Sanquin
Blood Supply

Appropriate transfusion policy; how to lower transfusion rates

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Presentation

- Background
- Transfusion policies / Dutch experience
- PROTON (II) studies
- Conclusions

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Background

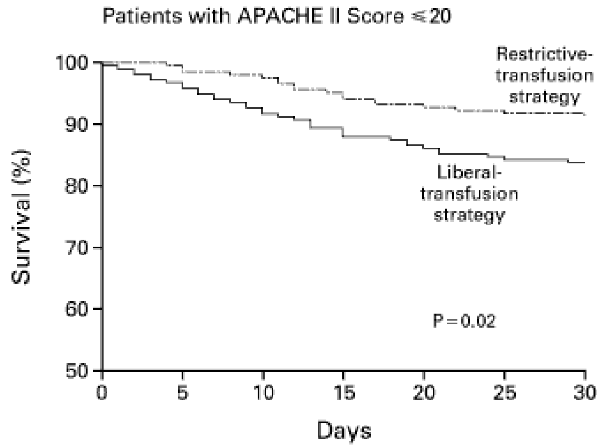
- Blood products are costly
- Optimal use is preferable and necessary
- What is optimal use?
- Evidence about optimal use is limited

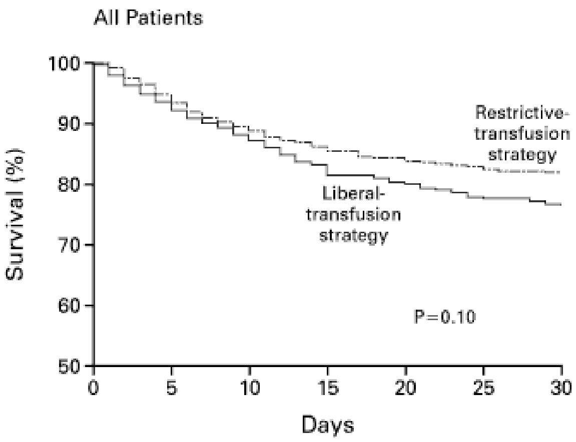
Transfusion Policies

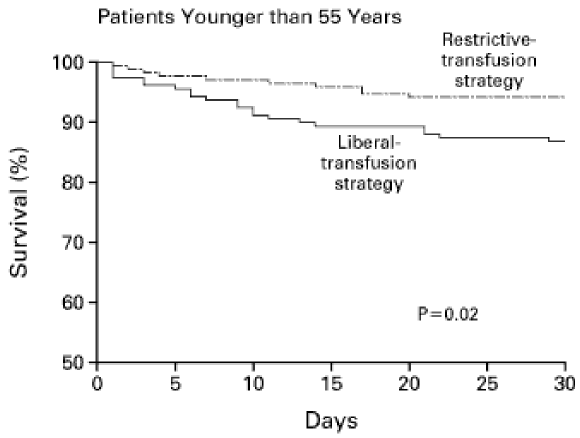
- To transfuse or not to transfuse; that is the question
- Restrictive versus liberal red cell transfusion triggers.
- What is the evidence?

Restrictive versus liberal transfusion triggers

- TRICC (transfusion requirements in critical care)-trial.
- N=838
- Hb 7-9 g/dl or 10-12 g/dl mmol/l
- N Engl J Med 1999







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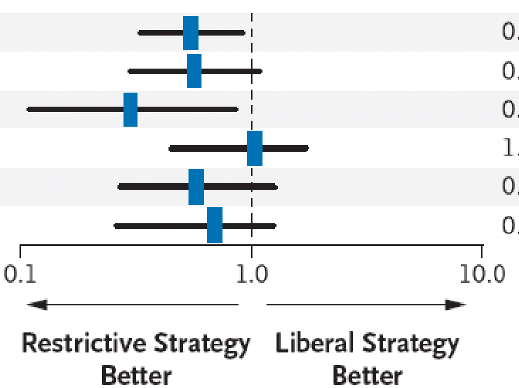
Transfusion Strategies for Acute Upper Gastrointestinal Bleeding

Càndid Villanueva, M.D., Alan Colomo, M.D., Alba Bosch, M.D., Mar Concepción, M.D., Virginia Hernandez-Gea, M.D., Carles Aracil, M.D., Isabel Graupera, M.D., María Poca, M.D., Cristina Alvarez-Urturi, M.D., Jordi Gordillo, M.D., Carlos Guarner-Argente, M.D., Miquel Santaló, M.D., Eduardo Muñiz, M.D., and Carlos Guarner, M.D.

