

5th FP – Applications related to Health (1998-2002)**Intelligent Systems for the health of citizens:**

ACTIVE HEALTH, ADICOL, ASTHMAWEB, BEPRO, BODY LIFE, CORAS, DROMEAS, GAIT, HARP, H-LIFE, HEALTHSAT, HEALTHY-MARKET, IHE-EUROPE, INFOGENE, IS4ALL, LIFEBELT, MEDITRAV, PANACEIA-ITV, PICNIC, PREVENTIVE, PRIDEH, PRIDE-GEN, REHAROB, RESHEN, SALUT, SPIRIT, WEIGHT-INFO, WEALTHY, WOMAN II, WRAPIN.

Intelligent Systems for Patients:

@HOME, AMON, CEMAT, CHS, CHARM, CHRONIC, DAPHNE, DIAFOOT, D-LAB, EPI-MEDICS, E-REMEDY, HEALTHMATE, H-CAD, HEARTS, HOMEY, HUMAN, IDEAS, KARMA, LIFELINGER, M2DM, MAMMOGRID, MOEBIUS, MTM, NISAN, PARREHA, PRE-HIP, PHARMA, PHARMDIS E+, PRO-ACCESS, TELECARE, TELEMEDICARE, TOPCARE, TOSCA, U-R-SAFE, VEPSI UPDATED, WIDENET, WUNSENS.

Intelligent Systems for Health Professionals:

ADEQUATE, AMIT, BIOGRID, BIOINFOMED, C-CARE, CHILDCARE, CLEANWORLD, DEVASPIM, DIAPOLE, DICTATE, DOCMEM, DYNCT, E-CARE, E-SCOPE, EDISCIM, GEMSS, GLANCE, HEALTH-MEMORY, HIN-EUROPE, HKIS, ICOTEL, ICUST2001, IERAPSI, IFG, IHELP, IMP-ART, INFACE, INFOGENMED, INHALE, INTERPRET, IMAGUM, INCA, IR-BOSS, IVP, JUST, LIQUAMO, MEDINFO, MEMO, MI3, MITTUG, MOBI-DEV, M. HEALTH, MOBIHEALTH, NUCLEO, OHM, OPENECG, OTELO, PLACEBO, PRED. CLINIC, PRO-HTML, REAL-PRO, SCREEN, SCREEN-TRIAL, SMARTIE-CZ, STEMNET, STRESST, TEAM-HOS, TELELOGOS, TELEPLAN, TM-ALLIANCE, TREAT, TTOOL, USBONE, VALIDON, WARD-IN-HAND, WEBLINC.

Telemedicine and Paediatrics through the European Commission

Going more deeply into paediatrics we enclose an overview of projects directly connected with paediatrics and funded or co-funded by the European commission through the framework programme.

ALLNET: ALL-NET Paediatric Critical Care Textbook. **A R&TD project co-funded by the European Commission (Health Telematics Application - Telematics Applications Programme) through the 4th Framework Programme for Research and development (1994-1998).** ALLNET intended to produce a graphically rich multilingual dynamic 'textbook' of intensive care paediatrics, entirely and freely accessible on the Internet. The textbook will be produced simultaneously in French, Spanish, English, and Russian/Ukrainian by a multinational consortium of medical universities.

Funding Institution:	European Commission
	Information Society Directorate General
Contract Number:	INCO PL977135
Project Coordinator:	University of Barcelona - Fundació Clinic (Spain)
Duration:	36 months
Start date:	01/01/1999
End date:	31/12/2001
Total costs:	190.400 €
EU funding:	140.000 €
xpastor@clinic.ub.es	

CHILDCARE : Intelligent collaborative environment for out-of-hospital children healthcare. A R&D project co-funded by the European Commission (Applications Related to Health – Information Society Technologies Programme) through the 5th Framework Programme for Research and Development (1998-2002). The CHILDCARE platform will incorporate intelligent features aiming towards the efficient collaboration of the Paediatrician with other medical professionals. The ultimate goal is to assist the Paediatrician to end up with the best possible diagnosis. Health experts and families will be able to communicate remotely with each other and exchange medical information through a secure platform. Moreover, the system will provide tele-medicine services incorporating video and audio communication, multilingual support and real-time exchange of short text messages, reminders and alerts. The system will promote the use of multiple access devices by supporting both wire-line and wireless communication.

