

# **Cost of CF treatment**

**David Shoseyov  
Hadassah Hebrew University  
Medical Center  
Mount Scopus, Jerusalem**

- Several surveys were performed in the last 20 years about the cost of CF and a full session was dedicated for it in the last European meeting in Lisbon
- A very wide range from 16,000 – 62,000 US\$ (Krauth *et al* 1996)
- Differences are due:
  - Disease severity
  - Age
  - **The different between medical systems**

- An increase of cost per patient from 18,715 US\$ in 2001 to 29,718 US\$ in 2007 (**61%+**) (2011 Briesacher *et al*)
- The rise in cost was mainly due to:
  - Higher visits number
  - The rise in Pseudomonas positive cultures
- **10X** increase for the cost of treatment in patients >10 years old (3,060 → 31,722 US\$ /year).

A work from Israel 20 years ago addressed the benefit of prenatal genetic testing in the Ashkenazi population as 97% of their mutations could be diagnosed in 1993

Ginsberg G, Blau H, Kerem E, Springer C, Kerem BS, Akstein E, Greenberg A, Kolumbos A, Abeliovich D, Gazit E, et al. Cost-benefit analysis of a *national screening* program for cystic fibrosis in an Israeli population. *Health Econ.* 1994 Jan-Feb;3(1):5-23.

❖ **Objectives:** To assess the costs and burden of treatments of CF patients in one year (2012).

❖ **Working hypotheses:** Accurate analysis of the true costs for treating CF patients will allow a more effective diversion of available resources.

# Method

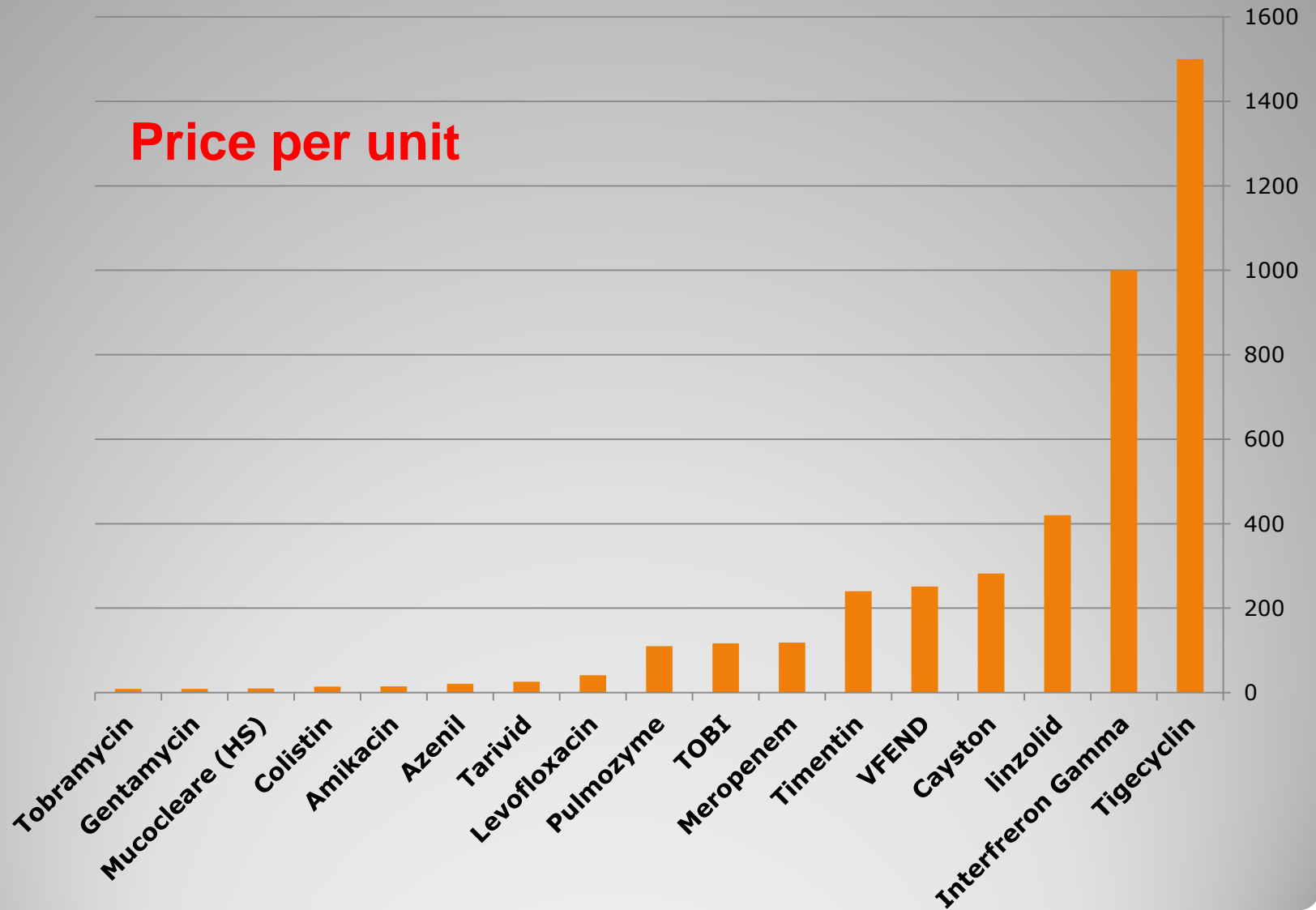
- Data on patients treated regularly at Hadassa CF Center in the year 2012 was collected from
  - Medical charts
  - Ministry of health
  - Hospital management officers
  - Hospital pharmacy
  - Home IV providers

