SFVTT
Société Française de Vigilance
et de Thérapeutique Transfusionnelle

Coût / efficacité / utilité / efficience des mesures de sécurité transfusionnelle et perspectives

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ASSISTANCE PUBLIQUE HÔPITAUX DE PARIS

Unité de recherche clinique en économie de la santé d'Ile-de-France

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Objectifs

- Identifier les différentes approches de la sécurisation des produits transfusés
- Estimer leur efficience
- Périmètre: du prélèvement à la transfusion

Idées fausses sur l'économie de la santé

- Réduction des dépenses
- Estimation des coûts
- Coût de la maladie
- « un patient décédé ne coûte rien »

Quels coûts?

	Médicaux	Non- médicaux
Directs (directement liés à la maladie et aux soins)	Consultations, médicaments, hospitalisations admissions, tests, imagerie…	Transports non médicaux Soins informels
Indirects	Coûts liés à la survie	Pertes de productivité Arrêts de travail, mortalité prématurée

Drummond M, et al. Methods for the Economic Evaluation of Health Care Programmes, 3rd ed., New York: Oxford University Press; 2005.

Le plan coût efficacité: l'outil de décision

Increasing costs

More costly, worse outcome

Dominated

More costly, better outcome

How much is the better outcome worth?

Improving outcome

Less costly, worse outcome

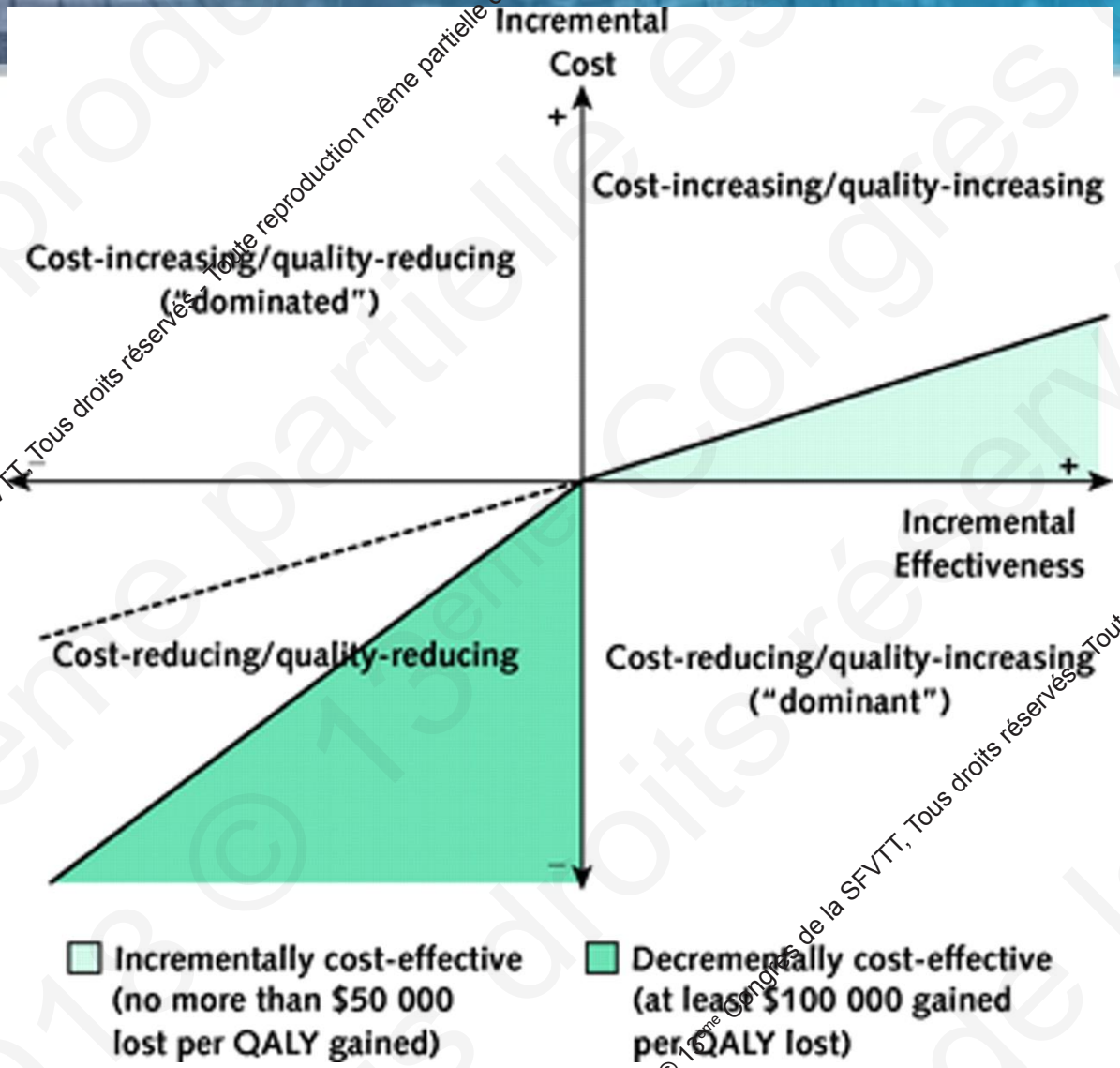
Are we ready to reduce quality in order to contain costs?

