



# TELEDERMATOLOGY IN THE ISRAEL DEFENCE FORCES

TELEDERMATOLOGY: QUALITY ASSESSMENT BY  
USER SATISFACTION AND CLINICAL EFFICIENCY

**MED-E-TEL 2005**

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# **Study objective**



**Evaluation of the implementation process, patient's satisfaction, short term clinical outcome and primary physicians' attitude towards the CSAFTD\* service in the IDF.**

**\*Computerized Store And Forward  
Teledermatology**

# Int'l Background



- Teledermatology was found to be reliable, accurate and mostly cost-effective in different architectures.
- Most skin disorders were adequately diagnosed and managed, with the highest concordance to FTF in cases of eczemas and follicular eruptions.
  - Du Moulin MF, Bullens-Goessens YI, Henquet CJ, et al. The reliability of diagnosis using store-and-forward teledermatology. *J Telemed Telecare* 2003;9:249-52.



# Medico-legal status



- **American Academy of Dermatology**
  - Recognizes the body of literature on the effectiveness of teledermatology.
  - Sees CSAFTD as a viable solution for underserved areas.
  - Recommends the use of primarily Store and Forward models with VC option (hybrid model).
- **American Medical Association**
  - Recommends reimbursement equal to FTF consultation
- **US Congress**
  - Bill (S.2750) introduced supporting Medicare reimbursement of Store and Forward (S&F) telemedicine to improve access to healthcare

# IN THE WORLD



## ■ Provision of telemedicine by Moscow to Azerbaijan

- Samedov RN. An internet station for telemedicine in Azerbaijan Republic. *J Telemed Telecare* 1998;4:42-3.

## ■ The British Armed Forces providing telemedicine service in Bosnia.

- Ritchie C. British army establishes telemedicine unit in Bosnia. *Lancet* 1998;352:46 (letter).

## ■ Teledermatology in vast areas of New Zealand.

- Oakley AM, Rennie MH. Retrospective review of teledermatology in the Waikato, 1997-2002. *Austral J Dermatol* 2004;45:23-8.



# IN THE WORLD



## ■ The U.S. Military experience with telemedicine

Vidnar DA. The history of teledermatology in the Department of Defense. *Dermatol Clin* 1999;17:113-24.

## ■ Teledermatology in vast areas of New Zealand.

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# Primary care and dermatology in the Israel Defense Forces





# THE PRIMARY CARE CLINICS



- **Health services in the Israel Defense Forces (IDF) are mostly based upon primary care physicians stationed in the various units and large specialist's centers that service a large geographical area.**



# IDF primary care clinics



- The Israel Defense forces employ app. 400 primary care physicians (PCP) deployed nationwide.
- In 2002 there were a total of 1,400,000 visits at primary clinics.
- The average soldier was referred to a PCP 7-8 times a year.

# PCP's limitations



- **The vast majority of PCPs are general practitioners with no dermatology expertise.**
- **Limited authorization capabilities.**



# IDF

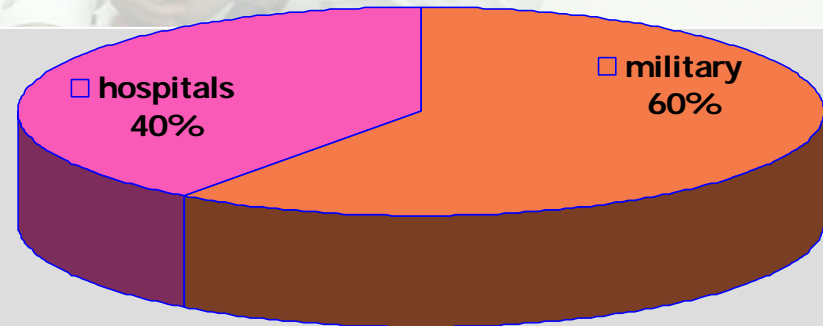
## secondary/specialist clinics



Medical services include: specialists, laboratories, imaging departments and physiotherapy clinics in the army as well as civilian clinics and hospitals.



### Referrals to specialist clinics in 2002:



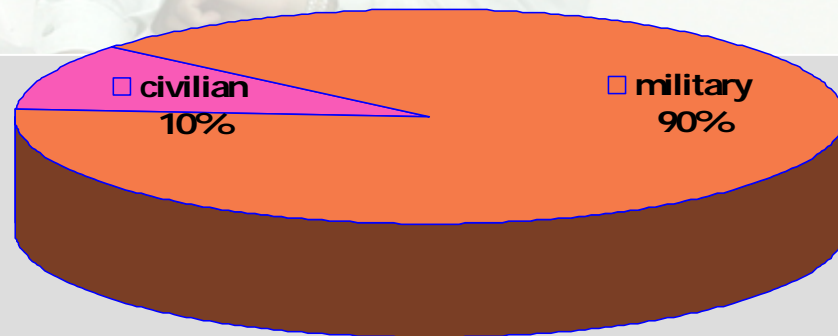
The total number of referrals to specialist clinics were **509,703**.

# IDF

## Dermatology clinics



- The second most common referrals to specialized medicine in the IDF .
- The service includes a full examination, local treatment, in-depth examination after diagnosis and the required medicines.