# Prices

Angio	3600
Bronchoscopy	3500
Hospital	3006
MRI	1900
Day care	1269
Physiotherapy	100

Tigecyclin	1500
Interfreron Gamma	1000
linzolid	420
Cayston	282
VFEND	251
Timentin	240
Meropenem	118.7
TOBI	116
Pulmozyme	110.1
Levofloxacin	41.5
Tarivid	25.7
Azenil	21
Amikacin	15
Colistin	14.04
Mucocleare (HS)	10
Gentamycin	9
Tobramycin	8.77

## Price per unit





# Method

- Data entered into dedicated EDC:
- [https://docs.google.com/forms/d/1sSfXMkpM37FLpg9304sP6G6z46mujo32L\\_XpCx6XCFI/viewform](https://docs.google.com/forms/d/1sSfXMkpM37FLpg9304sP6G6z46mujo32L_XpCx6XCFI/viewform)
- Updated results page:  
<https://docs.google.com/spreadsheets/ccc?key=0AqeIAhWj7dipdHRuQWt4TXhSeGNTOS1BeHpzZWxCYUE&usp=sharing>



## CF Cost Data

Thank you for helping fill this form. Please read carefully before starting the following notes:

1. This form contains 9 pages with many fields, and you will not be able to save the form for later use, so make sure you have enough time to submit a single form.
2. Once submitted, you will get a link to this form so you will be able to edit it.
3. For faster use of this form, use the [Tab] button to navigate from field to field.

Thanks, and good luck!

\* שחט

**ID \***

**Age \***

**Gender \***

**Ethnic Group**



PI/PS

Marital Status

Education

years of education

Height

cm

Weight

kg

BMI

Osteoporosis

« המשך

Internet Explorer browser interface showing the address bar with the URL: [https://docs.google.com/forms/d/1sSfXMkpM37FLpg9304sP6G6z46mujo32L\\_XpCx6XCFI/formRespon](https://docs.google.com/forms/d/1sSfXMkpM37FLpg9304sP6G6z46mujo32L_XpCx6XCFI/formRespon). The search bar contains "Search Google". The toolbar includes buttons for back, forward, home, and search, as well as a "Google" search engine selector. The address bar also shows "606 blocked" and "Options". The page title is "CF Cost Data".

## CF Cost Data

### IV Medicine

THIS IS THE LAST PAGE - YOU ARE ALMOST DONE!

For each section below, please write down how many times given per day, and how many days a year. You may leave blanks where no medicine was applied.

