

TELEMEDICINE

Régis Beuscart

CIC-IT Inserm 807

« Biosensors and E-Health » (Lille)

TELEMEDICINE AND TELECARE

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INTRODUCTION

E-Health : Definition

- ✦ « Application of Information and Communication Technologies to Healthcare »
- ✦ Healthcare is defined in a broad sense, including the medical domain as well as Homecare and personal health

PART 1: TELEMEDICINE

Telemedicine: Definition (WHO)

“The delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities”

Telemedicine : It's a long story...

E-Health 1960's : first steps

First tele-consultation experimentation in the Nebraska Psychiatric Institute (isolation, lack of skills).

- ✦ 1965 → first videoconference for cardiac surgery between USA and Switzerland
- ✦ 1973 → first telemedicine congress in the Michigan



E-Health and Telemedicine : It's a long story...

E-Health 1980's : military and spatial projects (no financial limits...)

* First motivation: inaccessibility

- US Army : Vietnam operation field
- US Navy : tele-expertise
- NASA : care to astronauts



* First civilian applications (close to military ones):

- Artic stations
- Oil off-shore stations

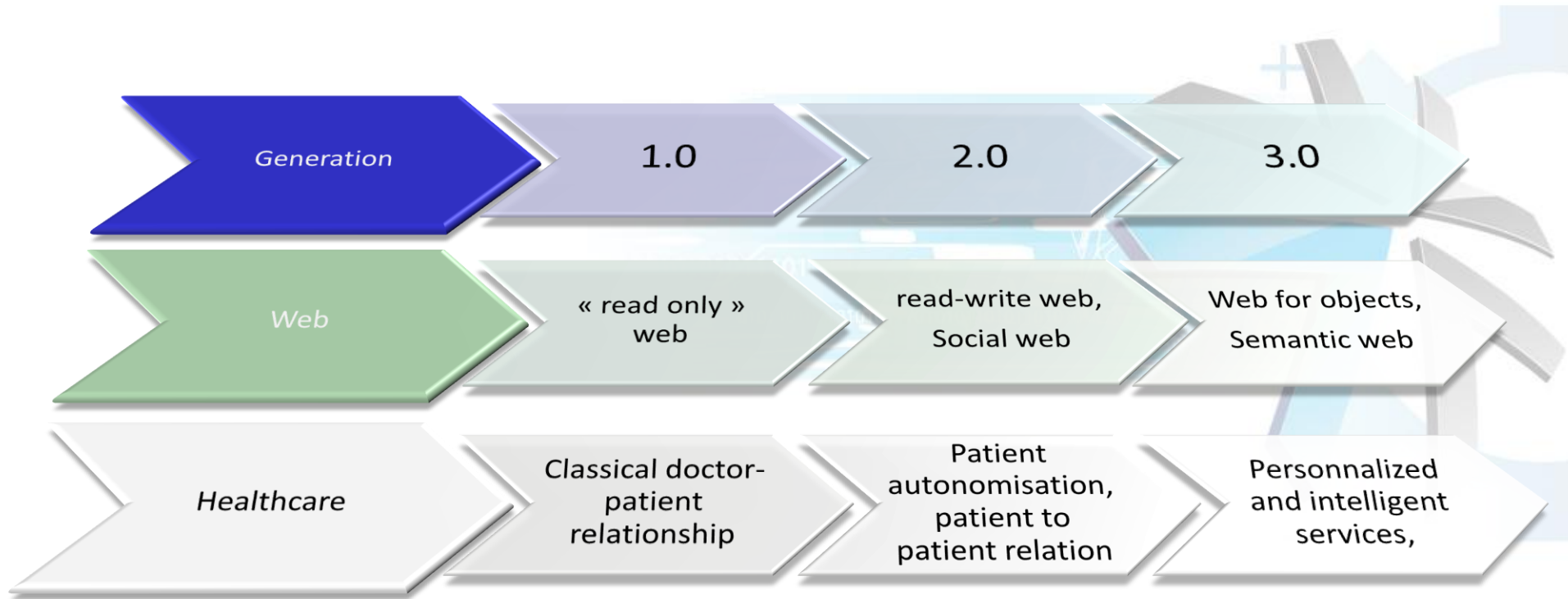


E-Health and Telemedicine : It's a long story...