Visits to the dermatologists in 2003:  
**52,000.**



# THE SPECIALIST CLINICS



## **AVAILABILITY & ACCESSIBILITY ARE LOW!**

- In the Israel Defense Forces, the demand for dermatologists' services constantly exceeds supply.
  - Specialist clinic – northern command: 22 days.
  - Specialist clinic – central command: 40 days
  - Specialist clinic – southern command: 35 days
- Many units, especially those in remote rural areas engaged in intensive security activity, suffer from under service and patients are often required to travel long distances to specialist clinics.



**Traveling to the  
DERMATOLOGIST...**



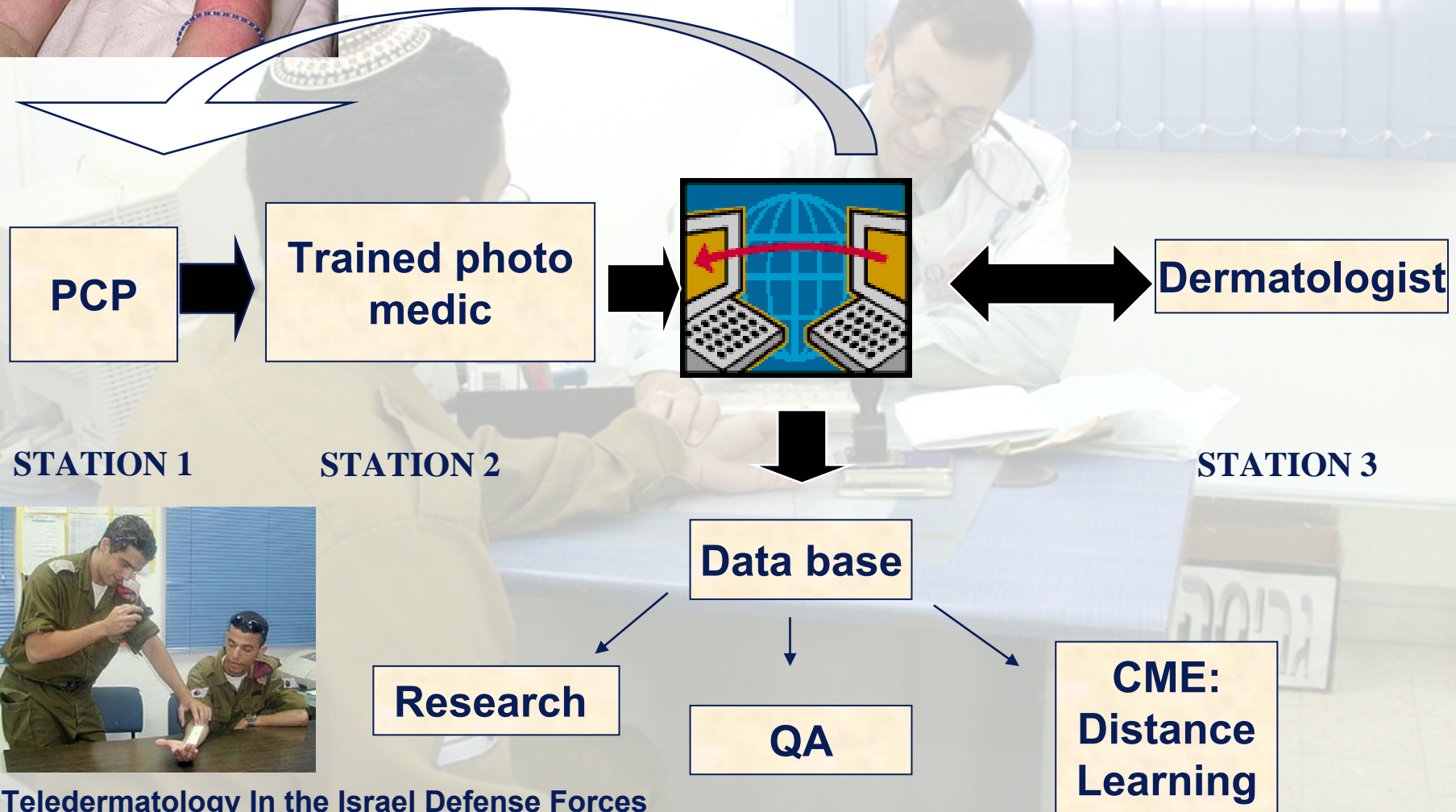


# **Tele dermatology in the IDF - bridging the gap?**





# Computerized store & forward teledermatology



Teledermatology In the Israel Defense Forces



## Station 1: primary care physician



- Patients with a dermatological condition that required a specialist, *excluding those with pigmented skin lesions*, are offered by their PCPs the CSAFTD service or a regular Face-to-Face referral.
- Patients give consent to participate.
- Each patient is examined by a PCP, who records the findings of the medical examination and the patient history on a prepared questionnaire.