### Ceftazidime/Fortum

**Ceftazidime/Fortum - Dose**

(mg)

**Ceftazidime/Fortum - Times a day**

**Ceftazidime/Fortum - Days a year**

**Gentamycin**

# Results

## Patients

- 129 patients with CF
- Average age  $16.7 \pm 11.6$  (67 years- 1 month old)
- 57 female 72 male
- PS – 35 PI-94
- PA 66 patient of whom 62 with PA mucoid type

# Results

## Day care visits

PI - Average  $11.2 \pm 12$  days (Max 79)

PS : Average  $8.8 \pm 10.6$  (Max 56)

## Hospital stay

– PI - Average  $10.1 \pm 24.4$  (Max 146)

– PS : Average  $2.5 \pm 5.1$  days (Max 17 days)

# Costs of treatment per patient

## PS medication cost NIS

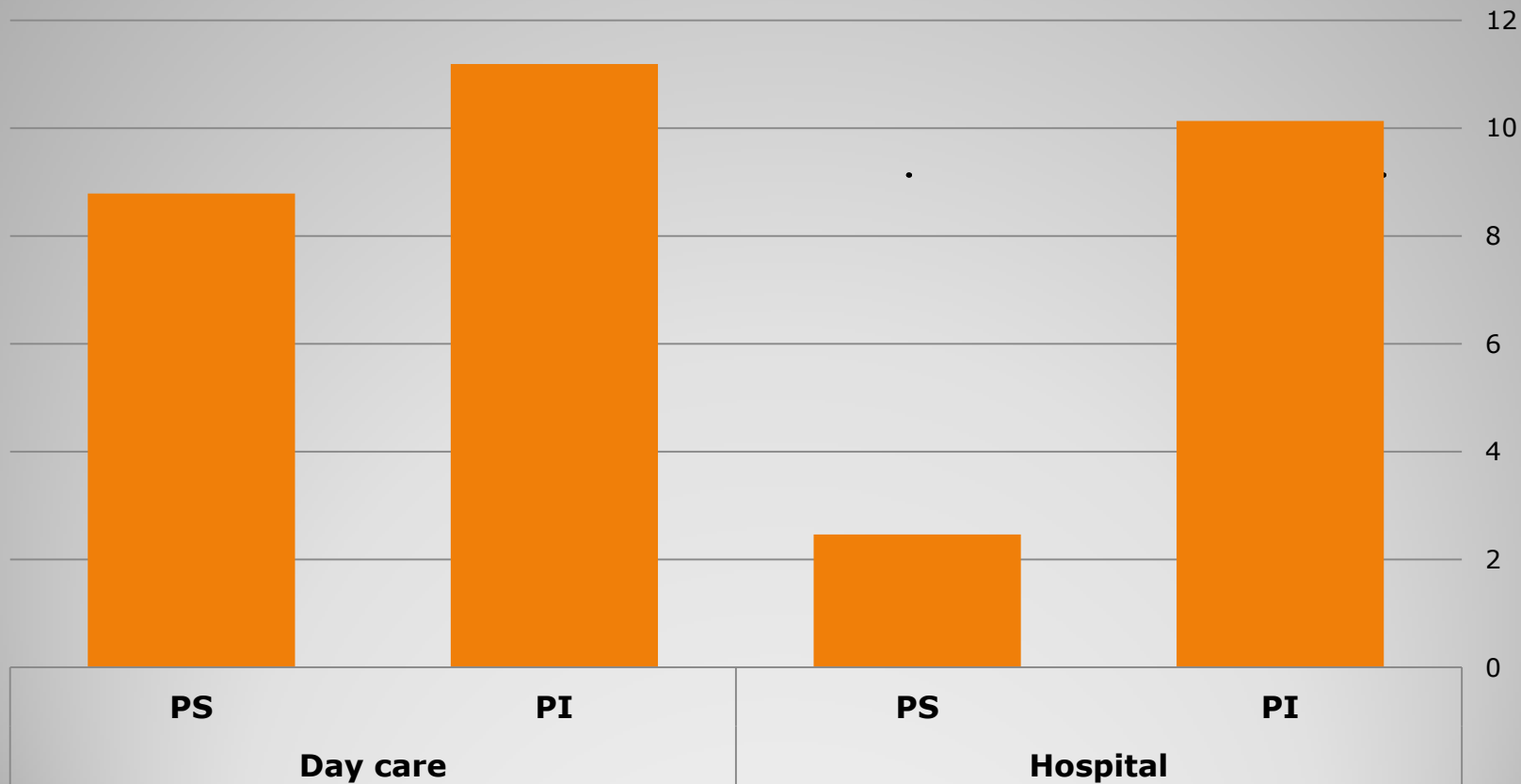
IV	Inhal	Ab PO	
32.26	1225.7	2584	Average
791.89	7477.9	9838	SD

