

# **Cost-effectiveness of Therapeutic Patient Education**

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**<http://setmc.hug-ge.ch>**

# Plan

- **How to evaluate the efficacy of TPE**
- **Efficacy of TPE in 34 meta-analyses**
- **Efficacy of TPE in different chronic diseases**
- **Cost-effectiveness of TPE**

# How to evaluate the efficacy of TPE

- Which criteria of efficacy ?
- Which type of TPE ?
- How is TPE described ?

# Which criteria of efficacy

- **Quality of life**
- **Psycho-social, depression, anxiety**
- **Drug observance**
- **Biological markers**
- **Morbidity – mortality**
- **Cost-efficacy**

**Quantitative – Qualitative ?**

# Which type of TPE ?

- **Basic information**
- **General group discussions**
- **Practical skills training**
- **Behavior therapy, goal setting, reinforcement**
- **Problem solving strategies**
- **Practical psychosocial problems**
- **Cognitive therapy, role of thoughts and emotions**
- **Multidisciplinary-complex: psycho-pedagogical**  
**Art-therapy - relaxation**

# How is TPE described ?

- **Type : basic information to multidisciplinary complex**
- **Setting: individual or groups**
- **Ambulatory-hospitalized**
- **Duration: 1 hour, 1 day, 1 week, 12 sessions...**
- **Which healthcare providers ?**
- **Reproducible**

# Methodology

- **50 000 publications found in Pubmed**
- **557 studies selected for 34 meta-analyses**
- **88 studies selected for good descriptions**
- **36 studies selected for good descriptions and complex-multidisciplinary TPE**

# Methodology

- **5 million TPE interventions not published**
- **500 000 studies qualitative-quantitative TPE not selected by Pubmed**
- **50 000 publications found in Pubmed**
  - 557 studies selected for 34 meta-analyses**
  - 88 studies selected for good descriptions**
  - 36 studies selected for good descriptions and complex-multidisciplinary TPE**



# Efficacy of TPE in 34 meta-analyses

Diabetes	8 meta-analyses	60 studies	12 000 patients
Asthma	3 meta-analyses 1 critical evaluation	30 studies	4 000 patients
BPCO	4 meta-analyses 4 reviews	80 studies	5 000 patients
Hypertension	3 meta-analyses	100 studies	8 000 patients
Cardiology	3 meta-analyses, 1 review	63 studies	8000 patients
Obesity	1 meta-analyse, 1 review	30 studies	1000 patients
Rheumatology	1 meta-analyse	17 studies	4 000 patients
Oncology	4 meta-analyses	177 studies	12 000 patients
<b>TOTAL</b>	<b>34 articles</b>	<b>557 studies</b>	<b>± 54 000 patients</b>

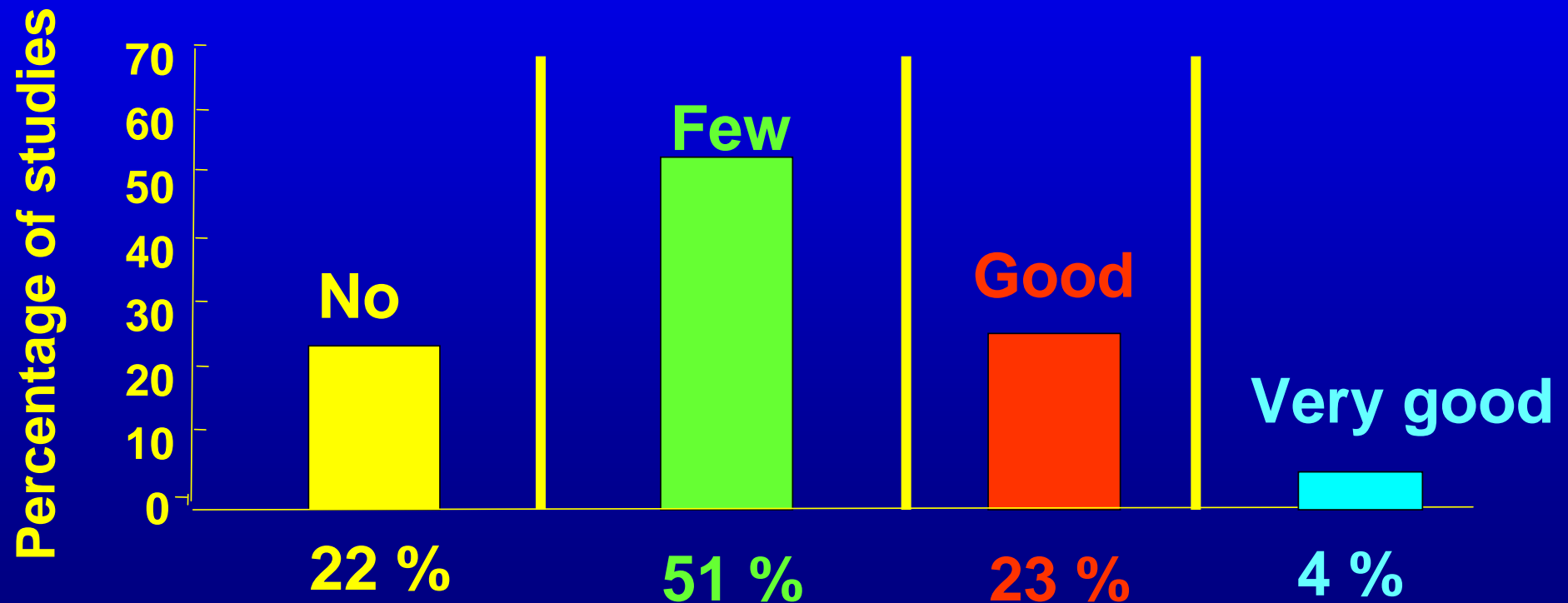
# Description's quality of the educational interventions

