

*Event Organized by the Medical School of the University of Cyprus in collaboration with the Nursing Services for the medical students and registered nurses undergoing specialist training in diabetes in occasion of the*

**2<sup>nd</sup> BRIDGE HEALTH Meeting of the EUBIROD Network**

**“BEST INFORMATION FOR PERSON-CENTRED HEALTH CARE”**

**Nicosia, CYPRUS, University of Cyprus Shakolion Educational Centre for Clinical Medicine**

**Wednesday 20<sup>th</sup>-Saturday 23<sup>rd</sup> September 2017**

# **CONSIDERATIONS ON THE MULTIDISCIPLINARY TEAM IN THE CARE OF DIABETES**

**Prof. Massimo Massi Benedetti**

**International Hub for Health Research - HIRS**



# DIABETES CARE IN THE FIRST HALF OF THE LAST CENTURY



# DIABETES CARE SCENARIO

## UP TO THE BEGINNING OF THE 2° HALF OF THE LAST CENTURY

- **Few people**
- **Few drugs (only insulin available)**
- **No technologies**
- **No IT**
- **No remedies for end stage complications (laser, dialysis, vascular surgery, wound healing procedures)**
- **No transplants**
- **Patients with end stage complications lost to follow up**
- **Poor understanding of the pathogenesis of diabetes**
- **Poor understanding of the pathogenesis of diabetes complications**
- **Empiric remedies**

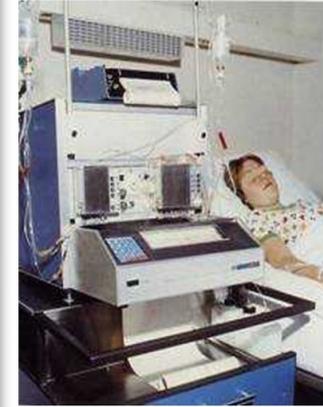


# **THE DIABETES FIREWORKS IN THE '70s -'80s**

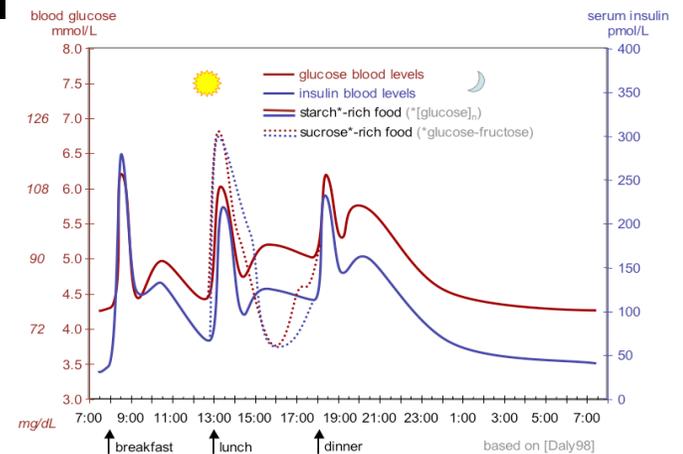


- Bed side artificial pancreas
- Finger tips glucose meters
- Home blood glucose monitoring
- Continuous glucose monitoring
- Non invasive glucose monitoring