## PI medication cost NIS

IV	Inhal	Ab. PO	
234.1	3,608.6	15,993.8	Average
2472.2	12836.6	71198.6	SD

# Results

## Clinics and Hospital days/year



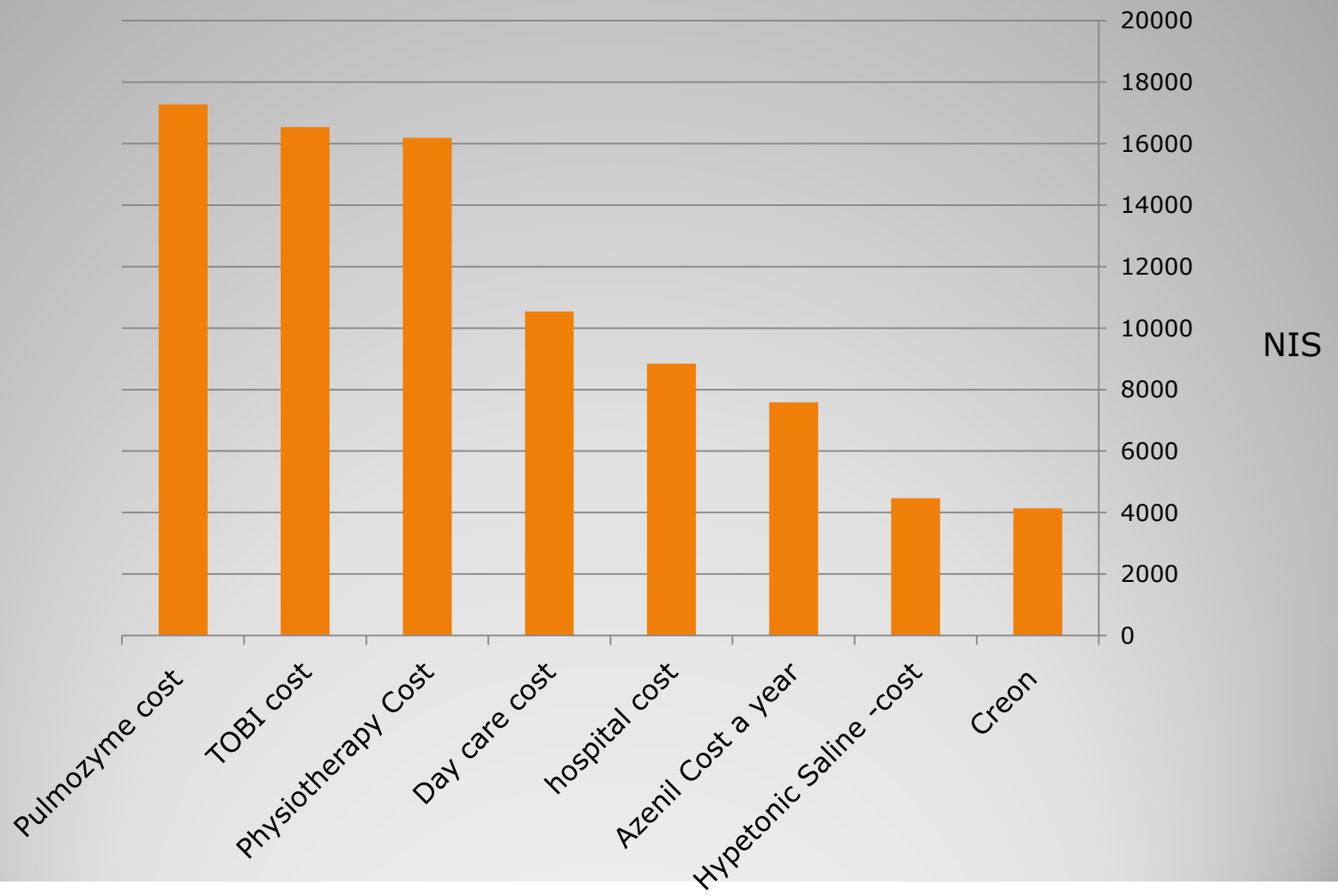