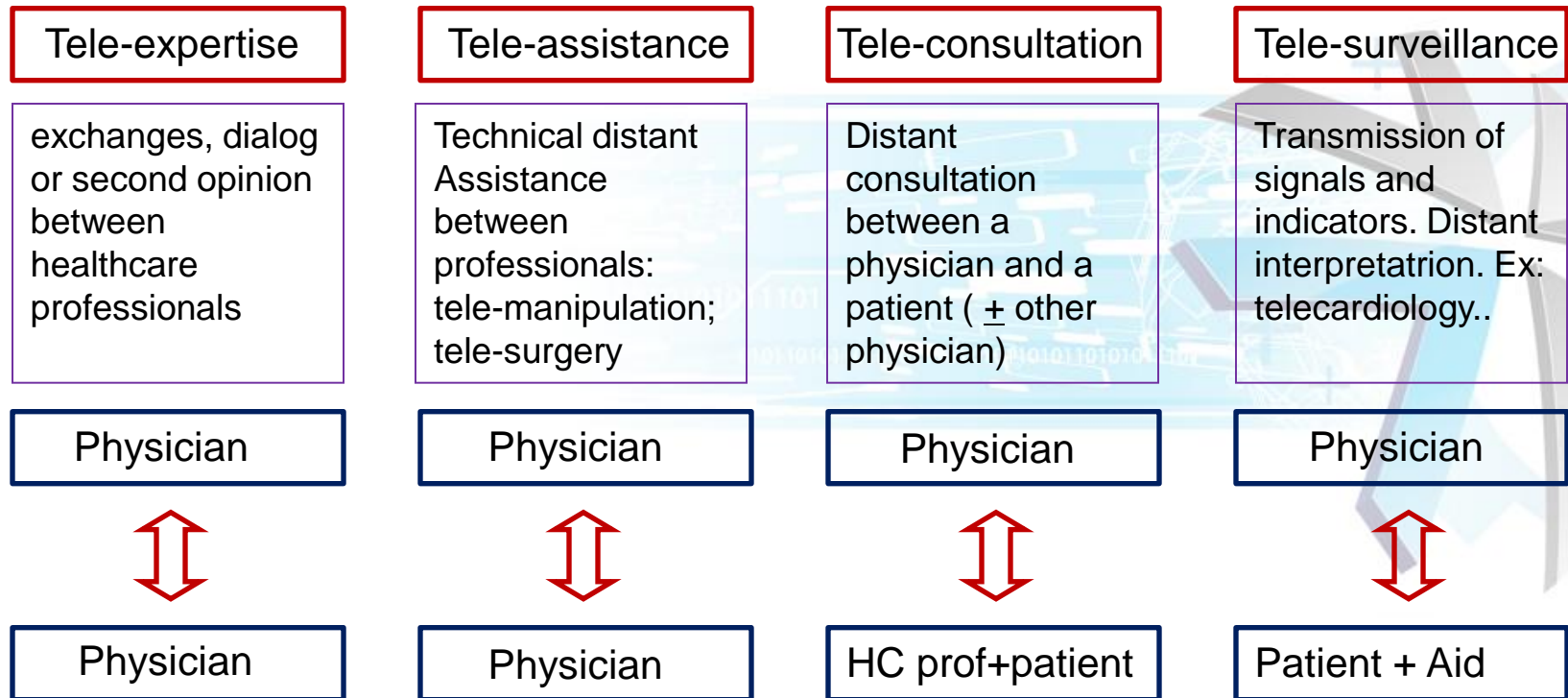
E-Health 2000's : conditions for maturity

- ✧ Augmentation of chronic diseases linked with aging population
- ✧ Alternatives to the hospitalization
- ✧ Technological evolutions (Internet era, Improvement of telecommunications)
- ✧ Changing attitudes (patient centered approach)
- ✧ Informed patients who want to be involved in their healthcare
- ✧ Validated economical models