B Death by 6 Weeks, According to Subgroup

Subgroup	Restrictive Strategy	Liberal Strategy	Hazard Ratio (95% CI)	P Value
	no. of patients/total no. (%)			
Overall	23/444 (5)	41/445 (9)	0.55 (0.33–0.92)	0.02
Patients with cirrhosis	15/139 (11)	25/138 (18)	0.57 (0.30–1.08)	0.08
Child–Pugh class A or B	5/113 (4)	13/109 (12)	0.30 (0.11–0.85)	0.02
Child–Pugh class C	10/26 (38)	12/29 (41)	1.04 (0.45–2.37)	0.91
Bleeding from varices	10/93 (11)	17/97 (18)	0.58 (0.27–1.27)	0.18
Bleeding from peptic ulcer	7/228 (3)	11/209 (5)	0.70 (0.26–1.25)	0.26



Transfusion thresholds and other strategies for guiding allogeneic red blood cell transfusion (Review)

Carson JL, Carless PA, Hebert PC

This is a reprint of a Cochrane review, prepared and maintained by The Cochrane Collaboration and published in *The Cochrane Library* 2012, Issue 5

Outcome: 5 Hospital mortality

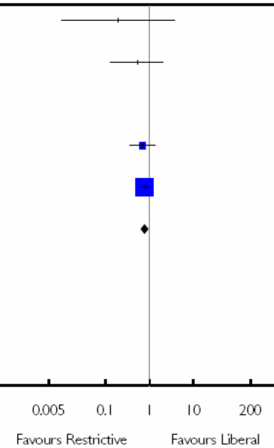
Study or subgroup	Restrictive n/N	Liberal n/N	Risk Ratio M-H,Random,95% CI
Blair 1986	0/26	2/24	0.19 [0.01, 3.67]
Bracey 1999	3/215	6/222	0.52 [0.13, 2.04]
Carson 1998	0/42	0/42	0.0 [0.0, 0.0]
Carson 2011	14/1003	20/999	0.70 [0.35, 1.37]
Hebert 1999	93/418	118/420	0.79 [0.63, 1.00]
Total (95% CI)	**1704**	**1707**	**0.77 [0.62, 0.95]**

Total events: 110 (Restrictive), 146 (Liberal)

Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 1.35$, df = 3 (P = 0.72); $I^2 = 0.0\%$

Test for overall effect: Z = 2.37 (P = 0.018)

Test for subgroup differences: Not applicable



Outcome: 3 60-day mortality

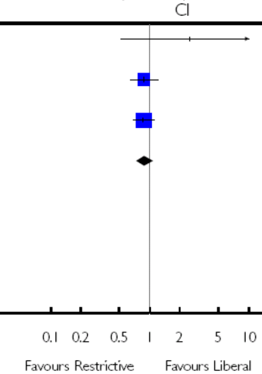
Study or subgroup	Restrictive n/N	Liberal n/N	Weight	Risk Ratio M-H,Random,95% CI
Carson 1998	5/42	2/42	1.4 %	2.50 [0.51, 12.17]
Carson 2011	66/1009	76/1007	35.4 %	0.87 [0.63, 1.19]
Hebert 1999	95/418	111/420	63.2 %	0.86 [0.68, 1.09]
Total (95% CI)	**1469**	**1469**	**100.0 %**	**0.88 [0.72, 1.06]**

Total events: 166 (Restrictive), 189 (Liberal)

Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 1.72$, df = 2 (P = 0.42); $I^2 = 0.0\%$

Test for overall effect: Z = 1.38 (P = 0.17)

Test for subgroup differences: Not applicable



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Less is more?