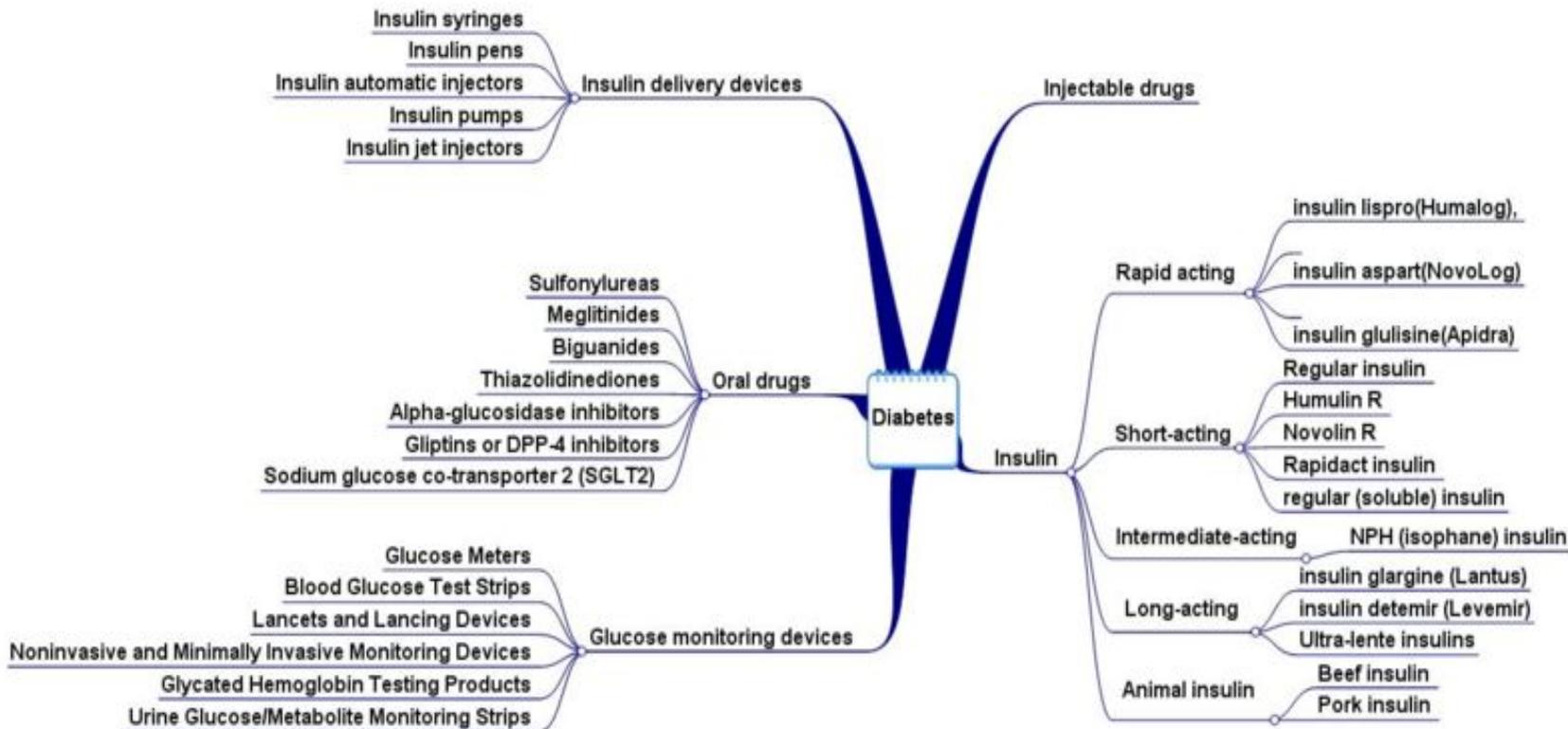
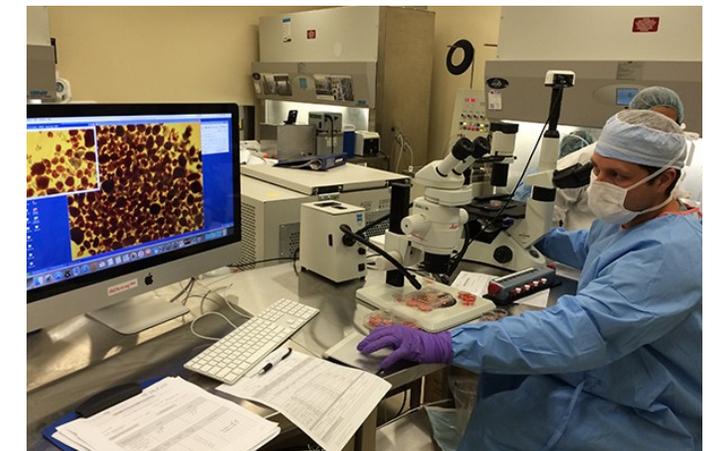
## „BIOSTATOR” (iv) 1974