Web Evolution



Telemedicine segments



Telemedicine is a medical activity, without any distortion

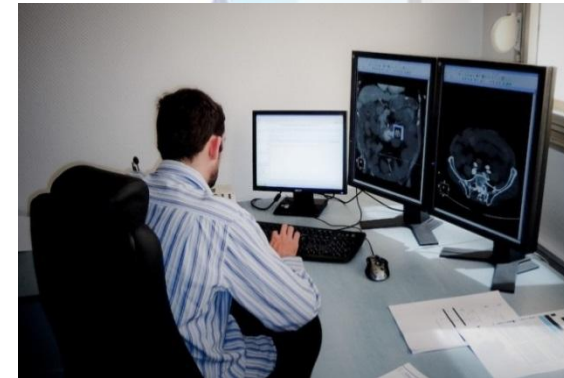
Examples of tele-expertise

✧ Tele-Radiology

- Analysis and interpretation of medical images
- Secure networking
- Contracts between the tele-radiology centre and the clients



✧ Tele-Pathology: the practice of pathology at a distance: static image-based systems, real-time systems, and virtual slide systems



Example of tele-assistance: tele-manipulation

Distant manipulation for tele-echography

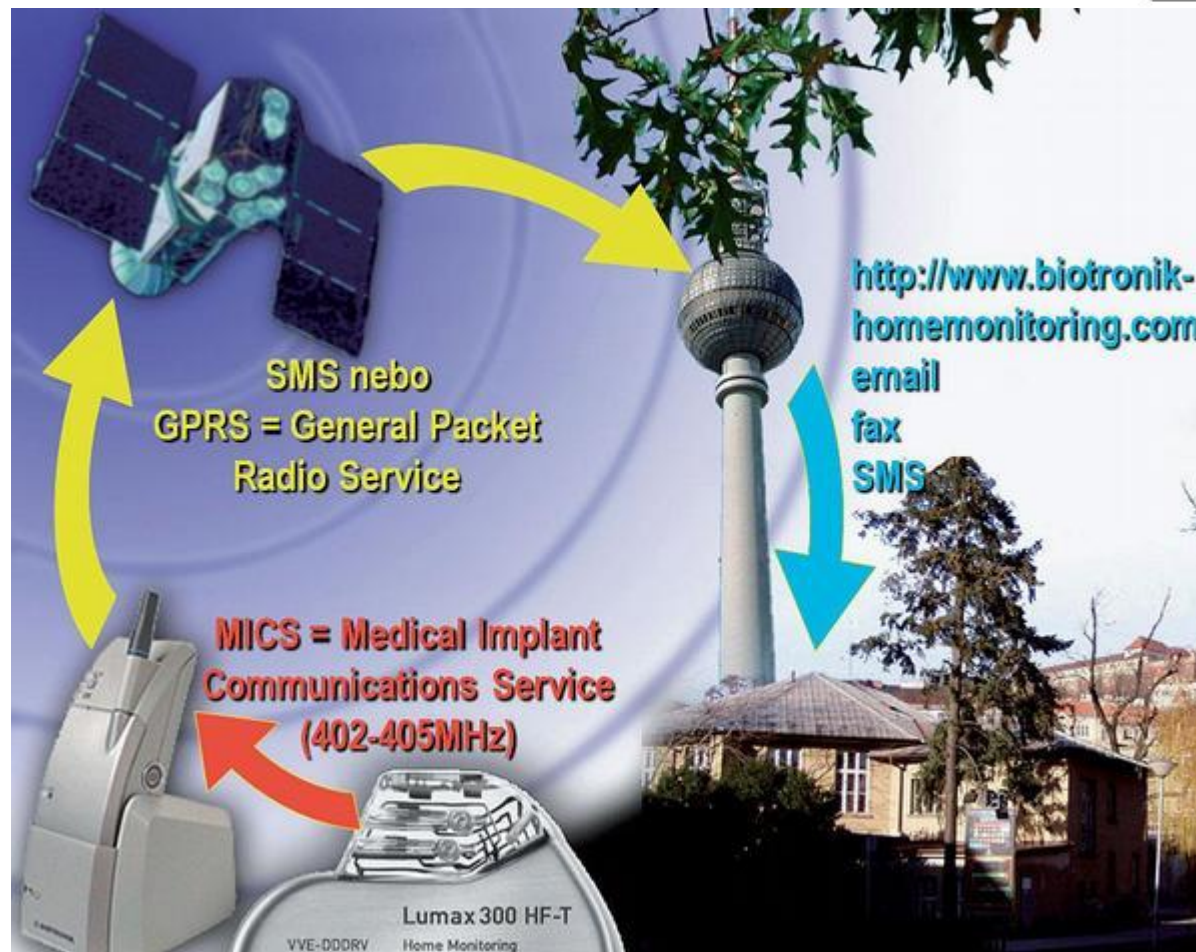
- ✦ An expert realizes distant echography examinations
- ✦ The physician remotely controls an ultrasound probe, through a real-time transmission of the acquired images and force feedback..
 - The slave system is a light robot with 2 degrees of freedom for translation and 4 degrees of freedom for the rotations.
 - A videoconferencing system allows the communication between the two medical sites.