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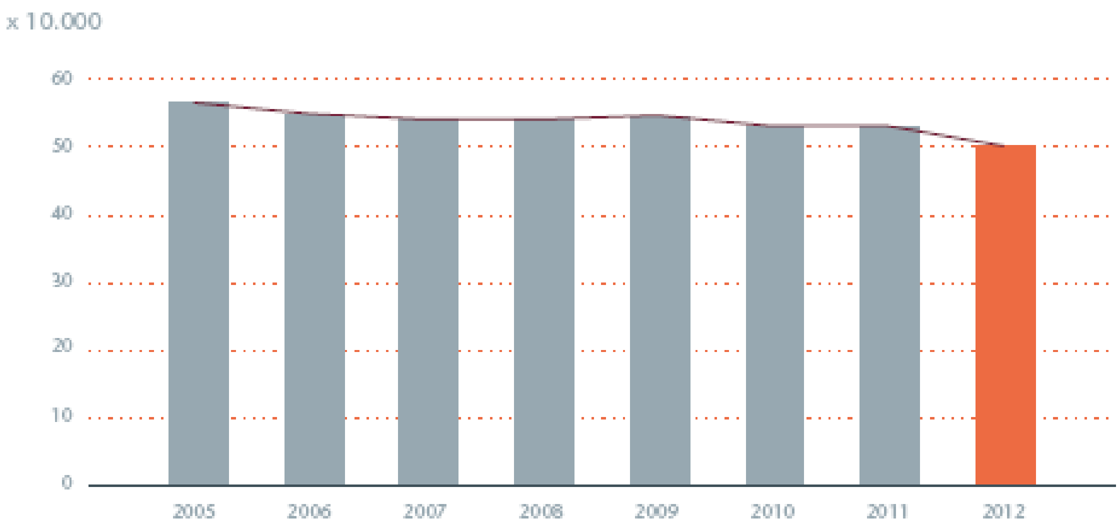
	Red Blood Cells
2005	565181
2006	549178
2007	540457
2008	544497
2009	539934
2010	535478
2011	529874
2012	486020

2005-2012: 14% decrease

2011-2012: 9% decrease

28,5 per 1000 inhabitants (lowest in Europe for comparable countries)



Dutch Experience

- National Blood Supply (Sanquin) including Department of Transfusion Medicine.
- Sanquin transfusion specialists are full members of Blood Transfusion Committees in Dutch hospitals and involved in developing Transfusion Guidelines.
- Transfusion specialists of Sanquin has an important advisory role in lowering transfusion rates.
- National Transfusion Guideline (CBO) promotes 4,5,6 rule, alternative therapies and new operation techniques.

- Introduction new law on quality of healthcare institution.
- Concentration of high risk patients.
- Economic crises.

How to lower transfusion rates?

- Data are needed.

- The Netherlands
- 1996-2006 PROTON-study (PROfiles of TransfusiON recipients)

- 2011-2015 PROTON II study

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PROTON study

- 1996-2006 PROTON-study (PROfiles of TransfusiON recipients)
- Data from 20 hospitals
  - 290 043 patients
  - 2 405012 blood products

The International Journal of Transfusion Medicine
Vox Sanguinis

Vox Sanguinis (2010) 99, 54–64

ORIGINAL PAPER

DOI: 10.1111/j.1423-0410.2010.01312.x

The PROTON study: profiles of blood product transfusion recipients in the Netherlands

B. A. Borkent-Raven,[1] M. P. Janssen,[1] C. L. van der Poel,[1,2] W. P. Schaasberg,[3] G. J. Bonsel[4] & B. A. van Hout[1]
[1]Julius Center for Health Sciences and Primary Care, University Medical Center Utrecht, Utrecht, The Netherlands
[2]Sanquin Blood Supply Foundation, Amsterdam, The Netherlands
[3]Statistics Netherlands, The Hague, The Netherlands
[4]Department of Obstetrics & Gynaecology, Erasmus University Rotterdam, The Netherlands