Less costly, better outcome

Dominant

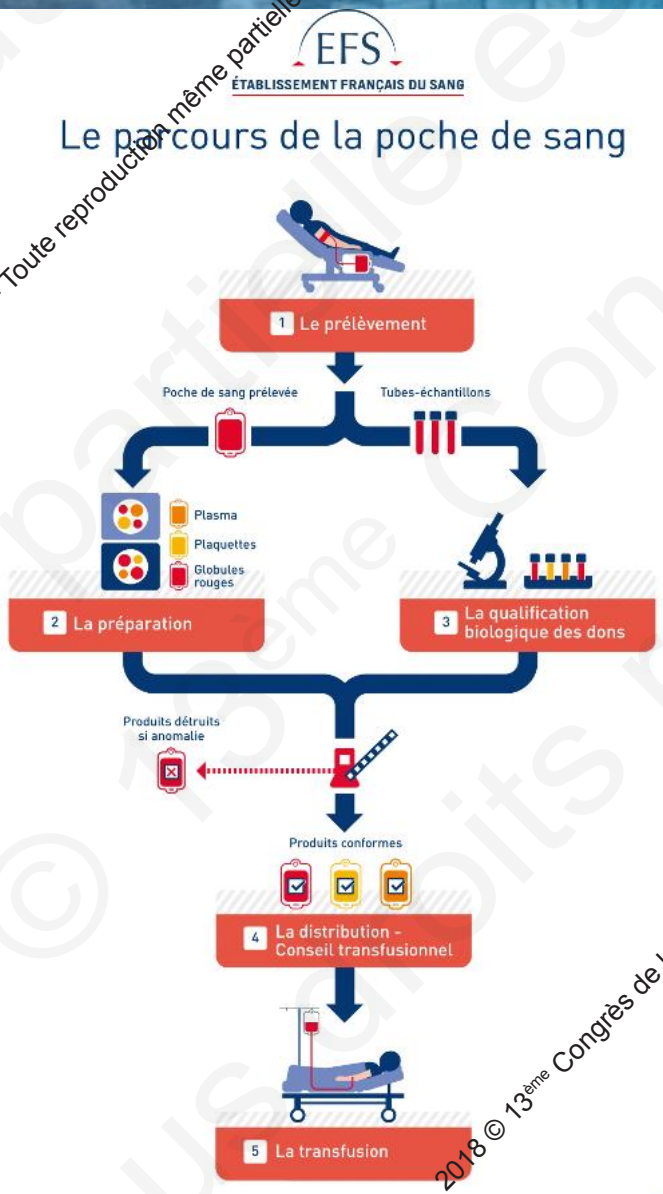
Laupacis A et al. Can Med Assoc J 1992;146:473–81.
NICE Guide to the methods of technology appraisal 2008.