Partenariats

*France Telecom R&D,
Praxim, CHU de Grenoble,
CIC, CHU de Brest, LATIM*

Example of Tele-surveillance: Tele-cardiology



E-Health in developing countries



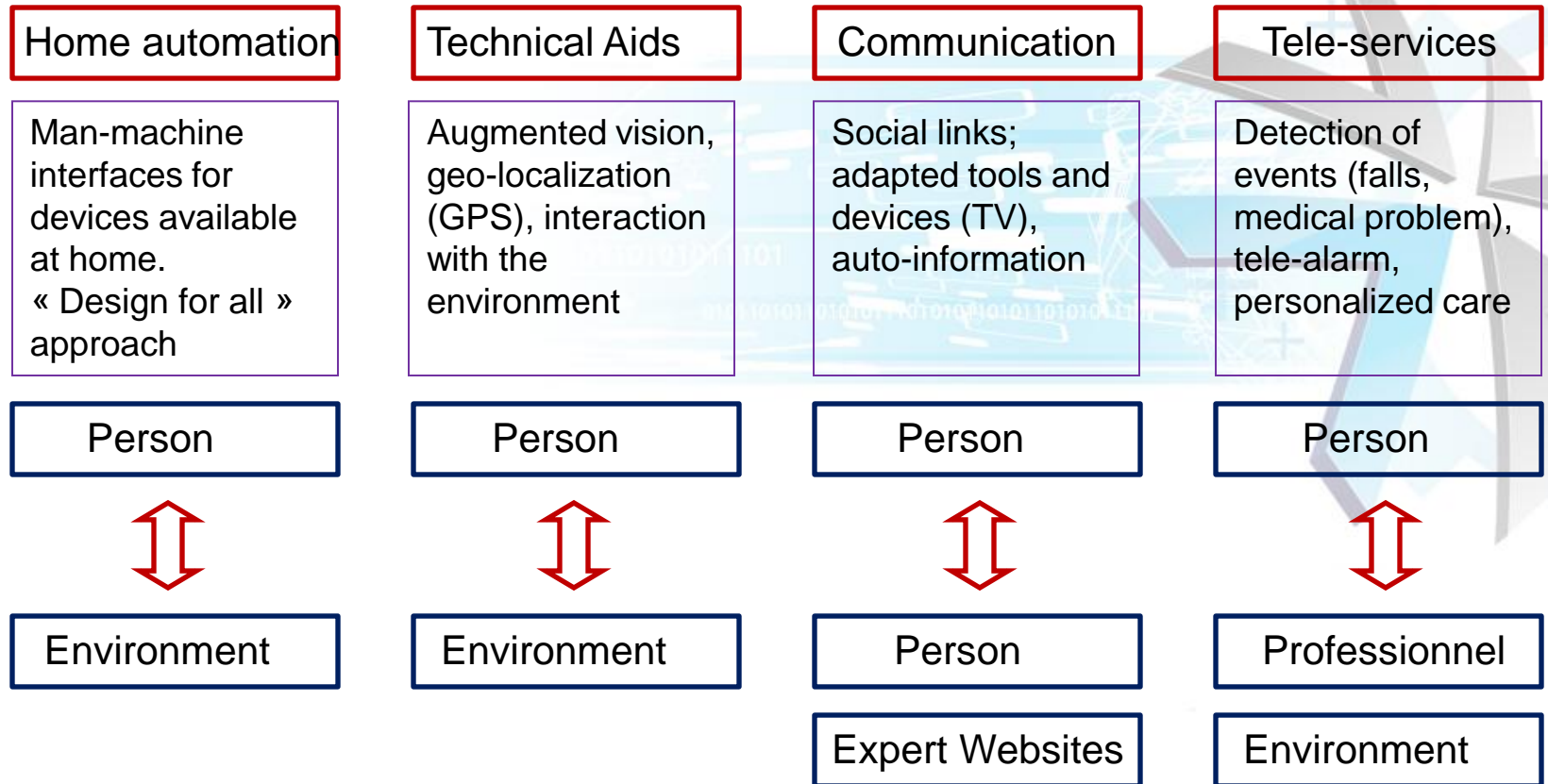
Teleradiology
Services

PART 2: TELECARE AND HOMECARE

Telecare: Definition (RCN)

