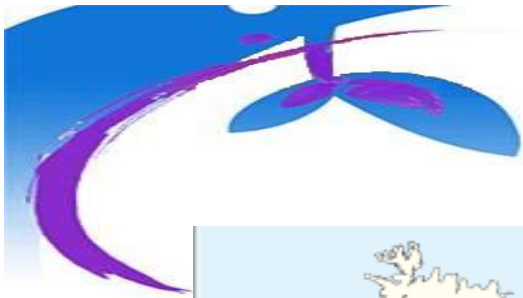




**The contribution of health economics to the
evaluation of diagnostic strategies and
microbiology testing.
Application to the point of care diagnostics in
medicine**

*Isabelle Durand-Zaleski, Public Health, Henri Mondor hospital AP-HP
Paris France*





European Union: SHI, Bismarck & Beveridge

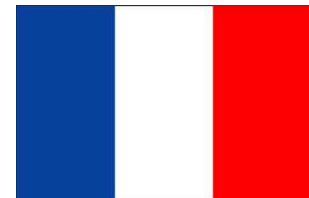


How much should we accept to spend?

- No market price
- Prices = costs = Soviet Union

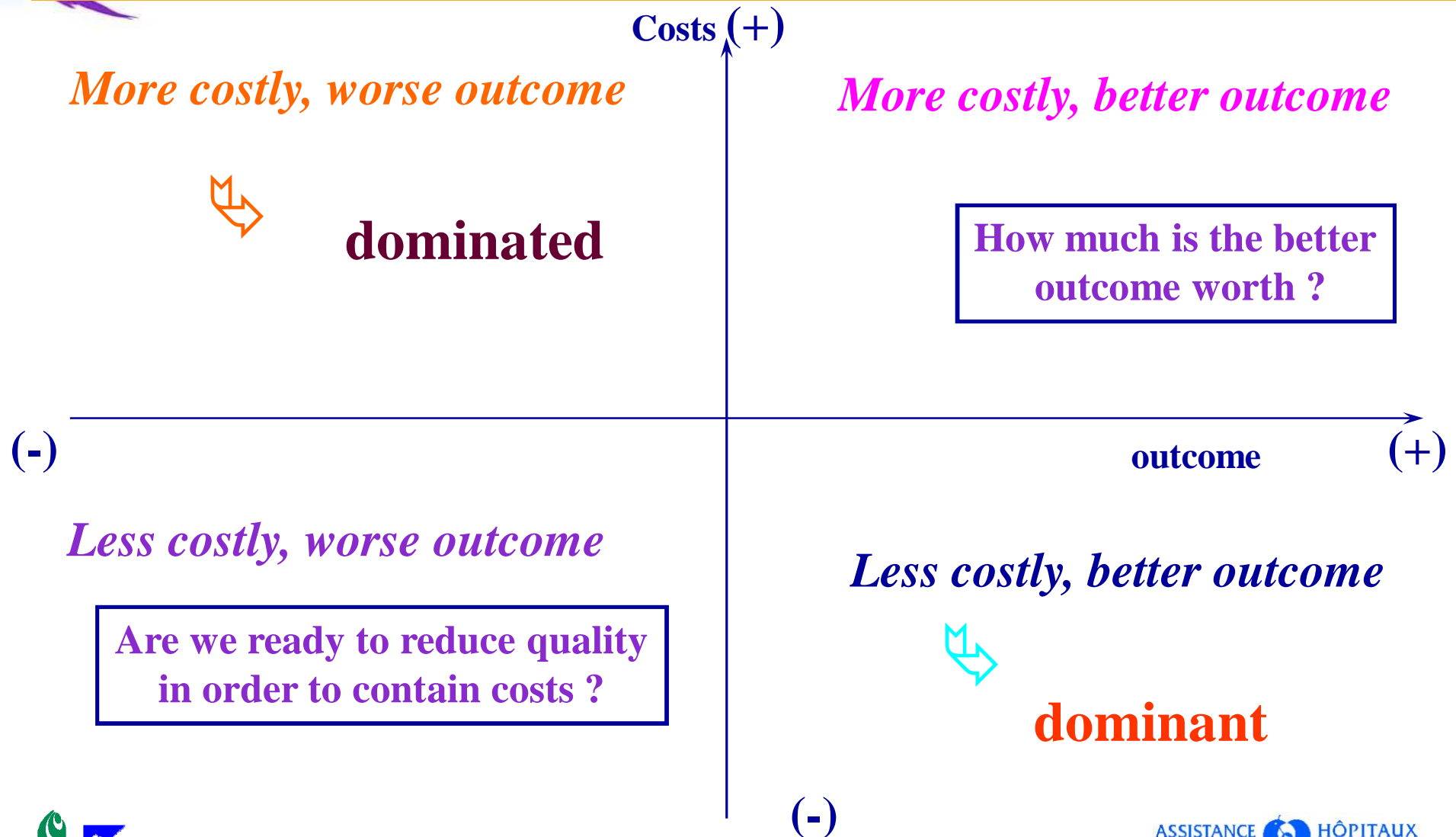
■ Prices set to control total spending

■ Prices reflect social utility



Assessment of a new technology compared to the reference treatment : the C/E plane