Le même un peu plus tard



Ann Intern Med. 2009;151(9):662-667.

En suivant l'ordre chronologique



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Sécuriser le don (quantité et qualité)

- Identifier et fidéliser les donneurs ‘fiables’
  - Sms, sonneries personnalisées
  - Informations ciblées pour les donneurs selon leur profil
  - Honneur, altruisme et aversion au risque
- Réduire les intervalles entre les dons
- Rémunérer les donneurs/ rembourser le transport

- Comment évaluer ces stratégies?
  - coût par don supplémentaire
  - coût par donneur supplémentaire

Qualfication biologique des dons: de loin le champ le plus étudié

VoxSanguinis
The International Journal of Transfusion Medicine
ISBT International Society of Blood Transfusion
Vox Sanguinis (2017)

ORIGINAL PAPER

DOI: 10.1111/vox.12543

An assessment of differences in costs and health benefits of serology and NAT screening of donations for blood transfusion in different Western countries

M. R. Janssen,[1,2] M. van Hulst,[3,4] B. Custer[5,6] for the ABO RBDM Health Economics and Outcomes Working Group & Collaborators*

NAT = nucleic acid testing

Methodes

- HCV, HBV, HIV
- Recueil de données épidémiologiques pour identifier les prévalences (nouveaux donneurs et donneurs réguliers)
- Extrapolation des conséquences de la transfusion d'un produit contaminé:
  - Survie
  - Qualité de vie
- Coût des tests
- Coûts des traitements

Table 1 Reported prevalence and incidence rates for various countries for calendar year 2012

	Australia	Canada	Denmark	Finland	France	Nether lands	United Kingdom	United States
HIV incidence[a] (regular donors)	4·0 (20%)	9·0 (45%)	6·2 (31%)	7·2 (36%)	11 (56%)	4·6 (23%)	4·0 (20%)	20 (100%)
HCV incidence[a] (regular donors)	30 (90%)	21 (63%)	4·2 (12%)	3·9 (12%)	3·7 (11%)	0·5 (2%)	3·2 (9%)	33 (100%)
HBV incidence[a] (regular donors)	40 (70%)	57 (100%)	17 (29%)	1·6 (3%)	6·7 (12%)	18 (32%)	1·6 (3%)	15 (26%)
HIV prevalence[a] (first-time donors)	1·7 (18%)	2·2 (22%)	1·5 (15%)	6·0 (62%)	2·1 (22%)	1·4 (14%)	2·6 (27%)	9·7 (100%)
HCV prevalence[a] (first-time donors)	66 (61%)	48 (44%)	12 (11%)	60 (55%)	34 (31%)	17 (16%)	33 (31%)	109 (100%)
HBV prevalence[a] (first-time donors)	83 (100%)	58 (70%)	22 (27%)	3·6 (4%)	71 (86%)	48 (57%)	35 (43%)	50 (60%)

[a]Incidence rates are given per 1 000 000 donor-years, and the prevalence is given per 100 000 donors. In brackets, the proportion of the maximum reported value per row is given.