Funding Institution :	European Commission
	Information Society Directorate General
Contract:	IST-2001-33383
Project Coordinator:	Atlante Sistemas S.L. (Spain)
Duration:	24 months
Start date:	01/09/2001
End date:	31/08/2003
Total costs:	3.570.001 €
EU funding:	2.025.000 €

KARMA 2 : Knowledge and Augmented Reality Management Assistance. A R&TD project co-funded by the European Commission (Applications Related to Health – Information Society Technologies Programme) through the 5th Framework Programme for Research and Development (1998-2002). The work focuses on the creation and development of an organisational model to efficiently and adequately manage home-care activities in specific patient populations and the delivery of health care services in general. The project will establish an easily accessible network enabling persons involved in health, social and psychological care delivery on one hand and the patients, their families and patients associations on the other hand, to have adequate and updated information on the conditions of patients in treatment or in home care.

Funding Institution	European Commission
	Information Society Directorate general
Contract Number:	IST-2001-32320
Project Coordinator:	Air Liquide Sanità Spa (Italy)
Duration:	24 months
Start date:	01/09/2001
End date:	31/08/2003
Total costs:	3.161.212 €
EU funding:	1.580.604 €

www.karma-project.net

Smartie-CZ. Amendment to the SMARTIE R&TD project co-funded by the European Commission (Applications Related to Health – Information Society Technologies Programme) through the 5th Framework Programme for Research and Development (1998-2002). The aim of the project is to extend the activities of the SMARTIE project to incorporate the expertise of Charles University in Prague, Czech Republic and to expand the clinical areas of expertise covered

in the SMARTIE project from 3 (Endocrinology , Gastroenterology , ICU /Emergency) to 5 (including Paediatrics and Biochemistry).

Funding Institution: European Commission
Information Society Directorate General
Contract Number: IST-2000-25429
Project co-ordinator: Fundació FIMIM (Spain)
Duration: 13 months
Start date: 24/06/2002
Total costs: 224.593 €
EU funding: 176.862 €

TELEMEDICARE : Telematic Support for Patient Focused Distant Care. A R&TD project co-funded by the European Commission (Applications Related to Health – Information Society Technologies Programme) through the 5th Framework Programme for Research and Development (1998-2002). A new generation of medical instruments, “the medical net instruments” for 24 hours a day real time patient monitoring is proposed. An integrated portable system including bio-sensors for ECG, oxymetry, blood pressure and temperature measurement etc., in conjunction with artificial intelligence will be developed and tested in many real rural and urban environments.

Funding Institution : European Commission
Information Society Directorate General
Contract: IST-1999-10754
Project Coordinator: SINTEF (Norway)
Duration: 30 months
Start date: 01/01/2000
End date: 30/06/2002
Total costs: 3.653.674 €
EU funding: 1.877.074 €

www.telemedicare.net

T-IDDM : Telematics management of Insulin-Dependent Diabetes Mellitus. A R&TD project co-funded by the European Commission (Health Telematics Application - Telematics Applications Programme) through the 4th Framework Programme for Research and development (1994-1998). The main objective of the T-IDDM project was the one of providing patients and physicians with a reliable and cost effective tool for the complex task of IDDM management. The purpose of the system design was to achieve a strict medical control of patients even when outside the hospital environment, avoiding frequent office visits (thus reducing costs) for monitoring those variables influencing therapeutic decision-making; the system is able to collect and store data, analyse it, and provide the most appropriate personalised medical advice.

Funding Institution : European Commission
Information Society Directorate General
Contract: TAP HC 1047
Project Coordinator: Università di Pavia (Italy)
Duration: 40 months
Start date: 01/07/1996
End date: 31/10/1999
Total costs: 1.417.360 €
EU funding: 710.000 €

Conclusions

As you will realise through the following and more specialised presentations, Telemedicine is vast sector with overwhelming perspectives for Paediatrics, especially in the Mediterranean area where traditionally strict links exist between the two sides of the big sea. The foundation of the Mediterranean Paediatric Institute will certainly encourage the spreading and developing of new technologies for the progress, the peace and the well being of our co-operating populations.