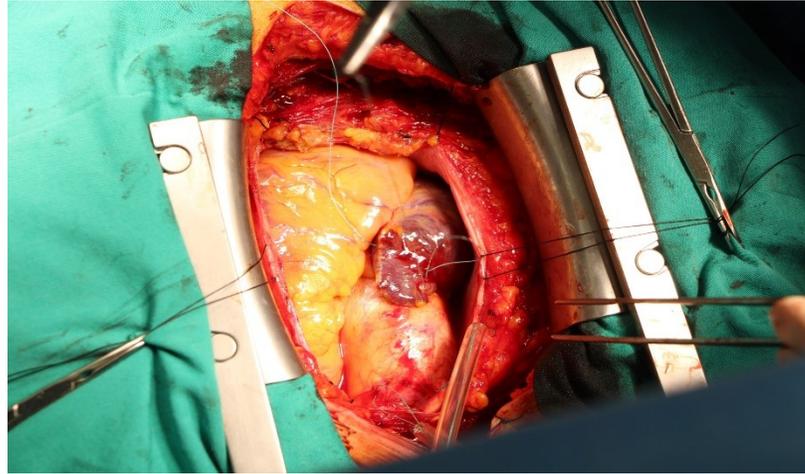
EF Pfeiffer



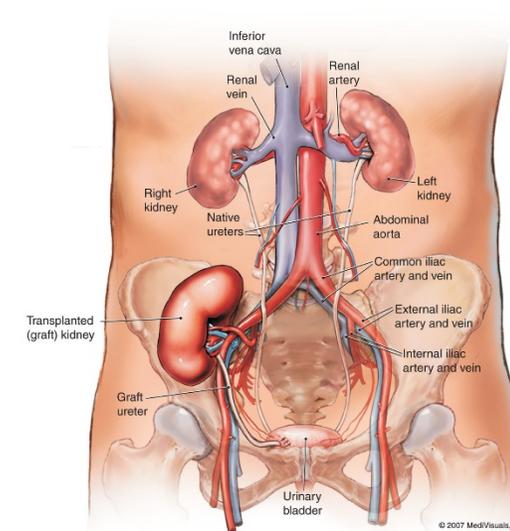
- **New oral agents**
- **New insulins**
- **Insulin pens**
- **Continuous insulin infusion systems**
- **Islet and pancreas transplantation**



- Laser therapy & ocular surgery
- Haemo- and peritoneal dialysis
- Renal transplant
- Cardiac and peripheral vascular surgery



**A Grafted (Transplanted) Kidney**



- Neuropathy
- Foot care



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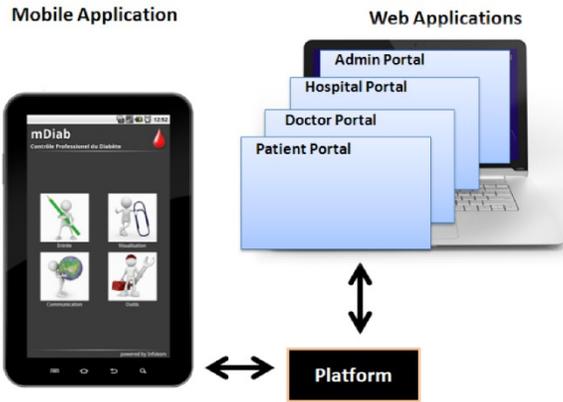
**\*Unsure if your device is compatible? Contact us first!**