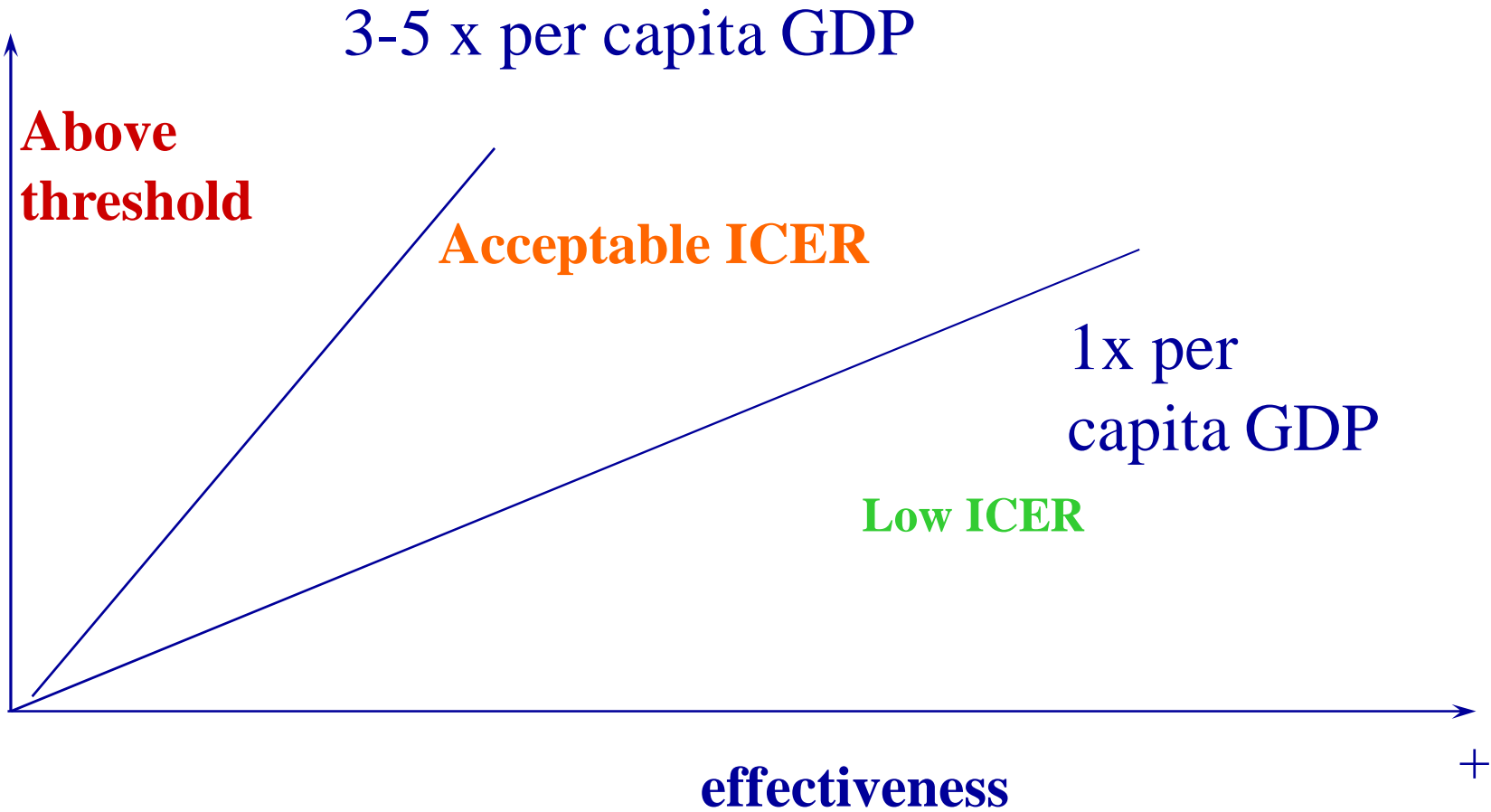
Laupacis & al. Can Med Assoc J, 1992

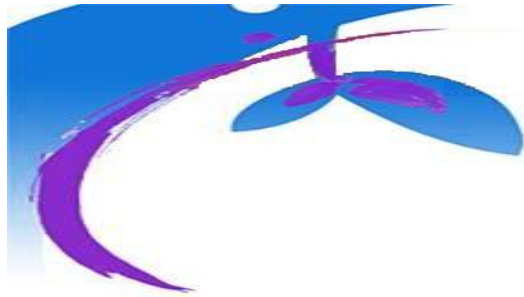




Cost +

C/E or C/U ratio (ICER)





Are Pharmaceuticals Cost-Effective? A Review Of The Evidence

Do drug treatments give value for the money? Careful analysis can yield useful information, this study finds.

by Peter J. Neumann, Eileen A. Sandberg, Chaim M. Bell, Patricia W. Stone, and Richard H. Chapman

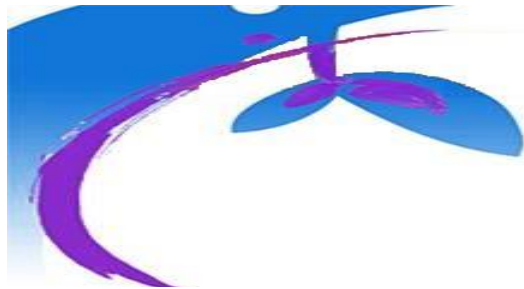
Cost-Utility Analyses Of Pharmaceuticals Published, 1976-1997

Type of intervention	Number	Percent
Pharmaceutical	73	32.0%
Surgical	41	18.0
Diagnostic	26	11.4
Screening	24	10.5
Medical procedure	16	7.0
Care delivery	13	5.7
Health education	12	5.3
Immunization	9	3.9
Medical device	6	2.6
Other	2	0.9

HEALTH AFFAIRS - Volume 19, Number 2

©2000 Project HOPE-The People-to-People Health Foundation, Inc.





Median Cost-Effectiveness Ratios, By Type Of Intervention

Intervention type	Number of ratios	Median cost-effectiveness^a
Immunization	38	\$2,000
Care delivery ^b	36	6,000
Surgical	128	10,000
Pharmaceutical	251	11,000
Screening	72	12,000
Other public health ^c	8	15,000
Health education/counseling	28	20,000
Diagnostic	83	20,000
Device	22	40,000
Various	3	68,000
Medical procedure ^d	42	140,000
All interventions	647	12,000



Point of care versus laboratory testing