Table 2 Cost-utility of various screening strategies for each of the eight countries per 100 000 donations

Country	Cost-utility per screening strategy considered (in thousands of US$ per QALY + 95% CI[a])			
	Serology compared to no screening	NAT compared to no screening	Combined serology and NAT compared to no screening	NAT testing compared to serology screening
Country 1	92 (15 to 274)	113 (24 to 331)	217 (72 to 601)	15 778 (7807 to 41 469)
Country 2	44 (13 to 85)	43 (13 to 85)	94 (41 to 172)	10 831 (6089 to 23 111)
Country 3	23 (16 to 31)	38 (27 to 49)	65 (49 to 82)	7102 (4888 to 10 493)
Country 4	18 (11 to 25)	31 (22 to 41)	57 (45 to 69)	13 803 (10 062 to 19 207)
Country 5	12 (−1 to 23)	17 (3 to 29)	36 (17 to 54)	2231 (1578 to 3258)
Country 6	0·15 (−4 to 5)	15 (9 to 21)	28 (22 to 34)	4655 (4068 to 5321)
Country 7	−3·4 (−26 to 33)	9 (−20 to 66)	25 (−11 to 105)	10 240 (3993 to 36 763)
Country 8	−11 (−25 to 1)	−12 (−26 to 0)	0·60 (−16 to 16)	7232 (4390 to 12 993)
Overall	16·9	27·5	52·2	8512

En France, ajouter les PCR aux tests sérologiques coûte 13 millions de $ pour gagner une année de vie en bonne santé

Tests virologiques aux Etats Unis

test	Total life years (USA) saved	Total QALYs (USA) saved	Cost (million$) per QALY
SS + MP NAT – p24	53 -220	102 -111	$2-9 million
SS + ID NAT – p24	9 - 722	13- 355	$10·0 million

ID, individual-donor; MP, minipool; NAT, nucleic acid testing; SS, serological screening.

Marshall DA, Kleinman SH, Wong JB, AuBuchon JP, Grima DT, Kulin NA, Weinstein MC. **Cost-effectiveness of nucleic acid test screening of volunteer blood donations for hepatitis B, hepatitis C and human immunodeficiency virus in the United States.** Vox Sang. 2004 Jan;86(1):28-40.

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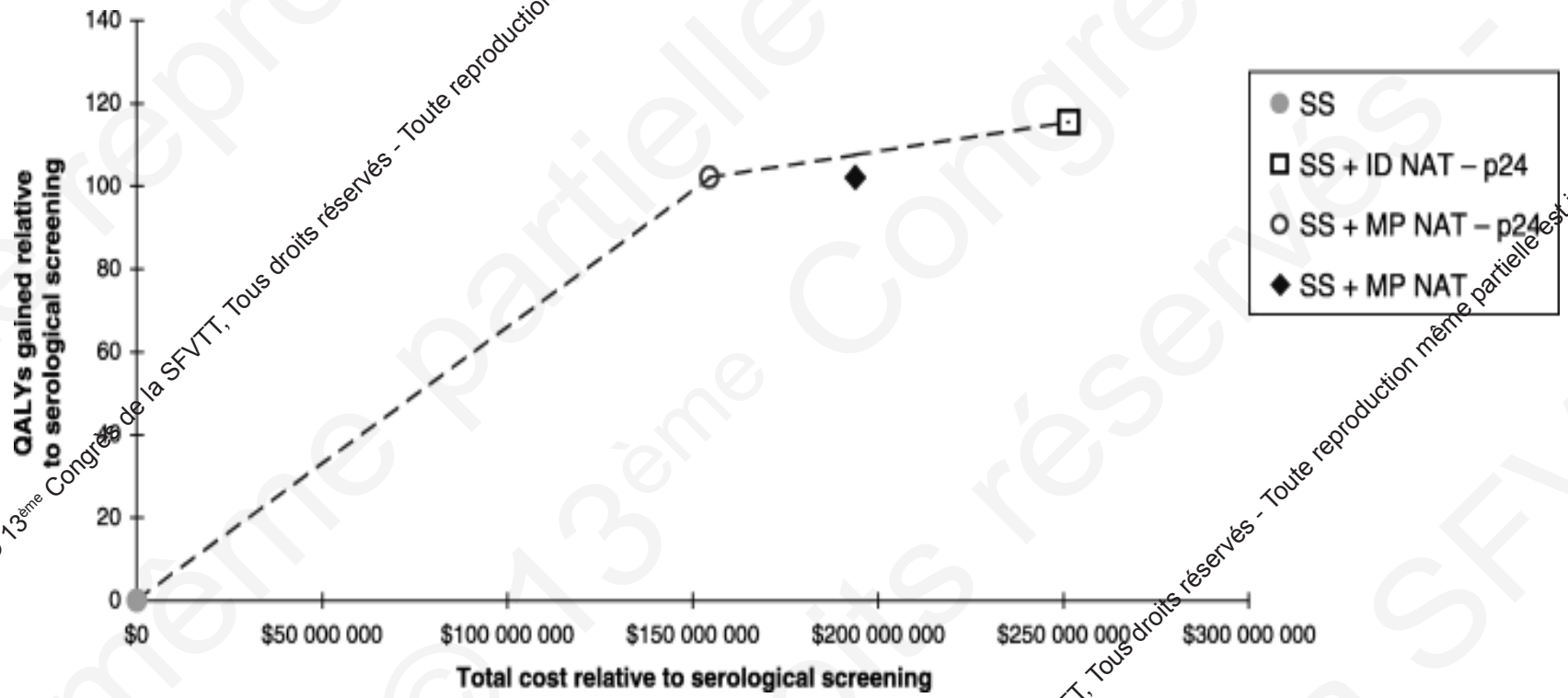
Cost-effectiveness of nucleic acid test screening of volunteer blood donations for hepatitis B, hepatitis C and human immunodeficiency virus in the United States



