecessary blood products
- May be undertreating patients at high risk of bleeding
- Not using limited platelet supply effectively

# Case-control study of ICH in thrombocytopenic patients with haematological malignancies



- What factors (e.g. age, haematological disease, treatment, infection) predispose patients to ICH?
- What is frequency of ICH in these patients?
- What are short-term outcomes? (e.g. death or persistent neurological deficit)

# INCITE STUDY

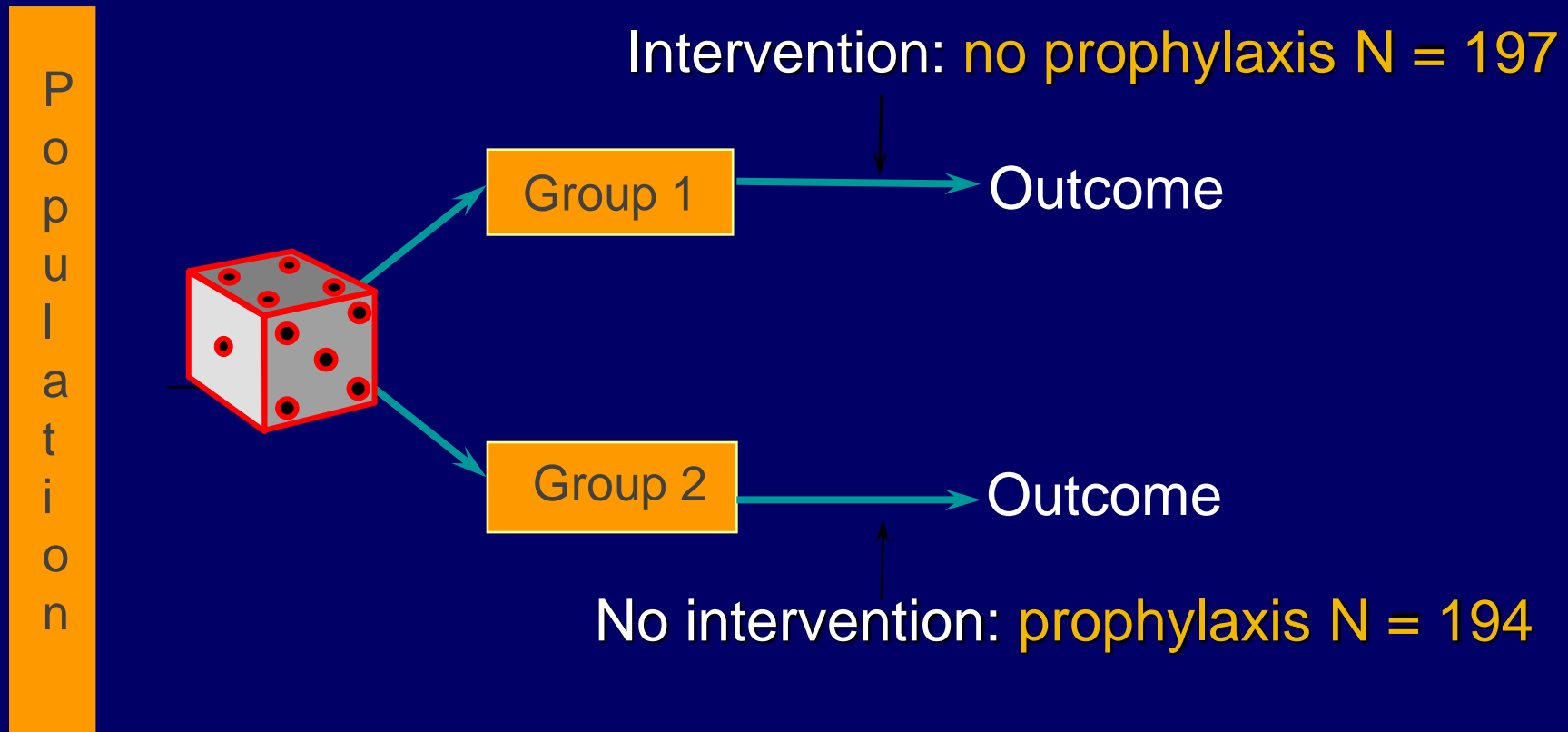


# Pre-procedure platelet transfusions

## Central Lines

- 2 retrospective observational studies
  - Ziedler et al 2011– 173 patients (acute leukaemia)
    - No increase in bleeding if plts > 20
  - Hass et al 2010 – 344 patients (majority haematology)
    - No significant bleeding complications
- Prospective observational study
  - Barrera et al 1996 – 108 patients
    - No difference in platelet count between patients with and without bleeding complications

# German Multicentre trial of prophylaxis vs. no prophylaxis



Primary outcome

Number of platelet transfusions given during 14 day observation period

# Primary end-point. Platelet transfusions per patient

	Prophylactic	Therapeutic	Reduction (%)	P value
All patients No. (treatment cycles)	194 (343 Rx cycles)	197 (301 Rx cycles)		