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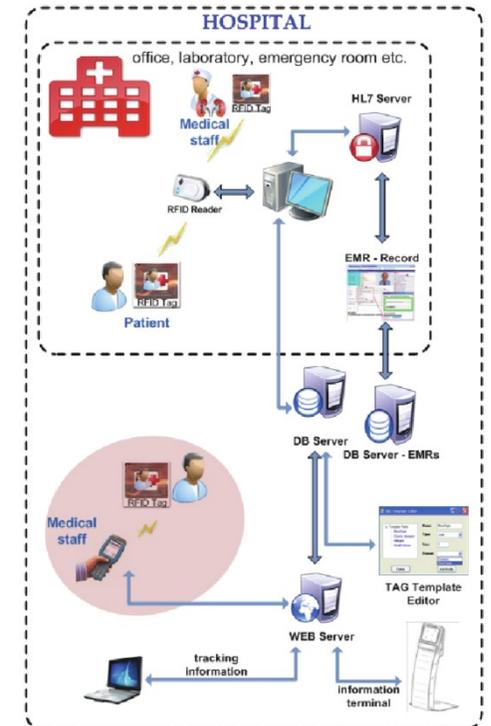
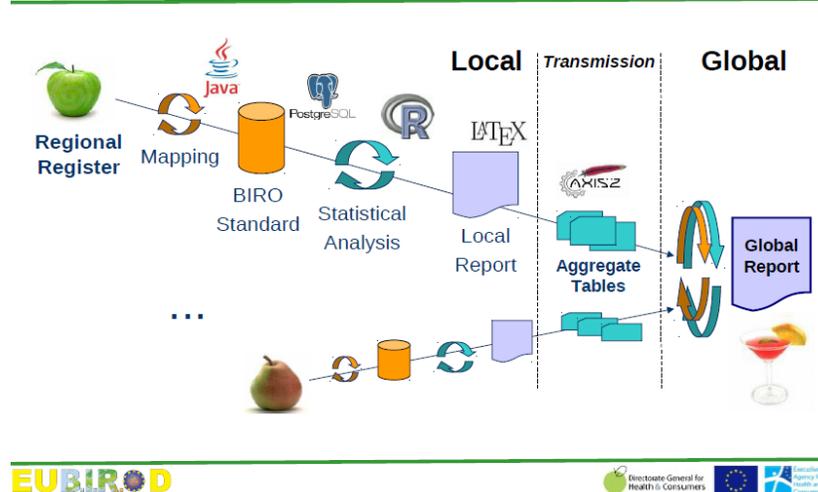


**The Smart Diabetic Socks**

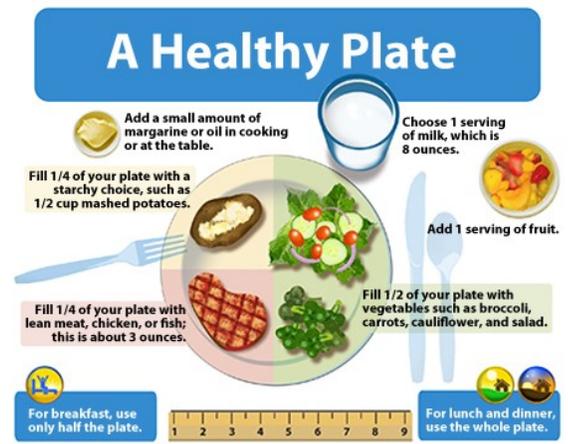
- Information Technology
- Electronic medical records
- Diabetes registries
- Telemedicine



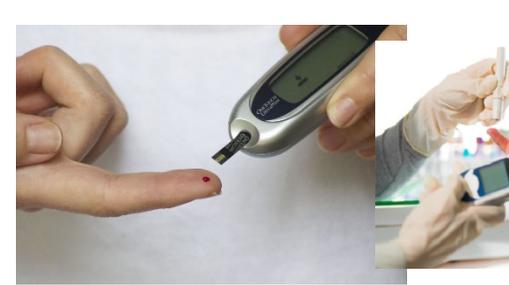
## The BIRO System



- Education
- Nutrition
- Exercise
- Behavioural management



- **Clearer understanding between metabolic control and late complications**
- **Evidences of feasibility of T2DM prevention or even regression**
- **Unsuccessful attempts to prevent T1DM**
  
- **Emerging issue of diabetes related costs**
- **Emerging understanding of psychological impact of diabetes**
- **Increasing awareness of social discrimination**
- **Start of globalization and parallel explosion of the Diabetes epidemics**



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**Diabetes**

- Injectable drugs
  - Insulin (IsoproHumalog)
  - Insulin aspart (NovoLog)
  - Insulin glargine (Lantus)
  - Regular insulin
  - Humulin R
  - Novolin R
  - Rapid-acting insulin
  - Regular (soluble) insulin
  - Intermediate-acting
    - NPH (isophane) insulin
    - Insulin glargine (Lantus)
    - Insulin detemir (Levemir)
    - Ultra-lente insulins
  - Long-acting
    - Basal insulin
    - Pork insulin
  - Animal insulin
- Oral drugs
  - Sulfonylureas
  - Meglitinides
  - Biguanides
  - Thiazolidinediones
  - Alpha-glucosidase inhibitors
  - Glitazone or DPP-4 inhibitors
  - Sodium glucose co-transporter 2 (SGLT2)
- Glucose Meters
  - Blood Glucose Test Strips
  - Lancets and Lancing Devices
  - Glucose monitoring devices
  - Noninvasive and Minimally Invasive Monitoring Devices
  - Glycated Hemoglobin Testing Products
  - Ultra Glucose/Metabolic Monitoring Strips
- Insulin delivery devices
  - Insulin syringes
  - Insulin pens
  - Insulin automatic injectors
  - Insulin pumps
  - Insulin jet injectors