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Vox Sanguinis
Volume 86, Issue 1, pages 28-40, 30 JAN 2004 DOI: 10.1111/j.0042-9007.2004.00379.x
http://onlinelibrary.wiley.com/doi/10.1111/j.0042-9007.2004.00379.x/full#f1

Intervention	Cost-effectiveness estimate	Reference
Addition of HIV-1 p24 antigen testing (vs. HIV antibody testing only) for screening donated blood	$2·3 million per QALY	AuBuchon JP, Birkmeyer JD, Busch MP: Cost-effectiveness of expanded human immunodeficiency virus-testing protocols for donated blood. *Transfusion (Paris)* 1997; **37**: 45–51
Addition of HIV RNA PCR testing (vs. HIV antibody testing only) for screening donated blood	$2·0 million per QALY	
Solvent-detergent-treated frozen plasma (vs. untreated plasma) for processing transfused blood	$9·7 million per QALY	Jackson BR, AuBuchon JP, Birkmeyer JD: Update of cost-effectiveness analysis for solvent–detergent-treated plasma. *JAMA* 1999; **282**: 329
Autologous blood donation for transurethral prostatectomy	$24 million per QALY	Etchason J, Peta L, Keeler E, Calhoun L, Kleinman S, Snider C, Fink A, Brook R: The cost-effectiveness of preoperative autologous blood donations. *N Engl J Med* 1995; **332**: 719–724
Autologous blood donation for abdominal hysterectomy	$1·4 million per QALY	
Universal (vs. category-specific) precautions to prevent HIV transmission	$0·9 million per LY	Stock SR, Gafni A, Bloch RF: Universal precautions to prevent HIV transmission to health care workers: an economic analysis. *Can Med Assoc J* 1990; **142**: 937–946
Autologous blood donation for coronary-artery bypass grafting	$0·5 million per QALY	Etchason J, Peta L, Keeler E, Calhoun L, Kleinman S, Snider C, Fink A, Brook R: The cost-effectiveness of preoperative autologous blood donations. *N Engl J Med* 1995; **332**: 719–724
Autologous blood donation for total hip replacement	$0·2 million per QALY	

Autres résultats comparables

- « In the Netherlands, the incremental cost-effectiveness ratio (ICER) of triplex NAT is **€5.20 million per quality-adjusted life-year** (QALY) for testing minipools of six donation samples and €4.65 million/QALY for individual donation testing.