# Severity groups

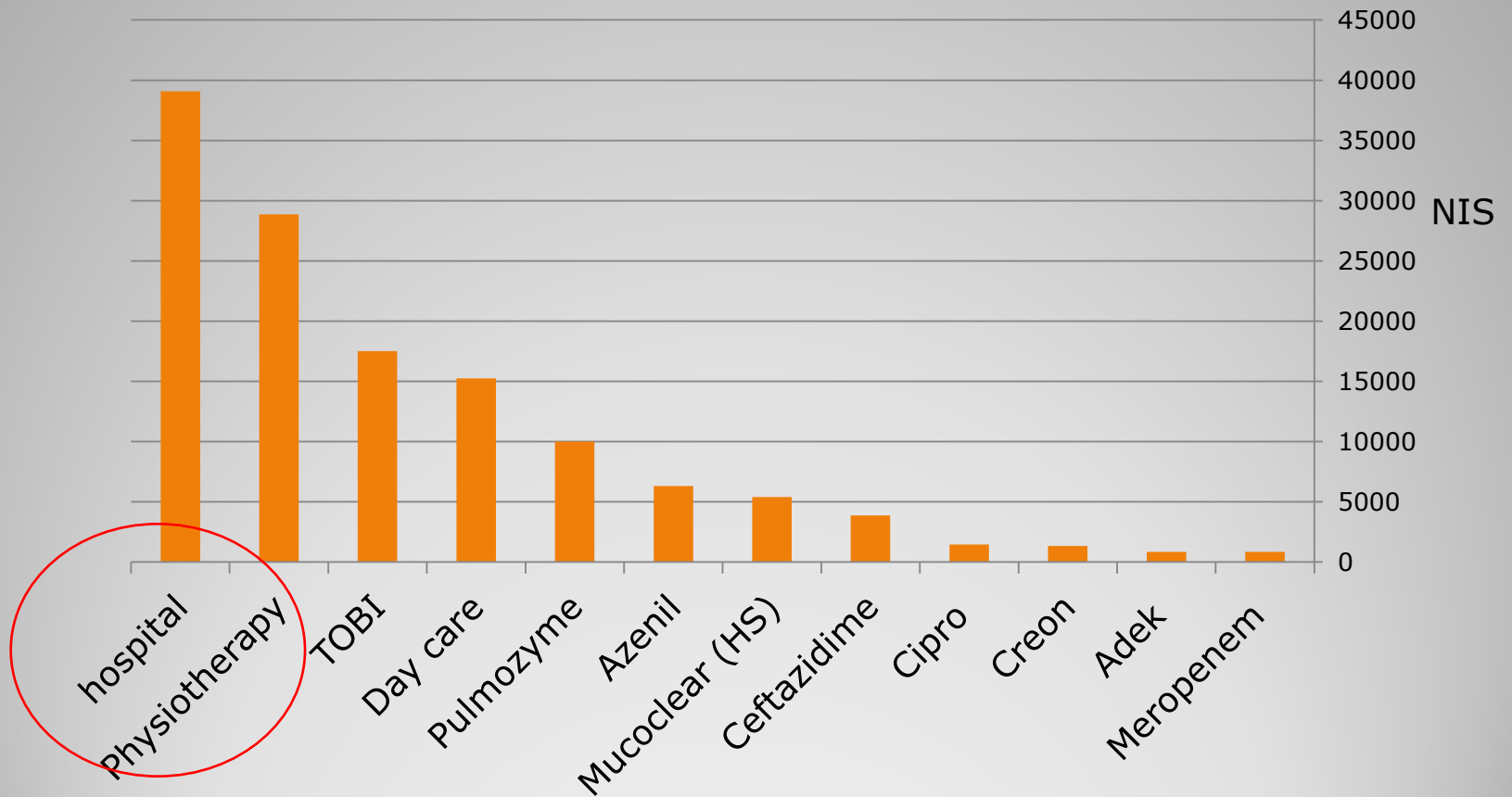
(n = 110 patients that can perform PFT)

- Patients with  $FEV_1 < 50\%$  - 7 patients
- Patients with  $FEV_1 = 50-70\%$  - 15 patients
- Patients with  $FEV_1 > 70\%$  - 88 patients