« Telecare uses a combination of alarms, sensors and other equipment, usually in the home environment, to help people live more independently by monitoring for changes and warning the people themselves or raising an alert at a control centre.»

Telecare: segmentation



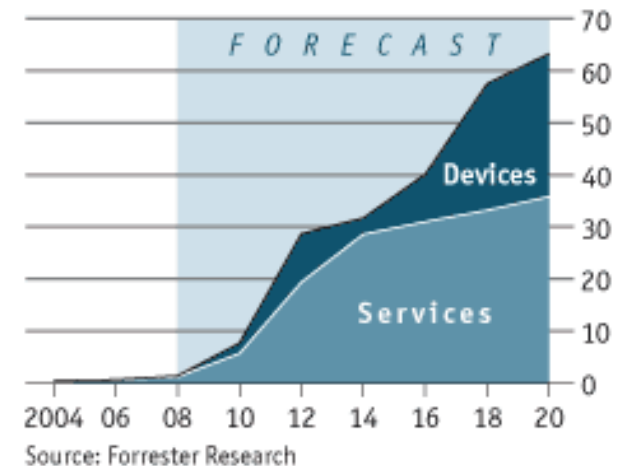
AAL: Ambient Assisted Living

- * Aging population
- * Chronic Diseases
- * Living at home
- * Personalized Services