- The ICER for anti-HTLV-I/II is €45.2 million/QALY if testing all donations, **€2.23 million/QALY** if testing new donors only, and €27.0 million/QALY if testing blood products for pediatric patients only.

- The ICER of Hepatitis A NAT is **€18.6 million/QALY**."

Borkent-Raven BA, Janssen MP, van der Poel CL, Bonsel GJ, van Hout BA. Cost-effectiveness of additional blood screening tests in the Netherlands. Transfusion. 2012 Mar;52(3):478-88.

Explication principale: le risque compétitif

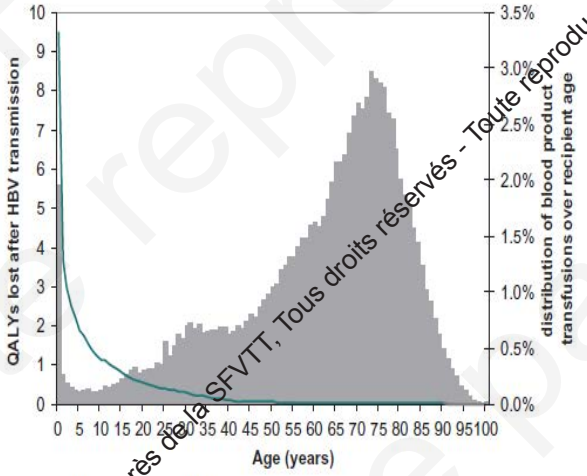

Fig. 1. QALYs lost after one HBV transmission per recipient age.

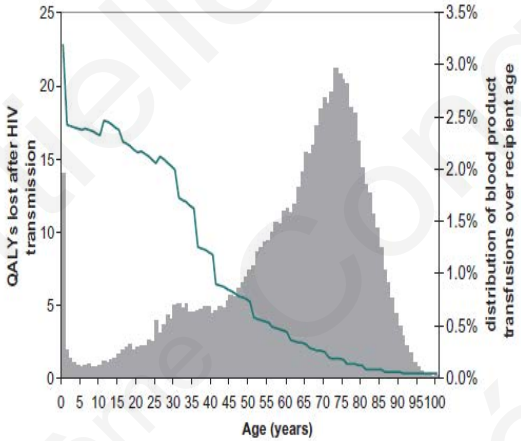

Fig. 3. QALYs lost after one HIV transmission per recipient age.

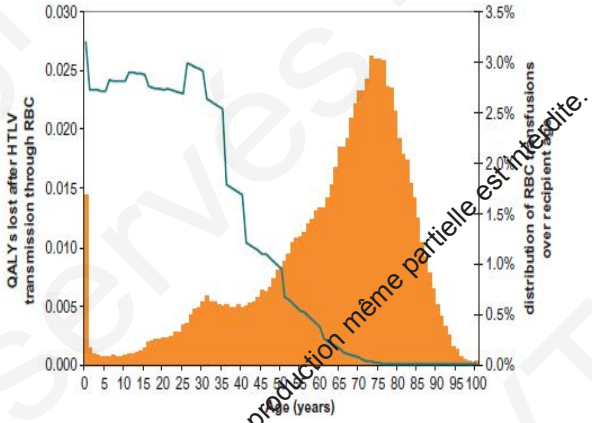

Fig. 5. QALYs lost after one HTLV-I/II transmission through RBCs per recipient age.

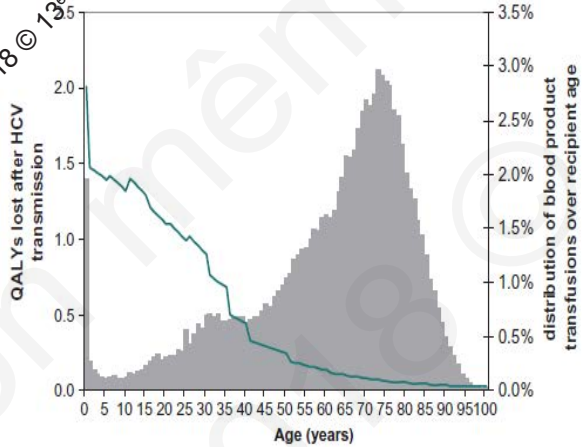

Fig. 2. QALYs lost after one HCV transmission per recipient age.