Luciano Beolchi, Sara Facchinetti

- 1 Definition used within the *Advanced Informatics in Medicine* action of the European Communities 1989-94
- 2 Definition used in: *Telemedicine: A Guide to Assessing Telecommunications in Health Care*, Institute of Medicine, National Academy Press (Washington, USA, 1996)
- 3 Definition used in: *A Health Telematics Policy In Support Of WHO's Health-For-All Strategy For Global Health Development*, Report of the International Consultation, 11-17 December, Geneva, 1997
- 4 *Information for Health: An information strategy for the modern NHS*, NHS Executive, 1998
- 5 physicians, nurses, technicians, etc.
- 6 on-line connection, involving simultaneous remote presence of two or more telemedicine actors
- 7 off-line connection whereby e.g. consultation request is sent using multimedia electronic mail for later reply and reporting

TELEMEDICINE IN THE MANAGEMENT OF YOUNG PATIENTS WITH TYPE 1 DIABETES MELLITUS: A FOLLOW-UP STUDY

*d'Annunzio G, *Bellazzi R, *Larizza C, *Montani S, °Pennati C, °Castelnovi C,
Stefanelli M, Lorini R.

Department of Pediatrics, University of Genoa, G. Gaslini Institute, Genoa;

**Department of Computer and Systemic Sciences, University of Pavia, Italy;*

°Department of Pediatrics, IRCCS Policlinico San Matteo, Pavia, Italy.



TYPE 1 DIABETES MELLITUS

- Endocrine disease
- Autoimmune destruction of pancreatic η -cells
- Lack of insulin secretion
- Subcutaneous insulin replacement



TYPE 1 DIABETES MELLITUS MANAGEMENT

• At diagnosis

- admission for metabolic ketoacidosis treatment
- insulin therapy
- educational intervention for self-management
 - intensive insulin regimen
 - self monitoring of the disease
 - recording in a log book
- adequate food plan
- regular physical activity

• Out-patient bi-monthly follow-up

- blood tests, HbA1c
- urinalysis
- clinical check-up
- auxological examination
- dietitian
- new insulin protocol



DCCT STUDY Diabetes Control and Complications Trial

Longitudinal study on 1441 patients

- Intensive vs conventional therapy
- Tight metabolic control
 - delays the onset
 - slows the progression
- Adverse events:
 - Hypoglycemic crisis
 - Weight gain