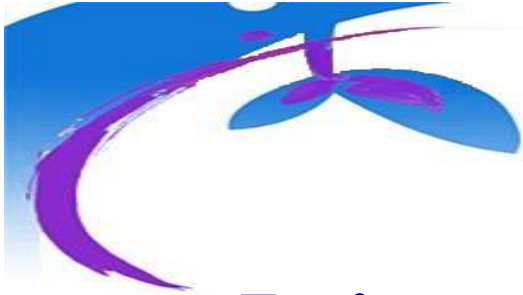
- **O'Connell DA, Seikaly H, Harris JR. Central laboratory versus point of care testing in intraoperative monitoring of parathyroid hormone levels: cost comparison. J Otolaryngol Head Neck Surg. 2008 Feb;37(1):91-7.**
- **Vickerman P, Watts C, Peeling RW, Mabey D, Alary M. Modelling the cost effectiveness of rapid point of care diagnostic tests for the control of HIV and other sexually transmitted infections among female sex workers. Sex Transm Infect. 2006 Oct;82(5):403-12**
- **Bjuhr M, Berne C, Larsson A. External quality assessment of HbA(1c) for point of care testing. Ups J Med Sci. 2006;111(2):201-7**
- **Lafata, J E, Kaatz, S, Martin, S A, Ward, R E, The cost-effectiveness of different management strategies for patients on chronic warfarin therapy. , J Gen Intern Med,2000-Jan; 15(1):31-7**
- **Iyer SB, Gerber MA, Pomerantz WJ, Mortensen JE, Ruddy RM. Effect of point-of-care influenza testing on management of febrile children. Acad Emerg Med. 2006 Dec;13(12):1259-68. Epub 2006 Nov 1.**
- **Apple FS, Chung AY, Kogut ME, Bubany S, Murakami MM. Decreased patient charges following implementation of point-of-care cardiac troponin monitoring in acute coronary syndrome patients in a community hospital cardiology unit. Clin Chim Acta. 2006 Aug;370(1-2):191-5. Epub 2006 Mar 6.**