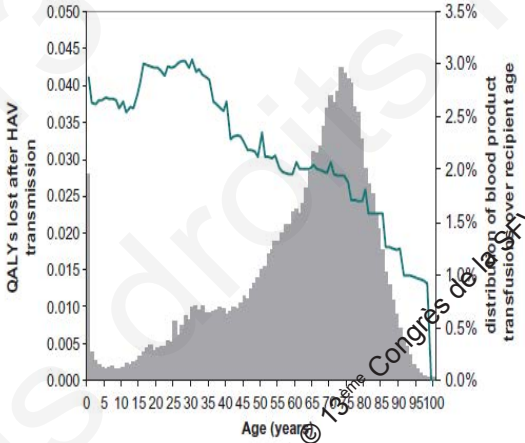

Fig. 4. QALYs lost after one HAV transmission per recipient age.

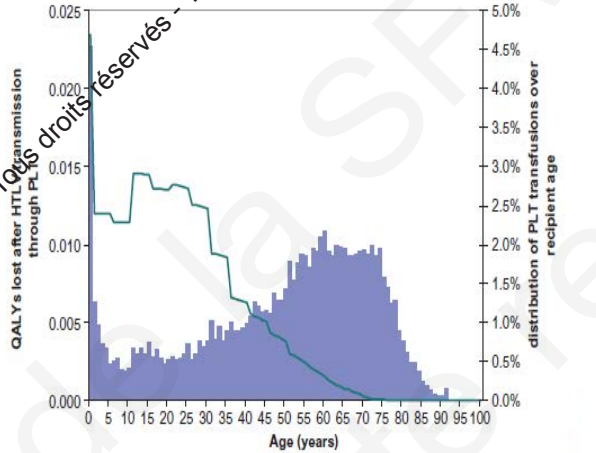

Fig. 6. QALYs lost after one HTLV-I/II transmission through PLTs per recipient age.

Borkent-Raven BA, Janssen MP, van der Poel CL, Bonsel GJ, van Hout BA. Cost-effectiveness of additional blood screening tests in the Netherlands. Transfusion. 2012 Mar;52(3):478-88.

Le rôle HV et ST

- Recueil prospectif 2005-10 dans un CHU
- 15,134 erreurs soit 215 par mois (range, 85-334).
- 60% erreurs de distribution
- 40% erreurs dans les services cliniques

- Erreurs de prescription
- Erreur d'étiquetage

- Coût $593,337

Maskens C, Downie H, Wendt A, Lima A, Merkley L, Lin Y, Callum J .**Hospital-based transfusion error tracking from 2005 to 2010: identifying the key errors threatening patient transfusion safety.** Transfusion. 2014 Jan;54(1):66-73;

Discussion

- Peu de changement en 20 ans
  - Loubière S, Rotily M, Durand-Zaleski I, Costagliola D. Including polymerase chain reaction in screening for hepatitis C virus RNA in blood donations is not cost-effective. Vox Sang. 2001 May;80(4):199-204.
- 'PCR testing performed in parallel with ELISA will potentially add less than1 year of life for all French recipients compared to ELISA screening alone.
- The incremental costs per life year saved were, respectively, ∈84·6 million with ELISA and PCR testing of blood pools, and ∈891·1 million with testing of individual blood donations.'
- La qualification biologique du don fait appel à un nombre croissant de tests pour une efficience catastrophique.

Conclusion

- Impossible d'ignorer l'évaluation économique
- Objectif académique: lecture critique des articles
- Objectif 'citoyen éclairé': comprendre les enjeux et participer à la décision