VoxSanguinis
The International Journal of Transfusion Medicine

Vox Sanguinis (2011) 100, 196–203

ORIGINAL PAPER

DOI: 10.1111/j.1423-0410.2010.01378.x

Survival after transfusion in the Netherlands

B. A. Borkent-Raven,[1] M. P. Janssen,[1] C. L. van der Poel,[1,2] W. P. Schaasberg,[3] G. J. Bonsel[4] & B. A. van Hout[1,5]
[1]Julius Center for Health Sciences and Primary Care, University Medical Center Utrecht, Utrecht, the Netherlands
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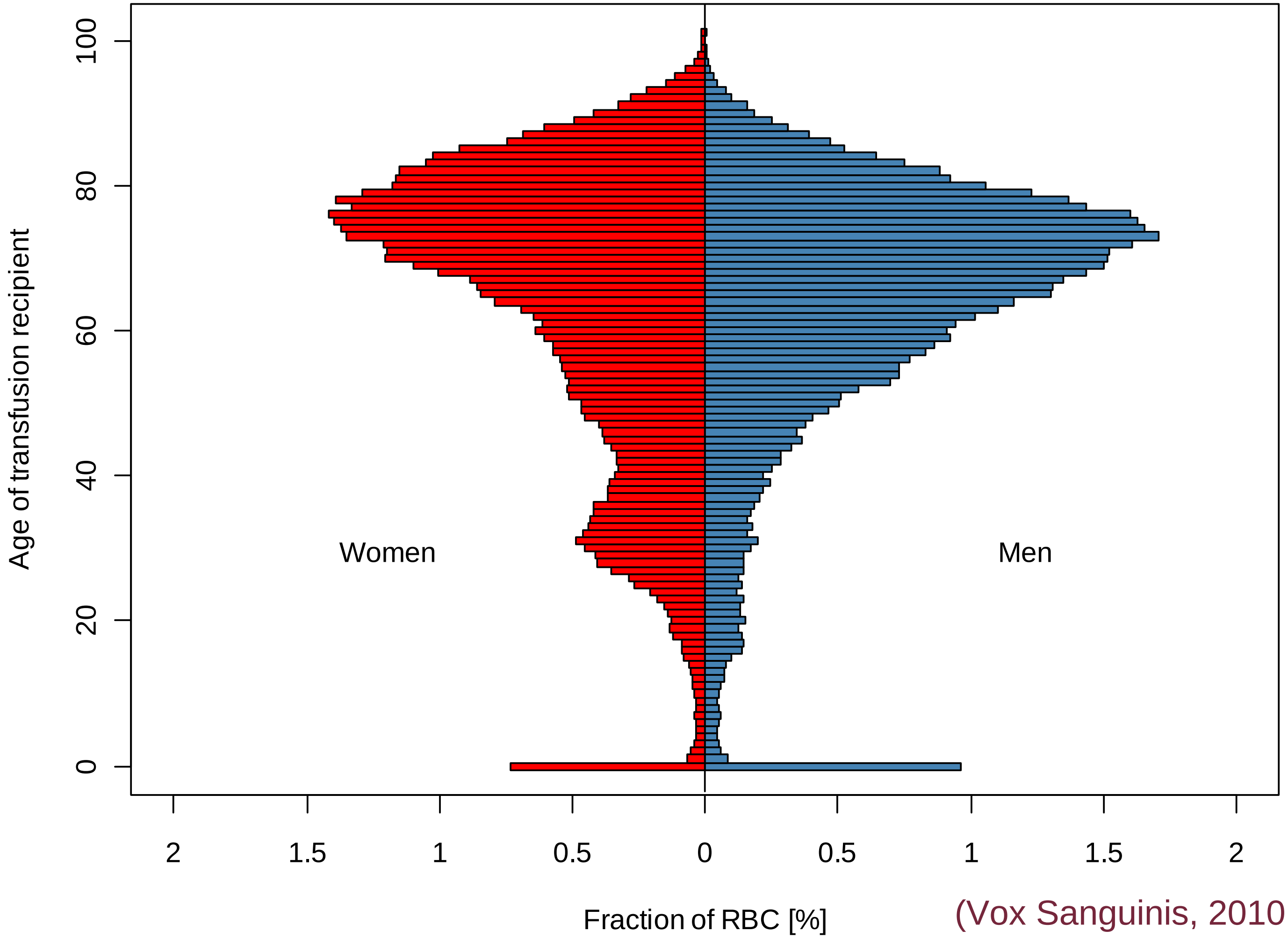
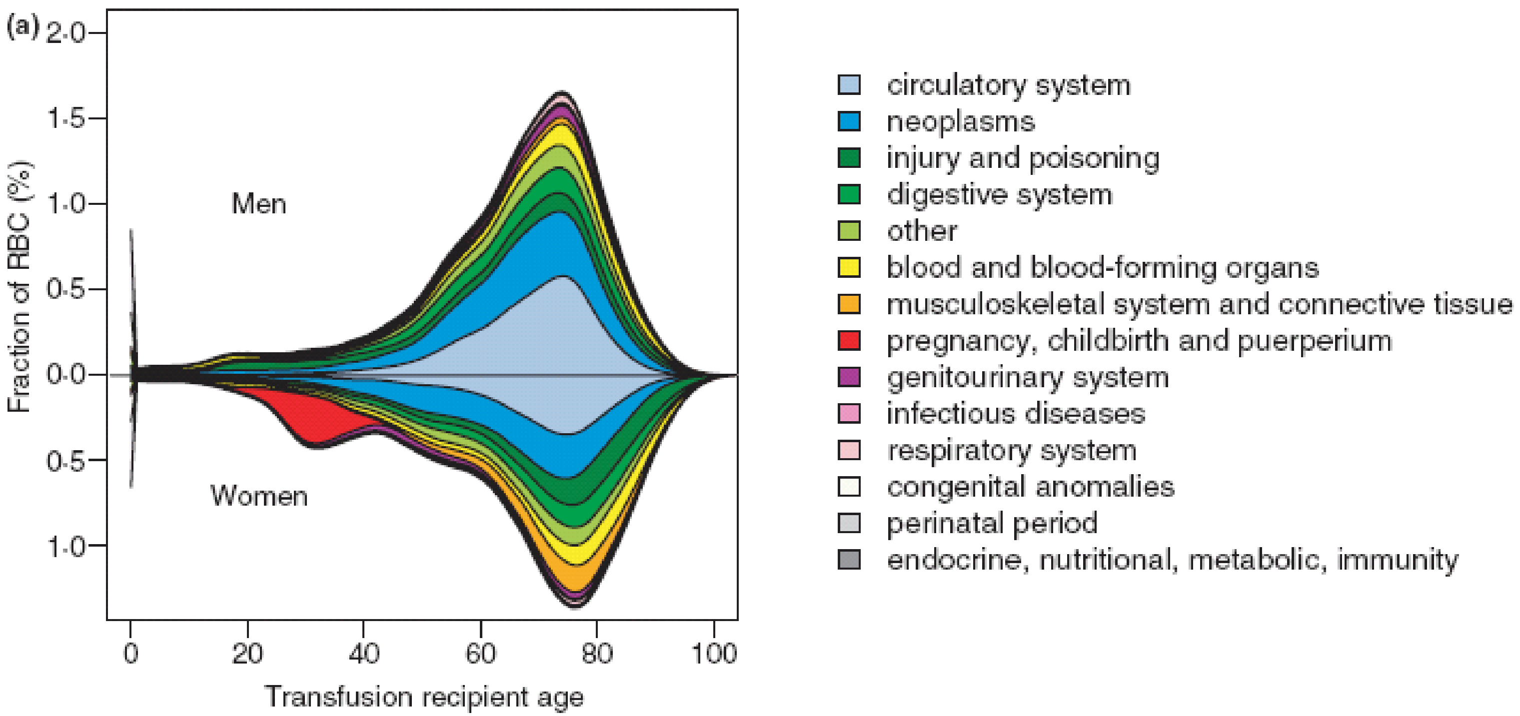
[4]Department of Obstetrics & Gynaecology, Erasmus University Rotterdam, the Netherlands
[5]University of Sheffield, Sheffield, UK