**The Smart Diabetic Socks**

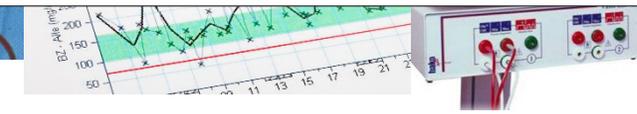
Bluetooth

Central Unit

Finite Element Model

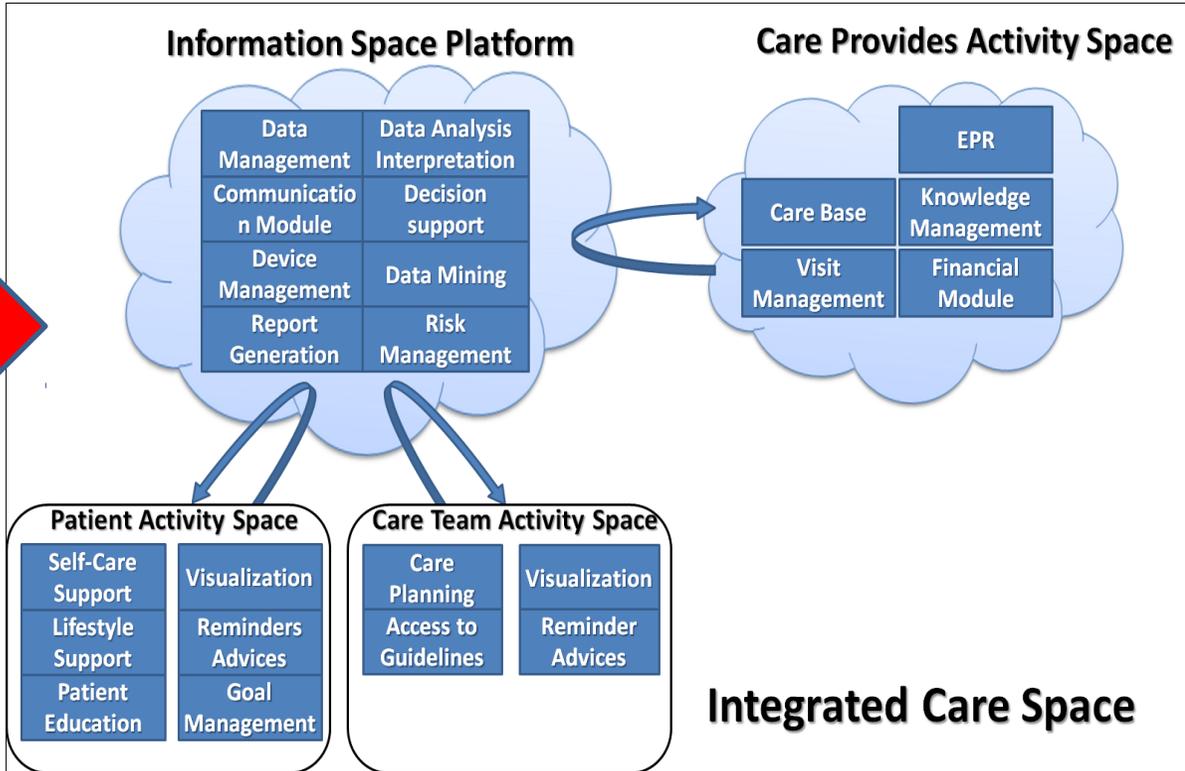
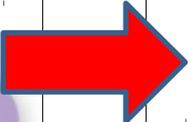
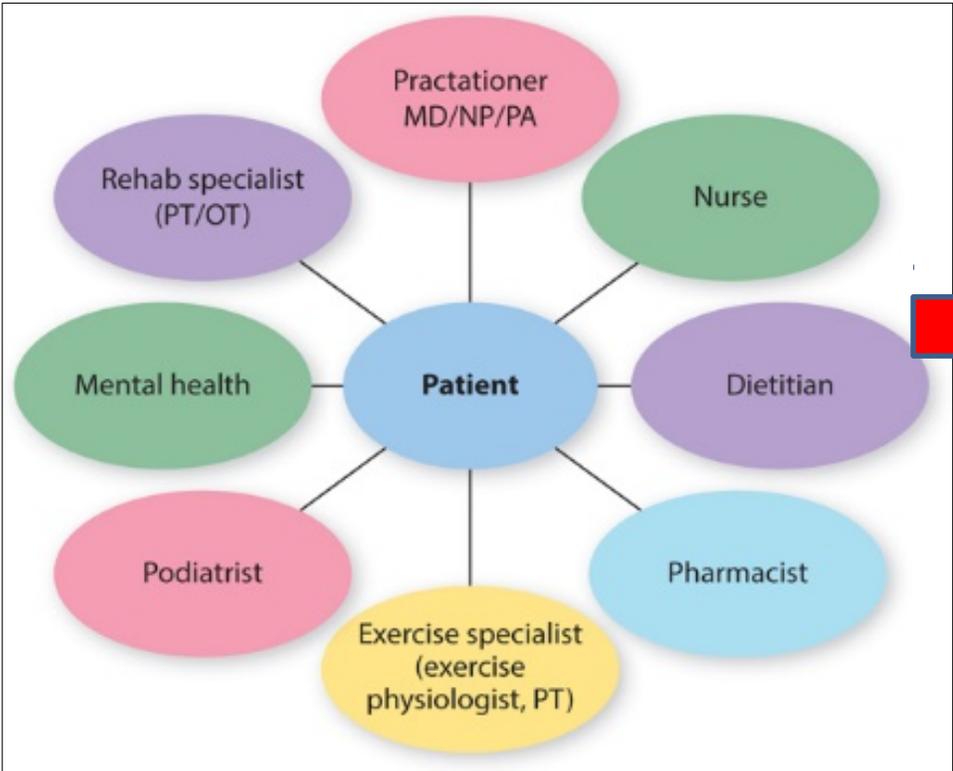
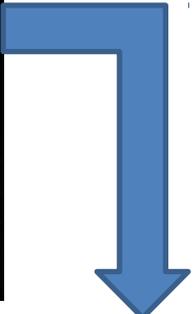
**BASIC TELEHEALTH SYSTEM**