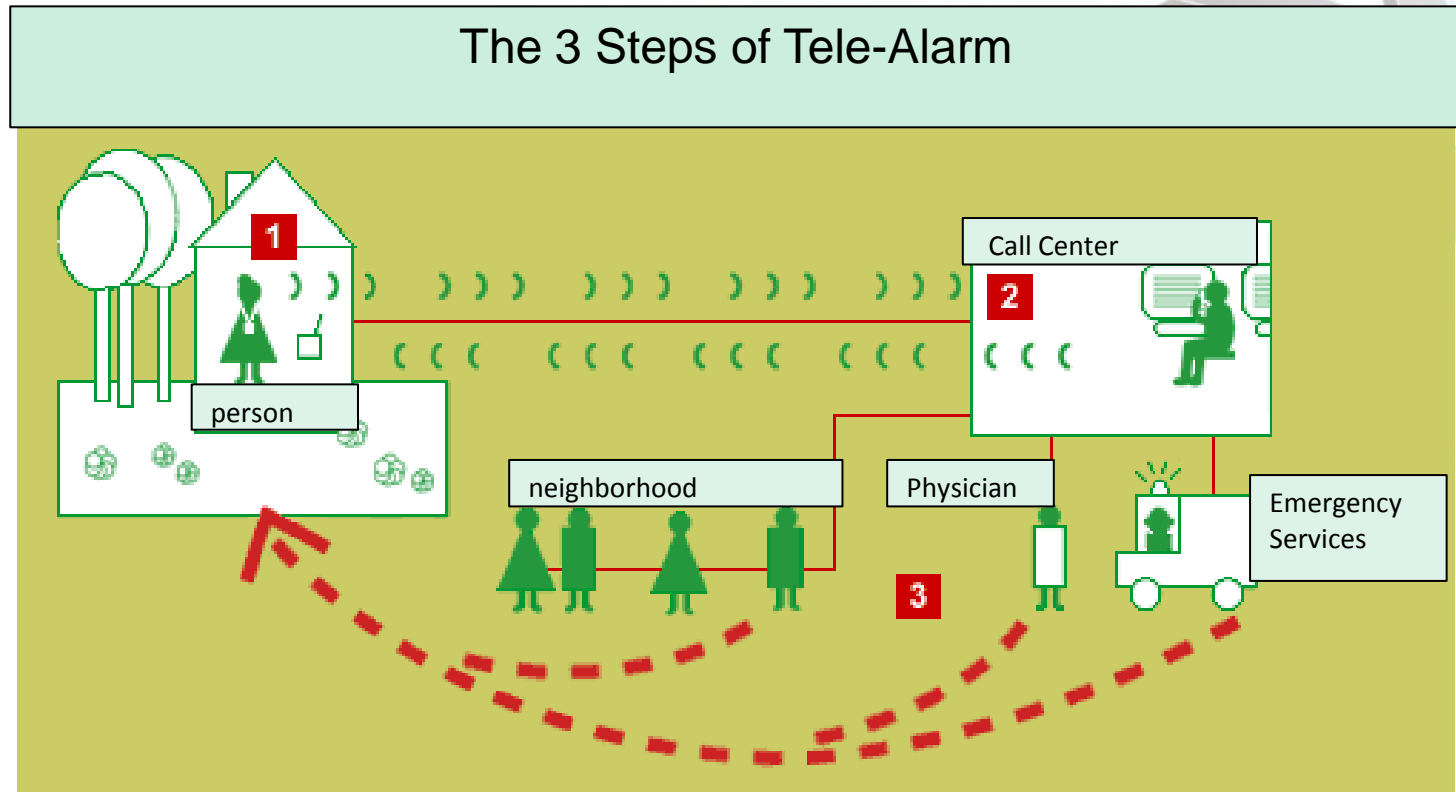
Ready for take-off

Sales of US personal medical-monitoring devices and related services, \$bn



Example of Tele-Services: Tele-Alarm

Basic principle: tele-alarm



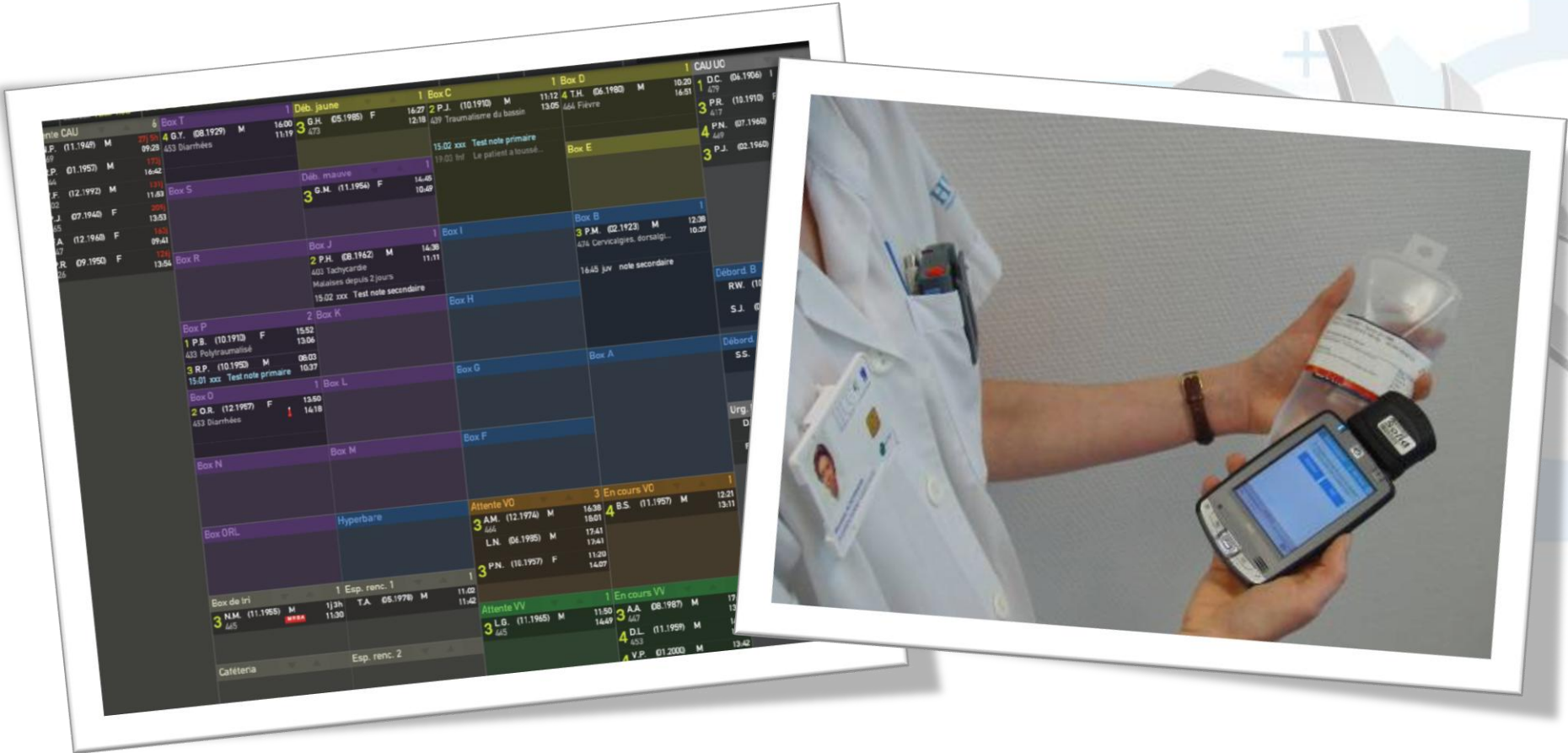
CONCLUSION

The right information, in the right place, at the right moment



Taking into account the current blood creatin, it is recommended to adapt the doses of gentamicin and to control the blood level of gentamicin within 3 days.

Real-time follow-up



Anticipation, coordination.

Clinical procedures to improve the patient management

J0 J1 J2 J3 J4 J5 J6 J7

Phase aiguë Stabilisation Sortie

Vous êtes en phase 3 depuis 0 heure(s)

Phase 1: Urgences Phase 2: Aiguë ➔ Phase 3: Stabilisation Phase 4: Soins de suite

Jeu d'ordres pour la phase 3 :

Jeu d'ordres pour la phase 3:
Veuillez également évaluer si des ordres prescrits dans la phase précédente doivent être stoppés.