The PCP office

# A prepared questionnaire



- **Directs the PCP.**
- **Based on scientific literature.**
- **Reduces significantly the need for recurrent exchange of messages between the PCP & Dermatologist.**

Description of the main problem

Description of any secondary lesions

Other symptoms

Distribution of lesions

Mucosal involvement

Nail and hair involvement

Duration of symptom

Episodic or continuous

Other aggravating factors

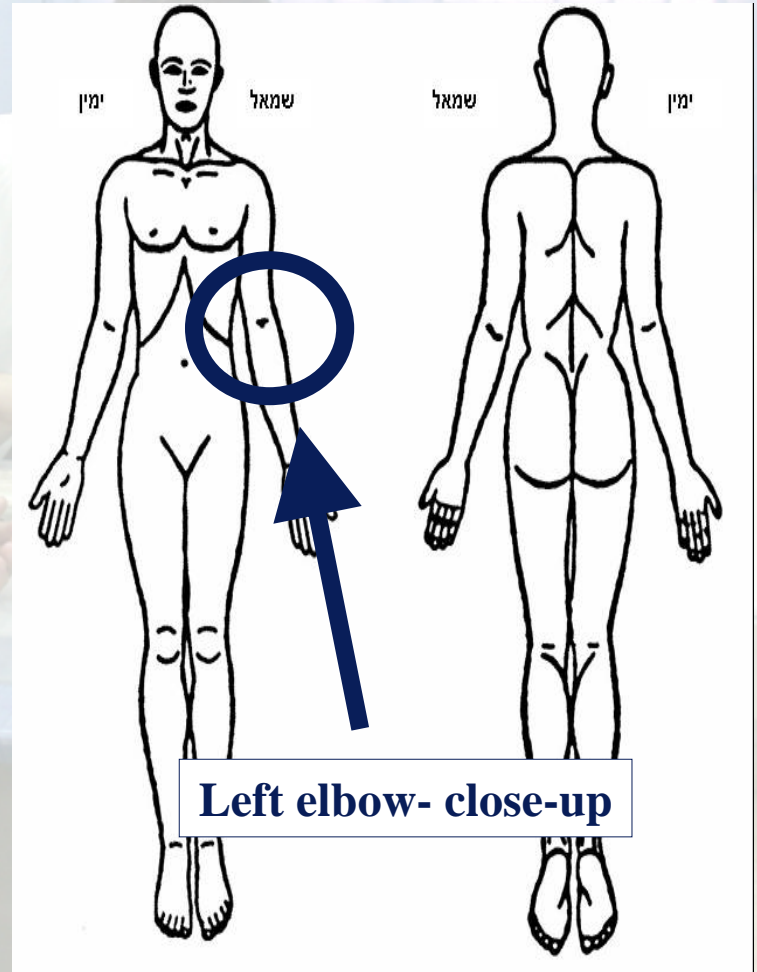
Dermatological history



# An instruction form for the photographer



**Specific guide to locate the skin problem and the kind of photography required by the primary doctor for consultation with the dermatologist.**



## Station 2: Photography in the PCP clinic



Medical staff member in the primary clinic is trained at digital photography by professional military photographers and dermatologists, and instructed to follow a standardized scheme .

The photo is sent by email to a the virtual specialist clinic along with the questionnaire

The process is documented in the central medical record of the patient.





# Station 3: A virtual dermatologic clinic



**מפגש רופא**

תאריך: 26/06/2003 מס' אישי: שם משפחה: שם פרטי: יחידת משנה: יחידה: מקרפ"ר 57 חפא: קלז איתי

שעה: 11:27 תעודת זהות:

תדפיסים	תוצאות ביקור	הפניות	טיפול	אבחנות	אנמנזה וממצאים	הסטוריה רפואית	המשך תיק רפואי	תמצית
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**מרפאות**

מחלקה: מומחה: עור ומין

מתקן: מוקד טל-רפואה

103.ט

8282 מרפ"א  
543 מר"ס  
מרכז רפואי גולן  
מר"ס ערבה  
מומחה בבסיס

סוג הפניה

אחר

מוקד טל-רפואה  
בי"ח אסף הרופא  
בי"ח בני ציון

**בדיקות**

מעבדה

בדיקה

מתקן

דימות

בדיקה

מתקן

**אישור**

סיסמה:

קלז איתי  
מקרפ"ר/רפואה/פרויקטים

מבגש' רפא  
האס' מבגש רפא  
מבגש רפא לא חיל  
הסלרית רפאית  
לאיתות  
תא לאר  
ציאה



## Station 3: Diagnosing Dermatologist



- The photo & the questionnaire is sent to a board-certified military dermatologist, who replies by email with a diagnosis, suggested therapy and plan for management.
- The dermatologist answer is incorporated into the computerized patient record (CPR).
- The PCP receives a notification of a completed consultation in the patient record.