DEVICES: USG, AED, Zigbee, Z-Wave, Bluetooth, Wi-Fi  
 GATEWAYS: DSL, Cable, Fiber, Wimax  
 DATABASE: Health Vault, Trend Analysis





# EVOLUTION OF DIABETES CARE MANAGEMENT



# DIABETES CARE TEAM APPROACH

## THE ADVANTAGES OF COMPREHENSIVE DIABETES CARE

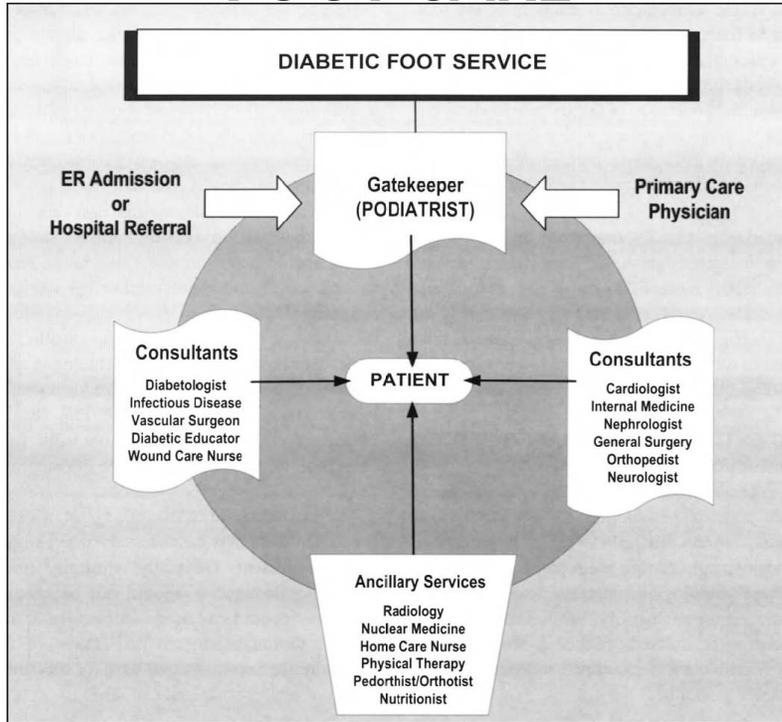
1. SATISFACTION OF THE NEEDS OF THE PERSON WITH DIABETES
2. INCREASE OF THE EFFICIENCY OF THE HEALTH CARE SYSTEM
3. REDUCTION OF THE BURDEN OF DIABETES FOR THE SOCIETY