Transfusions of red cells by age and sex



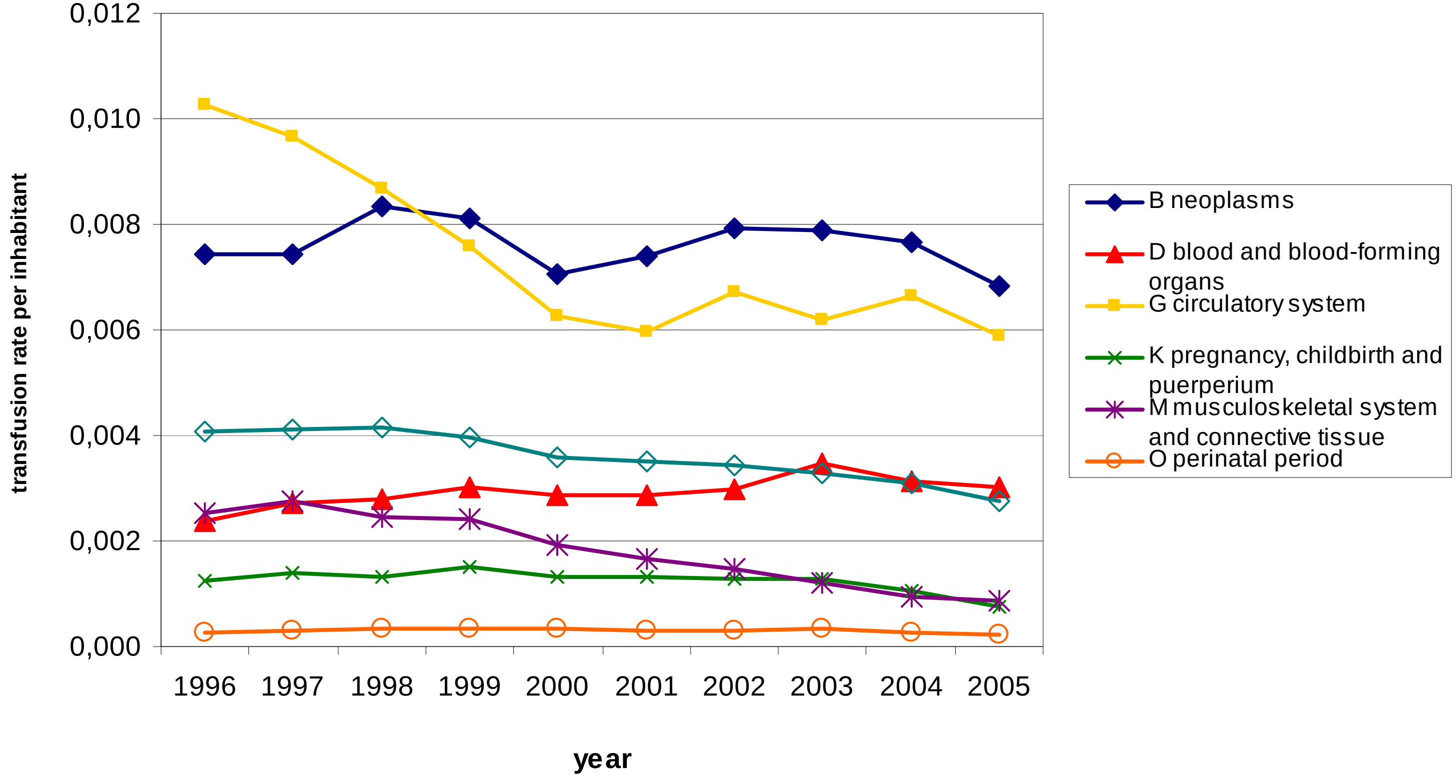
(Vox Sanguinis, 2010 (99))

PROTON results
Transfusion of red cells related by age and diagnoses



Vox Sanguinis 2010 (99)