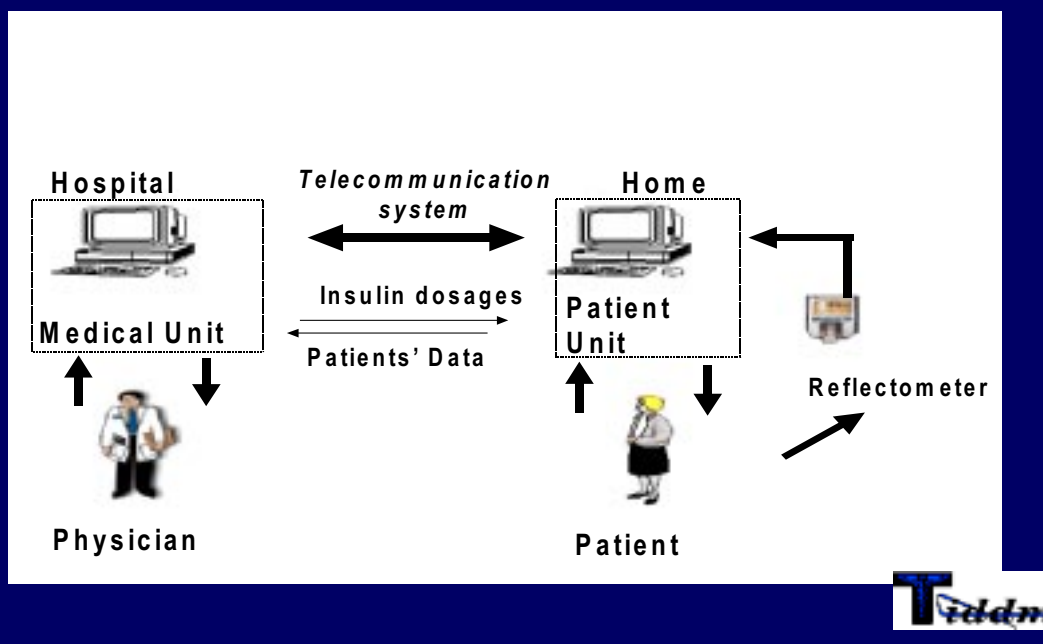
of vascular complications



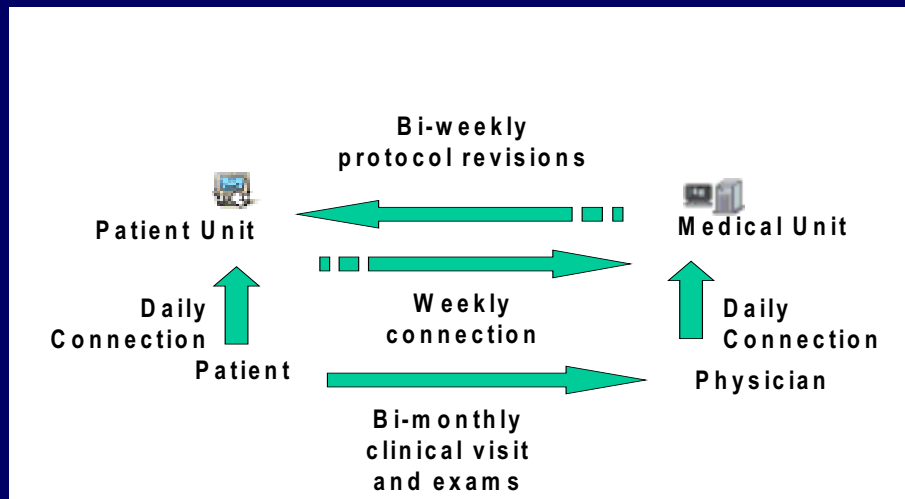
T-IDDMM PROJECT

- The aims of our EC sponsored (EC1047) T-IDDMM project were the implementation and validation of a telemedicine service to manage patients with type 1 diabetes;
- The first italian experience was performed in the Pediatric Department, Diabetological Section, IRCCS Policlinico San Matteo, Pavia, Italy

T-IDDMM STRUCTURE



T-IDDM – ORGANIZATIONAL ASPECTS



AIMS FOR PHYSICIANS

Clinical

- to provide an effective treatment leading to a good glycemic control ($HbA1c < 7,5\%$)
- to delay the onset and/or slow down the progression of chronic complications
- to achieve a careful balance between insulin therapy, diet and physical activity

Social and organizational

- to support continuous education of patients
- to allow for a cost-effective monitoring of a large number of patients
- To reduce the number of check-ups and to save work and school day loss



AIMS FOR PATIENTS

- to be involved more actively in diabetes management through a continuous link with the hospital
- to achieve a higher awareness about the usefulness of a better metabolic control as well as a higher level of education
- to self-adjust insulin dosages within the limits established by the physician



PATIENTS SELECTION AND INCLUSION

- *Selection based on:*
 - personal motivation
 - computer availability & know-how
 - with Patients' Association cooperation
- **Local Ethical Committee approval**
- *Inclusion criteria:*
 - informed consent by parents
 - metabolic data reliability
 - system not for emergency management



PATIENTS ENROLLED

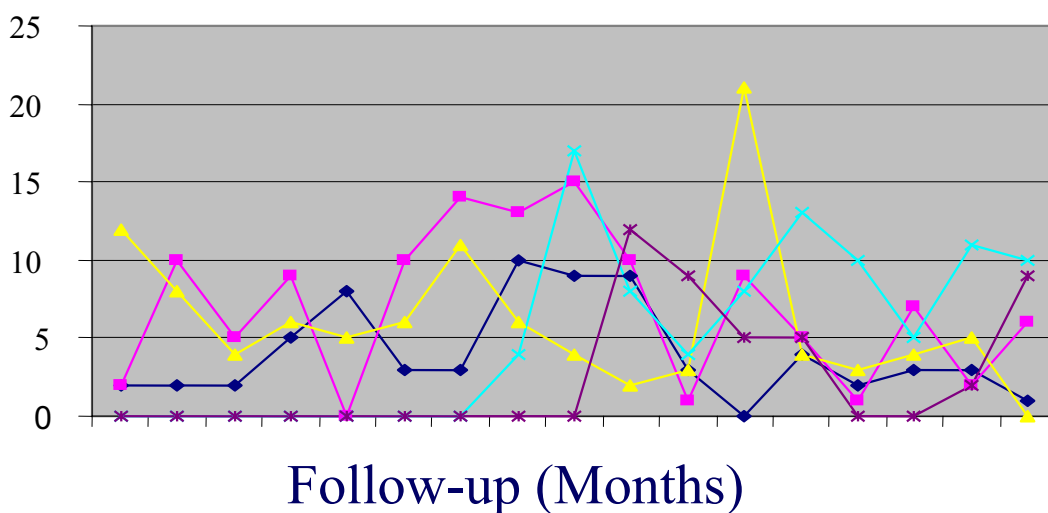
Pt	Sex	Age	Disease Duration	Pubertal Stage	HbA1c (1 year)	C-peptide	No. of injections	Associated Diseases*	Complications **
1	M	9 yrs 11/12	4 yrs 1/12	PH3G2	7.2%	Absent	4	None	Absent
2	F	12 yrs 11/12	6 yrs 5/12	PH4B4	9%	Absent	4	None	Absent
3	M	14 yrs 1/12	4 yrs 3/12	PH3G3	7.6%	Absent	4	None	N - M
4	F	15 yrs 7/12	4 yrs 4/12	PH4B4	7.3%	Absent	4	None	Absent
5	M	15 yrs 10/12.	2 yrs 2/12.	PH5G5	6.5%	Absent	3	None	Absent