**N = 557 studies**

<b>No description at all</b>	<b>Few descriptions only</b>	<b>Good descriptions but not complete</b>	<b>Very good descriptions with details</b>
<b>22%</b>	<b>51%</b>	<b>23%</b>	<b>4%</b>

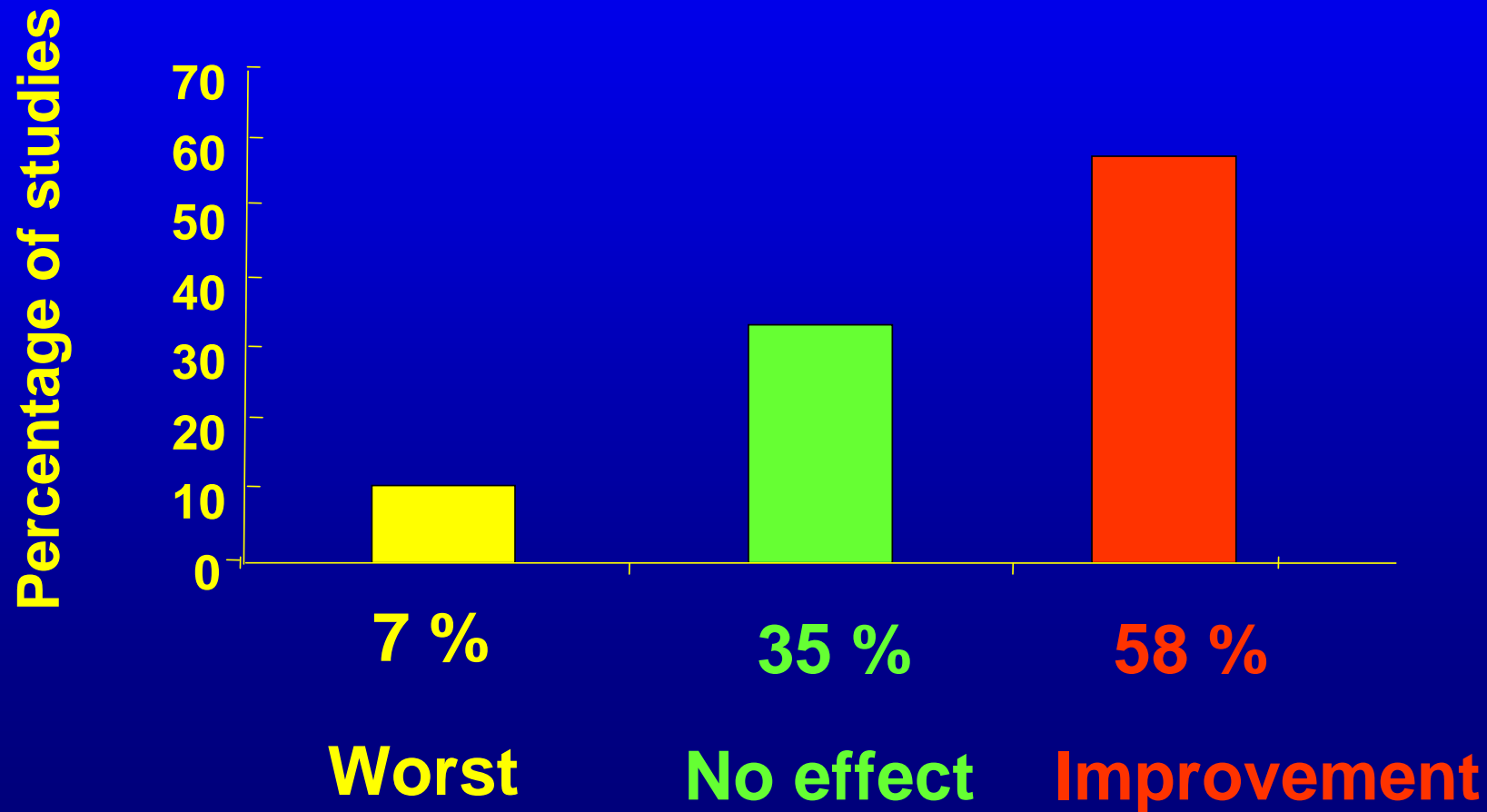
# Description's quality of the educational interventions