	2.44 (2.22 to 2.67)	1.63 (1.42 to 1.83)	33.5% (22.2 to 43.1)	< 0.0001
AML No. (treatment cycles)	96 (245 Rx cycles)	94 (198 Rx cycles)		
	2.68 (2.35 to 3.01)	1.83 (1.58 to 2.10)	31.6% (18.6 to 42.6)	< 0.0001
Autologous SCT No. (treatment cycles)	98 (98 Rx cycles)	103 (103 Rx cycles)		
	1.80 (1.45 to 2.15)	1.18 (0.82 to 1.55)	34.2% (6.6 to 53.7)	0.0193

Therapeutic platelet transfusion versus routine prophylactic transfusion in patients with haematological malignancies: an open-label, multicentre, randomised study Wandt *et al* 2012. Lancet

# Secondary outcome. Bleeding per treatment cycle

	All patients			AML Patients			Autologous SCT Patients		
	Prophylactic (343 Rx cycles)	Therapeutic (301 Rx cycles)	P value	Prophylactic (245 Rx cycles)	Therapeutic (198 Rx cycles)	P value	Prophylactic (98 Rx cycles)	Therapeutic (103 Rx cycles)	P value
Grade 2 or higher	65 19% (14 to 23)	127 42% (36 to 48)	< 0.001	57 24% (18 to 30)	98 51% (43 to 59)	<0.001	8 8% (3 to 14)	29 28% (19 to 37)	<0.001
Grade 3	3 1% (0 to 2)	7 2% (0 to 4)	0.21	3 1% ( 0 to 4)	6 3% (1 to 7)	0.32	0 0% (0 to 5)	1 1% (0 to 6)	1
Grade 4	4 1% (0 to 2)	14 5% (2 to 7)	0.0159	4 2% (0 to 3)	13 7% (3 to 11)	0.0095	0	0	-

Number of days with thrombocytopenia (<20)