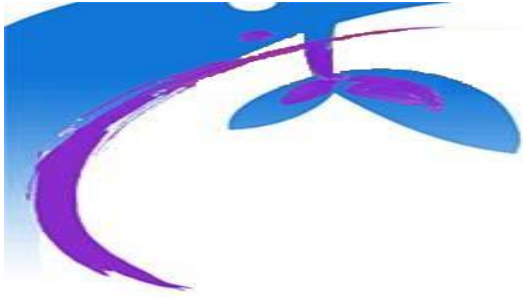
What are the relevant endpoints?

- **Test performance**
- **Costs: to whom?**
 - **Hospital (given prospective payment system)**
 - **Payer**
 - **Patient**
- **Transfer of competence**
- **Patient empowerment, satisfaction**



Costs data

- **Point of care more expensive (PTH surgery) : \$550 vs \$ 130**
- **The cost of the external quality assurance program is Euro 150 per instrument (HbA1C).**
- **No difference (influenza)**
- **Cost effective (HIV)**
- **Cost saving**



Cost-effective

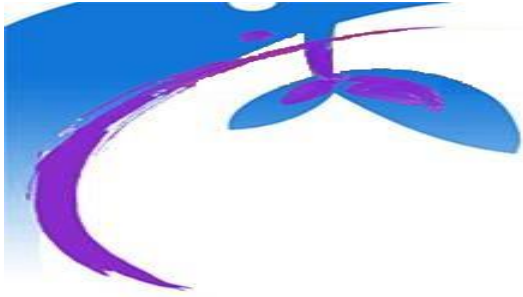
- **107-151 dollars per HIV infection averted if the POC tests cost 2 dollars and 58-81 dollars if they cost 1 dollar.**



Cost saving: integrated care for anticoagulation treatment

- **decision support software, point-of-service testing, and workflow redesign.**
- **moving from usual care to anticoagulation clinic testing would result in a total of:**
 - **1.7 thromboembolic events and**
 - **2.0 hemorrhagic events avoided per 100 patients over 5 years.**
- **Another 4.0 thromboembolic events and 0.8 hemorrhagic events would be avoided by moving to patient self-testing.**
- **for every dollar spent on clinic implementation and maintenance, over 25 US dollars was returned from cost containment and new revenue production.**





Cost-saving? : retrospective comparison for troponin monitoring

- 24/7 testing by the nursing staff in cardiology
- 7 months, 271 patients
- charges per patient: \$17,163 vs. \$12,882; NS
- The direct charge of reagents to the laboratory for testing of cTnI was lower in the Pre-POC group,
- Unit cost: \$3.8 vs. \$10.5 per reportable result, respectively.
- additional \$1850 increase in laboratory charges due to POC reagents.



Useful theories in political economy

M Goddard et al. Health economics, policy and law, 2006

- **Rationality**
- **Majority voting models**
- **Interest groups**
- **Bureaucratic decision making**
- **Rent seeking models**



Health policy: stakeholder analysis

- **Policy makers**
- **Payers, hospital managers**
- **Professionals, clinicians & nurses**
- **Manufacturers**
- **Patients**
- **Bureaucracies**



Conclusion: strategic decision-making

- **Costs are useful for budgeting purposes but cannot alone provide decision rules**
- **POC is probably more expensive because of high reagent + QA costs**
- **Non monetary benefits are:**
 - **Involvement of other professionals (physicians / nurses..)**
 - **Involvement of patients**
 - **Development of innovative technologies**
 - **Raise payers' awareness on the need to adapt financial incentives & payment mechanisms**
 - **Raise managers' awareness about the contribution of laboratories to overall revenues**