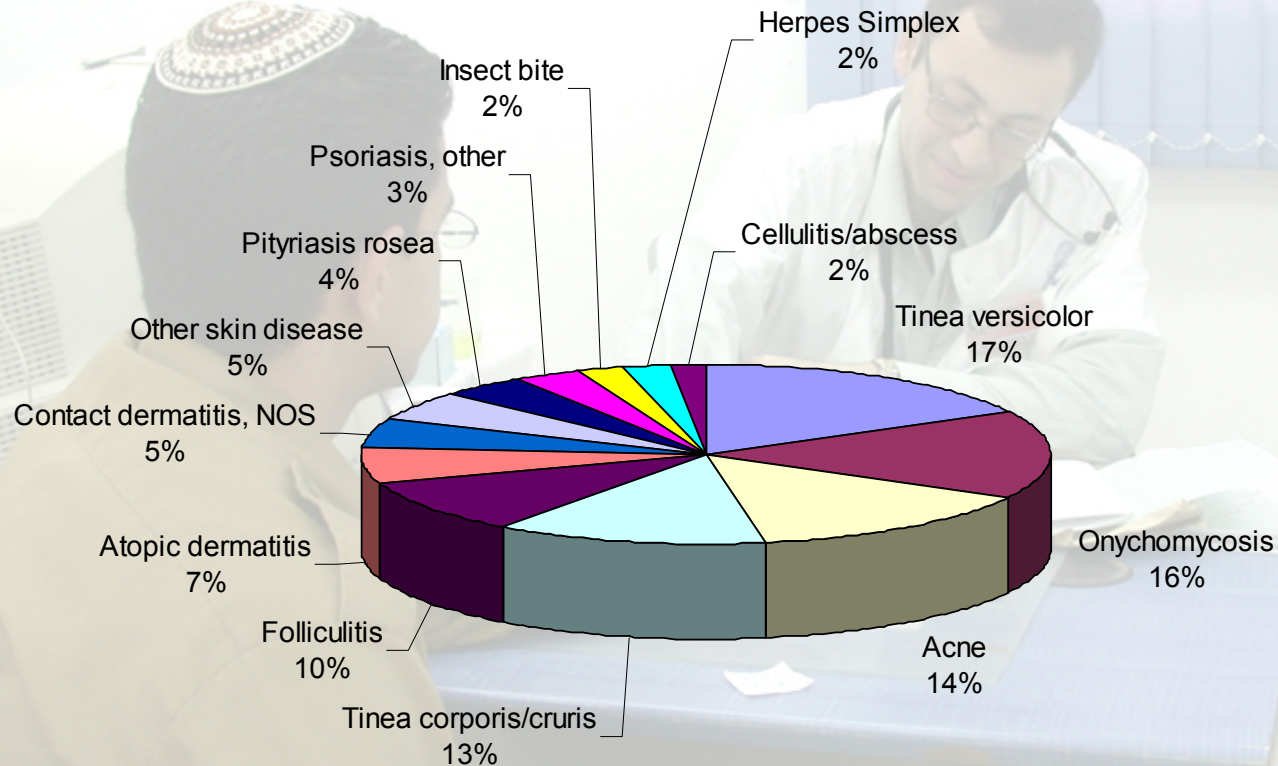




# Outcome measures



# Diagnosis distribution



**Common dermatoses distribution for age group**



# Referral rate to teledermatology



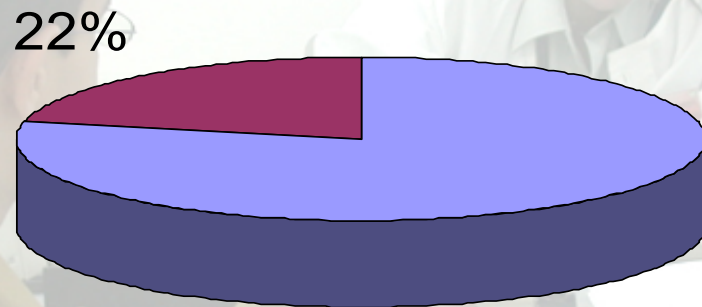
Unit type	Average derm ref. per month	FTF referrals	Tele referrals	Tele referrals percentage
Training school	25.1	20.8	4.3	17.2%
Urban unit	32.2	27.8	4.4	13.2%
Rural unit	10.7	4.1	6.6	61.9%

**Inter-unit variability in CSAFTD usage rate  
63% vs 7.1%**

# Consultation outcome



After 6 initial months of teledermatology service,  
435 patients were examined by teledermatology process