Prescription d'échocardiographie : **Prescrire**

Demande de consultation de cardiologie : **Prescrire**

Votre patient est-il prêt à passer à la phase 4 ? Dans ce cas, Répondez aux questions suivantes :

☐ Poids stable (pas de prise de poids depuis 48h) ou oedèmes en diminution

☐ Pas de stase pulmonaire

☐ Fonction rénale stable ou améliorée

Dyspnée au repos : **Amélioration**

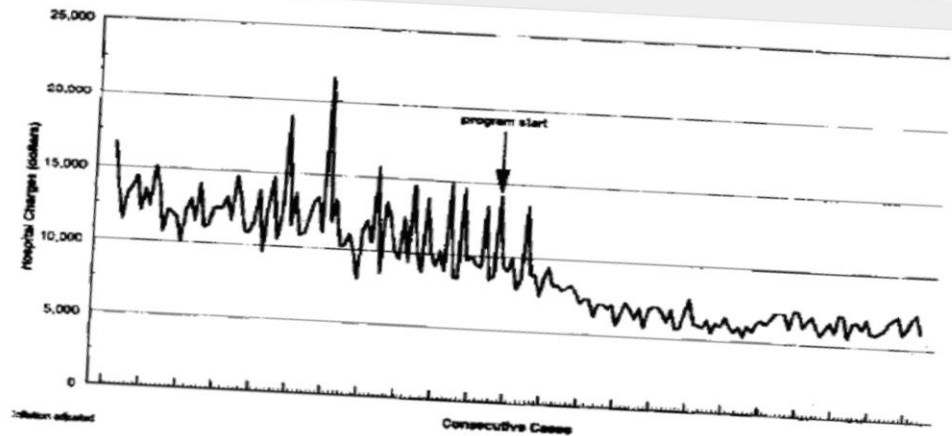
☐ Epanchement pleural absent

☐ Fréquence cardiaque entre 50 et 100

☐ IEC introduit si indiqué

☐ Bêta-bloquant introduit si indiqué

Démarrer la phase suivante **Retour phase précédente**



one case prior and one case after program implementation deleted for presentation purposes

FIGURE 2. Total hospital charges on consecutive radical retropubic prostatectomy patients before and after implementation of the collaborative care/critical pathway program.