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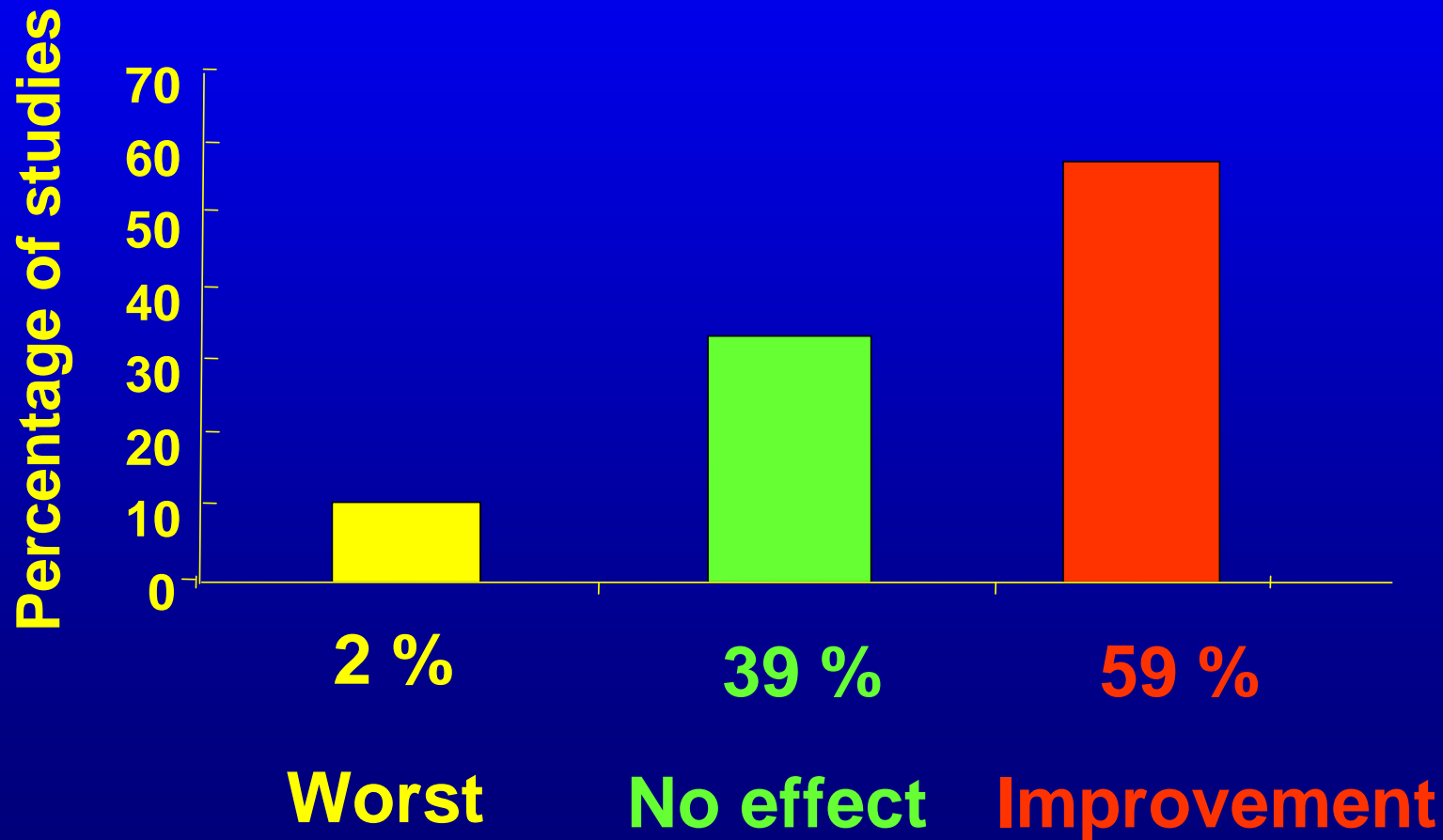
# Efficacy of TPE

N = 557 studies



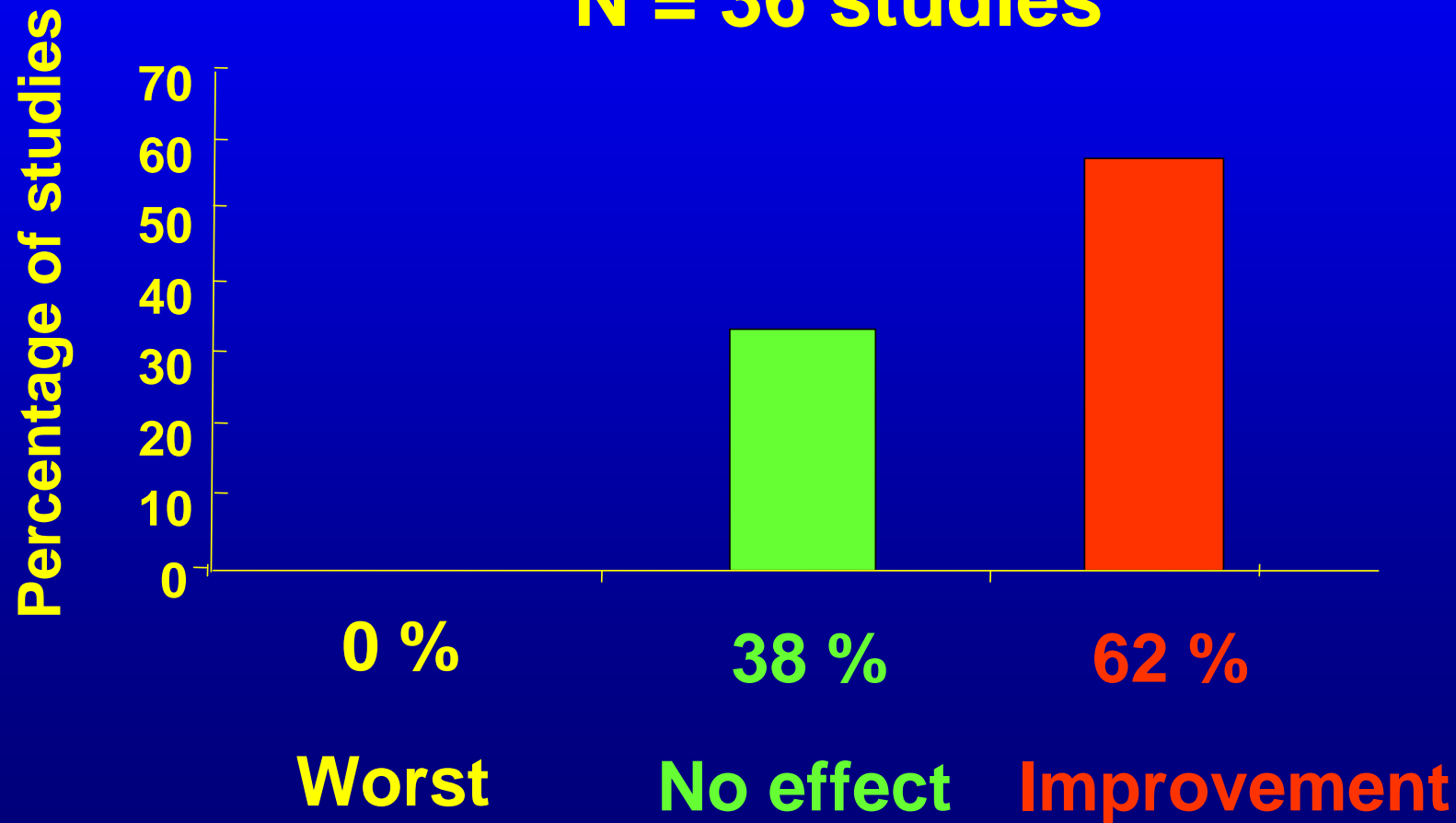
# Efficacy of TPE in studies selected for good description