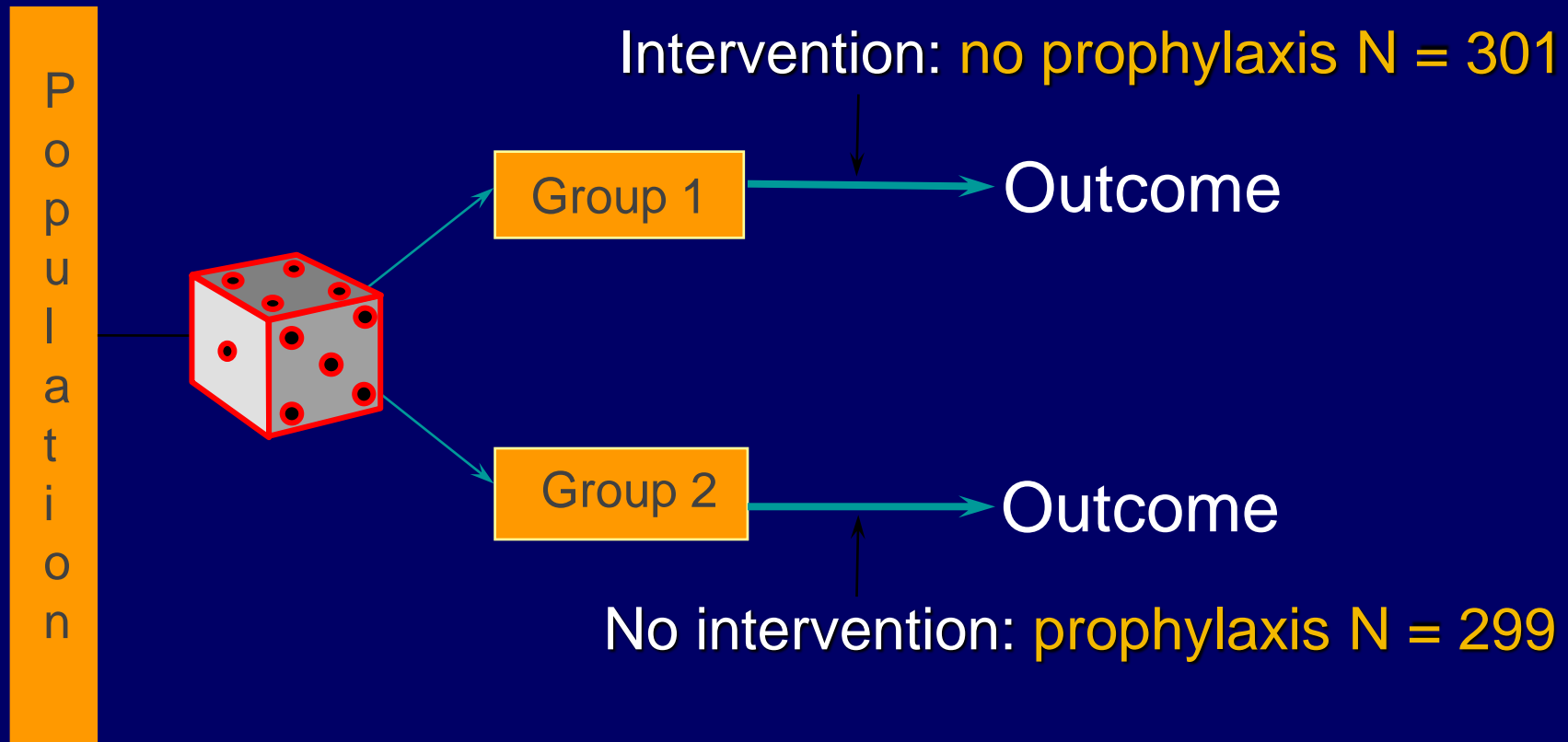
- No difference between study arms prophylactic vs. therapeutic
- Higher in AML group (12.68) vs. Autologous SCT (6.36 to 7.88).

Therapeutic platelet transfusion versus routine prophylactic transfusion in patients with haematological malignancies: an open-label, multicentre, randomised study Wandt *et al* 2012. Lancet

## Other secondary outcomes

- No difference between prophylactic and therapeutic groups
  - Red blood cell transfusions per patient
  - Days in hospital
  - Side effects of transfusions
  - Overall survival

# TOPPS: Multinational trial of prophylaxis vs. no prophylaxis



Primary outcome

Proportion of patients who have  $\geq$  WHO grade 2 bleeding

# Review of current Issues in Prophylactic Platelet Transfusion Studies

- Platelet dose
- Platelet threshold
- Therapeutic versus prophylactic

## Future research

- More evidence required for use of platelet transfusions prior to procedures
- A better understanding of all haemostatic changes in patients with haematological disorders
- A more patient-centred approach to platelet transfusions required

# Acknowledgements

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