Include the patient in the workflow



HUG
Hôpitaux Universitaires de Genève

Enfants et adolescents
Hôpital des enfants

Le bien-être de l'enfant et de l'adolescent, une volonté partagée

Infos patients

Page d'accueil

Présentation

Infos patients

Enseignement

Recherche et publications

Partenaires et liens

Sites Web spécialisés

Consultations

Mon enfant est malade

- Fiches pratiques
- Brochures spécialisées

Vie à l'hôpital

Charte de l'enfant

Vidéos

Mon enfant est malade

- Mon bébé a 40°C de température au milieu de la nuit!
- Mon petit garçon tousse et a de la peine à respirer!
- Ma petite fille est couverte de boutons comme des piqûres d'orties!



QUE FAIRE?

Parents, ces **fiches** vous sont destinées!

De la petite urgence en passant par les maladies courantes de l'enfance, ce site répond à toutes vos questions. Comment reconnaître des signes de gravité? Que donner à boire à mon enfant qui vomit et a de la diarrhée? Comment faire baisser la fièvre? Quand peut-il retourner à l'école?

Ces fiches contiennent une multitude de suggestions pratiques pour prendre soin de votre enfant malade.

Nous espérons de tout cœur que ces conseils vous serviront de guide lors des maladies de vos enfants.

Annick Galetto Alain Gervaix



CLIQUEZ ICI POUR LE SOMMAIRE DES FICHES

Recherche

OK

Département de l'enfant et de l'adolescent

Rue Willy-Donzé 6
1211 Genève 14

022 382 40 00
pediatrie-web@hcuge.ch

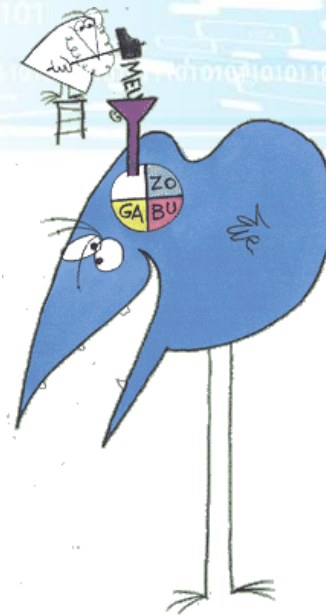
Vous retrouvez ces recommandations dans un livre:
Allô docteur, mon enfant est malade!



Conclusion

Thank you for your attention.

Questions?



PART 3: REASONS FOR SUCCESS AND FAILURES

Money is not always sufficient

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News

Germany puts universal health e-card on hold

Annette Tuffs

+ Author Affiliations

Germany's health minister, Philipp Rösler, has decided to put on hold the introduction of the planned electronic health card system, whereby every citizen was meant to hold an electronic card carrying their health data, medical history, prescriptions, and insurance status.

The project, originally to have been launched in January 2006, has so far cost the country's health insurance companies and its government a total of €1.7bn (£1.5bn; \$2.5bn).

The new German government, a coalition of the Christian Democrats and the liberal Free Democratic Party, has decided to review the plans, which were the work of the former Social Democrat health minister Ulla Schmidt, because of criticisms from doctors and experts on data safety about the security of data and the feasibility of the technology.

NHS may have to pay for electronic patient records it never uses

Michael Cross LONDON

Pressure on the NHS in England to abandon or radically reform its £13bn (€14bn; \$18bn) scheme to computerise all patients' records reached a new peak this week with the publication of a critical parliamentary report. The Committee of Public Accounts' second investigation into the NHS national programme for IT says that the health service may never adopt the programme's core systems for acute hospitals but will end up paying for them anyway.

E-Health Impact, to be confirmed...

Clinical Information Technologies and Inpatient Outcomes

A Multiple Hospital Study

Conclusion: Hospitals with automated notes and records, order entry, and clinical decision support had fewer complications, lower mortality rates, and lower costs.



Unexpected Increased Mortality After Implementation of a Commercially Sold Computerized Physician Order Entry System



OPEN ACCESS Freely available online

PLOS MEDICINE

The Impact of eHealth on the Quality and Safety of Health Care: A Systematic Overview ?

Conclusions: There is a large gap between the postulated and empirically demonstrated benefits of eHealth technologies. In addition, there is a lack of robust research on the risks of implementing these technologies and their cost-effectiveness