**N = 88 studies**



# Global efficacy in studies with good description and good level of TPE

**N = 36 studies**



# **Efficacy of TPE**

## **Summary**

- **Improvement in 58 % of the 557 studies selected from Pubmed**
- **Improvement in 59 % of the 88 studies with good description of educational intervention**
- **Improvement in 62 % of the 36 studies with good description of educational intervention and with good level of TPE**



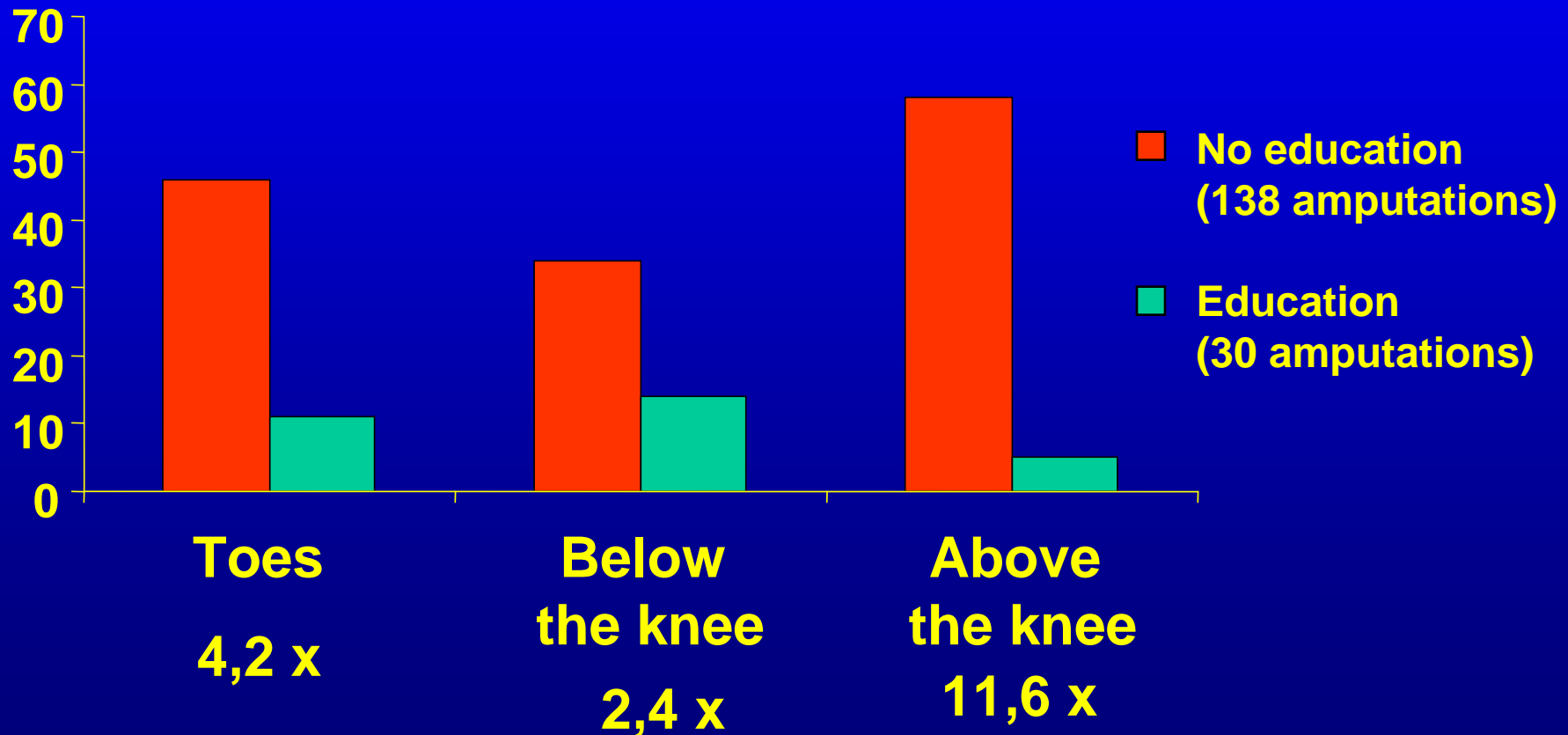
# Efficacy of TPE in different chronic diseases