**Mean Consultation  
TIME: 72 H**

- Tele-consultation only
- Further referral to FTF appointment

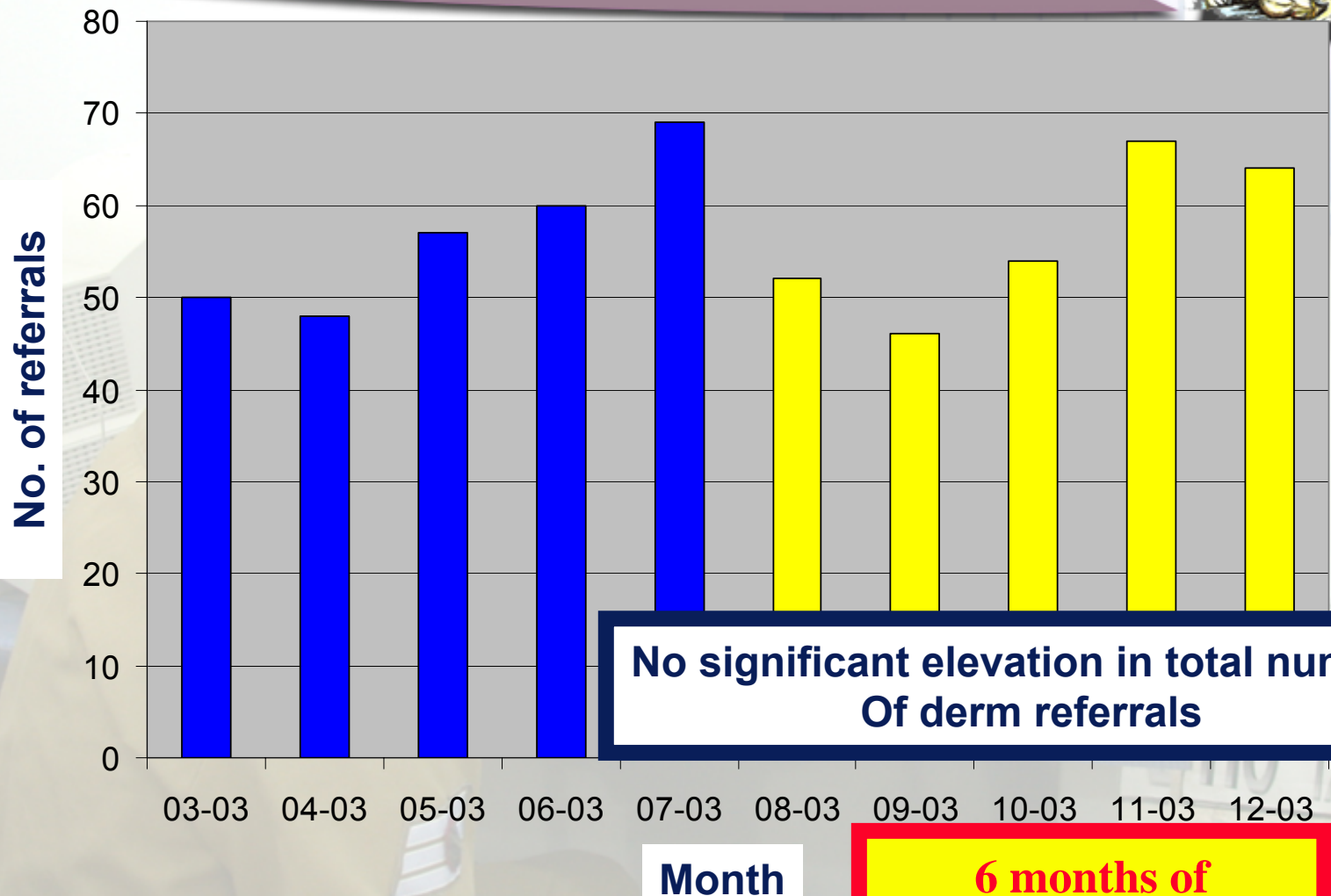




# **Micro analysis: Haifa naval base**

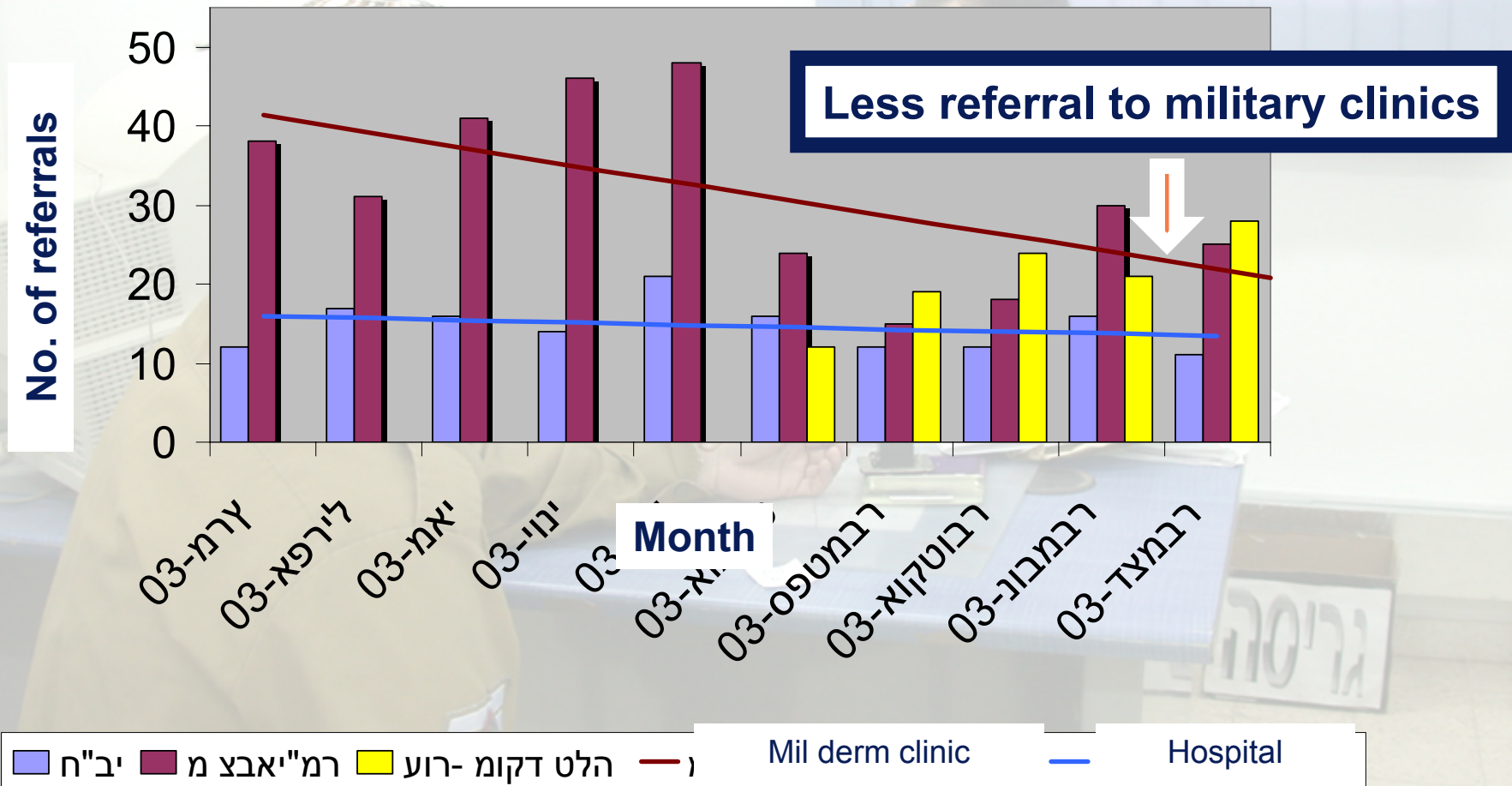


# Total referral to dermatologist





# Referral destination



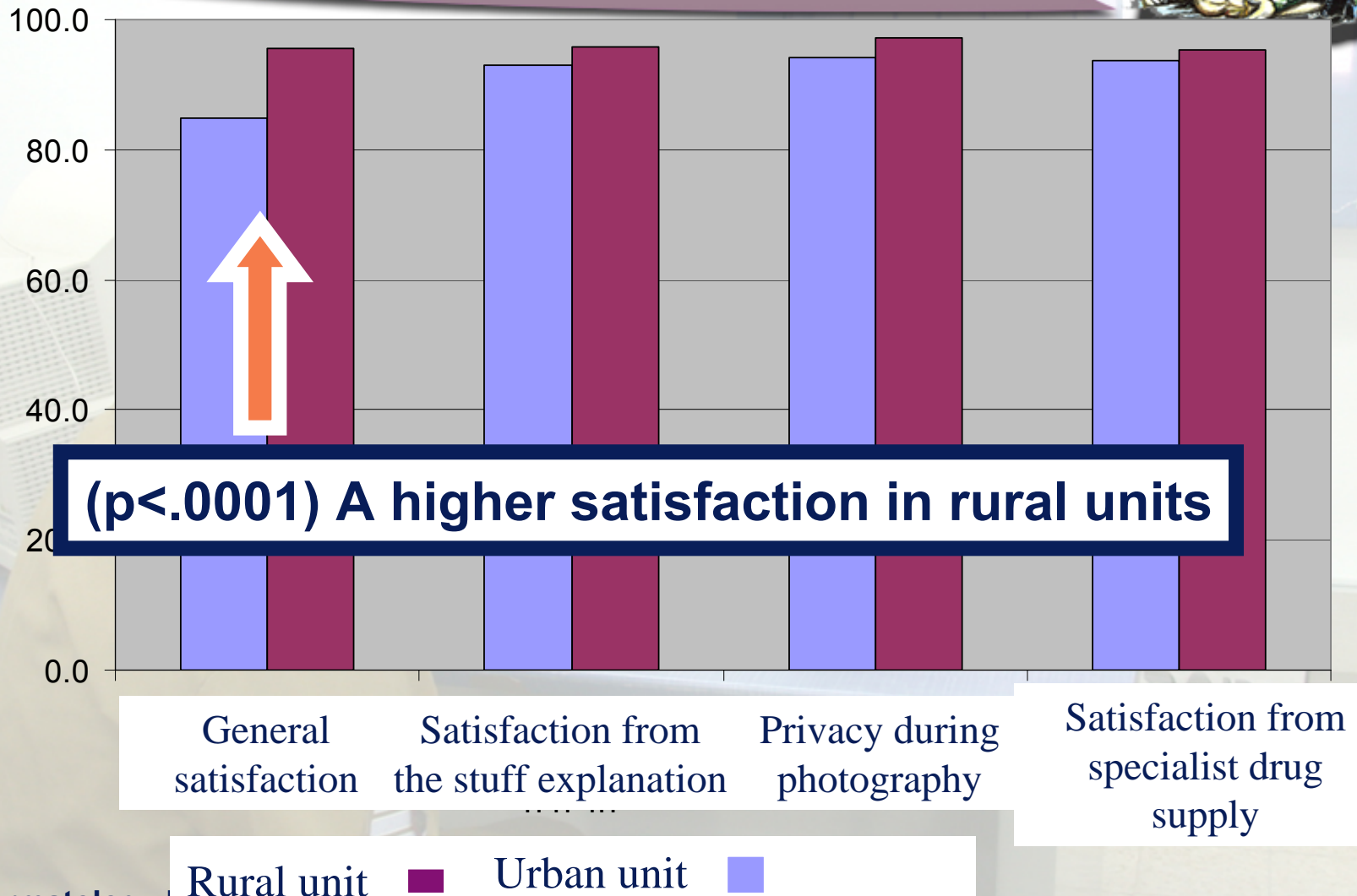


# User feedback





# Patient satisfaction by unit type



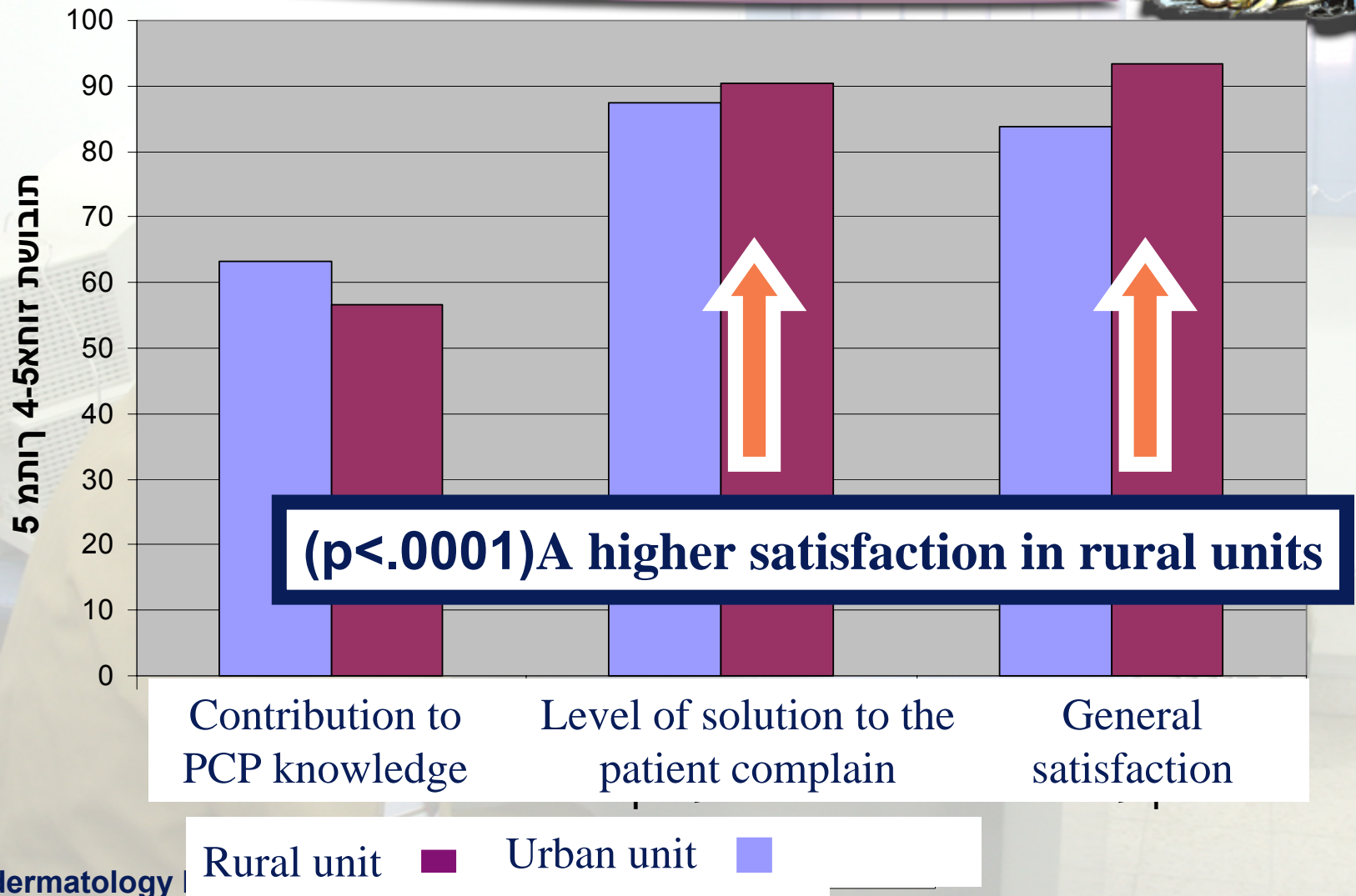
# Patient satisfaction



- ❖ Satisfaction was high in both rural and urban clinics.
- ❖ The rural patients scored higher on parameters of:
  - Level of service
  - Accessibility
  - Overall satisfaction.
- ❖ The rural physicians also scored these parameters higher than the urban physicians



# PCP satisfaction by unit type



# PCP satisfaction



- ❖ PCPs were overall highly satisfied with the CSAFTD service.
- ❖ A significant difference between rural and urban physicians was found on the question of overall satisfaction which was graded higher by rural PCPs.
- ❖ Most PCPs claimed CSAFTD service Contributed to their dermatology knowledge.





# Teledermatology - Summery

# Benefits



- **For the patient: “Home Delivery”**
  - Case management stays within the unit.
  - No need to travel long distances and lose work time .
  - No need to wait to the appointment.
- **For the PCP: Empowerment**
  - Ability to offer a wider range of services to his patients.
  - Improvement in quality of service.
  - Gain dermatology knowledge.
  - Fast response from the specialist.
- **For the organization: Improve efficiency.**
  - Optimization of specialist resources.
  - Higher selectivity in specialist referral.
  - Less outsourcing to civilian centers.
  - Improved quality control.
  - National leader in the teledermatology field.



# Possible benefits



- ❖ Reduction of lost of work days due to 50,000 FTF referral to dermatologist.
- ❖ Educate the PCP – possible reduction in unnecessary referrals.
- ❖ Reduction in administrative referrals.