* Coeliac disease and autoimmune thyroid diseases

** N: Subclinical peripheral neuropathy ; M: persistent microalbuminuria



RESULTS: ACCESS NUMBER



RESULTS: METABOLIC DATA 1

	Pt 1	Pt 2	Pt 3	Pt 4	Pt 5
Follow-up (days)	570	540	390	330	600
# access	134	116	108	63	74
# BG	1223	1525	650	1072	783
# uryanalysis	1161	1352	470	573	278
# protocol adjustment	12	11	11	4	10

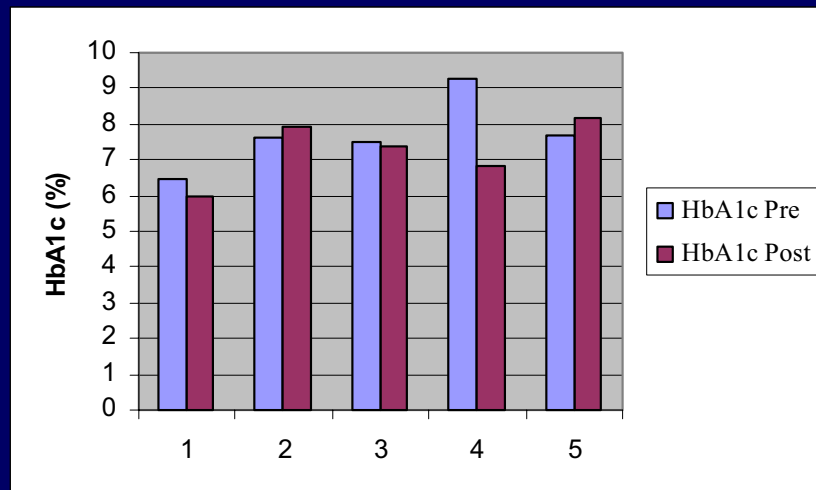


RESULTS: METABOLIC DATA 2

	Breakfast		Lunch		Dinner	
	<i>pre</i>	<i>post</i>	<i>pre</i>	<i>post</i>	<i>pre</i>	<i>post</i>
Mean	191	158	116	124	145	129
Median	201	164	129	127	123	124
SD	65	60	80	51	67	58
Min.	95	53	50	48	68	48
Max.	345	293	271	214	322	291



RESULTS: METABOLIC CONTROL

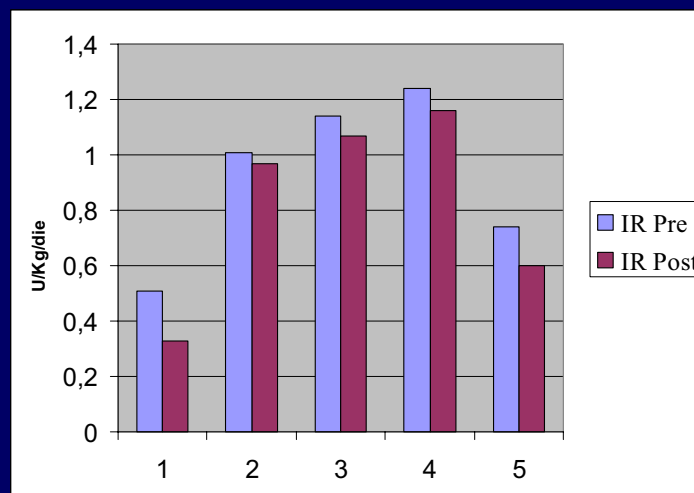


Wilcoxon test for paired data: $p=0.8$

Caso # 4: Wilcoxon test for unpaired data: $p=0.07$



RESULTS: INSULIN REQUIREMENT



Wilcoxon test for paired data: $p=0.06$

Case # 1: Wilcoxon test for unpaired data: $p=0.02$

Case # 5: Wilcoxon test for unpaired data: $p=0.007$