# Efficacy of TPE in diabetic patients

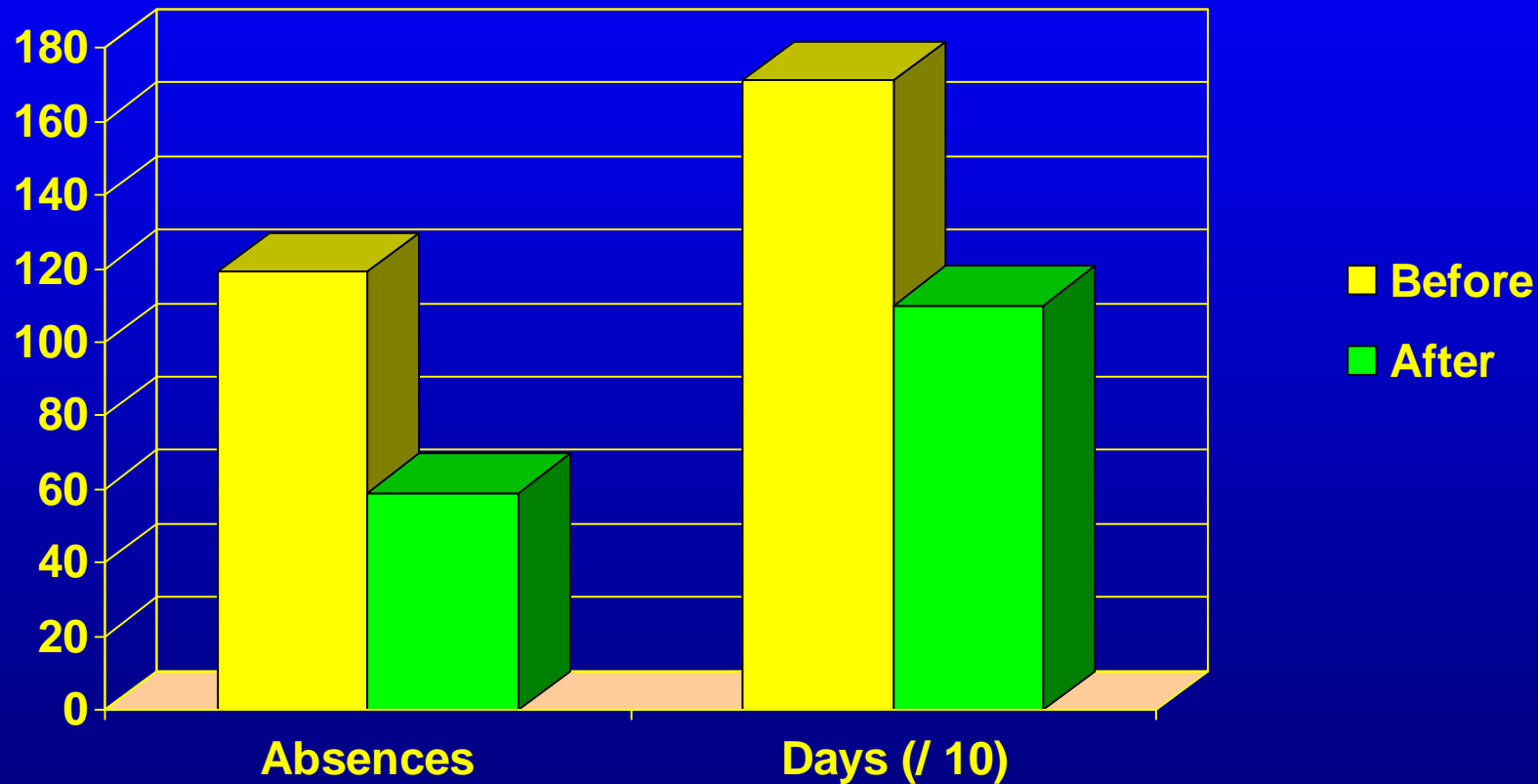
- **Foot ulcers** - 49 %
- **Hospitalisations** - 89 %
- **Antibiotics** - 57 %
- **Foot operations** - 87 %
- **Amputations** - 79 %
- **Missed workdays** - 70 %

# Efficacy of a patient education programme on number of amputations



# Asthma

## Effect of education on absence from work



67 workers: 1 year follow up

Muhlhauser & al. *J Int Med.* 1991. 230:157

# Schizophrenia

## Efficacy of TPE on relapses

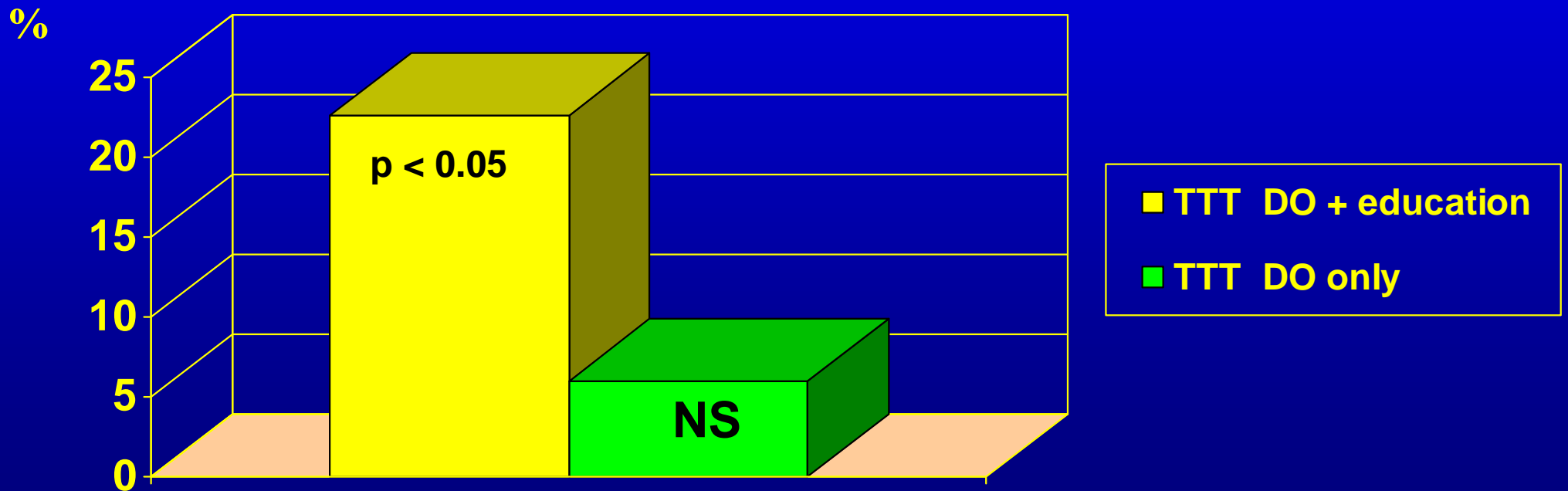
■ TPE treatment  
■ « Standard » treatment