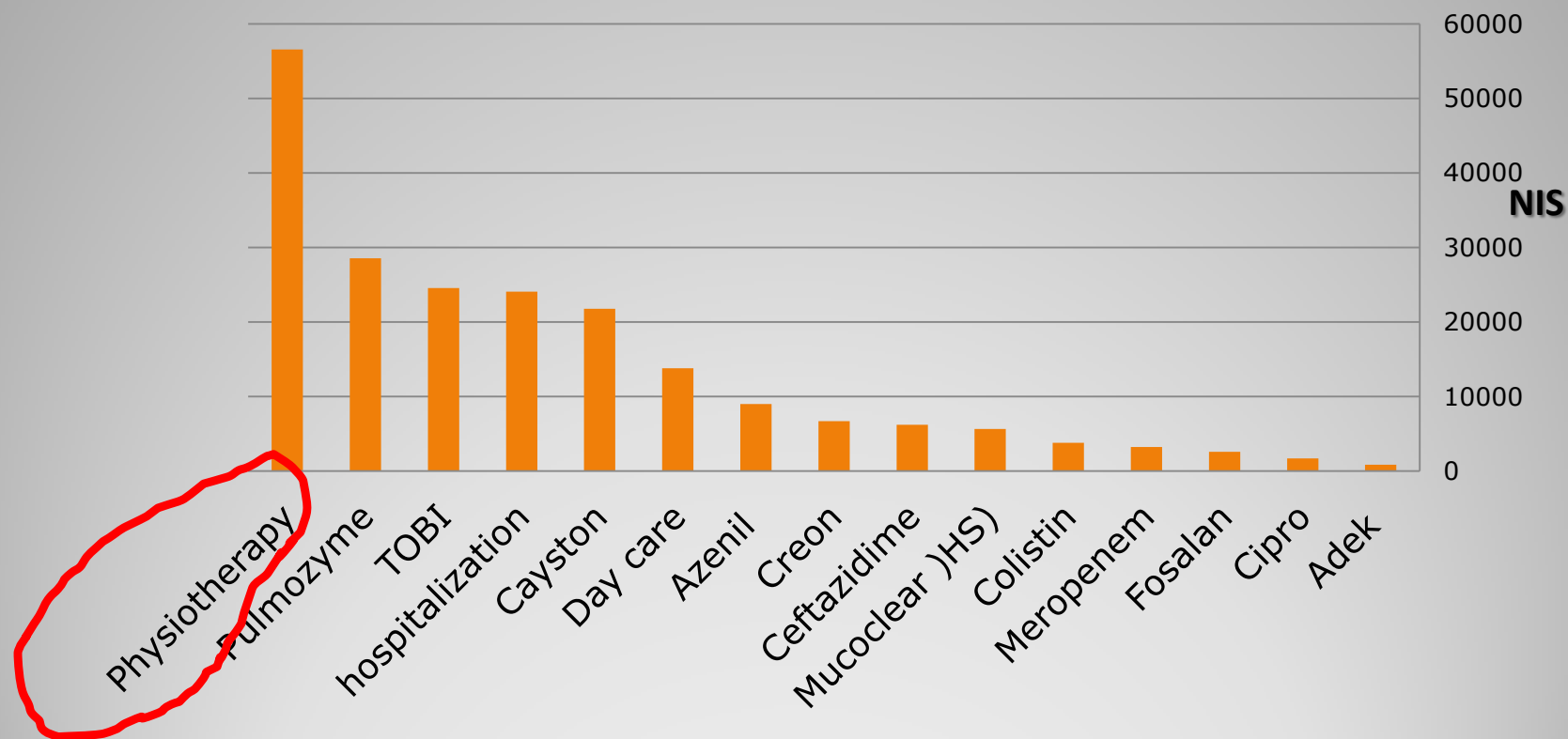
## Cost of tratment FEV > 70



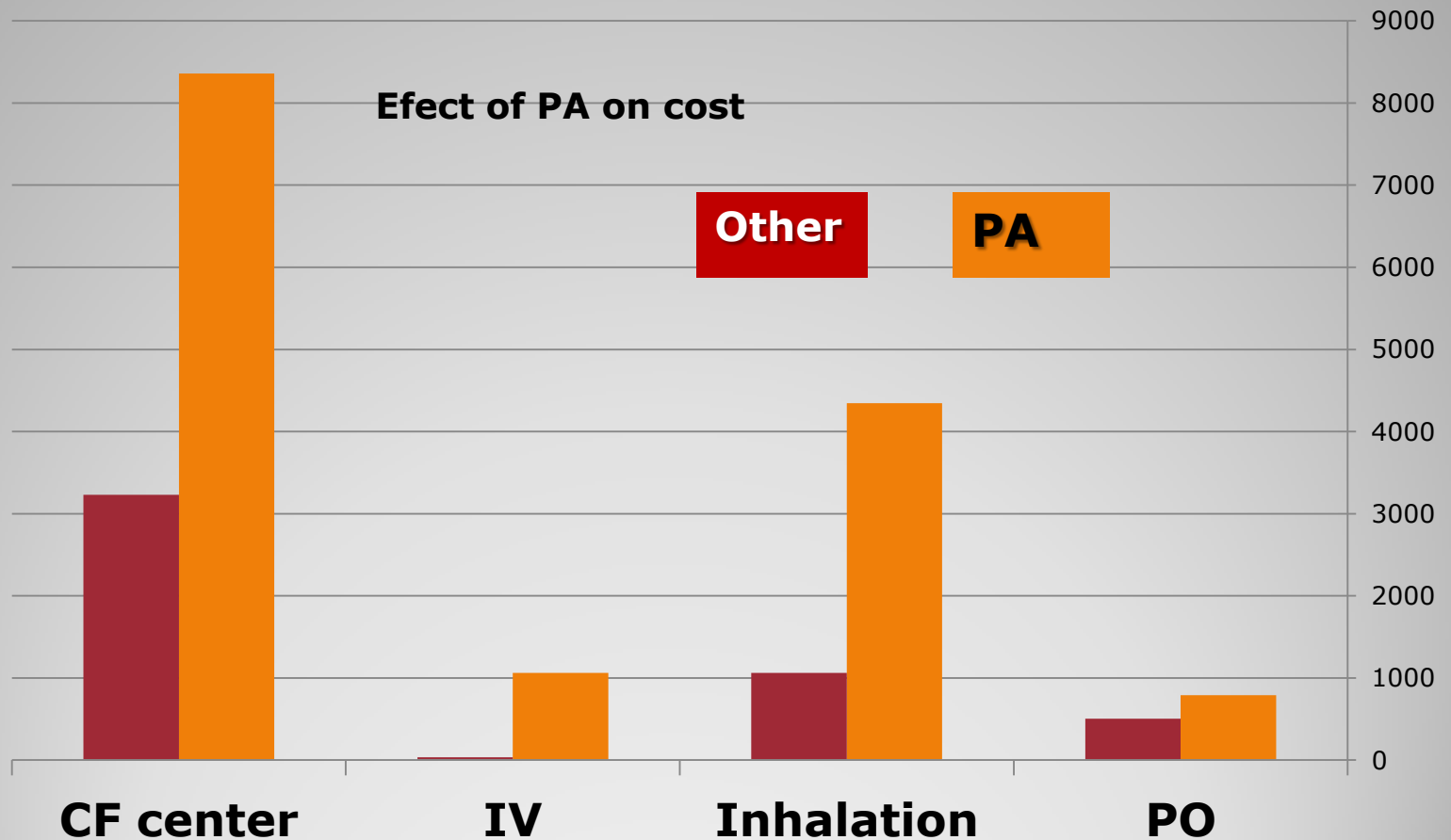
## Cost of treatments FEV1 50-70



## Average cost per treatment (FEV<sub>1</sub><50%)



# Effect of Pseudomonas infection



# Effect of Pseudomonas infection

## Pseudomonas infection 63 patients

	Total Cost	CF center	IV	Inhalation	PO
Average	168010	8358	1061	4346	791
SD	145344	31002	10535	13775.54	2998.202

## Others infection – 65 patients

	Total Cost	CF center	IV	Inhalation	PO
Average	69104	3230	35	1951	505
SD	52122	9737	491	7997	2133

# Conclusion

- PI patient treatment is more expensive
- Severity of disease (expressed as FEV<sub>1</sub>) increase the cost **X3**
- PA increase the cost of treatment **X3**
- **Physiotherapy** is a major contributor to the cost of treatment in Pts with FEV<sub>1</sub> < 50%
- This is a ONE center study
- A national survey is required

# Future

- Prices are expected to rise significantly as new efficient but expensive technologies are on our door



# Thanks for the work Without them this work could not be done

- ❖ Batia Nachmani
  - ❖ Thea Pugatsh
  - ❖ Shoshi Armoni
  - ❖ Malena Cohen
  - ❖ Eitan Kerem
- 
- ❖ And to my son Tal who prepared the program