**BUT**

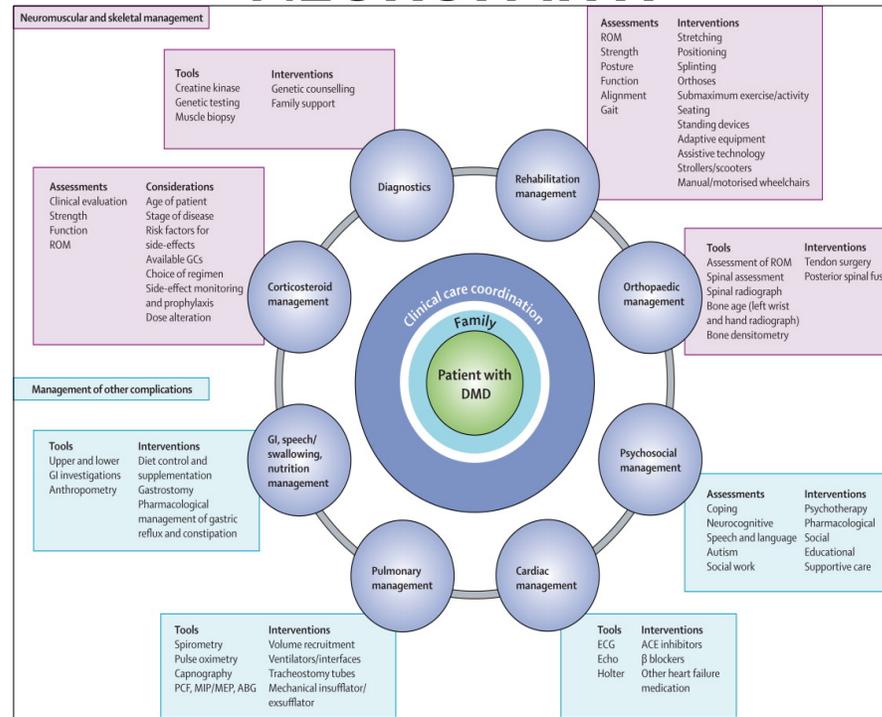
**IS IT EASY?**



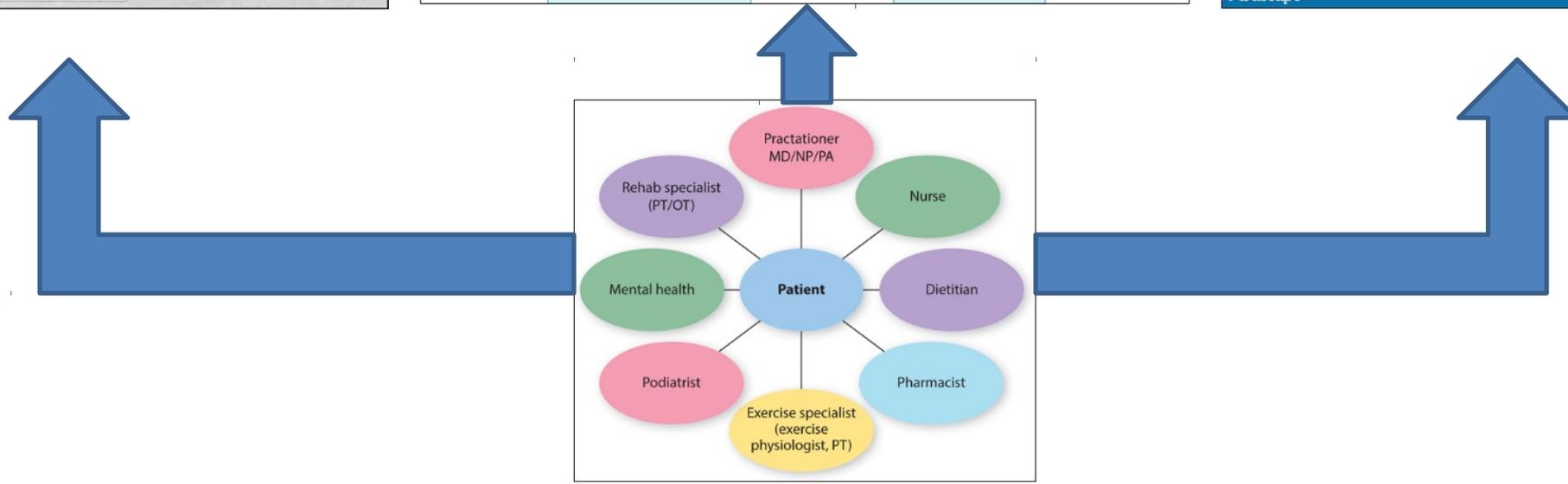
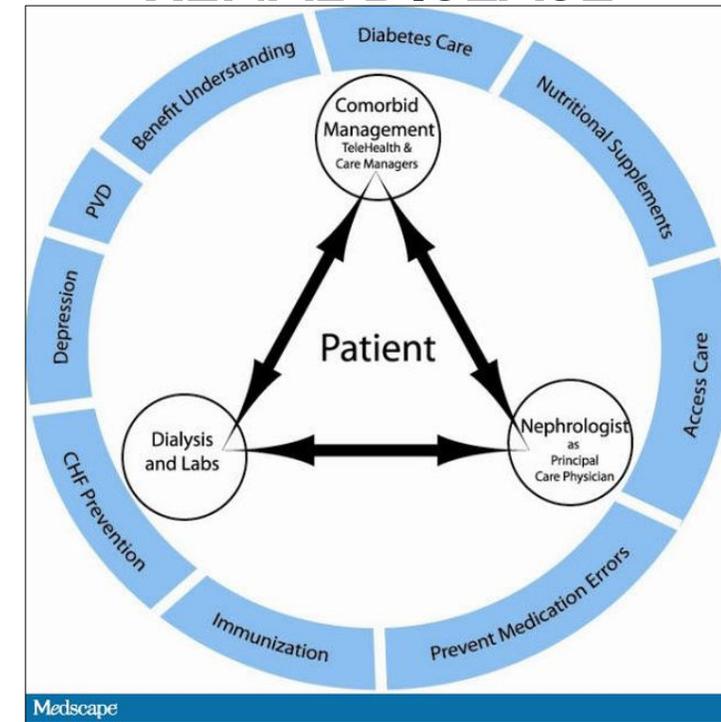
# FOOT CARE



# NEUROPATHY



# RENAL DISEASE



# **GOVERNANCE IN THE NEW FRONTIER**

## **RISKS**

- **Inefficiency**
- **Ineffectiveness**
- **Increase of costs**
- **Negative impact on people with diabetes**

# **RISK FACTORS FOR THE DIABETES TEAM APPROACH**

## **ENVIRONMENTAL FACTORS**

- **Complexity of the Team approach tree**
- **Variability of models according to environmental platform**
- **Lack of resources: professional, structural, economic**
- **Management of the Flux of information**
- **Rotation of professionals**
- **Bourocreatisation**
- **Various levels of defensive medicine (surgical/medical): who is bearing the responsibility of what?**

# **RISK FACTORS FOR THE DIABETES TEAM APPROACH**

## **CULTURAL FACTORS**

- **Integration of professionals with various backgrounds**
- **Uneven level of knowledge**
- **Variability of priorities between the team members**
- **Hierarchies between specialties**
- **Hierarchies between professionals**
- **Overall cultural background**

# **RISK FACTORS FOR THE DIABETES TEAM APPROACH**

## **HUMAN FACTORS**

- **Uneven level of commitment**
- **Conflict of proper and improper interests**
- **Resistances to accept the person with diabetes as a full member of the team**

**BUT THE MAJOR RISK, IN CASE OF SUCCESS IS:**



# PERSONALIZED MEDICINE

# EVOLUTION OF DIABETES CARE MANAGEMENT