# Tuberculosis

## Education improves compliance to treatment

1 year follow-up



# **Efficacy of TPE on HbA1C**

- **Meta-analyses of 31 randomized controlled studies n = 4263 Diabetics**
- **HbA1C decreased by 0.76 % and 1 % with 23.6 hours of total contact time with the educator**
- **The duration, the contact is predictor for HbA1C improvement**
- **8 out of 31 studies had no effect at all, but in 6 out of 8, the control group received also a TPE**

# **Efficacy of TPE on blood pressure**

- **Meta-analyses of 102 studies n = 6581**
- **Knowledge improved in 87 %**
- **Compliance measured in 30 studies and improved by 88 % in combined TPE + behaviour and psycho support**
- **Blood pressure is significantly improved in 88 % of the studies**

# **Efficacy of TPE on readmission rates in patient with heart failure**

- **Meta-analyses 8 randomized controlled studies**
- **Readmissions decreased in 7/8 studies**  
**RR = 0.79                  NNT = 9**
- **No effect on mortality**



# **Patient education programmes for older people with heart failure**

- **21 controlled randomised studies 1995 – 2005**
- **Patients > 60 ans, with severe heart failure**
- **12/21 effective studies on mortality, readmissions,**
- **TPE must be done during hospitalisation and with follow-up**

# **Effect of TPE and psycho-social support on quality of life in cancer patients**

- **Meta-analyses: 37 controlled studies n = 3120**
- **Significant effect of TPE on quality of life**
- **Significantly after 12 weeks and better than social support or psychotherapy**

# Response to behavior therapy for obesity programme >26 weeks and extended-contact sessions (10-22 weeks)

	<b>N</b>	<b>Initial w.loss (kg)</b>	<b>Net loss after extended contact (kg)</b>	<b>% ititial loss maintained</b>	<b>Successful long term loss (&gt;5%)</b>
<b>1.</b>	<b>77</b>	<b>17.4</b>	<b>15.6</b>	<b>90 %</b>	<b>Yes</b>
<b>2.</b>	<b>45</b>	<b>13.8</b>	<b>15.2</b>	<b>110 %</b>	<b>Yes</b>
<b>3.</b>	<b>38</b>	<b>11.0</b>	<b>12.4</b>	<b>113 %</b>	<b>Yes</b>
<b>4.</b>	<b>49</b>	<b>9.9</b>	<b>10.1</b>	<b>101 %</b>	<b>Yes</b>
<b>5.</b>	<b>77</b>	<b>9.6</b>	<b>6.5</b>	<b>71 %</b>	<b>No</b>
<b>6.</b>	<b>48</b>	<b>9.2</b>	<b>8.2</b>	<b>90 %</b>	<b>Yes</b>
<b>7.</b>	<b>148</b>	<b>8.4</b>	<b>7.1</b>	<b>88 %</b>	<b>Yes</b>

1) Wadden 1997, 2) Weinstock 1998, 3) Wadden 1998, 4) Perri 1997, 5) Wing 1998, 6) Leermakers 1999, 7) Jakicic 1999.

# Medical costs for obesity and role of patient education

- **Medical costs induced by obesity are considerable and mainly due to its complications.**  
**€ 2 billions in Switzerland, 98 % for complications**  
A.Schmid, A.Golay et al, *Soz-Präventivmed.* 50:87-94, 2005
- **Weight loss programmes are cost efficient:**  
**a 8.6 Kg weight loss in obese-Diabetic patients for 11 years induces a save of € 13600 per patient per year.**  
J. Ruolf, A. Golay et al, *Int. J. of Obesity*, 29, 517-529, 2005

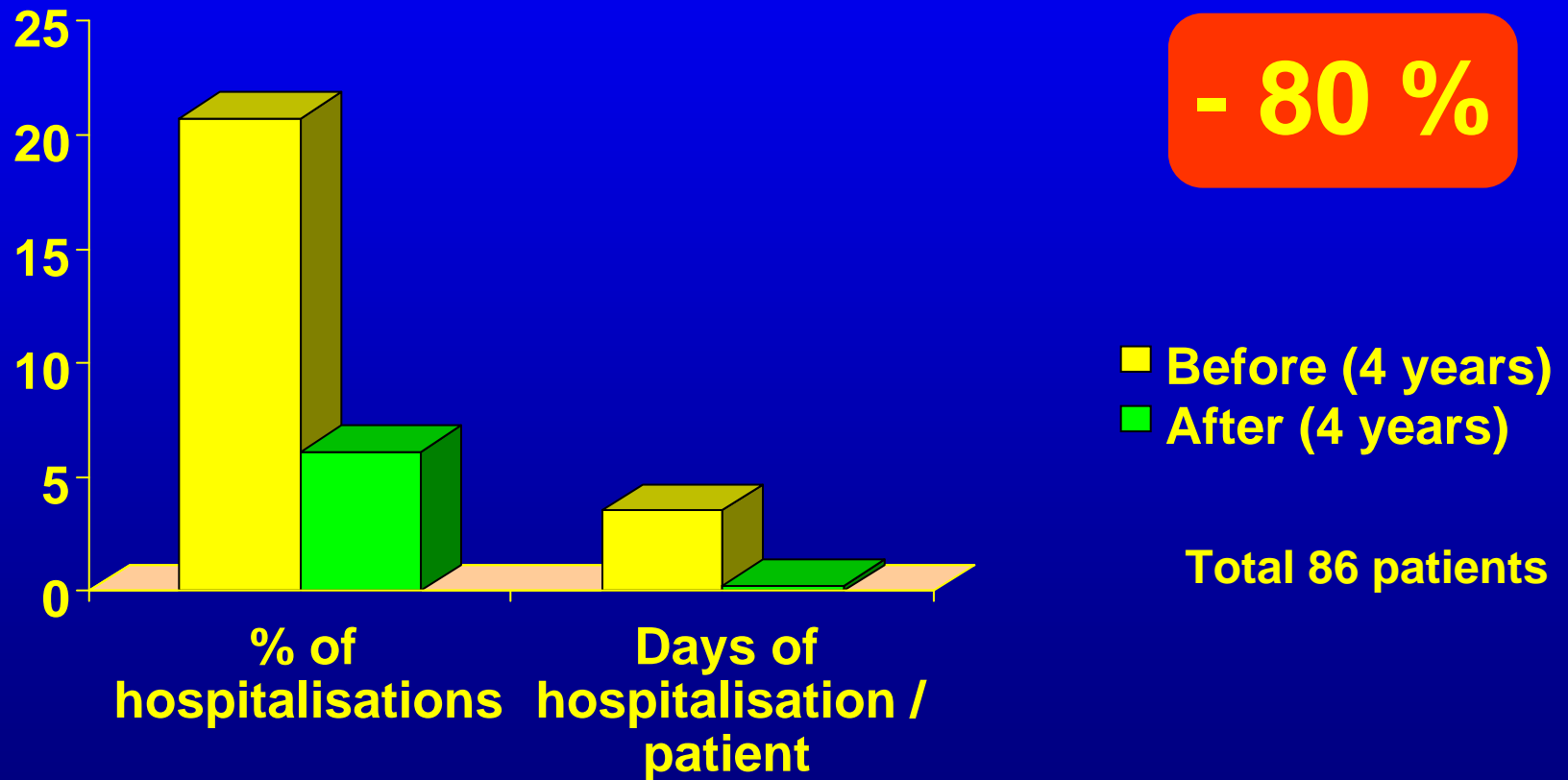
# Total save after a two-week obese patient education

