Evolving trends in the costs associated with inpatient immunosuppressive drugs use

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Background

- Acute and chronic allograft rejection are often treated with costly immunosuppressive (IS) drugs.
- A new transplant law came into force in Switzerland in 2007 involving change in the organ allocation system. In parallel, new methods of diagnosis of rejection has been developed in recent years.

Objective

- To analyze the costs associated with IS drugs administered to kidney, lung and heart transplant recipients in the surgical department of our university hospital between 2004 to 2008.

Methods

Setting

- Transplant center (kidney, lung and heart transplantation) of the surgical department of the university hospital (900-bed) in Lausanne Switzerland.

Data

- **IS drugs costs**: retrieved from the pharmacy database
- **Transplant center activity and clinical data**: retrieved from transplant center database and from hospital accounting system

Analysis

- Retrospective
- Period from January 2004 to December 2008

Results

- Between 2004 and 2008, the overall costs associated with inpatient IS drug use doubled, due to a striking increase in costs in 2007 and 2008 (fig. 1).

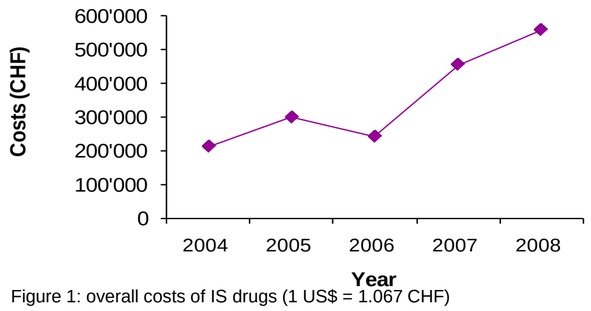

Figure 1: overall costs of IS drugs (1 US$ = 1.067 CHF)

- This increase was not related to an increase in the number of transplants (fig. 2 and 3a), or in the number of days of hospitalization (fig. 3b) or in the average length of stay (fig. 3c).

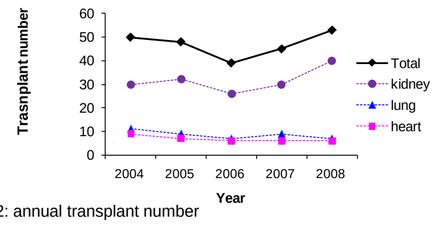

Figure 2: annual transplant number

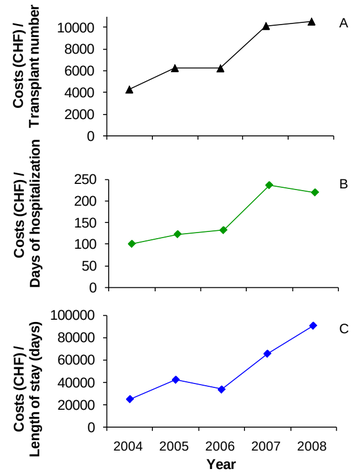

Figure 3: overall costs of IS drugs over annual transplant number (A), over total number of days of hospitalization (B), over average length of stay (C) (1 US$ = 1.067 CHF)

- However this increase was mainly explained by an increase in the use of induction and rejection therapies in 2007 and 2008 (fig. 4).

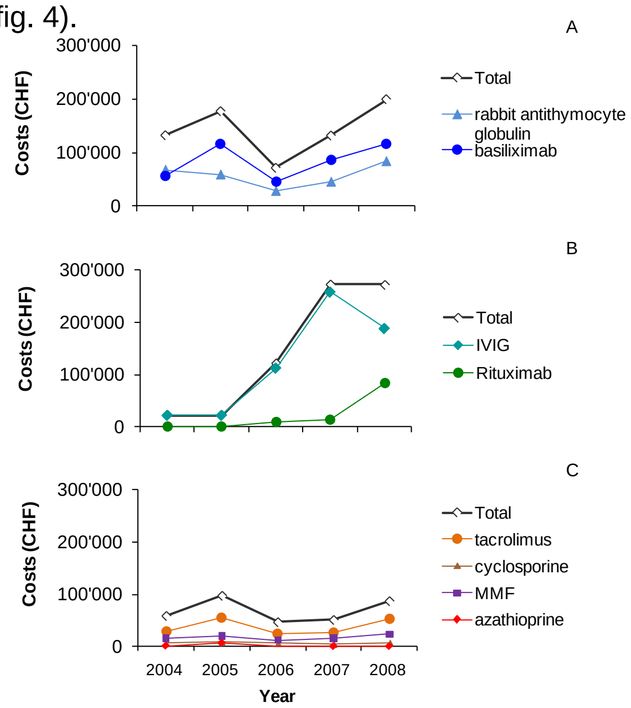

Figure 4: overall costs of IS drugs: (A) induction and cellular rejection treatment, (B) humoral rejection treatment, (C) maintenance treatment. MMF= mycophenolate mofetil (1 US$ = 1.067 CHF)

- Interestingly, more patients with acute rejection, particularly humoral rejection, were treated in 2007-2008 vs 2004-2006. (P = 0.008 and 0.01 for overall and humoral acute rejection, respectively, poisson regression) (fig. 5).

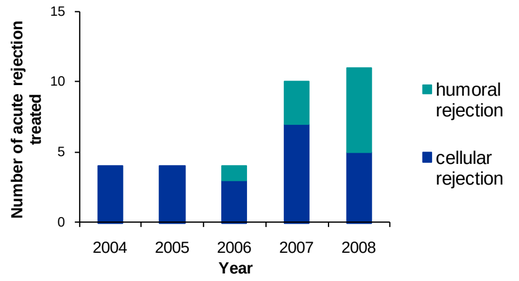

Figure 5: annual number of acute rejection

Conclusion

- Costs associated with IS drugs use strikingly increased in 2007 and 2008, which was explained by an increase in specific drugs used to prevent or treat acute rejection, particularly humoral rejection.
- A change in the national system of organ allocation in 2007, combined with an increasing use of new methods to diagnose antibody-mediated rejections may be responsible for these evolving trends which have significant implications in patient management.