# Key success factors



- ❖ **Leadership: The clinic commander.**
- ❖ **Incentive: Both unit commanders and professional commanders.**
- ❖ **Distinct CSAFTD sessions.**
- ❖ **Training of a specialized photo-medic.**
- ❖ **Responsibility and accountability of the PCP and the teledermatology specialist.**



let's talk about money



# Basic assumptions



- ❖ 75% of referrals suitable for CSAFTD.
- ❖ 65% maximal referral rate observed in preliminary pilot.
- ❖ 10% of referrals require a hospital clinic.
- ❖ 78% of tele – referrals do not require additional FTF appointment.
- ❖ A dermatologist can examine twice the number of referral per hour in CSATD.
- ❖ CSAFTD service increases total derm referrals by 5%

# cost of implantation in a single unit



- ❖ **Elements:**
  - ❖ 4-5 mega-pixels digital camera.
  - ❖ Training of a photo-medic.
  - ❖ Quality assurance.
- ❖ **Total cost:**
  - ❖ Annual camera cost 120\$ (5 yr amortization)
  - ❖ Training in local IDF facilities 20\$

## Cost of a single referral

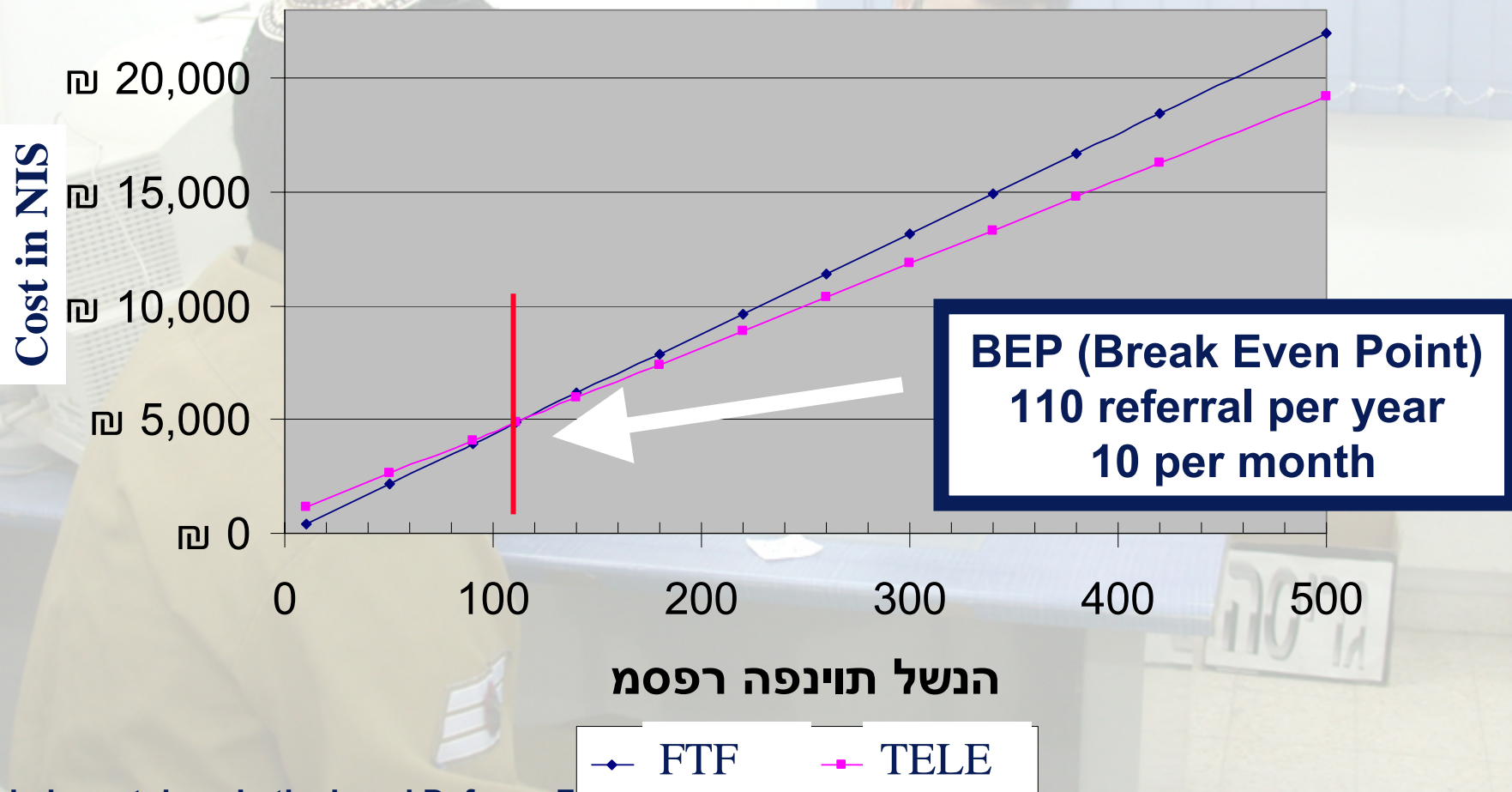


- ❖ **Cmil** – Cost of appointment at a military dermatology clinic.
- ❖ **Ccivil** - Cost of appointment at a hospital dermatology clinic.
- ❖ **Ctele** - Cost of tele referral.
- ❖ **Ftele** – tele consultation time factor (0.5).
- ❖ **Iinderm** - % of tele referrals of all derm referrals. (78%)

$$\text{Ctele} = \text{Cmil} \times \text{Ftele} + \text{Cmil} \times (1 - \text{Iinderm})$$



# Cost of CSATD service in a single primary clinic



# Return Of Investment (ROI)