	During 9 months before	During 9 months after	Difference
Medical costs induced by physicians	€ 64 101	€ 56 253	- € 7 848
Medical direct costs	€ 18 341	€ 16 686	- € 1 655
Paramedical direct costs	€ 10 005	€ 9 142	- € 863
Indirect costs: days out of work	12 649	5 377	- 7 272
<b>TOTAL Save</b>	<b>€ 115101</b>	<b>€ 87458</b>	<b>€ 17 638</b>

**The total save is: €480 per patient per year (17%)**

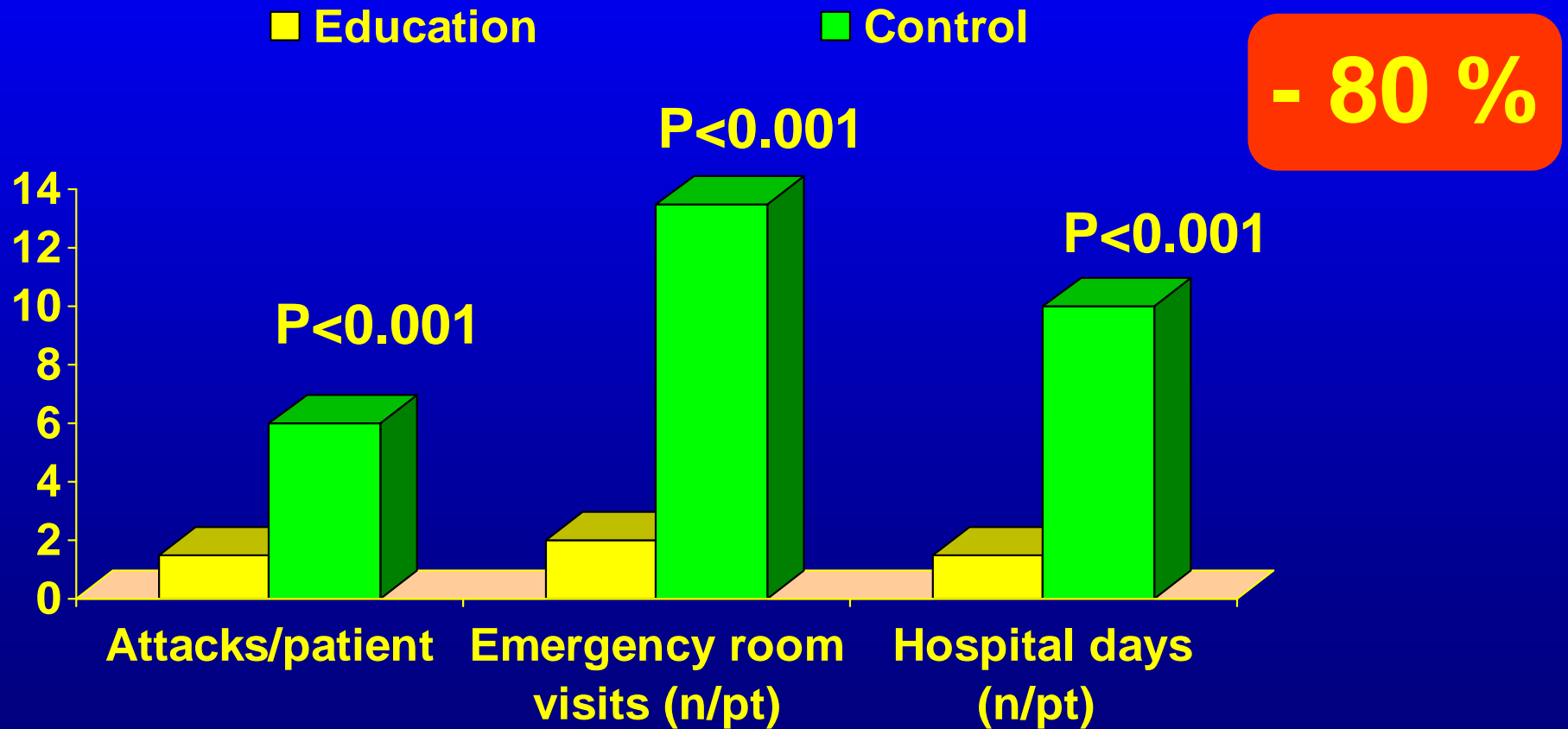
# Diabetes :