Additional analyses PROTON on red blood cell use



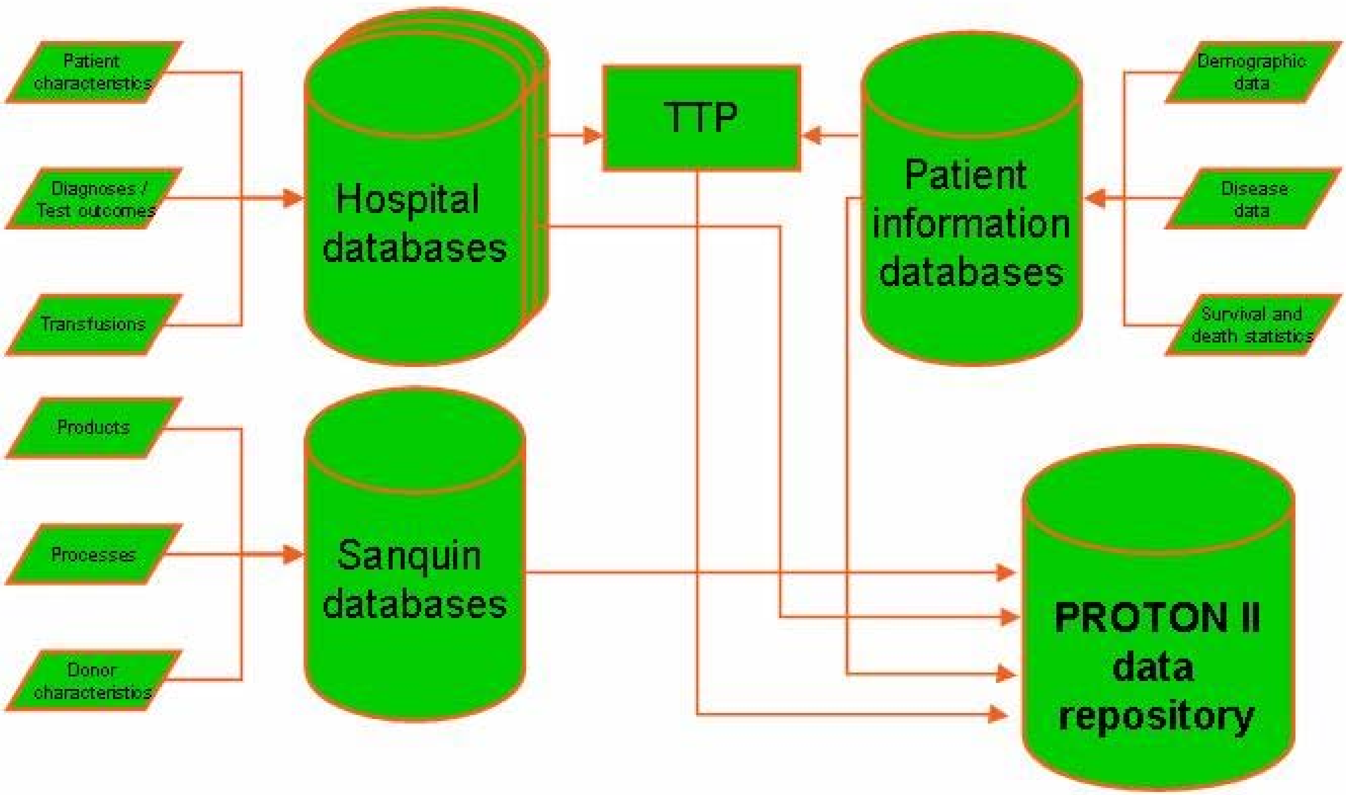
PROTON II

Aim

- The aim of PROTON II is to construct and maintain a nationally representative repository of quantitative data on the blood transfusion chain from donor tot patient using existing databases to optimise the efficiency, sufficiency and safety of blood transfusions in the Netherlands

- Analyses
  - benchmark data hospitals
  - relationship donor characteristics and patient outcomes
  - cost-effectiveness analysis
  - use data mining techniques
  - case-control studies on risk-factors

PROTON II Data collection



Conclusions

- There is growing evidence that restrictive transfusion triggers are of benefit for the patient.
- Transfusion rates show great variety between the different countries.
- Countries should develop strategies to improve the implementation of restrictive transfusion triggers.
- Blood Banks can play an advisory role in lowering transfusion rates.
- Analyses of quantitative data of the whole transfusion chain could improve that process.
- It is expected that PROTON II further will improve the optimization of the Dutch transfusion chain.