## 80 % decrease of hospitalisations



# Asthma :

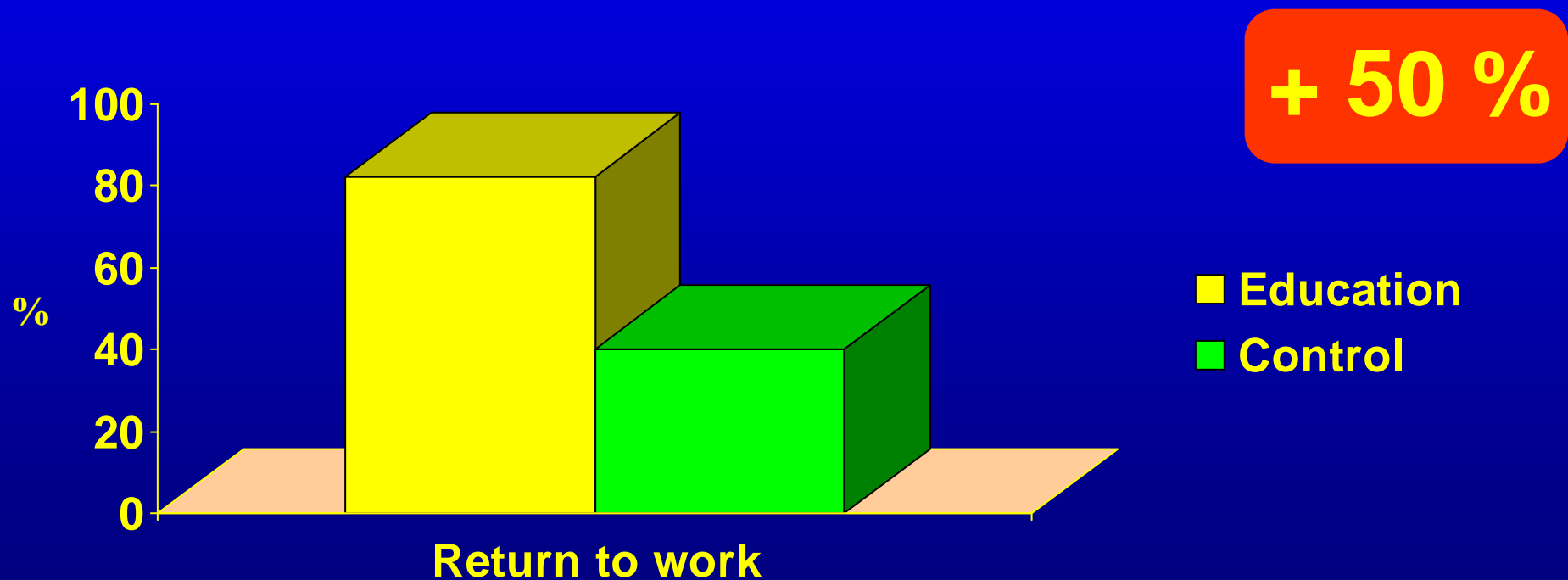
## 80 % decrease of hospitalisation



# Back pain : + 50 % return to work

N= 50 patients each group

Education - behaviour training - physical fitness (54 h. for 3 weeks)





# **The contribution of education has not been well addressed**

- Lack of theoretical basis of learning**
- Poor methodology, description of interventions**
- Evaluation often incomplete**
- HCP insufficient formation in teaching**

# **A global approach**

- patient education**
- renewed training for general practitioners**
- close follow-up with regular consultations**
- an organized system of nursing care**

# **Efficacy of Patient Education**

**Patient's knowledge increase**

**Better recognition of symptoms**

**Better use of medication**

**More patient satisfaction**

**Enhanced well-being of patients**

**Improved clinical outcomes**

<b>Diabetes:</b>	<b><i>Ellis et al 2004, Deakin et al 2005, Steed et al 2003</i></b>
<b>BPCO :</b>	<b><i>Devine et al 1996, Turnock et al 2005, Hermiz et al 2002</i></b>
<b>Asthma :</b>	<b><i>Guevara et al 2003, Devine et al 1996</i></b>
<b>Cardio :</b>	<b><i>Gwadry-Sridhar et al 2004, Yu et al 2006</i></b>
<b>Hypertension :</b>	<b><i>Devine et al 1995, Boulware 2001</i></b>

**Patient education**  
**Self-management interventions**  
**Teaching plans**  
**Psycho-educational programs, ...**  
  
**are cost-effective**

H Holman and K Lorig. *Public Health Report*. 2004;119:239-43.  
A Golay and ML Masciangelo. *Rev. Med. Sui*. 2005;1:807-13.  
Z Pataky & JP Assal. *J. of Med. and the Person*. 2007;5(2):72-7.

# Conclusions

- **Efficacy of TPE is well proven in controlled studies**
- **The quality and complexity of TPE is very important**
- **The methodology should be better described**
- **Authors' reported weaknesses in the research methodology**
- **Lack of description of the educational interventions**

# Conclusion

**The studies showing no effect of TPE are those with a control group having received some education**

**We need more studies with robust methodology and using a complex reproducible TPE model**

**1\$ invested  
in patient  
education**

**makes a profit of 4 \$  
per patient**

The background of the slide is a reproduction of the famous fresco 'The Creation of Adam' by Michelangelo. It depicts the hand of God on the right reaching towards the hand of Adam on the left, with a small gap between their fingers. The entire scene is set against a cracked, aged stone background.

**Thanks to all my collaborators**

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